N60200.AR.004325
NAS CECIL FIELD, FL
5090.3a

# FIRST QUARTER 2005 OPERATIONS AND MAINTENANCE STATUS REPORT FOR AIR SPARGING SYSTEM AT BUILDING 271 NAS CECIL FIELD FL

11/22/2005

ESA ENVIRONMENTAL SPECIALISTS INC

# First Quarter 2005
# Operations and Maintenance Status Report

## Air Sparging System
## Building 271

## Former Naval Air Station Cecil Field
## Jacksonville, Florida

## Contract No. N62467-03-G-0016

**Submitted to:**

U.S. Naval Facilities
Engineering Command
Southern Division

**Prepared by:**


ESA Environmental Specialists, Inc
1100 South Mint Street, Suite 100
Charlotte, NC 28203
(704) 598-4407


November 22, 2005

# Contents

Acronyms ..... ii

1 Introduction ..... 1
1.1 Site History ..... 1
1.2 Remediation System / Technology Description ..... 2
2 System Performance Monitoring ..... 4
2.1 Operational Efficiencies ..... 4
2.2 AS System Summary of Maintenance and Downtime ..... 4
2.3 AS System Pressure / Flow Rate Monitoring ..... 5
2.4 Water Level Measurements ..... 6
3 Summary of Sampling and Laboratory Analytical Results ..... 8
3.1 Ground Water Monitoring ..... 8
4 Conclusions and Recommendations ..... 11
5 References ..... 12

APPENDICES

A Laboratory Analytical Reports for Groundwater Samples

FIGURES

1-1 Site Plan ..... 3
2-1 Potentiometric Surface Map – May 24, 2005 ..... 7

TABLES

2-1 Air Sparge System Well Measurements ..... 5
2-2 Water Level Measurements ..... 6
3-1 Summary of Groundwater Analytical ..... 9
3-2 Field Perimeter Measurements ..... 10

## Acronyms

| | |
|---|---|
| ABB-ES | ABB Environmental Services, Inc. |
| AS | Air Sparging |
| AST | Aboveground Storage Tank |
| BLS | Below Land Surface |
| BTEX | benzene, toluene, ethylbenzene, xylene |
| CA | Contamination Assessment |
| CAR | Contamination Assessment Report |
| Cfm | cubic feet per minute |
| CTO | Contract Task Order |
| DO | dissolved oxygen |
| EPA | U.S. Environmental Protection Agency |
| ESA | ESA Environmental Specialists, Inc |
| FAC | Florida Administration Code |
| FDEP | Florida Department of Environmental Protection |
| FID | Flame ionization detector |
| FL-PRO | Florida Petroleum Residual Organic |
| GAC | granular activated carbon |
| GCTLs | groundwater cleanup target levels |
| JETC | Jet Engine Test Cell |
| LNAPL | Light Non-Aqueous Phase Liquids |
| mg/ L | milligrams per liter |
| MTBE | methyl tert butyl ether |
| NADSC | Natural Attenuation Default Source Concentration |
| NAS | Naval Air Station |
| NAVFAC EDF SOUTH | Naval Facilities Engineering Command, Engineering Field Division, Southern Division |
| O&M | Operation and Maintenance |
| ORP | oxygen-reduction potential |
| OWSs | oil water separators |
| PAH | polynuclear aromatic hydrocarbon |
| ppm | parts per million |
| psi | pounds per square inch |

| | |
|---|---|
| RAP | Remedial Action Plan |
| RAPA | Remedial Action Plan Addendum |
| SARA | Site Assessment Report Addendum |
| SCTLs | Soil Cleanup Target Levels |
| TRPH | total recoverable petroleum hydrocarbon |
| TtNUS | Tetra Tech NUS |
| USACE | U.S. Army Corps of Engineers |
| UST | Underground Storage Tank |
| VOC | Volatile Organic Compound |

# 1 Introduction

ESA Environmental Specialists, Inc. (ESA) has been contracted by the Department of the Navy, Naval Facilities Engineering Command Engineering Field Division South (NAVFAC EFD SOUTH), to provide active treatment operation and maintenance (O&M) services at two groundwater remediation sites (Jet Engine Test Cell and Building 271), plus annual natural attenuation monitoring services at one groundwater remediation site (Area 199), situated at the former Naval Air Station (NAS) Cecil Field, Jacksonville, Duval County, Florida.
The purpose of this 2nd Quarter 2005 Operations and Maintenance Status Report is to provide a summary of activities performed at the Building 271 site during the period from August 1, 2005 through October 31, 2005.

## 1.1 Site History

### Building 271

Building 271 was a former retail gasoline facility that contained four USTs (designated 271-D, 271-R, 271-UL, and 271-SUL) and two OWSs. The USTs were grouped in a tank pit located on the west side of Building 271, while the OWSs were located on the east side of the building. USTs 271-UL, 271-R, and 271-SUL each had an approximate capacity of 10,000 gallons and UST 271-D had an approximate capacity of 6,000 gallons (TtNUS, 2002).

According to UST closure records, UST 271-D was removed on March 5, 1996, and no soil or groundwater contamination was detected. The report also indicates that the UST and associated piping were removed from the site (TtNUS, 2002).

In July 1999, Harding Lawson Associates (HLA) compiled a Confirmatory Sampling Report (CSR) for the USTs and the two OWSs that indicated petroleum-impacted soil was encountered at two locations relative to the USTs. The CSR concluded that soil or groundwater was not impacted as a result of past OWS operations. Based on the CSR finding of soil contamination, a Site Assessment (SA) was recommended for the UST site. An SA Plan for the assessment of soil and groundwater at the UST site was prepared by TtNUS (TtNUS, 2002).

Following completion of the planned investigation in the SA Plan, CH2M Hill removed the remaining three USTs, associated piping, and distribution systems. The UST and associated soil removals addressed the soil contamination issues; however, groundwater samples collected following UST and soil removal indicated the presence of volatile organic compounds (VOCs) in site groundwater. TtNUS proceeded to plan and execute a second investigation in a SA Plan Addendum (2001) to further define the extent of contamination in the groundwater (TtNUS, 2002).

CH2M Hill also removed both OWSs, and submitted separate Limited Closure Assessment Reports (LCAR) for each OWS site in April 2001 to the FDEP. Both LCARs for the OWSs indicated that no petroleum contamination of the soil or groundwater existed in the immediate areas surrounding the former OWSs. On May 23, 2001, the FDEP issued separate letters agreeing with CH2M Hill's findings (TtNUS, 2002).

A SA report prepared by TtNUS in May 2002 concluded that petroleum constituents had impacted groundwater in the vicinity of the former USTs and that all of the contaminated soil was removed by CH2M Hill during the UST removal. TtNUS recommended the preparation and implementation of a Remedial Action Plan (RAP) to remediate groundwater at the site (TtNUS, 2002).

TtNUS submitted to FDEP for approval a RAP in September 2002 and a RAP Addendum (RAPA) in January 2003 to select the remedial alternative to remediate the contaminated groundwater at the site. AS was selected as the remedial alternative. FDEP Approval on the RAP and RAPA was received in February 2003.

CH2M Hill installed an AS system in accordance with the RAP (TtNUS, 2002), RAPA (TtNUS, 2003), and Work Plan Addendum No. 18, Installation of Air Sparging Systems at the Jet Engine Test Cell (JETC) and Building 271 (CH2M Hill, 2003) from September to November 2003. The AS system commenced operation on November 17, 2003.

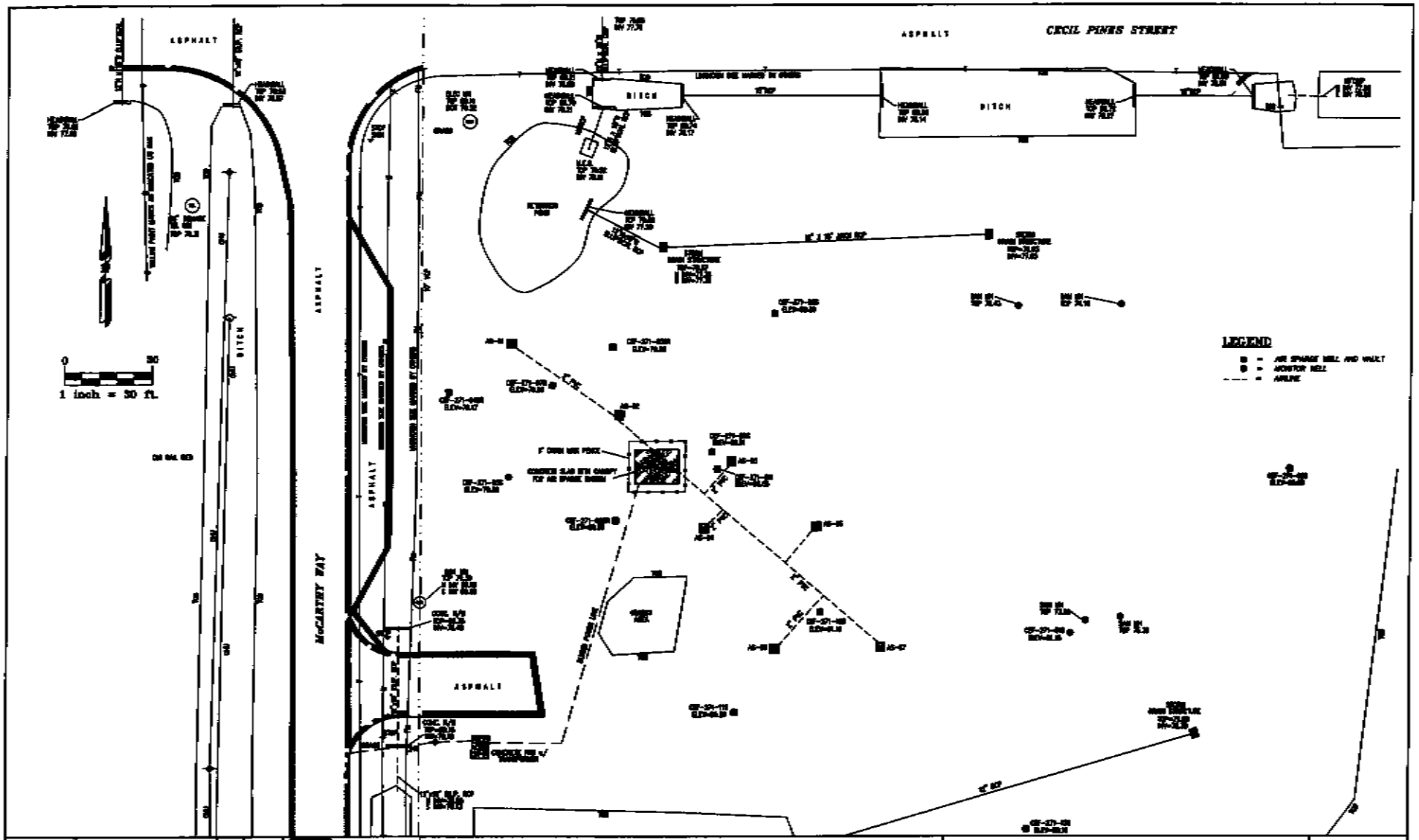
On May 24, 2005, management of on-going remedial activities at the Building 271 site was transferred from CH2M Hill to ESA.

A site plan showing the site and the AS system layout is provided in Figure 1-1.

## 1.2 Remediation System/Technology Description

AS is a physical treatment method of expediting the transfer of VOCs form the soil and groundwater to the sparging air. Atmospheric air is injected into the air sparge wells, which are screened within the groundwater contaminant plume. As the injected air passes upward through the VOC laden groundwater and soil, VOCs are partitioned to the passing air and migrate to the vadose zone.

The Building 271 AS system consists of 7 AS wells (AS-01 through AS-07), rotary vane-type compressor, receiver tank, and associated piping and instrumentation. The AS wells are screened from approximately 28 to 30 feet below land surface (bls). The AS system is designed for each AS well to operate at an airflow rate of 10 cubic feet per minute (cfm) at an injection pressure of 15 pounds per square inch (psi). The locations of the AS wells are shown on Figure 1-1.




| REVISIONS | BY | DATE |
|---|---|---|
| | | |

DRAWN: JC
CHECKED: JB
DATE: OCT 2005

Environmental Specialists, Inc.

**BUILDING 271**
**FORMER NAS CECIL FIELD**
**JACKSONVILLE, FLORIDA**

SITE MAP

MAY 24, 2005

FIGURE 1-1

# 2 System Performance Monitoring

O&M checks of the system were performed weekly during the monitoring period. During an O&M check, a preventative maintenance checklist (based upon manufacturers' recommendations) is completed, and any required maintenance activity is performed. All meters and gauges at the system are read and recorded during the O&M check. Well vault gauges and meters are read and recorded on a monthly basis.

## 2.1 Operational Efficiencies

| | **Period (8/01-10/31)** | **To Date (from 5/17/05)** |
|---|---|---|
| **Air Sparging System** | Building 271 | Building 271 |
| Hours of Possible Operation | 1992 | 3816 |
| Hours of Actual Operation | 98.63 | 838.10 |
| Percent Hours of Operation | 4.95% | 21.96% |

## 2.2 AS System Summary of Maintenance and Downtime

During the period from August 1, 2005 through October 23, 2005, Building 271 AS system ran a total of 4.12 days out of a possible 83 days resulting on 1893.37 hours of downtime. The AS system downtime is detailed as follows:

- **Building 271 AS System**
  - System down upon arrival on 8/9/05, compressor tripped, system reset and restarted before departure
  - System down upon arrival on 8/15/05, compressor tripped, system reset and restarted before departure
  - System down upon arrival on 8/26/05, compressor tripped, system reset and restarted before departure
  - System down upon arrival on 9/3/05, system restarted before departure
  - System down upon arrival on 9/22/05, system restarted before departure
  - System down upon arrival on 10/6/05, AS-1 line with excessive water from recent heavy rain, No pressure /min flow at downstream of well vault regulator. System restarted before departure
  - System down upon arrival on 10/23/05, compressor relay tripped, system reset and restarted before departure

## 2.3 AS System Pressure/Flow Rate Monitoring

During the monitoring period, injection pressure was measured at each AS wellhead weekly during the first month and monthly thereafter. The wellhead pressures for the operating AS wells averaged 10.44 psi, compared to the design pressure of 15 psi. The AS wellhead pressure data is provided in Table 2-1.

**Table 2-1 Air Sparging Well Measurements**
**Building 271**

| Location | Air Sparge Well | Date | Wellhead Pressure (psi) Initial | Wellhead Pressure (psi) Reset | Flow Rate (scfm) Initial | Flow Rate (scfm) Reset |
|---|---|---|---|---|---|---|
| Building 271 | AS-01 | 8/9/2005 | 10.0 | - | 6.0 | - |
| | | 9/3/05 | 10.0 | - | 6.0 | - |
| | | 10/6/05 | 0 | - | 0 | - |
| Building 271 | AS-02 | 8/9/2005 | 12.8 | - | 8.0 | - |
| | | 9/3/05 | 12.5 | - | 7.5 | - |
| | | 10/6/05 | 11.0 | - | 5.0 | - |
| Building 271 | AS-03 | 8/9/2005 | 10.0 | - | 4.0 | - |
| | | 9/3/05 | 10.0 | - | 4.0 | - |
| | | 10/6/05 | 10.5 | - | 5.0 | - |
| Building 271 | AS-04 | 8/9/2005 | 12.2 | - | 7.0 | - |
| | | 9/3/05 | 12.5 | - | 7.0 | - |
| | | 10/6/05 | 13.5 | - | 9.0 | - |
| Building 271 | AS-05 | 8/9/2005 | 12.5 | - | 5.0 | - |
| | | 9/3/05 | 12.5 | - | 5.0 | - |
| | | 10/6/05 | 13.0 | - | 5.5 | - |
| Building 271 | AS-06 | 8/9/2005 | 9.5 | - | 3.2 | - |
| | | 9/3/05 | 9.0 | - | 3.0 | - |
| | | 10/6/05 | 8.8 | - | 0 | - |
| Building 271 | AS-07 | 8/9/2005 | 9.5 | - | 1.5 | - |
| | | 9/3/05 | 9.5 | - | 1.5 | - |
| | | 10/6/05 | 10.0 | - | 2.0 | - |
| **Averages** | | | **10.44** | | **4.53** | |

psi – pounds per square inch
scfm – standard cubic feet per minute
*Air line leak; optimized

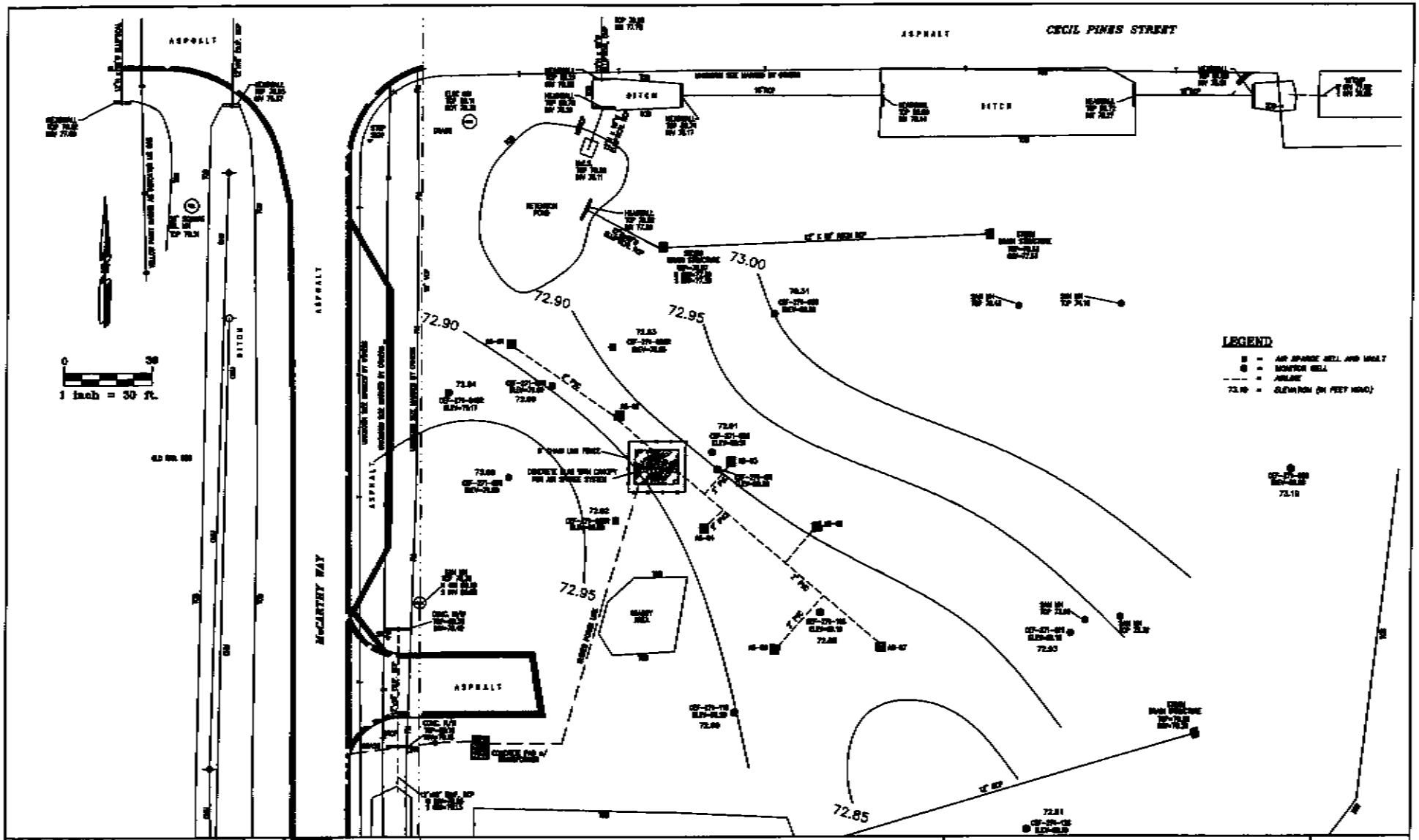
## 2.4 Water Level Measurements

Depth to groundwater measurements were recorded during the first month and quarterly thereafter from the 13 monitoring wells during the monitoring period. The results from the groundwater level measurement surveys are provided in Table 2-2. Light non-aqueous phase liquid (LNAPL) was not detected on monitoring wells during the monitoring period.

**Table 2-2, Water Level Measurements**
**Building 271, 2nd Quarter, 2005**

| Monitoring Well | Date | TOC Elevation (feet) | Depth to Water (feet bTOC) | Water Level Elevation (feet NGVD) |
|---|---|---|---|---|
| CEF-271-01S | 9/3/05 | 81.15 | 6.25 | 74.90 |
| CEF-271-02S | 9/3/05 | 80.68 | 5.54 | 75.14 |
| CEF-271-03S | 9/3/05 | 79.88 | 6.66 | 73.22 |
| CEF-271-04SR | 9/3/05 | 79.17 | 4.13 | 75.04 |
| CEF-271-05SR | 9/3/05 | 79.85 | 4.85 | 75.00 |
| CEF-271-06S | 9/3/05 | 80.50 | 5.55 | 74.95 |
| CEF-271-07S | 9/3/05 | 79.99 | 4.92 | 75.07 |
| CEF-271-08S | 9/3/05 | 80.89 | 5.80 | 75.09 |
| CEF-271-09S | 9/3/05 | 80.51 | 5.53 | 74.98 |
| CEF-271-10S | 9/3/05 | 81.18 | 6.29 | 74.89 |
| CEF-271-11S | 9/3/05 | 80.29 | 5.38 | 74.91 |
| CEF-271-12S | 9/3/05 | 80.19 | 5.41 | 74.78 |
| CEF-271-1I | 9/3/05 | 80.56 | 7.48 | 73.08 |

Top of Casing Elevations and data prior to 4/27/00 obtained from BEI
TOC – top of casing
bTOC – Below top of casing
Elevation is referenced to National Geodetic Vertical Datum 1929 (NGVD 1929)
Depth to water measured from top of casing




| | | | |
|---|---|---|---|
| DRAWN: RC<br>CHECKED: AS<br>DATE: OCT 2005 | REVISIONS | BY | DATE |

Environmental Specialists, Inc.

**BUILDING 271**
**FORMER NAS CECIL FIELD**
**JACKSONVILLE, FLORIDA**

POTENIOMETRIC SURFACE MAP
MAY 24, 2005

FIGURE 2-1

# 3 Summary of Sampling and Laboratory Analytical Results

## 3.1 Groundwater Monitoring

ESA conducted the 2nd Quarter 2005 groundwater monitoring events beginning in August 1, 2005. During the 2nd Quarter 2005 monitoring event monitoring wells CEF-271 were sampled. The groundwater samples were laboratory analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tert butyl ether (MTBE) by EPA Method SW8021B, the 16-listed polynuclear aromatic hydrocarbons (PAHs) and 1- and 2-methylnapthalene by AEL SOP SVOC-006: 2-25-03 and SW8270C-SIM, and Total Recoverable Petroleum Hydrocarbons (TRPH) by the Florida Petroleum Organic (FL-PRO) Method. The laboratory analytical results for the detected parameters from the 2nd Quarter groundwater monitoring events are summarized in Table 3-1. The locations of the monitoring wells are shown on Figure 1-1. Copies of the analytical laboratory reports from the groundwater monitoring events are provided in Appendix A.

Field parameters consisting of pH, temperature, dissolved oxygen (DO), and specific conductivity were measured during purging of the monitoring wells. The field parameters are summarized in Table 3-2. The aquifer at the site within the treatment area remains highly aerobic with DO measurements above 1 milligram per liter (mg/ L) in 12 of the 13 monitoring wells and oxidation-reduction potential (ORP) measurements greater than 50 millivolts in 11 of the 13 monitoring wells.

The Groundwater samples from the monitoring well CEF-271-07S detected the following contaminants with concentrations exceeding GCTLs: Benzene, Xylenes, and Toluene. CEF-271-07S well also detected concentrations of Toluene that exceeded the Natural Attenuation Default Source Concentrations (NADSC).

The previous quarterly report did not show the exceeded levels of Benzene and Toluene for CEF-271-07S and is exclusive to this report. However, with the exception of CEF-271-07S increase in Toluene and Benzene concentrations, in general, as compared to the previous quarterly reports, the groundwater analytical concentrations have remained undetected or decreased. This indicates that the air sparge system is reducing the groundwater contamination at this site.

## Table 3-1 Groundwater Analytical Results, 1st Quarterly Report 2005

| Parameter | Station ID | | CEF-271-07S | CEF-271-09S | CEF-271-10S | CEF-271-12S | Equip Blank |
|---|---|---|---|---|---|---|---|
| | Sample ID | | J055914-01 | J055914-02 | J055914-03 | J055914-04 | J055914-05 |
| | Sample Date | | 9/3/2005 | 9/3/2005 | 9/3/2005 | 9/3/2005 | 9/3/2005 |
| | GCTL[1] | NADC[1] | | | | | |
| | micrograms per liter (µg/L) | | | | | | |
| **Volatile Aromatic Hydrocarbons** | | | | | | | |
| Benzene | 1 | 10 | **3.8** | 0.21 U | 0.21 U | 0.21 U | 0.21 U |
| Ethylbenzene | 30 | 300 | 3.2 | 0.17 U | 0.17 U | 0.17 U | 0.17 U |
| Methyl-tert-butyl Ether | 20 | 200 | 1.1 U | 0.35 U | 0.35 U | 0.35 U | 0.35 U |
| Xylenes (total) | 20 | 200 | **26** | 0.63 U | 0.63 U | 0.63 U | 0.63 U |
| Toluene | 1 | 10 | **18** | 0.23 U | 0.23 U | 0.23 U | 0.23 U |
| | | | | | | | |
| 1-methylnaphthalene | 28 | 280 | 2.1 | 0.12 U | 0.12 U | 0.12 U | 0.12 U |
| 2-methylnaphthalene | 28 | 280 | 1.8 | 0.18 U | 0.18 U | 0.18 U | 0.18 U |
| Acenaphthene | 20 | 200 | 0.19 i | 0.13 U | 0.13 U | 0.13 U | 0.13 U |
| Acenaphthylene | 210 | 2100 | 0.13 U | 0.13 U | 0.13 U | 0.13 U | 0.13 U |
| Anthracene | 2100 | 21000 | 0.080 U | 0.081 U | 0.081 U | 0.080 U | 0.080 U |
| Benzo(a)anthracene | 0.05 | 0.5 | **0.11 U** | **0.11 U** | **0.11 U** | **0.11 U** | **0.11 U** |
| Benzo(a)pyrene | 0.2 | 2 | 0.094 U | 0.095 U | 0.095 U | 0.094 U | 0.094 U |
| Benzo(b)fluoranthene | 0.05 | 0.5 | **0.081 U** | **0.081 U** | **0.081 U** | **0.081 U** | **0.081 U** |
| Benzo(g,h,i)perylene | 210 | 2100 | 0.092 U | 0.093 U | 0.093 U | 0.092 U | 0.092 U |
| Benzo(k)fluoranthene | 0.5 | 5 | 0.082 U | 0.083 U | 0.083 U | 0.082 U | 0.082 U |
| Chrysene | 4.8 | 48 | 0.060 U | 0.060 U | 0.060 U | 0.060 U | 0.060 U |
| Dibenz(a,h)anthracene | 0.005 | 0.05 | **0.10 U** | **0.10 U** | **0.10 U** | **0.10 U** | **0.10 U** |
| Fluoranthene | 280 | 2800 | 0.098 i | 0.085 U | 0.085 U | 0.084 U | 0.084 U |
| Fluorene | 280 | 2800 | 0.12 i | 0.11 U | 0.11 U | 0.10 U | 0.10 U |
| Indeno(1,2,3-cd)pyrene | 0.05 | 0.5 | **0.15 U** | **0.15 U** | **0.15 U** | **0.15 U** | **0.15 U** |
| Naphthalene | 14 | 140 | 5.4 | 0.15 U | 0.15 U | 0.15 U | 0.15 U |
| Phenanthrene | 210 | 2100 | 0.22 i | 0.10 U | 0.10 U | 0.10 U | 0.10 U |
| Pyrene | 210 | 2100 | 0.12 U | 0.12 U | 0.12 U | 0.12 U | 0.12 U |

Notes:
GCTL - Groundwater Cleanup Target Level, 1 = Chapter 62-777 FAC GCTLs reported in µg/L, Bold indicates concentration exceeds GCTL
NADC - Natural Attenuation Default Concentration, Shade indicates concentration exceeds NADC
U - the compound was analyzed for but not detected
i - the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

**Table 3-2**
**Field Parameter Measurements**
**Building 271 GW Field Monitoring**

| Sample Date 9/3/2005 | Groundwater | | | | | |
|---|---|---|---|---|---|---|
| **Well** | **pH** | **Conductivity (mS/cm)** | **Turbidity (NTU)** | **Dissolved Oxygen (mg/L)** | **Temperature (°C)** | **ORP (mV)** |
| CEF-271-01S | 6.31 | 665 | - | **1.75** | 25.97 | [illegible] |
| CEF-271-02S | 6.39 | 335 | - | **1.62** | 25.95 | [illegible] |
| CEF-271-03S | 6.42 | 411 | - | **1.66** | 27.27 | [illegible] |
| CEF-271-04SR | 6.60 | 213 | - | **1.98** | 27.76 | [illegible] |
| CEF-271-05SR | 6.53 | 153 | - | **1.92** | 27.13 | [illegible] |
| CEF-271-06S | 6.55 | 399 | - | **2.43** | 25.79 | [illegible] |
| CEF-271-07S | 6.62 | 705 | 1.97 | 0.29 | 25.86 | -168.0 |
| CEF-271-08S | 5.84 | 622 | - | **1.49** | 27.27 | [illegible] |
| CEF-271-09S | 7.03 | 310 | 20.3 | **2.47** | 25.62 | 24.90 |
| CEF-271-10S | 6.98 | 558 | 0.86 | **2.24** | 25.94 | [illegible] |
| CEF-271-11S | 6.56 | 360 | - | **2.12** | 26.07 | [illegible] |
| CEF-271-12S | 6.50 | 375 | 43.6 | **2.05** | 24.27 | [illegible] |
| CEF-271-1I | 6.32 | 329 | - | **1.21** | 27.08 | [illegible] |

Note: All measurements taken using direct reading instruments in the field.
mS/cm – milliSiemens per centimeter
NTU – nephelomatic turbidity units
mg/L – milligrams per liter
°C – degrees Celsius
ORP – oxygen reducing potential
mV - millivolts
Shade indicates ORP values exceeding 50mV
Bold indicates DO values exceeding 1 mg/L
NM – Not Measured

## 4.0 Conclusions and Recommendations

Building 271 AS systems operated with a great amount downtime during the monitoring period with a resulting operational efficiency of percent of 4.95%. The majority of the Building 271 AS System downtime was due primarily to compressor relay trips causing the system to turn off until they can be reset and restarted at the next site visit check. The compressor relay trips are due to electrical utility power outages. The installation of automatic timed resets for the Mattei compressors operating at Cecil Field Building 271 is recommended in order to reduce downtime. This installation will offer the AS Systems auto reset capabilities as compared to the current configuration which only offers a manual reset method.

The Groundwater samples from the monitoring well CEF-271-07S detected the following contaminants with concentrations exceeding GCTLs: Benzene, Xylenes, and Toluene. CEF-271-07S well also detected concentrations of Toluene that exceeded the Natural Attenuation Default Source Concentrations (NADSC).

The previous quarterly report did not show the exceeded levels of Benzene and Toluene for CEF-271-07S and is exclusive to this report. However, with the exception of CEF-271-07S increase in Toluene and Benzene concentrations, in general, as compared to the previous quarterly reports, the groundwater analytical concentrations have remained undetected or decreased. This indicates that the air sparge system is reducing the groundwater contamination at this site.

# 5.0 References

ESA Environmental Specialists, Inc. June 2005. Cecil Field Workplan. NAS Cecil Field, Jacksonville, Florida.

ESA Environmental Specialists, Inc. June 2005. Cecil Field Health and Safety Plan. NAS Cecil Field, Jacksonville, FL.

CH2MHILL Constructors, Inc. April 2001. Limited Closure Assessment Report, Oil/Water Separator Removal. NAS Cecil Field, Jacksonville, Florida.

CH2MHILL Constructors, Inc. August 2003. Work Plan Addendum No. 18, Work Plan Addendum No. 18 Installation of Air Sparging Systems at the Jet Engine Test Cell and Building 271, Naval Air Station Cecil Field, Jacksonville, Florida.

TetraTech NUS, Inc. September 2002. Remedial Action Plan for Building 271 Tanks UL/R/SUL/D at Naval Air Station Cecil Field, Jacksonville, Florida.

TetraTech NUS, Inc. January 2003. Remedial Action Plan Addendum for Building 271 Tanks UL/R/SUL/D at Naval Air Station Cecil Field, Jacksonville, Florida.

# APPENDIX A
## Analytical Results

**Advanced Environmental Laboratories, Inc.**

6601 Southpoint Parkway
Jacksonville, Florida 32216
(904) 363-9350
FAX (904) 363-9354

| | | | |
|---|---|---|---|
| **Client:** | URS | **Report No.:** | J055914 |
| **Project Name:** | Cecil Field-Bldg 271 | **Date Sampled:** | 9/3/2005 |
| **Project Number:** | | **Date Received:** | 9/6/05 08:00 |
| | | **Date Reported:** | 9/13/2005 |

**Attention:** Bill Kelly

**Phone Number:** 9046456233

**Address:** 8761 Perimeter Park Blvd.
Suite 201
Jacksonville, FL 32216

**Project Description**

The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody.

**Project Name:** Cecil Field-Bldg 271

Approved By: Signature Valid

Digitally signed by Cecil Chaney
DN: cn=Cecil Chaney, c=US
Date: 2005.09.13 12:36:49 -04'00'

[redacted]

If there are any questions involving this report, the above named should be contacted.

**THIS REPORT SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF THE LABORATORY.**

*Advanced Environmental Laboratories certifies that the test results in this report meet all requirements of the NELAC standards, unless noted otherwise in the body of the report.*

**Total Number of Pages = 10**

# Advanced Environmental Laboratories, Inc.

*Analytical Report*

**Client:** URS
**Project Name:** Cecil Field-Bldg 271

**Report No.:** J055914
**Date/Time Received:** 9/6/05 08:00

**Lab Code:** J055914-01
**Client Sample ID:** 1
**Site:** CEF-271-07S
**Matrix:** Water

**Date/Time Sampled:** 9/3/2005 17:46
**Shipping Method:** Client drop off
**Sampled By:** BILL KELLY
**Sampling Method:** G

## *Polynuclear Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 1 | 0.12 | 0.49 | 2.1 | ug/L | | AEL SOP SVOC-006: 2-25-03 | | J |
| 2-Methylnaphthalene | 1 | 0.18 | 0.71 | 1.8 | ug/L | | SW8270C-SIM | | J |
| Acenaphthene | 1 | 0.13 | 0.51 | 0.19 | ug/L | i | SW8270C-SIM | | J |
| Acenaphthylene | 1 | 0.13 | 0.51 | 0.13 | ug/L | U | SW8270C-SIM | | J |
| Anthracene | 1 | 0.080 | 0.32 | 0.080 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)anthracene | 1 | 0.11 | 0.45 | 0.11 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)pyrene | 1 | 0.094 | 0.38 | 0.094 | ug/L | U | SW8270C-SIM | | J |
| Benzo(b)fluoranthene | 1 | 0.081 | 0.32 | 0.081 | ug/L | U | SW8270C-SIM | | J |
| Benzo(g,h,i)perylene | 1 | 0.092 | 0.37 | 0.092 | ug/L | U | SW8270C-SIM | | J |
| Benzo(k)fluoranthene | 1 | 0.082 | 0.33 | 0.082 | ug/L | U | SW8270C-SIM | | J |
| Chrysene | 1 | 0.060 | 0.24 | 0.060 | ug/L | U | SW8270C-SIM | | J |
| Dibenz(a,h)anthracene | 1 | 0.10 | 0.41 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Fluoranthene | 1 | 0.084 | 0.34 | 0.098 | ug/L | i | SW8270C-SIM | | J |
| Fluorene | 1 | 0.10 | 0.42 | 0.12 | ug/L | i | SW8270C-SIM | | J |
| Indeno(1,2,3-cd)pyrene | 1 | 0.15 | 0.59 | 0.15 | ug/L | U | SW8270C-SIM | | J |
| Naphthalene | 1 | 0.15 | 0.61 | 5.4 | ug/L | | SW8270C-SIM | | J |
| Phenanthrene | 1 | 0.10 | 0.40 | 0.22 | ug/L | i | SW8270C-SIM | | J |
| Pyrene | 1 | 0.12 | 0.48 | 0.12 | ug/L | U | SW8270C-SIM | | J |

## *Volatile Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 3 | 0.63 | 2.5 | 3.8 | ug/L | | SW8021B | | J |
| Ethylbenzene | 3 | 0.51 | 2.0 | 3.2 | ug/L | | SW8021B | | J |
| m&p-Xylenes | 3 | 1.2 | 4.8 | 14 | ug/L | | SW8021B | | J |
| Methyl-tert-butyl Ether | 3 | 1.1 | 4.2 | 1.1 | ug/L | U | SW8021B | | J |
| o-Xylene | 3 | 0.69 | 2.8 | 12 | ug/L | | SW8021B | | J |
| Toluene | 3 | 0.69 | 2.8 | 18 | ug/L | | SW8021B | | J |

| Surrogates: | Control Limits | % Recovery | Qual. | Method | Prep Method |
|---|---|---|---|---|---|
| 1-Bromo-4-chlorobenzene | 75 - 119 | 88 | | SW8021B | SW5030B |
| Decafluorobiphenyl | 21 - 122 | 57 | | SW8270C-SIM | SW3510C |

i The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
U The compound was analyzed for but not detected.
J DOH certification #E82574 (AEL-JAX) (FL NELAC certification)

# Advanced Environmental Laboratories, Inc.

*Analytical Report*

**Client:** URS
**Project Name:** Cecil Field-Bldg 271

**Report No.:** J055914
**Date/Time Received:** 9/6/05 08:00

**Lab Code:** J055914-02
**Client Sample ID:** 2
**Site:** CEF-271-09S
**Matrix:** Water

**Date/Time Sampled:** 9/3/2005 17:13
**Shipping Method:** Client drop off
**Sampled By:** BILL KELLY
**Sampling Method:** G

## *Polynuclear Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 1.01 | 0.12 | 0.50 | 0.12 | ug/L | U | AEL SOP SVOC-006: 2-25-03 | | J |
| 2-Methylnaphthalene | 1.01 | 0.18 | 0.72 | 0.18 | ug/L | U | SW8270C-SIM | | J |
| Acenaphthene | 1.01 | 0.13 | 0.52 | 0.13 | ug/L | U | SW8270C-SIM | | J |
| Acenaphthylene | 1.01 | 0.13 | 0.52 | 0.13 | ug/L | U | SW8270C-SIM | | J |
| Anthracene | 1.01 | 0.081 | 0.32 | 0.081 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)anthracene | 1.01 | 0.11 | 0.45 | 0.11 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)pyrene | 1.01 | 0.095 | 0.38 | 0.095 | ug/L | U | SW8270C-SIM | | J |
| Benzo(b)fluoranthene | 1.01 | 0.081 | 0.33 | 0.081 | ug/L | U | SW8270C-SIM | | J |
| Benzo(g,h,i)perylene | 1.01 | 0.093 | 0.37 | 0.093 | ug/L | U | SW8270C-SIM | | J |
| Benzo(k)fluoranthene | 1.01 | 0.083 | 0.33 | 0.083 | ug/L | U | SW8270C-SIM | | J |
| Chrysene | 1.01 | 0.060 | 0.24 | 0.060 | ug/L | U | SW8270C-SIM | | J |
| Dibenz(a,h)anthracene | 1.01 | 0.10 | 0.41 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Fluoranthene | 1.01 | 0.085 | 0.34 | 0.085 | ug/L | U | SW8270C-SIM | | J |
| Fluorene | 1.01 | 0.11 | 0.42 | 0.11 | ug/L | U | SW8270C-SIM | | J |
| Indeno(1,2,3-cd)pyrene | 1.01 | 0.15 | 0.60 | 0.15 | ug/L | U | SW8270C-SIM | | J |
| Naphthalene | 1.01 | 0.15 | 0.61 | 0.15 | ug/L | U | SW8270C-SIM | | J |
| Phenanthrene | 1.01 | 0.10 | 0.40 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Pyrene | 1.01 | 0.12 | 0.48 | 0.12 | ug/L | U | SW8270C-SIM | | J |

## *Volatile Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1 | 0.21 | 0.84 | 0.21 | ug/L | U | SW8021B | | J |
| Ethylbenzene | 1 | 0.17 | 0.68 | 0.17 | ug/L | U | SW8021B | | J |
| m&p-Xylenes | 1 | 0.40 | 1.6 | 0.40 | ug/L | U | SW8021B | | J |
| Methyl-tert-butyl Ether | 1 | 0.35 | 1.4 | 0.35 | ug/L | U | SW8021B | | J |
| o-Xylene | 1 | 0.23 | 0.92 | 0.23 | ug/L | U | SW8021B | | J |
| Toluene | 1 | 0.23 | 0.92 | 0.23 | ug/L | U | SW8021B | | J |

| Surrogates: | Control Limits | % Recovery | Qual. | Method | Prep Method |
|---|---|---|---|---|---|
| 1-Bromo-4-chlorobenzene | 75 - 119 | 96 | | SW8021B | SW5030B |
| Decafluorobiphenyl | 21 - 122 | 71 | | SW8270C-SIM | SW3510C |

U The compound was analyzed for but not detected.
J DOH certification #E82574 (AEL-JAX) (FL NELAC certification)

# Advanced Environmental Laboratories, Inc.

*Analytical Report*

**Client:** URS
**Project Name:** Cecil Field-Bldg 271

**Report No.:** J055914
**Date/Time Received:** 9/6/05 08:00

**Lab Code:** J055914-03
**Client Sample ID:** 3
**Site:** CEF-271-10S
**Matrix:** Water

**Date/Time Sampled:** 9/3/2005 16:30
**Shipping Method:** Client drop off
**Sampled By:** BILL KELLY
**Sampling Method:** G

## *Polynuclear Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 1.01 | 0.12 | 0.50 | 0.12 | ug/L | U | AEL SOP SVOC-006: 2-25-03 | | J |
| 2-Methylnaphthalene | 1.01 | 0.18 | 0.72 | 0.18 | ug/L | U | SW8270C-SIM | | J |
| Acenaphthene | 1.01 | 0.13 | 0.52 | 0.13 | ug/L | U | SW8270C-SIM | | J |
| Acenaphthylene | 1.01 | 0.13 | 0.52 | 0.13 | ug/L | U | SW8270C-SIM | | J |
| Anthracene | 1.01 | 0.081 | 0.32 | 0.081 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)anthracene | 1.01 | 0.11 | 0.45 | 0.11 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)pyrene | 1.01 | 0.095 | 0.38 | 0.095 | ug/L | U | SW8270C-SIM | | J |
| Benzo(b)fluoranthene | 1.01 | 0.081 | 0.33 | 0.081 | ug/L | U | SW8270C-SIM | | J |
| Benzo(g,h,i)perylene | 1.01 | 0.093 | 0.37 | 0.093 | ug/L | U | SW8270C-SIM | | J |
| Benzo(k)fluoranthene | 1.01 | 0.083 | 0.33 | 0.083 | ug/L | U | SW8270C-SIM | | J |
| Chrysene | 1.01 | 0.060 | 0.24 | 0.060 | ug/L | U | SW8270C-SIM | | J |
| Dibenz(a,h)anthracene | 1.01 | 0.10 | 0.41 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Fluoranthene | 1.01 | 0.085 | 0.34 | 0.085 | ug/L | U | SW8270C-SIM | | J |
| Fluorene | 1.01 | 0.11 | 0.42 | 0.11 | ug/L | U | SW8270C-SIM | | J |
| Indeno(1,2,3-cd)pyrene | 1.01 | 0.15 | 0.60 | 0.15 | ug/L | U | SW8270C-SIM | | J |
| Naphthalene | 1.01 | 0.15 | 0.61 | 0.15 | ug/L | U | SW8270C-SIM | | J |
| Phenanthrene | 1.01 | 0.10 | 0.40 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Pyrene | 1.01 | 0.12 | 0.48 | 0.12 | ug/L | U | SW8270C-SIM | | J |

## *Volatile Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1 | 0.21 | 0.84 | 0.21 | ug/L | U | SW8021B | | J |
| Ethylbenzene | 1 | 0.17 | 0.68 | 0.17 | ug/L | U | SW8021B | | J |
| m&p-Xylenes | 1 | 0.40 | 1.6 | 0.40 | ug/L | U | SW8021B | | J |
| Methyl-tert-butyl Ether | 1 | 0.35 | 1.4 | 0.35 | ug/L | U | SW8021B | | J |
| o-Xylene | 1 | 0.23 | 0.92 | 0.23 | ug/L | U | SW8021B | | J |
| Toluene | 1 | 0.23 | 0.92 | 0.23 | ug/L | U | SW8021B | | J |

| Surrogates: | Control Limits | % Recovery | Qual | Method | Prep Method |
|---|---|---|---|---|---|
| 1-Bromo-4-chlorobenzene | 75 - 119 | 94 | | SW8021B | SW5030B |
| Decafluorobiphenyl | 21 - 122 | 82 | | SW8270C-SIM | SW3510C |

U The compound was analyzed for but not detected.
J DOH certification #E82574 (AEL-JAX) (FL NELAC certification)

# Advanced Environmental Laboratories, Inc.

*Analytical Report*

**Client:** URS
**Project Name:** Cecil Field-Bldg 271

**Report No.:** J055914
**Date/Time Received:** 9/6/05 08:00

**Lab Code:** J055914-04
**Client Sample ID:** 4
**Site:** CEF-271-12S
**Matrix:** Water

**Date/Time Sampled:** 9/3/2005 15:40
**Shipping Method:** Client drop off
**Sampled By:** BILL KELLY
**Sampling Method:** G

## *Polynuclear Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 1 | 0.12 | 0.49 | 0.12 | ug/L | U | AEL SOP SVOC-006: 2-25-03 | | J |
| 2-Methylnaphthalene | 1 | 0.18 | 0.71 | 0.18 | ug/L | U | SW8270C-SIM | | J |
| Acenaphthene | 1 | 0.13 | 0.51 | 0.13 | ug/L | U | SW8270C-SIM | | J |
| Acenaphthylene | 1 | 0.13 | 0.51 | 0.13 | ug/L | U | SW8270C-SIM | | J |
| Anthracene | 1 | 0.080 | 0.32 | 0.080 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)anthracene | 1 | 0.11 | 0.45 | 0.11 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)pyrene | 1 | 0.094 | 0.38 | 0.094 | ug/L | U | SW8270C-SIM | | J |
| Benzo(b)fluoranthene | 1 | 0.081 | 0.32 | 0.081 | ug/L | U | SW8270C-SIM | | J |
| Benzo(g,h,i)perylene | 1 | 0.092 | 0.37 | 0.092 | ug/L | U | SW8270C-SIM | | J |
| Benzo(k)fluoranthene | 1 | 0.082 | 0.33 | 0.082 | ug/L | U | SW8270C-SIM | | J |
| Chrysene | 1 | 0.060 | 0.24 | 0.060 | ug/L | U | SW8270C-SIM | | J |
| Dibenz(a,h)anthracene | 1 | 0.10 | 0.41 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Fluoranthene | 1 | 0.084 | 0.34 | 0.084 | ug/L | U | SW8270C-SIM | | J |
| Fluorene | 1 | 0.10 | 0.42 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Indeno(1,2,3-cd)pyrene | 1 | 0.15 | 0.59 | 0.15 | ug/L | U | SW8270C-SIM | | J |
| Naphthalene | 1 | 0.15 | 0.61 | 0.15 | ug/L | U | SW8270C-SIM | | J |
| Phenanthrene | 1 | 0.10 | 0.40 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Pyrene | 1 | 0.12 | 0.48 | 0.12 | ug/L | U | SW8270C-SIM | | J |

## *Volatile Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1 | 0.21 | 0.84 | 0.21 | ug/L | U | SW8021B | | J |
| Ethylbenzene | 1 | 0.17 | 0.68 | 0.17 | ug/L | U | SW8021B | | J |
| m&p-Xylenes | 1 | 0.40 | 1.6 | 0.40 | ug/L | U | SW8021B | | J |
| Methyl-tert-butyl Ether | 1 | 0.35 | 1.4 | 0.35 | ug/L | U | SW8021B | | J |
| o-Xylene | 1 | 0.23 | 0.92 | 0.23 | ug/L | U | SW8021B | | J |
| Toluene | 1 | 0.23 | 0.92 | 0.23 | ug/L | U | SW8021B | | J |

| Surrogates: | Control Limits | % Recovery | Qual. | Method | Prep Method |
|---|---|---|---|---|---|
| 1-Bromo-4-chlorobenzene | 75 - 119 | 92 | | SW8021B | SW5030B |
| Decafluorobiphenyl | 21 - 122 | 63 | | SW8270C-SIM | SW3510C |

U The compound was analyzed for but not detected.
J DOH certification #E82574 (AEL-JAX) (FL NELAC certification)

# Advanced Environmental Laboratories, Inc.

## *Analytical Report*

**Client:** URS
**Project Name:** Cecil Field-Bldg 271

**Report No.:** J055914
**Date/Time Received:** 9/6/05 08:00

**Lab Code:** J055914-05
**Client Sample ID:** 5
**Site:** EQUIPMENT BLANK
**Matrix:** Water

**Date/Time Sampled:** 9/3/2005 15:00
**Shipping Method:** Client drop off
**Sampled By:** BILL KELLY
**Sampling Method:** G

### *Polynuclear Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 1 | 0.12 | 0.49 | 0.12 | ug/L | U | AEL SOP SVOC-006: 2-25-03 | | J |
| 2-Methylnaphthalene | 1 | 0.18 | 0.71 | 0.18 | ug/L | U | SW8270C-SIM | | J |
| Acenaphthene | 1 | 0.13 | 0.51 | 0.13 | ug/L | U | SW8270C-SIM | | J |
| Acenaphthylene | 1 | 0.13 | 0.51 | 0.13 | ug/L | U | SW8270C-SIM | | J |
| Anthracene | 1 | 0.080 | 0.32 | 0.080 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)anthracene | 1 | 0.11 | 0.45 | 0.11 | ug/L | U | SW8270C-SIM | | J |
| Benzo(a)pyrene | 1 | 0.094 | 0.38 | 0.094 | ug/L | U | SW8270C-SIM | | J |
| Benzo(b)fluoranthene | 1 | 0.081 | 0.32 | 0.081 | ug/L | U | SW8270C-SIM | | J |
| Benzo(g,h,i)perylene | 1 | 0.092 | 0.37 | 0.092 | ug/L | U | SW8270C-SIM | | J |
| Benzo(k)fluoranthene | 1 | 0.082 | 0.33 | 0.082 | ug/L | U | SW8270C-SIM | | J |
| Chrysene | 1 | 0.060 | 0.24 | 0.060 | ug/L | U | SW8270C-SIM | | J |
| Dibenz(a,h)anthracene | 1 | 0.10 | 0.41 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Fluoranthene | 1 | 0.084 | 0.34 | 0.084 | ug/L | U | SW8270C-SIM | | J |
| Fluorene | 1 | 0.10 | 0.42 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Indeno(1,2,3-cd)pyrene | 1 | 0.15 | 0.59 | 0.15 | ug/L | U | SW8270C-SIM | | J |
| Naphthalene | 1 | 0.15 | 0.61 | 0.15 | ug/L | U | SW8270C-SIM | | J |
| Phenanthrene | 1 | 0.10 | 0.40 | 0.10 | ug/L | U | SW8270C-SIM | | J |
| Pyrene | 1 | 0.12 | 0.48 | 0.12 | ug/L | U | SW8270C-SIM | | J |

### *Volatile Aromatic Hydrocarbons*

| Analytes: | Dilution | Adjusted MDL | Adjusted PQL | Results | Units | Qualifier(s) | Method | Parameter Comment | Lab |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1 | 0.21 | 0.84 | 0.21 | ug/L | U | SW8021B | | J |
| Ethylbenzene | 1 | 0.17 | 0.68 | 0.17 | ug/L | U | SW8021B | | J |
| m&p-Xylenes | 1 | 0.40 | 1.6 | 0.40 | ug/L | U | SW8021B | | J |
| Methyl-tert-butyl Ether | 1 | 0.35 | 1.4 | 0.35 | ug/L | U | SW8021B | | J |
| o-Xylene | 1 | 0.23 | 0.92 | 0.23 | ug/L | U | SW8021B | | J |
| Toluene | 1 | 0.23 | 0.92 | 0.23 | ug/L | U | SW8021B | | J |

| Surrogates: | Control Limits | % Recovery | Qual. | Method | Prep Method |
|---|---|---|---|---|---|
| 1-Bromo-4-chlorobenzene | 75 - 119 | 88 | | SW8021B | SW5030B |
| Decafluorobiphenyl | 21 - 122 | 77 | | SW8270C-SIM | SW3510C |

U The compound was analyzed for but not detected.
J DOH certification #E82574 (AEL-JAX) (FL NELAC certification)

# Advanced Environmental Laboratories, Inc.

## *Analytical Report*

**Client:** URS

**Project Name:** Cecil Field-Bldg 271

**Report No.:** J055914

**Date/Time Received:** 9/6/05 08:00

## *Sample Cross Reference Information*

**Lab Code: J055914-01**

**Client Sample Number: 1**

**Site: CEF-271-07S**

**Matrix: Water**

| Test Description | Analysis Method | Prep Method | Analytical Batch ID | Analysis Date/Time | | Analyst | Prep Batch ID | Prep Date/Time |
|---|---|---|---|---|---|---|---|---|
| Polynuclear Aromatic Hydrocarbons | SW8270C-SIM | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Polynuclear Aromatic Hydrocarbons | AEL SOP SVOC-006: 2-25-03 | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Volatile Aromatic Hydrocarbons | SW8021B | SW5030B | v090705d | 9/7/2005 | 13:37 | RMB | v090705d | 9/7/2005 13:37:0 |

If the Analytical Batch ID and Prep Batch IDis null, the analysis was not performed by AEL, and the original report from the subcontracted laboratory will be provided containing this information.

**Lab Code: J055914-02**

**Client Sample Number: 2**

**Site: CEF-271-09S**

**Matrix: Water**

| Test Description | Analysis Method | Prep Method | Analytical Batch ID | Analysis Date/Time | | Analyst | Prep Batch ID | Prep Date/Time |
|---|---|---|---|---|---|---|---|---|
| Polynuclear Aromatic Hydrocarbons | SW8270C-SIM | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Polynuclear Aromatic Hydrocarbons | AEL SOP SVOC-006: 2-25-03 | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Volatile Aromatic Hydrocarbons | SW8021B | SW5030B | v090705d | 9/7/2005 | 13:37 | RMB | v090705d | 9/7/2005 13:37:0 |

If the Analytical Batch ID and Prep Batch IDis null, the analysis was not performed by AEL, and the original report from the subcontracted laboratory will be provided containing this information.

**Lab Code: J055914-03**

**Client Sample Number: 3**

**Site: CEF-271-10S**

**Matrix: Water**

| Test Description | Analysis Method | Prep Method | Analytical Batch ID | Analysis Date/Time | | Analyst | Prep Batch ID | Prep Date/Time |
|---|---|---|---|---|---|---|---|---|
| Polynuclear Aromatic Hydrocarbons | SW8270C-SIM | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Polynuclear Aromatic Hydrocarbons | AEL SOP SVOC-006: 2-25-03 | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Volatile Aromatic Hydrocarbons | SW8021B | SW5030B | v090705d | 9/7/2005 | 13:37 | RMB | v090705d | 9/7/2005 13:37:0 |

If the Analytical Batch ID and Prep Batch IDis null, the analysis was not performed by AEL, and the original report from the subcontracted laboratory will be provided containing this information.

**Lab Code: J055914-04**

**Client Sample Number: 4**

**Site: CEF-271-12S**

**Matrix: Water**

| Test Description | Analysis Method | Prep Method | Analytical Batch ID | Analysis Date/Time | | Analyst | Prep Batch ID | Prep Date/Time |
|---|---|---|---|---|---|---|---|---|
| Polynuclear Aromatic Hydrocarbons | SW8270C-SIM | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Polynuclear Aromatic Hydrocarbons | AEL SOP SVOC-006: 2-25-03 | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Volatile Aromatic Hydrocarbons | SW8021B | SW5030B | v090705d | 9/7/2005 | 13:37 | RMB | v090705d | 9/7/2005 13:37:0 |

If the Analytical Batch ID and Prep Batch IDis null, the analysis was not performed by AEL, and the original report from the subcontracted laboratory will be provided containing this information.

**Lab Code: J055914-05**

**Client Sample Number: 5**

**Site: EQUIPMENT BLANK**

**Matrix: Water**

| Test Description | Analysis Method | Prep Method | Analytical Batch ID | Analysis Date/Time | | Analyst | Prep Batch ID | Prep Date/Time |
|---|---|---|---|---|---|---|---|---|
| Polynuclear Aromatic Hydrocarbons | SW8270C-SIM | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Polynuclear Aromatic Hydrocarbons | AEL SOP SVOC-006: 2-25-03 | SW3510C | sv090805nb | 9/8/2005 | 15:55 | WF | oe090705sim | 9/7/2005 08:00:0 |
| Volatile Aromatic Hydrocarbons | SW8021B | SW5030B | v090705d | 9/7/2005 | 13:37 | RMB | v090705d | 9/7/2005 13:37:0 |

If the Analytical Batch ID and Prep Batch IDis null, the analysis was not performed by AEL, and the original report from the subcontracted laboratory will be provided containing this information.

# Advanced Environmental Laboratories, Inc.

*Analytical Report*

**Client:** URS

**Project Name:** Cecil Field-Bldg 271

**Report No.:** J055914

**Date/Time Received:** 9/6/05 08:00

## *Quality Assurance Report*

## Method Blanks

### Polynuclear Aromatic Hydrocarbons

| QCBatchID | Analyte | QC Sample Type | Method | MDL | Result | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| sv090805nb | 1-Methylnaphthalene | Method Blank | AEL SOP SVOC-006: 2-25-03 | 0.12 | 0.12 | ug/L | U |
| sv090805nb | 2-Methylnaphthalene | Method Blank | SW8270C-SIM | 0.18 | 0.18 | ug/L | U |
| sv090805nb | Acenaphthene | Method Blank | SW8270C-SIM | 0.13 | 0.13 | ug/L | U |
| sv090805nb | Acenaphthylene | Method Blank | SW8270C-SIM | 0.13 | 0.13 | ug/L | U |
| sv090805nb | Anthracene | Method Blank | SW8270C-SIM | 0.080 | 0.080 | ug/L | U |
| sv090805nb | Benzo(a)anthracene | Method Blank | SW8270C-SIM | 0.11 | 0.11 | ug/L | U |
| sv090805nb | Benzo(a)pyrene | Method Blank | SW8270C-SIM | 0.094 | 0.094 | ug/L | U |
| sv090805nb | Benzo(b)fluoranthene | Method Blank | SW8270C-SIM | 0.081 | 0.081 | ug/L | U |
| sv090805nb | Benzo(g,h,i)perylene | Method Blank | SW8270C-SIM | 0.092 | 0.092 | ug/L | U |
| sv090805nb | Benzo(k)fluoranthene | Method Blank | SW8270C-SIM | 0.082 | 0.082 | ug/L | U |
| sv090805nb | Chrysene | Method Blank | SW8270C-SIM | 0.080 | 0.080 | ug/L | U |
| sv090805nb | Dibenz(a,h)anthracene | Method Blank | SW8270C-SIM | 0.10 | 0.10 | ug/L | U |
| sv090805nb | Fluoranthene | Method Blank | SW8270C-SIM | 0.084 | 0.084 | ug/L | U |
| sv090805nb | Fluorene | Method Blank | SW8270C-SIM | 0.10 | 0.10 | ug/L | U |
| sv090805nb | Indeno(1,2,3-cd)pyrene | Method Blank | SW8270C-SIM | 0.15 | 0.15 | ug/L | U |
| sv090805nb | Naphthalene | Method Blank | SW8270C-SIM | 0.15 | 0.15 | ug/L | U |
| sv090805nb | Phenanthrene | Method Blank | SW8270C-SIM | 0.10 | 0.10 | ug/L | U |
| sv090805nb | Pyrene | Method Blank | SW8270C-SIM | 0.12 | 0.12 | ug/L | U |

| Surrogate(s) | Result | Units | % Recovery | Qualifier | Acceptance Limits |
|---|---|---|---|---|---|
| Decafluorobiphenyl | 14 | ug/L | 55 | | 21 - 122 |

### Volatile Aromatic Hydrocarbons

| QCBatchID | Analyte | QC Sample Type | Method | MDL | Result | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| v090705d | Benzene | Method Blank | SW8021B | 0.21 | 0.21 | ug/L | U |
| v090705d | Ethylbenzene | Method Blank | SW8021B | 0.17 | 0.17 | ug/L | U |
| v090705d | m&p-Xylenes | Method Blank | SW8021B | 0.40 | 0.40 | ug/L | U |
| v090705d | Methyl-tert-butyl Ether | Method Blank | SW8021B | 0.35 | 0.35 | ug/L | U |
| v090705d | o-Xylene | Method Blank | SW8021B | 0.23 | 0.23 | ug/L | U |
| v090705d | Toluene | Method Blank | SW8021B | 0.23 | 0.23 | ug/L | U |

| Surrogate(s) | Result | Units | % Recovery | Qualifier | Acceptance Limits |
|---|---|---|---|---|---|
| 1-Bromo-4-chlorobenzene | 46 | ug/L | 92 | | 75 - 119 |

**Quality Assurance Qualifiers:**

U The compound was analyzed for but not detected.

**Definitions:**

Water matrix refers to all aqueous matrices except drinking water, including but not limited to, wastewater, ground water, surface water, aqueous wastes and leach
Soil matrix refers to all non-aqueous matrices, including soils, solids, sludges, semi-solids, and non-aqueous waste samples
All results in mg/kg or % are reported in dry weight basis, unless notated otherwise. All results in mg/L are reported in wet weight basis.
MDL Method Detection Limit, without correction for dilution or moisture content
Adjusted Reporting Limit is the MDL accounting for all dilutions and moisture content caclulations.
PQL is defined to be 4 times the MDL, for all results qualified with a 'I' qualifier.
Sampling Method: G=Grab, P=Pump, C=Composite

*The estimated measurements of uncertainty can be provided upon request*

**This is the last page of the analytical report.**

La AEL Advanced Environmental Labs Inc

Advanced Environmental
6601 Southpoint Parkway
Jacksonville, FL 32216

Client: URS Corp

Project name: Cecil Field Bldg 271

Date/Time Rcvd: 9/6/05 0800

Log-in request number: J055914

Received by: CS

Completed by: CS

## Cooler/Shipping Information:

Courier: ☐ AEL ☒ Client ☐ UPS ☐ Pony Express ☐ FedEx ☐ AES ☐ ASAP ☐ Other (describe): _____

Type: ☒ Cooler ☐ Box ☐ Other (describe) _____

Cooler temperature: Identify the cooler and document the temperature blank or ice water measurement

| Cooler ID | 1 | | | | |
|---|---|---|---|---|---|
| Temp (°C) | ∞ | | | | |
| Temp taken from | ☐ Sample Bottle ☒ Cooler | ☐ Sample Bottle ☐ Cooler | ☐ Sample Bottle ☐ Cooler | ☐ Sample Bottle ☐ Cooler | ☐ Sample Bottle ☐ Cooler |
| Temp measured with | ☒ IR gun ☐ Thermometer (enter ID): | ☐ IR gun ☐ Thermometer (enter ID): | ☐ IR gun ☐ Thermometer (enter ID): | ☐ IR gun ☐ Thermometer (enter ID): | ☐ IR gun ☐ Thermometer (enter ID): |

## Other Information:

Any discrepancies should be explained in the "Comments" section below.

DS 9/6/05

| CHECKLIST | YES | NO | NA |
|---|---|---|---|
| 1. Were custody seals on shipping container(s) intact? | ✓ | | ✓ |
| 2. Were custody papers properly included with samples? | ✓ | | |
| 3. Were custody papers properly filled out (ink, signed, match labels)? | ✓ | | |
| 4. Did all bottles arrive in good condition (unbroken)? | ✓ | | |
| 5. Were all bottle labels complete (sample #, date, signed, analysis, preservatives)? | ✓ | | |
| 6. Did the sample labels agree with the chain of custody? | ✓ | | |
| 7. Were correct bottles used for the tests indicated? | ✓ | | |
| 8. Were proper sample preservation techniques indicated on the label? | ✓ | | |
| 9. Were samples received within holding times? | ✓ | | |
| 10. Were all VOA vials checked for the presence of air bubbles? | ✓ | | |
| 11. Were there air bubbles present in the VOA vials? | ✓ | | |
| 12. Were samples in direct contact with wet ice? If "No," check one: ☐ NO ICE ☐ BLUE ICE | | ✓ | |
| 13. Was the cooler temperature less than 6°C? | ✓ | | |
| 14. Were the sample containers provided by AEL? | ✓ | | |
| 15. Were samples accepted into the laboratory? | ✓ | | |
| 16. Was it necessary to split samples into other bottles? | | ✓ | |

## Comments:

Advanced Environmental Laboratories, Inc.
☒ Jacksonville: 8801 Southpoint Parkway, Jacksonville, FL 32216 • (904) 363-9350 Fax (904) 363-9354
☐ Tampa: 9610 Princess Palm Avenue, Tampa, FL 33619 • (813) 630-9616 Fax (813) 630-4327
☐ Gainesville: 2106 NW 67th Place, Suite 7, Gainesville, FL 32606 • (352) 367-1500 Fax (352) 367-0050
☐ Orlando: 529 S. North Lake Blvd., Suite 1016, Altamonte Springs, FL 32701 • (407) 937-1594 Fax (407) 937-1597

# CHAIN OF CUSTODY RECORD

J055914

CLIENT NAME: URS Corp

PROJECT NAME: CECR FIELD - BLDG 271

ADDRESS: 8761 PERIMETER PARK BLVD STE 201 JACKSONVILLE, FL 32216

P.O. NUMBER / PROJECT NUMBER:

PROJECT LOCATION:

PHONE: 904/645-6233 FAX: 904/645-6243

CONTACT: WILLIAM KELLY

SAMPLED BY: W Kelly

TURN AROUND TIME: ☒ STANDARD ☐ RUSH _____

REMARKS / SPECIAL INSTRUCTIONS: AEL PRE-LOG # Q0013

WW=waste water SW=surface water GW=ground water DW=drinking water OIL A=air SO=soil SL=sludge

| SAMPLE ID | SAMPLE DESCRIPTION | Grab Composite | SAMPLING DATE | SAMPLING TIME | MATRIX | NO. CONT. | BOTTLE SIZE & TYPE: 3x40ml G | 1L A | | | | | | LAB NUMBER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ANALYSIS REQUIRED: BTEX+MTBE BY EPA 8021 | TPH BY EPA 8270 SIM | | | | | | |
| | | | | | | | Preserv: HCl | I | | | | | | |
| | CEF-271-07S MS/MSD | G | 9/3/05 | 1746 | GW | 4 | X | X | | | | | | 01 |
| | CEF-271-09S | | | 1713 | GW | 4 | X | X | | | | | | 02 |
| | CEF-271-10S | | | 1630 | GW | 4 | X | X | | | | | | 03 |
| | CEF-271-12S | | | 1540 | GW | 4 | X | X | | | | | | 04 |
| | EB | | | 1500 | GW | 4 | X | X | | | | | | 05 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

I = Ice H = (HCl) S = ($H_2SO_4$) N = ($HNO_3$) T = (Sodium Thiosulfate)

| | Relinquished by: | Date | Time | Received by: | Date | Time |
|---|---|---|---|---|---|---|
| 1 | W Kelly | 9/6/05 | 0800 | [illegible] | 9/6/05 | 0800 |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |

Received on ice? ☒ yes ☐ no QC ☐ sent ☐ received

revised 8/01