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NAS CECIL FIELD, FL
5090.3a

FIRST ANNUAL SECOND YEAR GROUNDWATER MONITORING LETTER REPORT FOR
BUILDING 199 TANK 199 NAS CECIL FIELD FL
3/30/2001
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-03-1-089

Document Tracking No. 01JAX0053

March 30, 2001

Project Number 0394

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Mr. Nick Ugolini (Mail Code 1843)
2155 Eagle Drive
North Charleston, South Carolina 29406

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

Subject: Groundwater Monitoring Report, 1st Annual, 2nd Year (January 2001)
Building 199, Tank 199
Former Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Ugolini:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this 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 monitor annually the groundwater associated with the Tank 199 site (Figure 1) at the former Naval Air Station Cecil Field (NASCF), Jacksonville, Florida. The information in this report was presented and discussed during the February 6, 2001 BCT telephone conference call.

This work was begun 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 Rule 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.

This report summarizes the fieldwork and analytical results for the subject site at the former NASCF for the year 2001. The work was performed in general accord with the Base-wide Generic Work Plan Volumes I and II (TtNUS, 1998).

FIELD OPERATIONS

Groundwater measurements were made on January 5, 2001, at nine monitoring wells on site. The depth to water in the monitoring wells ranged from 2.93 to 4.96 feet below top of casing (btoc). For reasons to be discussed below, the groundwater elevation data from only five

monitoring wells is included in Table 1. Figure 2 indicates that groundwater flow at the Tank 199 site varies from east to south across the site. The last report (HLA, 2000) indicated the groundwater flow direction for the site was to the south-southeast.

Top-of-casing elevation data for four of the nine monitoring wells on site could not be used. Previous reports indicated that monitoring wells CEF-199-1S and CEF-199-4S were replaced during remedial activities. Background data for these two wells does not indicate if the elevation data precedes or post-dates the well replacement. Additionally, the present physical condition of two wells, CEF-199-7S and CEF-199-8S, indicates that the well casings may have been disturbed. TtNUS will determine if repair or re-installation is appropriate. The monitoring wells will be re-surveyed before the next sampling event.

On January 5, 2001, TtNUS collected groundwater samples from the three monitoring wells listed in the MOP. Sampling was conducted in general accordance with the Base-wide Generic Work Plan Volumes I and II (TtNUS, 1998).

Following collection, the groundwater samples were shipped to Accutest Laboratories in Orlando, Florida, for analysis. The samples were analyzed using Environmental Protection Agency (EPA) Method SW846 8021B for volatile organic compounds (VOCs), SW846 8310 for polynuclear aromatic hydrocarbons (PAHs), and Florida – Petroleum Range Organics (FL-PRO) for total recoverable petroleum hydrocarbons (TRPH). The analytical results for this event are summarized in Table 2. A copy of the laboratory report is provided in Attachment C.

RESULTS

The analytical report indicates that no action levels, as defined by the FDEP MOP order, were exceeded in the groundwater samples from monitoring wells CEF-199-1S, CEF-199-4S and CEF-199-7S. The reported concentrations for the contaminants of concern (benzene, toluene, ethylbenzene, or naphthalene) did not exceed the respective Groundwater Cleanup Target Levels (GCTLs) in monitoring well CEF-199-1S, and the laboratory reported no VOCs or PAHs were detected in the groundwater samples from the two perimeter wells.

Though TRPH was not assigned an action level in the MOP order, the 5-milligram per liter (mg/L) GCTL for TRPH was exceeded in monitoring well CEF-199-1S at a concentration of 28.4 mg/L. Also, TRPH was detected in both perimeter wells at concentrations below 1 mg/L. Figure 3 shows the estimated contour of the TRPH plume at the site based on the GCTL.

Attachment D contains a table duplicated from the second groundwater monitoring event (HLA, 2000). That table summarizes the historical analytical data for the site prior to this sampling event.

CONCLUSIONS and RECOMMENDATIONS

The VOC and PAH analytical data for the three monitoring wells indicate the site is ready for a no further action recommendation; however, since the TRPH GCTL is still exceeded at the site and Rule 62-770.680 (d), FAC cannot be met, continued monitoring at the site is required.

Mr. Nick Ugolini
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TtNUS recommends continuing annual monitoring of groundwater in accordance with the FDEP MOP order. The next groundwater-monitoring event is scheduled for January 2002. If you have any questions with regard to this submittal, please contact me at (412) 921-7231.

Respectfully,


Joseph W. Logan
Task Order Manager


Debbie Wroblewski
Program Manager

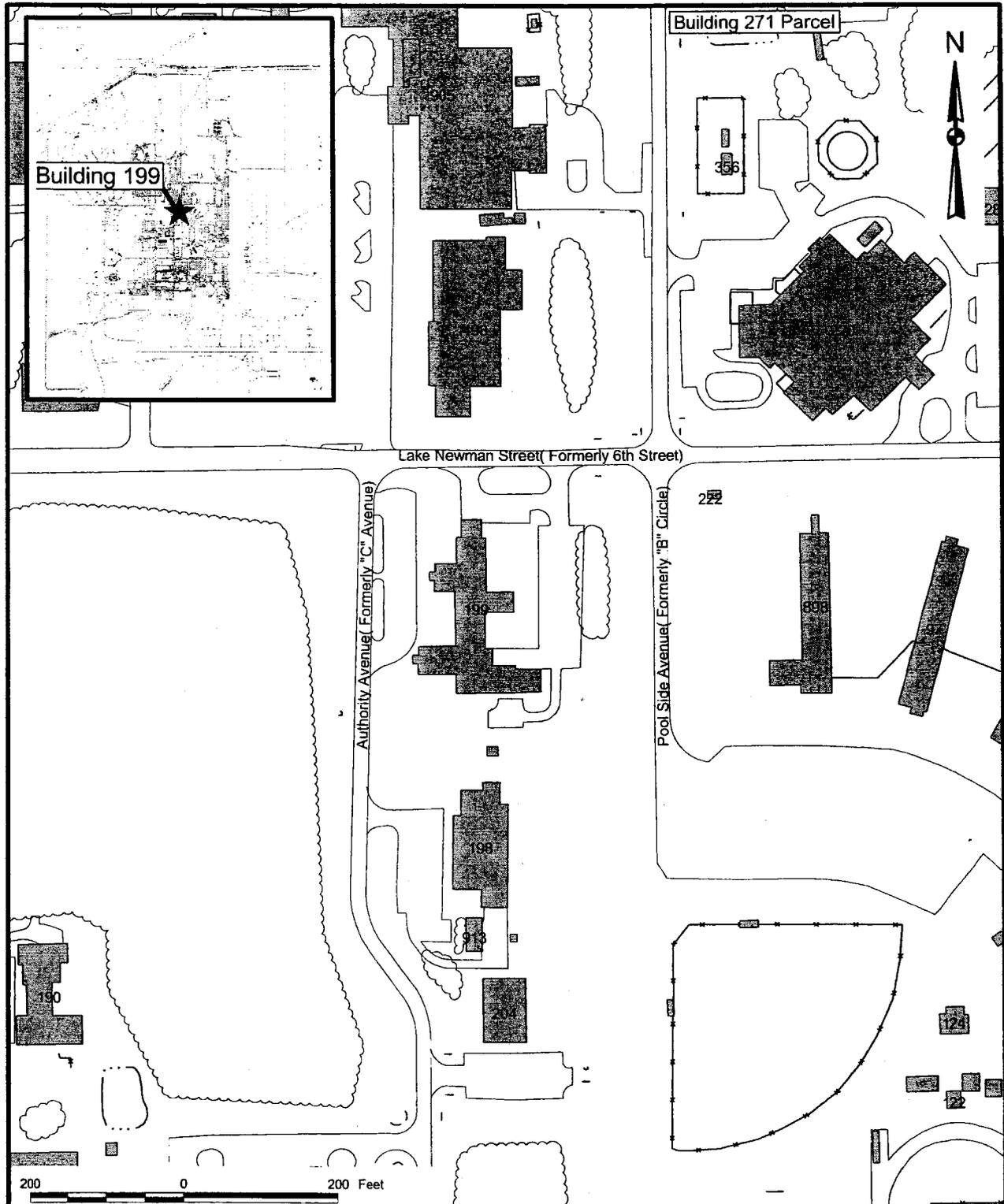
JL/mwd

Attachments (8)

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)

Mr. Nick Ugolini
SOUTHNAVFACENGCOM
March 30, 2001 – Page 4

bcc: M. Dale, TtNUS
R. Simcik, TtNUS (Bookcase File)
J. Johnson, TtNUS (Information Repository)

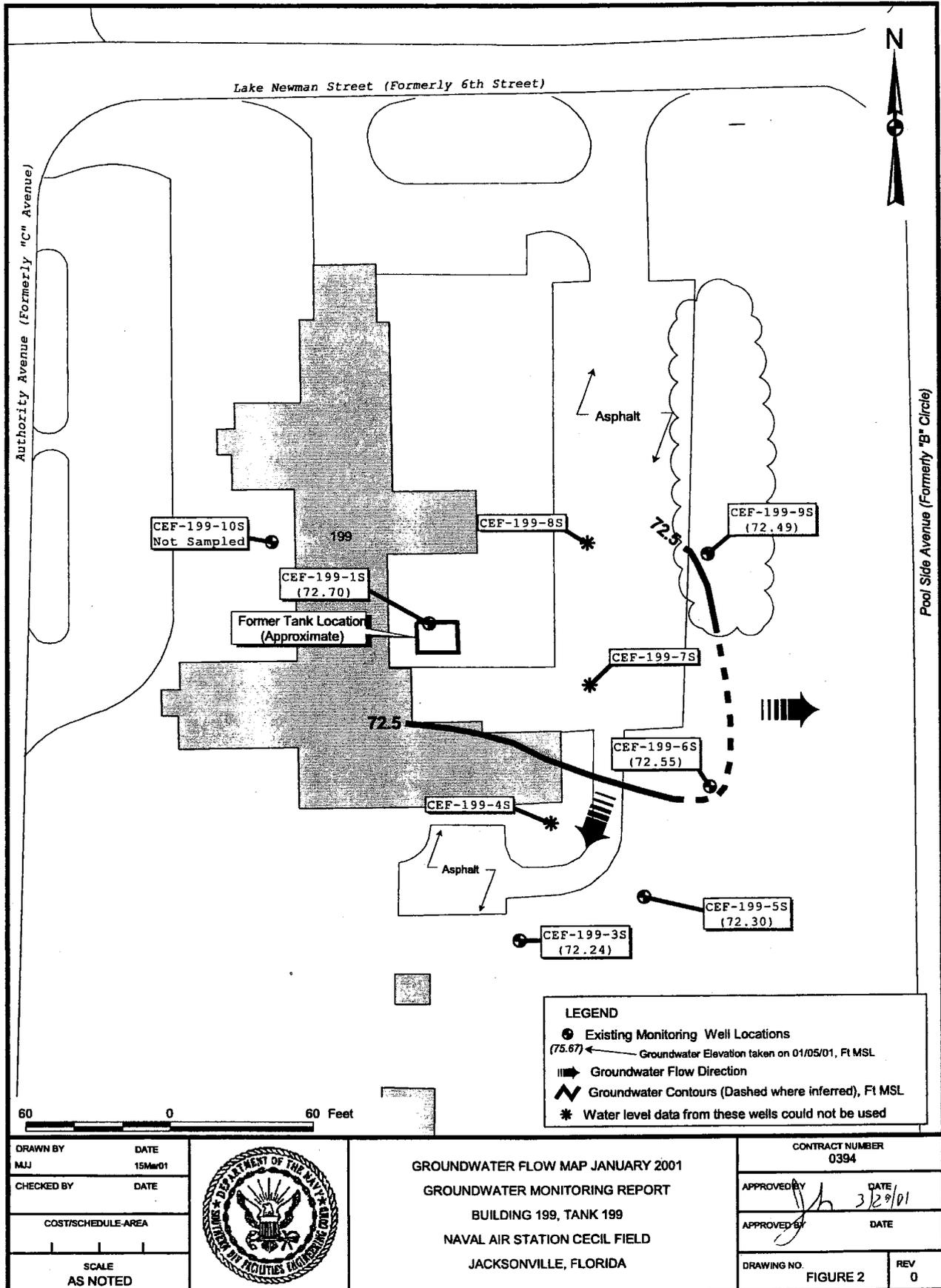


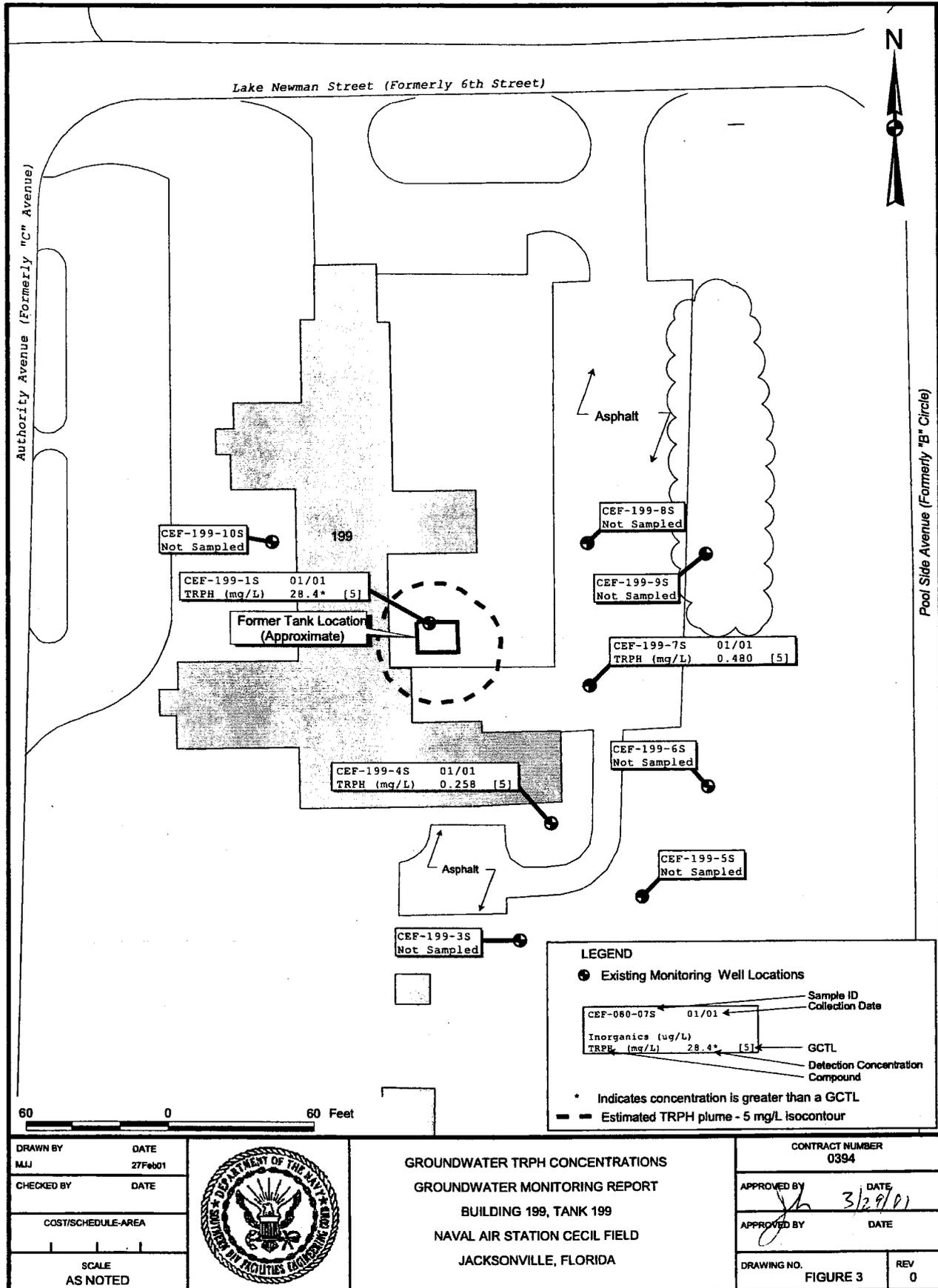
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|--------------------|-----------------|
| DRAWN BY MJJ | DATE 27Feb01 |
| CHECKED BY | DATE |
| COST/SCHEDULE-AREA | |
| SCALE AS NOTED | |



SITE LOCATION MAP
 GROUNDWATER MONITORING REPORT
 BUILDING 199, TANK 199
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

| | |
|-------------------------|-----------------|
| CONTRACT NUMBER 0039 | |
| APPROVED BY | DATE 2/29/01 |
| APPROVED BY | DATE |
| DRAWING NO. FIGURE 1 | REV 0 |





| Table 1 Groundwater Elevation Data Groundwater Monitoring Report, January 2001 Building 199, Tank 199 Naval Air Station Cecil Field Jacksonville, Florida | | | | |
|---|-------------------------|-------------------------------------|-----------------------------|-----------------------------------|
| Monitoring Well Identification | Well Depth (feet, BTOC) | Top-of-Casing Elevation (feet, msl) | January 5, 2001 | |
| | | | Depth to Water (feet, BTOC) | Water-Level Elevation (feet, msl) |
| CEF-199-1S | 11.36 | 77.93 | 4.85 | 73.08 ^D |
| CEF-199-3S | NA | 75.98 | 3.74 | 72.24 |
| CEF-199-4S | 11.52 | 77.16 | 4.23 | 72.93 ^D |
| CEF-199-5S | NA | 76.05 | 3.75 | 72.30 |
| CEF-199-6S | NA | 75.48 | 2.93 | 72.55 |
| CEF-199-7S | 13.24 | 77.14 | 4.11 | 73.03 ^D |
| CEF-199-8S | NA | 77.42 | 4.90 | 72.52 ^D |
| CEF-199-9S | NA | 77.07 | 4.58 | 72.49 |
| CEF-199-10S | NA | 77.66 | 4.96 | 72.70 |

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

| <p align="center">Table 2 Summary of Detections Groundwater Monitoring Report, January 2001 Building 199, Tank 199 Naval Air Station Cecil Field Jacksonville, Florida</p> | | | | | | |
|--|-------------------|----------------------------|------------|--|--|---------------------------------------|
| 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 2nd Year | NADSC ² /GCTL ¹ |
| | CEF-199-1S | CEF-199-4S | CEF-199-7S | | | |
| Date Sample Collected | 1/5/01 | 1/5/01 | 1/5/01 | | | |
| <u>Volatile Organic Compounds (EPA Method 8021B) (µg/L)</u> | | | | | | |
| Benzene | 0.53 | 1.0U | 1.0U | 100/1 | 7 | 100/1 |
| Toluene | 1.0U | 1.0U | 1.0U | 400/40 | None | 400/40 |
| Ethylbenzene | 2.8 | 1.0U | 1.0U | 300/30 | None | 300/30 |
| <u>Polynuclear Aromatic Hydrocarbons (EPA Method 8310) (µg/L)</u> | | | | | | |
| 1-Methylnaphthalene | 4.3 | 2.0U | 2.2U | None | None | 200/20 |
| 2-Methylnaphthalene | 2.5 | 2.0U | 2.2U | None | None | 200/20 |
| Naphthalene | 4.2 | 2.0U | 2.2U | 200/20 | 40 | 200/20 |
| Phenanthrene | 2.7 | 2.0U | 2.2U | None | None | 2100/210 |
| <u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/L)</u> | | | | | | |
| TRPH | 28.4 | 0.258 | 0.480 | None | 8 | 50/5 |
| <p>Notes: Values exceeding milestones, NADSC or GCTL, are in bold. U = not detected and value next to modifier indicates the reporting limit for that compound. µg/L = micrograms per liter. mg/L = milligrams per liter. EPA = Environmental Protection Agency. FL-PRO = Florida Petroleum Range Organics. ¹GCTL=Groundwater Cleanup Target Levels based on Chapter 62-770, Florida Administrative Code. ²NADSC=Natural Attenuation Default Source Concentrations as promulgated in Chapter 62-770.690.</p> | | | | | | |

ATTACHMENT A
MONITORING ONLY PLAN APPROVAL ORDER



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32389-2400

David B. Strube
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.

| <u>Monitoring Wells</u> | <u>Parameters</u> | <u>Frequency</u> |
|------------------------------|--------------------------|------------------|
| CEF-199-1S and CEF-199-4S | 602, 8310, and FL-Pro | 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.

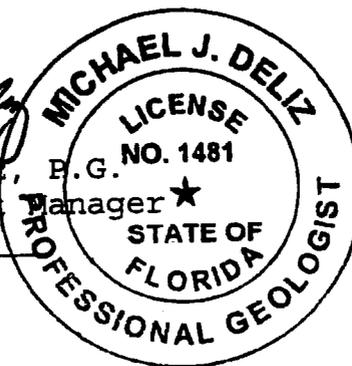
If you have any concerns regarding this letter, please contact me at (850) 921-9991.

Sincerely,

Michael J. Deliz, P.G.
Remedial Project Manager

29-446-00

Date



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

TJB B JJC JJC ESN esn

ATTACHMENT C
GROUNDWATER ANALYTICAL REPORT

Sample Summary

Tetra Tech, NUS

Job No: F8579

Cecil Field-Tank 199

| Sample Number | Collected Date | Time By | Received | Matrix Code | Type | Client Sample ID |
|---------------|----------------|----------|----------|-------------|--------------|-------------------|
| F8579-1 | 01/05/01 | 14:10 MD | 01/06/01 | AQ | Ground Water | CEF-199-GW-4S-01 |
| F8579-2 | 01/05/01 | 15:45 MD | 01/06/01 | AQ | Ground Water | CEF-199-GW-7S-01 |
| F8579-3 | 01/05/01 | 17:10 MD | 01/06/01 | AQ | Ground Water | CEF-199-GW-1S-01 |
| F8579-4 | 01/05/01 | 00:00 MD | 01/06/01 | AQ | Ground Water | CEF-199-GW-DUP-01 |

Report of Analysis

Client Sample ID: CEF-199-GW-4S-01
 Lab Sample ID: F8579-1
 Matrix: AQ - Ground Water
 Method: SW846 8021B
 Project: Cecil Field-Tank 199

Date Sampled: 01/05/01
 Date Received: 01/06/01
 Percent Solids: n/a

| Run # | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|------------|----|----------|-----|-----------|------------|------------------|
| Run #1 | QR004918.D | 1 | 01/17/01 | RAW | n/a | n/a | GQR157 |
| Run #2 | | | | | | | |

Purgeable Aromatics, Full List

| CAS No. | Compound | Result | RL | Units | Q |
|-----------|-------------------------|--------|-----|-------|---|
| 71-43-2 | Benzene | ND | 1.0 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | ug/l | |
| 1330-20-7 | Xylenes (total) | ND | 3.0 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|----------|--------------------------|--------|--------|---------|
| 352-33-0 | 1-Chloro-4-fluorobenzene | 102% | | 65-125% |
| 98-08-8 | aaa-Trifluorotoluene | 100% | | 72-125% |

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | | | |
|-------------------|----------------------|-----------------|----------|
| Client Sample ID: | CEF-199-GW-4S-01 | Date Sampled: | 01/05/01 |
| Lab Sample ID: | F8579-1 | Date Received: | 01/06/01 |
| 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 ^a | AA005998.D | 1 | 01/15/01 | MRE | 01/12/01 | OP2563 | GAA220 |
| Run #2 | EE001454.D | 1 | 01/16/01 | MRE | 01/15/01 | OP2576 | GEE71 |

Polynuclear Aromatic Hydrocarbons

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

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---------|----------------------|--------|--------|---------|
| 84-15-1 | o-Terphenyl | 80% | 92% | 29-133% |
| 92-94-4 | p-Terphenyl | 69% | 72% | 33-133% |

(a) Confirmed by re-extraction and reanalysis.

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | | | |
|-------------------|-------------------------|-----------------|----------|
| Client Sample ID: | CEF-199-GW-4S-01 | Date Sampled: | 01/05/01 |
| Lab Sample ID: | F8579-1 | Date Received: | 01/06/01 |
| Matrix: | AQ - Ground Water | Percent Solids: | n/a |
| Method: | FLORIDA-PRO SW846 3510C | | |
| Project: | Cecil Field-Tank 199 | | |

| Run # | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|-----------|----|----------|-----|-----------|------------|------------------|
| Run #1 | OP12816.D | 1 | 01/12/01 | SKW | 01/11/01 | OP2562 | GOP508 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---------|----------------------|--------|--------|---------|---|
| | TPH (C8-C40) | 0.258 | 0.25 | mg/l | |
| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits | |
| 84-15-1 | o-Terphenyl | 87% | | 40-140% | |

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | | | |
|-------------------|----------------------|-----------------|----------|
| Client Sample ID: | CEF-199-GW-7S-01 | Date Sampled: | 01/05/01 |
| Lab Sample ID: | F8579-2 | Date Received: | 01/06/01 |
| 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 | QR004919.D | 1 | 01/17/01 | RAW | n/a | n/a | GQR157 |
| Run #2 | | | | | | | |

Purgeable Aromatics, Full List

| CAS No. | Compound | Result | RL | Units | Q |
|-----------|-------------------------|--------|-----|-------|---|
| 71-43-2 | Benzene | ND | 1.0 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | ug/l | |
| 1330-20-7 | Xylenes (total) | ND | 3.0 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|----------|--------------------------|--------|--------|---------|
| 352-33-0 | 1-Chloro-4-fluorobenzene | 103% | | 65-125% |
| 98-08-8 | aaa-Trifluorotoluene | 100% | | 72-125% |

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | | | |
|-------------------|----------------------|-----------------|----------|
| Client Sample ID: | CEF-199-GW-7S-01 | Date Sampled: | 01/05/01 |
| Lab Sample ID: | F8579-2 | Date Received: | 01/06/01 |
| 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 ^a | AA006001.D | 1 | 01/15/01 | MRE | 01/12/01 | OP2563 | GAA220 |
| Run #2 | EE001457.D | 1 | 01/16/01 | MRE | 01/15/01 | OP2576 | GEE71 |

Polynuclear Aromatic Hydrocarbons

| CAS No. | Compound | Result | RL | Units | Q |
|----------|------------------------|--------|------|-------|---|
| 83-32-9 | Acenaphthene | ND | 4.4 | ug/l | |
| 208-96-8 | Acenaphthylene | ND | 4.4 | ug/l | |
| 120-12-7 | Anthracene | ND | 2.2 | ug/l | |
| 56-55-3 | Benzo(a)anthracene | ND | 0.22 | ug/l | |
| 50-32-8 | Benzo(a)pyrene | ND | 0.22 | ug/l | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 0.22 | ug/l | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 0.22 | ug/l | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 0.22 | ug/l | |
| 218-01-9 | Chrysene | ND | 2.2 | ug/l | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 0.22 | ug/l | |
| 206-44-0 | Fluoranthene | ND | 2.2 | ug/l | |
| 86-73-7 | Fluorene | ND | 2.2 | ug/l | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 0.22 | ug/l | |
| 91-20-3 | Naphthalene | ND | 2.2 | ug/l | |
| 90-12-0 | 1-Methylnaphthalene | ND | 2.2 | ug/l | |
| 91-57-6 | 2-Methylnaphthalene | ND | 2.2 | ug/l | |
| 85-01-8 | Phenanthrene | ND | 2.2 | ug/l | |
| 129-00-0 | Pyrene | ND | 2.2 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---------|----------------------|--------|--------|---------|
| 84-15-1 | o-Terphenyl | 53% | 99% | 29-133% |
| 92-94-4 | p-Terphenyl | 49% | 91% | 33-133% |

(a) Confirmed by re-extraction and reanalysis.

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | | | |
|-------------------|-------------------------|-----------------|----------|
| Client Sample ID: | CEF-199-GW-7S-01 | Date Sampled: | 01/05/01 |
| Lab Sample ID: | F8579-2 | Date Received: | 01/06/01 |
| Matrix: | AQ - Ground Water | Percent Solids: | n/a |
| Method: | FLORIDA-PRO SW846 3510C | | |
| Project: | Cecil Field-Tank 199 | | |

| Run # | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|-----------|----|----------|-----|-----------|------------|------------------|
| Run #1 | OP12817.D | 1 | 01/12/01 | SKW | 01/11/01 | OP2562 | GOP508 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | Units Q |
|---------|--------------|--------|------|---------|
| | TPH (C8-C40) | 0.480 | 0.25 | mg/l |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---------|----------------------|--------|--------|---------|
| 84-15-1 | o-Terphenyl | 77% | | 40-140% |

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

Client Sample ID: CEF-199-GW-1S-01
 Lab Sample ID: F8579-3
 Matrix: AQ - Ground Water
 Method: SW846 8021B
 Project: Cecil Field-Tank 199

Date Sampled: 01/05/01
 Date Received: 01/06/01
 Percent Solids: n/a

| Run # | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---------------------|------------|----|----------|-----|-----------|------------|------------------|
| Run #1 ^a | QR004920.D | 1 | 01/17/01 | RAW | n/a | n/a | GQR157 |
| Run #2 | | | | | | | |

Purgeable Aromatics, Full List

| CAS No. | Compound | Result | RL | Units | Q |
|-----------|-------------------------|--------|-----|-------|---|
| 71-43-2 | Benzene | 0.53 | 1.0 | ug/l | J |
| 108-90-7 | Chlorobenzene | ND | 1.0 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | ug/l | |
| 100-41-4 | Ethylbenzene | 2.8 | 1.0 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | ug/l | |
| 1330-20-7 | Xylenes (total) | ND | 3.0 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|----------|--------------------------|--------|--------|---------|
| 352-33-0 | 1-Chloro-4-fluorobenzene | 103% | | 65-125% |
| 98-08-8 | aaa-Trifluorotoluene | 100% | | 72-125% |

(a) Confirmed by GC/MS

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | | | |
|-------------------|----------------------|-----------------|----------|
| Client Sample ID: | CEF-199-GW-1S-01 | Date Sampled: | 01/05/01 |
| Lab Sample ID: | F8579-3 | Date Received: | 01/06/01 |
| 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 ^a | AA006006.D | 2 | 01/15/01 | MRE | 01/12/01 | OP2563 | GAA220 |
| Run #2 | EE001458.D | 2 | 01/16/01 | MRE | 01/15/01 | OP2576 | GEE71 |

Polynuclear Aromatic Hydrocarbons

| CAS No. | Compound | Result | RL | Units | Q |
|----------|------------------------|--------|--------|---------|---|
| 83-32-9 | Acenaphthene | ND | 8.0 | ug/l | |
| 208-96-8 | Acenaphthylene | ND | 8.0 | ug/l | |
| 120-12-7 | Anthracene | ND | 4.0 | ug/l | |
| 56-55-3 | Benzo(a)anthracene | ND | 0.40 | ug/l | |
| 50-32-8 | Benzo(a)pyrene | ND | 0.40 | ug/l | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 0.40 | ug/l | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 0.40 | ug/l | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 0.40 | ug/l | |
| 218-01-9 | Chrysene | ND | 4.0 | ug/l | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 0.40 | ug/l | |
| 206-44-0 | Fluoranthene | ND | 4.0 | ug/l | |
| 86-73-7 | Fluorene | ND | 4.0 | ug/l | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 0.40 | ug/l | |
| 91-20-3 | Naphthalene | 4.2 | 4.0 | ug/l | |
| 90-12-0 | 1-Methylnaphthalene | 4.3 | 4.0 | ug/l | |
| 91-57-6 | 2-Methylnaphthalene | 2.5 | 4.0 | ug/l | J |
| 85-01-8 | Phenanthrene | 2.7 | 4.0 | ug/l | J |
| 129-00-0 | Pyrene | ND | 4.0 | ug/l | |
| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits | |
| 84-15-1 | o-Terphenyl | 112% | 124% | 29-133% | |
| 92-94-4 | p-Terphenyl | 75% | 116% | 33-133% | |

(a) Confirmed by re-extraction and reanalysis. Dilution required to matrix.

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | |
|---|--|
| Client Sample ID: CEF-199-GW-1S-01 Lab Sample ID: F8579-3 Matrix: AQ - Ground Water Method: FLORIDA-PRO SW846 3510C Project: Cecil Field-Tank 199 | Date Sampled: 01/05/01 Date Received: 01/06/01 Percent Solids: n/a |
|---|--|

| Run # | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|-----------|----|----------|----|-----------|------------|------------------|
| Run #1 | OP12827.D | 25 | 01/13/01 | ME | 01/11/01 | OP2562 | GOP509 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---------|----------------------|-----------------|--------|---------|---|
| | TPH (C8-C40) | 28.4 | 6.2 | mg/l | |
| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits | |
| 84-15-1 | o-Terphenyl | 0% ^a | | 40-140% | |

(a) Outside control limits due to dilution.

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | | | |
|-------------------|----------------------|-----------------|----------|
| Client Sample ID: | CEF-199-GW-DUP-01 | Date Sampled: | 01/05/01 |
| Lab Sample ID: | F8579-4 | Date Received: | 01/06/01 |
| 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 | QR004921.D | 1 | 01/17/01 | RAW | n/a | n/a | GQR157 |
| Run #2 | | | | | | | |

Purgeable Aromatics, Full List

| CAS No. | Compound | Result | RL | Units | Q |
|-----------|-------------------------|--------|-----|-------|---|
| 71-43-2 | Benzene | 0.56 | 1.0 | ug/l | J |
| 108-90-7 | Chlorobenzene | ND | 1.0 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | ug/l | |
| 100-41-4 | Ethylbenzene | 3.0 | 1.0 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | ug/l | |
| 1330-20-7 | Xylenes (total) | ND | 3.0 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|----------|--------------------------|--------|--------|---------|
| 352-33-0 | 1-Chloro-4-fluorobenzene | 104% | | 65-125% |
| 98-08-8 | aaa-Trifluorotoluene | 100% | | 72-125% |

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | | | |
|-------------------|----------------------|-----------------|----------|
| Client Sample ID: | CEF-199-GW-DUP-01 | Date Sampled: | 01/05/01 |
| Lab Sample ID: | F8579-4 | Date Received: | 01/06/01 |
| Matrix: | AQ - Ground Water | Percent Solids: | n/a |
| Method: | EPA 8310 SW846 3510C | | |
| Project: | Cecil Field-Tank 199 | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---------------------|------------|----|----------|-----|-----------|------------|------------------|
| Run #1 ^a | AA006007.D | 4 | 01/15/01 | MRE | 01/12/01 | OP2563 | GAA220 |
| Run #2 | EE001459.D | 4 | 01/16/01 | MRE | 01/15/01 | OP2576 | GEE71 |

Polynuclear Aromatic Hydrocarbons

| CAS No. | Compound | Result | RL | Units | Q |
|----------|------------------------|--------|------|-------|---|
| 83-32-9 | Acenaphthene | ND | 16 | ug/l | |
| 208-96-8 | Acenaphthylene | ND | 16 | ug/l | |
| 120-12-7 | Anthracene | ND | 8.0 | ug/l | |
| 56-55-3 | Benzo(a)anthracene | ND | 0.80 | ug/l | |
| 50-32-8 | Benzo(a)pyrene | ND | 0.80 | ug/l | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 0.80 | ug/l | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 0.80 | ug/l | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 0.80 | ug/l | |
| 218-01-9 | Chrysene | ND | 8.0 | ug/l | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 0.80 | ug/l | |
| 206-44-0 | Fluoranthene | ND | 8.0 | ug/l | |
| 86-73-7 | Fluorene | ND | 8.0 | ug/l | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 0.80 | ug/l | |
| 91-20-3 | Naphthalene | ND | 8.0 | ug/l | |
| 90-12-0 | 1-Methylnaphthalene | ND | 8.0 | ug/l | |
| 91-57-6 | 2-Methylnaphthalene | ND | 8.0 | ug/l | |
| 85-01-8 | Phenanthrene | ND | 8.0 | ug/l | |
| 129-00-0 | Pyrene | ND | 8.0 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---------|----------------------|--------|--------|---------|
| 84-15-1 | o-Terphenyl | 81% | 111% | 29-133% |
| 92-94-4 | p-Terphenyl | 74% | 112% | 33-133% |

(a) Confirmed by re-extraction and reanalysis. Dilution required due to matrix.

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

Report of Analysis

| | |
|-------------------------------------|-------------------------|
| Client Sample ID: CEF-199-GW-DUP-01 | Date Sampled: 01/05/01 |
| Lab Sample ID: F8579-4 | Date Received: 01/06/01 |
| Matrix: AQ - Ground Water | Percent Solids: n/a |
| Method: FLORIDA-PRO SW846 3510C | |
| Project: Cecil Field-Tank 199 | |

| Run # | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|--------|-----------|----|----------|----|-----------|------------|------------------|
| Run #1 | OP12828.D | 40 | 01/13/01 | ME | 01/11/01 | OP2562 | GOP509 |
| Run #2 | | | | | | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---------|----------------------|-----------------|--------|---------|---|
| | TPH (C8-C40) | 39.0 | 10 | mg/l | |
| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits | |
| 84-15-1 | o-Terphenyl | 0% ^a | | 40-140% | |

(a) Outside control limits due to dilution.

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

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

ATTACHMENT D

**HLA - TABLE 1
SUMMARY OF DETECTIONS**

**Table 1
Summary of Detections**

Monitoring Only for Natural Attenuation
Tank 199 Site
NAS Cecil Field, Jacksonville, Florida

| Analytes | Monitoring Well Location | | | | | | | | | Cleanup Criteria ¹ | |
|---------------------|--------------------------|-------|-------|-------|---------------------------|-------|-------|---------------------------|-------|-------------------------------------|---|
| | CEF-199-1S (source) | | | | CEF-199-4S (perimeter) | | | CEF-199-7S (perimeter) | | | |
| | 12/96 | 12/98 | 07/99 | 02/00 | 12/98 | 07/99 | 02/00 | 07/99 | 02/00 | Action levels (source/perimeter) | Milestone Objectives (end of year 1) |
| Benzene | 8.1 | 3.1 | 7.0 | 1.7 | ND | ND | ND | ND | ND | 100 / 1 | 10 |
| Ethylbenzene | 11 | 5 | 7.0 | 4.7 | ND | ND | ND | ND | ND | 300 / 30 | NS |
| Toluene | 4.5 | ND | ND | ND | ND | ND | ND | ND | ND | 400 / 40 | NS |
| Xylenes, Total | 52 | 1 | ND | ND | ND | ND | ND | ND | ND | NS/NS | NS |
| 1,4-Dichlorobenzene | NA | NA | 41 | ND | NA | ND | ND | ND | ND | NS/NS | NS |
| 1,2-Dichlorobenzene | NA | NA | 7.0 | ND | NA | ND | ND | ND | ND | NS/NS | NS |
| Naphthalene | NA | NA | 57 | 33 | NA | ND | ND | ND | ND | 200/20 | 50 |
| 1-Methylnaphthalene | NA | NA | 96 | 53 | NA | ND | ND | ND | ND | NS/NS | NS |
| 2-Methylnaphthalene | NA | NA | 83 | 61 | NA | ND | ND | ND | ND | NS/NS | NS |
| Fluorene | NA | NA | 11 | 0.3 | NA | ND | ND | ND | ND | NS/NS | NS |
| Anthracene | NA | NA | 2.8 | ND | NA | ND | ND | ND | ND | NS/NS | NS |
| Benzo(a)anthracene | NA | NA | 3.0 | ND | NA | ND | ND | ND | ND | NS/NS | NS |
| TRPH | NA | NA | 5.4 | 3.7 | NA | ND | ND | ND | ND | NS/NS | 10 |

Notes: ¹ Based on the Monitoring Only Plan Approval Order

µg/l = micrograms per liter

mg/l = milligrams per liter

ND = not detected

NS = no value specified in the approval order.

NA= not analyzed