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"WORK PLAN FOR SUPPLEMENTAL SITE ASSESSMENT FOR TANKS 81 A, B AND C NAS  
CECIL FIELD FL"  
11/1/2006  
TETRA TECH NUS INC

# Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-04-D-0055



## Work Plan for Supplemental Site Assessment for Tanks 81 A, B, and C

Naval Air Station Cecil Field  
Jacksonville, Florida

Contract Task Order 0025

November 2006



Southeast

2155 Eagle Drive

North Charleston, South Carolina 29406

**WORK PLAN  
FOR SUPPLEMENTAL SITE ASSESSMENT  
FOR TANKS 81 A, B, AND C**

**NAVAL AIR STATION CECIL FIELD  
JACKSONVILLE, FLORIDA**

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

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

**Submitted by:  
Tetra Tech NUS, Inc.  
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**CONTRACT NUMBER N62467-04-D-0055  
CONTRACT TASK ORDER 0025**

**NOVEMBER 2006**

**PREPARED UNDER THE SUPERVISION OF:**



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**TABLE OF CONTENTS**

<u>SECTION</u>	<u>PAGE</u>
<b>ACRONYMS</b> .....	<b>iv</b>
<b>1.0 INTRODUCTION</b> .....	<b>1-1</b>
1.1 INTRODUCTION .....	1-1
1.2 OBJECTIVES .....	1-1
<b>2.0 SITE HISTORY</b> .....	<b>2-1</b>
<b>3.0 SITE LOCATION AND REGIONAL GEOLOGY</b> .....	<b>3-1</b>
3.1 SITE LOCATION .....	3-1
3.2 REGIONAL GEOLOGY .....	3-1
<b>4.0 SCOPE OF WORK</b> .....	<b>4-1</b>
4.1 MONITORING WELLS .....	4-1
4.1.1 General Details .....	4-1
4.1.2 Monitoring Well Development.....	4-3
4.2 GROUNDWATER ASSESSMENT ACTIVITIES .....	4-3
4.2.1 Groundwater Levels and Surveying .....	4-3
4.2.2 Laboratory Analyses .....	4-3
4.2.3 General Sampling Protocols.....	4-4
4.2.4 Aquifer Testing.....	4-4
4.3 EQUIPMENT DECONTAMINATION .....	4-4
4.4 WASTE HANDLING .....	4-4
4.5 SAMPLE HANDLING, PACKAGING, AND SHIPPING .....	4-5
4.6 SAMPLE CUSTODY.....	4-6
4.7 QUALITY CONTROL SAMPLES.....	4-6
4.8 SITE MANAGEMENT AND BASE SUPPORT .....	4-6
4.9 CONTINGENCY PLAN.....	4-7
<b>5.0 NATURAL ATTENUATION MONITORING PLAN DEVELOPMENT</b> .....	<b>5-1</b>
<b>6.0 LEVEL OF EFFORT</b> .....	<b>6-1</b>
<b>REFERENCES</b> .....	<b>R-1</b>

**APPENDICES**

<b>A</b>	<b>FDEP LETTER DATED DECEMBER 2, 2005</b>
<b>B</b>	<b>AUGUST 2005 SUPPLEMENTAL SITE ASSESSMENT LETTER REPORT</b>
<b>C</b>	<b>FIELD FORMS</b>

**TABLES**

<u>NUMBER</u>	<u>PAGE</u>
4-1	Analytical Sample Summary .....
4-2	Quality Control Sample Frequency .....

**Figures**

<u>NUMBER</u>	<u>PAGE</u>
4-1	Proposed Monitoring Well Locations .....

## ACRONYMS

bls	Below Land Surface
CLEAN	Comprehensive Long-term Environmental Action Navy
COC	Contaminant of Concern
CTO	Contract Task Order
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FOL	Field Operations Leader
ft	Foot or Feet
GCTL	Groundwater Cleanup Target Level
IDW	Investigative Derived Waste
NAMP	Natural Attenuation Monitoring Plan
NAS	Naval Air Station
NAVFAC SE	Naval Facilities Engineering Command Southeast
Navy	United States Navy
QC	Quality Control
RAP	Remedial Action Plan
SAR	Site Assessment Report
SOP	Standard Operating Procedure
SRCR	Site Rehabilitation Completion Report
SSA	Supplemental Site Assessment
SSALR	Supplemental Site Assessment Letter Report
TMB	Trimethylbenzene
TOC	Top of Casing
TOM	Task Order Manager
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
VOH	Volatile Organic Halocarbon

## **1.0 INTRODUCTION**

### **1.1 INTRODUCTION**

Tetra Tech NUS, Inc. (TtNUS) has prepared this Supplemental Site Assessment (SSA) Work Plan for Building 81, Tanks 81 A, B, and C at Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. This SSA Work Plan was prepared for the United States Navy (Navy) Naval Facilities Engineering Command Southeast (NAVFAC SE) under Contract Task Order (CTO) 0025 of the Comprehensive Long-term Environmental Action Navy (CLEAN) IV Contract Number N62467-04-D-0055.

This SSA Work Plan will address the field activities associated with installation of additional monitoring wells at Building 81, Tanks A, B, and C to support the development of a Natural Attenuation Monitoring Plan (NAMP).

### **1.2 OBJECTIVES**

Groundwater monitoring at Building 81, Tanks 81 A, B, and C indicates that groundwater contamination has impacted both the shallow and intermediate intervals of the surficial aquifer and appears to be migrating. The concentrations of contaminants of concern (COCs) continue to exceed the Groundwater Cleanup Target Levels (GCTLs) specified in Chapter 62-770, Florida Administrative Code (FAC). As a result, TtNUS has recommended that additional monitoring wells be installed to better delineate the horizontal extent of contamination in the shallow and intermediate zones. The Florida Department of Environmental Protection (FDEP) approved the recommendation for a supplemental investigation in a letter dated December 2, 2005, which is included as Appendix A. To accomplish this objective, three additional shallow monitoring wells and three additional intermediate monitoring wells will be installed, and groundwater samples will be collected only from these new monitoring wells. The data collected during the investigation will be used to prepare a brief SSA letter report (SSA II) presenting the results of the well installation and laboratory analytical results and will also include a NAMP in accordance with Chapter 62-770, FAC.

## 2.0 SITE HISTORY

TtNUS personnel conducted a Site Assessment and prepared a Site Assessment Report (SAR) for Building 81, Tanks 81 A, B, and C on July 18, 2002, which documents past land use and associated environment investigation history (TtNUS, 2002). It also includes information on the source removal activities that occurred prior to submittal of the SAR to the FDEP. The conclusions and recommendations from the SAR were as follows:

- Soil contamination was adequately addressed and removed by previous source removal actions.
- Groundwater contamination has been delineated to the water table.
- There is no free product and contamination does not appear to extend deeper than the water table.
- Monitoring of contaminated groundwater in five water table wells (CEF-81-8SR, CEF-81-9S, CEF-81-12S, CEF-81-13S, and CEF-81-14S) for the four COCs [isopropylbenzene; naphthalene; 1,2,4-trimethylbenzene (TMB); and 1,3,5-TMB] referenced in Section ES.2 for 5 years is recommended.
- Institutional controls are recommended to prevent use of groundwater as a potable water source.

The four COCs specified in the SAR were isopropylbenzene; naphthalene; 1,2,4-TMB; and 1,3,5-TMB. The FDEP generally accepted the recommendations in the Monitoring Only Plan Approval Order dated October 1, 2002, with the exception of altering the recommended monitoring well list. The monitoring well list specified in the order was as follows: CEF-81-08SR, CEF-81-13S, CEF-81-14S, and CEF-81-01I.

The first quarterly monitoring event, conducted in January 2003, indicated that concentrations of COCs in intermediate well CEF-81-01I exceeded GCTLs. The associated report (TtNUS, 2003) recommended that the monitoring program be discontinued and that a supplemental site assessment be conducted. The FDEP approved the recommendation for a supplemental investigation in a letter dated February 5, 2004.

Additional monitoring wells were installed at the site for additional analysis as part of the supplemental site assessment. Four intermediate monitoring wells (CEF-81-02I, CEF-81-03I, CEF-81-04I, and CEF-81-05I) and one deep monitoring well (CEF-81-01D) were installed and developed in February 2005. The newly installed wells along with the original five MOP wells were sampled for the following constituents during the February 2005 groundwater sampling event.

- Benzene, toluene, ethylbenzene, and xylenes; isopropylbenzene (cumene); 1,2,4-TMB; 1,3,5-TMB; and tentatively identified compounds (TICs) using United States Environmental Protection Agency (USEPA) Method SW846 8260B.
- Polynuclear aromatic hydrocarbons (PAHs) using USEPA Method SW846 8310.

TtNUS conducted a supplemental site assessment and prepared a Supplemental Site Assessment Letter Report for the site (TtNUS, 2005). A copy of the Supplemental Site Assessment Letter Report (SSALR) is included as Appendix B. The top of casing (TOC) elevations of these five new wells were surveyed in March 2005. The SSALR documents the site history and the groundwater investigation conducted during the supplemental site assessment. The SSALR indicated that groundwater contamination is migrating downgradient to shallow perimeter wells from shallow source well CEF-81-09S. It also indicated that contamination is migrating to downgradient intermediate wells. The SSALR indicated that the vertical extent of COCs in groundwater has been delineated by the new deep well. The SSALR recommended additional monitoring wells be installed to delineate the shallow and intermediate intervals. The FDEP approved the recommendation for a supplemental investigation in a letter dated December 2, 2005 (see Appendix A).

## **3.0 SITE LOCATION AND REGIONAL GEOLOGY**

### **3.1 SITE LOCATION**

The majority of NAS Cecil Field is located in southwestern Duval County, and the southernmost portion is located in Clay County. The base was operated by the Navy from approximately 1943 to 1999. Building 81, Tanks 81 A, B, and C is located in the Main Base area of NAS Cecil Field. Figure 1 in Appendix B provides a location map for the site. Former Tanks 81 A, B, and C consisted of three aboveground storage tanks located northwest of Building 81.

### **3.2 REGIONAL GEOLOGY**

The geology of the area consists of the following two distinct groups: rocks that form the Floridian aquifer and younger rocks that lie above the Floridian aquifer. The younger rocks are very sandy with layers of shell, clay, and limestone. This material is mostly unconsolidated. Rocks of the older group are consolidated limestone with some dolomite.

The youngest deposits are sediments of the Holocene and Pleistocene age. The thicknesses of these unconsolidated deposits vary from approximately 20 to 40 feet (ft), and the strata consist of sand and clayey layers.

Below the Holocene and Pleistocene deposits are Upper Miocene or Pliocene sediments. The thicknesses of these deposits also vary, with reported ranges from 20 to 110 ft and 70 to 150 ft. The strata are composed of sand, shale, sandy clay, and limestone.

The Miocene-age Hawthorne formation is located approximately 75 ft below land surface (bls) and is approximately 400 ft thick. The formation consists of calcareous, phosphatic sandy clays, and clay sands interbedded with thin, discontinuous lenses of sand, sandy limestone, and hard dolomite. The limestone and dolomite lenses are thicker and more prevalent near the base of the formation.

The youngest unit in the Floridian aquifer and the Ocala group is the Eocene-age Crystal River formation. It is a white to cream, chalky marine limestone with abundant fossils. The middle member of the Ocala group is the Williston formation. The formation is composed of granular limestone and is distinguished by its characteristic fossil assemblage. The Inglis formation underlies the Williston formation. It is also a granular marine limestone formation but can be easily differentiated from the Williston formation by the presence of coquina beds. It is not always possible to distinguish between the three members of the Ocala group. The Ocala group is around 200 ft thick and underlain by the Avon Park Limestone.

The Avon Park Limestone includes rocks that vary from limestone to dolomite. The dolomite beds are harder than the granular limestone beds. The Avon Park Limestone is found at a depth of approximately 700 ft bls and is approximately 50 ft thick.

The Lake City Limestone underlies the Avon Park Limestone. It consists of alternating massive to granular limestone and cherty, glauconitic dolomite beds that consist entirely of foraminifera. Locally, thin lignite beds might be encountered. The top of the formation lies approximately 780 ft bls (Brown and Caldwell, 1990).

## 4.0 SCOPE OF WORK

The work in the following sections will be completed in accordance with FDEP and TtNUS Standard Operating Procedures (SOPs).

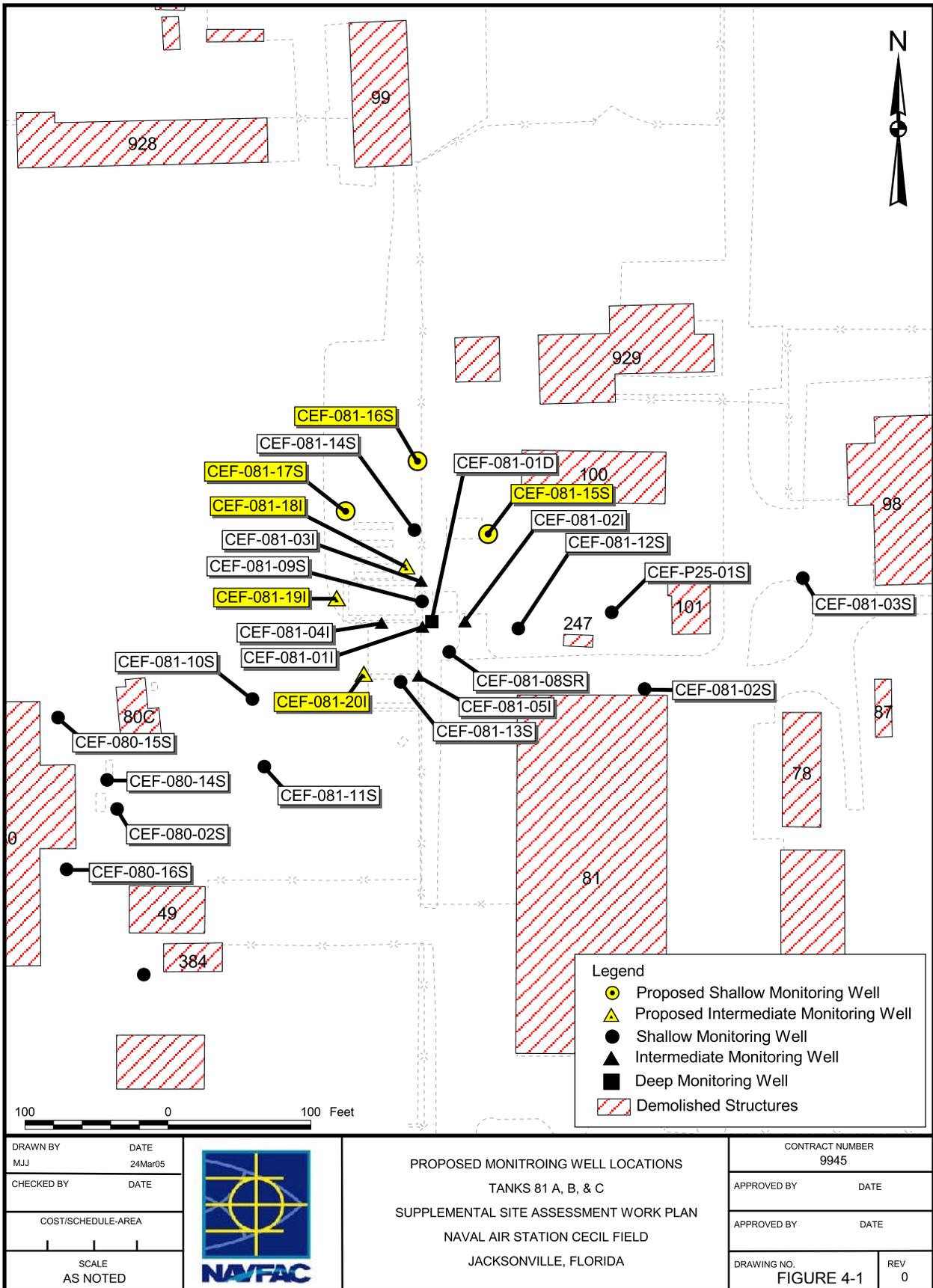
TtNUS personnel in charge will maintain a logbook in accord with FDEP SOPs and TtNUS SOP SA-6.3. At the end of each day in the field, the Field Operations Leader (FOL) will complete a Daily Activities Record for any subcontractor activities (see Appendix C).

### 4.1 MONITORING WELLS

Monitoring wells will be installed and constructed in general accordance with applicable guidelines from the following sources: Monitoring Well Design, Installation, Construction, and Development Guidelines (NAVFAC SE, 1997); Chapter 40C-3, FAC, Water Wells (Revised) (St. Johns River Water Management District, 1995); and the Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (USEPA, 1996). In some cases, site conditions, geologic settings, or unknown factors may require slight modifications in well installation and/or construction methods. Modifications from the aforementioned guidance documents will be evaluated and reviewed by the on-site senior field geologist. Any deviations or modifications deemed appropriate will be properly documented.

#### 4.1.1 General Details

Six permanent monitoring wells will be installed using hollow stem auger drilling techniques. Three shallow monitoring wells (CEF-081-15S, CEF-081-16S, and CEF-081-17S) will be installed to approximately 15 ft bls, and three intermediate monitoring wells (CEF-081-18I, CEF-081-19I, and CEF-081-20I) will be installed to approximately 35 ft bls. The locations of the new monitoring wells along with the new well numbers are included in Figure 4-1. These monitoring wells will be single cased. Primary casing and screens of the monitoring wells will be constructed of 2-inch inside diameter, Schedule 40, flush-joint polyvinyl chloride riser and flush-joint 0.010-inch factory-slotted well screen. The shallow monitoring well screen sections will be 10 ft in length, and the intermediate monitoring well screen sections will be 5 ft in length. After the borings are drilled to the desired depth, wells will be installed through the augers. The wells will be finished with above-grade, locking, weather-resistant protective covers. A boring log, monitoring well sheet, and certificate of conformance will be maintained for each well installation (see Appendix C). The proposed locations of the three shallow monitoring wells and the three intermediate monitoring wells are shown on Figure 6 in Appendix B.



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#### **4.1.2 Monitoring Well Development**

Monitoring well development will be conducted in general accordance with NAVFAC SE guidelines (NAVFAC SE, 1997). The monitoring wells will be developed no sooner than 24 hours after placement of grout to remove fine sediment from around the screened intervals of the wells. Wells will be developed by bailing and surging or by pumping, as determined by the field geologist. Field parameters (pH, temperature, turbidity, and specific conductance) will be measured at equally spaced time intervals during well development. Wells will be developed for a maximum of 1 hour or until the field measurements become stable and the development water is visibly clear. Water quality stabilization will be determined using the following criteria:

- Temperature, plus or minus 0.5 degrees Celsius
- pH, plus or minus 0.1
- Specific conductivity, plus or minus 10 microSiemens

These data will be recorded on a monitoring well development record (see Appendix C). No sooner than 24 hours after development, groundwater samples will be collected from monitoring wells in accordance with SOPs.

### **4.2 GROUNDWATER ASSESSMENT ACTIVITIES**

#### **4.2.1 Groundwater Levels and Surveying**

Prior to obtaining samples, synoptic water levels and total well depths will be measured and recorded on site-specific groundwater level measurement sheets (see Appendix C). A second round of water levels will be collected approximately 1 month later on the same type of data sheet. This task will be accomplished in accordance with FDEP SOPs and TtNUS SOP GH-1.2.

A registered surveyor will survey the permanent monitoring wells installed during the site assessment. Horizontal positioning will be measured and plotted with respect to the Florida State Plane Coordinate System and the North American Datum of 1983. The TOC elevation of each permanent monitoring well will be surveyed with respect to the North American Vertical Datum of 1988 and referenced to site features (building corners, etc.). The TOC elevations will be used with the depth-to-water data previously mentioned to determine groundwater flow direction and gradient.

#### **4.2.2 Laboratory Analyses**

In accordance with the SSALR, groundwater samples from the six new monitoring wells at the site will be analyzed for the COCs summarized in Table 4-1.

**TABLE 4-1  
ANALYTICAL SAMPLING SUMMARY**

**Work Plan for Supplement Site Assessment  
Naval Air Station Cecil Field  
Jacksonville, Florida**

<b>COC</b>	<b>Laboratory Method</b>
Benzene, toluene, ethylbenzene, and xylenes	SW-846 8260B
Isopropyl benzene (cumene)	SW-846 8260B
1,2,3-Trimethylbenzene	SW-846 8260B
1,2,4-Trimethylbenzene	SW-846 8260B
Tentatively identified compounds	SW-846 8260B
Polynuclear aromatic hydrocarbons	SW-846 83P

**4.2.3 General Sampling Protocols**

General sampling protocols will be in accordance with FDEP SOPs and TtNUS SOP SA-1.1. The data will be recorded on a groundwater sample log sheet and a low flow purge data sheet (see Appendix C).

**4.2.4 Aquifer Testing**

Aquifer testing will not be necessary to determine aquifer characteristics because this site has been investigated extensively as documented in previous reports.

**4.3 EQUIPMENT DECONTAMINATION**

The equipment involved in well installation and well sampling activities will be decontaminated prior to and during the respective field activities in accordance with FDEP SOPs and TtNUS SOP SA-7.1.

**4.4 WASTE HANDLING**

Drill cuttings from the well installations and water from the well development and purging and sampling will be collected and containerized in Department of Transportation-approved (17-E or 17-H) 55-gallon drums. Each drum will be sealed, labeled, and maintained on site, pending investigation-derived waste (IDW) analytical results. Groundwater analytical results will be used to determine appropriate off-site disposal of aqueous IDW.

A lined decontamination pad will be constructed and used to collect the water from steam cleaning of drilling equipment. Decontamination materials generated during the site investigation will be containerized for proper disposal. Characterization samples will be collected in accordance with the TtNUS Decontamination of Field Equipment and Waste Handling SOP and NAS Cecil Field practices.

Because soil cuttings will be generated but no soil analytical data is planned for collection, a composite soil sample will be collected for total recoverable petroleum hydrocarbons (TRPH), volatile organic halocarbons (VOHs), and metals (arsenic, cadmium, chromium, and lead). These data will be used to characterize the soil IDW for proper disposal.

Analyses for TRPH, VOHs, and metals (arsenic, cadmium, chromium, and lead) is required to comply with the soil thermal treatment and disposal regulations in Chapter 62-713, FAC.

#### **4.5 SAMPLE HANDLING, PACKAGING, AND SHIPPING**

Sample handling includes the selection of sample containers, preservatives, allowable holding times, and analytical methods. In addition, sample identification, packaging, and shipping will be addressed in this section. Sample handling procedures will be in accordance with FDEP SOPs and TtNUS SOP SA-6.1. The FOL will be responsible for completing the following forms when samples are collected for shipping:

- Sample labels
- Chain-of-custody labels
- Appropriate labels applied to shipping coolers
- Chain-of custody Forms
- Federal Express Air Bills

The site has previously been assigned a unique facility number as follows: Building 81, Tanks 81 A, B, and C = 81. Each sample will be assigned a unique sample identification number as follows:

<u>1</u> General Site Name	<u>2</u> Facility Number	<u>3</u> Sample Identifier	<u>4</u> Sequence Number
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**Where:**

<u>1</u> General Site Name	CEF
<u>2</u> Facility Number	81
<u>3</u> Sample Identifier	Monitoring well identification number
<u>4</u> Sequence number	See below

Groundwater samples collected from permanent monitoring wells will have a sequence number beginning at 02 (for the first event in this work plan) and continuing consecutively based on the sampling round.

For example, a groundwater sample collected from shallow monitoring well number nine at the site during the first groundwater sampling round under this work plan would have the following nomenclature:

**CEF-81-09S-02**

It should be noted that well CEF-81-08-S at the site was abandoned and replaced, and the replacement nomenclature for that particular well is augmented with an “R” as follows:

**CEF-81-08SR**

**4.6 SAMPLE CUSTODY**

Sample chain of custody begins with the release of empty sample bottles from the laboratory and must be documented and maintained from that point forward. To maintain custody of the sample bottles or samples, they must be in someone's physical possession, in a locked room or vehicle, or sealed with an intact custody seal. When the possession of the bottles or samples is transferred from one person to another, it will be documented in the field logbook and on the chain-of-custody form.

**4.7 QUALITY CONTROL SAMPLES**

In addition to periodic calibration of field equipment and appropriate documentation on a field calibration sheet (see Appendix C), quality control (QC) samples will be collected or generated during environmental sampling activities in accordance with FDEP SOPs. Table 4-2 provides the QC sample frequency.

**TABLE 4-2  
QUALITY CONTROL SAMPLE FREQUENCY**

**Work Plan for Supplement Site Assessment  
Naval Air Station Cecil Field  
Jacksonville, Florida**

<b>Type of Samples</b>	<b>Number of Samples</b>	<b>Frequency</b>
Field Duplicate	10+	1/10 samples/matrix

TtNUS personnel will perform a limited validation review of the data packages generated by the analytical laboratory to eliminate false positive and false negative results.

**4.8 SITE MANAGEMENT AND BASE SUPPORT**

TtNUS will perform this project with support from the Navy. This section of the work plan describes the project contacts, support personnel, project milestones, and time frames of all major events.

Throughout the duration of the investigation activities, work at NAS Cecil Field (now known as Cecil Commerce Center) will be coordinated through NAVFAC SE and FDEP. The primary contacts are as follows:

1. NAVFAC SE Engineer in Charge  
Mr. Mark Davidson  
(843) 820-5596
2. FDEP  
Mr. David Grabka  
(850) 488-3693

NAVFAC SE personnel will provide the following support functions:

- Provide existing engineering plans, drawings, diagrams, files, etc. to facilitate evaluation of the sites under investigation.
- Provide all historical data, background geological and hydrogeological information, and initial site investigation documents.

Jacksonville Aviation Authority personnel will aid in providing areas for storage of IDW as necessary.

The project will be staffed with personnel from the TtNUS Jacksonville, Florida office. During field activities, TtNUS will provide an FOL who is familiar with the scope of work to be completed and requirements of working at NAS Cecil Field. Additionally, TtNUS will subcontract one 4-wheel drive hollow stem auger drill rig and crew and will provide a field crew to supervise drilling activities and sample the groundwater monitoring wells.

Mr. Mark Peterson is the Assistant Task Order Manager (TOM) for CTO 0025 and will be the primary point of contact for the base and the FOL for SSA activities at Building 81, Tanks 81 A, B, and C. He is responsible for cost and schedule control as well as technical performance. Mr. Peterson will provide senior level review and oversight during field activities.

#### **4.9 CONTINGENCY PLAN**

In the event of problems that may be encountered during site activities, the NAVFAC SE point of contact will be notified immediately, followed by the TtNUS Assistant TOM. The Assistant TOM will determine a course of action designed not to interfere with the schedule or budget. All contingency plans will be approved through the NAVFAC SE point of contact before being enacted.

## 5.0 NATURAL ATTENUATION MONITORING PLAN DEVELOPMENT

Data from the SSA activities will be used to develop a NAMP for regulatory approval. The NAMP will include the following, as referenced in Chapter 62-770, Paragraph 62-770.690(8), FAC (FDEP, 2005a):

- Installation of a minimum of two monitoring wells. At least one well will be located at the downgradient edge of the plume, and at least one well will be located in the area of highest groundwater contamination or directly adjacent to it if the area of highest groundwater contamination is inaccessible.
- The designated monitoring wells will be sampled and analyzed for applicable petroleum product COCs no more frequently than quarterly.
- Water level measurements in all designated wells will be made within 24 hours of initiating each sampling event.
- If analyses of groundwater samples indicate that concentrations of COCs exceed any action levels specified in the NAMP approval, the well or wells will be resampled no later than 30 days after the initial positive result is known. If the results of the resampling confirm that the applicable action levels are exceeded, the monitoring report will be signed and sealed by an appropriate registered professional and shall include a proposal to do one or the following:
  - Perform an SSA and submit an SSALR.
  - Continue the implementation of the approved NAMP.
  - Prepare and submit a Remedial Action Plan (RAP).
- On an annual basis, the analytical data shall be evaluated in reference to the expected reductions in concentrations of COCs in monitoring wells to verify progress of site rehabilitation by natural attenuation. If the annual rate of expected cleanup progress is not achieved, the monitoring report will include a proposal to do one of the following:
  - Perform an SSA and submit an SSALR.
  - Continue the implementation of the approved NAMP.
  - Prepare and submit a RAP.
- A minimum of two sampling events is required, and site rehabilitation will be considered complete when the No Further Action criteria have been met for two consecutive sampling events.

- TtNUS will submit to the FDEP for review two copies of a Natural Attenuation Monitoring Report that will include analytical results, chain-of-custody forms, tables updated as applicable, site maps that illustrate the analytical results, and water level elevation information.

## 6.0 LEVEL OF EFFORT

Field activities including utility clearance, monitoring well installation and development, sampling, surveying, and IDW management at this site are proposed to begin in January 2007 and take approximately 2 months to complete. The following is the anticipated level of effort for the activities associated with this investigation:

- Utility Clearances 1 week
- Driller Coordination and Mobilization 0.25 day
- Monitoring Well Installation and Development 2 to 4 days
- Monitoring Well Sampling 2 days
- Off-Site Laboratory Analyses 30 days
- IDW Management/Disposal 1 to 3 days
- NAMP 30 days

It is currently anticipated that tasks for this project will be completed with limited delays occurring during transition between tasks. However, delays during task transition are possible.

Assuming that nothing unusual is found during this scope of work, after the fieldwork is complete and the laboratory analytical data are received and processed, a letter report will be prepared for the site. Prior to final submittal of the document, TtNUS will present the results to the Base Realignment and Closure Cleanup Team.

## REFERENCES

Brown and Caldwell, 1990. Remedial Investigation/Feasibility Study Work Plan, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for NAVFAC SE, North Charleston, South Carolina. May.

FDEP (Florida Department of Environmental Protection), 2002. Monitoring Only Plan Approval Order Letter. October.

FDEP, 2004. SSA Investigation Approval Letter. February.

FDEP, 2005a. Chapter 62-770, Florida Administrative Code, Petroleum Contamination Site Cleanup Criteria. April.

FDEP, 2005b. SSALR Approval Letter. December.

NAVFAC SE (Naval Facilities Engineering Command Southeast), 1997. Monitoring Well Design, Installation, Construction, and Development Guidelines. North Charleston, South Carolina. March.

St. Johns River Water Management District, 1995. Chapter 40C-3, Florida Administrative Code, Water Wells (Revised). March.

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TtNUS, 2005. Supplemental Site Assessment Letter Report, Building 81, Tanks 81 A, B, and C, NAS Cecil Field, Jacksonville, Florida. Prepared for NAVFAC SE, North Charleston, South Carolina. August.

USEPA (United States Environmental Protection Agency), 1996. Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, Athens, Georgia. May.

**APPENDIX A**

**FDEP LETTER DATED DECEMBER 2, 2005**



# Department of Environmental Protection

JED BUSH  
Governor

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

Colleen M. Castille  
Secretary

December 2, 2005

Commanding Officer  
Attn: Mr. Mark Davidson  
Code ES33  
Southern Division  
Naval Facilities Engineering Command  
P.O. Box 190010  
North Charleston, South Carolina 29419-9010

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

Dear Mr. Davidson:

I have completed my review of the Supplemental Site Assessment Letter Report, Building 81, Tanks 81 A,B and C, Naval Air Station Cecil Field, dated August 3, 2005 (received August 5, 2005), prepared and submitted by Tetra Tech NUS, Inc. The report is acceptable and approved. I also concur with the recommendations made in the report that additional monitoring wells be installed to delineate the shallow and intermediate depths of the surficial aquifer.

If I can be of any further assistance with this matter, please contact me at (850) 245-8997.

Sincerely,

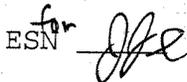
  
David P. Grabka, P.G.  
Remedial Project Manager

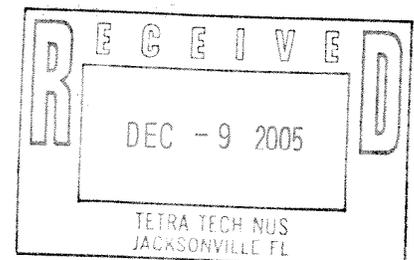
cc: Mike Fitzsimmons, FDEP Northeast District  
Mark Speranza, Tetra Tech NUS, Pittsburgh  
Alan Pace, Tetra Tech NUS, Jacksonville  
Doyle Brittain, EPA Region 4  
Mike Halil, CH2M Hill, Jacksonville

JJC



ESN





"More Protection, Less Process."

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**APPENDIX B**

**AUGUST 2005 SUPPLEMENTAL SITE ASSESSMENT LETTER REPORT**



**TETRA TECH NUS, INC.**

8640 Philips Highway, Suite 16 • Jacksonville, FL 32256  
Tel 904.636.6125 • Fax 904.636.6165 • www.tetrattech.com

Document Tracking Number 05JAX0058

August 3, 2005

Project Number 9945

Mr. David Grabka  
Remedial Project Manager  
Technical Review/Federal Facilities  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Reference: CLEAN III Contract Number N62467-94-D0888  
Contract Task Order Number 0361

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

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Supplemental Site Assessment Letter Report for the referenced Contract Task Order (CTO) for the subject site. This report has been prepared for the United States Navy Southern Division, Naval Facilities Engineering Command (NAVFAC EFD SOUTH) under CTO 0361, for the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888. This report provides the results of the supplemental site assessment activities and a limited review of prior site investigation results to aid in evaluating current site conditions and recommending future actions at the site. Figure 1 shows the general location of this site.

**SITE HISTORY**

The Site Assessment Report (SAR) for this site (TtNUS, 2002) documents past land use and the associated environmental investigation history. It also includes information on the source removals that occurred prior to submittal of the SAR to the Florida Department of Environmental Protection (FDEP). The conclusions and recommendations from the SAR were as follows:

“The following conclusions are made in this SAR:

- The soil contamination was adequately addressed and removed by previous investigations.
- The groundwater contamination has been delineated to the water table.
- There is no free product and the contamination does not appear to extend deeper than the water table.

The following additional activities are recommended in this SAR:

- Monitor the contaminated groundwater in five water table wells for the four COCs referenced in section ES.2 for five years in accordance with Chapter 62-770, FAC.
- Implement institutional controls to prevent the use of groundwater as a potable water source.”

- Implement institutional controls to prevent the use of groundwater as a potable water source.”

The four contaminants of concern (COCs) specified in the SAR were isopropylbenzene, naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB. The FDEP generally accepted the recommendations in their Monitoring Only Plan Approval Order dated October 1, 2002, with the exception of altering the recommended monitoring well list. The well list specified in the order was as follows: CEF-81-08SR, CEF-81-9S, CEF-81-13S, CEF-81-14S, and CEF-81-01I.

The first quarterly monitoring event, held in January 2003, revealed the concentrations of COCs in intermediate well CEF-81-01I exceeded the GCTLs. The report (TtNUS, 2003) recommended the monitoring program be discontinued, and a supplemental site assessment be conducted. The FDEP approved the recommendation for a supplemental investigation in a letter dated February 5, 2004.

### **SUPPLEMENTAL SITE ASSESSMENT OBJECTIVES**

The objective of the supplemental assessment at Tanks 81 A, B, and C was to evaluate the site's current groundwater conditions. The site assessment data will be used to determine appropriate future actions at the site.

### **MONITORING WELL INSTALLATION**

Four intermediate [30 feet (ft) deep with screens from 25 to 30 ft below land surface (bls)] monitoring wells (CEF-81-02I, CEF-81-03I, CEF-81-04I, and CEF-81-05I) and one deep (55 ft deep with a screen interval from 50 to 55 ft bls) well (CEF-81-01D) were installed and developed in February 2005 (Figure 2). The Boring Logs, Monitoring Well (Construction) Sheets, Certificates of Conformance and Monitoring Well Development Records for each well are provided in Attachment A. The top-of-casing (TOC) elevations of these five new wells were surveyed in March 2005, and the data set from the registered surveyor is provided in Attachment B.

### **GROUNDWATER SAMPLING AND ANALYSIS**

On February 18, 2005, TtNUS personnel mobilized to Tanks 81 A, B, and C to conduct the groundwater sampling event. The sampling activities were completed on February 21, 2005, in accordance with the FDEP's Standard Operating Procedures for Field Activities (DEP-SOP-001/01). A copy of the field data record for the water level measurements is included in Attachment C.

Water level measurements were recorded from several monitoring wells on February 18, 2005. The depth-to-water measurements coupled with TOC elevation data were used to calculate groundwater elevations (Table 1). Depth to groundwater ranged from 6.21 to 7.52 ft below top of casing (btoc) for the shallow wells. The water level data were used to estimate groundwater flow direction at the site for the water table interval (Figure 3). Similarly, depth to groundwater ranged from 6.54 to 7.01 ft btoc for the intermediate interval. The groundwater flow direction at the site for this interval is indicated on Figure 4.

The sampling team collected groundwater samples from the original five MOP wells and the five new wells. Copies of the groundwater sample log sheets and low flow purge data sheets are provided for each well in Attachment C. The samples were packed on ice and transported to Accutest Laboratories in Orlando, Florida. The groundwater samples were analyzed for the following:

- Benzene, toluene, ethylbenzene, and xylene; isopropylbenzene (cumene); 1,2,4-TMB; 1,3,5-TMB; and tentatively identified compounds (TICs) using Environmental Protection Agency (EPA) Method SW846 8260B.

- Polynuclear aromatic hydrocarbons (PAHs) using EPA Method SW846 8310.

TICs were completed for the samples in order to provide results for the compound 1,2,3-TMB observed in previous samples (collected circa June 2001) from this site at concentrations above the groundwater cleanup target level (GCTL). PAHs were analyzed and reported to ensure that the COC, naphthalene, would be adequately characterized. Copies of the laboratory analytical report and chain-of-custody documentation are provided in Attachment D.

## **GROUNDWATER ANALYTICAL RESULTS**

The analytical results for the groundwater samples collected at Tanks 81 A, B, and C from this supplemental assessment have been compared to the appropriate GCTLs. Cumene was detected, above its respective GCTL [0.8 micrograms per liter ( $\mu\text{g/L}$ )], in the groundwater samples collected from CEF-81-09S (2.8  $\mu\text{g/L}$ ), CEF-81-14S (3.3  $\mu\text{g/L}$ ), and CEF-81-04I (1.7  $\mu\text{g/L}$ ). Concentrations of other analytes [other volatile organic compounds (VOCs) and PAHs] were either below the respective GCTL, below the method detection limits, or had no established GCTL for comparison. The analytical results for the COCs from this supplemental assessment are summarized in Table 2.

## **SITE ASSESSMENT SUMMARY**

The water level data collected as part of the supplemental site assessment indicates that shallow groundwater flow is approximately to the north. This conclusion generally agrees with the flow data direction given in the SAR, which also indicated flow from the source well (CEF-81-09S) toward the perimeter well (CEF-81-14S).

With the addition of four new intermediate wells, water level data was also collected and compared for this interval. The elevation data indicates that the groundwater flow for this interval at 25 to 30 ft bls is approximately to the west-northwest from the source area around well CEF-81-01I toward well CEF-81-04I.

While the shallow source area well CEF-81-09S appears to remain impacted by a COC (specifically, cumene), the groundwater contamination is also impacting the downgradient perimeter well CEF-81-14S (Figure 5). This situation indicates the groundwater contamination at the water table interval is not delineated downgradient.

The sample data for the intermediate well CEF-81-01I appears to indicate the impact from cumene has decreased to below the GCTL; however, the concentration of COCs in the downgradient intermediate well, CEF-81-04I, indicate the contamination is moving in that direction (Figure 5). Since CEF-81-04I is impacted with a cumene level above the GCTL and there are no other downgradient intermediate wells, that interval is also not completely delineated.

The vertical extent of COCs in groundwater is now delineated by the new deep well, CEF-81-01D, which is screened from 50 to 55 ft bls (Figure 5).

## **RECOMMENDATIONS**

Based on the results of the groundwater monitoring, TtNUS recommends additional monitoring wells be installed to delineate the shallow and intermediate intervals. Figure 6 provides the proposed locations for these new wells. Following installation and development, a round of water levels will be collected on the same wells as before coupled with the new wells to determine groundwater elevation and flow direction, the new wells will be surveyed by a registered surveyor, and only the new wells will be sampled for the same COCs and methods used in this supplemental investigation.

Mr. David Grabka  
FDEP  
August 3, 2005 - Page 4 of 4

If you should have any questions or require additional information, please feel free to contact Mr. Paul Calligan at (813) 806-0202.

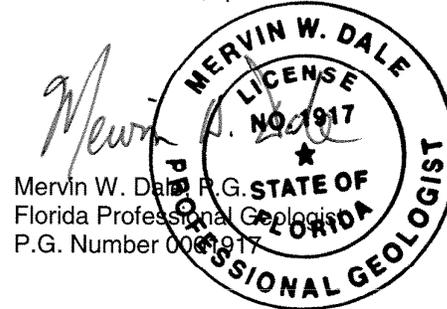
Sincerely,

  
Paul E. Calligan, P.G.  
Task Order Manager

PC/md

Attachments (12)

pc: Gabe Magwood, NAVFAC EFD SOUTH  
Debbie Humbert (Cover Letter Only)  
Mark Perry/File (Unbound)  
CTO 361 File



## TABLES

**Table 1  
Groundwater Elevation Data**

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

Monitoring Well Identification	Well Depth (ft, btoc)	TOC Elevation (ft, msl)	January 11, 2002		May 23, 2002		January 7, 2003		March 13, 2003		February 18, 2005	
			Depth to Water (ft, btoc)	Water-Level Elevation (ft, msl)	Depth to Water (ft, btoc)	Water-Level Elevation (ft, msl)	Depth to Water (ft, btoc)	Water-Level Elevation (ft, msl)	Depth to Water (ft, btoc)	Water-Level Elevation (ft, msl)	Depth to Water (ft, btoc)	Water-Level Elevation (ft, msl)
CEF-80-3S	15.12	77.68	4.74	72.94	5.22	72.46	5.07	72.61	3.16	74.52	6.61	71.07
CEF-80-13S	14.90	78.17	4.96	73.21	5.48	72.69	5.51	72.66	3.56	74.61	7.09	71.08
CEF-81-2S	15.00	78.41	NM	NM	6.02	72.39	NM	NM	3.39	75.02	7.34	71.07
CEF-81-8SR	12.94	77.61	4.62	72.99	5.06	72.55	5.14	72.47	2.90	74.71	6.57	71.04
CEF-81-9S	12.74	77.72	4.73	72.99	5.19	72.53	5.16	72.56	3.08	74.64	6.78	70.94
CEF-81-10S	12.99	78.46	5.45	73.01	5.98	72.48	5.68	72.78	4.18	74.28	7.52	70.94
CEF-81-11S	12.88	78.47	5.46	73.01	5.97	72.50	5.56	72.91	4.06	74.41	7.48	70.99
CEF-81-12S	11.68	77.37	4.37	73.00	4.81	72.56	4.91	72.46	2.42	74.95	6.21	71.16
CEF-81-13S	12.14	77.91	4.92	72.99	5.36	72.55	5.27	72.64	3.24	74.67	6.91	71.00
CEF-81-14S	13.00	78.30	NI	NI	5.85	72.45	6.13	72.17	3.78	74.52	7.41	70.89
CEF-81-1I	29.25	77.73	4.77	72.96	4.77	72.96	5.65	72.08	3.16	74.57	6.79	70.94
CEF-P25-1S	12.00	77.57	NM	NM	5.17	72.40	6.00	71.57	2.36	75.21	6.52	71.05
CEF-81-2I	30.00	77.42	NI	NI	NI	NI	NI	NI	NI	NI	6.54	70.88
CEF-81-3I	30.00	77.78	NI	NI	NI	NI	NI	NI	NI	NI	6.95	70.83
CEF-81-4I	30.00	77.54	NI	NI	NI	NI	NI	NI	NI	NI	6.74	70.80
CEF-81-5I	30.00	77.84	NI	NI	NI	NI	NI	NI	NI	NI	7.01	70.83
CEF-81-1D	55.00	77.77	NI	NI	NI	NI	NI	NI	NI	NI	6.83	70.94

**Notes:**

msl = mean sea level  
NI = not installed  
NM = not measured

**Table 2  
Groundwater Analytical Data**

Supplemental Site Assessment Letter Report  
Building 81, Tanks 81 A, B, and C  
Naval Air Station Cecil Field  
Jacksonville, Florida  
Page 1 of 3

Contaminants of Concern	Source Monitoring Well				Perimeter Monitoring Wells							
	CEF-81-09S				CEF-81-01I				CEF-81-08SR			
	12/13/2001	1/8/2003	3/13/2003	2/18/2005	12/13/2001	1/8/2003	3/13/2003	2/18/2005	12/13/2001	1/8/2003	3/13/2003	2/18/2005
<b>Priority Pollutant Semi-Volatile Organic Compounds (SVOCs) (EPA Method 8270C) or PAHs (EPA Method 8310) (µg/L)</b>												
Naphthalene	12.5	5.5	NA	4.2	4.4 J	329	NA	0.98 U	6.0 U	1.0 U	NA	0.98 U
<b>VOCs (EPA Method 8260B) (µg/L)</b>												
Isopropyl benzene	6.2	NA	4.8	2.8	ND	NA	11.6	0.69	ND	NA	0.50 U	0.50 U
Naphthalene <sup>3</sup>	27.3	NA	65.0	12 JN	ND	NA	45.0	ND	ND	NA	1.0 U	ND
1,2,3-TMB <sup>3</sup>	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND
1,2,4-TMB	79.4	NA	32.6	6.0	ND	NA	5.7	1.0 U	ND	NA	0.50 U	1.0 U
1,3,5-TMB	19.0	NA	8.2	1.0 U	ND	NA	2.0	1.0 U	ND	NA	0.50 U	1.0 U
<b>TICs</b>	ND	<sup>4</sup>	NA	<sup>5</sup>	ND	<sup>4</sup>	NA	<sup>5</sup>	ND	ND	NA	<sup>5</sup>
See notes at end of table.												

**Table 2  
Groundwater Analytical Data**

Supplemental Site Assessment Letter Report  
Building 81, Tanks 81 A, B, and C  
Naval Air Station Cecil Field  
Jacksonville, Florida  
Page 2 of 3

Contaminants of Concern	Perimeter Monitoring Wells								NADSC/ GCTL <sup>1,2</sup>
	CEF-81-13S				CEF-81-14S				
	12/13/2001	1/8/2003	3/13/2003	2/21/2005	5/23/2002	1/8/2003	3/13/2003	2/18/2005	
<b>Priority Pollutant SVOCs (EPA Method 8270C) or PAHs (EPA Method 8310) (µg/L)</b>									
Naphthalene	5.5 U	1.0 U	NA	0.96 U	5.0 U	1.1 U	NA	7.8	200/20
<b>VOCs (EPA Method 8260B) (µg/L)</b>									
Isopropyl benzene	ND	NA	0.50 U	0.50 U	ND	NA	0.50 U	<b>3.3</b>	8/0.8
Naphthalene <sup>3</sup>	ND	NA	1.0 U	ND	ND	NA	1.0 U	15	200/20
1,2,3-TMB <sup>3</sup>	ND	NA	NA	ND	ND	NA	NA	ND	100/10
1,2,4-TMB	ND	NA	0.50 U	1.0 U	ND	NA	0.50 U	1.5	100/10
1,3,5-TMB	ND	NA	0.50 U	1.0 U	ND	NA	0.50 U	1.0 U	100/10
<b>TICs</b>	ND	ND	NA	<sup>5</sup>	ND	ND	NA	<sup>5</sup>	---

See notes at end of table.

**Table 2  
Groundwater Analytical Data**

Supplemental Site Assessment Letter Report  
Building 81, Tanks 81 A, B, and C  
Naval Air Station Cecil Field  
Jacksonville, Florida  
Page 3 of 3

Contaminants of Concern						NADSC/ GCTL <sup>1,2</sup>
	CEF-81-02I	CEF-81-03I	CEF-81-04I	CEF-81-05I	CEF-81-01D	
	2/18/2005	2/18/2005	2/18/2005	2/21/2005	2/18/2005	
<b>Priority Pollutant SVOCs (EPA Method 8270C) or PAHs (EPA Method 8310) (µg/L)</b>						
Naphthalene	0.95 U	0.97 U	2.2	0.96 U	0.95 U	200/20
<b>VOCs (EPA Method 8260B) (µg/L)</b>						
Isopropyl benzene	0.50 U	0.50 U	<b>1.7</b>	0.50 U	0.50 U	8/0.8
Naphthalene <sup>3</sup>	ND	ND	ND	ND	ND	200/20
1,2,3-TMB <sup>3</sup>	ND	ND	ND	ND	ND	100/10
1,2,4-TMB	1.0 U	100/10				
1,3,5-TMB	1.0 U	100/10				
<b>TICs</b>	5	5	5	5	5	---

**Notes:**

<sup>1</sup>GCTLs based on Chapter 62-777, Florida Administrative Code.

<sup>2</sup>NADSC as promulgated in Chapter 62-770.690.

<sup>3</sup>These compounds (listed under VOCs) were analyzed using a library search and are considered TICs.

<sup>4</sup>See Groundwater Monitoring Report, 1st Quarter, 1st Year (January 2003), TtNUS, 2003.

<sup>5</sup>See Appendix A, Accutest Laboratory Report. It was noted that none of the detected TICs with established GCTLs exceeded those standards.

U = not detected at detection limit shown

N indicates presumptive evidence of a compound.

NA = not analyzed

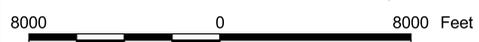
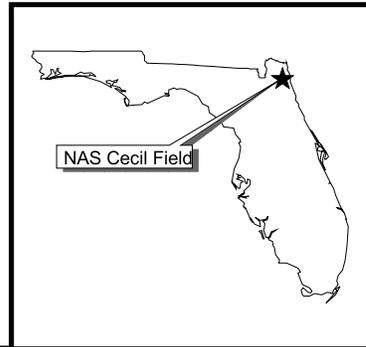
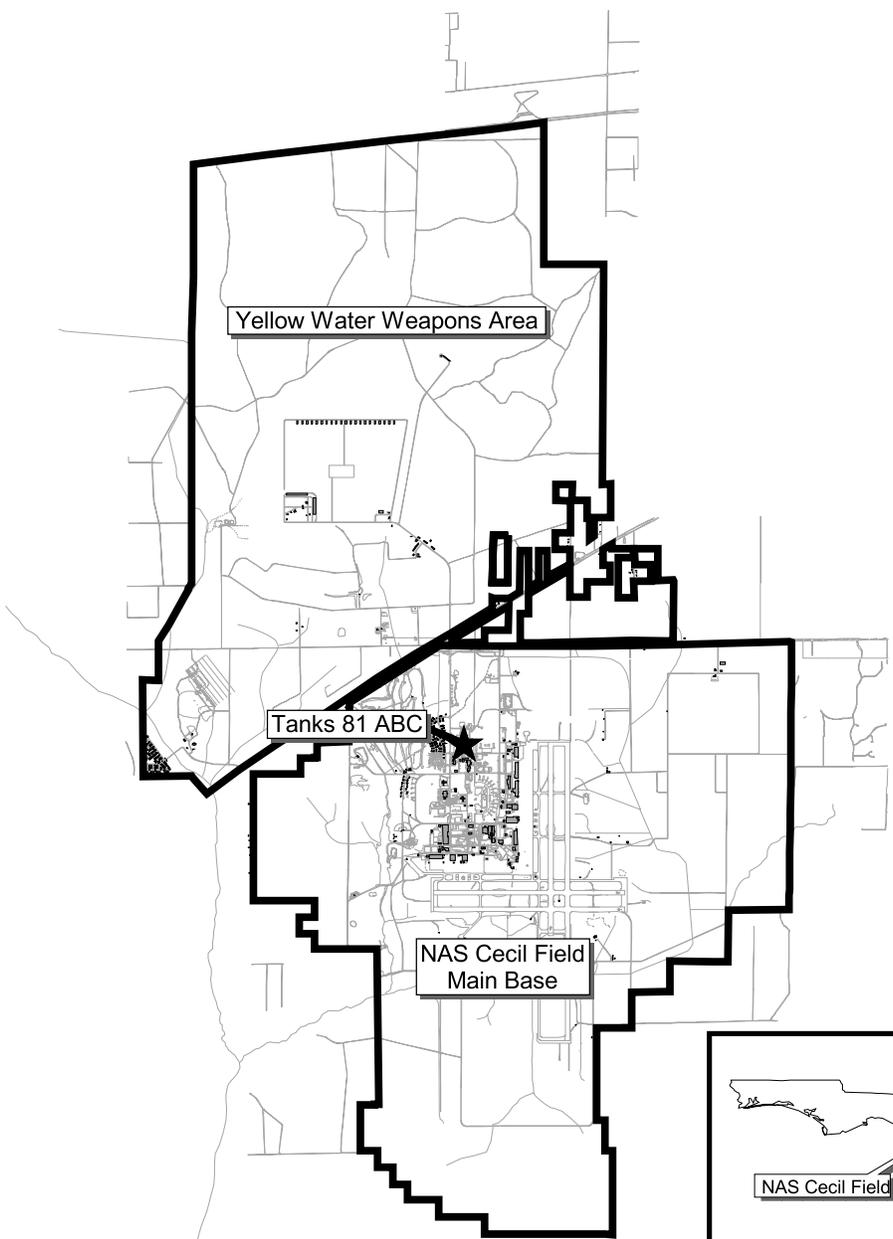
**Bold** indicates values exceeding NADSC or GCTL standards.

ND = not detected

NADSC = Natural Attenuation Default Source Concentrations

J = estimated value

## FIGURES

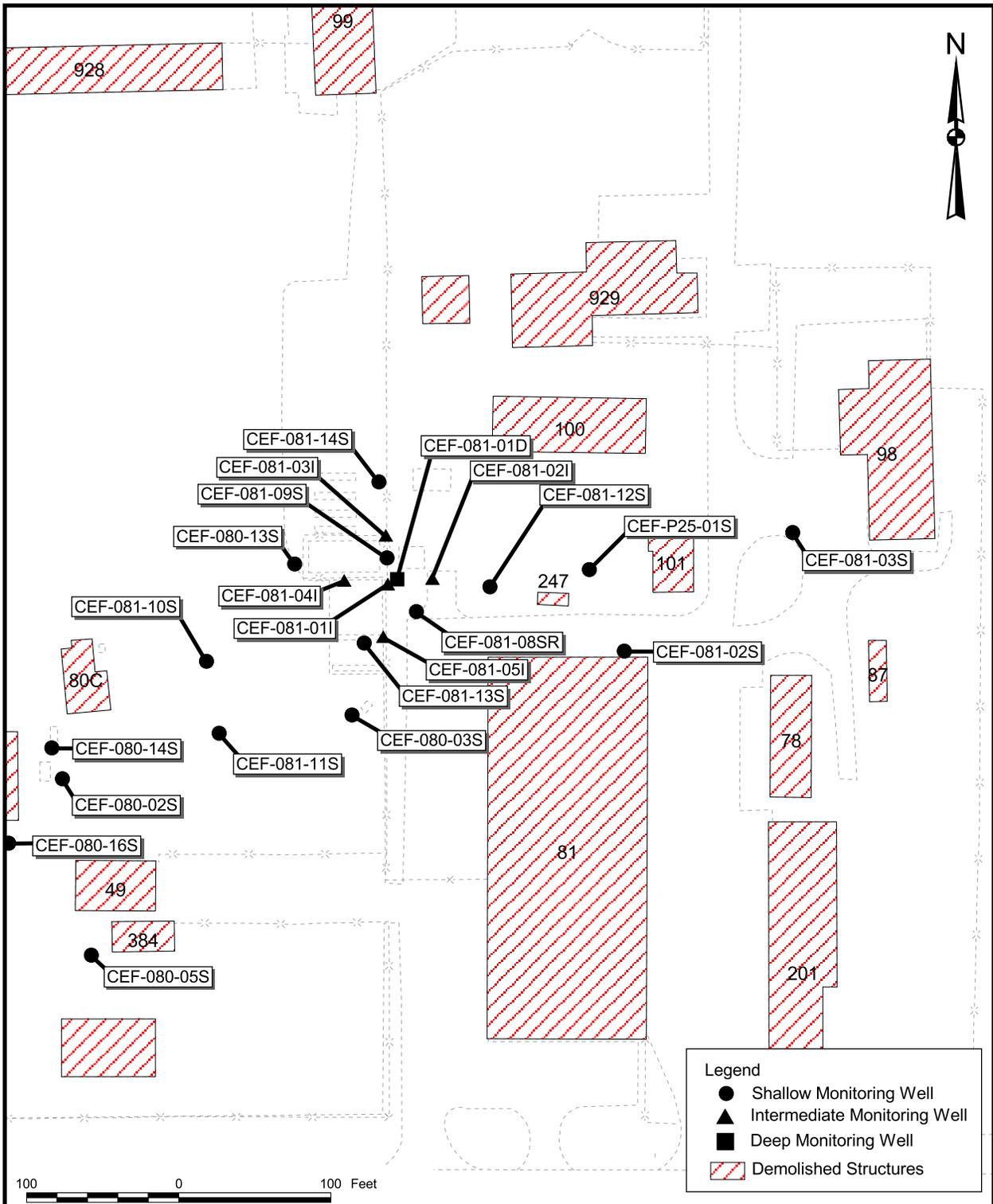


DRAWN BY MJJ	DATE 24Mar05
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



GENERAL LOCATION MAP  
TANKS 81 A, B, & C  
SUPPLEMENTAL SITE ASSESSMENT REPORT  
NAVAL AIR STATION CECIL FIELD  
JACKSONVILLE, FLORIDA

CONTRACT NUMBER 9945	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV 0

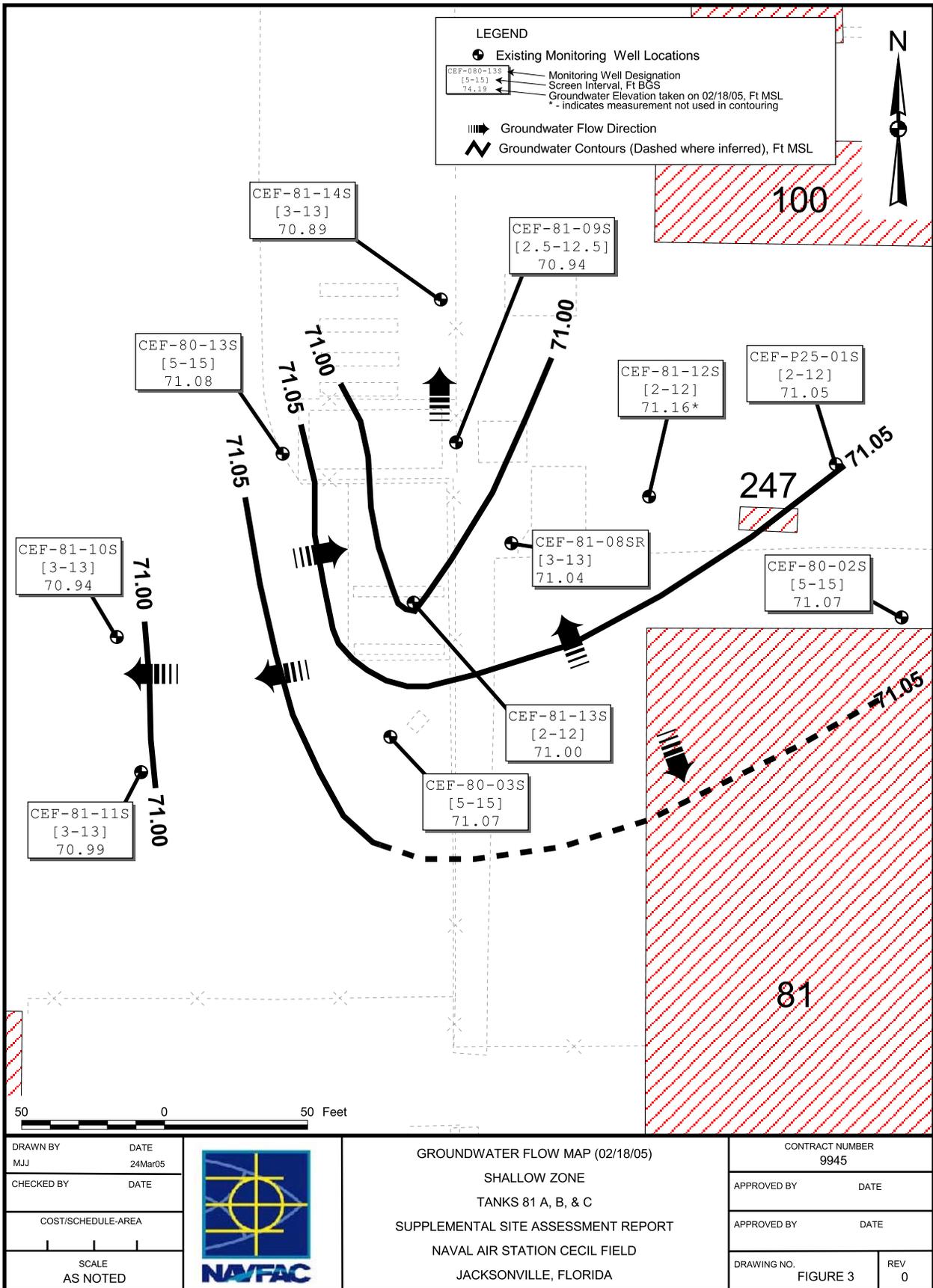


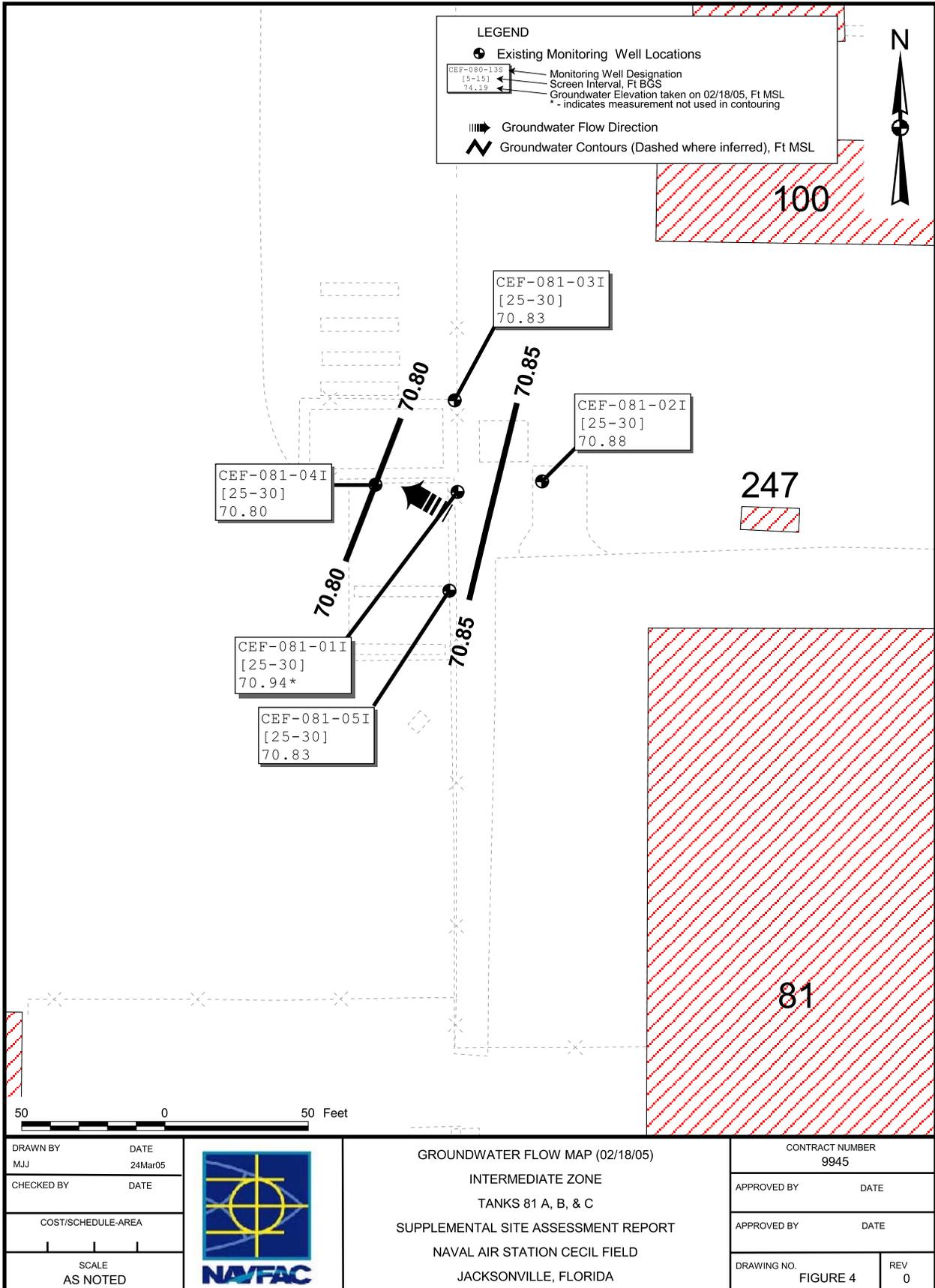
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COST/SCHEDULE-AREA	
SCALE AS NOTED	

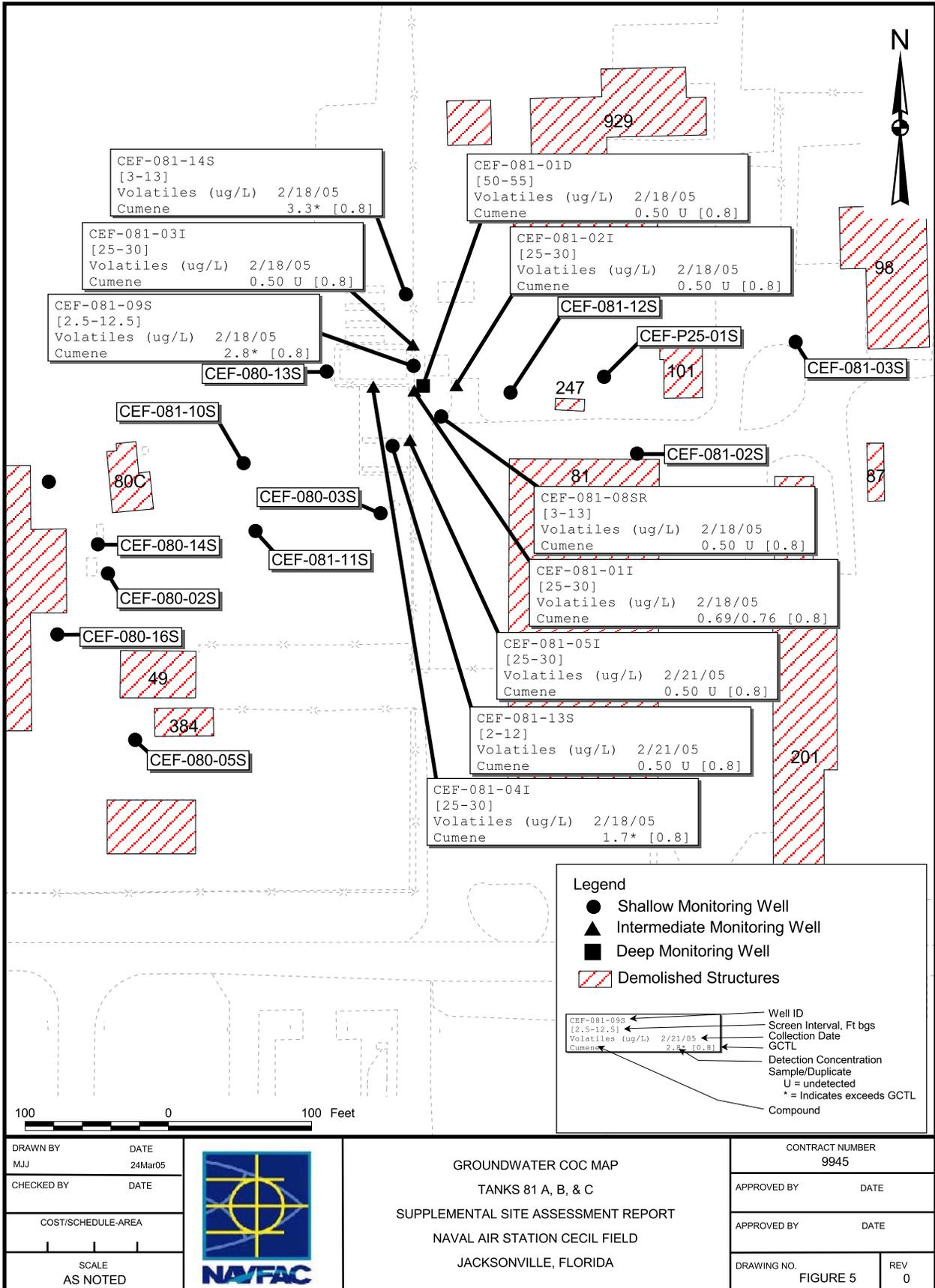


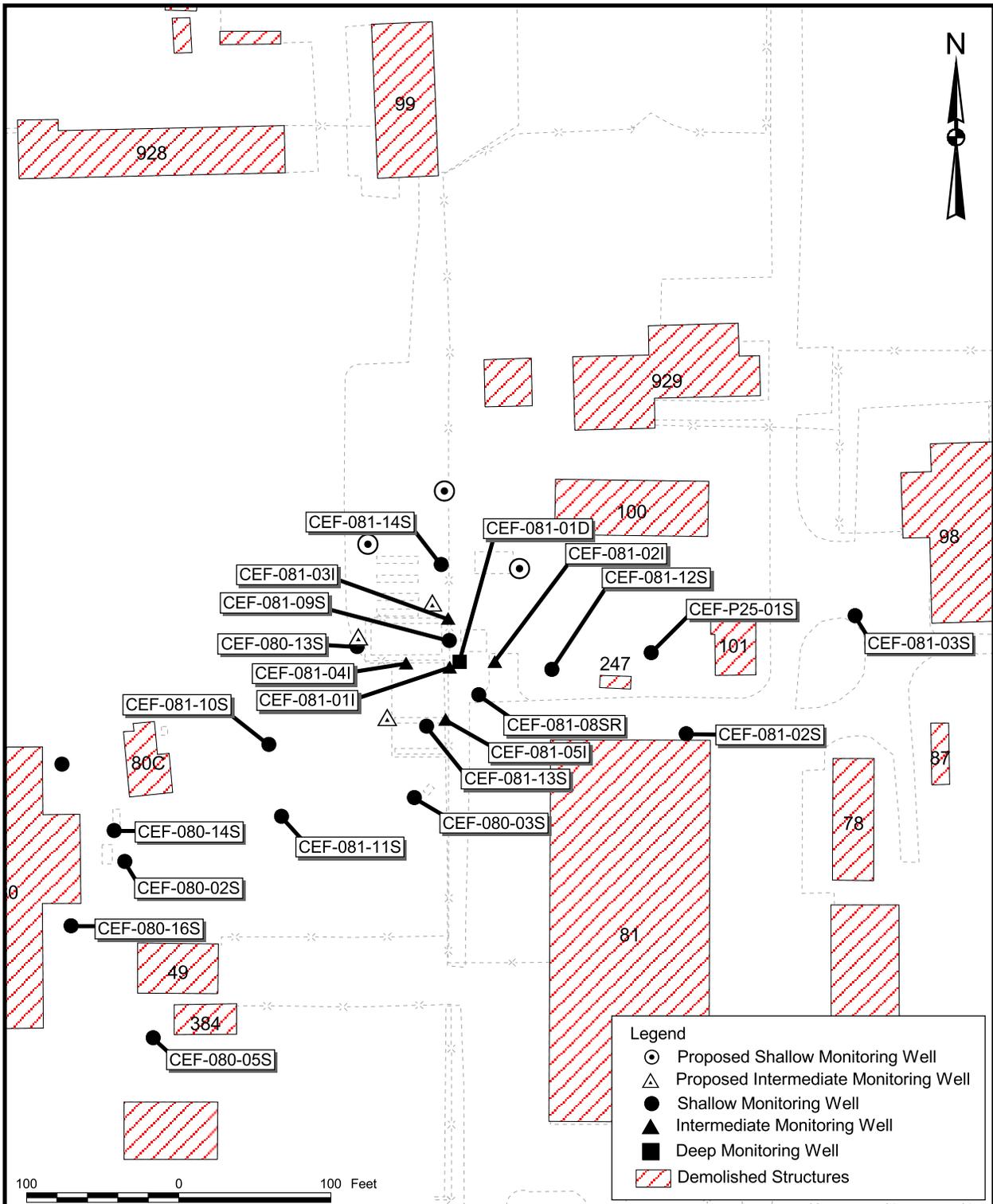
MONITROING WELL LOCATION MAP  
TANKS 81 A, B, & C  
SUPPLEMENTAL SITE ASSESSMENT REPORT  
NAVAL AIR STATION CECIL FIELD  
JACKSONVILLE, FLORIDA

CONTRACT NUMBER 9945	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV 0









DRAWN BY MJJ	DATE 24Mar05
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



**PROPOSED MONITORING WELL LOCATIONS**  
 TANKS 81 A, B, & C  
 SUPPLEMENTAL SITE ASSESSMENT REPORT  
 NAVAL AIR STATION CECIL FIELD  
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 9945	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 6	REV 0

**ATTACHMENT A**  
**MONITORING WELL INSTALLATION FORMS**

# BORING LOG

# COPY



Tetra Tech NUS, Inc.

Page 1 of 1

TANKS 81 ABC

PROJECT NAME: SUPPLEMENTAL GW ASSESSMENT BORING NO.: 005  
 PROJECT NUMBER: N9945 DATE: 02/15/2005  
 DRILLING COMPANY: PARTRIDGE WELL CO. GEOLOGIST: MERVIN DALE  
 DRILLING RIG: DRILMASTER 400 DRILLER: JEFF WEATHERFORD

Sample No. and Type or RQP MD	Depth (Ft.) or Run No.	Blows / or AQD (p) MD	Sample Recovery Sample Length MD	Lithology Change (Depth/Ft.) or Screened Interval MD	MATERIAL DESCRIPTION			U S C S *	Remarks	PID/FID Reading (ppm)				
					Soil Density/Consistency MD or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole**	Driller BZ*	
	0-4				LT. BRN.		SILTY FINE SAND	SM	DRY					0.30.3
	4-7				LT. BRN.		SILTY FINE SAND	SM	MOIST					
	7-8				LT. GRAY		SILTY FINE SAND	SM	wet					
	8-13				LT. GRAY		SILTY FINE SAND	SM	wet *					0.30.3
	13- <del>15</del>				LT. GRAY		SILTY FINE SAND	SM						0.3 0.3 **
					EOTB @ 55.5 ft. b/s.									

\* When rock coring, enter rock brokenness.

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

Remarks: \* Slight non-petroleum odor (sweet)

Drilling Area Background (ppm): 0.0

\*\* READ @ 55 FT BLS.

Converted to Well: Yes  No  Well I.D. #: CEF-81-1D



Tetra Tech NUS, Inc.

# COPY

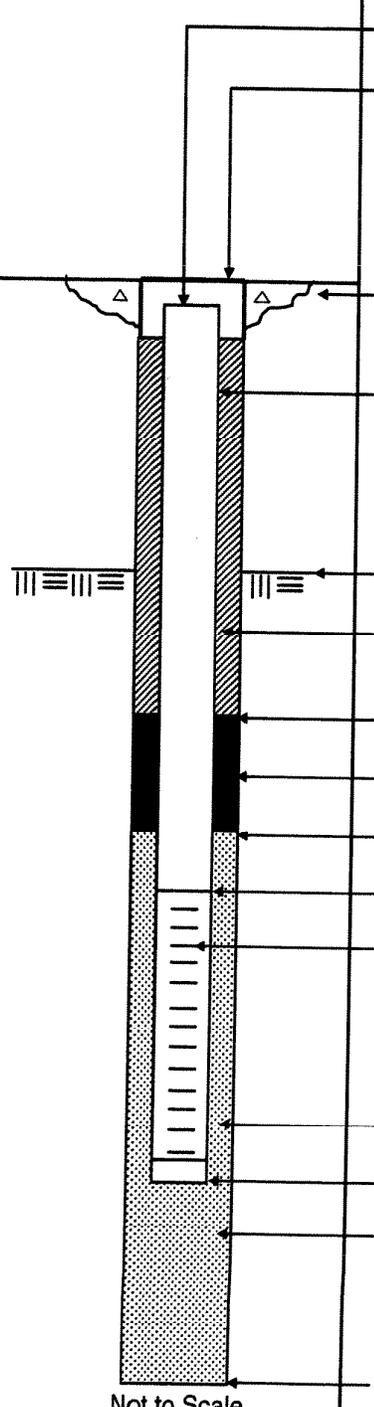
WELL No.:

CEF-81-1D

## MONITORING WELL SHEET

PROJECT: SUPPLEMENTAL DRILLING Co.: Partridge Well BORING No.: 005  
 PROJECT No.: N9945 DRILLER: J. Weatherford DATE COMPLETED: 02/15/05  
 SITE: TANKS 81ABC DRILLING METHOD: Hollow Stem NORTHING: \_\_\_\_\_  
 GEOLOGIST: M. Dale DEV. METHOD: Bladder Pump EASTING: \_\_\_\_\_

Ground Elevation = Datum:



Elevation / Depth of Top of Riser: 1 1/2 IN.  
 Elevation / Height of Top of Surface Casing: 1 0.5 IN  
 I.D. of Surface Casing: 8"  
 Type of Surface Casing: Steel bolt-down manhole  
 Type of Surface Seal: Concrete  
2 ft x 2 ft x 6 inch pad  
 I.D. of Riser: 2 inch  
 Type of Riser: Sch. 40 PVC  
 Borehole Diameter: 8 inch  
 Elevation / Depth Top of Rock: N/A  
 Type of Backfill: Type I/II Portland Cement  
 Elevation / Depth of Seal: 144 FT. 6 IN.  
 Type of Seal: 30/65 FINE SAND  
 Elevation / Depth of Top of Filter Pack: 147 FT. 11 IN.  
 Elevation / Depth of Top of Screen: 150 FT.  
 Type of Screen: Sch. 40 PVC  
 Slot Size x Length: 0.010 inch x 5 FT.  
 I.D. of Screen: 2 inch  
 Type of Filter Pack: 20/30 SAND  
 Elevation / Depth of Bottom of Screen: 155 FT.  
 Elevation / Depth of Bottom of Filter Pack: 155.5 FT.  
 Type of Backfill Below Well: 20/30 GRADE SAND  
 Elevation / Total Depth of Borehole: 155.5 FT.

Not to Scale



**MONITORING WELL MATERIALS  
CERTIFICATE OF CONFORMANCE**

Well Designation: CEF-81-10  
 Site Name: TANKS 81 ABC  
 Date Installed: 02/15/2005  
 Project Name: SUPPLEMENTAL GW ASSESSMENT

Site Geologist: MERVIN W. DALE  
 Drilling Company: PARTRIDGE WELL CO.  
 Driller: JEFF WEATHERFORD  
 Project Number: N9945 SYO 050

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	Sch. 40 PVC, 2 IN. DIAM.	ATLANTIC DRILLING SUPPLY (ADS), JAX, FL.	NO
Well Screen	Sch. 40 PVC, 2 IN. DIAM., 0.010 IN MACHINE SLOT	ADS, JAX, FL.	NO
End Cap	Sch. 40 PVC, 2 IN. DIAM., well pt., 6 in. long	ADS, JACKSONVILLE FL	NO
Drilling Fluid	Potable WATER	ARTESIAN Well at Partridge	NO
Drilling Fluid Additives	NONE	---	---
Backfill Material	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Annular Filter Pack	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Bentonite Seal	30/65 GRADE FINE SAND	STANDARD SAND, JAX, FL.	NO
Annular Grout	Type I/II Portland Cement	Lehigh (Allentown, PA) or Quikrete (Atl, GA)	NO
Surface Cement	Quikrete Concrete	Quikrete Co. (Atlanta, GA.)	NO
Protective Casing	Steel bolt down Manhole, 8 IN. DIAM.	ADS, JACKSONVILLE, FL	NO
Paint	NONE	---	---
Rod Lubricant	NONE	---	---
Compressor Oil	NONE	---	---

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

Signature of Site Geologist: Mervin W. Dale

COPY





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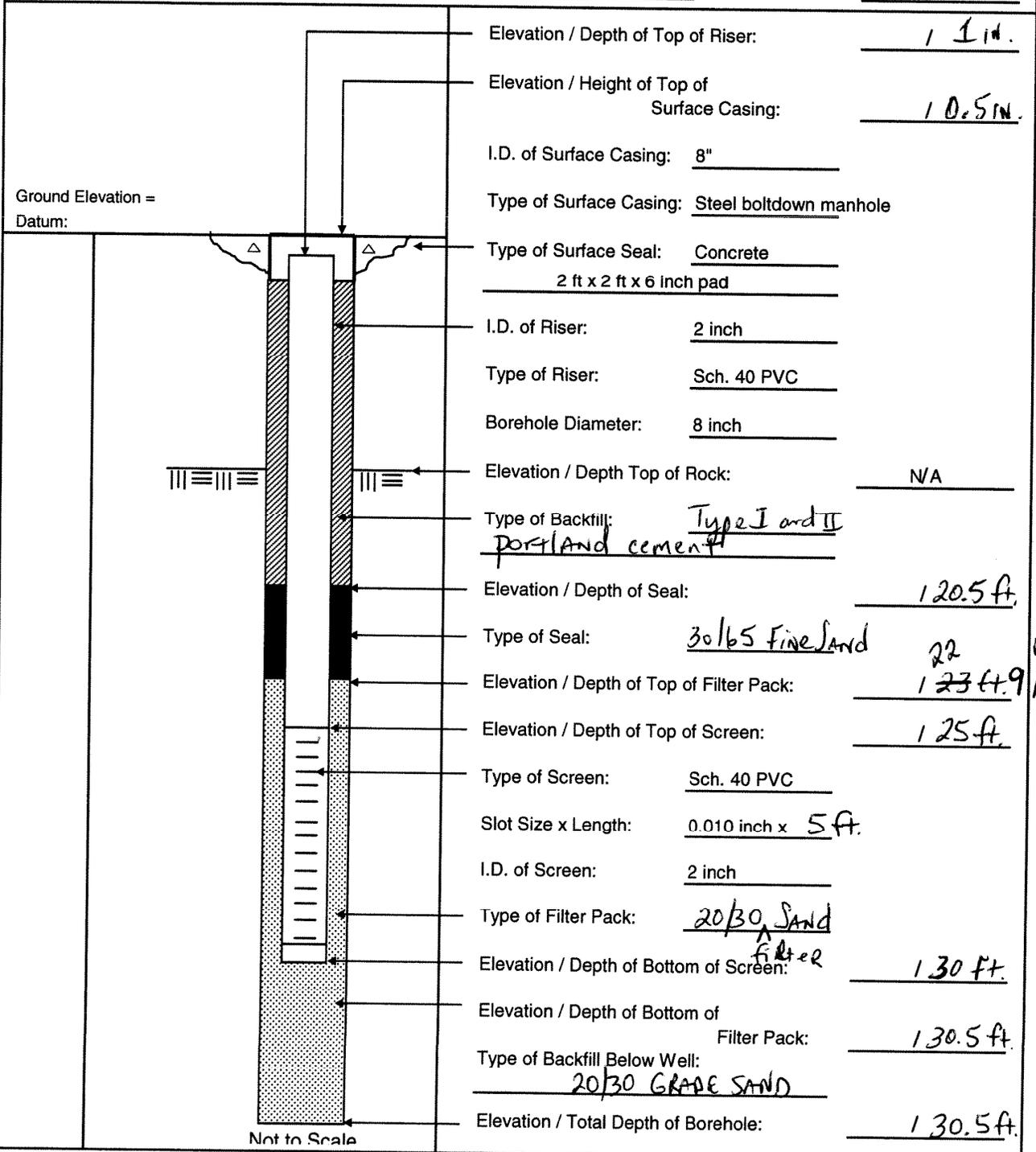
COPY

WELL No.:

CEF-81-2I

MONITORING WELL SHEET

PROJECT: Supp. Gwl. Assess. DRILLING Co.: Partridge Well BORING No.: 001  
 PROJECT No.: N9945 DRILLER: J. Weatherford DATE COMPLETED: 02/14/05  
 SITE: TANKS 81 ABC DRILLING METHOD: Hollow Stem NORTHING: \_\_\_\_\_  
 GEOLOGIST: M. Dale DEV. METHOD: Bladder Pump EASTING: \_\_\_\_\_





**MONITORING WELL MATERIALS  
CERTIFICATE OF CONFORMANCE**

Well Designation: CEF-81-2I  
 Site Name: TANKS 81 ABC  
 Date Installed: 02/14/2005  
 Project Name: SUPPLEMENTAL GW ASSESSMENT

Site Geologist: MERVIN W. DALE  
 Drilling Company: PARTRIDGE WELL CO.  
 Driller: JEFF WEATHERFORD  
 Project Number: N9945 SYO 050

Material	Brand/Description	Source/Supplier	Sample Collected?
Well Casing	Sch. 40 PVC, 2 IN. DIAM.	ATLANTIC DRILLING SUPPLY (ADS), JAX, FL.	NO
Well Screen	Sch. 40 PVC, 2 IN. DIAM., 0.010 IN MACHINE SLOT	ADS, JAX, FL.	NO
End Cap	Sch. 40 PVC, 2 IN. DIAM., well pt. 6 in. long	ADS, JACKSONVILLE FL	NO
Drilling Fluid	POTABLE WATER	ARTESIAN WELL AT PARTRIDGE	NO
Drilling Fluid Additives	NONE	---	---
Backfill Material	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Annular Filter Pack	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Bentonite Seal	30/65 GRADE FINE SAND	STANDARD SAND, JAX, FL.	NO
Annular Grout	Type I/II Portland Cement	Lehigh (Allentown PA) or Quikrete (Atl, GA)	NO
Surface Cement	Quikrete Concrete	Quikrete Co. (ATLANTA, GA.)	NO
Protective Casing	Steel bolt down Manhole, 8 IN. DIAM.	ADS, JACKSONVILLE, FL	NO
Paint	NONE	---	---
Rod Lubricant	NONE	---	---
Compressor Oil	NONE	---	---

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

Signature of Site Geologist: Mervin W. Dale

COPY

# BORING LOG

# COPY



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Page 1 of 1

PROJECT NAME: TANKS 81 ABC SUPPLEMENTAL GW ASSESSMENT BORING NO.: 002  
 PROJECT NUMBER: N9943 DATE: 02/14/2005  
 DRILLING COMPANY: PARTRIDGE WELL CO. GEOLOGIST: Mervin W. DACE  
 DRILLING RIG: DRILMASTER 400 DRILLER: JEFF WEATHERFORD

NO Sample No. and Type or RQD	Depth (Ft.) or Run No.	NO Blows/ 6" or RQD (%)	NO Sample Recovery Sample Length	NO Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		U S C S *	Remarks	PID/FID Reading (ppm)					
					NO Soil Density Consistency or Rock Hardness	Color			Material Classification	Sample	Sampler BZ	Borehole**	Driller BZ**	
	0-4				lt. brn	silty fine sand	SM	DRY					0.3	0.3
	4-7				lt. brn	silty fine sand	SM	Moist						
	7-8.5				lt. gray	silty fine sand	SM	wet, pet. odor	16.5*			1.5	0.4	
	8.5-24				lt. gray	silty fine sand	SM	wet, pet. odor	8.0*			0.8	0.4	
	24-30.5				lt. gray	silty fine sand	SM	wet, slight petroleum odors						
EOR @ 30.5 ft. bls.														

\* When rock coring, enter rock brokenness.

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

Remarks: \* read from drum

Drilling Area  
Background (ppm): 0.3

Converted to Well: Yes X No      Well I.D. #: CEF-81-3I



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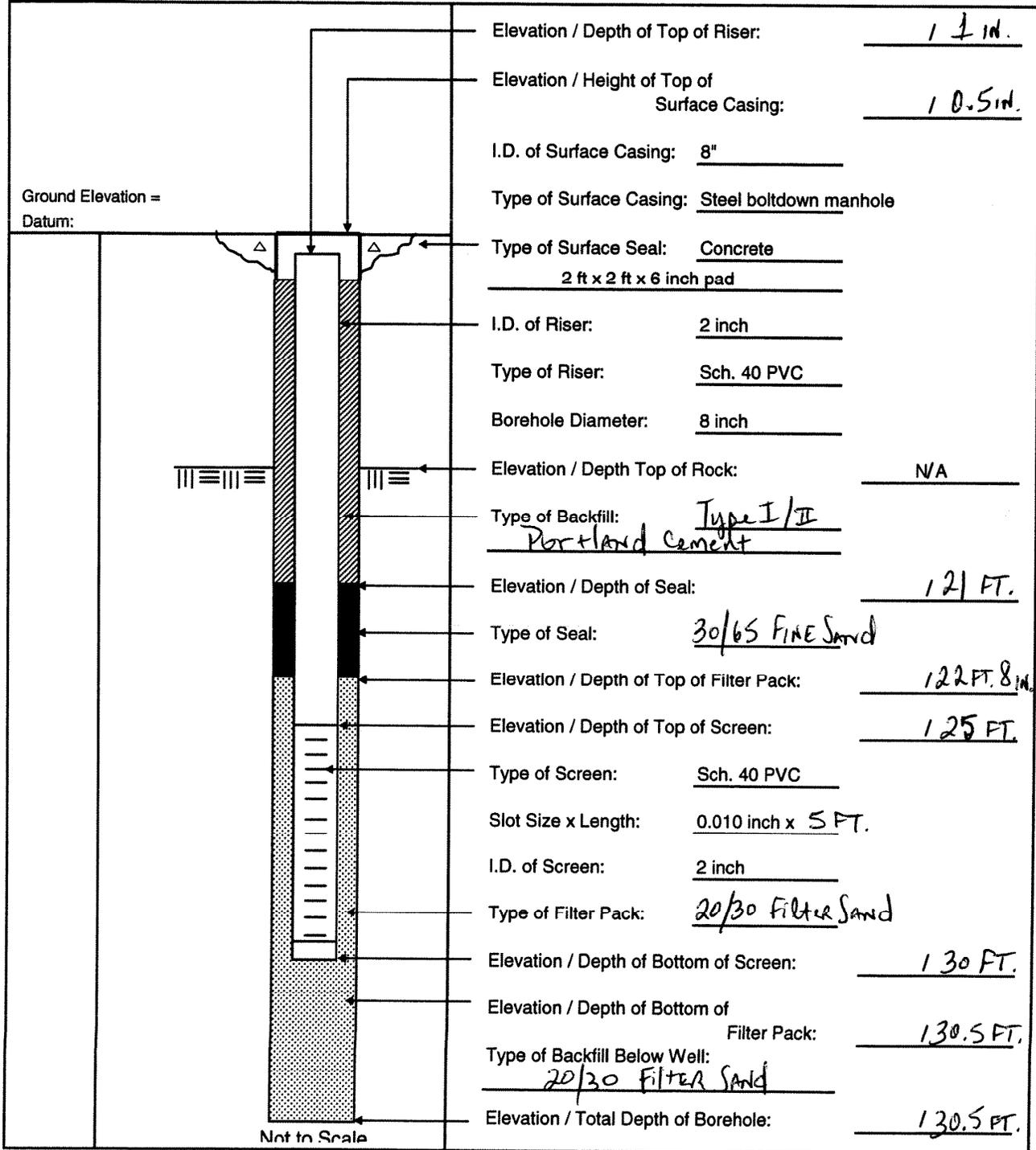
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WELL No.:

CEF-81-3E

MONITORING WELL SHEET

PROJECT: SUPPLEMENTAL DRILLING Co.: Partridge Well BORING No.: 002  
 PROJECT No.: N9945 DRILLER: J. Weatherford DATE COMPLETED: 02/14/05  
 SITE: TANKS 81 ABC DRILLING METHOD: Hollow Stem NORTHING: \_\_\_\_\_  
 GEOLOGIST: M. Dale DEV. METHOD: Bladder Pump EASTING: \_\_\_\_\_





**MONITORING WELL MATERIALS  
CERTIFICATE OF CONFORMANCE**

Well Designation: CEF-81-3I  
 Site Name: TANKS 81 ABC  
 Date Installed: 02/14/2005  
 Project Name: SUPPLEMENTAL GW ASSESSMENT

Site Geologist: MERVIN W. DALE  
 Drilling Company: PARTRIDGE WELL CO.  
 Driller: JEFF WEATHERFORD  
 Project Number: N9945 SYO 050

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	Sch. 40 PVC, 2 IN. DIAM.	ATLANTIC DRILLING SUPPLY (ADS), JAX, FL.	NO
Well Screen	Sch. 40 PVC, 2 IN. DIAM., 0.010 IN MACHINE SLOT	ADS, JAX, FL.	NO
End Cap	Sch. 40 PVC, 2 IN. DIAM., well pt. 6 in long	ADS, JACKSONVILLE FL	NO
Drilling Fluid	POTABLE WATER	ARTESIAN Well at Partridge	NO
Drilling Fluid Additives	NONE	---	---
Backfill Material	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Annular Filter Pack	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Bentonite Seal	30/65 GRADE FINE SAND	STANDARD SAND, JAX, FL.	NO
Annular Grout	Type I/II Portland Cement	Lehigh (Allentown, PA) or Quikrete (A+I, GA.)	NO
Surface Cement	Quikrete Concrete	Quikrete Co. (ATLANTA, GA.)	NO
Protective Casing	Steel bolt down Manhole, 8 IN. DIAM.	ADS, JACKSONVILLE, FL	NO
Paint	NONE	---	---
Rod Lubricant	NONE	---	---
Compressor Oil	NONE	---	---

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

Signature of Site Geologist: Mervin W. Dale

COPY

# BORING LOG

# COPY



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Page 1 of 1

PROJECT NAME: SUPPLEMENTAL GW. ASSESSMENT BORING NO.: 003  
 PROJECT NUMBER: N9945 DATE: 02/15/2005  
 DRILLING COMPANY: PARTRIDGE WELL CO. GEOLOGIST: MELVIN W. DALE  
 DRILLING RIG: DRILMASTER 400 DRILLER: JEFF WEATHERFORD

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / or RQD (%)	Sample Recovery Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	U S C S *	Remarks	PID/FID Reading (ppm)			
										Sample	Sampler BZ	Borehole**	Driller BZ**
	0-4					LT. BRN.	SILTY FINE SAND	SM	DRY FILL			0.0	0.0
	4-7					LT. BRN.	SILTY FINE SAND	SM	DRY <sup>MOIST</sup> FILL				
	7-8					LT. GRAY	SILTY FINE SAND	SM	WET			0.9	0.0
	8-13					LT. GRAY	SILTY FINE SAND	SM	wet				
	13-20					LT. GRAY	SILTY FINE SAND	SM	wet *			4.2	0.0
	20-					LT. ↓	SILTY FINE SAND	SM	wet				
	30.5					GRAY	↓	SM	wet			0.2	0.0
EOB @ 30.5 ft. b/s.													

\* When rock coring, enter rock brokenness.

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

Remarks: \* SLIGHT ODR, NON-PETROLEUM

Drilling Area  
Background (ppm): 0.0

Converted to Well: Yes X No \_\_\_\_\_ Well I.D. #: CF-81-4I



Tetra Tech NUS, Inc.

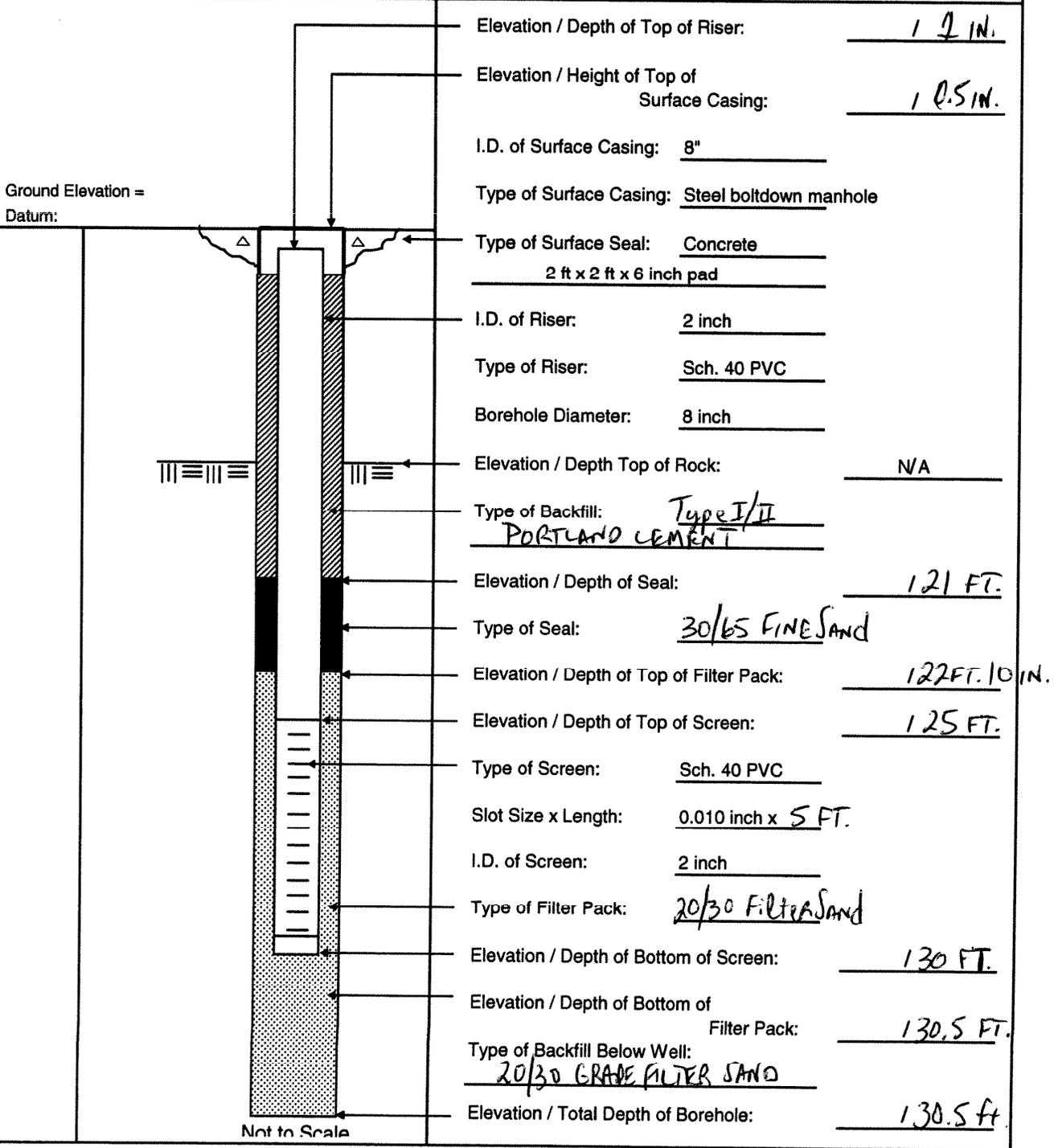
COPY

WELL No.:

CEF-81-4I

MONITORING WELL SHEET

PROJECT: SUPPLEMENTAL DRILLING Co.: Partridge Well BORING No.: 003  
 PROJECT No.: N9945 DRILLER: J. Weatherford DATE COMPLETED: 2/15/05  
 SITE: TANKS 81 ABC DRILLING METHOD: Hollow Stem NORTHING: \_\_\_\_\_  
 GEOLOGIST: M. Dale DEV. METHOD: Bladder Pump EASTING: \_\_\_\_\_





**MONITORING WELL MATERIALS  
CERTIFICATE OF CONFORMANCE**

Well Designation: CEF-81-4I  
 Site Name: TANKS 81 ABC  
 Date Installed: 02/15/2005  
 Project Name: SUPPLEMENTAL GW ASSESSMENT

Site Geologist: MERVIN W. DALE  
 Drilling Company: PARTRIDGE WELL CO.  
 Driller: JEFF WEATHERFORD  
 Project Number: N9945 SYO 050

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	Sch. 40 PVC, 2 IN. DIAM.	ATLANTIC DRILLING SUPPLY (ADS), JAX, FL.	NO
Well Screen	Sch. 40 PVC, 2 IN. DIAM., 0.010 IN MACHINE SLOT	ADS, JAX, FL.	NO
End Cap	Sch. 40 PVC, 2 IN. DIAM., well pt., 6 in. long	ADS, JACKSONVILLE FL	NO
Drilling Fluid	Potable WATER	ARTESIAN Well at Partridge	NO
Drilling Fluid Additives	NONE	---	---
Backfill Material	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Annular Filter Pack	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Bentonite Seal	30/65 GRADE FINE SAND	STANDARD SAND, JAX, FL.	NO
Annular Grout	Type I/II Portland Cement	Lehigh (Allentown, PA) or Quikrete (Atl, GA)	NO
Surface Cement	Quikrete Concrete	Quikrete Co. (ATLANTA, GA.)	NO
Protective Casing	Steel bolt down Manhole, 8 IN. DIAM.	ADS, JACKSONVILLE, FL	NO
Paint	NONE	---	---
Rod Lubricant	NONE	---	---
Compressor Oil	NONE	---	---

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

Signature of Site Geologist: Mervin W. Dale

COPY

# BORING LOG

COPY



Tetra Tech NUS, Inc.

Page 1 of 1

THANKS 81 ABC

PROJECT NAME: SUPPLEMENTAL GW. ASSESSMENT BORING NO.: 004  
 PROJECT NUMBER: N9945 DATE: 02/15/2005  
 DRILLING COMPANY: PARTRIDGE WELL CO. GEOLOGIST: Mer DALE  
 DRILLING RIG: DRILMASTER 400 DRILLER: JEFF WEATHERFORD

Sample No. and Type or RQR MD	Depth (Fl.) or Run No.	Flows / or AQD (%) MD	Sample Recovery (%) MD	Lithology Change (Depth/Ft.) or Screened Interval MD	MATERIAL DESCRIPTION			U S C S *	Remarks	PID/FID Reading (ppm)				
					Soil Density/ Consistency or Rock Hardness	Color	Material Classification			Drill Sample	Sampler BZ	Borehole**	Driller BZ**	
	0-4				LT. BRN		SILTY FINE SAND	SM	DRY FILL				0.3	0.3
	4-7				LT. BRN		SILTY FINE SAND	SM	MOIST					
	7-8				GRAY		SILTY FINE SAND	SM	WET PET. odor	16.0		0.8	0.3	
	8-10				GRAY		SILTY FINE SAND	SM	WET					
	10-13				YEL. DAG.		SILTY FINE SAND	SM	WET					
	13-25				LT. GRAY		SILTY FINE SAND	SM	WET				0.7	0.3
	25-30.5				LT. GRAY		SILTY FINE SAND	SM	WET					0.3
EOB @ 30.5 FT. BLS'														

\* When rock coring, enter rock brokenness.

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

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

Drilling Area D. 2-  
Background (ppm): 0.3

Converted to Well: Yes  No  Well I.D. #: CEP-81-5I



Tetra Tech NUS, Inc.

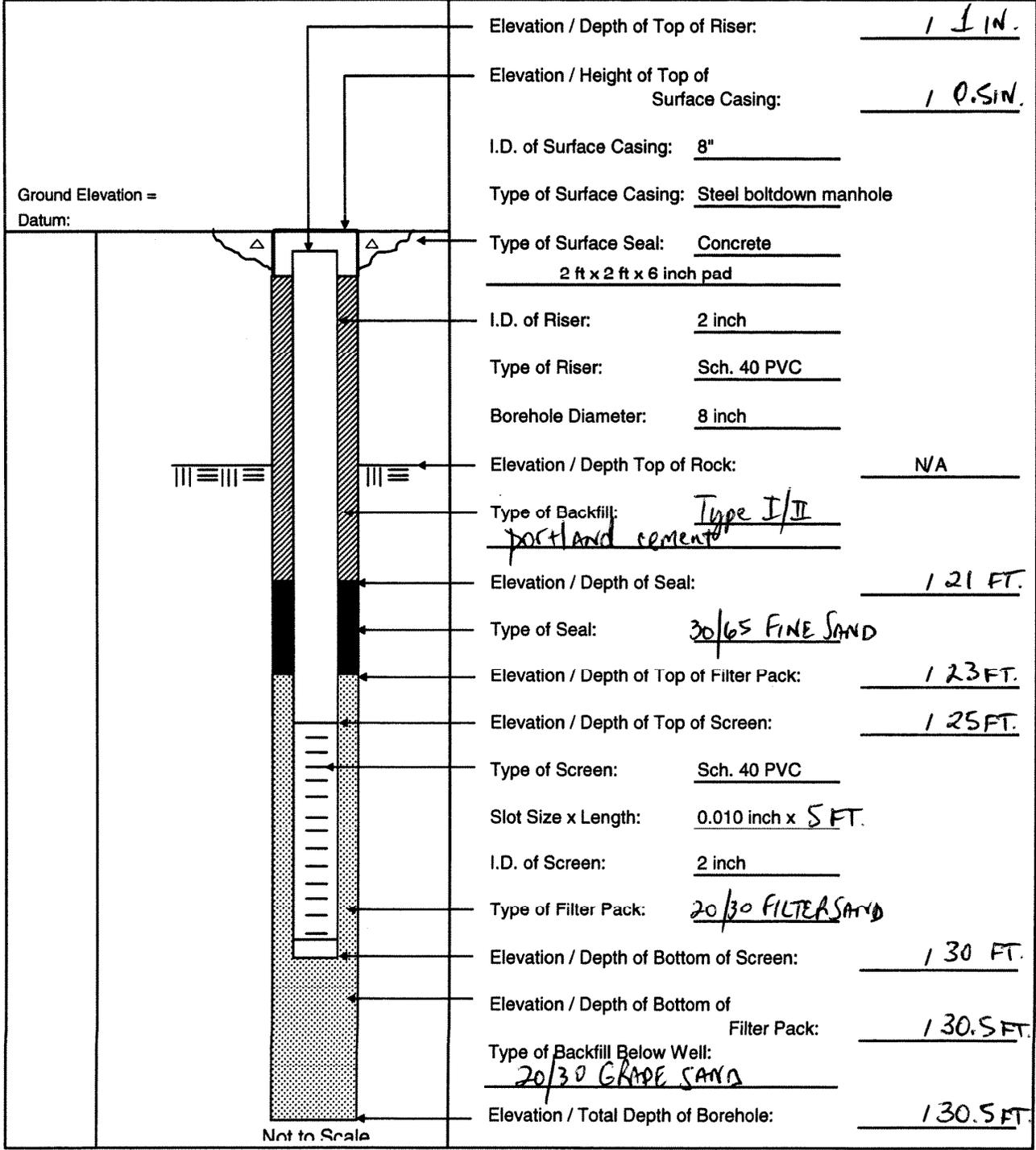
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WELL No.:

CEF-81-SI

MONITORING WELL SHEET

PROJECT: SUPPLEMENTAL DRILLING Co.: Partridge Well BORING No.: 004  
 PROJECT No.: N9945 DRILLER: J. Weatherford DATE COMPLETED: 02/15/05  
 SITE: TANKS 81 ABC DRILLING METHOD: Hollow Stem NORTHING: \_\_\_\_\_  
 GEOLOGIST: M. Dale DEV. METHOD: Bladder Pump EASTING: \_\_\_\_\_





**MONITORING WELL MATERIALS  
CERTIFICATE OF CONFORMANCE**

Well Designation: CEF-81-5I  
 Site Name: TANKS 81 ABC  
 Date Installed: 02/15/2005  
 Project Name: SUPPLEMENTAL GW ASSESSMENT

Site Geologist: MERVIN W. DALE  
 Drilling Company: PARTRIDGE WELL CO.  
 Driller: JEFF WEATHERFORD  
 Project Number: N9945 SYO 050

Material	Brand/Description	Source/Supplier	Sample Collected?
Well Casing	Sch. 40 PVC, 2 IN. DIAM.	ATLANTIC DRILLING SUPPLY (ADS), JAX, FL.	NO
Well Screen	Sch. 40 PVC, 2 IN. DIAM., 0.010 IN MACHINE SLOT	ADS, JAX, FL.	NO
End Cap	Sch. 40 PVC, 2 IN. DIAM., well pt. 6 in. long	ADS, JACKSONVILLE FL	NO
Drilling Fluid	Potable WATER	ARTESIAN Well at Partridge	NO
Drilling Fluid Additives	NONE	---	---
Backfill Material	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Annular Filter Pack	20/30 GRADE SAND	STANDARD SAND, JAX, FL.	NO
Bentonite Seal	30/65 GRADE FINE SAND	STANDARD SAND, JAX FL	NO
Annular Grout	Type I/II Portland Cement	Lehigh (Allentown, PA) or Quikrete (Atl, GA)	NO
Surface Cement	Quikrete Concrete	Quikrete Co. (Atlanta, GA.)	NO
Protective Casing	Steel bolt down Manhole, 8 IN. DIAM.	ADS, JACKSONVILLE, FL	NO
Paint	none	---	---
Rod Lubricant	none	---	---
Compressor Oil	None	---	---

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

Signature of Site Geologist: Mervin W. Dale

COPY











**ATTACHMENT B**  
**WELL SURVEY DATA**

TETRA TECH - SITES 293,815,199,81 AND 21  
SURVEYED : 3/01/05

Site 293 Monitoring Wells

	Northing	Easting	Elevation	Description
51	2144149	377675.7	75.095	CEF-29323S NG
52	2144148	377675.7	75.131	CEF-29323S CONC
53	2144148	377675.7	74.882	CEF-29323S PVC

Site 815 Soil Borings

55	2145754	377966.4	75.916	CEF815 B01
56	2145752	378060	75.97	CEF815 B02
57	2145666	378054.8	76.073	CEF815 B03
54	2145666	377971.9	76.071	CEF815 B04
60	2145722	377997.5	75.697	CEF815 B05
59	2145722	378027.7	75.725	CEF815 B06
58	2145692	378027.8	75.866	CEF815 B07
61	2145692	377997.9	75.795	CEF815 B08

Site 199 Monitoring Wells

62	2144943	376060.2	76.701	CEF199-11S CHK CONC
63	2144906	376106.5	75.644	CEF199-7SR NG
64	2144906	376106.7	75.718	CEF199-7SR CONC
65	2144905	376106.7	75.403	CEF199-7SR PVC

Site 81 Monitoring Wells

66	2146370	375806.7	77.92	CEF-81-5I NG
67	2146369	375806.8	78.064	CEF-81-5I CONC
68	2146369	375806.7	77.839	CEF-81-5I PVC
69	2146408	375816	78.012	CEF-81-1D NG
70	2146407	375815.8	78.066	CEF-81-1D CONC
71	2146407	375815.7	77.773	CEF-81-1D PVC
72	2146408	375838.9	77.733	CEF-81-2I NG
73	2146407	375838.8	77.703	CEF-81-2I CONC
74	2146407	375838.7	77.419	CEF-81-2I PVC
75	2146437	375808.4	78.015	CEF-81-3I NG
76	2146436	375808.7	78.094	CEF-81-3I CONC
77	2146435	375808.7	77.777	CEF-81-3I PVC
78	2146407	375780.8	77.719	CEF-81-4I NG
79	2146406	375780.9	77.992	CEF-81-4I CONC
80	2146406	375781.1	77.539	CEF-81-4I PVC

Site 21 Monitoring Wells

85	2146672	372845.8	73.286	CEF21-09S	NG
86	2146673	372845.7	73.409	CEF21-09S	CONC
87	2146673	372845.5	73.203	CEF21-09S	PVC

**ATTACHMENT C**  
**FIELD SAMPLING FORMS**





COPY

Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL05101  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-051  
 Site: Tanks 81 ABC, NAS Cecil Field  
 Monitoring Well  
 Domestic Well  
 Other: \_\_\_\_\_  
 Sampler: P. LEVERETTE

SAMPLING DATA								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time:		S.U.	mS/cm	°C	NTU	mg/L	mV	
<u>2/21/05</u>	<u>Coop</u>	<u>6.08</u>	<u>0.213</u>	<u>23.18</u>	<u>45.2</u>	<u>0.22</u>	<u>-11.2</u>	
<u>0930</u>								
Method:	<u>Peristaltic</u>							

PURGE DATA	
Date:	<u>2/21/05</u>
Method:	<u>Peristaltic</u>
Monitor Reading (ppm):	<u>1.3</u>
Well Casing Diameter:	<u>2-inch</u>
Well Casing Material:	<u>PVC</u>
Total Well Depth (ft):	<u>30</u>
Static Water Level (ft):	<u>6.84</u>
One Casing Volume (gal):	<u>0 @ 1L</u>
Start Purge (hrs):	<u>0855</u>
End Purge (hrs):	<u>0925</u>
Total Purge Time (min):	<u>35</u>
Total Vol. Purged (gal):	<u>9.0</u>

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	<input checked="" type="checkbox"/>
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	<input checked="" type="checkbox"/>

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ.	LAB: <u>Accutest</u> <u>4405 Vineland Rd., C-15</u> <u>Orlando, FL 32811</u> COC #: <u>81ABC-02</u>

Check if Collected:

MS / MSD     DUPLICATE / ID No.: NONE

Signature(s):





COPY

Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL13S01  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-13S  
 Site: Tanks 81 ABC, NAS Cecil Field  
 Monitoring Well Sampler: P. LEVERETTE  
 Domestic Well  
 Other:

SAMPLING DATA								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time:	S.U.	mS/cm	°C	NTU	mg/L	mV		
<u>2/21/05</u>	<u>6.001-05</u>	<u>4.49</u>	<u>0.057</u>	<u>20.25</u>	<u>79.3</u>	<u>0.37</u>	<u>280.6</u>	
<u>1045</u>								
Method:	<u>Peristaltic</u>							

PURGE DATA	
Date:	<u>2/21/05</u>
Method:	<u>Peristaltic</u>
Monitor Reading (ppm):	<u>0.2</u>
Well Casing Diameter:	<u>2-inch</u>
Well Casing Material:	<u>PVC</u>
Total Well Depth (ft):	<u>12.14</u>
Static Water Level (ft):	<u>6.85</u>
One Casing Volume (gal):	<u>3.3</u>
Start Purge (hrs):	<u>0947</u>
End Purge (hrs):	<u>1042</u>
Total Purge Time (min):	<u>55</u>
Total Vol. Purged (gal):	<u>16.5</u>

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	<input checked="" type="checkbox"/>
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	<input checked="" type="checkbox"/>

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ.	LAB: <u>Accutest</u> <u>4405 Vineland Rd., C-15</u> <u>Orlando, FL 32811</u> COC #: <u>81ABC-02</u>

Check if Collected:

MS / MSD     DUPLICATE / ID No.: NONE

Signature(s):





COPY

Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL8SR01  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-8SR  
 Site: Tanks 81 ABC, NAS Cecil Field Sampler: P. LEVERETTE  
 Monitoring Well  
 Domestic Well  
 Other:

SAMPLING DATA								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time:	S.U.	mS/cm	°C	NTU	mg/L	mV		
<u>2/18/05</u>	<u>Clear</u>	<u>4.36</u>	<u>0.065</u>	<u>20.62</u>	<u>19.4</u>	<u>0.63</u>	<u>305.6</u>	
<u>1055</u>								
Method:	Peristaltic							

PURGE DATA	
Date:	<u>2/18/05</u>
Method:	Peristaltic
Monitor Reading (ppm):	<u>0.0</u>
Well Casing Diameter:	2-inch
Well Casing Material:	PVC
Total Well Depth (ft):	<u>12.94</u>
Static Water Level (ft):	<u>6.57</u>
One Casing Volume (gal):	<u>3.9</u>
Start Purge (hrs):	<u>0957</u>
End Purge (hrs):	<u>1055</u>
Total Purge Time (min):	<u>58</u>
Total Vol. Purged (gal):	<u>17.5</u>

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	<input checked="" type="checkbox"/>
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	<input checked="" type="checkbox"/>

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ.	LAB: <u>Accutest</u> <u>4405 Vineland Rd., C-15</u> <u>Orlando, FL 32811</u> COC #: <u>81ABC-01</u>

Check if Collected:  MS / MSD  DUPLICATE / ID No.: None Signature(s): P. Leverette





COPY

Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL04101  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-041  
 Site: Tanks 81 ABC, NAS Cecil Field Sampler: P. LEVERETTE  
 Monitoring Well  
 Domestic Well  
 Other: \_\_\_\_\_

SAMPLING DATA								
Date: <u>2/18/05</u>	Color	pH	S.C.	Temp <sup>(°C)</sup>	Turbidity	DO	ORP	
Time: <u>1525</u>		S.U.	mS/cm	<u>23.36</u>	NTU	mg/L	mV	
Method: <u>Peristaltic</u>	<u>Clear</u>	<u>5.82</u>	<u>0.204</u>	<u>18.3</u>	<u>18.3</u>	<u>0.22</u>	<u>32.1</u>	

PURGE DATA	
Date: <u>2/18/05</u>	See Attached Low Flow Purge Data Sheet for Purge Data
Method: <u>Peristaltic</u>	
Monitor Reading (ppm): <u>0.7</u>	
Well Casing Diameter: <u>2-inch</u>	
Well Casing Material: <u>PVC</u>	
Total Well Depth (ft): <u>30</u>	
Static Water Level (ft): <u>6.74</u>	
One Casing Volume (gal/L): <u>@ 1L</u>	
Start Purge (hrs): <u>1457</u>	
End Purge (hrs): <u>1525</u>	
Total Purge Time (min): <u>28</u>	
Total Vol. Purged (gal/L): <u>8.5</u>	

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	✓
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	✓

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ.	LAB: <u>Accutest</u> <u>4405 Vineland Rd., C-15</u> <u>Orlando, FL 32811</u> COC #: <u>81ABC-01</u>

Check if Collected:	Signature(s):
<input type="checkbox"/> MS / MSD <input type="checkbox"/> DUPLICATE / ID No.: <u>NONE</u>	





COPY

Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL9S01  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-9S  
 Site: Tanks 81 ABC, NAS Cecil Field Sampler: P. LEVERETTE  
 Monitoring Well  
 Domestic Well  
 Other: \_\_\_\_\_

SAMPLING DATA								
Date: <u>2/18/05</u>	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time: <u>1440</u>		S.U.	mS/cm	°C	NTU	mg/L	mV	
Method: <u>Peristaltic</u>	<u>ORANGE</u>	<u>5.02</u>	<u>0.076</u>	<u>21.14</u>	<u>713</u>	<u>0.72</u>	<u>-29.1</u>	

PURGE DATA	
Date: <u>2/18/05</u>	See Attached Low Flow Purge Data Sheet for Purge Data
Method: <u>Peristaltic</u>	
Monitor Reading (ppm): <u>7.6</u>	
Well Casing Diameter: <u>2-inch</u>	
Well Casing Material: <u>PVC</u>	
Total Well Depth (ft): <u>12.74</u>	
Static Water Level (ft): <u>1330</u> <u>AD 6.78</u>	
One Casing Volume (gal): <u>3.7</u>	
Start Purge (hrs): <u>1330</u>	
End Purge (hrs): <u>1435</u>	
Total Purge Time (min): <u>65</u>	
Total Vol. Purged (gal): <u>19.5</u>	

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	✓
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	✓

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ.	LAB: <u>Accutest</u> <u>4405 Vineland Rd., C-15</u> <u>Orlando, FL 32811</u> COC #: <u>81ABC-01</u>

Check if Collected:	Signature(s):
<input type="checkbox"/> MS / MSD <input type="checkbox"/> DUPLICATE / ID No.: <u>None</u>	





COPY

Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL01101  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-011  
 Site: Tanks 81 ABC, NAS Cecil Field  
 [ X ] Monitoring Well Sampler: P. LEVERETTE  
 [ ] Domestic Well  
 [ ] Other: \_\_\_\_\_

SAMPLING DATA								
Date: <u>2/18/05</u>	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time: <u>1310</u>		S.U.	mS/cm	°C	NTU	mg/L	mV	
Method: <u>Peristaltic</u>	<u>CLEAR</u>	<u>5.41</u>	<u>0.109</u>	<u>22.61</u>	<u>14.6</u>	<u>0.17</u>	<u>67.0</u>	

PURGE DATA	
Date: <u>2/18/05</u>	See Attached Low Flow Purge Data Sheet for Purge Data
Method: <u>Peristaltic</u>	
Monitor Reading (ppm): <u>0.3</u>	
Well Casing Diameter: <u>2-inch</u>	
Well Casing Material: <u>PVC</u>	
Total Well Depth (ft): <u>29.25</u>	
Static Water Level (ft): <u>6.79</u>	
One Casing Volume (gal): <u>3.1</u>	
Start Purge (hrs): <u>1240</u>	
End Purge (hrs): <u>1305</u>	
Total Purge Time (min): <u>25</u>	
Total Vol. Purged (gal): <u>7.5</u>	

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	✓
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	✓

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ.	LAB: <u>Accutest</u> <u>4405 Vineland Rd., C-15</u> <u>Orlando, FL 32811</u> COC #: <u>81ABC-01</u>

Check if Collected:  MS / MSD  DUPLICATE / ID No.: 81ABCGL011010 Signature(s): [Signature]





COPY

Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL01D01  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-01D  
 Site: Tanks 81 ABC, NAS Cecil Field Sampler: Rome  
 Monitoring Well  
 Domestic Well  
 Other:

SAMPLING DATA								
Date:	<u>2/18/05</u>	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Time:	<u>1550</u>		S.U.	mS/cm	°C	NTU	mg/L	mV
Method:	Peristaltic	<u>Clear</u>	<u>5.34</u>	<u>0.092</u>	<u>24.02</u>	<u>60.2</u>	<u>0.43</u>	<u>178.0</u>

PURGE DATA	
Date:	<u>2/18/05</u>
Method:	Peristaltic
Monitor Reading (ppm):	<u>0.9</u>
Well Casing Diameter:	2-inch
Well Casing Material:	PVC
Total Well Depth (ft):	<u>55'</u>
Static Water Level (ft):	<u>6.85</u>
One Casing Volume (gall):	<u>3.1 (50/min)</u>
Start Purge (hrs):	<u>1300</u>
End Purge (hrs):	<u>1350</u>
Total Purge Time (min):	<u>50</u>
Total Vol. Purged (gall):	<u>11.4 L</u>

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	<input checked="" type="checkbox"/>
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	<input checked="" type="checkbox"/>

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ. <u>x5 Volumes due to high (&gt;20) turbidity</u>	LAB: <u>Accutest</u> <u>4405 Vineland Rd., C-15</u> <u>Orlando, FL 32811</u> COC #: <u>81ABC-01</u>

Check if Collected:

MS / MSD     DUPLICATE / ID No.: NONE

Signature(s): Rome





COPY

Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL03101  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-031  
 Site: Tanks 81 ABC, NAS Cecil Field  
 Monitoring Well  
 Domestic Well  
 Other:  
 Sampler: Rome

SAMPLING DATA								
Date: <u>2/18/05</u>	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time: <u>1440</u>		S.U.	mS/cm	°C	NTU	mg/L	mV	
Method: <u>Peristaltic</u>	<u>Clear</u>	<u>6.00</u>	<u>0.141</u>	<u>23.70</u>	<u>5.41</u>	<u>0.10</u>	<u>36.9</u>	

PURGE DATA	
Date: <u>2/18/05</u>	See Attached Low Flow Purge Data Sheet for Purge Data
Method: <u>Peristaltic</u>	
Monitor Reading (ppm): <u>2.2</u>	
Well Casing Diameter: <u>2-inch</u>	
Well Casing Material: <u>PVC</u>	
Total Well Depth (ft): <u>30</u>	
Static Water Level (ft): <u>6.95</u>	
One Casing Volume (gal/L): <u>3.1 (Screen)</u>	
Start Purge (hrs): <u>1400 1410</u>	
End Purge (hrs): <u>1436</u>	
Total Purge Time (min): <u>30</u>	
Total Vol. Purged (gal/L): <u>6.20</u>	

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	✓
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	✓

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ. <u>Screen fully submerged removed + One pump system volume</u>	LAB: <u>Accutest</u> 4405 Vineland Rd., C-15 Orlando, FL 32811 COC #: <u>81ABC-01</u>

Check if Collected:  MS / MSD  DUPLICATE / ID No.: NONE Signature(s): S. Rome





COPY

Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL14S01  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-14S  
 Site: Tanks 81 ABC, NAS Cecll Field Sampler: Rame  
 Monitoring Well  
 Domestic Well  
 Other:

SAMPLING DATA								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time:	S.U.	mS/cm	°C	NTU	mg/L	mV		
<u>2/18/05</u>	<u>Clear</u>	<u>5.26</u>	<u>0.174</u>	<u>20.81</u>	<u>5.15</u>	<u>0.68</u>	<u>244.9</u>	
<u>1545</u>								
Method:	Peristaltic							

PURGE DATA	
Date:	<u>2/18/05</u>
Method:	Peristaltic
Monitor Reading (ppm):	<u>0.2</u>
Well Casing Diameter:	<u>2-inch</u>
Well Casing Material:	<u>PVC</u>
Total Well Depth (ft):	<u>1300</u>
Static Water Level (ft):	<u>7.41</u>
One Casing Volume (gal):	<u>4.0 L</u>
Start Purge (hrs):	<u>1450</u>
End Purge (hrs):	<u>1539</u>
Total Purge Time (min):	<u>49</u>
Total Vol. Purged (gal):	<u>12 L</u>

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	<input checked="" type="checkbox"/>
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	<input checked="" type="checkbox"/>

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ.	LAB: <u>Accutest</u> <u>4405 Vineland Rd., C-15</u> <u>Orlando, FL 32811</u> COC #: <u>81 ABC-01</u>

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

Signature(s): Rame

81ABCGL14S01S  
81ABCGL14S01M





Project Name: Supplemental GW Assessment Sample ID No.: 81ABCGL02101  
 Project No.: N9945 SY0 050 122 Sample Location: CEF-81-021  
 Site: Tanks 81 ABC, NAS Cecil Field Sampler: S. Rave  
 Monitoring Well  
 Domestic Well  
 Other:

SAMPLING DATA								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time:	S.U.	mS/cm	°C	NTU	mg/L	mV		
<u>2/18/05</u>	<u>Clear</u>	<u>5.42</u>	<u>0.107</u>	<u>23.41</u>	<u>5.01</u>	<u>0.26</u>	<u>92.7</u>	
<u>1100</u>								
Method:	<u>Peristaltic</u>							

PURGE DATA	
Date:	<u>2/18/05</u>
Method:	<u>Peristaltic</u>
Monitor Reading (ppm):	<u>0.6</u>
Well Casing Diameter:	<u>2-inch</u>
Well Casing Material:	<u>PVC</u>
Total Well Depth (ft):	<u>30.0'</u>
Static Water Level (ft):	<u>6.54</u>
One Casing Volume (gal):	<u>3.1 (Screen)</u>
Start Purge (hrs):	<u>1000</u>
End Purge (hrs):	<u>1040</u>
Total Purge Time (min):	<u>40</u>
Total Vol. Purged (gal):	<u>11.4</u>

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
Select VOCs, SW 846 8260B*	HCl, Cool to 4 ° C	3 - 40 ml teflon-lined vials	Accutest	<input checked="" type="checkbox"/>
PAHs, SW 846 8310!	Cool to 4 ° C	2 - 1 liter glass amber	Accutest	<input checked="" type="checkbox"/>

OBSERVATIONS / NOTES	LAB INFO
* Report BTEX, MTBE, isopropyl benzene, 1,2,3-TMB, 1,2,4-TMB and 1,3,5-TMB. ! Include 1- and 2-methylnaphthalene Dedicated tubing in situ. <u>- 5 foot screen interval (0.10 slt)</u>	LAB: <u>Accutest</u> <u>4405 Vineland Rd., C-15</u> <u>Orlando, FL 32811</u> COC #: <u>81ABC-01</u>

Check if Collected:

MS / MSD     DUPLICATE / ID No.:

Signature(s): S. Rave



**ATTACHMENT D**  
**LABORATORY REPORTS**



08/03/05

**Technical Report for**

---

**Tetra Tech NUS**

NAS Cecil Field-CTO #361

N9945-WR1000892 /CTO361

Accutest Job Number: F29927

Sampling Date: 02/18/05

---

**Report to:**

Tetra Tech, NUS

dalem@tnus.com

ATTN: Merv Dale

Total number of pages in report: 33



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*  
Harry Behzadi, Ph.D.  
Laboratory Director

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK  
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# Table of Contents

Sections:



-1-

<b>Section 1: Sample Summary .....</b>	<b>3</b>
<b>Section 2: Case Narrative/Conformance Summary .....</b>	<b>5</b>
<b>Section 3: Sample Results .....</b>	<b>6</b>
3.1: F29927-1: 81ABCGL8SR01 .....	6
3.2: F29927-2: 81ABCGL02I01 .....	8
3.3: F29927-3: 81ABCGL01I01 .....	10
3.4: F29927-4: 81ABCGL01D01 .....	12
3.5: F29927-5: 81ABCGL09S01 .....	14
3.6: F29927-6: 81ABCGL03I01 .....	17
3.7: F29927-7: 81ABCGL14S01 .....	19
3.8: F29927-8: 81ABCGL04I01 .....	21
3.9: F29927-9: 81ABCGL01I01D .....	23
3.10: F29927-10: 81ABCEL00101 .....	25
3.11: F29927-11: 81ABCFL00101 .....	27
3.12: F29927-12: 81ABCTL01 .....	29
<b>Section 4: Misc. Forms .....</b>	<b>30</b>
4.1: Chain of Custody .....	31



### Sample Summary

Tetra Tech NUS

Job No: F29927

NAS Cecil Field-CTO #361  
 Project No: N9945-WR1000892 /CTO361

Sample Number	Collected Date	Time By	Matrix Received	Code Type	Client Sample ID
F29927-1	02/18/05	10:55 SR	02/19/05	AQ Ground Water	81ABCGL8SR01
F29927-2	02/18/05	11:00 SR	02/19/05	AQ Ground Water	81ABCGL02I01
F29927-3	02/18/05	13:10 SR	02/19/05	AQ Ground Water	81ABCGL01I01
F29927-4	02/18/05	13:50 SR	02/19/05	AQ Ground Water	81ABCGL01D01
F29927-5	02/18/05	14:40 SR	02/19/05	AQ Ground Water	81ABCGL09S01
F29927-6	02/18/05	14:40 SR	02/19/05	AQ Ground Water	81ABCGL03I01
F29927-7	02/18/05	15:45 SR	02/19/05	AQ Ground Water	81ABCGL14S01
F29927-7D	02/18/05	15:45 SR	02/19/05	AQ Water Dup/MSD	81ABCGL14S01
F29927-7S	02/18/05	15:45 SR	02/19/05	AQ Water Matrix Spike	81ABCGL14S01
F29927-8	02/18/05	15:25 SR	02/19/05	AQ Ground Water	81ABCGL04I01
F29927-9	02/18/05	00:00 SR	02/19/05	AQ Ground Water	81ABCGL01I01D
F29927-10	02/18/05	09:55 SR	02/19/05	AQ Ground Water	81ABCEL00101
F29927-11	02/18/05	11:05 SR	02/19/05	AQ Ground Water	81ABCFL00101



### Sample Summary (continued)

Tetra Tech NUS

Job No: F29927

NAS Cecil Field-CTO #361

Project No: N9945-WR1000892 /CTO361

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
F29927-12	02/18/05	10:35 SR	02/19/05	AQ Trip Blank Water	81ABCTL01

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Tetra Tech NUS

**Job No:** F29927

**Site:** NAS Cecil Field-CTO #361

**Report Date:** 3/8/2005 12:51:32 PM

11 Samples and 1 Trip Blank were collected on 02/18/2005 and were received at Accutest on 02/19/2005 properly preserved, at 3.8 Deg. C and intact. These Samples received an Accutest job number of F29927. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GCMS by Method SW846 8260B

**Matrix:** AQ

**Batch ID:** VN119

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F29927-7MS, F29927-7MSD were used as the QC samples indicated.

### Extractables by GC by Method SW846 8310

**Matrix:** AQ

**Batch ID:** OP12551

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F29927-7MS, F29927-7MSD were used as the QC samples indicated.

F29927-4: All hits confirmed by spectral match using a diode array detector.

F29927-5: All hits confirmed by spectral match using a diode array detector.

F29927-7: All hits confirmed by spectral match using a diode array detector.

F29927-8: All hits confirmed by spectral match using a diode array detector.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

\_\_\_\_\_  
Ellen Pampel, Inorganic QA (signature on file)

Date: March 8, 2005

**Tuesday, March 08, 2005**

Report of Analysis

3.1  
3

Client Sample ID:	81ABCGL8SR01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-1	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002591.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	0.50 U	1.0	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	103%		73-126%
2037-26-5	Toluene D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	97%		83-119%

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

(a) No TICs detected.

U = Not detected      MDL - Method Detection Limit      I = Result > = MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

### Report of Analysis

3.1  
3

Client Sample ID:	81ABCGL8SR01	
Lab Sample ID:	F29927-1	Date Sampled: 02/18/05
Matrix:	AQ - Ground Water	Date Received: 02/19/05
Method:	SW846 8310 SW846 3510C	Percent Solids: n/a
Project:	NAS Cecil Field-CTO #361	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE030326.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

#### Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.98 U	3.9	0.98	ug/l	
208-96-8	Acenaphthylene	0.98 U	3.9	0.98	ug/l	
120-12-7	Anthracene	0.98 U	2.0	0.98	ug/l	
56-55-3	Benzo(a)anthracene	0.098 U	0.20	0.098	ug/l	
50 32 8	Benzo(a)pyrene	0.098 U	0.20	0.098	ug/l	
205-99-2	Benzo(b)fluoranthene	0.098 U	0.20	0.098	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.098 U	0.20	0.098	ug/l	
207-08-9	Benzo(k)fluoranthene	0.098 U	0.20	0.098	ug/l	
218-01-9	Chrysene	0.98 U	2.0	0.98	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.098 U	0.20	0.098	ug/l	
206-44-0	Fluoranthene	0.49 U	2.0	0.49	ug/l	
86 73 7	Fluorene	0.98 U	2.0	0.98	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.098 U	0.20	0.098	ug/l	
91-20-3	Naphthalene	0.98 U	2.0	0.98	ug/l	
90-12-0	1-Methylnaphthalene	0.49 U	2.0	0.49	ug/l	
91-57-6	2-Methylnaphthalene	0.49 U	2.0	0.49	ug/l	
85-01-8	Phenanthrene	0.98 U	2.0	0.98	ug/l	
129-00-0	Pyrene	0.49 U	2.0	0.49	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		36-114%
92-94-4	p-Terphenyl	87%		31-121%

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 L = Indicates value exceeds calibration range

I = Result > = MDL but < RL    J = Estimated value  
 V = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

### Report of Analysis

32  
3

Client Sample ID: 81ABCGL02I01	Date Sampled: 02/18/05
Lab Sample ID: F29927-2	Date Received: 02/19/05
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: NAS Cecil Field-CTO #361	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002592.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	0.50 U	1.0	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		86-115%
17060-07-0	1,2-Dichloroethane-D4	104%		73-126%
2037-26-5	Toluene-D8	92%		86-112%
460-00-4	4-Bromofluorobenzene	95%		83-119%

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

(a) No TICs detected.

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 L = Indicates value exceeds calibration range

I = Result > = MDL but < RL    J = Estimated value  
 V = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Report of Analysis

32  
3

Client Sample ID:	81ABCGL02I01	Date Sampled:	02/18/05
Lab Sample ID:	F29927 2	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8310 SW846 3510C		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE030327.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.95 U	3.8	0.95	ug/l	
208-96-8	Acenaphthylene	0.95 U	3.8	0.95	ug/l	
120-12-7	Anthracene	0.95 U	1.9	0.95	ug/l	
56-55-3	Benzo(a)anthracene	0.095 U	0.19	0.095	ug/l	
50-32-8	Benzo(a)pyrene	0.095 U	0.19	0.095	ug/l	
205-99-2	Benzo(b)fluoranthene	0.095 U	0.19	0.095	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.095 U	0.19	0.095	ug/l	
207-08-9	Benzo(k)fluoranthene	0.095 U	0.19	0.095	ug/l	
218-01-9	Chrysene	0.95 U	1.9	0.95	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.095 U	0.19	0.095	ug/l	
206-44-0	Fluoranthene	0.48 U	1.9	0.48	ug/l	
86-73-7	Fluorene	0.95 U	1.9	0.95	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.095 U	0.19	0.095	ug/l	
91-20-3	Naphthalene	0.95 U	1.9	0.95	ug/l	
90-12-0	1-Methylnaphthalene	0.48 U	1.9	0.48	ug/l	
91-57-6	2-Methylnaphthalene	0.48 U	1.9	0.48	ug/l	
85-01-8	Phenanthrene	0.95 U	1.9	0.95	ug/l	
129-00-0	Pyrene	0.48 U	1.9	0.48	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		36-114%
92-94-4	p-Terphenyl	76%		31-121%

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

### Report of Analysis

Client Sample ID:	81ABCGL01I01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-3	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002593.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	0.69	1.0	0.50	ug/l	I
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	104%		73-126%
2037-26-5	Toluene-D8	90%		86-112%
460-00-4	4-Bromofluorobenzene	97%		83-119%

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

(a) No TICs detected.

U = Not detected      MDL - Method Detection Limit      I = Result > = MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Report of Analysis

3.3  
3

Client Sample ID: 81ABCGL01101	Date Sampled: 02/18/05
Lab Sample ID: F29927-3	Date Received: 02/19/05
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8310 SW846 3510C	
Project: NAS Cecil Field-CTO #361	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE030328.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.98 U	3.9	0.98	ug/l	
208-96-8	Acenaphthylene	0.98 U	3.9	0.98	ug/l	
120-12-7	Anthracene	0.98 U	2.0	0.98	ug/l	
56-55-3	Benzo(a)anthracene	0.098 U	0.20	0.098	ug/l	
50-32-8	Benzo(a)pyrene	0.098 U	0.20	0.098	ug/l	
205-99-2	Benzo(b)fluoranthene	0.098 U	0.20	0.098	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.098 U	0.20	0.098	ug/l	
207-08-9	Benzo(k)fluoranthene	0.098 U	0.20	0.098	ug/l	
218-01-9	Chrysene	0.98 U	2.0	0.98	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.098 U	0.20	0.098	ug/l	
206-44-0	Fluoranthene	0.49 U	2.0	0.49	ug/l	
86-73-7	Fluorene	0.98 U	2.0	0.98	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.098 U	0.20	0.098	ug/l	
91-20-3	Naphthalene	0.98 U	2.0	0.98	ug/l	
90-12-0	1-Methylnaphthalene	0.49 U	2.0	0.49	ug/l	
91-57-6	2-Methylnaphthalene	0.49 U	2.0	0.49	ug/l	
85-01-8	Phenanthrene	0.98 U	2.0	0.98	ug/l	
129-00-0	Pyrene	0.49 U	2.0	0.49	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		36-114%
92-94-4	p-Terphenyl	64%		31-121%

U = Not detected      MDL - Method Detection Limit      I = Result > = MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Report of Analysis

3.4  
3

Client Sample ID: 81ABCGL01D01	Date Sampled: 02/18/05
Lab Sample ID: F29927-4	Date Received: 02/19/05
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: NAS Cecil Field-CTO #361	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002594.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	1.1	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	0.50 U	1.0	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	105%		73-126%
2037-26-5	Toluene-D8	90%		86-112%
460-00-4	4-Bromofluorobenzene	98%		83-119%

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

(a) No TICs detected.

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 L = Indicates value exceeds calibration range

I = Result > = MDL but < RL    J = Estimated value  
 V = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Report of Analysis

3.4  
3

Client Sample ID: 81ABCGL01D01	Date Sampled: 02/18/05
Lab Sample ID: F29927-4	Date Received: 02/19/05
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8310 SW846 3510C	
Project: NAS Cecil Field-CTO #361	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EE030329.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.95 U	3.8	0.95	ug/l	
208-96-8	Acenaphthylene	0.95 U	3.8	0.95	ug/l	
120-12-7	Anthracene	0.95 U	1.9	0.95	ug/l	
56-55-3	Benzo(a)anthracene	0.095 U	0.19	0.095	ug/l	
50-32-8	Benzo(a)pyrene	0.095 U	0.19	0.095	ug/l	
205-99-2	Benzo(b)fluoranthene	0.095 U	0.19	0.095	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.095 U	0.19	0.095	ug/l	
207-08-9	Benzo(k)fluoranthene	0.095 U	0.19	0.095	ug/l	
218-01-9	Chrysene	0.95 U	1.9	0.95	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.095 U	0.19	0.095	ug/l	
206-44-0	Fluoranthene	0.48 U	1.9	0.48	ug/l	
86-73-7	Fluorene	0.95 U	1.9	0.95	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.095 U	0.19	0.095	ug/l	
91-20-3	Naphthalene	0.95 U	1.9	0.95	ug/l	
90-12-0	1-Methylnaphthalene	0.75 U	1.9	0.48	ug/l	I
91-57-6	2-Methylnaphthalene	0.48 U	1.9	0.48	ug/l	
85-01-8	Phenanthrene	0.95 U	1.9	0.95	ug/l	
129-00-0	Pyrene	0.48 U	1.9	0.48	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	89%		36-114%
92-94-4	p-Terphenyl	76%		31-121%

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

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

### Report of Analysis

Client Sample ID:	81ABCGL09S01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-5	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002595.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.60	1.0	0.50	ug/l	I
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	2.8	1.0	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	6.0	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	104%		73-126%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	96%		83-119%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
141-93-5	Benzene, 1,3-diethyl-	17.41	6.5	ug/l	JN
135-01-3	Benzene, 1,2-diethyl-	17.68	6.2	ug/l	JN
99-87-6	Benzene, 1-methyl-4-(1-methylethyl)	17.92	8.9	ug/l	JN
1587-04-8	Benzene, 1-methyl-2-(2-propenyl)-	18.04	11	ug/l	JN
767-58-8	Indan, 1-methyl-	18.11	17	ug/l	JN
4912-92-9	1H-Indene, 2,3-dihydro-1,1-dimethy	18.28	7.4	ug/l	JN
95-93-2	Benzene, 1,2,4,5-tetramethyl-	18.36	7.8	ug/l	JN
874-41-9	Benzene, 1-ethyl-2,4-dimethyl-	18.41	7.1	ug/l	JN
1595-16-0	Benzene, 1-methyl-4-(1-methylpropy	18.61	5.7	ug/l	JN
2039-89-6	Benzene, 2-ethenyl-1,4-dimethyl-	18.89	38	ug/l	JN
17059-48-2	1H-Indene, 2,3-dihydro-1,6-dimethy	19.27	6.7	ug/l	JN
97664-18-1	Benzene, 1-methyl-4-(1-methyl-2-pr	19.37	13	ug/l	JN
40650-41-7	1H-Indene, 2,3-dihydro-1,1,5-trime	19.48	5.8	ug/l	JN
3877-19-8	Naphthalene, 1,2,3,4-tetrahydro-2-	19.69	10	ug/l	JN

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

### Report of Analysis

Client Sample ID:	81ABCGL09S01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-5	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
6682-71-9	1H-Indene, 2,3-dihydro-4,7-dimethy	20.17	8.9	ug/l	JN
2809-64-5	Naphthalene, 1,2,3,4-tetrahydro-5-	20.62	6.1	ug/l	JN
91-20-3	Naphthalene	19.82	12	ug/l	JN
91-57-6	Naphthalene, 2-methyl-	21.15	14	ug/l	JN
4453-90-1	1,4-Methanonaphthalene, 1,4-dihydr	21.39	16	ug/l	JN
	Total TIC, Volatile		208.1	ug/l	J

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 L = Indicates value exceeds calibration range

I = Result >= MDL but < RL    J = Estimated value  
 V = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Report of Analysis

3.5  
3

Client Sample ID:	81ABCGL09S01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-5	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8310 SW846 3510C		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EE030330.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1010 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.99 U	4.0	0.99	ug/l	
208-96-8	Acenaphthylene	0.99 U	4.0	0.99	ug/l	
120-12-7	Anthracene	0.99 U	2.0	0.99	ug/l	
56-55-3	Benzo(a)anthracene	0.099 U	0.20	0.099	ug/l	
50-32-8	Benzo(a)pyrene	0.099 U	0.20	0.099	ug/l	
205-99-2	Benzo(b)fluoranthene	0.099 U	0.20	0.099	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.099 U	0.20	0.099	ug/l	
207-08-9	Benzo(k)fluoranthene	0.099 U	0.20	0.099	ug/l	
218-01-9	Chrysene	0.99 U	2.0	0.99	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.099 U	0.20	0.099	ug/l	
206-44-0	Fluoranthene	0.50 U	2.0	0.50	ug/l	
86-73-7	Fluorene	0.99 U	2.0	0.99	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.099 U	0.20	0.099	ug/l	
91-20-3	Naphthalene	4.2	2.0	0.99	ug/l	
90-12-0	1-Methylnaphthalene	9.2	2.0	0.50	ug/l	
91-57-6	2-Methylnaphthalene	5.7	2.0	0.50	ug/l	
85-01-8	Phenanthrene	0.99 U	2.0	0.99	ug/l	
129-00-0	Pyrene	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	70%		36-114%
92-94-4	p-Terphenyl	45%		31-121%

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

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

### Report of Analysis

3.6  
3

Client Sample ID:	81ABCGL03I01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-6	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002596.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	0.50 U	1.0	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	105%		73-126%
2037-26-5	Toluene-D8	90%		86-112%
460-00-4	4-Bromofluorobenzene	99%		83-119%

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

(a) No TICs detected.

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Report of Analysis

3.6  
3

Client Sample ID:	81ABCGL03I01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-6	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8310 SW846 3510C		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE030332.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.97 U	3.9	0.97	ug/l	
208-96-8	Acenaphthylene	0.97 U	3.9	0.97	ug/l	
120-12-7	Anthracene	0.97 U	1.9	0.97	ug/l	
56-55-3	Benzo(a)anthracene	0.097 U	0.19	0.097	ug/l	
50-32-8	Benzo(a)pyrene	0.097 U	0.19	0.097	ug/l	
205-99-2	Benzo(b)fluoranthene	0.097 U	0.19	0.097	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.097 U	0.19	0.097	ug/l	
207-08-9	Benzo(k)fluoranthene	0.097 U	0.19	0.097	ug/l	
218-01-9	Chrysene	0.97 U	1.9	0.97	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.097 U	0.19	0.097	ug/l	
206-44-0	Fluoranthene	0.49 U	1.9	0.49	ug/l	
86-73-7	Fluorene	0.97 U	1.9	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.097 U	0.19	0.097	ug/l	
91-20-3	Naphthalene	0.97 U	1.9	0.97	ug/l	
90-12-0	1-Methylnaphthalene	0.49 U	1.9	0.49	ug/l	
91-57-6	2-Methylnaphthalene	0.49 U	1.9	0.49	ug/l	
85-01-8	Phenanthrene	0.97 U	1.9	0.97	ug/l	
129-00-0	Pyrene	0.49 U	1.9	0.49	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	89%		36-114%
92-94-4	p-Terphenyl	75%		31-121%

U = Not detected      MDL - Method Detection Limit      I = Result > = MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	81ABCGL14S01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-7	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002588.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	3.3	1.0	0.50	ug/l	
95 63 6	1,2,4-Trimethylbenzene	1.5	2.0	1.0	ug/l	I
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	103%		73-126%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	94%		83-119%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
141-93-5	Benzene, 1,3-diethyl-	17.41	5.4	ug/l	JN
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	17.92	6.2	ug/l	JN
768-49-0	Benzene, (2-methyl-1-propenyl)-	18.04	7.3	ug/l	JN
767-58-8	Indan, 1-methyl-	18.11	18	ug/l	JN
824-22-6	1H-Indene, 2,3-dihydro-4-methyl-	18.89	32	ug/l	JN
119-64-2	Naphthalene, 1,2,3,4-tetrahydro-	19.09	15	ug/l	JN
4175-53-5	1H-Indene, 2,3-dihydro-1,3-dimethy	19.28	5.4	ug/l	JN
17059-48-2	1H-Indene, 2,3-dihydro-1,6-dimethy	19.37	9.9	ug/l	JN
3877-19-8	Naphthalene, 1,2,3,4-tetrahydro-2-	19.69	5.3	ug/l	JN
1680-51-9	Naphthalene, 1,2,3,4-tetrahydro-6-	20.62	6.5	ug/l	JN
91-20-3	Naphthalene	19.82	15	ug/l	JN
91-57-6	Naphthalene, 2-methyl-	21.15	9.4	ug/l	JN
4453-90-1	1,4-Methanonaphthalene, 1,4-dihydr	21.39	11	ug/l	JN
	Total TIC, Volatile		146.4	ug/l	J

U = Not detected MDL - Method Detection Limit  
 RL = Reporting Limit  
 L = Indicates value exceeds calibration range

I = Result >= MDL but < RL J = Estimated value  
 V = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	81ABCGL14S01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-7	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8310 SW846 3510C		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EE030333.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

## Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.97 U	3.9	0.97	ug/l	
208-96-8	Acenaphthylene	0.97 U	3.9	0.97	ug/l	
120-12-7	Anthracene	0.97 U	1.9	0.97	ug/l	
56-55-3	Benzo(a)anthracene	0.097 U	0.19	0.097	ug/l	
50-32-8	Benzo(a)pyrene	0.097 U	0.19	0.097	ug/l	
205-99-2	Benzo(b)fluoranthene	0.097 U	0.19	0.097	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.097 U	0.19	0.097	ug/l	
207-08-9	Benzo(k)fluoranthene	0.097 U	0.19	0.097	ug/l	
218-01-9	Chrysene	0.97 U	1.9	0.97	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.097 U	0.19	0.097	ug/l	
206-44-0	Fluoranthene	0.49 U	1.9	0.49	ug/l	
86-73-7	Fluorene	0.97 U	1.9	0.97	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.097 U	0.19	0.097	ug/l	
91-20-3	Naphthalene	7.8	1.9	0.97	ug/l	
90-12-0	1-Methylnaphthalene	9.9	1.9	0.49	ug/l	
91-57-6	2-Methylnaphthalene	6.2	1.9	0.49	ug/l	
85-01-8	Phenanthrene	0.97 U	1.9	0.97	ug/l	
129-00-0	Pyrene	0.49 U	1.9	0.49	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		36-114%
92-94-4	p-Terphenyl	87%		31-121%

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

U = Not detected MDL - Method Detection Limit  
 RL = Reporting Limit  
 I = Indicates value exceeds calibration range

I = Result >= MDL but < RL J = Estimated value  
 V = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	81ABCGL04I01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-8	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	N0002597.D	1	02/22/05	NJ	n/a	n/a	VN119

Run #1	Purge Volume
Run #2	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	1.5	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	1.7	1.0	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		86-115%
17060-07-0	1,2-Dichloroethane-D4	105%		73-126%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	97%		83-119%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	unknown	17.53	6	ug/l	J
1560-06-1	Benzene, 2-butenyl-	18.04	7.1	ug/l	JN
767-58-8	Indan, 1-methyl-	18.11	8.1	ug/l	JN
4912-92-9	1H-Indene, 2,3-dihydro-1,1-dimethy	18.28	8.7	ug/l	JN
95-93-2	Benzene, 1,2,4,5-tetramethyl-	18.36	5.9	ug/l	JN
934-10-1	3-Phenylbut-1-ene	18.89	17	ug/l	JN
1075-22-5	1H-Indene, 2,3-dihydro-5,6-dimethy	19.27	8.2	ug/l	JN
17059-48-2	1H-Indene, 2,3-dihydro-1,6-dimethy	19.37	12	ug/l	JN
40650-41-7	1H-Indene, 2,3-dihydro-1,1,5-trime	19.47	8.2	ug/l	JN
2461-34-9	Naphth[1,2-b]oxirene, 1a,2,3,7b-te	20.07	5.6	ug/l	JN
17057-82-8	1H-Indene, 2,3-dihydro-1,2-dimethy	20.16	6.3	ug/l	JN
700-12-9	Benzene, pentamethyl-	20.31	7.8	ug/l	JN
90-12-0	Naphthalene, 1-methyl-	21.38	8.9	ug/l	JN
	Total TIC, Volatile		109.8	ug/l	J

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 L = Indicates value exceeds calibration range

I = Result >= MDL but < RL    J = Estimated value  
 V = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

### Report of Analysis

3.3  
3

Client Sample ID:	81ABCGL04I01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-8	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8310 SW846 3510C		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EE030336.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

**Polynuclear Aromatic Hydrocarbons**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	1.0 U	4.0	1.0	ug/l	
208-96-8	Acenaphthylene	1.0 U	4.0	1.0	ug/l	
120-12-7	Anthracene	1.0 U	2.0	1.0	ug/l	
56-55-3	Benzo(a)anthracene	0.10 U	0.20	0.10	ug/l	
50-32-8	Benzo(a)pyrene	0.10 U	0.20	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	0.10 U	0.20	0.10	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.10 U	0.20	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	0.10 U	0.20	0.10	ug/l	
218-01-9	Chrysene	1.0 U	2.0	1.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.10 U	0.20	0.10	ug/l	
206-44-0	Fluoranthene	0.50 U	2.0	0.50	ug/l	
86-73-7	Fluorene	1.1	2.0	1.0	ug/l	I
193-39-5	Indeno(1,2,3-cd)pyrene	0.10 U	0.20	0.10	ug/l	
91-20-3	Naphthalene	2.2	2.0	1.0	ug/l	
90-12-0	1-Methylnaphthalene	6.3	2.0	0.50	ug/l	
91-57-6	2-Methylnaphthalene	4.6	2.0	0.50	ug/l	
85-01-8	Phenanthrene	1.0 U	2.0	1.0	ug/l	
129-00-0	Pyrene	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	87%		36-114%
92-94-4	p-Terphenyl	80%		31-121%

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

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

### Report of Analysis

3.9  
3

Client Sample ID: 81ABCGL01I01D	Date Sampled: 02/18/05
Lab Sample ID: F29927-9	Date Received: 02/19/05
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: NAS Cecil Field-CTO #361	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002598.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	0.76	1.0	0.50	ug/l	I
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		86-115%
17060-07-0	1,2-Dichloroethane-D4	104%		73-126%
2037-26-5	Toluene-D8	89%		86-112%
460-00-4	4-Bromofluorobenzene	98%		83-119%

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

(a) No TICs detected.

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Report of Analysis

3.9  
3

Client Sample ID: 81ABCGL01I01D	Date Sampled: 02/18/05
Lab Sample ID: F29927-9	Date Received: 02/19/05
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8310 SW846 3510C	
Project: NAS Cecil Field-CTO #361	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE030337.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.98 U	3.9	0.98	ug/l	
208-96-8	Acenaphthylene	0.98 U	3.9	0.98	ug/l	
120-12-7	Anthracene	0.98 U	2.0	0.98	ug/l	
56-55-3	Benzo(a)anthracene	0.098 U	0.20	0.098	ug/l	
50-32-8	Benzo(a)pyrene	0.098 U	0.20	0.098	ug/l	
205-99-2	Benzo(b)fluoranthene	0.098 U	0.20	0.098	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.098 U	0.20	0.098	ug/l	
207-08-9	Benzo(k)fluoranthene	0.098 U	0.20	0.098	ug/l	
218-01-9	Chrysene	0.98 U	2.0	0.98	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.098 U	0.20	0.098	ug/l	
206-44-0	Fluoranthene	0.49 U	2.0	0.49	ug/l	
86-73-7	Fluorene	0.98 U	2.0	0.98	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.098 U	0.20	0.098	ug/l	
91-20-3	Naphthalene	0.98 U	2.0	0.98	ug/l	
90-12-0	1-Methylnaphthalene	0.49 U	2.0	0.49	ug/l	
91-57-6	2-Methylnaphthalene	0.49 U	2.0	0.49	ug/l	
85-01-8	Phenanthrene	0.98 U	2.0	0.98	ug/l	
129-00-0	Pyrene	0.49 U	2.0	0.49	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	89%		36-114%
92-94-4	p-Terphenyl	79%		31-121%

U = Not detected      MDL - Method Detection Limit      I = Result > = MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

### Report of Analysis

3.10  
3

Client Sample ID:	81ABCEL00101	Date Sampled:	02/18/05
Lab Sample ID:	F29927-10	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002599.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	0.50 U	1.0	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		86-115%
17060-07-0	1,2-Dichloroethane-D4	105%		73-126%
2037-26-5	Toluene-D8	90%		86-112%
460-00-4	4-Bromofluorobenzene	97%		83-119%

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

(a) No TICs detected.

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

### Report of Analysis

310  
3

Client Sample ID:	81ABCEL00101	Date Sampled:	02/18/05
Lab Sample ID:	F29927-10	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8310 SW846 3510C		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE030338.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

**Polynuclear Aromatic Hydrocarbons**

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	1.0 U	4.0	1.0	ug/l	
208-96-8	Acenaphthylene	1.0 U	4.0	1.0	ug/l	
120-12-7	Anthracene	1.0 U	2.0	1.0	ug/l	
56-55-3	Benzo(a)anthracene	0.10 U	0.20	0.10	ug/l	
50-32-8	Benzo(a)pyrene	0.10 U	0.20	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	0.10 U	0.20	0.10	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.10 U	0.20	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	0.10 U	0.20	0.10	ug/l	
218-01-9	Chrysene	1.0 U	2.0	1.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.10 U	0.20	0.10	ug/l	
206-44-0	Fluoranthene	0.50 U	2.0	0.50	ug/l	
86-73-7	Fluorene	1.0 U	2.0	1.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.10 U	0.20	0.10	ug/l	
91-20-3	Naphthalene	1.0 U	2.0	1.0	ug/l	
90-12-0	1-Methylnaphthalene	0.50 U	2.0	0.50	ug/l	
91-57-6	2-Methylnaphthalene	0.50 U	2.0	0.50	ug/l	
85-01-8	Phenanthrene	1.0 U	2.0	1.0	ug/l	
129-00-0	Pyrene	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	85%		36-114%
92-94-4	p-Terphenyl	72%		31-121%

U = Not detected      MDL - Method Detection Limit      I = Result > = MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Report of Analysis

311  
3

Client Sample ID:	81ABCFL00101	Date Sampled:	02/18/05
Lab Sample ID:	F29927-11	Date Received:	02/19/05
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002600.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	0.50 U	1.0	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	105%		73-126%
2037-26-5	Toluene-D8	92%		86-112%
460-00-4	4-Bromofluorobenzene	98%		83-119%

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

(a) No TICs detected.

U = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 L = Indicates value exceeds calibration range

I = Result >= MDL but < RL    J = Estimated value  
 V = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Report of Analysis

311  
3

Client Sample ID: 81ABCFL00101	Date Sampled: 02/18/05
Lab Sample ID: F29927-11	Date Received: 02/19/05
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8310 SW846 3510C	
Project: NAS Cecil Field-CTO #361	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE030339.D	1	03/04/05	MRE	02/22/05	OP12551	GEE1195
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1010 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.99 U	4.0	0.99	ug/l	
208-96-8	Acenaphthylene	0.99 U	4.0	0.99	ug/l	
120-12-7	Anthracene	0.99 U	2.0	0.99	ug/l	
56-55-3	Benzo(a)anthracene	0.099 U	0.20	0.099	ug/l	
50-32-8	Benzo(a)pyrene	0.099 U	0.20	0.099	ug/l	
205-99-2	Benzo(b)fluoranthene	0.099 U	0.20	0.099	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.099 U	0.20	0.099	ug/l	
207-08-9	Benzo(k)fluoranthene	0.099 U	0.20	0.099	ug/l	
218-01-9	Chrysene	0.99 U	2.0	0.99	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.099 U	0.20	0.099	ug/l	
206-44-0	Fluoranthene	0.50 U	2.0	0.50	ug/l	
86-73-7	Fluorene	0.99 U	2.0	0.99	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.099 U	0.20	0.099	ug/l	
91-20-3	Naphthalene	0.99 U	2.0	0.99	ug/l	
90-12-0	1-Methylnaphthalene	0.50 U	2.0	0.50	ug/l	
91-57-6	2-Methylnaphthalene	0.50 U	2.0	0.50	ug/l	
85-01-8	Phenanthrene	0.99 U	2.0	0.99	ug/l	
129-00-0	Pyrene	0.50 U	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		36-114%
92-94-4	p-Terphenyl	81%		31-121%

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Report of Analysis

3.12  
3

Client Sample ID:	81ABCTL01	Date Sampled:	02/18/05
Lab Sample ID:	F29927-12	Date Received:	02/19/05
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Cecil Field-CTO #361		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0002601.D	1	02/22/05	NJ	n/a	n/a	VN119
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
95-47-6	o-Xylene	0.50 U	1.0	0.50	ug/l	
	m,p-Xylene	0.50 U	2.0	0.50	ug/l	
98-82-8	Isopropylbenzene	0.50 U	1.0	0.50	ug/l	
95-63-6	1,2,4-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	1.0 U	2.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	106%		73-126%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	98%		83-119%

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

(a) No TICs detected.

U = Not detected      MDL - Method Detection Limit      I = Result >= MDL but < RL      J = Estimated value  
 RL = Reporting Limit      V = Indicates analyte found in associated method blank  
 L = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Misc. Forms

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## Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 81ABC-01 F29927 PAGE 1 OF 2

PROJECT NO: N9945 CTD 361		FACILITY: TANKS 81 ABC, NASCF		PROJECT MANAGER: PAUL CALLIGAN		PHONE NUMBER: 813 F06 0202		LABORATORY NAME AND CONTACT: ACCUTEST H. WANDREY			
SAMPLERS (SIGNATURE): <i>[Signature]</i>		FIELD OPERATIONS LEADER: MERV DALE		PHONE NUMBER: 904 626 6125		ADDRESS: 4405 Vineland Rd. C-15		CITY, STATE: ORLANDO, FL 32811			
STANDARD TAT: <input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 72 hr. <input type="checkbox"/> 7 day <input type="checkbox"/> 14 day		CARRIER/WAYBILL NUMBER: Fedex 848150682180		CONTAINER TYPE: PLASTIC (P) or GLASS (G): G G		PRESERVATIVE USED: HEP No. 2					
DATE YEAR: 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD (GRAV (G) COMP (C))	No. OF CONTAINERS	TYPE OF ANALYSIS: See back Vocs PAHs	COMMENTS	
2/18	1055	81ABC6LBSR01				GW G	5 3 2			Cool to 4°C	
2/18	1100	81ABC6LO2I01				GW G	5 3 2				
2/18	1310	81ABC6LO1I01				GW G	5 3 2			Work Release 1000892	
2/18	1350	81ABC6LO1O101				GW G	5 3 2				
2/18	1440	81ABC6LO9B01				GW G	5 3 2			* 16 method - listed PAHs plus 1-methyl and 2-methyl naphthalene using SW 846 B31D.	
2/18	1440	81ABC6LO3I01				GW G	5 3 2				
2/18	1545	81ABC6L14901				GW G	5 3 2				
2/18	1525	81ABC6LO4I01				GW G	5 3 2				
2/18	0000	81ABC6LO1I01D				GW G	5 3 2				
2/18	0955	81ABC6LO0101				QC G	5 3 2			* for work release MD for dist of method	
2/18	1745	81ABC6LO0101				QC G	5 3 2				
2/18	1545	81ABC6L14501B				GW G	5 3 2				
2/18	1545	81ABC6L14501M				GW G	5 3 2				
1. RELINQUISHED BY: Merv Dale		DATE: 2/18/05		TIME: 1:05 PM		1. RECEIVED BY: [Signature]		DATE: 2/18/05		TIME: 4:30	
2. RELINQUISHED BY: [Signature]		DATE: 2/19/05		TIME: 9:30		2. RECEIVED BY: [Signature]		DATE: 2-19-05		TIME: 9:30	
3. RELINQUISHED BY:		DATE:		TIME:		3. RECEIVED BY:		DATE:		TIME:	
COMMENTS: * SW 846 B260B for BTEX, MTBE, 1,2,3-TMB (trimethylbenzene), 1,2,4-TMB and 1,3,5-TMB. 3.8, 3.6, 3.5											
DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE)				YELLOW (FIELD COPY)				PINK (FILE COPY)			

4.1 4

F29927: Chain of Custody Page 1 of 3



TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 81ABC-01

F29927  
PAGE 2 OF 2

PROJECT NO: N9945, CTD 361		FACILITY: TANKS 91 ABC, BASF		PROJECT MANAGER PAUL CALLIGAN		PHONE NUMBER 813 806 0202		LABORATORY NAME AND CONTACT: ACCUTEST H. WANDREY	
SAMPLERS (SIGNATURE) <i>[Signature]</i>		FIELD OPERATIONS LEADER MERY DALE		PHONE NUMBER 904 636 6125		ADDRESS 4405 Vineland Rd., C-15		CITY, STATE ORLANDO, FL 32811	
STANDARD TAT <input checked="" type="checkbox"/> RUSH TAT <input type="checkbox"/>		CARRIER/WAYBILL NUMBER 8422 1834 9568		MATRIX (GW, SO, SW, SD, GC, ETC.)		COLLECTION METHOD GRAP (G) COMP (C)		CONTAINER TYPE PLASTIC (P) or GLASS (G)	
<input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 72 hr. <input type="checkbox"/> 7 day <input type="checkbox"/> 14 day		Fedex 8436 4375 3820		No. OF CONTAINERS		PRESERVATIVE USED		TYPE OF ANALYSIS ✓ VOCs * ✓ PAHs ** HCE None	
DATE YEAR	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)				COMMENTS
2005									
2/10	1055	81ABC1201				GC	G	2	Cool to 4°C
									Work Release 1000892
									*SW846 8260B G.- BTEX, MTBC, 1,2,3-trimethylbenzene (TMB), 1,2,4-TMB, and 1,3,5-TMB.
1. RELINQUISHED BY <i>[Signature]</i>		DATE 2/10/05		TIME 1705		1. RECEIVED BY Fedex		DATE 2/10/05	
2. RELINQUISHED BY FX		DATE		TIME		2. RECEIVED BY <i>[Signature]</i>		DATE 2-19-05	
3. RELINQUISHED BY		DATE		TIME		3. RECEIVED BY		DATE TIME 9:30	
COMMENTS ** SW846 8310 for 16 method-listed PAHs plus 1-methyl and 2-methyl naphthalene.									
DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 402R									

4.1  
4

**ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION**

ACCUTEST'S JOB NUMBER: F29927 CLIENT: tetra tech PROJECT: tanks #1, ABG, NASTC  
DATE/TIME RECEIVED: 2-14-05 / 9:20 # OF COOLERS RECEIVED: 3 COOLER TEMPS: 3.8, 3.6, 3.0  
METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER  
AIRBILL NUMBERS: 843643758820

**COOLER INFORMATION**

- CUSTODY SEAL NOT PRESENT INTACT
- NO COC RECEIVED
- ANALYSES NOT MARKED ON COC
- ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- TEMPERATURE CRITERIA NOT MET

**SAMPLE INFORMATION**

- SAMPLE LABELS PRESENT ON ALL BOTTLES
- CORRECT NUMBER OF CONTAINERS USED
- SAMPLE RECEIVED IMPROPERLY PRESERVED
- INSUFFICIENT VOLUME FOR ANALYSIS
- SAMPLE RECEIVED PAST HOLD TIME
- TIMES ON COC DON'T MATCH LABEL
- ID'S ON COC DON'T MATCH LABEL
- VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- UNCLEAR FILTERING INSTRUCTIONS
- UNCLEAR COMPOSITING INSTRUCTIONS
- SAMPLE(S) RECEIVED BROKEN
- % SOLIDS JAR NOT RECEIVED

**TRIP BLANK INFORMATION**

- TRIP BLANK NOT PROVIDED
- TRIP BLANK NOT ON COC
- TRIP BLANK INTACT
- TRIP BLANK NOT INTACT
- RECEIVED WATER TRIP BLANK
- RECEIVED SOIL TRIP BLANK

**SOIL INFORMATION**

NUMBER OF ENCORES ? 0  
NUMBER OF 5035 FIELD KITS ? 0

SUMMARY OF COMMENTS:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

TECHNICIAN SIGNATURE/DATE Stano Cray / 2-14-05 TECHNICIAN SIGNATURE/DATE [Signature]

ASBD02/04/05

4.1  
4

**APPENDIX C**

**FIELD FORMS**



**EQUIPMENT INSPECTION**

**COMPANY:** \_\_\_\_\_ **UNIT NO.** \_\_\_\_\_

**FREQUENCY:** Inspect at the initiation of the project, after repairs, once every 10-day shift.

Inspection Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_\_ Equipment Type: \_\_\_\_\_  
(e.g., bulldozer, generator)

	Good	Need Repair	N/A
Tires or tracks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hoses and belts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cab, mirrors, safety glass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Is the equipment equipped with audible back-up alarms and back-up lights?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Horn and gauges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brake condition (dynamic, park, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire extinguisher (Type/Rating - _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Levels:			
- Engine oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Transmission fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Brake fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Cooling system fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Windshield wipers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Hydraulic oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil leak/lube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coupling devices and connectors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exhaust system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blade/boom/ripper condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access-ways: Frame, hand holds, ladders, walkways (non-slip surfaces), guardrails?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power cable and/or hoist cable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steering (standard and emergency)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Safety Guards:**

	Yes	No
- Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Hot pipes and surfaces exposed to accidental contact? _____	<input type="checkbox"/>	<input type="checkbox"/>
- All emergency shut offs have been identified and communicated to the field crew? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Have emergency shutoffs been field tested? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Results? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Are any structural members bent, rusted, or otherwise show signs of damage? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Are fueling cans used with this equipment approved type safety cans? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? _____	<input type="checkbox"/>	<input type="checkbox"/>

## EQUIPMENT INSPECTION (Continued)

### Portable Power Tools:

- Tools and Equipment in Safe Condition? \_\_\_\_\_
- Saw blades, grinding wheels free from recognizable defects (grinding wheels have been sounded)? \_\_\_\_\_
- Portable electric tools properly grounded? \_\_\_\_\_
- Damage to electrical power cords? \_\_\_\_\_
- Blade guards in place? \_\_\_\_\_
- Components adjusted as per manufacturers recommendation? \_\_\_\_\_

### Cleanliness:

- Overall condition (was the decontamination performed prior to arrival on-site considered acceptable)? \_\_\_\_\_
- Where was this equipment used prior to its arrival on site? \_\_\_\_\_
- Site Contaminants of concern at the previous site? \_\_\_\_\_
- Inside debris (coffee cups, soda cans, tools and equipment) blocking free access to foot controls? \_\_\_\_\_

### Operator Qualifications (as applicable for all heavy equipment):

- Does the operator have proper licensing where applicable, (e.g., CDL)? \_\_\_\_\_
- Does the operator, understand the equipment's operating instructions? \_\_\_\_\_
- Is the operator experienced with this equipment? \_\_\_\_\_
- Does the operator have emotional and/or physical limitations which would prevent him/her from performing this task in a safe manner? \_\_\_\_\_
- Is the operator 21 years of age or more? \_\_\_\_\_

### Identification:

- Is a tagging system available, for positive identification, for tools removed from service? \_\_\_

### Additional Inspection Required Prior to Use On-Site

- |   | Yes                      | No                       |
|---|--------------------------|--------------------------|
| - Does equipment emit noise levels above 90 decibels?       | <input type="checkbox"/> | <input type="checkbox"/> |
| - If so, has an 8-hour noise dosimetry test been performed? | <input type="checkbox"/> | <input type="checkbox"/> |
| - Results of noise dosimetry: _____                         |                          |                          |
| - Defects and repairs needed: _____                         |                          |                          |
| - General Safety Condition: _____                           |                          |                          |
| - Operator or mechanic signature: _____                     |                          |                          |

Site Safety Officer Signature: \_\_\_\_\_

Approved for Use:     Yes             No





Tetra Tech NUS, Inc.

# OVERBURDEN MONITORING WELL SHEET

BORING NO.: \_\_\_\_\_

PROJECT: _____	DRILLING Co.: _____	BORING No.: _____
PROJECT No.: _____	DRILLER: _____	DATE COMPLETED: _____
SITE: _____	DRILLING METHOD: _____	NORTHING: _____
GEOLOGIST: _____	DEV. METHOD: _____	EASTING: _____

The diagram shows a vertical well casing with a riser pipe extending above ground. It includes seals at the surface and below ground, a filter pack, and a screen. A ground elevation line is shown on the left. Arrows point from the labels on the right to the corresponding parts of the well.

ELEVATION OF TOP OF SURFACE CASING: _____
STICK -UP TOP OF SURFACE CASING: _____
ELEVATION OF TOP OF RISER PIPE: _____
RISER STICK-UP ABOVE GROUND SURFACE: _____
I.D. OF SURFACE CASING: _____
TYPE OF SURFACE CASING: _____
GROUND ELEVATION: _____
TYPE OF SURFACE SEAL: _____
RISER PIPE I.D.: _____
TYPE OF RISER PIPE: _____
BOREHOLE DIAMETER: _____
TYPE OF SEAL: _____
ELEVATION / DEPTH OF SEAL: _____ /
TYPE OF SEAL: _____
ELEVATION / DEPTH TOP OF FILTER PACK: _____ /
ELEVATION / DEPTH TOP OF SCREEN: _____ /
TYPE OF SCREEN: _____
SLOT SIZE X LENGTH: _____
I.D. OF SCREEN: _____
TYPE OF FILTER PACK: _____
ELEVATION / DEPTH BOTTOM OF SCREEN: _____ /
ELEVATION / DEPTH BOTTOM OF FILTER PACK: _____ /
TYPE OF BACKFILL BELOW WELL: _____
ELEVATION / DEPTH OF BOREHOLE: _____ /



**MONITORING WELL MATERIALS  
CERTIFICATE OF CONFORMANCE**

Well Designation: \_\_\_\_\_

Site Name: \_\_\_\_\_

Date Installed: \_\_\_\_\_

Project Name: \_\_\_\_\_

Site Geologist: \_\_\_\_\_

Drilling Company: \_\_\_\_\_

Driller: \_\_\_\_\_

Project Number: \_\_\_\_\_

<b>Material</b>	<b>Brand/Description</b>	<b>Source/Supplier</b>	<b>Sample Collected ?</b>
Well Casing			
Well Screen			
End Cap			
Drilling Fluid			
Drilling Fluid Additives			
Backfill Material			
Annular Filter Pack			
Bentonite Seal			
Annular Grout			
Surface Cement			
Protective Casing			
Paint			
Rod Lubricant			
Compressor Oil			

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

Signature of Site Geologist: \_\_\_\_\_









