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NAS CECIL FIELD, FL  
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ANNUAL GROUNDWATER MONITORING LETTER REPORT YEAR 4 FOR BUILDING 199  
TANK 199 NAS CECIL FIELD FL  
4/15/2003  
TETRA TECH NUS INC



**TETRA TECH NUS, INC.**

661 Andersen Drive ■ Pittsburgh, Pennsylvania 15220-2745  
(412) 921-7090 ■ FAX (412) 921-4040 ■ www.tetrattech.com

PITT-04-3-037

April 15, 2003

Project Number 0394

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

Reference: CLEAN Contract No. N62467-94-D0888  
Contract Task Order No. 0108

Subject: Annual Groundwater Monitoring Report, Year 4 (February 2003)  
Building 199, Tank 199  
Naval Air Station Cecil Field  
Jacksonville, Florida

Dear Mr. Hansel:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this third annual Groundwater Monitoring Letter Report for the referenced Contract Task Order (CTO) for the Tank 199 site. This groundwater monitoring report was prepared for the U.S. Navy Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62467-94-D-0888. The objective of this task is to perform annual monitoring of the groundwater associated with Tank 199 (Figure 1) at the former Naval Air Station Cecil Field (NASCF), Jacksonville, Florida.

This work was initiated to comply with the issuance of the Monitoring Only Plan (MOP) Approval Order (Attachment A) by the Florida Department of Environmental Protection (FDEP). The FDEP directed that SOUTHNAVFACENGCOM complete the monitoring program pursuant to Chapter 62-770.690(7), Florida Administrative Code (FAC). Following a review of groundwater monitoring data for April 2000, the FDEP issued a modification to the MOP (Attachment B) to change the monitoring frequency from semi-annual to annual.

Field activities and groundwater analytical results for the year 2003 are summarized in this report. The work was performed in general accordance with the Base-wide Generic Work Plan Volumes I and II (TtNUS, 1998).

**FIELD OPERATIONS**

Depth-to-water measurements were obtained at nine site-monitoring wells on February 18, 2003. For brevity, these wells will be referred in an abbreviated form. For example, MW-1S will be used in this

report instead of the unabbreviated CEF-199-1S. Water level depths in the wells ranged from 1.69 (MW-6S) to 3.17 (MW-10S) feet below top of casing (btoc). Groundwater elevation data is provided in Table 1.

A groundwater elevation contour map generated from the data, shown as Figure 2, indicates that the water table in the area of concern is higher at the former source area (MW-1S) than in all four compass directions surrounding it, which infers a radial flow outward from the source. The steepest hydraulic gradient is to the east-southeast and south-southeast, which are generally the same flow directions inferred from previous site investigations.

On February 18, 2003, TtNUS collected groundwater samples from the three monitoring wells listed in the MOP (MW-1S, -4S, and -7S). A duplicate sample was collected from well MW-1S. Building 199 was demolished during the week of February 3, 2003, which delayed sampling until February 18, 2003. Following collection, the groundwater samples were shipped to Accutest Laboratories in Orlando, Florida for analysis of volatile organic compounds (VOCs) by U. S. Environmental Protection Agency (EPA) Method SW846 8021B, for polynuclear aromatic hydrocarbons (PAHs) by EPA Method SW846 8310, and for total recoverable petroleum hydrocarbons (TRPH) using the Florida-Petroleum Range Organics (FL-PRO) analytical method. The analytical results for this event are summarized in Table 2. A copy of the laboratory report is provided as Attachment C.

## **RESULTS**

No VOCs or PAHs were detected in groundwater samples from the three wells. The TRPH concentration in MW-1S was 3.19 milligram per liter (mg/L) (1.34 mg/L in the duplicate); no TRPH was detected in groundwater samples from the other wells.

In the previous sampling event (January 8, 2002), benzene was reported at a concentration of 1.9 micrograms per liter (ug/L) (1.8 ug/L in the duplicate) in MW-1S. No other contaminant concentrations exceeded groundwater cleanup target levels (GCTLs) in that event.

A historical summary of groundwater analytical data for the sampling events conducted between 1996 and 2003 is provided in Table 3. Figure 3 illustrates the TRPH and benzene data for the last four sampling events.

## **CONCLUSIONS and RECOMMENDATIONS**

TtNUS concludes that annual monitoring at Tank 199 should be continued for the following reason:

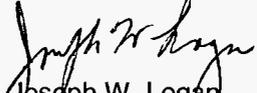
- This sampling event is the first event where the contaminant concentrations were less than GCTLs, and two consecutive events with concentrations less than GCTLs are required for no further action, in accordance with Chapter 62-770.690(7)(b), FAC.

There are no recommendations for changes to the monitoring program so a full set of analytical results from the source well and downgradient wells will be available from the next sampling event for comparison with the previous sampling results. The next event is scheduled for January 2004.

Mr. Wayne Hansel  
SOUTHNAVFACENGCOM  
April 15, 2003 – Page 3

If you have any questions with regard to this submittal, please contact me at (412) 921-7231.

Very truly yours,

  
Joseph W. Logan  
Task Order Manager

  
Debbie Wroblewski  
Program Manager

JL/jwl

Attachments (9)

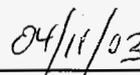
cc: D. Vaughn-Wright, USEPA  
D. Grabka, FDEP (2 copies)  
D. Wroblewski, TtNUS (w/o attachments)  
M. Speranza, TtNUS  
M. Perry, TtNUS (CTO 0108 File Copy)

## PROFESSIONAL REVIEW CERTIFICATION

The Annual Groundwater Monitoring Report, Year 4 (February 2003) for Building 199, Tank 199 was prepared using sound hydrogeologic principles and judgment. This report is based on the groundwater monitoring activities and associated information detailed in the text and appended to this report. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the monitoring activities described in this report. This report was developed for Building 199, Tank 199 at the former NAS Cecil Field, Jacksonville, Florida, and should not be construed to apply to any other site.



Mervin W. Dale  
Florida Professional Geologist  
License No. PG-0001917



Date

## TABLES

**TABLE 1**  
**GROUNDWATER ELEVATION DATA**  
**TANK 199**  
**NAVAL AIR STATION CECIL FIELD**  
**JACKSONVILLE, FLORIDA**  
**PAGE 1 OF 1**

Monitoring Well Identification	Well Depth (feet, BTOC)	Top-of-Casing Elevation (feet, msl)	January 5, 2001		Top of Casing Elevation (feet, msl) Resurveyed 6/14/01	January 8, 2002		February 18, 2003	
			Depth to Water (feet, BTOC)	Water-Level Elevation (feet, msl)		Depth to Water (feet, BTOC)	Water-Level Elevation (feet, msl)	Depth to Water (feet, BTOC)	Water-Level Elevation (feet, msl)
CEF-199-1S	11.36	77.93	4.85	73.08 <sup>D</sup>	76.78	4.58	72.20	1.85	74.93
CEF-199-3S	NA	75.98	3.74	72.24	74.64	3.59	71.05	2.70	71.94
CEF-199-4S	11.52	77.16	4.23	72.93 <sup>D</sup>	75.83	4.09	71.74	2.64	73.19
CEF-199-5S	NA	76.05	3.75	72.30	74.71	3.70	71.01	2.81	71.90
CEF-199-6S	NA	75.48	2.93	72.55	74.14	3.57	70.57	1.69	72.45
CEF-199-7S	13.24	77.14	4.11	73.03 <sup>D</sup>	75.80	3.69	72.11	2.08	73.72
CEF-199-8S	NA	77.42	4.90	72.52 <sup>D</sup>	76.08	4.62	71.46	2.78	73.30
CEF-199-9S	NA	77.07	4.58	72.49	75.73	4.30	71.43	2.43	73.30
CEF-199-10S	NA	77.66	4.96	72.70	76.32	4.69	71.63	3.17	73.15

Notes:

msl = mean sea level  
BTOC = below top of casing  
D = data not used in figure  
NA = not available

**TABLE 2**  
**SUMMARY OF DETECTIONS - FEBRUARY 2003**  
**TANK 199**  
**NAVAL AIR STATION CECIL FIELD**  
**JACKSONVILLE, FLORIDA**

Analyte	Contaminated Well		Perimeter Monitoring Wells		MOP Approval Order Action Levels for Contaminated Well/Perimeter Wells	Milestone Objectives for CEF-199-1S at the end of the 4th Year	NADSC <sup>2</sup> /GCTL <sup>1</sup>
	CEF-199-1S	CEF-199-1S Duplicate	CEF-199-4S	CEF-199-7S			
Date Sample Collected	2/18/2003	2/18/2003	2/18/2003	2/18/2003			
<b><u>Volatiles Organic Compounds (EPA Method 8021B) (µg/L)</u></b>							
Benzene	< 1.0	< 1.0	< 1.0	< 1.0	100/1	3	100/1
Toluene	< 1.0	< 1.0	< 1.0	< 1.0	400/40	None	400/40
Ethylbenzene	< 1.0	< 1.0	< 1.0	< 1.0	300/30	None	300/30
1,2-Dichlorobenzene	< 1.0	< 1.0	< 1.0	< 1.0	None	None	6000/600
<b><u>Polynuclear Aromatic Hydrocarbons (EPA Method 8310) (µg/L)</u></b>							
1-Methylnaphthalene	< 2.2	< 2.2	< 2.0	< 2.1	None	None	200/20
2-Methylnaphthalene	< 2.2	< 2.2	< 2.0	< 2.1	None	None	200/20
Naphthalene	< 2.2	< 2.2	< 2.0	< 2.1	200/20	25	200/20
Fluorene	< 2.2	< 2.2	< 2.0	< 2.1	None	None	2800/280
Phenanthrene	< 2.2	< 2.2	< 2.0	< 2.1	None	None	2100/210
<b><u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/L)</u></b>							
TRPH	3.19	1.34	< 0.26	< 0.26	None	6	50/5

Notes:

Values exceeding milestones, NADSC or GCTL, are in bold.

µg/L = micrograms per liter.

mg/L = milligrams per liter.

< = less than.

EPA = U. S. Environmental Protection Agency.

FL-PRO = Florida Petroleum Range Organics.

<sup>1</sup>GCTL=Groundwater Cleanup Target Levels based on Chapter 62-770, Florida Administrative Code.

<sup>2</sup>NADSC=Natural Attenuation Default Source Concentrations as promulgated in Chapter 62-770.690.

TABLE 3

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER  
 TANK 199  
 NAVAL AIR STATION CECIL FIELD  
 JACKSONVILLE, FLORIDA  
 PAGE 1 OF 3

Location Duplicate, as noted Sample Date Well Depth, feet	FDEP GCTL FAC 62-777	CEF-199-1S (Source)								
		12/96	12/98	7/99	2/00	1/01	1/02	Duplicate 1/02	2/03	Duplicate 2/03
<b>Volatile Organic Compounds (µg/L)</b>										
BENZENE	1	<b>8.1</b>	<b>3.1</b>	<b>7.0</b>	<b>1.7</b>	0.53	<b>1.9</b>	<b>1.8</b>	1 U	1 U
ETHYLBENZENE	30	11	5	7	4.7	2.8	1.5	1.4	1 U	1 U
TOLUENE	40	4.5	ND	ND	ND	1 U	0.58J	0.54J	1 U	1 U
XYLENES	20	<b>52</b>	1	ND	ND	3 U	3 U	3 U	3 U	3 U
1,4-DICHLOROBENZENE	75	NA	NA	41	ND	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	NA	NA	7	ND	1 U	2.1	2.0	1 U	1 U
<b>Semivolatile Organic Compounds (µg/L)</b>										
NAPHTHALENE	20	NA	NA	<b>57</b>	<b>33</b>	4.2	10.3	6.4	2.2 U	2.2 U
1-METHYLNAPHTHALENE	20	NA	NA	<b>96</b>	<b>53</b>	4.3	17.8	13.0	2.2 U	2.2 U
2-METHYLNAPHTHALENE	20	NA	NA	<b>83</b>	<b>61</b>	2.5	15.2	10.6	2.2 U	2.2 U
FLUORENE	280	NA	NA	11	0.3	4 U	3.6J	2.7J	2.2 U	2.2 U
ANTHRACENE	2100	NA	NA	2.8	ND	4 U	2 U	2 U	2.2 U	2.2 U
BENZO(A)ANTHRACENE	0.2	NA	NA	<b>3</b>	ND	0.4 U	0.2 U	0.2 U	1.3 U	0.86 U
<b>Total Petroleum Hydrocarbons (mg/L)</b>										
TRPH (C8-C40)	5	NA	NA	<b>5.4</b>	3.7	<b>28.4</b>	1.59	1.58	3.19	1.34

Notes:

- GCTL - Groundwater Cleanup Target Level.
- Bold values are greater than GCTL.
- µg/L - microgram per liter.
- mg/L - milligram per liter.
- NA - Not analyzed.
- ND - Not detected.
- U - Undetected at detection limit shown.
- J - Estimated.

TABLE 3

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER  
 TANK 199  
 NAVAL AIR STATION CECIL FIELD  
 JACKSONVILLE, FLORIDA  
 PAGE 2 OF 3

Location Duplicate, as noted Sample Date Well Depth, feet	FDEP GCTL FAC 62-777	CEF-199-4S (Perimeter)					
		12/98	7/99	2/00	1/01	1/02	2/03
<b>Volatile Organic Compounds (µg/L)</b>							
BENZENE	1	ND	ND	ND	1 U	1 U	1 U
ETHYLBENZENE	30	ND	ND	ND	1 U	1 U	1 U
TOLUENE	40	ND	ND	ND	1 U	1 U	1 U
XYLENES	20	ND	ND	ND	3 U	3 U	3 U
1,4-DICHLOROBENZENE	75	NA	ND	ND	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	NA	ND	ND	1 U	1 U	1 U
<b>Semivolatile Organic Compounds (µg/L)</b>							
NAPHTHALENE	20	NA	ND	ND	2 U	2 U	2 U
1-METHYLNAPHTHALENE	20	NA	ND	ND	2 U	2 U	2 U
2-METHYLNAPHTHALENE	20	NA	ND	ND	2 U	2 U	2 U
FLUORENE	280	NA	ND	ND	2 U	2 U	2 U
ANTHRACENE	2100	NA	ND	ND	2 U	2 U	2 U
BENZO(A)ANTHRACENE	0.2	NA	ND	ND	0.2 U	0.2 U	0.2 U
<b>Total Petroleum Hydrocarbons (mg/L)</b>							
TRPH (C8-C40)	5	NA	ND	ND	0.258	0.25 U	0.26 U

Notes:

- GCTL - Groundwater Cleanup Target Level.
- Bold values are greater than GCTL.
- µg/L - microgram per liter.
- mg/L - milligram per liter.
- NA - Not analyzed.
- ND - Not detected.
- U - Undetected at detection limit shown.
- J - Estimated.

TABLE 3

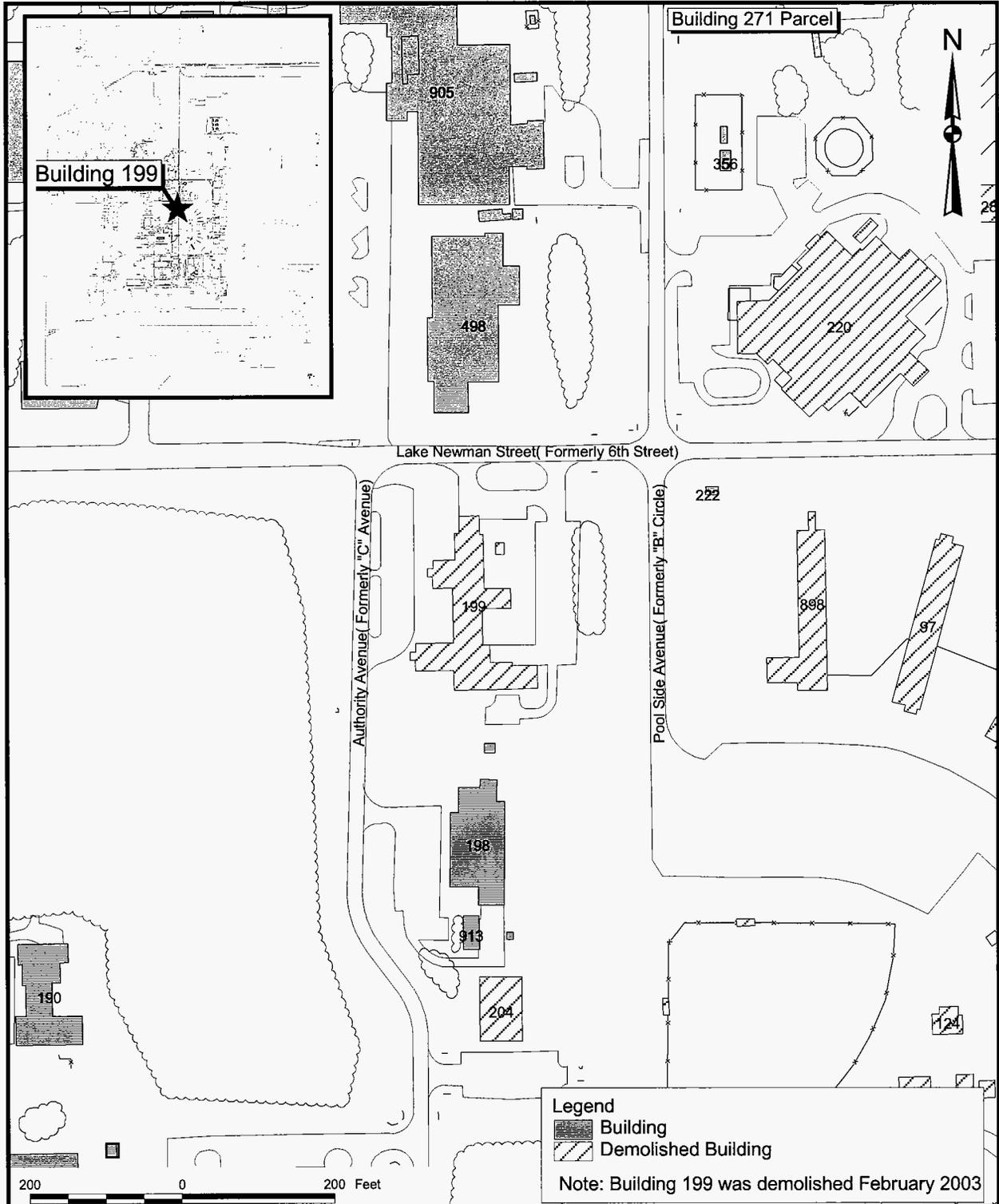
SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER  
 TANK 199  
 NAVAL AIR STATION CECIL FIELD  
 JACKSONVILLE, FLORIDA  
 PAGE 3 OF 3

Location Duplicate, as noted Sample Date Well Depth, feet	FDEP GCTL FAC 62-777	CEF-199-7S (Perimeter)				
		7/99 13.24	2/00 13.24	1/01 13.24	1/02 13.24	2/03 13.24
<b>Volatile Organic Compounds (µg/L)</b>						
BENZENE	1	ND	ND	1 U	1 U	1 U
ETHYLBENZENE	30	ND	ND	1 U	1 U	1 U
TOLUENE	40	ND	ND	1 U	1 U	1 U
XYLENES	20	ND	ND	3 U	3 U	3 U
1,4-DICHLOROBENZENE	75	ND	ND	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	ND	ND	1 U	1 U	1 U
<b>Semivolatile Organic Compounds (µg/L)</b>						
NAPHTHALENE	20	ND	ND	2.2 U	2 U	2.1 U
1-METHYLNAPHTHALENE	20	ND	ND	2.2 U	2 U	2.1 U
2-METHYLNAPHTHALENE	20	ND	ND	2.2 U	2 U	2.1 U
FLUORENE	280	ND	ND	2.2 U	2 U	2.1 U
ANTHRACENE	2100	ND	ND	2.2 U	2 U	2.1 U
BENZO(A)ANTHRACENE	0.2	ND	ND	0.22 U	0.2 U	0.21 U
<b>Total Petroleum Hydrocarbons (mg/L)</b>						
TRPH (C8-C40)	5	ND	ND	0.480	0.28 U	0.26 U

Notes:

- GCTL - Groundwater Cleanup Target Level.
- Bold values are greater than GCTL.
- µg/L - microgram per liter.
- mg/L - milligram per liter.
- NA - Not analyzed.
- ND - Not detected.
- U - Undetected at detection limit shown.
- J - Estimated.

## FIGURES

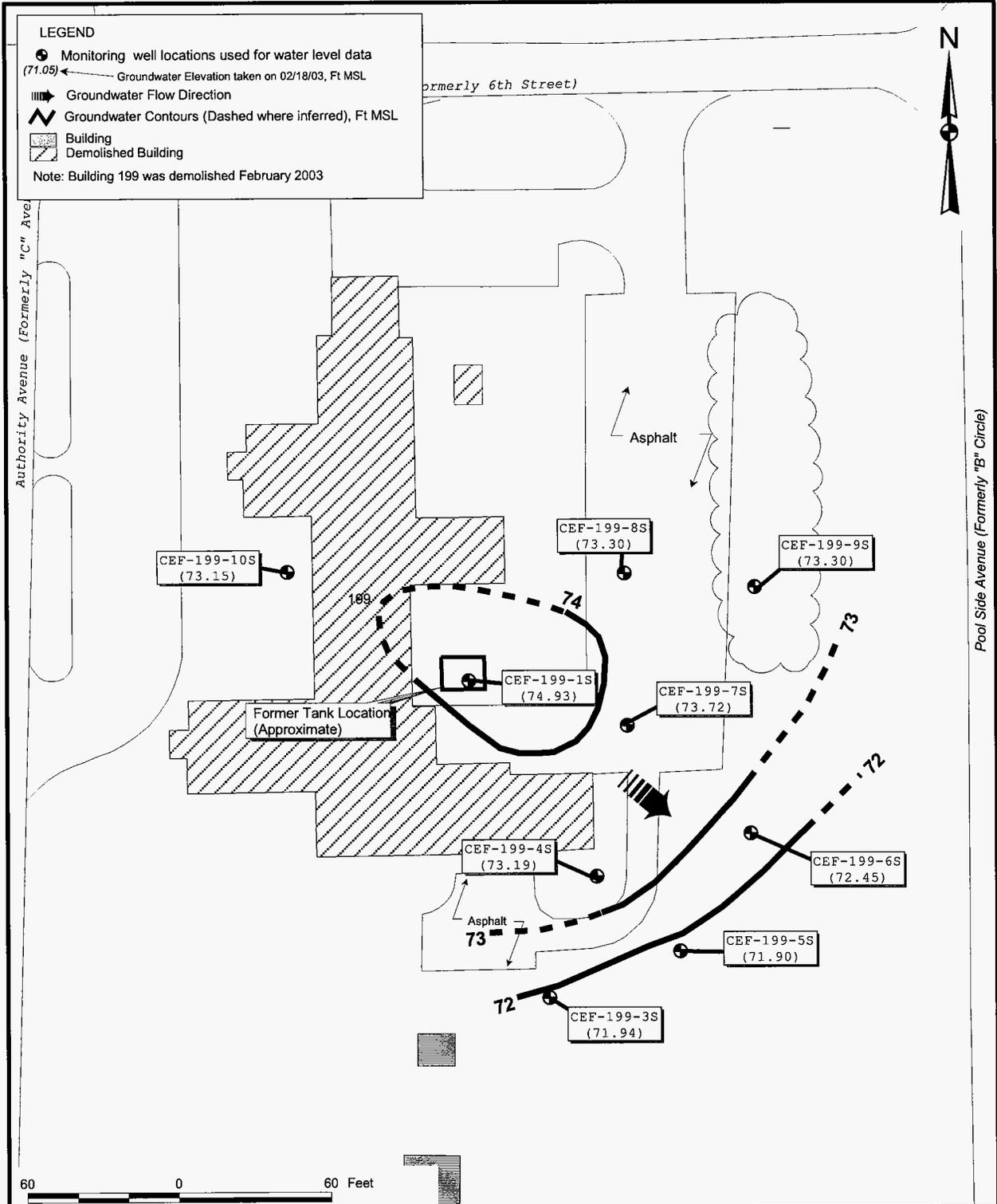


DRAWN BY MJJ	DATE 26Mar03
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SITE LOCATION MAP  
 FEBRUARY 2003  
 YEAR 4 ANNUAL GROUNDWATER MONITORING REPORT  
 BUILDING 199, TANK 199  
 NAVAL AIR STATION CECIL FIELD  
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0394	
APPROVED BY <i>[Signature]</i>	DATE 4/1/03
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV 0

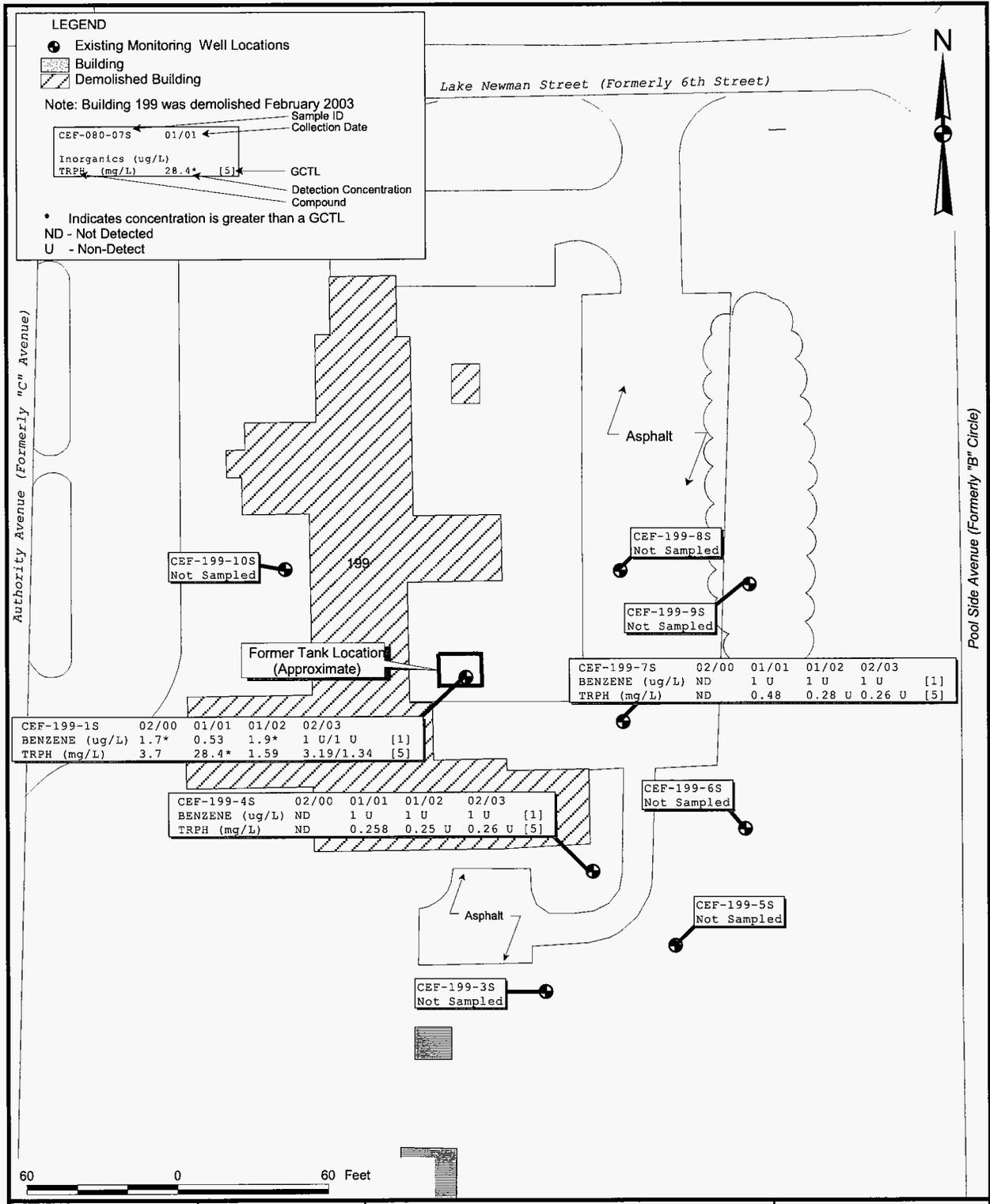


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CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



GROUNDWATER FLOW MAP  
 FEBRUARY 2003  
 YEAR 4 ANNUAL GROUNDWATER MONITORING REPORT  
 BUILDING 199, TANK 199  
 NAVAL AIR STATION CECIL FIELD  
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0394	
APPROVED BY <i>[Signature]</i>	DATE 4/11/03
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV 0



DRAWN BY MJJ	DATE 26Mar03
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



**GROUNDWATER BENZENE AND TRPH CONCENTRATIONS**  
**FEBRUARY 2003**  
**YEAR 4 ANNUAL GROUNDWATER MONITORING REPORT**  
**BUILDING 199, TANK 199**  
**NAVAL AIR STATION CECIL FIELD**  
**JACKSONVILLE, FLORIDA**

CONTRACT NUMBER 0394	
APPROVED BY <i>[Signature]</i>	DATE 4/11/03
APPROVED BY	DATE
DRAWING NO. FIGURE 3	REV 0

**ATTACHMENT A**  
**MONITORING ONLY PLAN APPROVAL ORDER**



# Department of Environmental Protection

Jeb Bush  
Governor

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

David B. Strub  
Secretary

May 10, 1999

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Commanding Officer  
Mr. Bryan Kizer, Code 1842  
SOUTHNAVFACENGCOM  
Post Office Box 190010  
North Charleston, SC 29419-0068

Subject: Monitoring Only Plan  
Approval Order  
Facility 199, Naval Air Station Cecil Field

Dear Mr. Kizer:

The Bureau of Waste Cleanup has completed the review of the Site Assessment Report Addendum and Monitoring Only Proposal for Natural Attenuation dated February 1999 (received February 26, 1999), submitted for this site. Pursuant to Rule 62-770.690, Florida Administrative Code (F.A.C.), the Department approves the monitoring only proposal. Pursuant to Rule 62-770.690(7), F.A.C., you are required to complete the monitoring program outlined below. The first sampling event should be performed within 60 days of receipt of this Monitoring Only Plan Approval Order (Order). Water-level measurements should be made immediately prior to each sampling event. The analytical results (laboratory report), chain of custody, cumulative summary table of the analytical results, site map(s) illustrating the most recent analytical results, and the water-level elevation information (cumulative summary table and most recent flow interpretation map), should be submitted to the Department within 60 days of sample collection.

Monitoring Wells  
CEF-199-1S and  
CEF-199-4S

Parameters  
602, 8310, and  
FL-Pro

Frequency  
Semi-annual

If concentrations of chemicals of concern in any of the designated wells increase above the action levels listed below, the well or wells must be resampled no later than 30 days after the initial positive results are known. If the results of the

*"Protect, Conserve and Manage Florida's Environment and Natural Resources"*

Mr. Bryan Kizer  
Page Two  
May 10, 1999

resampling confirm the initial sampling results, then a proposal must be submitted, as described in Rule 62-770.690(7)(f), F.A.C.

Contaminated well:

MW-CEF-199-1S: 100 µg/l Benzene; 300 µg/l Ethylbenzene;  
400µg/l Toluene; and 200 µg/l Naphthalene.

Perimeter wells:

MW-CEF-199-4S and MW-CEF-199-7S: 1 µg/l Benzene; 30 µg/l  
Ethylbenzene; 40 µg/l Toluene; 20 µg/l Naphthalene.

The approved Remedial Action by Natural Attenuation monitoring period is 5 years. "Milestone" objectives should be established if monitoring is projected to take greater than one year. The following are the "milestone" objectives that will be used for annual evaluation of remediation progress by natural attenuation. An explanation of the progress relative to these milestone objectives, and the need for corrective action (if applicable), should be provided in the annual evaluation:

<u>Benzene</u>	<u>MW-CEF- 199-1S</u>
End of year 1	10
End of year 2	7
End of year 3	5
End of year 4	3
End of year 5	ND

<u>Naphthalene</u>	
End of year 1	50
End of year 2	40
End of year 3	30
End of year 4	25
End of year 5	20

<u>TRPH</u>	
End of year 1	10
End of year 2	8
End of year 3	7
End of year 4	6
End of year 5	4

If the applicable No Further Action criteria in Rule 62-770.680, F.A.C., are achieved at the end of the monitoring period, a Site Rehabilitation Completion Report, summarizing the

**ATTACHMENT B**

**FDEP LETTER APPROVING CHANGE IN SAMPLING FREQUENCY**



# Department of Environmental Protection

Jeb Bush  
Governor

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

David B. Struhs  
Secretary

August 29, 2000

Commanding Officer  
Mr. Nick Ugolini, Code 1843  
SOUTHNAVFACENGCOM  
Post Office Box 190010  
North Charleston, SC 29419-0068

RE: Building 199, Groundwater Sampling Results - Event 2,  
Naval Air Station Cecil Field, Florida.

Dear Mr. Ugolini:

I have completed the technical review of the Groundwater Sampling Results, dated April 2000 (received August 25, 2000) submitted for the above-referenced site. FDEP concurs that sampling frequency can be reduced to annual groundwater monitoring in 2000/2001.

If you have any concerns regarding this letter, please contact me at (850) 921-9991.

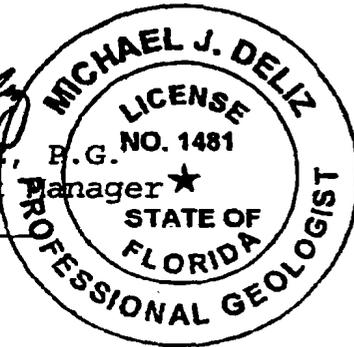
Sincerely,

*Michael J. Deliz*

Michael J. Deliz, P.G. NO. 1481  
Remedial Project Manager ★

29-AUG-00

Date



CC: Debbie Vaughn-Wright, USEPA - Atlanta  
John Flowe, City of Jacksonville  
Scott Glass, SOUTHNAVFACENGCOM  
Mark Speranza, TTUS - Pittsburgh

TJB B JJC JJC ESN ESN

**ATTACHMENT C**  
**GROUNDWATER ANALYTICAL REPORT**  
**FEBRUARY 2003**

## Report of Analysis

<b>Client Sample ID:</b> CEF-199-GW-1S-03 <b>Lab Sample ID:</b> F16658-1 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8021B <b>Project:</b> Cecil Field-Tank 199	<b>Date Sampled:</b> 02/18/03 <b>Date Received:</b> 02/20/03 <b>Percent Solids:</b> n/a
---	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CD035922.D	1	02/21/03	BM	n/a	n/a	GCD1437
Run #2							

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

**Purgeable Aromatics, Full List**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
352-33-0	1-Chloro-4-fluorobenzene	90%		74-127%
98-08-8	aaa-Trifluorotoluene	88%		73-135%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	CEF-199-GW-1S-03	Date Sampled:	02/18/03
Lab Sample ID:	F16658-1	Date Received:	02/20/03
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 8310 SW846 3510C		
Project:	Cecil Field-Tank 199		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE013435.D	1	02/25/03	SM	02/21/03	OP6984	GEE585
Run #2	EE013466.D	2	02/26/03	SM	02/21/03	OP6984	GEE586

Run #	Initial Volume	Final Volume
Run #1	930 ml	1.0 ml
Run #2	930 ml	1.0 ml

## Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.3	1.1	ug/l	
208-96-8	Acenaphthylene	ND	4.3	1.1	ug/l	
120-12-7	Anthracene	ND	2.2	1.1	ug/l	
56-55-3	Benzo(a)anthracene <sup>a</sup>	ND <sup>b</sup>	1.3	1.3	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	0.11	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	0.11	ug/l	
218-01-9	Chrysene	ND	2.2	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	0.11	ug/l	
206-44-0	Fluoranthene	ND	2.2	0.54	ug/l	
86-73-7	Fluorene	ND	2.2	1.1	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	0.11	ug/l	
91-20-3	Naphthalene	ND	2.2	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	0.54	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	0.54	ug/l	
85-01-8	Phenanthrene	ND	2.2	1.1	ug/l	
129-00-0	Pyrene	ND	2.2	0.54	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	63%	61%	32-142%
92-94-4	p-Terphenyl	70%	68%	30-128%

(a) Elevated reporting limits due to matrix interference.

(b) Result is from Run# 2

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> CEF-199-GW-1S-03	<b>Date Sampled:</b> 02/18/03
<b>Lab Sample ID:</b> F16658-1	<b>Date Received:</b> 02/20/03
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> FLORIDA-PRO SW846 3510C	
<b>Project:</b> Cecil Field-Tank 199	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP27352.D	1	02/21/03	SKW	02/21/03	OP6987	GOP936
Run #2							

Run #	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	3.19	0.27	0.19	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	70%		51-125%		

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	CEF-199-GW-7S-03	Date Sampled:	02/18/03
Lab Sample ID:	F16658-2	Date Received:	02/20/03
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8021B		
Project:	Cecil Field-Tank 199		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CD035923.D	1	02/21/03	BM	n/a	n/a	GCD1437
Run #2							

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

## Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
352-33-0	1-Chloro-4-fluorobenzene	74%		74-127%
98-08-8	aaa-Trifluorotoluene	73%		73-135%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	CEF-199-GW-7S-03	Date Sampled:	02/18/03
Lab Sample ID:	F16658-2	Date Received:	02/20/03
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 8310 SW846 3510C		
Project:	Cecil Field-Tank 199		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE013436.D	1	02/25/03	SM	02/21/03	OP6984	GEE585
Run #2							

Run #	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

## Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.2	1.1	ug/l	
208-96-8	Acenaphthylene	ND	4.2	1.1	ug/l	
120-12-7	Anthracene	ND	2.1	1.1	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.21	0.11	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.21	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.21	0.11	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.21	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.21	0.11	ug/l	
218-01-9	Chrysene	ND	2.1	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.21	0.11	ug/l	
206-44-0	Fluoranthene	ND	2.1	0.53	ug/l	
86-73-7	Fluorene	ND	2.1	1.1	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.21	0.11	ug/l	
91-20-3	Naphthalene	ND	2.1	2.1	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.1	0.53	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.1	0.53	ug/l	
85-01-8	Phenanthrene	ND	2.1	1.1	ug/l	
129-00-0	Pyrene	ND	2.1	0.53	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		32-142%
92-94-4	p-Terphenyl	76%		30-128%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> CEF-199-GW-7S-03 <b>Lab Sample ID:</b> F16658-2 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> FLORIDA-PRO SW846 3510C <b>Project:</b> Cecil Field-Tank 199	<b>Date Sampled:</b> 02/18/03 <b>Date Received:</b> 02/20/03 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP27353.D	1	02/21/03	SKW	02/21/03	OP6987	GOP936
Run #2							

Run #	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	ND	0.26	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	94%		51-125%		

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	CEF-199-GW-4S-03	Date Sampled:	02/18/03
Lab Sample ID:	F16658-3	Date Received:	02/20/03
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8021B		
Project:	Cecil Field-Tank 199		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CD035888.D	1	02/20/03	BM	n/a	n/a	GCD1435
Run #2							

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

## Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
352-33-0	1-Chloro-4-fluorobenzene	88%		74-127%
98-08-8	aaa-Trifluorotoluene	86%		73-135%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	CEF-199-GW-4S-03	Date Sampled:	02/18/03
Lab Sample ID:	F16658-3	Date Received:	02/20/03
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 8310 SW846 3510C		
Project:	Cecil Field-Tank 199		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE013437.D	1	02/25/03	SM	02/21/03	OP6984	GEE585
Run #2							

Run #	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

## Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.0	1.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	1.0	ug/l	
120-12-7	Anthracene	ND	2.0	1.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	0.10	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	0.10	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.10	ug/l	
218-01-9	Chrysene	ND	2.0	1.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.10	ug/l	
206-44-0	Fluoranthene	ND	2.0	0.51	ug/l	
86-73-7	Fluorene	ND	2.0	1.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.10	ug/l	
91-20-3	Naphthalene	ND	2.0	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	0.51	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	0.51	ug/l	
85-01-8	Phenanthrene	ND	2.0	1.0	ug/l	
129-00-0	Pyrene	ND	2.0	0.51	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	73%		32-142%
92-94-4	p-Terphenyl	60%		30-128%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> CEF-199-GW-4S-03 <b>Lab Sample ID:</b> F16658-3 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> FLORIDA-PRO SW846 3510C <b>Project:</b> Cecil Field-Tank 199	<b>Date Sampled:</b> 02/18/03 <b>Date Received:</b> 02/20/03 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP27354.D	1	02/21/03	SKW	02/21/03	OP6987	GOP936
Run #2							

Run #	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	ND	0.26	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	91%		51-125%		

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	CEF-199-GW-DUP1-03	Date Sampled:	02/18/03
Lab Sample ID:	F16658-4	Date Received:	02/20/03
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8021B		
Project:	Cecil Field-Tank 199		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CD035924.D	1	02/21/03	BM	n/a	n/a	GCD1437
Run #2							

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

## Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
352-33-0	1-Chloro-4-fluorobenzene	77%		74-127%
98-08-8	aaa-Trifluorotoluene	77%		73-135%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	CEF-199-GW-DUP1-03	Date Sampled:	02/18/03
Lab Sample ID:	F16658-4	Date Received:	02/20/03
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 8310 SW846 3510C		
Project:	Cecil Field-Tank 199		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE013441.D	1	02/25/03	SM	02/21/03	OP6984	GEE585
Run #2	EE013468.D	2	02/26/03	SM	02/21/03	OP6984	GEE586

Run #	Initial Volume	Final Volume
Run #1	930 ml	1.0 ml
Run #2	930 ml	1.0 ml

## Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.3	1.1	ug/l	
208-96-8	Acenaphthylene	ND	4.3	1.1	ug/l	
120-12-7	Anthracene	ND	2.2	1.1	ug/l	
56-55-3	Benzo(a)anthracene <sup>a</sup>	ND <sup>b</sup>	0.86	0.86	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	0.11	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	0.11	ug/l	
218-01-9	Chrysene	ND	2.2	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	0.11	ug/l	
206-44-0	Fluoranthene	ND	2.2	0.54	ug/l	
86-73-7	Fluorene	ND	2.2	1.1	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	0.11	ug/l	
91-20-3	Naphthalene	ND	2.2	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	0.54	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	0.54	ug/l	
85-01-8	Phenanthrene	ND	2.2	1.1	ug/l	
129-00-0	Pyrene	ND	2.2	0.54	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%	73%	32-142%
92-94-4	p-Terphenyl	75%	74%	30-128%

(a) Elevated reporting limits due to matrix interference.

(b) Result is from Run# 2

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> CEF-199-GW-DUP1-03	<b>Date Sampled:</b> 02/18/03
<b>Lab Sample ID:</b> F16658-4	<b>Date Received:</b> 02/20/03
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> FLORIDA-PRO SW846 3510C	
<b>Project:</b> Cecil Field-Tank 199	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP27357.D	1	02/21/03	SKW	02/21/03	OP6987	GOP936
Run #2							

Run #	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	1.34	0.27	0.18	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	86%		51-125%		

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound