

N60200.AR.003017
NAS CECIL FIELD, FL
5090.3a

SITE ASSESSMENT REPORT ADDENDUM FOR BUILDING 502 TANK 502 BASE
REALIGNMENT AND CLOSURE NAS CECIL FIELD FL
7/24/2001
TETRA TECH NUS INC

**Site Assessment Report
Addendum**

for

Building 502, Tank 502

Base Realignment and Closure

Naval Air Station Cecil Field

Jacksonville, Florida



**Southern Division
Naval Facilities Engineering Command**

Contract Number N62467-94-D-0888

Contract Task Order 0121

July 2001



TETRA TECH NUS, INC.

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Document Tracking No. 01JAX0094

July 24, 2001

Project Number 0486

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 No. N62467-94-D-0888
Contract Task Order No. 0121

Subject: Site Assessment Report Addendum
Building 502, Tank 502
Former Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Site Assessment Report Addendum (SARA) for the subject site (Figure 1) under the referenced Contract Task Order (CTO). This report was prepared by TtNUS 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. This SARA is TtNUS' response to the Florida Department of Environmental Protection's (FDEP) technical review (Attachment A) of the Building 502, Tank 502 Annual Groundwater Monitoring Report [Harding Lawson Associates (HLA), 2000]. The guidance document for this report is Chapter 62-770, Florida Administrative Code (FAC).

BACKGROUND

Tank 502, a 1,000-gallon fuel oil tank, was removed in 1997 and a subsequent site assessment, performed by HLA in 1998, recommended a soil source removal. The source removal was conducted in January 1999, and the following items were noted in the report (CH2M Hill Constructors, 1999):

- The contaminated soil associated with Tank 502 was removed.
- No free product was encountered in the excavation.
- Three monitoring wells were abandoned since they were in the limits of the excavation – CEF-502-1S, CEF-502-2S, and CEF-502-5D. Figure 2 shows these wells and the limits of the excavation.

In April, a follow-up Site Assessment Report (SAR) (HLA, 1999) recommended that no further action be conducted with regard to the soils at the site. The SAR recommended that groundwater monitoring for natural attenuation (MONA) take place since benzene, ethylbenzene, xylenes, naphthalene, and total recoverable petroleum hydrocarbons (TRPH) were previously detected in excess of groundwater cleanup target levels (GCTLs). The MONA noted that wells CEF-502-2S and CEF-502-5D had been abandoned, and it recommended that those wells be replaced because they would be monitored along with CEF-502-4S. The FDEP responded in July with a Monitoring Only Plan (MOP) Approval letter (1999). A

copy of the MOP Approval letter is provided as Attachment B. It should be noted that the MOP Approval letter required the semi-annual sampling of CEF-502-1S, CEF-502-4S, CEF-502-2S, and CEF-502-5D. Monitoring wells CEF-502-2S and CEF-502-5D were abandoned in January 1999. HLA replaced the two abandoned wells with CEF-502-6S and CEF-502-7D before the commencement of the first semi-annual event in August 1999. Following the second semi-annual sampling event, the FDEP agreed (see Attachment A) with the SAR recommendation (HLA, 2000) to continue groundwater monitoring. However, the FDEP required a monitoring well "in the former location of CEF-502-1S", and stipulated that the well should be sampled "using USEPA (United States Environmental Protection Agency) Methods 602, 8310, and FL-PRO (Florida – Petroleum Range Organics)." TtNUS was tasked by SOUTHNAVFACENCOM to replace CEF-502-1S, collect a round of groundwater samples from monitoring wells CEF-502-1S, CEF-502-4S, CEF-502-6S, and CEF-502-7D, and follow-up with a report.

FIELD OPERATIONS

On March 30, 2001, TtNUS personnel used an HLA map from the last sampling event to re-locate the position of monitoring well CEF-502-1S. The abandoned well and its concrete pad were still in place. The monitoring well was re-installed within approximately 2 feet (ft) of the old location that same day and labeled CEF-502-1SR. The boring log and monitoring well construction diagram are provided in Attachment C. The well re-install and subsequent sampling were conducted in general accordance with the Base-wide Generic Work Plan for the former Naval Air Station Cecil Field Volumes I and II (TtNUS, 1998).

Water level measurements were recorded on April 9, 2001 from each of the monitoring wells shown on Table 1 prior to sample collection. The depth to water ranged from 5.03 ft below land surface (bls) (CEF-502-3S) to 6.31 ft bls (CEF-502-1SR). The depth-to-water measurements, along with top-of-casing elevations, were used to calculate groundwater elevations.

On April 9 and 10, 2001, groundwater samples were collected from CEF-502-1SR, CEF-502-4S, CEF-502-6S and CEF-502-7D. The samples were placed on ice and shipped overnight by Federal Express to Accura Laboratories in Norcross, Georgia, for analysis. The samples were analyzed for volatile organic compounds (VOCs) by USEPA Method SW846 8260B, polynuclear aromatic hydrocarbons (PAHs) by USEPA Method SW846 8270C, and TRPH by FL-PRO. The reported detection limits for these methods meet the requirements for the similar methods stipulated in the MOP Approval letter.

RESULTS

The groundwater elevation data indicate that flow varies from southwest to southeast (Figure 2), which is a change from HLA's (1999 and 2000) semi-annual monitoring report data of a southeasterly flow direction. The analytical results (Attachment D) for the source wells CEF-502-1SR and CEF-502-6S indicate the following areas of concern:

- GCTLs were exceeded for the naphthalene group compounds in the sample from CEF-502-1SR.
- The GCTL for TRPH was exceeded in the sample from CEF-502-1SR.
- No GCTLs were exceeded in the sample from CEF-502-6S.

The analytical results (Attachment D) for the perimeter wells CEF-502-4S and CEF-502-7D indicate the following information:

- No GCTLs were exceeded in the samples from the downgradient shallow well.
- No compounds of concern (COC) were detected in the sample from the vertical extent perimeter well.

Figure 3 is provided to illustrate the COC analytical data. Table 2 summarizes the detected COCs reported in Attachment D.

CONCLUSIONS and RECOMMENDATIONS

An evaluation of the current groundwater flow and analytical data and similar existing SAR data appear to indicate the current well configuration for the site is not adequate to monitor groundwater petroleum impacts at the site. Additionally, a review of Chapter 62-770.690, FAC requirements for natural attenuation monitoring is provided:

- Free product was not encountered during the source removal.
- Contaminated soil, according to the source removal report, was removed and is not present at the site.
- Petroleum products' COCs present in the groundwater appear to be delineated by the perimeter wells.
- Comparison of analytical data (Attachment E) for former well CEF-502-1S and replacement well CEF-502-1SR (Table 2) indicate the mass of contaminants in the groundwater is decreasing except for TRPH concentrations. And, the TRPH increases may be a by-product of degradation of the other petroleum compounds.
- Comparison of analytical data (Attachment E) for former well CEF-502-2S and existing well CEF-502-6S (Table 2) appears to indicate the COCs have decreased.

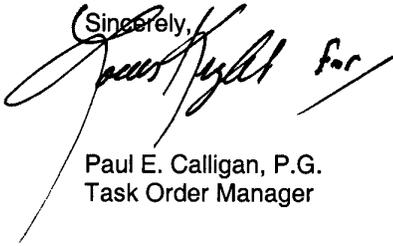
Since the analytical data and historical reports indicate the site's groundwater may be naturally attenuating, TtNUS recommends continuation of the site's MONA program with the following modifications:

- Install an additional shallow monitoring well at the site. The proposed location is shown on Figure 2.
- In addition to the proposed perimeter well, monitor the following monitoring wells semi-annually for five years: CEF-502-1SR (source well), CEF-502-3S (perimeter well), CEF-502-4S (perimeter well), CEF-502-6S (source well), and CEF-502-7D (perimeter well).
- The recommended analytical list is as follows: USEPA Methods SW846 8021B and 8310 and FL-PRO.
- The projected milestone objectives for the site are provided on Table 3.

Mr. David Grabka
FDEP
July 24, 2001 – Page 4

If you have any questions with regard to this submittal, please contact me at (850) 385-9899 extension 24.

Sincerely,

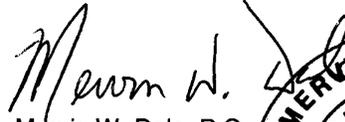


Paul E. Calligan, P.G.
Task Order Manager

PC/mwd

Attachments (11)

cc: N. Ugolini, SOUTHNAVFACENCOM (cd only)
D. Vaughn-Wright, USEPA
D. Wroblewski, TtNUS (cover letter only)
M. Perry, TtNUS (unbound)



Mervin W. Dale, P.G.
Florida Professional Geologist
P.G. No. 0001917



Mr. David Grabka
FDEP
July 24, 2001 – Page 5

bcc: M. Dale, TtNUS
R. Simcik, TtNUS (bookcase file)
J. Johnson, TtNUS (Information Repository)

Table 1
Groundwater Elevation and Monitoring Well Construction Data

Site Assessment Report Addendum
 Building 502, Tank 502
 Naval Air Station Cecil Field
 Jacksonville, Florida

Well Number	Total Depth (feet, bls)	Top of Casing Elevation (feet NGVD)	April 9, 2001	
			Depth to Water Below Top of Casing (feet)	Water Elevation (feet msl)
CEF-502-1SR	12.46	83.53	6.31	77.22
CEF-502-3S	13	82.06	5.03	77.03
CEF-502-4S	12.31	82.09	5.07	77.02
CEF-502-6S	14.87	83.09	5.72	77.37
CEF-502-7D	30.05	83.04	6.00	77.04

Notes: bls = below land surface.
 msl = mean sea level.
 NGVD = National Geodetic Vertical Datum, 1929.
 Wells 3S and 4S reported to NGVD by HLA (2000).
 TtNUS surveyed other wells using wells 3S and 4S as benchmarks.

Table 2
Summary of Detections in Groundwater

Site Assessment Report Addendum
Building 502, Tank 502
Naval Air Station Cecil Field
Jacksonville, Florida

Sample ID	Source Well	Perimeter Well	Source Well	Perimeter Well	GCTL ¹	NADSC ²
	CEF-502-GW-1SR-02	CEF-502-GW-4S-02	CEF-502-GW-6S-02	CEF-502-GW-7D-02		
Date Sampled	4/9/2001	4/10/2001	4/9/2001	4/9/2001		
Compounds Detected	CEF-502-1SR	CEF-502-4S	CEF-502-6S	CEF-502-7D		
Polynuclear Aromatic Hydrocarbons (USEPA Method 8270C) ($\mu\text{g/L}$)						
Acenaphthene	3.7	<1.0	1.2	<1.0	20	200
Fluorene	4.5	<1.0	0.48J	<1.0	280	2800
Phenanthrene	1.7	<1.0	<1.0	<1.0	210	2100
1-Methylnaphthalene	63	<1.0	7.4	<1.0	20	200
2-Methylnaphthalene	85	<1.0	0.96J	<1.0	20	200
Naphthalene	66	<1.0	2.0	<1.0	20	200
Volatile Organic Compounds (USEPA Method 8260B) ($\mu\text{g/L}$)						
Ethylbenzene	13	0.92J	2.4	<1.0	30	300
Total Xylenes	4.8	<2.0	<2.0	<1.0	20	200
Florida - Petroleum Range Organics (FL-PRO) (mg/L)						
Total Recoverable Petroleum Hydrocarbons	24	1.1	1.5	<1.0	5	50

Notes:

¹GCTL = Groundwater Cleanup Target Levels based on Chapter 62-770, Florida Administrative Code (FAC).

²NADSC = Natural Attenuation Default Source Concentrations as promulgated in Chapter 62-770.690, FAC.

J = estimated

$\mu\text{g/L}$ = micrograms per liter

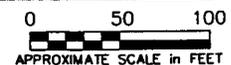
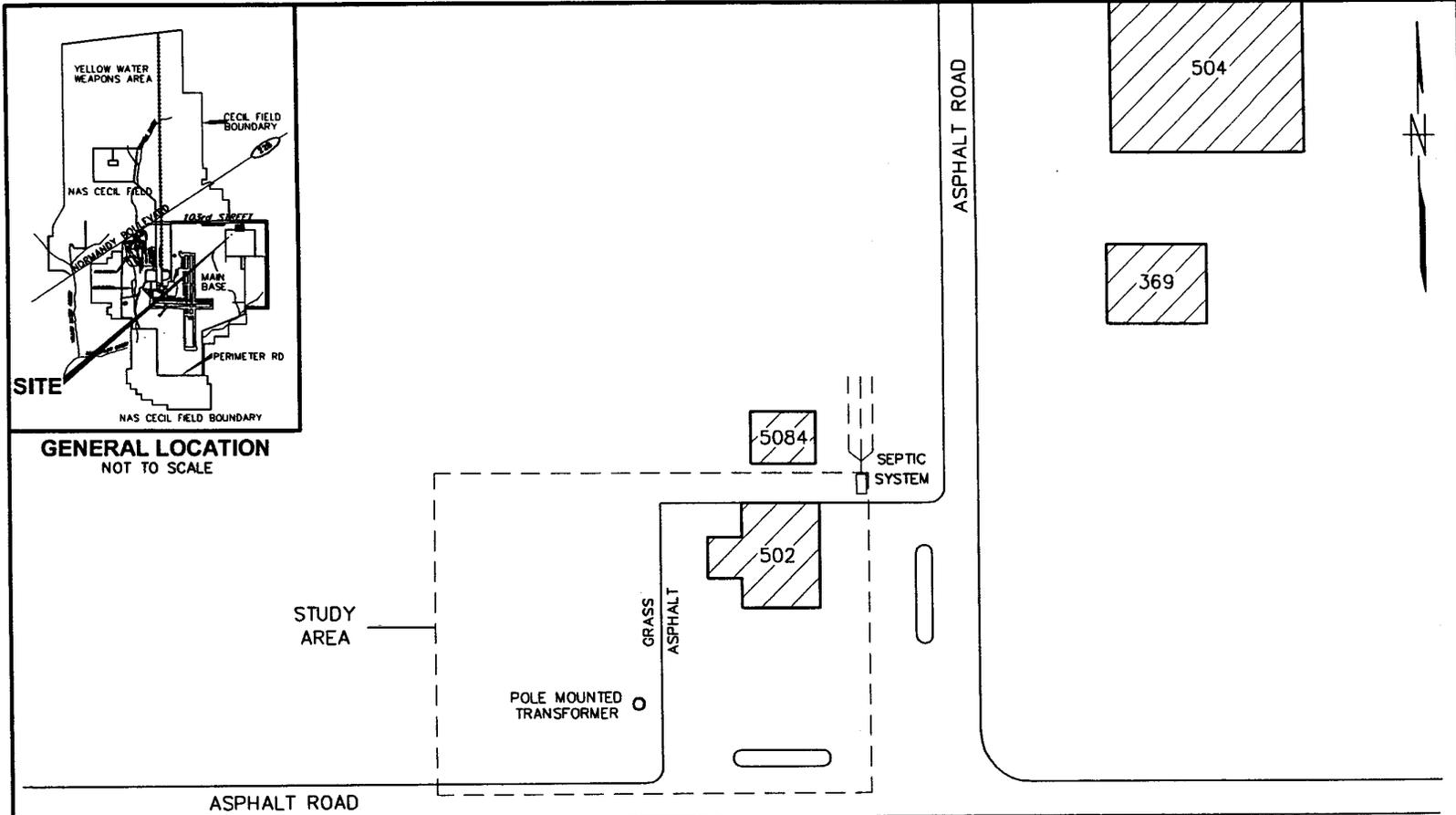
mg/L = milligrams per liter

**Table 3
Recommended Milestone Objectives**

Site Assessment Report Addendum
Building 502, Tank 502
Naval Air Station Cecil Field
Jacksonville, Florida

Compounds of Concern	Units	End Of				
		Year 1	Year 2	Year 3	Year 4	Year 5
Naphthalene	$\mu\text{g/L}$	55	45	35	25	<20
1-Methylnaphthalene	$\mu\text{g/L}$	55	45	35	25	<20
2-Methylnaphthalene	$\mu\text{g/L}$	74	61	46	31	<20
TRPH	mg/L	20	16	12	8	<5

Notes:
 $\mu\text{g/L}$ = micrograms per liter.
 mg/L = milligrams per liter.
< = less than.
TRPH = total recoverable petroleum hydrocarbons.

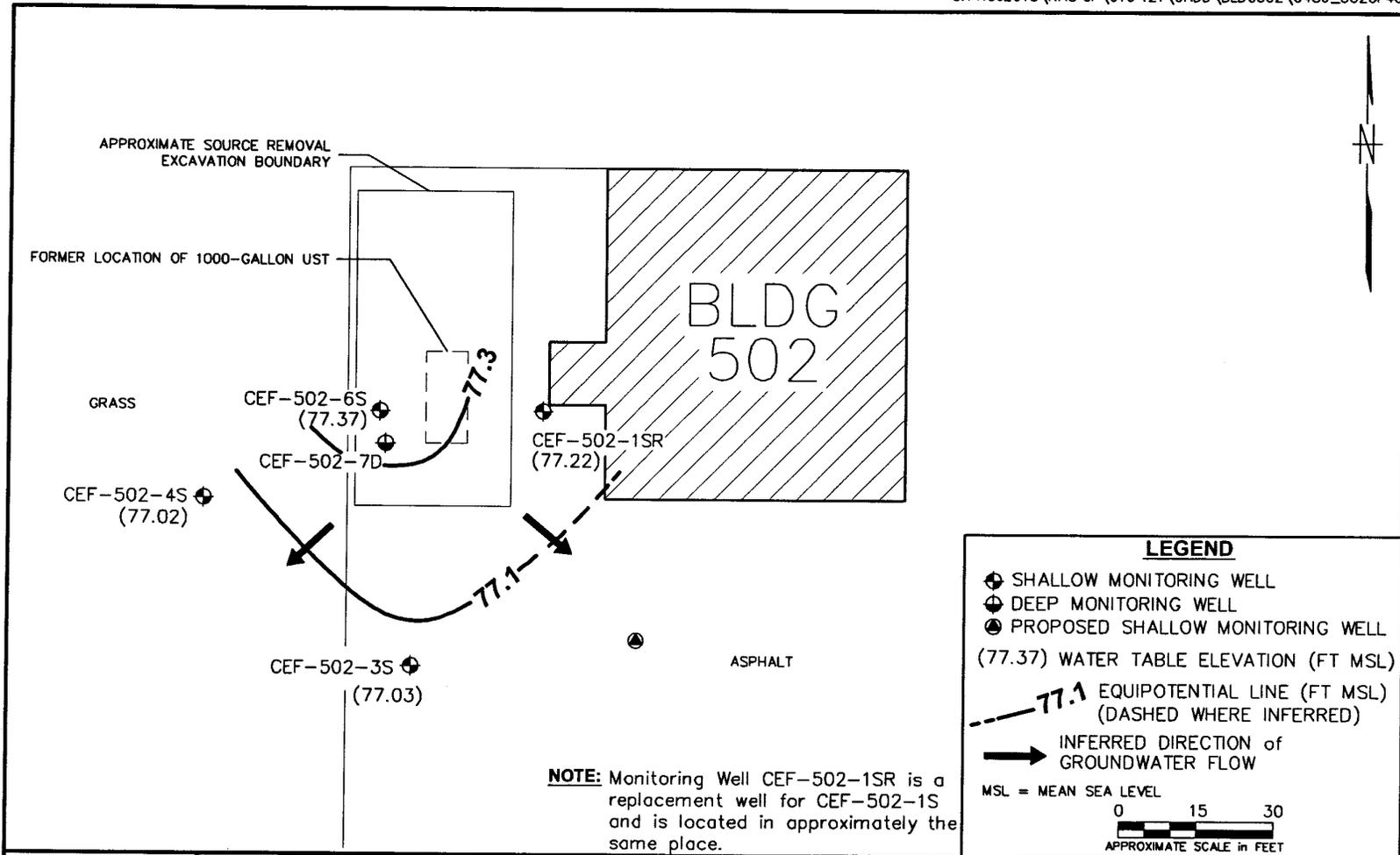


DRAWN BY LLK	DATE 6/13/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SITE LOCATION MAP
BUILDING 502
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NO. 0486	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV. 0



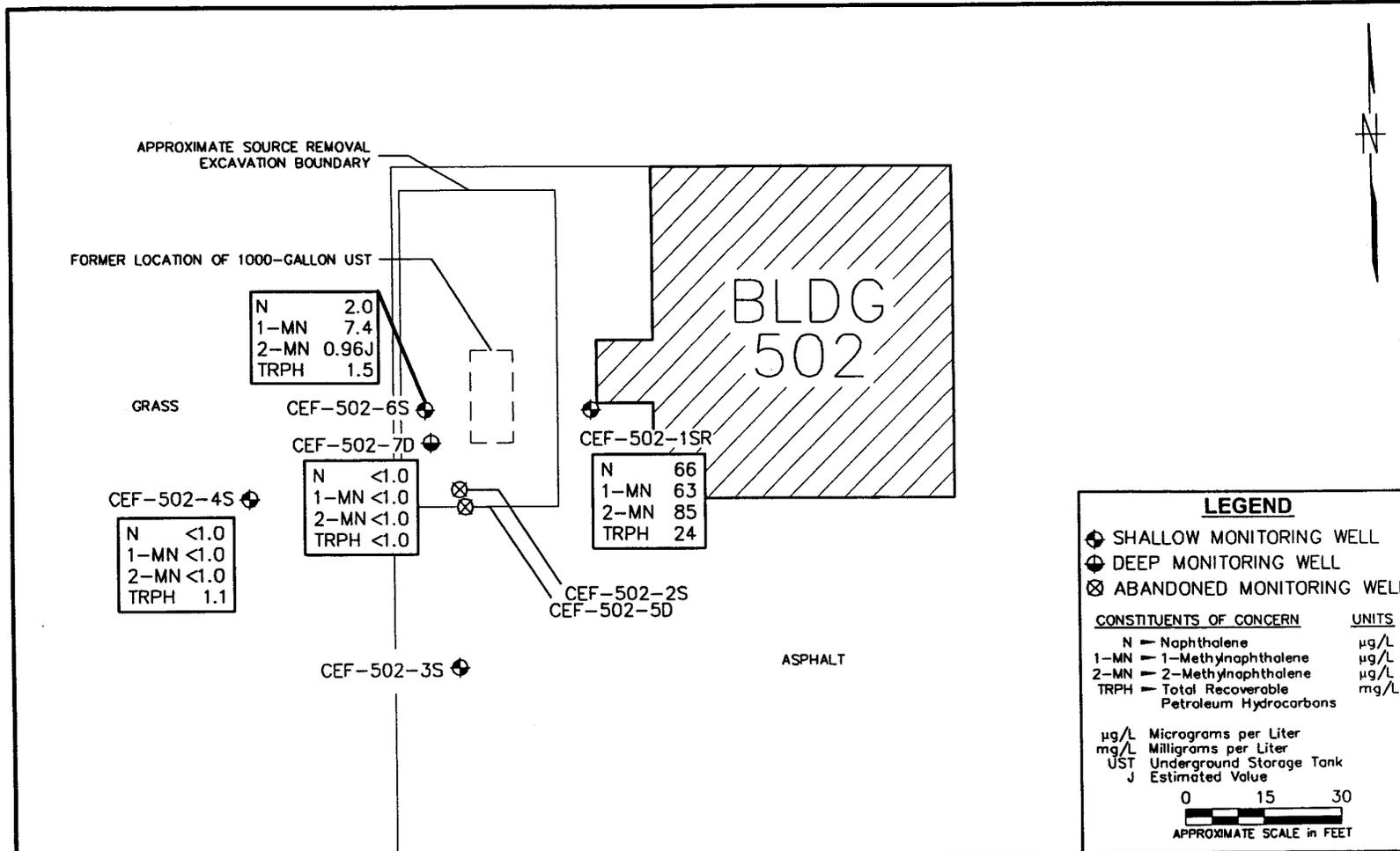
NOTE: Monitoring Well CEF-502-1SR is a replacement well for CEF-502-1S and is located in approximately the same place.

DRAWN BY	DATE
LLK	6/21/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	



GROUNDWATER FLOW MAP (04-09-2001) and
 PROPOSED SHALLOW MONITORING WELL LOCATION
 BUILDING 502
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NO.	0486
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO.	FIGURE 2
REV.	0



DRAWN BY LLK DATE 6/13/01
 CHECKED BY DATE
 COST/SCHED-AREA
 SCALE AS NOTED



HYDROCARBON CONCENTRATIONS IN GROUNDWATER
 APRIL 9-10, 2001
 BUILDING 502
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NO. 0486
 APPROVED BY DATE
 APPROVED BY DATE
 DRAWING NO. FIGURE 3 REV. 0

ATTACHMENT A
FDEP ANNUAL REVIEW LETTER



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

July 6, 2000

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

RE: Building 502, Tank 502, Semi-Annual/Annual Groundwater
Monitoring Report, Naval Air Station Cecil Field,
Florida.

Dear Mr. Ugolini:

I have completed the technical review of the Annual Groundwater Monitoring Report, dated June 2000 (received June 5, 2000) submitted for the above-referenced site. FDEP concurs that semi-annual groundwater monitoring should continue in 2000/2001. In addition, a monitoring well must be installed in the former location of CEF-502-1S and sampled using USEPA Methods 602, 8310, and FL-Pro. Based on this data, a recommendation should be submitted for future actions at this site.

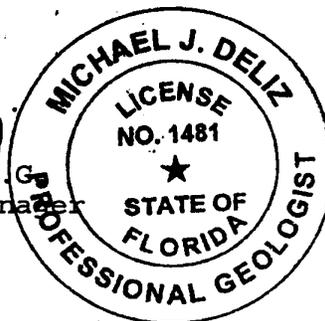
If you have any concerns regarding this letter, please contact me at (850) 921-9991.

Sincerely,

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

6-24-00

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

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ATTACHMENT B
FDEP SAR AND MOP APPROVAL LETTERS



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

July 13, 1999

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commanding Officer
Mr. Bryan Kizer, Code 1842
SOUTHNAVFACENGCOM
Post Office Box 190010
North Charleston, SC 29419-9010

RE: Site Assessment Report and Monitoring Only Proposal for
Facility 502, Tank 502, Naval Air Station Cecil Field,
Florida.

Dear Mr. Kizer:

I have reviewed the Site Assessment Report Revision and
Monitoring Only Proposal for Natural Attenuation dated April 1999
(received April 23, 1999), submitted for this site. Based upon
my review and comments, the enclosed Monitoring Only Plan for
Natural Attenuation was signed by Mr. John M. Ruddell, Director
of the Division of Waste Management.

If I can be of any further assistance with this matter,
please contact me at (850) 921-9991.

Sincerely,

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

13-July-99

Date

CC: Debbie Vaughn-Wright, USEPA
John Flowe, City of Jacksonville
Scott Glass, SOUTHNAVFACENGCOM
Dave Kruzicki, NAS Cecil Field
Eric Blomberg, HLA - Tallahassee

TJB B JJC ESN ESN ESN

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Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
July 13, 1999

David B. Struhs
Secretary

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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

Subject: Monitoring Only Plan Approval
Order Facility 502, Tank 502,
Naval Air Station, Cecil Field

Dear Mr. Kizer:

The Bureau of Waste Cleanup has completed the review of the Site Assessment Report and Monitoring Only Proposal for Natural Attenuation dated April 1999 (received April 23, 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-502-1S, CEF-502-2S, CEF-502-4S, and CEF-502 5D	602, 8310, and FL-PRO	Semi-annual

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Mr. Bryan Kizer

Page Two

July 13, 1999

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 resampling confirm the initial sampling results, then a proposal must be submitted, as described in Rule 62-70.690(7)(f), F.A.C.

Contaminated wells:

CEF-502-1S and CEF-502-2S: 100 µg/l Benzene; 200 µg/l Xylene; 300 µg/l Ethylbenzene; 400 µg/l Toluene; 200 µg/l Naphthalene; and 50 mg/l TRPH.

Perimeter wells:

CEF-502-4S and CEF-502-5D: 1 µg/l Benzene; 20 µg/l Xylene; 30 µg/l Ethylbenzene; 40 µg/l Toluene; 20 µg/l Naphthalene; and 5 mg/l TRPH

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- 502-2S</u>
End of year 1	26
End of year 2	13
End of year 3	6
End of year 4	3
End of year 5	<1

<u>Ethylbenzene</u>	<u>MW-CEF- 502-2S</u>
End of year 1	60
End of year 2	50
End of year 3	40
End of year 4	30
End of year 5	<30

Mr. Bryan Kizer
Page Three
July 13, 1999

<u>Xylene</u>	<u>MW-CEF-</u> <u>502-2S</u>
End of year 1	150
End of year 2	100
End of year 3	50
End of year 4	20
End of year 5	<20

<u>Naphthalene</u>	<u>MW-CEF-</u> <u>502-2S</u>
End of year 1	150
End of year 2	100
End of year 3	50
End of year 4	20
End of year 5	<20

<u>TRPH</u>	<u>MW-CEF-</u> <u>502-2S</u>
End of year 1	10
End of year 2	8
End of year 3	6
End of year 4	5
End of year 5	<5

If the applicable No Further Action criteria in Rule 62-70.680, F.A.C., are achieved 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 achieved following one year of monitoring, then a report summarizing the monitoring program should be submitted, including a proposal as described in Rule 62-770.690(7) (g).

Persons affected by this Order have the following options:

If you choose to accept the above decision by the Department 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:

ATTACHMENT C
BORING LOG AND
MONITORING WELL CONSTRUCTION DIAGRAM

BORING LOG



Tetra Tech NUS, Inc.

Page 1 of 1

PROJECT NAME: NAS CECIL FIELD BORING NUM GEF-502-1SR
 PROJECT NUMBER: N3996JG0050380 DATE: 3-30-01
 DRILLING COMPANY: Partridge Drilling GEOLOGIST: Louis Knight
 DRILLING RIG: B-3500 DRILLER: MIKE NICHOLSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		USCS*	Remarks	PID/FID Reading (ppm)											
					Soil Density/Consistency or Rock Hardness	Color			Material Classification	Sample	Sampler BZ	Borehole*	Driller BZ**							
	0.6			ASPHALT																
				FINE SAND		YBR	MEDIUM	MOD → STRONG HC ODOR FROM												
							YELLOW													
							BROWN													
							BR.Y	PALE BROWN-YELLOW		5-9' bls										
								DK GRAY-BROWN		SLIGHT HC										
								TO BLACK		ODOR 9-13'										
								DARK												
								BROWN												
	13				13 TD															

* When rock or rock brokenness.

** Include monitoring reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.

Remarks: _____

Drilling Area Background (ppm):

Converted to Well: Yes No Well I.D. #: GEF-502-1SR



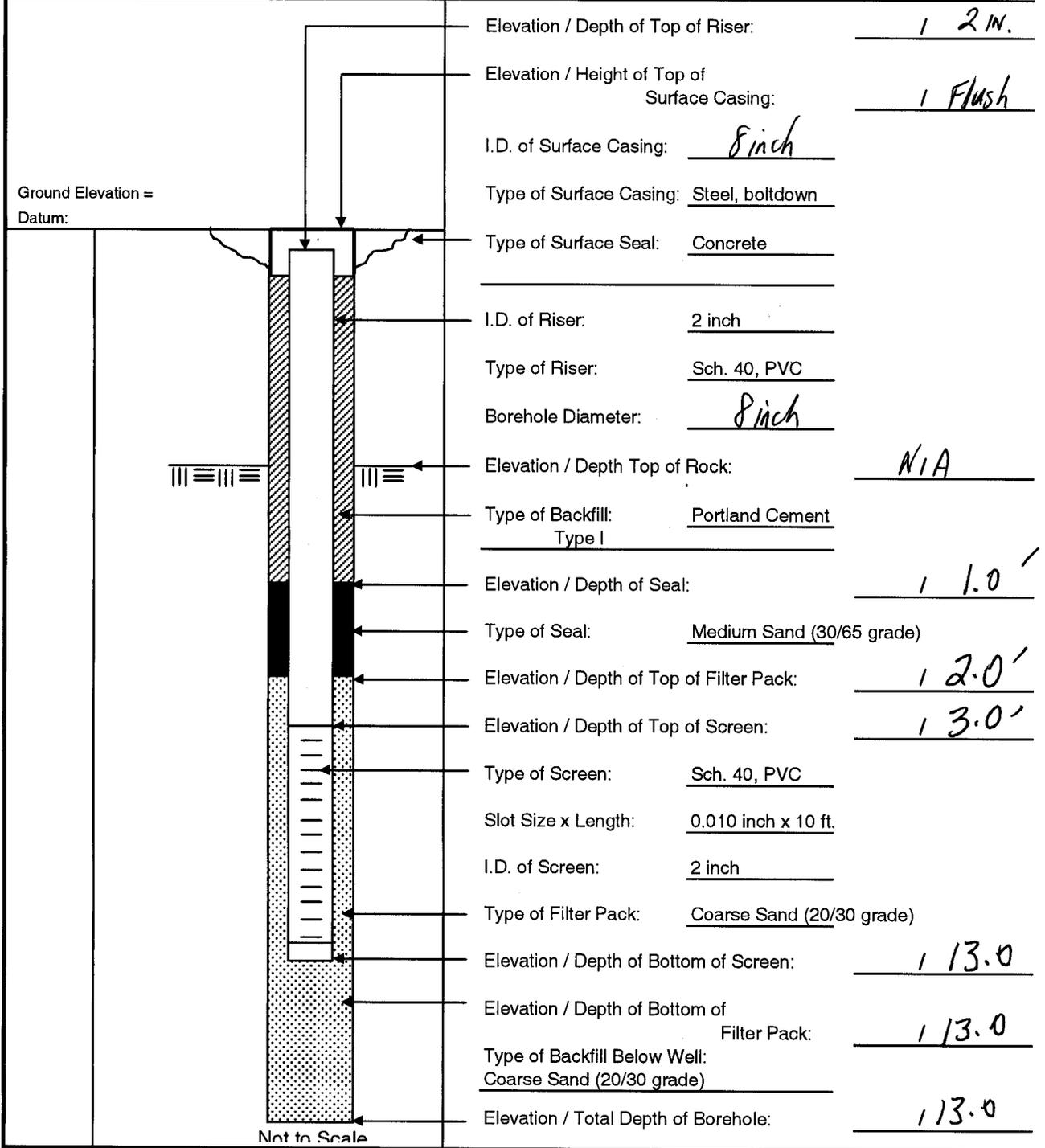
Tetra Tech NUS, Inc.

WELL No.:

CEF-502-MW1SR

MONITORING WELL SHEET

PROJECT: NAS CECIL FIELD DRILLING Co.: Partridge BORING No.: CEF-502-MW1SR
 PROJECT No.: 3996 DRILLER: M. NICHOLSON DATE COMPLETED: 03/21/2001
 SITE: BLOG 502 DRILLING METHOD: Hollow Stem NORTHING: _____
 GEOLOGIST: L. Knight DEV. METHOD: Submersible EASTING: _____



Elevation / Depth of Top of Riser: 1 2 IN.
 Elevation / Height of Top of Surface Casing: 1 Flush
 I.D. of Surface Casing: 8 inch
 Type of Surface Casing: Steel, bolt-down
 Type of Surface Seal: Concrete
 I.D. of Riser: 2 inch
 Type of Riser: Sch. 40, PVC
 Borehole Diameter: 8 inch
 Elevation / Depth Top of Rock: N/A
 Type of Backfill: Portland Cement Type I
 Elevation / Depth of Seal: 1 1.0'
 Type of Seal: Medium Sand (30/65 grade)
 Elevation / Depth of Top of Filter Pack: 1 2.0'
 Elevation / Depth of Top of Screen: 1 3.0'
 Type of Screen: Sch. 40, PVC
 Slot Size x Length: 0.010 inch x 10 ft.
 I.D. of Screen: 2 inch
 Type of Filter Pack: Coarse Sand (20/30 grade)
 Elevation / Depth of Bottom of Screen: 1 13.0
 Elevation / Depth of Bottom of Filter Pack: 1 13.0
 Type of Backfill Below Well: Coarse Sand (20/30 grade)
 Elevation / Total Depth of Borehole: 1 13.0

Not to Scale

ATTACHMENT D
GROUNDWATER ANALYTICAL REPORT

ACCURA ANALYTICAL LABORATORY, INC.
6017 Financial Drive, Norcross, Georgia, 30071, Phone (770) 449-8800

CASE NARRATIVE for Project Number: 27566
Client Project: Cecil Field, Bldg. 502 / NO486
CTO Manager: Paul Calligan

The following items were noted concerning this project:

1. The following samples were received by Accura Analytical Laboratory on 04/10/01 at 0945:

<u>Client I.D.</u>	<u>Laboratory I.D.</u>
CEF-502-GW-06S-02	AC11282
CEF-502-GW-01SR-02	AC11283
CEF-502-GW-07D-02	AC11284
CEF-502-DUP1-02	AC11285

2. The sample cooler temperature was noted to be 2⁰C upon receipt.
3. The "J" values noted for the PAH results indicate estimated concentrations that were above the method detection limits, but below the reporting limits.
4. The pH of the samples was 1.0 for the VOC analysis.
5. One of the surrogates (Nonatriacontane/C39), associated with the FL-PRO analysis was outside the method specified limit for all samples and Q.C. analyses performed for this project as noted with "Z" qualifier. The recoveries were within historical limits established in the laboratory; therefore the data was accepted.
6. The following samples required dilution due to high analyte concentration, resulting in elevated detection limits:

FL-PRO
CER-502-GW-01SR-02
CER-502-DUP1-02

7. The laboratory control sample recovery was outside the project specified limit for the following analyte:

FL-PRO

The recovery was within historical limits established in the laboratory; therefore the data was accepted.

8. The following spike recoveries were outside the project specified limits due to the samples were preserved with HCL which causes this compound to break down rapidly in an acidic environment; therefore low recoveries for this compound are expected:

VOC – SW-46-8260B

Matrix Spike - 2-Chloroethylvinylether

Matrix Spike Duplicate - 2-Chloroethylvinylether

9. The following spike recoveries could not be determined due to high sample concentration:

FL-PRO

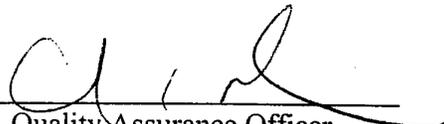
Matrix Spike - FL-PRO

Matrix Spike Duplicate - FL-PRO

10. The relative percent difference between the matrix spike and matrix spike duplicate was outside the project specified limit for the following analyte:

FL-PRO

11. Batch QC is reported for the FL-PRO and PAH analyses due to limited sample volume. Note that laboratory control sample and laboratory control sample duplicate recoveries are reported as matrix spike and matrix spike duplicate recoveries on the QC spreadsheet for the PAH analysis.
12. Per client request, the FL-PRO results are reported out as greater than or equal to Accura Analytical Laboratory's reported detection limit.


Quality Assurance Officer
Camden L. Robinson



TETRA TECH NUS, INC.

147L # 27566 145L/2C

CHAIN OF CUSTODY

NUMBER 502-040901

PAGE 1 OF 1/2

CECIL FIELD

PROJECT NO: N0486	SITE NAME: Bldg. 502	PROJECT MANAGER AND PHONE NUMBER: PAUL CALLIGAN 850 385 9899	LABORATORY NAME AND CONTACT: ACCURA Bonnie Hogie
SAMPLERS (SIGNATURE) <i>[Signature]</i>		FIELD OPERATIONS LEADER AND PHONE NUMBER: MERVIN DALL 904 281 1941 x.14	ADDRESS: 6017 FINANCIAL DRIVE
		CARRIER/WAYBILL NUMBER: Fedex 8244 2558 5213	CITY, STATE: NORCROSS, GA 30071

STANDARD TAT RUSH TAT
 24 hr. 48 hr. 72 hr. 7 day 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G) G G G
 PRESERVATIVE USED HCR None HCR

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS			COMMENTS	
04/09	1607	CEE-502-GW-065-02	GW	G	7	3	2	2	AC 11282	Cool to 4°C
04/09	1335	CEER-502-GW-013R-02	GW	G	7	3	2	2	AC 11283	
										*Report EPA Method 602 compounds for VOC only.

1. RELINQUISHED BY: <i>[Signature]</i>	DATE: 4-9-01	TIME: 1845	1. RECEIVED BY: FED EX	DATE:	TIME:
2. RELINQUISHED BY:	DATE:	TIME:	2. RECEIVED BY:	DATE:	TIME:
3. RELINQUISHED BY: FED EX	DATE: 4-10-01	TIME: 0945	3. RECEIVED BY: <i>[Signature]</i>	DATE: 4-10-01	TIME: 0945

COMMENTS: PO# FLOR 0486 P377 (DW) Field job# 0486 GHD 050825

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)



PROJECT NO: **NO486** SITE NAME: **CECIL FIELD BLDG 502**

SAMPLERS (SIGNATURE): *[Signature]*

PROJECT MANAGER AND PHONE NUMBER: **PAUL CALLIGAN 856-385-9881**

LABORATORY NAME AND CONTACT: **ACCURA BONNIE MOGUE**

FIELD OPERATIONS LEADER AND PHONE NUMBER: **MERVIN DALE 904-281-1941**

ADDRESS: **6017 FINANCIAL DRIVE**

CARRIER/WAYBILL NUMBER: **FED EX 8244 2558 5224**

CITY, STATE: **ND R CROSS GA 30071**

STANDARD TAT RUSH TAT

24 hr. 48 hr. 72 hr. 7 day 14 day

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (G)	No. OF CONTAINERS	TYPE OF ANALYSIS			COMMENTS	
						VOL ^s	SWB	TRPH		
04/09	1620	CEF-502-GW-77B-02	GW	G	7	3	2	2	AC 11284	Cool To 4°C
04/09	—	CEF-502-DUPI-02	GW	G	7	3	2	2	AC 11285	
										* REPORT EPA METHOD 602 COMPOUND FOR VOCs ONLY

1. RELINQUISHED BY: <i>[Signature]</i>	DATE: 4-9-01	TIME: 1845	1. RECEIVED BY: FED EX	DATE: _____	TIME: _____
2. RELINQUISHED BY: _____	DATE: _____	TIME: _____	2. RECEIVED BY: _____	DATE: _____	TIME: _____
3. RELINQUISHED BY: FED EX.	DATE: 4-10-01	TIME: 0945	3. RECEIVED BY: <i>[Signature]</i>	DATE: 4-10-01	TIME: 0945

COMMENTS: **PO# FLOR 0486 P37FLDW) FIELD SOB# 0486 GH0 050825**

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

I Candice L. Ribon, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (770) 449-8800 if there are any questions or problems with the enclosed electronic deliverables.

Signature: Candice L. Ribon Title: QC Officer Date: 5/9/01

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LABORATORY REPORT

Accura Sample ID #: AC11282 Accura Project #: 27566
 Client: Tetra Tech Nus -Jacksonville Date Sampled: 4/9/01
 Client Contact: PAUL CALLIGAN Date Received: 4/10/01
 Client Project Number: NO486 Date Reported: 4/26/01
 Client Project Name: CECIL FIELD.BLDG. 502 Sample Matrix: WATER
 Client Sample ID: CEF-502-GW-06S-02

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	7.4		1.0
2-Methylnaphthalene	0.96	J	1.0
Acenaphthene	1.2		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	0.48	J	1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	2.0		1.0
Phenanthrene	<RL		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	1.5		1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1.1.1-Trichloroethane	<RL		1.0
1.1.2,2-Tetrachloroethane	<RL		1.0
1.1.2-Trichloroethane	<RL		1.0
1.1-Dichloroethane	<RL		1.0
1.1-Dichloroethene	<RL		1.0
1.2-Dichloroethane	<RL		1.0
1.2-Dichloropropane	<RL		1.0
1.3-Dichloropropene	<RL		1.0

2-Chloroethylvinyl ether	<RL	10
Acrolein	<RL	10
Acrylonitrile	<RL	10
Benzene	<RL	1.0
Bromodichloromethane	<RL	1.0
Bromoform	<RL	1.0
Bromomethane	<RL	1.0
Carbon tetrachloride	<RL	1.0
Chlorobenzene	<RL	1.0
Chloroform	<RL	1.0
Chloromethane	<RL	1.0
Ethylbenzene	2.4	1.0
Methylene chloride	<RL	5.0
Methyl-tert-butyl ether (MTBE)	<RL	10
Tetrachloroethene	<RL	1.0
Toluene	<RL	1.0
trans-1,2-Dichloroethene	<RL	1.0
Trichloroethene	<RL	1.0
Vinyl chloride	<RL	1.0
Xylenes (Total)	<RL	2.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 43-111)	69		
Nitrobenzene-d5 (Range 37-104)	71		
p-Terphenyl-d14 (Range 15-132)	30		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	42	Z	
o-Terphenyl (Range 82-142)	84		

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (88-128)	96		
4-Bromofluorobenzene (82-117)	109		
Toluene-d8 (80-119)	116		

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LABORATORY REPORT

Accura Sample ID #: AC11283 Accura Project #: 27566
 Client: Tetra Tech Nus -Jacksonville Date Sampled: 4/9/01
 Client Contact: PAUL CALLIGAN Date Received: 4/10/01
 Client Project Number: NO486 Date Reported: 4/25/01
 Client Project Name: CECIL FIELD,BLDG. 502 Sample Matrix: WATER
 Client Sample ID: CER-502-GW-01SR-02

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	63		1.0
2-Methylnaphthalene	85		1.0
Acenaphthene	3.7		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	4.5		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	66		1.0
Phenanthrene	1.7		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	24		10

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

2-Chloroethylvinyl ether	<RL	10
Acrolein	<RL	10
Acrylonitrile	<RL	10
Benzene	<RL	1.0
Bromodichloromethane	<RL	1.0
Bromoform	<RL	1.0
Bromomethane	<RL	1.0
Carbon tetrachloride	<RL	1.0
Chlorobenzene	<RL	1.0
Chloroform	<RL	1.0
Chloromethane	<RL	1.0
Ethylbenzene	13	1.0
Methylene chloride	<RL	5.0
Methyl-tert-butyl ether (MTBE)	<RL	10
Tetrachloroethene	<RL	1.0
Toluene	<RL	1.0
trans-1,2-Dichloroethene	<RL	1.0
Trichloroethene	<RL	1.0
Vinyl chloride	<RL	1.0
Xylenes (Total)	4.8	2.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01 Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
2-Fluorobiphenyl (Range 43-111)	66		
Nitrobenzene-d5 (Range 37-104)	76		
p-Terphenyl-d14 (Range 15-132)	48		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
C(39) (Range 42-193)	37	Z	
o-Terphenyl (Range 82-142)	126		

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,2-Dichloroethane-d4 (88-128)	101		
4-Bromofluorobenzene (82-117)	98		
Toluene-d8 (80-119)	103		

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LABORATORY REPORT

Accura Sample ID #: AC11284 Accura Project #: 27566
 Client: Tetra Tech Nus -Jacksonville Date Sampled: 4/9/01
 Client Contact: PAUL CALLIGAN Date Received: 4/10/01
 Client Project Number: NO486 Date Reported: 4/26/01
 Client Project Name: CECIL FIELD.BLDG. 502 Sample Matrix: WATER
 Client Sample ID: CEF-502-GW-07D-02

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	<RL		1.0
2-Methylnaphthalene	<RL		1.0
Acenaphthene	<RL		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	<RL		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	<RL		1.0
Phenanthrene	<RL		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	<RL		1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1.1.1-Trichloroethane	<RL		1.0
1.1.2.2-Tetrachloroethane	<RL		1.0
1.1.2-Trichloroethane	<RL		1.0
1.1-Dichloroethane	<RL		1.0
1.1-Dichloroethene	<RL		1.0
1.2-Dichloroethane	<RL		1.0
1.2-Dichloropropane	<RL		1.0
1.3-Dichloropropene	<RL		1.0

2-Chloroethylvinyl ether	<RL	10
Acrolein	<RL	10
Acrylonitrile	<RL	10
Benzene	<RL	1.0
Bromodichloromethane	<RL	1.0
Bromoform	<RL	1.0
Bromomethane	<RL	1.0
Carbon tetrachloride	<RL	1.0
Chlorobenzene	<RL	1.0
Chloroform	<RL	1.0
Chloromethane	<RL	1.0
Ethylbenzene	<RL	1.0
Methylene chloride	<RL	5.0
Methyl-tert-butyl ether (MTBE)	<RL	10
Tetrachloroethene	<RL	1.0
Toluene	<RL	1.0
trans-1,2-Dichloroethene	<RL	1.0
Trichloroethene	<RL	1.0
Vinyl chloride	<RL	1.0
Xylenes (Total)	<RL	2.0

ANALYSIS: X B/N Sample Surrogates (Waters) Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 43-111)	75		
Nitrobenzene-d5 (Range 37-104)	77		
p-Terphenyl-d14 (Range 15-132)	58		

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	27	Z	
o-Terphenyl (Range 82-142)	90		

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (88-128)	96		
4-Bromofluorobenzene (82-117)	101		
Toluene-d8 (80-119)	109		

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LABORATORY REPORT

Accura Sample ID #: AC11285 Accura Project #: 27566
 Client: Tetra Tech Nus -Jacksonville Date Sampled: 4/9/01
 Client Contact: PAUL CALLIGAN Date Received: 4/10/01
 Client Project Number: NO486 Date Reported: 4/25/01
 Client Project Name: CECIL FIELD,BLDG. 502 Sample Matrix: WATER
 Client Sample ID: CEF-502-DUP1-02

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	63		1.0
2-Methylnaphthalene	89		1.0
Acenaphthene	3.9		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	4.8		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	62		1.0
Phenanthrene	2.4		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	22		10

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

2-Chloroethylvinyl ether	<RL	10
Acrolein	<RL	10
Acrylonitrile	<RL	10
Benzene	<RL	1.0
Bromodichloromethane	<RL	1.0
Bromoform	<RL	1.0
Bromomethane	<RL	1.0
Carbon tetrachloride	<RL	1.0
Chlorobenzene	<RL	1.0
Chloroform	<RL	1.0
Chloromethane	<RL	1.0
Ethylbenzene	13	1.0
Methylene chloride	<RL	5.0
Methyl-tert-butyl ether (MTBE)	<RL	10
Tetrachloroethene	<RL	1.0
Toluene	<RL	1.0
trans-1,2-Dichloroethene	<RL	1.0
Trichloroethene	<RL	1.0
Vinyl chloride	<RL	1.0
Xylenes (Total)	4.7	2.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01 Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
2-Fluorobiphenyl (Range 43-111)	66		
Nitrobenzene-d5 (Range 37-104)	65		
p-Terphenyl-d14 (Range 15-132)	61		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
C(39) (Range 42-193)	28	Z	
o-Terphenyl (Range 82-142)	107		

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,2-Dichloroethane-d4 (88-128)	94		
4-Bromofluorobenzene (82-117)	102		
Toluene-d8 (80-119)	105		

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 LABORATORY REPORT

Accura Sample ID #: AC11286 Accura Project #: 27566
 Client: Tetra Tech Nus -Jacksonville Date Sampled: 4/10/01
 Client Contact: PAUL CALLIGAN Date Received: 4/10/01
 Client Project Number: NO486 Date Reported: 5/10/01
 Client Project Name: CECIL FIELD,BLDG. 502 Sample Matrix: WATER
 Client Sample ID: METHOD BLANK

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	<RL		1.0
2-Methylnaphthalene	<RL		1.0
Acenaphthene	<RL		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	<RL		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	<RL		1.0
Phenanthrene	<RL		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/16/01 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	<RL		1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

2-Chloroethylvinyl ether	<RL	10
Acrolein	<RL	10
Acrylonitrile	<RL	10
Benzene	<RL	1.0
Bromodichloromethane	<RL	1.0
Bromoform	<RL	1.0
Bromomethane	<RL	1.0
Carbon tetrachloride	<RL	1.0
Chlorobenzene	<RL	1.0
Chloroform	<RL	1.0
Chloromethane	<RL	1.0
Ethylbenzene	<RL	1.0
Methylene chloride	<RL	5.0
Methyl-tert-butyl ether (MTBE)	<RL	10
Tetrachloroethene	<RL	1.0
Toluene	<RL	1.0
trans-1,2-Dichloroethene	<RL	1.0
Trichloroethene	<RL	1.0
Vinyl chloride	<RL	1.0
Xylenes (Total)	<RL	2.0

ANALYSIS: X Base Neutral OC Surrogates (W)

Method Ref: 8270C

Date Ext/Dig/Prep: 4/12/01 Date Analyzed: 4/23/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 57-102)	72		
Nitrobenzene-d5 (Range 50-103)	73		
p-Terphenyl-d14 (Range 64-113)	77		

ANALYSIS: X PRO OC Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/16/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	41	Z	
o-Terphenyl (Range 82-142)	103		

ANALYSIS: X VOC OC Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-130)	90		
4-Bromofluorobenzene (81-118)	102		
Toluene-d8 (84-115)	109		

**PROJECT QUALITY CONTROL RESULTS
AAL PROJECT #27566**

Method No	Analyte / Component	Project Control Rec.		Accuracy Limits		Project Control		Precision Limits		Project Control Recoveries		Accuracy Limits		Project Control		Precision Limits	
		MS	MSD	MS	MSD	MS/MSD Recoveries	MS/MSD % Deviation	MS/MSD Deviation	MS/MSD Deviation	LCS	LCS	LCS Recoveries	LCS Recoveries	Field Dup % Deviation	Field Dup % Deviation	Field Dup Deviation	Field Dup Deviation
		Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²
VOLATILES BY GC/MS																	
				%	%			%	%			%	%			%	%
8260B	1,1,1-Trichloroethane	94	91			60-140	20-150	3%	<30	<50						<50	<75
8260B	1,1,2,2-Tetrachloroethane	93	92			60-140	20-150	1%	<30	<50	107		65-135	65-135		<50	<75
8260B	1,1,2-Trichloroethane	96	92			60-140	20-150	4%	<30	<50	95		64-135	64-135		<50	<75
8260B	1,1-Dichloroethane	93	90			60-140	20-150	3%	<30	<50	98		65-135	65-135		<50	<75
8260B	1,1-Dichloroethene	98	90			60-140	20-150	9%	<30	<50	102		62-135	62-135		<50	<75
8260B	1,2-Dichloroethane	87	86			60-140	20-150	1%	<30	<50	105		65-135	65-135		<50	<75
8260B	1,2-Dichloropropane	93	93			60-140	20-150	0%	<30	<50	97		58-137	58-137		<50	<75
8260B	1,3-Dichloropropene	96	93			60-140	20-150	3%	<30	<50	96		60-135	60-135		<50	<75
8260B	2-Chloroethylvinyl ether	19	20			60-140	20-150	5%	<30	<50	98		65-135	65-135		<50	<75
8260B	Acrolein	94	84			60-140	20-150	11%	<30	<50	77		65-135	65-135		<50	<75
8260B	Acrylonitrile	92	94			60-140	20-150	2%	<30	<50	82		65-135	65-135		<50	<75
8260B	Benzene	96	93			60-140	20-150	3%	<30	<50	86		63-135	63-135		<50	<75
8260B	Bromodichloromethane	94	93			60-140	20-150	1%	<30	<50	102		65-135	65-135		<50	<75
8260B	Bromoform	97	92			60-140	20-150	5%	<30	<50	101		65-135	65-135		<50	<75
8260B	Bromomethane	72	67			60-140	20-150	7%	<30	<50	95		65-135	65-135		<50	<75
8260B	Carbon Tetrachloride	95	90			60-140	20-150	5%	<30	<50	113		62-135	62-135		<50	<75
8260B	Chlorobenzene	98	95			60-140	20-150	3%	<30	<50	109		52-135	52-135		<50	<75
8260B	Chloroform	91	89			60-140	20-150	2%	<30	<50	103		65-135	65-135		<50	<75
8260B	Chloromethane	90	83			60-140	20-150	8%	<30	<50	101		64-135	64-135		<50	<75
8260B	Ethylbenzene	101	96			60-140	20-150	5%	<30	<50	102		65-135	65-135		<50	<75
8260B	Methylene Chloride	84	80			60-140	20-150	5%	<30	<50	111		65-135	65-135		<50	<75
8260B	Methyl-tert-butyl ether	91	91			60-140	20-150	0%	<30	<50	99		65-135	65-135		<50	<75
8260B	Tetrachloroethylene	104	96			60-140	20-150	8%	<30	<50	88		65-135	65-135		<50	<75
8260B	Toluene	99	95			60-140	20-150	4%	<30	<50	109		61-135	61-135		<50	<75
8260B	Trans-1,2-Dichloroethene	98	90			60-140	20-150	9%	<30	<50	106		64-135	64-135		<50	<75
8260B	Trichloroethylene	96	95			60-140	20-150	1%	<30	<50	104		65-135	65-135		<50	<75
8260B	Vinyl Chloride	90	82			60-140	20-150	9%	<30	<50	103		61-135	61-135		<50	<75
8260B	total-Xylene	103	98			60-140	20-150	5%	<30	<50	107		36-144	36-144		<50	<75
8260B	Toluene-d8 (surr)	96	100			75-125	65-135	4%	NA	NA	109		65-135	65-135		<50	<75
8260B	4-Bromofluorobenzene (surr)	90	96			75-125	65-135	6%	NA	NA	107		NA	NA		NA	NA
8260B	1,2-Dichloroethane-d4 (surr)	83	89			62-139	52-149	7%	NA	NA	105		NA	NA		NA	NA
8260B									NA	NA	97		NA	NA		NA	NA

SEMI-VOLATILES BY GC/MS																	
				%	%			%	%			%	%			%	%
8270C	1-Methylnaphthalene	65	59			41-125	31-135	10%	#DIV/0!	<30	<50			60		41-125	31-135
8270C	2-Methylnaphthalene	83	76			41-125	31-135	9%	#DIV/0!	<30	<50			81		41-125	31-135
8270C	Acenaphthylene	78	73			47-125	37-135	7%	#DIV/0!	<30	<50			88		47-125	37-135
8270C	Acenaphthene	76	71			49-124	39-135	7%	#DIV/0!	<30	<50			79		49-124	39-135
8270C	Anthracene	82	83			45-165	35-175	1%	#DIV/0!	<30	<50			87		45-165	35-175
8270C	Benzo (a) anthracene	81	81			51-133	41-143	0%	#DIV/0!	<30	<50			93		51-133	41-143
8270C	Benzo (a) pyrene	76	80			41-125	31-135	5%	#DIV/0!	<30	<50			99		41-125	31-135
8270C	Benzo (b) fluoranthene	85	77			37-125	27-135	10%	#DIV/0!	<30	<50			93		37-125	27-135
8270C	Benzo (g,h,i) perylene	71	71			34-149	25-159	0%	#DIV/0!	<30	<50			99		34-149	25-159
8270C	Benzo (k) fluoranthene	74	84			37-123	37-123	13%	#DIV/0!	<30	<50			94		37-123	37-123
8270C	Chrysene	83	84			55-133	45-143	1%	#DIV/0!	<30	<50			92		55-133	45-143
8270C	Dibenzo (a,h) anthracene	74	75			50-125	40-135	1%	#DIV/0!	<30	<50			95		50-125	40-135
8270C	Fluoranthene	94	95			47-125	37-135	1%	#DIV/0!	<30	<50			94		47-125	37-135
8270C	Fluorene	78	74			48-139	38-149	5%	#DIV/0!	<30	<50			86		48-139	38-149
8270C	Indeno (1,2,3-c,d) pyrene	74	74			27-160	25-170	0%	#DIV/0!	<30	<50			94		27-160	25-170

Notes:
1) SW-846 Methods unless otherwise noted
2) Includes sediments, waste, solids

NS = Not Specified
NA = Not Applicable

**PROJECT QUALITY CONTROL RESULTS
AAL PROJECT #27566**

8270C	Naphthalene	74	65			50-125	40-135	13%	#DIV/0!	<30	<50									
8270C	Phenanthrene	84	81			54-125	44-135	4%	#DIV/0!	<30	<50		74	50-125	40-135			<50	<75	
8270C	Pyrene	68	67			47-136	37-146	1%	#DIV/0!	<30	<50		86	54-125	44-135			<50	<75	
8270C	2-Fluorobiphenyl	73	69			43-125	34-135	6%	#DIV/0!	<30	<50		94	47-136	37-146			<50	<75	
8270C	Nitrobenzene-d5	77	67			32-125	25-135	14%	#DIV/0!	<30	<50		87							
8270C	Terphenyl-d14	72	71			42-126	32-136	1%	#DIV/0!	<30	<50		86							
PETROLEUM HYDROCARBONS																				
FL-PRO	FL-PRO	0	0			%	%			%	%			%	%			%	%	
						50-150	30-170		#DIV/0!	#DIV/0!	<30	<50	73		%	%			<50	<75
														75-125	70-130					

Notes:
1) SW-846 Methods unless otherwise noted
2) Includes sediments, waste, solids

NS - Not Specified
NA - Not Applicable

ACCURA ANALYTICAL LABORATORY, INC.

6017 Financial Drive, Norcross, Georgia 30017, Phone (770)449-8800, FAX (770)449-5477
 FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved
 LABORATORY REPORT

Accura Sample ID #: AC11472 Accura Project #: 27595
 Client: Tetra Tech Nus -Jacksonville Date Sampled: 4/10/01
 Client Contact: PAUL CALLIGAN Date Received: 4/12/01
 Client Project Number: NO486 Date Reported: 5/10/01
 Client Project Name: CECIL FEILD,BLDG. 502 Sample Matrix: WATER
 Client Sample ID: CEF-502-GW-4S-02

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 4/14/01 Date Analyzed: 4/23/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	<RL		1.0
2-Methylnaphthalene	<RL		1.0
Acenaphthene	<RL		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	<RL		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	<RL		1.0
Phenanthrene	<RL		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	1.1	B	1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

2-Chloroethylvinyl ether	<RL		10
Acrolein	<RL		10
Acrylonitrile	<RL		10
Benzene	<RL		1.0
Bromodichloromethane	<RL		1.0
Bromoform	<RL		1.0
Bromomethane	<RL		1.0
Carbon tetrachloride	<RL		1.0
Chlorobenzene	<RL		1.0
Chloroform	<RL		1.0
Chloromethane	<RL		1.0
Ethylbenzene	0.92	J	1.0
Methylene chloride	<RL		5.0
Methyl-tert-butyl ether (MTBE)	<RL		10
Tetrachloroethene	<RL		1.0
Toluene	<RL		1.0
trans-1,2-Dichloroethene	<RL		1.0
Trichloroethene	<RL		1.0
Vinyl chloride	<RL		1.0
Xylenes (Total)	<RL		2.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 4/14/01 Date Analyzed: 4/23/01 Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
2-Fluorobiphenyl (Range 43-111)	67		
Nitrobenzene-d5 (Range 37-104)	52		
p-Terphenyl-d14 (Range 15-132)	54		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/17/01 Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
C(39) (Range 42-193)	28	Z	
o-Terphenyl (Range 82-142)	80	Z	

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,2-Dichloroethane-d4 (88-128)	87		
4-Bromofluorobenzene (82-117)	97		
Toluene-d8 (80-119)	105		

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 FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved
 LABORATORY REPORT

Accura Sample ID #: AC11473 Accura Project #: 27595
 Client: Tetra Tech Nus -Jacksonville Date Sampled: 4/12/01
 Client Contact: PAUL CALLIGAN Date Received: 4/12/01
 Client Project Number: NO486 Date Reported: 5/10/01
 Client Project Name: CECIL FEILD,BLDG. 502 Sample Matrix: WATER
 Client Sample ID: METHOD BLANK

ANALYSIS: PAH's - Low Level

Date Ext/Dig/Prep: 4/14/01 Date Analyzed: 4/23/01 Method Ref: 8270C
 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	<RL		1.0
2-Methylnaphthalene	<RL		1.0
Acenaphthene	<RL		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	<RL		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	<RL		1.0
Phenanthrene	<RL		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/16/01 Method Ref: FL-PRO
 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	0.46	J	1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01 Method Ref: 8260B
 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

2-Chloroethylvinyl ether	<RL	10
Acrolein	<RL	10
Acrylonitrile	<RL	10
Benzene	<RL	1.0
Bromodichloromethane	<RL	1.0
Bromoform	<RL	1.0
Bromomethane	<RL	1.0
Carbon tetrachloride	<RL	1.0
Chlorobenzene	<RL	1.0
Chloroform	<RL	1.0
Chloromethane	<RL	1.0
Ethylbenzene	<RL	1.0
Methylene chloride	<RL	5.0
Methyl-tert-butyl ether (MTBE)	<RL	10
Tetrachloroethene	<RL	1.0
Toluene	<RL	1.0
trans-1,2-Dichloroethene	<RL	1.0
Trichloroethene	<RL	1.0
Vinyl chloride	<RL	1.0
Xylenes (Total)	<RL	2.0

ANALYSIS: X Base Neutral OC Surrogates (W)

Method Ref: 8270C

Date Ext/Dig/Prep: 4/14/01 Date Analyzed: 4/23/01

Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
2-Fluorobiphenyl (Range 57-102)	62		
Nitrobenzene-d5 (Range 50-103)	63		
p-Terphenyl-d14 (Range 64-113)	71		

ANALYSIS: X PRO OC Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 4/13/01 Date Analyzed: 4/16/01

Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
C(39) (Range 42-193)	41	Z	
o-Terphenyl (Range 82-142)	103		

ANALYSIS: X VOC OC Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 4/18/01 Date Analyzed: 4/18/01

Result Units: %

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,2-Dichloroethane-d4 (81-130)	90		
4-Bromofluorobenzene (81-118)	102		
Toluene-d8 (84-115)	109		



TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER

502-041001

PAGE 2 OF 2

REV 100

PROJECT NO: N0486		SITE NAME: B. 502		PROJECT MANAGER AND PHONE NUMBER PAUL CALLIGAN 850-385-9899			LABORATORY NAME AND CONTACT: ACCURA BONNIE HOGUE				
SAMPLERS (SIGNATURE) <i>[Signature]</i>		FIELD OPERATIONS LEADER AND PHONE NUMBER MERVIN DALE 904-281-1941 x14			ADDRESS GOLF FINANCIAL DRIVE						
		CARRIER/WAYBILL NUMBER FED EX 8188 26082510			CITY, STATE NORCROSS, GA 30071						
STANDARD TAT <input checked="" type="checkbox"/>		MATRIX		GRAB (G) COMP (C)		No. OF CONTAINERS		CONTAINER TYPE PLASTIC (P) or GLASS (G)			
RUSH TAT <input type="checkbox"/>								PRESERVATIVE USED			
<input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 72 hr. <input type="checkbox"/> 7 day <input type="checkbox"/> 14 day											
DATE YEAR	TIME	SAMPLE ID				TYPE OF ANALYSIS		COMMENTS			
01/10	1310	LEF-502-GW-45-02		GW	G	7	3	2	2	AC 11472	COOL TO 4°C
											*REPORT EPA METHOD 602 COMPOUNDS FOR VOCs ONLY
1. RELINQUISHED BY <i>[Signature]</i>		DATE	TIME	1. RECEIVED BY		DATE	TIME				
2. RELINQUISHED BY		DATE	TIME	2. RECEIVED BY		DATE	TIME				
3. RELINQUISHED BY		DATE	TIME	3. RECEIVED BY		DATE	TIME				
COMMENTS		PO # FLOR 0486 P377 (DND)		FIELD JOB # 0486 G110 050 825							

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YELLOW (FIELD COPY)

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3/99

FORM NO. TINUS-001

PROJECT QUALITY CONTROL RESULTS
AAL PROJECT #27595

Method No ¹	Analyte / Component	Project Control Rec.				Accuracy Limits		Project Control		Precision Limits		Project Control Recoveries		Accuracy Limits		Project Control		Precision Limits	
		MS	MSD	MS	MSD	MS/MSD Recoveries		MS/MSD % Deviation		MS/MSD Deviation		LCS	LCS	LCS Recoveries		Field Dup % Deviation		Field Dup Deviation	
		Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²	Water	Soil ²
VOLATILES BY GC/MS																			
8260B	1,1,1-Trichloroethane	94	91			%	%			%	%			%	%			%	%
8260B	1,1,2,2-Tetrachloroethane	93	92			60-140	20-150	3%	<30	<50	107			65-135	65-135			<50	<75
8260B	1,1,2-Trichloroethane	96	92			60-140	20-150	1%	<30	<50	95			64-135	64-135			<50	<75
8260B	1,1-Dichloroethane	93	90			60-140	20-150	4%	<30	<50	98			65-135	65-135			<50	<75
8260B	1,1-Dichloroethene	98	90			60-140	20-150	9%	<30	<50	102			62-135	62-135			<50	<75
8260B	1,2-Dichloroethane	87	86			60-140	20-150	1%	<30	<50	105			65-135	65-135			<50	<75
8260B	1,2-Dichloropropane	93	93			60-140	20-150	0%	<30	<50	97			58-137	58-137			<50	<75
8260B	1,3-Dichloropropane	96	93			60-140	20-150	3%	<30	<50	96			60-135	60-135			<50	<75
8260B	2-Chloroethylvinyl ether	19	20			60-140	20-150	5%	<30	<50	98			65-135	65-135			<50	<75
8260B	Acrolein	94	84			60-140	20-150	11%	<30	<50	77			65-135	65-135			<50	<75
8260B	Acrylonitrile	92	94			60-140	20-150	2%	<30	<50	82			65-135	65-135			<50	<75
8260B	Benzene	96	93			60-140	20-150	3%	<30	<50	86			63-135	63-135			<50	<75
8260B	Bromodichloromethane	94	93			60-140	20-150	1%	<30	<50	102			65-135	65-135			<50	<75
8260B	Bromoform	97	92			60-140	20-150	5%	<30	<50	101			65-135	65-135			<50	<75
8260B	Bromomethane	72	67			60-140	20-150	7%	<30	<50	95			65-135	65-135			<50	<75
8260B	Carbon Tetrachloride	95	90			60-140	20-150	5%	<30	<50	113			62-135	62-135			<50	<75
8260B	Chlorobenzene	98	95			60-140	20-150	3%	<30	<50	109			52-135	52-135			<50	<75
8260B	Chloroform	91	89			60-140	20-150	2%	<30	<50	103			65-135	65-135			<50	<75
8260B	Chloromethane	90	83			60-140	20-150	8%	<30	<50	101			64-135	64-135			<50	<75
8260B	Ethylbenzene	101	96			60-140	20-150	5%	<30	<50	102			65-135	65-135			<50	<75
8260B	Methylene Chloride	84	80			60-140	20-150	5%	<30	<50	111			65-135	65-135			<50	<75
8260B	Methyl-tert-butyl ether	91	91			60-140	20-150	0%	<30	<50	99			65-135	65-135			<50	<75
8260B	Tetrachloroethylene	104	96			60-140	20-150	8%	<30	<50	88			65-135	65-135			<50	<75
8260B	Toluene	99	95			60-140	20-150	4%	<30	<50	109			61-135	61-135			<50	<75
8260B	Trans-1,2-Dichloroethene	98	90			60-140	20-150	9%	<30	<50	106			64-135	64-135			<50	<75
8260B	Trichloroethylene	96	95			60-140	20-150	1%	<30	<50	104			65-135	65-135			<50	<75
8260B	Vinyl Chloride	90	82			60-140	20-150	9%	<30	<50	103			61-135	61-135			<50	<75
8260B	total-Xylene	103	98			60-140	20-150	5%	<30	<50	107			36-144	36-144			<50	<75
8260B	Toluene-d8 (surr)	96	100			75-125	65-135	4%	NA	NA	107			65-135	65-135			<50	<75
8260B	4-Bromofluorobenzene (surr)	90	96			75-125	65-135	6%	NA	NA	107			NA	NA			NA	NA
8260B	1,2-Dichloroethane-d4 (surr)	83	89			62-139	52-149	7%	NA	NA	105			NA	NA			NA	NA
									NA	NA	97			NA	NA			NA	NA
SEMI-VOLATILES BY GC/MS																			
8270C	1-Methylnaphthalene	63	59			41-125	31-135	7%	#DIV/0!	<30	<50			%	%			%	%
8270C	2-Methylnaphthalene	81	74			41-125	31-135	9%	#DIV/0!	<30	<50	81		41-125	31-135			<50	<75
8270C	Acenaphthylene	77	73			47-125	37-135	5%	#DIV/0!	<30	<50	88		47-125	37-135			<50	<75
8270C	Acenaphthene	74	70			49-124	39-135	6%	#DIV/0!	<30	<50	79		49-124	39-135			<50	<75
8270C	Anthracene	86	85			45-165	35-175	1%	#DIV/0!	<30	<50	87		45-165	35-175			<50	<75
8270C	Benzo (a) anthracene	86	84			51-133	41-143	2%	#DIV/0!	<30	<50	93		51-133	41-143			<50	<75
8270C	Benzo (a) pyrene	82	95			41-125	31-135	15%	#DIV/0!	<30	<50	99		41-125	31-135			<50	<75
8270C	Benzo (b) fluoranthene	92	85			37-125	27-135	8%	#DIV/0!	<30	<50	93		37-125	27-135			<50	<75
8270C	Benzo (g,h,i) perylene	72	75			34-149	25-159	4%	#DIV/0!	<30	<50	99		34-149	25-159			<50	<75
8270C	Benzo (k) fluoranthene	75	83			37-123	37-123	10%	#DIV/0!	<30	<50	94		37-123	37-123			<50	<75
8270C	Chrysene	85	86			55-133	45-143	1%	#DIV/0!	<30	<50	92		55-133	45-143			<50	<75
8270C	Dibenzo (a,h) anthracene	77	80			50-125	40-135	4%	#DIV/0!	<30	<50	95		50-125	40-135			<50	<75
8270C	Fluoranthene	101	103			47-125	37-135	2%	#DIV/0!	<30	<50	94		47-125	37-135			<50	<75
8270C	Fluorene	80	76			48-139	38-149	5%	#DIV/0!	<30	<50	86		48-139	38-149			<50	<75
8270C	Indeno (1,2,3-c,d) pyrene	76	79			27-160	25-170	4%	#DIV/0!	<30	<50	94		27-160	25-170			<50	<75

Notes:
1) SW-846 Methods unless otherwise noted
2) Includes sediments, waste, solids

NS - Not Specified
NA - Not Applicable

**PROJECT QUALITY CONTROL RESULTS
AAL PROJECT #27595**

8270C	Naphthalene	72	66			50-125	40-135	9%	#DIV/0!	<30	<50		74	50-125	40-135			<50	<75
8270C	Phenanthrene	89	87			54-125	44-135	2%	#DIV/0!	<30	<50		86	54-125	44-135			<50	<75
8270C	Pyrene	69	67			47-136	37-146	3%	#DIV/0!	<30	<50		94	47-136	37-146			<50	<75
8270C	2-Fluorobiphenyl	73	68			43-125	34-135	7%	#DIV/0!	<30	<50		87						
8270C	Nitrobenzene-d5	75	69			32-125	25-135	8%	#DIV/0!	<30	<50		84						
8270C	Terphenyl-d14	74	74			42-126	32-136	0%	#DIV/0!	<30	<50		86						

PETROLEUM HYDROCARBONS				%	%			%	%			%	%					
FL-PRO	FL-PRO	<DL	<DL			50-150	30-170	#VALUE!	#DIV/0!	<30	<50	73	75-125	70-130			<50	<75

Notes:
1) SW-846 Methods unless otherwise noted
2) Includes sediments, waste, solids

NS = Not Specified
NA = Not Applicable

ATTACHMENT E

HLA (1999) GROUNDWATER ANALYTICAL SUMMARY TABLE

**Table 4
Summary of Groundwater Analytical Results**

Site Assessment Report
Building 502, Tank 502
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-502-1S	CEF-502-2S	CEF-502-3S	CEF-502-4S	CEF-502-5D	Groundwater Cleanup Target Levels ¹
Volatile Organic Aromatics (USEPA Method 601/602) ($\mu\text{g}/\ell$)						
Benzene	ND	26	ND	ND	ND	1
Ethylbenzene	19	68	ND	ND	ND	30
Toluene	ND	14	ND	ND	ND	40
Xylenes	7.9	180	ND	ND	ND	20
1,4-Dichlorobenzene	ND	ND	ND	ND	1.3	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 625) ($\mu\text{g}/\ell$)						
Fluoranthene	ND	8.3	ND	ND	ND	280
1-Methylnaphthalene	150	200	ND	1.3	ND	NA
2-Methylnaphthalene	200	260	ND	ND	ND	NA
Naphthalene	160	200	ND	ND	ND	20
Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/l)						
TRPH	7.5	13	ND	ND	ND	5

¹ Chapter 62-770, Florida Administrative Code.

Notes: Groundwater samples were collected on March 20, 1997, and June 18, 1998.

Bold indicates concentration exceeded cleanup target level.

USEPA = U.S. Environmental Protection Agency.

$\mu\text{g}/\ell$ = micrograms per liter.

ND = not detected.

NA = not applicable.

mg/l = milligrams per liter.

FL-PRO = Florida-Petroleum Residual Organics.