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NAS CECIL FIELD, FL
5090.3a

SECOND QUARTER FIRST YEAR GROUNDWATER MONITORING LETTER REPORT FOR
NORTH-SOUTH APRON PLUME NAS CECIL FIELD FL
1/2/2002
TETRA TECH NUS INC



TETRA TECH NUS, INC.

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Document Tracking Number 02JAX0038

January 2, 2002

Project Number N3996

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

Reference: Clean Contract Number N62467-94-D-0888
Contract Task Order Number 0168

Subject: Groundwater Monitoring Report, 2nd Quarter, 1st Year (August 2001)
North-South Apron Plume
Former Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this quarterly Groundwater Monitoring Report for the referenced Contract Task Order (CTO) for the North-South Apron Plume (NSAP). This groundwater monitoring report was prepared for the United States Navy Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62467-94-D-0888.

The primary objective of this task is to monitor groundwater associated with the intermediate zone at this site quarterly. The guidance document for this report is Chapter 62-770.690, Florida Administrative Code (FAC). The sampling program was accomplished in general accordance with the Natural Attenuation Monitoring Plan Approval Order issued by the Florida Department of Environmental Protection (FDEP) on March 16, 2001 (Attachment A). This report summarizes the field operations and analytical results for the subject site for the sampling event conducted on August 7, 2001. Figure 1 shows the location of the site.

FIELD OPERATIONS

Field operations were performed in general accordance with the Base-wide Generic Work Plan Volumes I and II (TtNUS, 1998). Groundwater measurements were collected, on August 7, 2001, from two shallow and four intermediate monitoring wells. After taking water levels, groundwater samples were collected from the four intermediate monitoring wells listed in the Monitoring Plan (CEF-M18-02I, CEF-M18-03I, CEF-M18-04I and CEF-M18-05I). Following collection, the groundwater samples were placed on ice and shipped under chain of custody to Accutest Laboratories in Orlando, Florida for analysis. The samples from the intermediate wells were analyzed for the contaminants of concern (COCs) benzene, toluene, ethylbenzene, and total xylenes (BTEX) using United States Environmental Protection Agency (USEPA) Method SW846 8260B in general accord with Attachment A. The sample from the shallow well was

analyzed for the volatile organic compound (VOC) target compound list (TCL) using the same USEPA method(s) in accordance with the FDEP's requirements provided in Attachment A.

RESULTS

The depth to water in the monitoring wells ranged from 3.48 to 6.30 feet (ft) below top of casing (btoc). The depth-to-water measurements, along with top-of-casing elevations, were used to calculate groundwater elevations. Table 1 provides the groundwater elevation data. Figure 1 shows the direction of groundwater flow to the southeast in the intermediate zone. The groundwater elevations from the shallow wells were not used in the calculation of groundwater flow direction.

The analytical results for this event are summarized in Table 2, and the laboratory report is provided as Attachment B. The results indicate that the action levels for benzene and total xylenes, as defined by the FDEP Monitoring Plan Order, were not exceeded in the groundwater samples from this event. Table 2 indicates that the Groundwater Cleanup Target Level (GCTL) for benzene was exceeded in each of the contaminated wells, designated in Attachment A. Other BTEX compounds were detected in the contaminated wells, but at concentrations below their respective GCTLs.

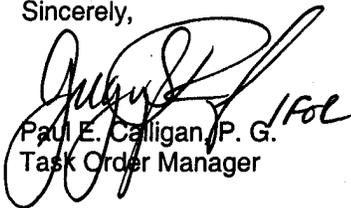
The BTEX analytical data (Table 2) for the intermediate, perimeter well CEF-M18-05I indicates those COCs were not detected. Figure 2 displays the analytical results. Table 3 summarizes the historical sampling data for the site's monitoring wells.

CONCLUSIONS and RECOMMENDATIONS

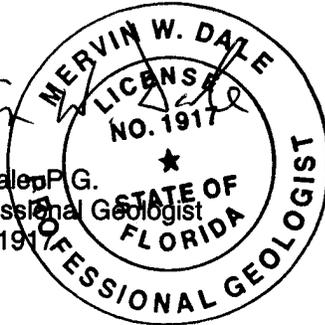
The benzene and xylene concentrations reported for monitoring well CEF-M18-02I has remained approximately static while the results for the same compounds for monitoring well CEF-M18-03I have decreased since the sampling event of September 14, 2000 (Table 3). However, the benzene concentration reported for monitoring well CEF-M18-04I appears to have increased by 1 part per billion since the September 14, 2000 sampling event (Table 3). No COCs were observed in the perimeter well CEF-M18-5I.

Since natural attenuation of COCs in the groundwater appears to be progressing at the site, TtNUS recommends continuing quarterly monitoring of groundwater at NSAP. The next groundwater-monitoring event is scheduled for November 2001. If you have any questions with regard to this submittal, please contact me at (850) 385-9899.

Sincerely,


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


Mervin W. Dale, P. G.
Florida Professional Geologist
PG Number 1917



PC/mwd

Attachments (7)

cc: N. Ugolini, SOUTH DIV
D. Vaughn-Wright, USEPA
D. Wroblewski, TtNUS (Cover Letter Only)
M. Perry, TtNUS (Unbound)
✓ Project File

Mr. David Grabka
FDEP
January 2, 2002 – Page 3

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

TABLES

Table 1
Groundwater Elevation Data

Quarterly Groundwater Monitoring Report
North-South Apron Plume
Former Naval Air Station Cecil Field
Jacksonville, Florida

Monitoring Well Identification	Well Depth (feet, btoc)	Top-of-Casing Elevation (feet, msl)	May 2, 2001		August 7, 2001	
			Depth to Water (feet, btoc)	Water-Level Elevation (feet, msl)	Depth to Water (feet, btoc)	Water-Level Elevation (feet, msl)
CEF-M18-01S	15	75.89	6.99	68.90	5.21	70.68
CEF-M18-02S	15	76.02	7.99	68.03	6.30	69.72
CEF-M18-02I	35	77.78	8.73	69.05	6.08	71.70
CEF-M18-03I	35	75.13	7.30	67.83	5.01	70.12
CEF-M18-04I	35	74.66	7.72	66.94	4.55	70.11
CEF-M18-05I	35	73.42	7.34	66.08	3.48	69.94

Notes: msl - mean sea level.
btoc = below top of casing.

Table 2
Summary of Results - August 2001 Event

Quarterly Groundwater Monitoring Report
North-South Apron Plume
Former Naval Air Station Cecil Field
Jacksonville, Florida

Well	CEF-M18-1S	CEF-M18-2S	CEF-M18-2I	CEF-M18-3I	CEF-M18-4I
Sample date	8/7/2001	8/7/2001	8/7/2001	8/7/2001	8/7/2001
Well Depth, feet bgs	15	35	35	35	35
		(Contaminated Well)	(Contaminated Well)	(Contaminated Well)	(Contaminated Well)
	Sample	Sample	Sample	Sample	Sample
Volatile Organic Compounds (ug/L)					
BENZENE	NS	NS	2.8	4.1	8.7
TOLUENE	NS	NS	2.0 U	2.0 U	2.0 U
ETHYLBENZENE	NS	NS	1.0 J	1.7J	2.0 U
XYLENES, TOTAL	NS	NS	7.0	10.6	6.0 U
Well	CEF-M18-4I	CEF-M18-5I	Monitoring Plan Approval Order	Monitoring Plan Approval Order Year 1 Milestone for Contaminated Wells	FDEP 62-777 Florida Administrative Code GCTLs
Sample date	8/7/2001	8/7/2001	Action Levels for Contaminated Well/Perimeter Well		
Well Depth, feet bgs	35	35			
	(Contaminated Well)	(Perimeter Well)			
	Duplicate	Sample			
Volatile Organic Compounds (ug/L)					
BENZENE	8.7	1.0 U	100/1	5	1
TOLUENE	2.0 U	2.0 U	None	None	40
ETHYLBENZENE	2.0 U	2.0 U	None	None	30
XYLENES, TOTAL	6.0 U	6.0 U	200/20	65	20

NOTES:

- 1 - Bold indicates concentrations greater than Monitoring Plan Action Level and/or GCTLs.
 - 2 - U = not detected at detection limit shown.
 - 3 - GCTL = Groundwater Cleanup Target Level.
 - 4 - J = estimated.
 - 5 - bgs = below ground surface.
- NS=Not Sampled

Table 3
Summary of BTEX Detections in Groundwater

Quarterly Groundwater Monitoring Report
North-South Apron Plume
Former Naval Air Station Cecil Field
Jacksonville, Florida
Page 1 of 2

Well	CEF-M18-01S				
Sample date	1/20/2000	9/14/2000	11/30/2000	05/02/01	8/7/2001
Well Depth, feet bgs	15	15	15	15	15
	Sample	Sample	Sample	Sample	Sample

Volatile Organic Compounds (ug/L)					
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U	NS
TOLUENE	1.0 U	2.0 U	2.0 U	2.0 U	NS
ETHYLBENZENE	1.0 U	2.0 U	2.0 U	2.0 U	NS
XYLENES, TOTAL	3.0 U	6.0 U	6.0 U	6.0 U	NS

Well	CEF-M18-02I				
Sample date	1/19/2000	1/19/2000	9/14/2000	5/2/2001	8/7/2001
Well Depth, feet bgs	35	35	35	35	35
	Sample	Duplicate	Sample	Sample	Sample

Volatile Organic Compounds (ug/L)					
BENZENE	5.3	5.3	2.5	3.8	2.8
TOLUENE	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U
ETHYLBENZENE	7.2	7	1.0 U	0.95 J	1.0 J
XYLENES, TOTAL	68.2	67.4	3.1	12.9	7.0

Well	CEF-M18-02S			CEF-M18-03I		
Sample date	3/28/2000	9/14/2000	8/7/2001	9/14/2000	5/2/2001	8/7/2001
Well Depth, feet bgs	15	15	15	35	35	35
	Sample	Sample	Sample	Sample	Sample	Sample

Volatile Organic Compounds (ug/L)						
BENZENE	1.0 U	1.0 U	NS	7	4.6	4.1
TOLUENE	1.0 U	2.0 U	NS	2.0 U	2.0 U	2.0 U
ETHYLBENZENE	1.0 U	2.0 U	NS	4.6	1.1 J	1.7J
XYLENES, TOTAL	3.0 U	6.0 U	NS	27.5	5.3 J	10.6

See notes at end of table.

Table 3
Summary of BTEX Detections in Groundwater

Quarterly Groundwater Monitoring Report
North-South Apron Plume
Former Naval Air Station Cecil Field
Jacksonville, Florida
Page 2 of 2

Well	CEF-M18-04I					
Sample date	3/28/2000	3/28/2000	9/14/2000	5/2/2001	8/7/2001	8/7/2001
Well Depth, feet bgs	35	35	35	35	35	35
	Sample	Duplicate	Sample	Sample	Sample	Duplicate

Volatile Organic Compounds (ug/L)						
BENZENE	1.0 U	1.0 U	7.7	8.0	8.7	8.7
TOLUENE	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U
ETHYLBENZENE	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U
XYLENES, TOTAL	3.0 U	3.0 U	6.0 U	6.0 U	6.0 U	6.0 U

Well	CEF-M18-05I			
Sample date	11/30/2000	11/30/2000	5/2/2001	8/7/2001
Well Depth, feet bgs	35	35	35	35
	Sample	Duplicate	Sample	Sample

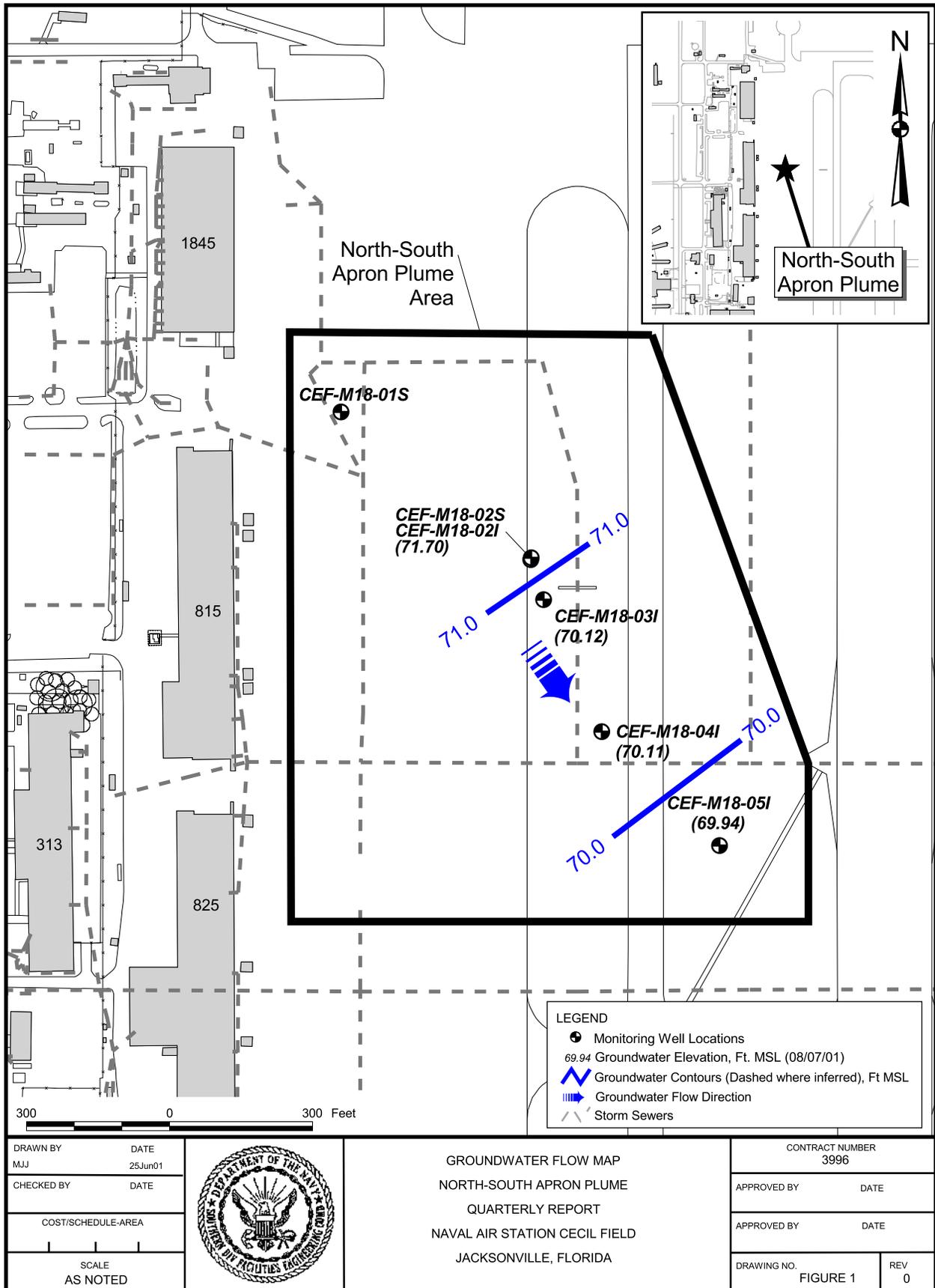
Volatile Organic Compounds (ug/L)				
BENZENE	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	2.0 U	2.0 U	2.0 U	2.0 U
ETHYLBENZENE	2.0 U	2.0 U	2.0 U	2.0 U
XYLENES, TOTAL	6.0 U	6.0 U	6.0 U	6.0 U

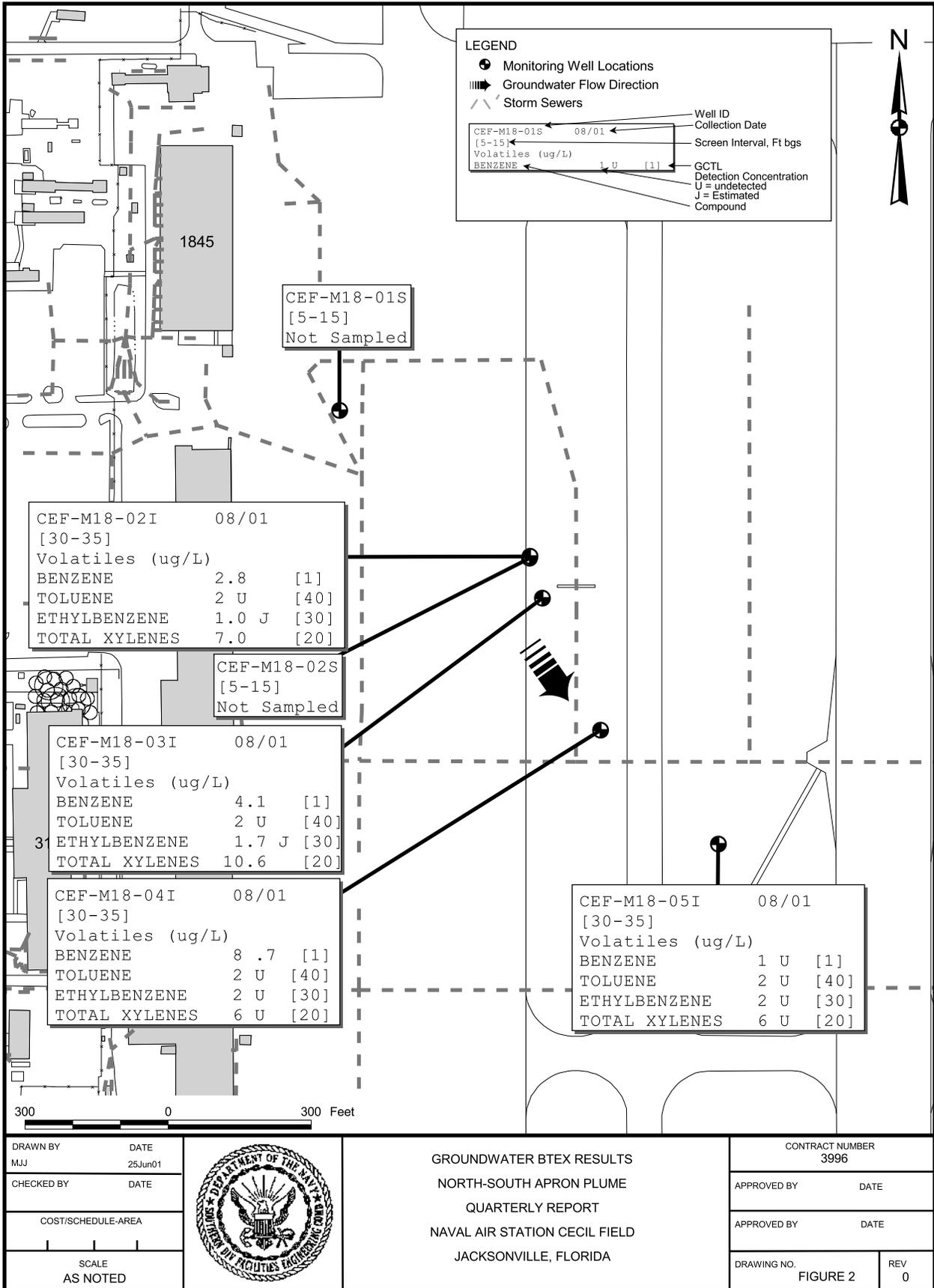
Well	Monitoring Plan Approval	
Sample date	Order Action Levels for	FDEP 62-777
Well Depth, feet bgs	Contaminated	FAC GCTLs
	Wells/Perimeter Well	

Volatile Organic Compounds (ug/L)		
BENZENE	100/1	1
TOLUENE	None	40
ETHYLBENZENE	None	30
XYLENES, TOTAL	200/20	20

- Notes:
- 1 - Bold indicates concentrations greater than FDEP criteria.
 - 2 - U - not detected at detection limit shown.
 - 3 - ug/L = micrograms per liter
 - 4 - bgs = below ground surface
 - 5 - BTEX = benzene, toluene, ethylbenzene and xylenes
 - 6 - FAC = Florida Administrative Code

FIGURES





ATTACHMENT A
MONITORING PLAN APPROVAL ORDER

M. Dele



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

March 16, 2001

Mr. Nick Ugolini
Code 1843 (UST RPM)
Southern Division
Naval Facilities Engineering Command
Post Office Box 190010
North Charleston, South Carolina 29419-9010

RE: Site Assessment Report, North-South Apron Plume, Naval Air
Station Cecil Field, Jacksonville, Florida

Dear Mr. Ugolini:

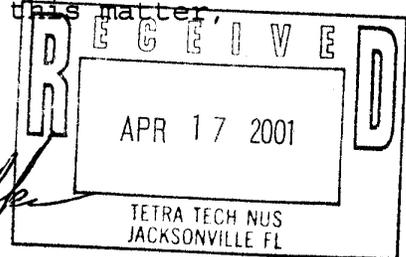
I have completed the review of the Site Assessment Report (SAR) and Monitoring Only Proposal (MOP) for the North-South Apron Plume, Naval Air Station Cecil Field, dated February 2001 (received March 1, 2001), prepared and submitted by Tetra Tech NUS, Inc. The SAR provides adequate evidence that natural attenuation at this site will reduce contaminant concentrations to below groundwater cleanup target levels in five years. I have attached a Monitoring Only Plan Approval Order signed by Douglas A. Jones specifying the actions to be taken in monitoring the site.

I also recommend that monitoring well CEF-M18-01S be resampled and analyzed for VOCs during the first quarter of monitoring to verify that the chlorinated hydrocarbons detected in September 2000, but not in January or November 2000, have not reappeared.

If I can be of any further assistance with this matter, please contact me at (850) 488-3693.

Sincerely,

David P. Grabka
Remedial Project Manager



cc: Scott Glass, Southern Division
Debbie Vaughn-Wright, USEPA Region 4

Mr. Nick Ugolini
North-South Apron Plume
Naval Air Station Cecil Field
March 16, 2001
Page Two

Mark Speranza, TetraTech NUS, Pittsburgh
Sam Ross, CH2M Hill Constructors, Inc.
Mike Fitzsimmons, FDEP Northeast District

TJB

B

JJC

JJC

ESN

ESN



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

March 16, 2001

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Nick Ugolini
Code 1843 (UST RPM)
Southern Division
Naval Facilities Engineering Command
Post Office Box 190010
North Charleston, South Carolina 29419-9010

Subject: Natural Attenuation Monitoring Plan Approval Order
North-South Apron Plume
Cecil Field Naval Air Station
Jacksonville, Duval County

Dear Mr. Ugolini:

The Bureau of Waste Cleanup has completed the review of the Site Assessment Report and Natural Attenuation Monitoring Plan dated February 2001 (received March 1, 2001), submitted for the petroleum product discharge discovered at this site. Pursuant to Rule 62-770.690, Florida Administrative Code (F.A.C.), the Department of Environmental Protection (Department) approves the Natural Attenuation Monitoring Plan. 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 Natural Attenuation Monitoring 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.

The monitoring wells to be sampled, the sampling parameters, and the sampling frequency are as follows:

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

Mr. Nick Ugolini
March 16, 2001
Page Two

<u>Monitoring Wells</u>	<u>Contaminants of Concern</u>	<u>Frequency</u>	<u>Duration</u>
CEF-M18-02I, CEF-M18-03I, CEF-M18-04I, CEF-M18-05I	BTEX	Quarterly	Five years

The approved Remedial Action by Natural Attenuation monitoring period is five years. The sampling frequency will be evaluated following the submittal of the first annual report to determine whether semiannual or annual sampling may be appropriate.

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>CEF-M18-02I</u>	<u>CEF-M18-03I</u>	<u>CEF-M18-04I</u>
<u>Benzene</u>			
End of year 1	5 µg/l	5 µg/l	5 µg/l
End of year 2	4 µg/l	4 µg/l	4 µg/l
End of year 5	<1 µg/l	<1 µg/l	<1 µg/l
<u>Xylenes</u>			
End of year 1	65 µg/l	65 µg/l	65 µg/l
End of year 2	55 µg/l	55 µg/l	55 µg/l
End of year 5	<20 µg/l	<20 µg/l	<20 µg/l

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

Contaminated wells:

CEF-M18-02I, CEF-M18-03I and CEF-M18-04I: 100 µg/l Benzene; 200 µg/l Total Xylenes

Perimeter well (temporary point of compliance):

CEF-M18-04I: 1 µg/l Benzene; 20 µg/l Total Xylenes

If the applicable No Further Action criteria in Rule 62-770.680, F.A.C., are met at the end of the monitoring period, a Site Rehabilitation Completion Report, summarizing the monitoring program and containing documentation supporting the opinion that the cleanup objectives have been achieved, should be submitted as required in Rule 62-770.690(8), F.A.C. If the applicable No Further Action criteria in Rule 62-770.680, F.A.C., are not met following five years of

Mr. Nick Ugolini
March 16, 2001
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monitoring, then a report summarizing the monitoring program should be submitted, including a proposal as described in Rule 62-770.690(7)(g), F.A.C.

Legal Issues

The Department's Order shall become final unless a timely petition for an administrative proceeding (hearing) is filed under Sections 120.569 and 120.57, Florida Statutes (F.S.), within 21 days of receipt of this Order. The procedures for petitioning for a hearing are set forth below.

Persons affected by this Order have the following options:

If you choose to accept the above decision by the Department about the Site Assessment Report you do not have to do anything. This Order is final and effective as of the date on the top of the first page of this Order.

If you disagree with the decision, you may do one of the following:

- (1) File a petition for administrative hearing with the Department's Office of General Counsel within 21 days of receipt of this Order; or
- (2) File a request for an extension of time to file a petition for hearing with the Department's Office of General Counsel within 21 days of receipt of this Order. Such a request should be made if you wish to meet with the Department in an attempt to informally resolve any disputes without first filing a petition for hearing.

Please be advised that mediation of this decision pursuant to Section 120.573, F.S., is not available.

How to Request an Extension of Time to File a Petition for Hearing

For good cause shown, pursuant to Rule 62-110.106(4), F.A.C., the Department may grant a request for an extension of time to file a petition for hearing. Such a request must be filed (received) in the Department's Office of General Counsel at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, within 21 days of receipt of this Order. Petitioner, if different from Commanding Officer, Southern Division Naval Facilities Engineering Command, shall mail a copy of the request to Commanding Officer, Southern Division Naval Facilities Engineering Command at the time of filing. Timely filing a request for an extension of time tolls the time period within which a petition for administrative hearing must be made.

How to File a Petition for Administrative Hearing

A person whose substantial interests are affected by this Order may petition for an administrative hearing under Sections 120.569 and 120.57, F.S. The petition must contain the

Mr. Nick Ugolini
March 16, 2001
Page Four

information set forth below and must be filed (received) in the Department's Office of General Counsel at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, within 21 days of receipt of this Order. Petitioner, if different from Commanding Officer, Southern Division Naval Facilities Engineering Command, shall mail a copy of the petition to Commanding Officer, Southern Division Naval Facilities Engineering Command at the time of filing. Failure to file a petition within this time period shall waive the right of anyone who may request an administrative hearing under Sections 120.569 and 120.57, F.S.

Pursuant to Section 120.54(5)(b)4.a., F.S. (1998, Supp.), and Rule 28-106.201, F.A.C., a petition for administrative hearing shall contain the following information:

- (a) The name, address, and telephone number of each petitioner, the name, address, and telephone number of the petitioner's representative, if any, the site owner's name and address, if different from the petitioner, the FDEP facility number, and the name and address of the facility;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) An explanation of how each petitioner's substantial interests are or will be affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by the petitioner, or a statement that there are no disputed facts;
- (e) A statement of the ultimate facts alleged, including a statement of the specific facts the petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the Department's action or proposed action; and
- (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the Department to take with respect to the Department's action or proposed action.

This Order is final and effective as of the date on the top of the first page of this Order. Timely filing a petition for administrative hearing postpones the date this Order takes effect until the Department issues either a final order pursuant to an administrative hearing or an order responding to supplemental information provided pursuant to meetings with the Department.

Judicial Review

Any party to this Order has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The

Mr. Nick Ugolini
March 16, 2001
Page Five

notice of appeal must be filed within 30 days after this Order is filed with the clerk of the Department (see below).

Questions

Any questions regarding the Department's review of your Site Assessment Report should be directed to David P. Grabka at (850) 488-3693. Questions regarding legal issues should be referred to the Department's Office of General Counsel at (850) 488-9314. Contact with any of the above does not constitute a petition for administrative hearing or request for an extension of time to file a petition for administrative hearing.

Sincerely,

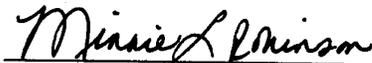


Douglas A. Jones, Chief
Bureau of Waste Cleanup
Division of Waste Management

DAJ/dpg

cc: Mike Fitzsimmons, FDEP Northeast District Office
Scott Glass, Southern Division
Debbie Vaughn-Wright, USEPA Region 4
Mark Speranza, Tetra Tech NUS, Pittsburgh
Sam Ross, CH2M Hill Constructors, Inc.
File

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to
§120.52 Florida Statutes, with the
designated Department Clerk, receipt
of which is hereby acknowledged.



Clerk
(or Deputy Clerk)

3/21/01

Date

Mr. Nick Ugolini
North-South Apron Plume
Cecil Field Naval Air Station

P.G. CERTIFICATION

SAR/MOP for North-South Apron Plume

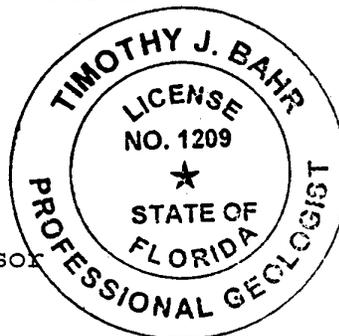
I hereby certify that in my professional judgement, the components of this Site Assessment Report and Monitoring Only Plan for the North-South Apron Plume, Cecil Field Naval Air Station, Jacksonville, Florida, satisfy the requirements set forth in Chapter 62-770, F.A.C., and that the geological interpretations in this report provide reasonable assurances of achieving the Assessment objectives stated in Chapter 62-770, F.A.C.

I personally completed this review.

This review was conducted by David P. Grabka working under my supervision.



Timothy J. Bahr, P.G.
Professional Geologist Supervisor
Technical Review Section



3/16/01
Date

ATTACHMENT B
GROUNDWATER ANALYTICAL REPORT



Southeast

ACCUTEST®

08/13/01

Technical Report for

Tetra Tech, NUS

Cecil Field CTO168

WORK RELEASE 168CF-3

Accutest Job Number: F10513

Report to:

Tetra Tech, NUS

davisb@tnus.com

ATTN: Bob Davis

Total number of pages in report: 12



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

H. Behzadi
Harry Behzadi, Ph.D.
Laboratory Director

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Sample Summary

Tetra Tech, NUS

Job No: F10513

Cecil Field CTO168

Project No: WORK RELEASE 168CF-3

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
F10513-1	08/07/01	16:00 ER	08/07/01	AQ	Ground Water	CEF-M18-GW-2I-06
F10513-2	08/07/01	16:05 ER	08/07/01	AQ	Ground Water	CEF-M18-GW-3I-06
F10513-3	08/07/01	16:52 ER	08/07/01	AQ	Ground Water	CEF-M18-GW-4I-06
F10513-4	08/07/01	14:53 ER	08/07/01	AQ	Ground Water	CEF-M18-GW-5I-06
F10513-5	08/07/01	00:00 ER	08/07/01	AQ	Ground Water	CEF-M18-GW-DUP1-06

Report of Analysis

Client Sample ID: CEF-M18-GW-2I-06
 Lab Sample ID: F10513-1
 Matrix: AQ - Ground Water
 Method: SW846 8260B
 Project: Cecil Field CTO168

Date Sampled: 08/07/01
 Date Received: 08/07/01
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013011.D	1	08/09/01	NAF	n/a	n/a	VH385
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	2.8	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	1.0	2.0	ug/l	J
591-78-6	2-Hexanone	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	ug/l	
100-42-5	Styrene	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	7.0	6.0	ug/l	

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-M18-GW-2I-06 Lab Sample ID: F10513-1 Matrix: AQ - Ground Water Method: SW846 8260B Project: Cecil Field CTO168	Date Sampled: 08/07/01 Date Received: 08/07/01 Percent Solids: n/a
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VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	102%		80-120%

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-M18-GW-3I-06
 Lab Sample ID: F10513-2
 Matrix: AQ - Ground Water
 Method: SW846 8260B
 Project: Cecil Field CTO168

Date Sampled: 08/07/01
 Date Received: 08/07/01
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013012.D	1	08/09/01	NAF	n/a	n/a	VH385
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	4.1	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	1.7	2.0	ug/l	J
591-78-6	2-Hexanone	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	ug/l	
100-42-5	Styrene	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	10.6	6.0	ug/l	

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-M18-GW-3I-06 Lab Sample ID: F10513-2 Matrix: AQ - Ground Water Method: SW846 8260B Project: Cecil Field CTO168	Date Sampled: 08/07/01 Date Received: 08/07/01 Percent Solids: n/a
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VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	102%		80-120%

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-M18-GW-4I-06
 Lab Sample ID: F10513-3
 Matrix: AQ - Ground Water
 Method: SW846 8260B
 Project: Cecil Field CTO168

Date Sampled: 08/07/01
 Date Received: 08/07/01
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013015.D	1	08/09/01	NAF	n/a	n/a	VH385
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	8.7	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
591-78-6	2-Hexanone	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	ug/l	
100-42-5	Styrene	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

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-M18-GW-4I-06 Lab Sample ID: F10513-3 Matrix: AQ - Ground Water Method: SW846 8260B Project: Cecil Field CTO168	Date Sampled: 08/07/01 Date Received: 08/07/01 Percent Solids: n/a
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VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

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-M18-GW-5I-06
 Lab Sample ID: F10513-4
 Matrix: AQ - Ground Water
 Method: SW846 8260B
 Project: Cecil Field CTO168

Date Sampled: 08/07/01
 Date Received: 08/07/01
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013016.D	1	08/09/01	NAF	n/a	n/a	VH385
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
591-78-6	2-Hexanone	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	ug/l	
100-42-5	Styrene	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

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-M18-GW-5I-06 Lab Sample ID: F10513-4 Matrix: AQ - Ground Water Method: SW846 8260B Project: Cecil Field CTO168	Date Sampled: 08/07/01 Date Received: 08/07/01 Percent Solids: n/a
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VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	102%		80-120%

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-M18-GW-DUP1-06
 Lab Sample ID: F10513-5
 Matrix: AQ - Ground Water
 Method: SW846 8260B
 Project: Cecil Field CTO168

Date Sampled: 08/07/01
 Date Received: 08/07/01
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013017.D	1	08/09/01	NAF	n/a	n/a	VH385
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	8.7	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
591-78-6	2-Hexanone	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	ug/l	
100-42-5	Styrene	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

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-M18-GW-DUP1-06 Lab Sample ID: F10513-5 Matrix: AQ - Ground Water Method: SW846 8260B Project: Cecil Field CTO168	Date Sampled: 08/07/01 Date Received: 08/07/01 Percent Solids: n/a
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VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		80-120%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

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