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NAS CECIL FIELD, FL  
5090.3a

SECOND QUARTER 2004 OPERATION AND MAINTENANCE STATUS REPORT FOR DAY  
TANK 1 SITE NAS CECIL FIELD FL  
10/1/2004  
TERRAINE INC ENVIRONMENTAL SERVICES

**SECOND QUARTER 2004  
Operation and Maintenance Status Report  
April 1, 2004 – June 30, 2004**

**DAY TANK 1 SITE**

**Contract No. N62467-02-G-0352  
Contract Task Order No. 0001**

**Naval Air Station Cecil Field  
Jacksonville, Florida**

**Submitted to:**

**U.S. Naval Facilities  
Engineering Command  
Southern Division**

**Prepared by:**

**Terraine, Inc.**  
2656 NW 97<sup>th</sup> Ave. Miami, FL 33172

**October 2004**

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# Signature Page

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We, James L. Young and Karen L. Baer, do hereby affirm that the information contained in this report is accurate and correct to the best of our knowledge and belief.

James L. Young, P.G., REM Project Manager TERRAINE, Inc.	Date	<u>PG-FL2090, REM-6089</u> Registration Nos.
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Karen L. Baer Field Superintendent TERRAINE, Inc.	Date
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# Acronyms

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ABB-ES	ABB Environmental Services, Inc.
acfh	actual cubic feet per hour
acfm	actual cubic feet per minute
AST	Aboveground Storage Tank
bls	below land surface
BOA	Basic Ordering Agreement
CCI	CH2M HILL Constructors, Inc.
°C	Degrees Celsius
CTO	Contract Task Order
DO	Dissolved Oxygen
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
Ft.	Feet
Gal.	Gallon
Gal/min	Gallon per minute
GCT	Groundwater Cleanup Target Levels
J.A. Jones	J.A. Jones Environmental Services
LNAPL	Light Non-Aqueous Phase Liquids
mg/L	Milligrams per liter
s/cm	Microsiemens per centimeter
Ms/cm	Millisiemens per centimeter
mV	millivolts
NA	Not Analyzed
NADSC	Natural Attenuation Default Source Criteria
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
ND	Non Detect
NGVD	National Geodetic Vertical Datum
NS	Not sampled
NTU	Nephelometric Turbidity Units
O&M	Operation and Maintenance
psi	pounds per square inch
RAP	Remedial Action Plan
SVOA	Semi-Volatile Organic Aromatics
TERRAINE	Terraine Environmental Services, Inc.
VCS	Vapor Collection System
VEW	Vapor Extraction Well
VOA	Volatile Organic Aromatics
VOC	Volatile Organic Compounds

# 1.0 Introduction

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Terraine, Inc. (TERRAINE) has been contracted by the Department of the Navy, Southern Division Naval Facilities Engineering Command (NAVFAC), to provide Operation and Maintenance (O&M) services at Day Tank 1, Naval Air Station (NAS) Cecil Field, Jacksonville, Florida, under **Basic Ordering Agreement (BOA) Contract No. N62467-02-G-0352, Contract Task Order (CTO) No. 0001**. The purpose of this O&M Report is to provide a summary of activities performed at the site during the period of April 1, 2004 to June 30, 2004.

## 1.1 Objective

The objective of the remedial action at the site of Day Tank 1 was to reduce the concentrations of petroleum-related contaminants in the groundwater and unsaturated soils to target levels specified by Chapter 62-777 Florida Administrative Code (FAC). Biosparging/vapor collection was the technology utilized to achieve this objective.

## 1.2 Site History

The Day Tank 1 site is located at the former NAS Cecil Field, approximately 1/8 mile south of the "A" Avenue gate on Jet Road. A base map illustrating the site location is included in **Figure 1, Appendix A**. A site map is included in **Figure 2, Appendix A**.

The site formerly contained a 200,000-gallon aboveground storage tank (AST), piping, and associated equipment to supply jet propellant fuel to the high-speed refuelers located on the flightline. It was reported that numerous spills occurred at the site over the course of the operation of the fuel delivery system (ABB Environmental Services, Inc. [ABB-ES], 1997). ABB-ES completed a contamination assessment for the facility in 1996, which documented the presence of petroleum-contaminated soil and groundwater at the site. A Remedial Action Plan (RAP) was subsequently developed by ABB-ES in 1997 for the excavation of 20,000 tons of petroleum-contaminated soil and the installation of a biosparging/vapor collection remediation system to address the contaminated groundwater at the site. In November 1999, CCI/J.A. Jones Environmental Services (J.A. Jones) removed the AST along with 24,000 tons of contaminated soil under Response Action Contract No. N62467-98-D-0995, CTO No. 0002 (CCI, 2000). The biosparging/vapor collection and start-up was performed on February 29, 2000. The system was operated and maintained by CCI/J.A. Jones under Response Action Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0002 for the first year of operation and then operated and maintained by CCI/J.A. Jones under Response Action Contract No. N62467-98-D-0995, CTO No. 0062. Currently, TERRAINE is maintaining the system under BOA Contract No. N62467-02-G-0352, CTO No. 0001. A remediation system and technology description is provided in the First Quarter 2004 Operations and Maintenance Status Report submitted by TERRAINE in June 2004.

Due to the substantial reduction of contaminant concentrations in wells within the area of influence of the biosparging and soil vapor extraction system, the Florida Department of Environmental Protection (FDEP) approved deactivating the remediation system on

approximately August 15, 2003. Post-active remediation monitoring in accordance with Chapter 62-770.750, FAC began at this time.

As a part of the post-active remediation monitoring, the following wells were to be sampled quarterly for volatile organic aromatics (VOAs) and semi-volatile organic aromatics (SVOAs) for a period of one year to evaluate rebound: CEF-293-9, VEW-7, VEW-2, VEW-3, VEW-4, VEW-5, and CEF-293-22.

Following construction activities at the Day Tank 1 site during the months of October through December 2003, vapor extraction wells VEW-1 and VEW-2 were destroyed. The wells were reinstalled before the 4<sup>th</sup> Quarter 2003 sampling event.

## **2.0 System Performance Monitoring**

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The system was shut down on approximately August 15, 2003 as a result of FDEP approval for system deactivation. Post-active remediation O&M checks were performed during the second quarter of 2004 on April 20, May 27, and June 24 and 29, 2004.

During a post-active remediation O&M check, the system is activated for a period of 15 minutes, a preventative maintenance checklist (based upon manufacturer's recommendations) is completed, and any required maintenance activity is performed.

### **2.1 Summary of Maintenance**

During the April 20, 2004 O&M check, the system shut down after 10 minutes. The system was unable to start during the May 27 and June 24 system checks. On June 29, 2004, a technician visited the site and was able to start the system. The system ran for the entirety of the system check before manually being shut down.

No maintenance was performed during the Second Quarter, 2004. Based on the O&M check on June 29, 2004, the system was believed to be functioning properly. Previous unsuccessful attempts to start the system are likely a result of scheduled maintenance notification indicated by the maintenance light. When this light is on, the system will only run for a short time before shutting down. This maintenance, which includes various filter changes and an oil change, will only take place if the system should be restarted due to contaminant rebound.

# 3.0 Summary of Sampling and Laboratory Analytical Results

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## 3.1 Groundwater Level Measurements

Depth-to-groundwater/Light Non-Aqueous Phase Liquid (LNAPL) measurements were recorded on June 9, 2004 at monitoring wells CEF-293-9 and CEF-293-22 and vapor extraction wells VEW-1, VEW-2, VEW-3, VEW-4, VEW-5, and VEW-7. The top-of-casing elevation, depth-to-LNAPL measurements, depth-to-water measurements, calculated LNAPL thickness and calculated water level elevations are provided on **Table 1**.

No LNAPL was discovered in vapor extraction well VEW-1 during the Second Quarter 2004.

## 3.2 Data Validation

A cursory review of quality control data was performed. This review evaluated data completeness, holding time compliance, laboratory blank contamination, and detection limits. The validation process results in qualifiers that are shown with the analyte concentrations in Table 2, Appendix B.

## 3.3 Groundwater Monitoring

As a result of substantial reductions in contaminant concentrations in groundwater sampled from monitoring wells at the Day Tank 1 site, and at the request of the FDEP, the number of required monitoring locations was reduced on May 6, 2003 from twelve to seven by recommendation of FDEP. Seven monitoring locations (two monitoring wells and five vapor extraction wells) at the site were sampled on June 9, 2004 for VOA and SVOA using USEPA Methods 8260B and 8270C-SIM, respectively.

All sampling points exhibited decreases in contaminant concentrations compared to the baseline groundwater-sampling event performed on January 25, 2000. Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene concentrations in groundwater sampled from CEF-293-09 were greater than the Groundwater Cleanup Target Levels (GCTL) per Chapter 62-777 F.A.C; however the concentrations were lower than the Natural Attenuation Default Source Concentrations (NADSC). Benzene and naphthalene concentrations in groundwater sampled from VEW-7 were greater than the GCTL, but less than the NADSC. The contaminant concentrations for all other monitoring locations were below the GCTL for all constituents.

The locations of the monitoring/vapor extraction wells are shown in **Figure 2, Appendix A**. Analytical results are summarized in **Table 2, Appendix B**.

Field parameters, including pH, temperature, specific conductivity, and dissolved oxygen (DO) were also measured during the sampling event using a Horiba® water quality meter and a YSI® 556 MPS. The results are summarized in **Table 3, Appendix B**. Groundwater sampling logs are included in **Appendix C**.

## **4.0 Conclusions and Recommendations**

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### **4.1 Conclusions**

In general, contaminant concentrations have decreased in comparison to baseline levels. Contaminant concentrations greater than the GCTLs reported during the past three quarters (December 2003, March 2004, and June 2004) for wells VEW-7 and CEF-293-09, are believed a result of excavation activities that took place between October 2003 and December 2003.

### **4.2 Recommendations**

Based on analytical data obtained to date, the following is recommended for the site:

- Sample groundwater from VEW-1 to ensure that the groundwater in that area has been remediated.
- Continue groundwater sampling from monitoring wells and vapor extraction wells through Third Quarter, 2004 to monitor for rebound.

## 5.0 References

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ABB Environmental Services, Inc. January 1997. Remedial Action Plan, Day Tank 1, Facility 293, Naval Air Station Cecil Field, Jacksonville, Florida.

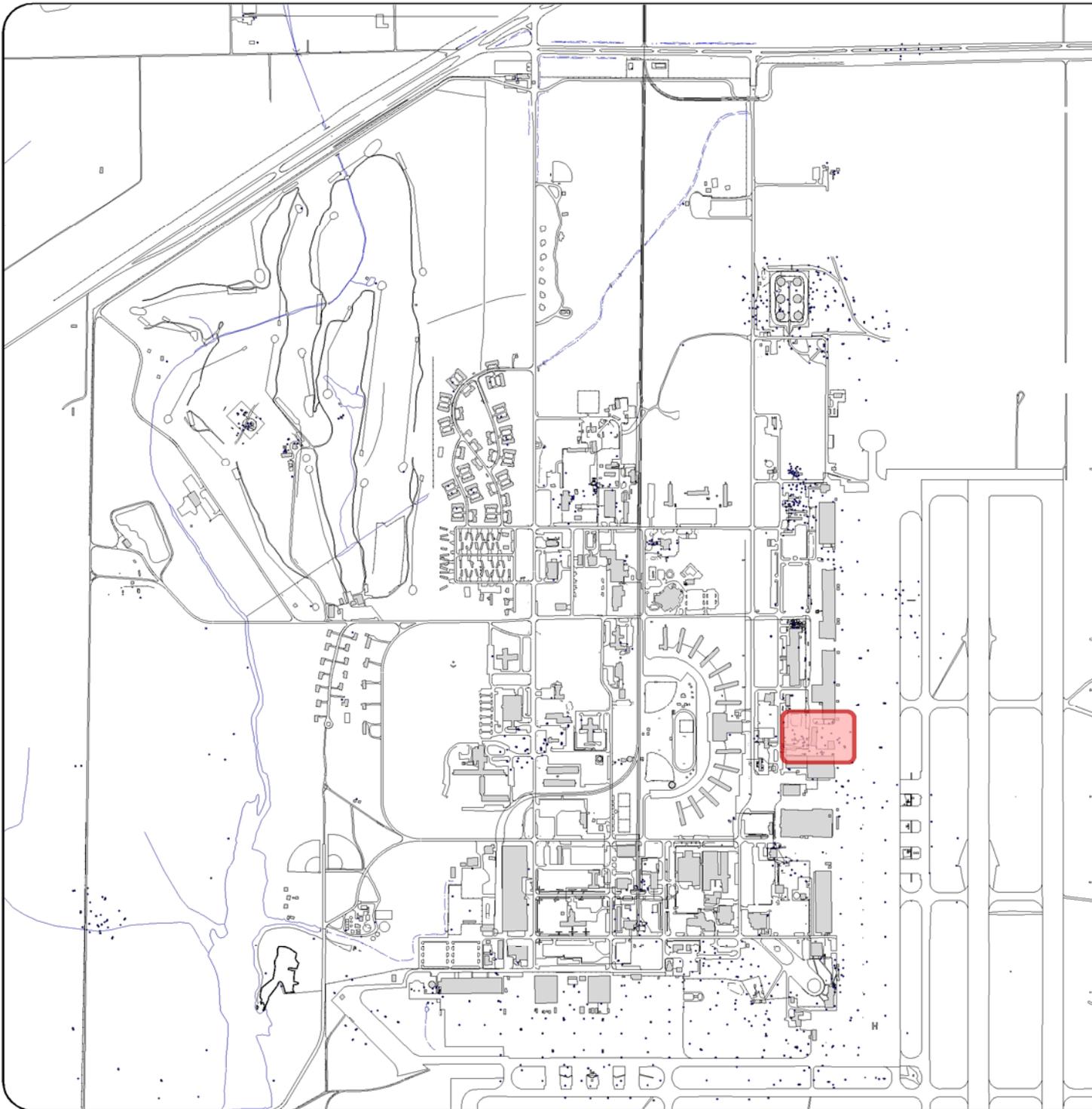
Terraine, Inc. Operation and Maintenance Status Report, April 1, 2004 – June 30, 2004, Biosparging and Soil Vapor Extraction System, Day Tank 1 Site, Naval Air Station, Cecil Field, Jacksonville, Florida.

## APPENDIX A

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*Figures*

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**NOTES**

Sources: Environmental IR Gateway ([www.sdirport.com](http://www.sdirport.com))

**LEGEND**

 APPROXIMATE SITE BOUNDARY

0 0.25 0.5  
APPROXIMATE SCALE IN MILES



**NAS CECIL FIELD  
FIGURE 1: SITE LOCATION MAP  
DAY TANK 1**

Prepared For:  
U.S. Naval Facilities Engineering  
Command, Southern Division

DWN BY: LFW

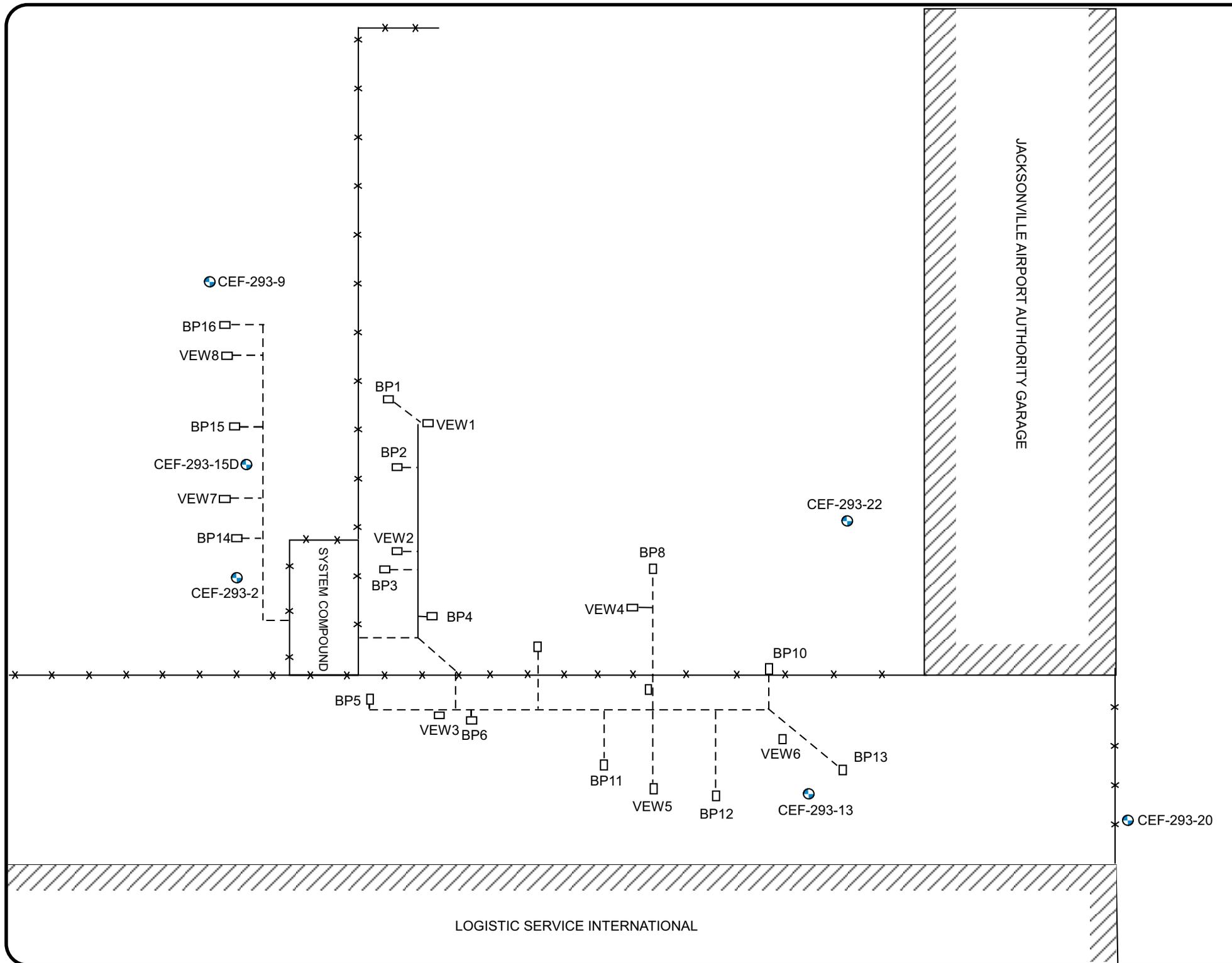
CHK BY: KBG

SCALE: SEE LEGEND

APR BY: JLY

DATE: 10/12/04

FILE: N/A



**NOTES**

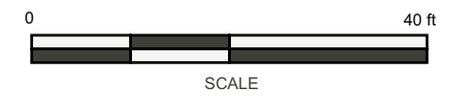
DASHED LINES INDICATE SUBSURFACE FEATURES

**LEGEND**

- x — FENCE
- - - - UNDERGROUND LINES
- VAULT COVER
- MONITORING WELL



**FIGURE 2  
SITE MAP  
DAY TANK 1**



DWN BY: JLY	CHK BY: MJP
	APR BY: JLY
DATE: 8-26-04	FILE: 04-41001

## APPENDIX B

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*Tables*

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<b>TABLE 1</b> <b>DEPTH TO GROUNDWATER/LNAPL MEASUREMENTS</b> <b>DAY TANK 1 BIOSPARGE/VAPOR COLLECTION SYSTEM</b> <b>NAS CECIL FIELD</b> <b>JACKSONVILLE, FLORIDA</b>						
Well Identification	Date	Top of Casing Elevation (Feet)	Depth to LNAPL (Feet)	Depth to Water (Feet)	LNAPL Thickness (Feet)	Water Level Elevation (Feet)
CEF-293-09	06/13/00	77.36	none present	9.93	0.00	67.43
	03/11/03		none present	6.09	0.00	71.27
	06/06/03		none present	7.85	0.00	69.51
	09/02/03		none present	7.29	0.00	70.07
	12/12/03		none present	9.62	0.00	67.74
	03/17/04		none present	9.84	0.00	67.52
	06/09/04		none present	9.83	0.00	67.53
CEF-293-22	06/13/00	75.95	none present	8.88	0.00	67.07
	03/11/03		none present	8.33	0.00	67.62
	06/07/03		none present	7.00	0.00	68.95
	09/02/03		none present	6.34	0.00	69.61
	12/12/03		none present	8.65	0.00	67.30
	03/17/04		none present	8.80	0.00	67.15
	06/09/04		none present	8.56	0.00	67.39
VEW-01	06/13/00	76.32	8.60	10.89	2.29	67.03
	03/11/03		5.08	5.80	0.72	71.02
	06/07/03		6.90	7.40	0.50	69.27
	09/02/03		4.40	4.90	0.50	71.77
	12/12/03		none present	NM	0.00	NM
	03/17/04		none present	NM	0.00	NM
	06/09/04		none present	8.40	0.00	67.92
VEW-02	06/13/00	75.86	7.50	13.02	5.52	62.84
	03/11/03		none present	4.71	0.00	71.15
	06/07/03		none present	6.50	0.00	69.36
	09/02/03		none present	5.96	0.00	69.90
	12/12/03		none present	11.04	0.00	64.82
	03/17/04		none present	8.40	0.00	67.46
	06/09/04		none present	8.54	0.00	67.32
VEW-03	06/13/00	75.28	none present	8.05	0.00	67.23
	12/11/02		none present	6.23	0.00	69.05
	03/11/03		none present	4.07	0.00	71.21
	06/06/03		none present	6.10	0.00	69.18
	09/02/03		none present	5.35	0.00	69.93
	12/12/03		none present	7.80	0.00	67.48
	03/17/04		none present	8.02	0.00	67.26
06/09/04	none present	8.01	0.00	67.27		
VEW-04	06/13/00	75.54	none present	8.38	0.00	67.16
	03/11/03		none present	4.66	0.00	70.88
	06/07/03		none present	6.50	0.00	69.04
	09/02/03		none present	5.80	0.00	69.74
	12/12/03		none present	8.12	0.00	67.42
	03/17/04		none present	8.30	0.00	67.24
	06/09/04		none present	8.37	0.00	67.17
VEW-05	06/13/00	74.63	none present	7.53	0.00	67.10
	03/11/03		none present	3.80	0.00	70.83
	06/06/06		none present	6.75	0.00	67.88
	09/02/03		none present	4.95	0.00	69.68
	12/12/03		none present	7.40	0.00	67.23
	03/17/04		none present	7.50	0.00	67.13
	06/09/04		none present	7.55	0.00	67.08
VEW-07	06/13/00	76.44	none present	9.06	0.00	67.38
	03/11/03		none present	5.01	0.00	71.43
	06/07/03		none present	6.97	0.00	69.47
	09/04/03		none present	6.45	0.00	69.99
	12/12/03		none present	8.90	0.00	67.54
	03/17/04		none present	9.00	0.00	67.44
	06/09/04		none present	8.99	0.00	67.45

LNAPL = Light Non-Aqueous Phase Liquid  
NA = Not Available  
NM = Not Measured  
Elevation is referenced to National Geodetic Vertical Datum 1929 (NGVD 1929)  
Depth to LNAPL is measured from top of casing  
Depth to water is measured from top of casing



**TABLE 3**  
**GROUNDWATER FIELD ANALYTICAL RESULTS**  
**DAY TANK 1 BIOSPARGE/VAPOR COLLECTION SYSTEM**  
**NAS CECIL FIELD**  
**JACKSONVILLE, FLORIDA**

	Date	ph (s. u.)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Temperature (°C)
CEF-293-9	1/25/2000	5.99	0.088	NM	21.40
	3/11/2003	5.90	0.29	4.29	20.85
	6/6/2003	6.00	0.472	0.00	23.26
	9/2/2003	5.84	0.730	0.93	26.10
	12/12/2003	5.86	0.998	0.01	23.22
	3/17/2004	5.40	0.279	1.00	21.10
	6/9/2004	5.61	0.280	0.26	24.03
CEF-293-22	1/25/2000	6.44	0.126	NM	23.00
	3/11/2003	3.95	0.508	3.13	21.50
	6/7/2003	5.72	0.428	0.12	25.90
	9/2/2003	5.57	0.929	0.72	28.75
	12/12/2003	5.63	0.626	4.24	24.35
	3/17/2004	5.71	0.480	NM	23.01
	6/9/2004	4.96	0.172	0.9	25.32
VEW-1	1/25/2000	5.33	0.057	NM	23.0
	3/11/2003	NM	NM	NM	NM
	6/7/2003	NM	NM	NM	NM
VEW-2	1/25/2000	5.63	0.085	NM	22.70
	3/11/2003	5.90	0.110	2.51	21.10
	6/7/2003	6.09	0.132	0.00	22.90
	9/4/2003	5.60	0.342	1.34	26.85
	12/12/2003	5.82	0.563	4.01	22.78
	3/17/2004	5.48	0.172	0.80	21.30
	6/9/2004	5.57	0.172	0.16	23.45
VEW-3	1/25/2000	5.90	0.070	NM	22.10
	3/11/2003	4.84	0.166	6.06	21.30
	6/7/2003	5.61	0.159	0.34	25.10
	9/2/2003	5.06	0.306	0.51	27.40
	12/12/2003	5.10	0.354	0.66	24.60
	3/17/2004	5.40	0.398	NM	21.80
	6/9/2004	4.7	0.145	0.42	25.63
VEW-4	1/25/2000	5.59	0.078	NM	23.00
	3/11/2003	4.35	0.126	5.85	22.40
	6/7/2003	5.60	0.109	0.00	25.10
	9/2/2003	5.35	0.277	0.00	27.53
	12/12/2003	5.37	0.358	0.28	24.34
	3/17/2004	5.17	0.316	NM	22.73
	6/9/2004	4.63	0.128	0.57	25.43
VEW-5	1/25/2000	6.28	0.113	NM	21.50
	3/11/2003	4.35	0.104	5.25	20.70
	6/6/2003	5.10	0.122	0.02	24.70
	9/2/2003	4.84	0.319	0.08	27.69
	12/12/2003	4.68	0.278	0.36	23.62
	3/17/2004	5.00	0.245	NM	21.51
	6/9/2004	4.47	0.106	0.11	25.83
VEW-7	1/25/2000	5.63	0.074	NM	21.80
	3/11/2003	4.98	0.111	2.69	18.50
	6/7/2003	5.70	0.134	0.00	22.00
	9/4/2003	5.01	0.318	2.26	25.31
	12/12/2003	5.07	0.469	0.17	23.18
	3/17/2004	5.44	0.186	1.20	21.40
	6/9/2004	5.36	0.214	0.18	24.23

s. u. = standard units  
mS/cm = milli siemens per centimeter  
mg/L = Milligrams per liter  
°C = degrees Centigrade  
NM = not measured

## APPENDIX C

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*Groundwater Sampling Logs*

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# GROUNDWATER SAMPLING LOG



## Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1:	Technician 2: Larry Wolski	Weather: "Cloudy, Humid, Sunny"
Sampling ID: 04-41001/5:CEF-293-09:6/9/04		

Notes:

## Well Information

Well ID: <b>CEF-293-09</b>	Sampling Date: <b>6/9/2004</b>	
Well Diam (in): 2.0	Total Well Depth (ft): 14.00	Well Screen Interval (ft):
TOC Elevation (ft msl): 77.36	Northing: 0	Easting: 0
Static Depth to Water (ft): 9.83	Well Capacity (gal): 0.00	

## Purge Setup

Purge Method: Nomad Submersible	Tubing Material: PPE	Pump Set at (ft): 12.00	
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS	Turb. Meter: Hach 2100P
Purge Start: 11:57	Purge End: 12:06	Total Volume Purged (gal): 1.40	

## Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Color	Odor
12:02	10.07	0.70	-0.02	0.95	24.39	0.2	5.76	-87.1	38.30	clear	none
12:04	10.08	0.90	-0.00	0.36	24.19	0.2	5.69	-98.7	22.60		
12:06	10.09	1.40	0.00	0.30	24.03	0.2	5.62	-106.8	15.20		

## Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Field Test Kit Readings (mg/L)</u>			
Sample Date:	6/9/2004	DO (mg/L):	0.26	DO:	0.00	Sulfate:	0.00
Sample Start Time:	12:16	Temp (°C):	24.03	CO2:	0.00	Sulfide:	0.00
Sample End Time:	12:20	SEC (µS/cm):	280.00	Alkalinity:	0.00		
Field Filtered:	<input type="checkbox"/>	pH:	5.61	Ferrous Iron:	0.00		
Duplicate:	<input type="checkbox"/>	ORP (mV):	-109.60	H2S:	0.00		
		Turb (NTU):	14.80	Manganese:	0.00		

"VOCs, PAHs"	<u>Lab Analyses/Methods:</u>	<u>Technician Initials</u>
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# GROUNDWATER SAMPLING LOG



## Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: "Cloudy, Humid, Sunny"
Sampling ID: 04-41001/5:CEF-293-22:6/9/04		

Notes:

## Well Information

Well ID: <b>CEF-293-22</b>	Sampling Date: <b>6/9/2004</b>	
Well Diam (in): 2.0	Total Well Depth (ft): 14.70	Well Screen Interval (ft):
TOC Elevation (ft msl): 75.95	Northing: 0	Easting: 0
Static Depth to Water (ft): 8.56	Well Capacity (gal): 0.00	

## Purge Setup

Purge Method: Peristaltic	Tubing Material:	Pump Set at (ft): 0.00	
pH Meter:	Cond. Meter:	DO Meter:	Turb. Meter:
Purge Start: 13:11	Purge End: 13:51	Total Volume Purged (gal):	1.80

## Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Color	Odor
13:30	10.30	1.00	-0.00	0.69	25.63	156.0	4.95	63.0	297.00	milky	none
13:32	9.90	1.20	0.00	0.71	25.75	154.0	4.96	62.0	359.00		
13:35	9.60	1.30	0.00	0.66	25.84	151.0	4.97	59.0	458.00		
13:36	9.50	1.40	-0.87	0.87	25.89	151.0	4.98	54.0	570.00		
13:42	9.40	1.60	0.02	0.81	26.00	231.0	5.00	41.0	775.00		
13:49	10.00	1.70	0.10	1.22	25.23	166.0	4.97	12.0	689.00		
13:51	9.70	1.80	0.00	0.95	25.29	172.0	4.96	14.0	670.00		

## Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Field Test Kit Readings (mg/L)</u>			
Sample Date:	6/9/2004	DO (mg/L):	0.90	DO:	0.00	Sulfate:	0.00
Sample Start Time:	13:54	Temp (°C):	25.32	CO2:	0.00	Sulfide:	0.00
Sample End Time:	14:10	SEC (uS/cm):	172.00	Alkalinity:	0.00		
Field Filtered:	<input type="checkbox"/>	pH:	4.96	Ferrous Iron:	0.00		
Duplicate:	<input type="checkbox"/>	ORP (mV):	15.00	H2S:	0.00		
		Turb (NTU):	643.00	Manganese:	0.00		

<u>Lab Analyses/Methods:</u>	<u>Technician Initials</u>
"VOCs, PAHs"	

# GROUNDWATER SAMPLING LOG



## Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1:	Technician 2: Larry Wolski	Weather: "Cloudy, Humid, Sunny"
Sampling ID: 04-41001/5:VEW-02:6/9/04		

Notes:

## Well Information

Well ID: <b>VEW-02</b>	Sampling Date: <b>6/9/2004</b>	
Well Diam (in): 2.0	Total Well Depth (ft): 16.00	Well Screen Interval (ft):
TOC Elevation (ft msl): 75.86	Northing: 0	Easting: 0
Static Depth to Water (ft): 8.54	Well Capacity (gal): 0.00	

## Purge Setup

Purge Method: Peristaltic	Tubing Material: PPE	Pump Set at (ft): 10.50
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS
Turb. Meter: Hach 2100P	Total Volume Purged (gal): 2.50	
Purge Start: 13:13	Purge End: 13:35	

## Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Color	Odor
13:30	8.69	1.50	-0.01	0.31	24.02	0.1	5.63	-50.6	1,000.00	brown	none
13:33	8.71	2.00	0.00	0.27	23.83	0.1	5.57	-64.7	1,000.00		
13:35	8.74	2.50	0.08	0.16	23.63	0.1	5.56	-72.4	1,000.00		

## Sampling Data

Sample Information		Final Purge Readings		Field Test Kit Readings (mg/L)	
Sample Date:	6/9/2004	DO (mg/L):	0.16	DO:	0.00
Sample Start Time:	13:40	Temp (°C):	23.45	CO2:	0.00
Sample End Time:	13:53	SEC (µS/cm):	172.00	Alkalinity:	0.00
Field Filtered:	<input type="checkbox"/>	pH:	5.57	Ferrous Iron:	0.00
Duplicate:	<input type="checkbox"/>	ORP (mV):	-75.90	H2S:	0.00
		Turb (NTU):	1,000.00	Manganese:	0.00
		Sulfate:	0.00	Sulfide:	0.00

"VOCs, PAHs"	<u>Lab Analyses/Methods:</u>	<u>Technician Initials</u>
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# GROUNDWATER SAMPLING LOG



## Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: Sunny
Sampling ID: 04-41001/5:VEW-03:6/9/04		

Notes:

## Well Information

Well ID: <b>VEW-03</b>	Sampling Date: <b>6/9/2004</b>	
Well Diam (in): 2.0	Total Well Depth (ft): 0.00	Well Screen Interval (ft):
TOC Elevation (ft msl): 75.28	Northing: 0	Easting: 0
Static Depth to Water (ft): 8.01	Well Capacity (gal): 0.00	

## Purge Setup

Purge Method: Peristaltic	Tubing Material: PPE	Pump Set at (ft): 10.00
pH Meter: Horiba U-22	Cond. Meter: Horiba U-22	DO Meter: Horiba U-22
Turb. Meter: Hach 2100P	Total Volume Purged (gal): 1.30	
Purge Start: 11:56	Purge End: 12:11	

## Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Color	Odor
12:06	8.05	1.00	-0.00	0.43	25.07	144.0	4.74	84.0	2.85	clear	none
12:08	8.05	1.20	-0.01	0.45	25.37	144.0	4.71	75.0	1.94		
12:10	8.05	1.30	-0.00	0.41	25.57	145.0	4.70	70.0	1.27		

## Sampling Data

Sample Information		Final Purge Readings		Field Test Kit Readings (mg/L)			
Sample Date:	6/9/2004	DO (mg/L):	0.42	DO:	0.00	Sulfate:	0.00
Sample Start Time:	12:13	Temp (°C):	25.63	CO2:	0.00	Sulfide:	0.00
Sample End Time:	12:30	SEC (µS/cm):	145.00	Alkalinity:	0.00		
Field Filtered:	<input type="checkbox"/>	pH:	4.70	Ferrous Iron:	0.00		
Duplicate:	<input type="checkbox"/>	ORP (mV):	70.00	H2S:	0.00		
		Turb (NTU):	1.59	Manganese:	0.00		

"VOCs, PAHs"	<u>Lab Analyses/Methods:</u>	<u>Technician Initials</u>
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# GROUNDWATER SAMPLING LOG



## Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: "Cloudy, Light rain"
Sampling ID: 04-41001/5:VEW-04:6/9/04		

Notes:

## Well Information

Well ID: <b>VEW-04</b>	Sampling Date: <b>6/9/2004</b>	
Well Diam (in): 2.0	Total Well Depth (ft): 15.10	Well Screen Interval (ft):
TOC Elevation (ft msl): 75.54	Northing: 0	Easting: 0
Static Depth to Water (ft): 8.37	Well Capacity (gal): 0.00	

## Purge Setup

Purge Method: Peristaltic	Tubing Material: PPE	Pump Set at (ft): 10.50
pH Meter: Horiba U-22	Cond. Meter: Horiba U-22	DO Meter: Horiba U-22
Turb. Meter: Hach 2100P	Total Volume Purged (gal): 1.50	
Purge Start: 15:10	Purge End: 15:30	

## Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Color	Odor
15:24	8.45	1.20	-0.06	1.05	25.30	127.0	4.76	196.0	30.70	clear	none
15:26	8.45	1.40	-0.02	0.54	25.39	128.0	4.69	202.0	14.20		
15:28	8.45	1.50	-0.01	0.52	25.42	128.0	4.65	208.0	13.40		

## Sampling Data

Sample Information		Final Purge Readings		Field Test Kit Readings (mg/L)	
Sample Date:	6/9/2004	DO (mg/L):	0.57	DO:	0.00
Sample Start Time:	15:30	Temp (°C):	25.43	CO2:	0.00
Sample End Time:	15:42	SEC (µS/cm):	128.00	Alkalinity:	0.00
Field Filtered:	<input type="checkbox"/>	pH:	4.63	Ferrous Iron:	0.00
Duplicate:	<input type="checkbox"/>	ORP (mV):	210.00	H2S:	0.00
		Turb (NTU):	14.70	Manganese:	0.00
				Sulfate:	0.00
				Sulfide:	0.00

"VOCs, PAHs"	<u>Lab Analyses/Methods:</u>	<u>Technician Initials</u>
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# GROUNDWATER SAMPLING LOG



## Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1: Karen Baer	Technician 2:	Weather: "Humid, Sunny"
Sampling ID: 04-41001/5:VEW-05:6/9/04		

Notes:

## Well Information

Well ID: <b>VEW-05</b>	Sampling Date: <b>6/9/2004</b>	
Well Diam (in): 2.0	Total Well Depth (ft): 16.85	Well Screen Interval (ft):
TOC Elevation (ft msl): 74.63	Northing: 0	Easting: 0
Static Depth to Water (ft): 7.55	Well Capacity (gal): 0.00	

## Purge Setup

Purge Method: Peristaltic	Tubing Material: PPE	Pump Set at (ft): 10.00
pH Meter: Horiba U-22	Cond. Meter: Horiba U-22	DO Meter: Horiba U-22
Turb. Meter: Hach 2100P	Total Volume Purged (gal): 1.80	
Purge Start: 12:35	Purge End: 12:48	

## Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Color	Odor
12:44	7.60	1.50	0.03	0.04	25.15	105.0	4.51	235.0	8.20	clear	none
12:46	7.60	1.70	0.00	0.06	25.42	105.0	4.50	236.0	5.90		
12:48	7.60	1.80	-0.00	0.09	25.76	108.0	4.47	238.0	6.34		

## Sampling Data

Sample Information		Final Purge Readings		Field Test Kit Readings (mg/L)	
Sample Date:	6/9/2004	DO (mg/L):	0.11	DO:	0.00
Sample Start Time:	12:50	Temp (°C):	25.83	CO2:	0.00
Sample End Time:	13:04	SEC (µS/cm):	106.00	Alkalinity:	0.00
Field Filtered:	<input type="checkbox"/>	pH:	4.47	Ferrous Iron:	0.00
Duplicate:	<input type="checkbox"/>	ORP (mV):	238.00	H2S:	0.00
		Turb (NTU):	7.17	Manganese:	0.00
				Sulfate:	0.00
				Sulfide:	0.00

"VOCs, PAHs"	<u>Lab Analyses/Methods:</u>	<u>Technician Initials</u>

# GROUNDWATER SAMPLING LOG



## Project Information

Project No: 04-41001/5	Project Name: Day Tank 1 - Cecil Field LTM/RAO	
Technician 1:	Technician 2: Larry Wolski	Weather: "Cloudy, Humid"
Sampling ID: 04-41001/5:VEW-07:6/9/04		
Notes:		

## Well Information

Well ID: <b>VEW-07</b>	Sampling Date: <b>6/9/2004</b>	
Well Diam (in): 2.0	Total Well Depth (ft): 16.40	Well Screen Interval (ft):
TOC Elevation (ft msl): 76.44	Northing: 0	Easting: 0
Static Depth to Water (ft): 8.99	Well Capacity (gal): 0.00	

## Purge Setup

Purge Method: Peristaltic	Tubing Material: PPE	Pump Set at (ft): 10.50
pH Meter: YSI 556 MPS	Cond. Meter: YSI 556MPS	DO Meter: YSI 556 MPS
Turb. Meter: Hach 2100P	Total Volume Purged (gal): 3.50	
Purge Start: 12:25	Purge End: 12:56	

## Purging Data

Time	Water Level (ft)	Vol Purged (gal)	Pump Rate (gal/min)	DO (mg/L)	Temp (°C)	SEC (µS/cm)	pH	ORP (mV)	Turbidity (NTU)	Color	Odor
12:40	9.11	1.50	0.00	0.45	24.00	0.2	5.34	-47.8	150.00	brown	none
12:42	9.07	1.75	-0.00	0.29	24.16	0.2	5.35	-51.8	107.00		
12:44	9.08	2.00	0.03	0.30	24.33	0.2	5.37	-52.9	74.50		
12:47	9.11	2.25	0.00	0.25	24.43	0.2	5.36	-59.1	53.50		
12:50	9.11	2.60	0.01	0.28	24.25	0.2	5.36	-61.9	38.00		
12:52	9.10	3.10	-0.03	0.25	24.16	0.2	5.35	-62.5	28.20		
12:55	9.10	3.50	0.01	0.18	24.23	0.2	5.36	-65.2	19.80		

## Sampling Data

<u>Sample Information</u>		<u>Final Purge Readings</u>		<u>Field Test Kit Readings (mg/L)</u>	
Sample Date:	6/9/2004	DO (mg/L):	0.18	DO:	0.00
Sample Start Time:	13:00	Temp (°C):	24.23	CO2:	0.00
Sample End Time:	13:07	SEC (uS/cm):	214.00	Alkalinity:	0.00
Field Filtered:	<input type="checkbox"/>	pH:	5.36	Ferrous Iron:	0.00
Duplicate:	<input type="checkbox"/>	ORP (mV):	-65.60	H2S:	0.00
		Turb (NTU):	20.40	Manganese:	0.00
<u>Lab Analyses/Methods:</u>				<u>Technician Initials</u>	
"VOCs, PAHs"					