N60200.AR.003634
NAS CECIL FIELD, FL
5090.3a

SUPPLEMENTAL ASSESSMENT LETTER REPORT FOR TRUCK STAND FACILITY 372 NAS CECIL FIELD FL

6/12/2003

TETRA TECH NUS INC

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June 12, 2003

Project Number N4248

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 0248

Subject: Letter Report, Supplemental Assessment
Truck Stand, Facility 372
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) has completed the installation and sampling of additional monitoring wells at Truck Stand and is pleased to submit this letter report in both hard copy and compact disk (CD) formats in accordance with the referenced Contract Task Order. This letter report was prepared for the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command under the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62467-94-D-0888.

SITE BACKGROUND

The truck Stand was a former jet propellant (JP-5) fuel station designed to dispense fuel from the North Fuel Farm to Navy trucks bound for the flightline. A Contamination Assessment Report Addendum II was submitted in December 1995 (ABB Environmental Services, 1995), indicating the extent of the soil and groundwater contamination. A soil source removal was conducted in 1996, followed by a monitoring only program (MOP) that was conducted from 1997 to 2000. A second soil source removal was conducted along with the removal of all structures in July and August 2000 (CH2M Hill Constructors, 2001). MOP activities were resumed in 2001, and the resulting analytical data gave cause for the recommendation of a Remedial Action Plan (RAP). Prior to initiation of a RAP, TtNUS recommended the need for additional monitoring wells to better delineate and possibly reduce the assumed size of the dissolved hydrocarbon plume in the shallow aquifer zone. The guidance document for this report is Chapter 62-770, Florida Administrative Code (FAC). This report summarizes the field operations and analytical results for the subject site. Figure 1 shows the location of the site.

FIELD OPERATIONS

Field operations were performed in general accordance with the TtNUS Comprehensive Quality Assurance Plan Number 980038. On September 10, 2002, TtNUS personnel mobilized to the site to supervise the installation of permanent monitoring wells. Two shallow and one deep groundwater monitoring wells (CEF-372-22S, CEF-372-23S, and CEF-372-16DR) were installed and subsequently developed to determine the horizontal and vertical extent of the dissolved hydrocarbon plume. Monitoring well CEF-372-16DR was installed as a replacement well for monitoring well CEF-372-16D, which was abandoned during the second source removal. The boring logs, well construction diagrams, and certificates of conformance for these three wells are provided in Attachment A.

On September 24, 2002, TtNUS personnel mobilized to the site to collect water samples from monitoring wells CEF-372-22S, CEF-372-23S and CEF-372-16DR. Prior to collecting the samples the depth to water was measured in each well using an electronic water level indicator. After gauging the wells, each well was purged with a peristaltic pump using low-flow purging techniques. Subsequent to purging, groundwater samples were collected from each well using low flow quiescent sampling techniques. Following collection, the groundwater samples were placed on ice and shipped under chain of custody to Accutest Laboratories for analysis. The samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl-tert-butyl-ether (MTBE) using United States Environmental Protection Agency (USEPA) Method SW846 8260B and polynuclear aromatic hydrocarbons (PAHs) using USEPA Method SW846 8310. This analytical list conforms to the original MOP as modified by the MOP Addendum and the April 2000 Base Closure Team meeting minutes.

The laboratory analytical results from the September 24, 2002 sampling event indicated that the concentrations of one or more contaminants of concern (COCs) exceeded Groundwater Cleanup Target Levels (GCTLs) in CEF-372-16DR. On December 10, 2002, TtNUS personnel mobilized to the site to supervise the installation of an additional monitoring well. Deep monitoring well CEF-372-24D was installed and subsequently developed to aid in determining the vertical extent of groundwater contamination below monitoring well CEF-372-16DR. The boring log, well construction diagram, and certificate of conformance for CEF-372-24D are also provided in Attachment A.

On January 7, 2003, TtNUS personnel mobilized to the site to collect a water sample from monitoring well CEF-372-24D. Prior to collecting the samples the depth to water was measured using an electronic water level indicator. After gauging the well, it was purged with a peristaltic pump using low-flow purging techniques. Subsequent to purging, groundwater samples were collected from the well using low flow quiescent sampling techniques. Following collection, the groundwater samples were placed on ice and shipped under chain of custody to Accutest Laboratories for analysis. The samples were analyzed for BTEX and MTBE using USEPA Method SW846 8260B and PAHs using USEPA Method SW846 8310.

GROUNDWATER FLOW RESULTS – SEPTEMBER 2002

The depth to water in the monitoring wells ranged from 3.01 to 3.85 feet (ft) below top of casing (btoc) during the September 2002 sampling event. The depth-to-water measurements, along with top-of-casing elevations, were used to calculate groundwater elevations. The groundwater elevation data for the original MOP wells (CEF-372-01, 07, 14, and 20) was used to estimate the groundwater flow direction. Data from wells CEF-372-13R, CEF-372-22S, and CEF-372-23S was not used in contouring since those wells were installed in backfill material which appears to have affected the water levels. The groundwater flow direction for the September 24, 2002, data appears to be to the northeast. The groundwater elevations are summarized in Table 1. The groundwater flow direction is depicted on Figure 2.

GROUNDWATER FLOW RESULTS – JANUARY 2003

The depth to water in the monitoring wells ranged from 3.51 to 4.39 ft btoc during the January sampling event. The groundwater flow direction was similarly derived for the January 2003 event, and the result was estimated at a northeasterly direction. This data is similarly displayed on Table 1 and depicted on Figure 3.

GROUNDWATER ANALYTICAL RESULTS – SHALLOW WELLS

Ethylbenzene and total xylenes were detected in samples from shallow well CEF-372-22S, but at concentrations below the respective GCTLs. No other volatile organic compounds (VOCs) of concern were detected in samples from the two new shallow wells. Three PAHs (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) were detected in samples from both new shallow wells. The concentrations of these COCs exceeded the respective GCTLs in samples from shallow well CEF-372-22S, but none of the concentrations for samples from the other well CEF-372-23S exceeded a GCTL. The laboratory analytical results are summarized in Table 2 and depicted on Figure 4. The laboratory analytical report for these wells is provided in Attachment B.

GROUNDWATER ANALYTICAL RESULTS – VERTICAL EXTENT WELLS

Benzene, ethylbenzene, and total xylenes were detected in samples from monitoring well CEF-372-16DR; however, the concentrations were below respective GCTLs. Of the VOCs of concern, only benzene and MTBE were detected in samples from the deeper well CEF-372-24D; however, the concentrations were also below the respective GCTLs. The same three PAHs mentioned previously were detected in samples from the well CEF-372-16DR, and the concentrations were all above their respective GCTLs. Of the PAHs of concern, only naphthalene was detected in the sample from the deeper well CEF-372-24D, and that concentration was reported below the GCTL. The laboratory analytical results are summarized in Table 2 and depicted on Figure 4. The laboratory analytical reports for these wells are provided in Attachments B and C.

CONCLUSIONS AND RECOMMENDATIONS

In the Annual Monitoring Report (Harding Lawson Associates, June 1998), the following statement was made: "Of the five monitoring wells (CEF-372-01, CEF-372-07, CEF-372-13, CEF-372-14, and CEF-372-20) sampled on a quarterly basis for one year, only samples collected from the source well, CEF-372-13, have had detections of petroleum contaminants." Specifically, BTEX and PAHs were sampled during the following events: May 1997, August 1997, November 1997, and March 1998. At TtNUS' recommendation following one additional sampling event in October 1998 with no detected COCs, the upgradient well CEF-372-01 was dropped from the MOP. TtNUS reported in a semi-annual groundwater monitoring report (November 1999) that no detectable COCs were found from the samples from the sidegradient and downgradient perimeter monitoring wells (CEF-372-07, CEF-372-14, and CEF-372-20). That report indicated that the COCs had not been detected in the perimeter wells for any of the last seven sampling events.

TtNUS recommended preparation of a RAP for the site in the June 2001 Semi-Annual Groundwater Monitoring Report based on consistently high levels of COCs in the samples from well CEF-372-13R that exceeded GCTLs for select VOCs and PAHs. However, as shown by Figure 2, the distance between the upgradient well and a sidegradient well as compared to the source well exceeds approximately 120 ft. TtNUS agreed with the Navy that additional wells would be needed to better delineate the footprint of contamination for an improved and more cost efficient remedial action system. Also, the vertical extent of the contamination would have to be confirmed since it was last reported in December 1996.

Based on the recently reported results for the additional shallow monitoring wells and the historical information from the original MOP wells, the horizontal extent of the dissolved hydrocarbon plume in the area around the source monitoring well CEF-372-13R (as shown by the groundwater contamination plume contour on Figure 4) is now better delineated. Additionally, the vertical extent of petroleum contamination at the site has been determined to exist no deeper than 45 ft below land surface (bls) at the site. Therefore, TtNUS recommends preparation of a RAP for the site.

If you have any questions regarding the information presented in this document, please contact me by phone at (813) 806-0202 or via e-mail at calliganp@ttnus.com.

Sincerely,

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

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

PC/mwd

Attachments (9)

pc: W. Hansel, SOUTHNAVFACENGCOM (CD only)
D. Vaughn-Wright, USEPA
M. Perry, TtNUS (unbound and CD)
D. Wroblewski, TtNUS (cover letter only)
Project File

TABLES

Table 1
Groundwater Elevations and Monitoring Well Construction Data

Supplemental Assessment Letter Report
Truck Stand - Facility 372
Naval Air Station Cecil Field
Jacksonville, Florida

Wells	Total Depth (ft, bls)	Top-of-Casing Elevation[1] (ft, msl)	September 24, 2002		January 7, 2003	
			Depth to Water BTOC (ft)	Water Elevation (ft, msl)	Depth to Water BTOC (ft)	Water Elevation (ft, msl)
CEF-372-01S	12.2	81.17	3.75	77.42	4.39	76.78
CEF-372-07S	11.7	80.69	3.32	77.37	4.07	76.62
CEF-372-13R[2]	11.0	81.34	3.50	77.84	4.16	77.18
CEF-372-14S	11.5	80.77	3.40	77.37	4.15	76.62
CEF-372-16DR	35.0	79.89	3.85	76.04	4.39	75.50
CEF-372-20	11.6	80.06	3.01	77.05	3.51	76.55
CEF-372-22S	14.0	79.92	3.69	76.23	4.26	75.66
CEF-372-23S	14.0	79.63	3.39	76.24	4.00	75.63
CEF-372-24D	49.3	80.81	NC	NC	4.30	76.51

Notes:
[1] Based on a survey completed in January 2003 by a Florida-registered surveyor, the historical elevations for the original site wells (CEF-372-01 through CEF-372-20) were increased by 0.09 feet.
[2] This monitoring well replaced on 2/7/01 by JA Jones.
msl = mean sea level
NC = not collected

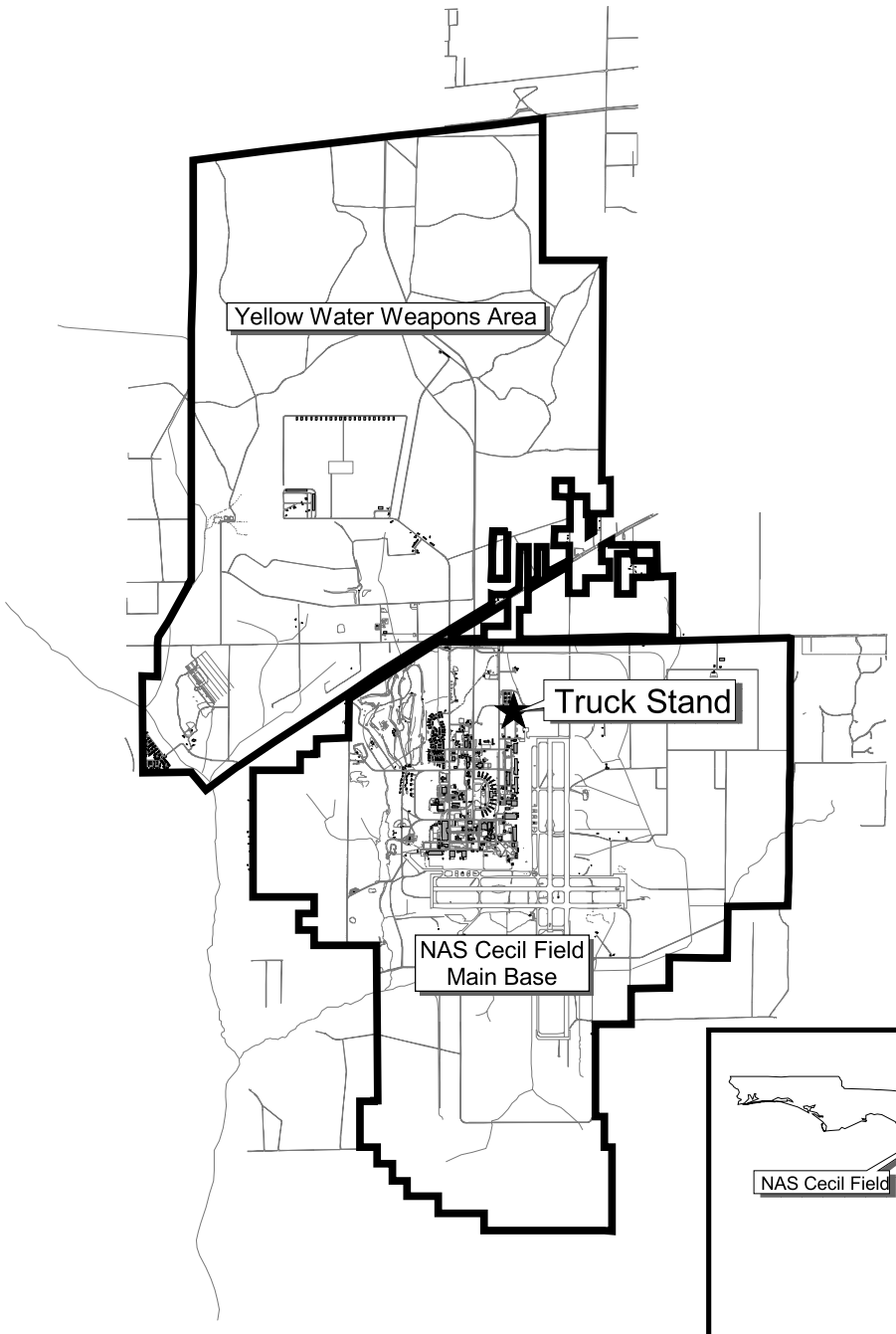
Table 2
Summary of Groundwater Analytical Results

Supplemental Assessment Letter Report
Truck Stand - Facility 372
Naval Air Station Cecil Field
Jacksonville, Florida

Compounds	GCTL[1]	CEF-372-16DR	CEF-372-22S	CEF-372-23S	CEF-372-24D
		9/24/2002	9/24/2002	9/24/2002	1/7/2003
VOCs (USEPA Method 8260B) (µg/L)					
Benzene	1	0.51	1.0 U	1.0 U	0.66 J
Toluene	40	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	30	13.7	5.3	1.0 U	1.0 U
Total Xylenes	20	3.3	2.1 J	3.0 U	3.0 U
Methyl Tert Butyl Ether	50	1.0 U	1.0 U	1.0 U	0.62 J
PAHs (USEPA Method 8310) (µg/L)					
Naphthalene	20	**65.9**	**49.9**	1.4 J	4.6
1-Methylnaphthalene	20	**35.5**	**45.7**	2.0 J	2.1 U
2-Methylnaphthalene	20	**30.7**	**47.0**	0.63 J	2.1 U

Notes:
[1]GCTLs, Chapter 62-777, FAC (effective 8/5/99)
Bold indicates compound exceeding GCTL value.
U = undetected at concentration shown next to this identifier
J = Indicates an estimated value
µg/L = micrograms per liter

FIGURES



DRAWN BY: MJJ	DATE: 07Apr03	GENERAL LOCATION MAP SUPPLEMENTAL ASSESSMENT LETTER REPORT NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 4248
CHECKED BY:	DATE:		APPROVED BY: DATE:
COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 1 REV: 0

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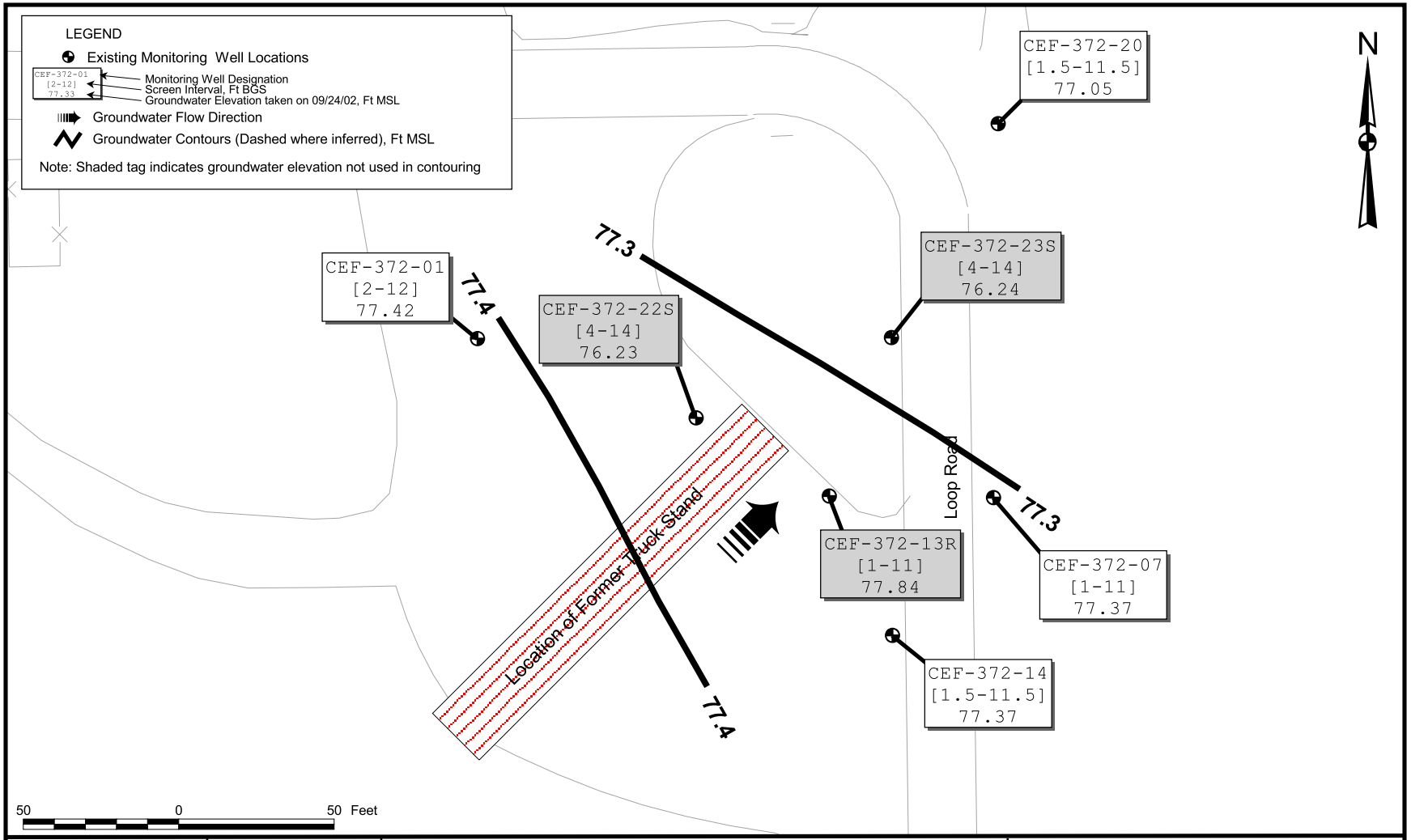

DRAWN BY: MJJ	DATE: 05Apr03	GROUNDWATER FLOW 09/24/02 TRUCK STAND SUPPLEMENTAL ASSESSMENT LETTER REPORT NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 4248
CHECKED BY: ___	DATE: ___		APPROVED BY: ___ DATE: ___
COST/SCHEDULE-AREA			APPROVED BY: ___ DATE: ___
SCALE: AS NOTED			DRAWING NO.: FIGURE 2 REV: 0

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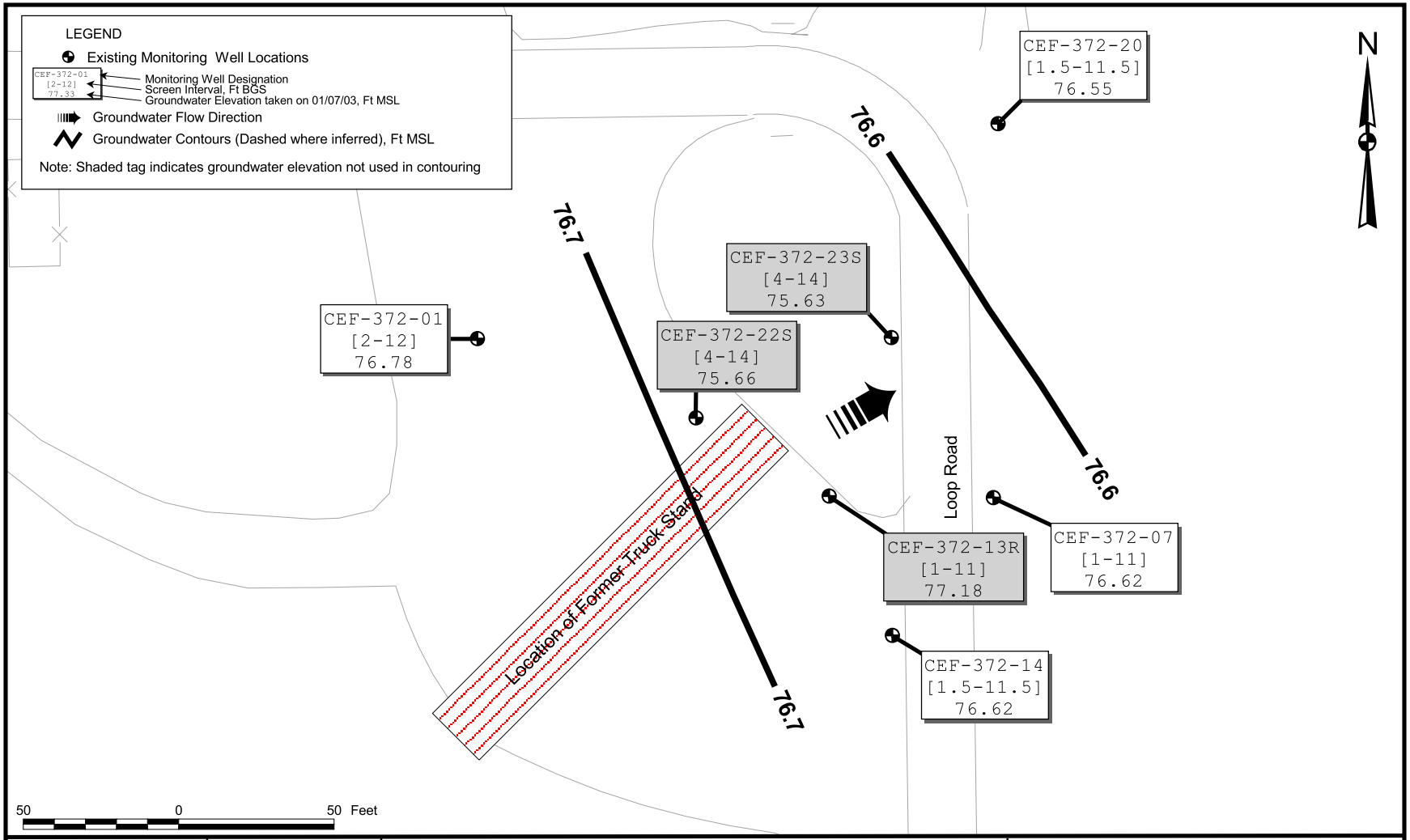

DRAWN BY: MJJ	DATE: 05Apr03	GROUNDWATER FLOW 01/07/03 TRUCK STAND SUPPLEMENTAL ASSESSMENT LETTER REPORT NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA
CHECKED BY: ___	DATE: ___	CONTRACT NUMBER: 4248
COST/SCHEDULE-AREA		APPROVED BY: ___ DATE: ___
SCALE: AS NOTED		APPROVED BY: ___ DATE: ___
		DRAWING NO.: FIGURE 3 REV: 0

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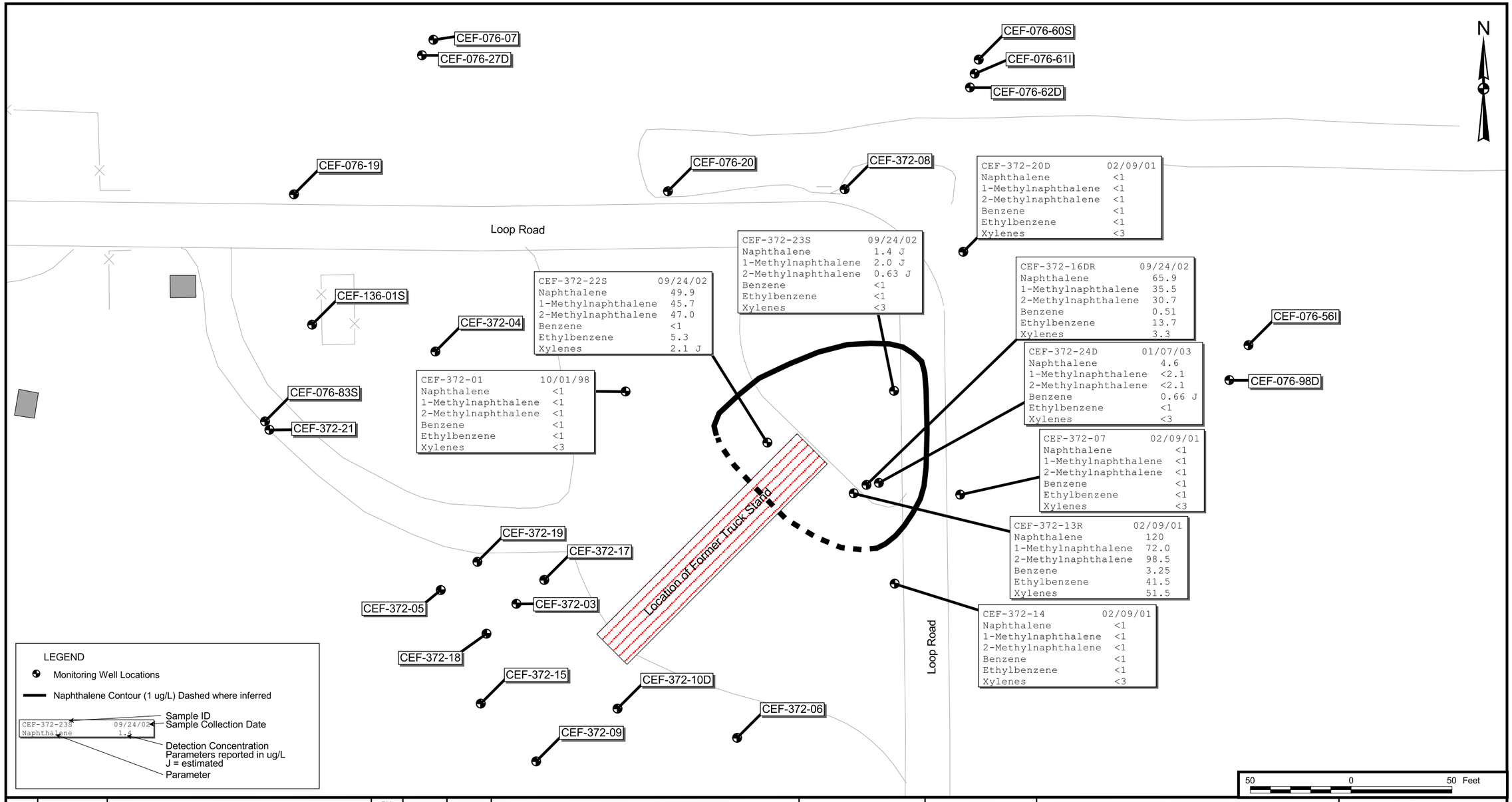


NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY MJJ DATE 04Jun03

CHECKED BY _____ DATE _____

COST/SCHED-AREA

SCALE AS NOTED

GROUNDWATER HYDROCARBON PLUME
TRUCK STAND
SUPPLEMENTAL ASSESSMENT LETTER REPORT
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NO. 4248

APPROVED BY _____ DATE _____

APPROVED BY _____ DATE _____

DRAWING NO. FIGURE 4

REV. 0

ATTACHMENT A

BORING LOGS, WELL CONSTRUCTION DIAGRAMS,

AND CERTIFICATES OF CONFORMANCE

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: SFF, Truck Stand, Site 46, NSAP, DT1
PROJECT NUMBER: N4248MW0050
DRILLING COMPANY: Portbridge
DRILLING RIG: Wilmoster 400
BORING NUMBER: SB-01
DATE: 9/10/02
GEOLOGIST: M Dale C Gleeta
DRILLER: Jeff W/Heatherland

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: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-4					Bk	Silty Sand		Dry				
	4-5					Bk	Silty Sand		Moist @ 5'				
	5-14					Bk	Silty Sand		Wet				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: ____

Converted to Well: Yes X No ____ Well I.D. #: CEF-372-225

Tetra Tech NUS, Inc.

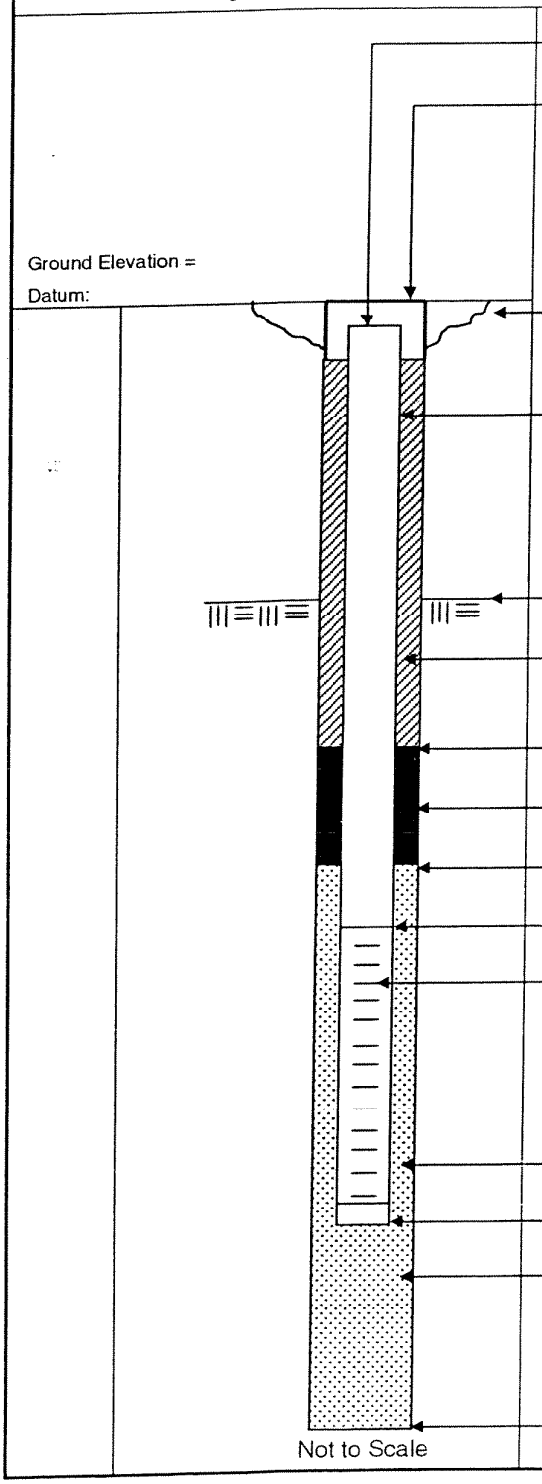
WELL No.: CEF-372-22S

MONITORING WELL SHEET (SINGLE-CASED)

PROJECT: Cecil Field
PROJECT No.: N4248
SITE: Truck Stand
GEOLOGIST: C Coleston

DRILLING Co.: Partridge
DRILLER: Jeff Weatherford
DRILLING METHOD: HSA
DEV. METHOD: Sub. Pump

BORING No.: SB-01
DATE COMPLETED: 9/10/02
NORTHING:
EASTING:



Elevation / Depth of Top of Riser: 10.24ft.
Elevation / Height of Top of Surface Casing: 10 ft
I.D. of Surface Casing: 8"
Type of Surface Casing: Steel
Type of Surface Seal: Concrete
I.D. of Riser: 2 inch
Type of Riser: PVC
Borehole Diameter: 8 inch
Elevation / Depth Top of Rock: N/A
Type of Backfill: Type I-II Portland Cement
Elevation / Depth of Seal: 11.5ft
Type of Seal: 30/65 Sand
Elevation / Depth of Top of Filter Pack: 13 ft
Elevation / Depth of Top of Screen: 14 ft
Type of Screen: PVC
Slot Size x Length: 0.010 in X 10'
I.D. of Screen: 2 inch
Type of Filter Pack: 20/30 Sand
Elevation / Depth of Bottom of Screen: 114 ft
Elevation / Depth of Bottom of Filter Pack: 114 ft
Type of Backfill Below Well:
Elevation / Total Depth of Borehole: 114 ft

MONITORING WELL MATERIALS
CERTIFICATE OF CONFORMANCE

Well Designation: CEF-372-225
Site Name: Truck Stand
Date Installed: 9/10/02
Project Name: Cecil Field

Site Geologist: M Dale / C Gleaton
Drilling Company: Partridge
Driller: Jeff Weatherford
Project Number: N4248MW0050120

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	Sch 40 PVC 2in Dia	Alantic Drilling Supply, Jax Fl	No
Well Screen	Sch 40 PVC 2in 0.010 slots	ADS Jax Fl	No
End Cap	Sch 40 PVC 2in 6inch long	ADS Jax Fl	No
Drilling Fluid	None		—
Drilling Fluid Additives	None		—
Backfill Material	None		—
Annular Filter Pack	Standard 20/30 Grade Sand	Standard Sand Jax Fl	No
Bentonite Seal	Standard 30/65 Grade Sand	Standard Sand Jax Fl	No
Annular Grout	Portland Cemente Type I-II	Lehigh Cement Allentown, PA	No
Surface Cement	Quikrete Concrete	Quikrete Company Altanta GA	No
Protective Casing	8in Steel manhole	ADS Jax Fl	No
Paint	None		—
Rod Lubricant	None		—
Compressor Oil	None		—

To the best of my knowledge, I certify that the above described materials were used during installation of this monitoring well.

Signature of Site Geologist: C Gleaton

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: SFF, Truck Stand, Site 46, NSAP, DT1
PROJECT NUMBER: N4248MW0050
DRILLING COMPANY: Partridge
DRILLING RIG: Drilmaster 400
BORING NUMBER: SB-02
DATE: 9/10/02
GEOLOGIST: M. Dole
DRILLER: Jeff Weather-Per

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: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-.5					Bk	Silty Sand		Dry				
	.5-.8					~~Bk~~ Br	Clayey Sand		Dry				
	.8-1.5					Gr	~~Fine~~ Silty Sand		Dry				
	1.5-2					Bn	Silty Sand		Dry				
	2-5					Lt Bn	Silty Sand		Moist *				
	5-14.5'					Bk	Silty Sand		Wet				

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks: * Strong fuel odor @ 4.8'
No OVA due to malfunction

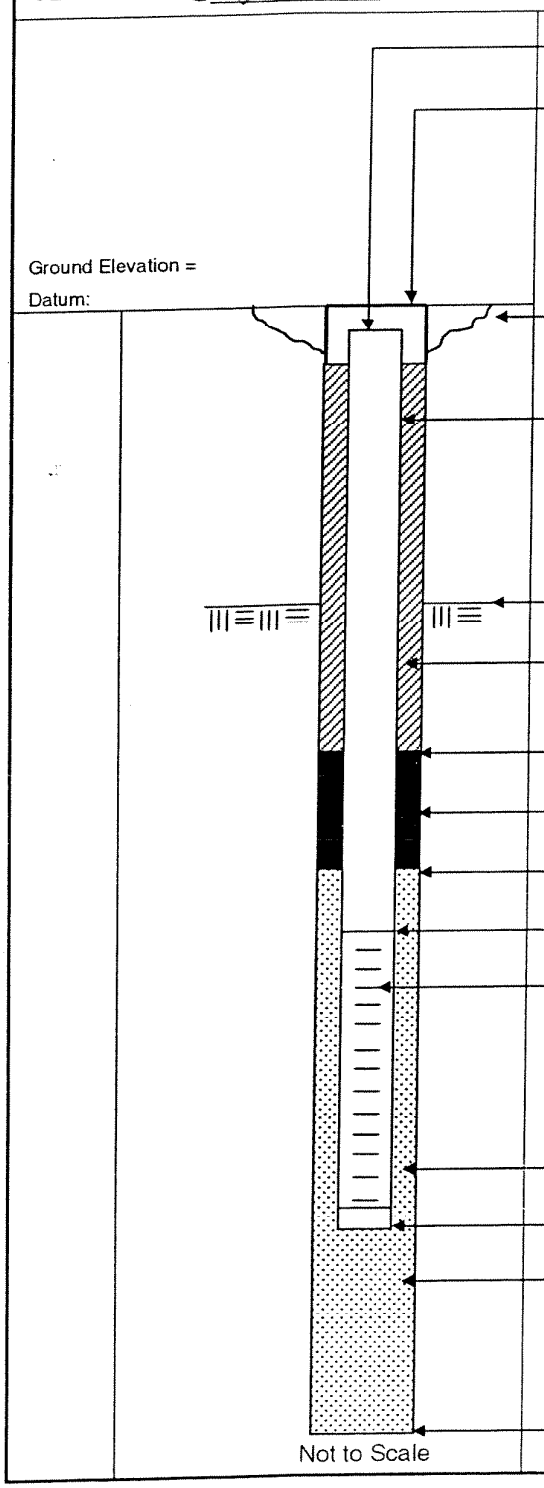
Converted to Well: Yes X No ____ Well I.D. #: QFF-372-235

Tetra Tech NUS, Inc.

WELL No.: CEF-372-235

MONITORING WELL SHEET (SINGLE-CASED)

PROJECT:	Cecil field	DRILLING Co.:	Partridge	BORING No.:	SB-02
PROJECT No.:	N4248	DRILLER:	Jeff Weatherford	DATE COMPLETED:	9/10/02
SITE:	Truck Stand	DRILLING METHOD:	HSA	NORTHING:	
GEOLOGIST:	C Gleaton	DEV. METHOD:	Sub. pump	EASTING:	



- Elevation / Depth of Top of Riser: 10.24 ft
- Elevation / Height of Top of Surface Casing: 10 ft
- I.D. of Surface Casing: 8"
- Type of Surface Casing: Steel
- Type of Surface Seal: Concrete
- I.D. of Riser: 2 inch
- Type of Riser: PVC
- Borehole Diameter: 8 inch
- Elevation / Depth Top of Rock: N/A
- Type of Backfill: Type I-II Portland Cement
- Elevation / Depth of Seal: 11.5 ft
- Type of Seal: 30/65 Sand
- Elevation / Depth of Top of Filter Pack: 13 ft
- Elevation / Depth of Top of Screen: 14 ft
- Type of Screen: PVC
- Slot Size x Length: 0.010in X 10'
- I.D. of Screen: 2 inch
- Type of Filter Pack: 20/30 Sand
- Elevation / Depth of Bottom of Screen: 114' ft
- Elevation / Depth of Bottom of Filter Pack: 119.5ft
- Type of Backfill Below Well: 20/30 Sand
- Elevation / Total Depth of Borehole: 119.5 ft

MONITORING WELL MATERIALS
CERTIFICATE OF CONFORMANCE

Well Designation: CEF-372-235
Site Name: Truck Stand
Date Installed: 9/10/02
Project Name: Cecil Field

Site Geologist: C Gleaton
Drilling Company: Partridge
Driller: Jeff Weatherford
Project Number: N4248MMW0050120

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	Sch 40 PVC 2in Dia	Atlantic Drilling Supply, Jax Fl	No
Well Screen	Sch 40 PVC 2in 0.010 slots	ADS Jax Fl	No
End Cap	Sch 40 PVC 2in 6inch long	ADS Jax Fl	No
Drilling Fluid	None		
Drilling Fluid Additives	None		
Backfill Material	None		
Annular Filter Pack	Standard 20/30 Grade Sand	Standard Sand Jax Fl	No
Bentonite Seal	Standard 30/65 Grade Sand	Standard Sand Jax Fl	No
Annular Grout	Portland Cement Type I-II	Lehigh Cement Allentown, PA	No
Surface Cement	Quikrete Concrete	Quikrete Company Atlanta GA	No
Protective Casing	8in Steel manhole	ADS Jax Fl	No
Paint	None		
Rod Lubricant	None		
Compressor Oil	None		

To the best of my knowledge, I certify that the above described materials were used during installation of this monitoring well.

Signature of Site Geologist: C. Gleaton

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: SFF, Truck Stand, Site 46, NSAP, DT1
PROJECT NUMBER: N4248MW0050
DRILLING COMPANY: Patridge
DRILLING RIG: Dilmaster 400
BORING NUMBER: SB-03
DATE: 9/10/02
GEOLOGIST: M. Dale C Gleaton
DRILLER: Jeff Weatherford

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: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-4					Dr Bn	Silty Sand		Dry				
	4-10					Dr Bn	Silty Sand		Moist @ 5'				
	10-15					Dr Bn	Silty Sand		Wet				
	15-25					Dr Bn	Silty Sand		Wet				
	25-35.5					Dr Bn	Silty Sand						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks: Dr: Dark Bn: Brown

Converted to Well: Yes X No ____ Well I.D. #: CEF-372-16DR

Tetra Tech NUS, Inc.

WELL No.: CEF-372-16DR

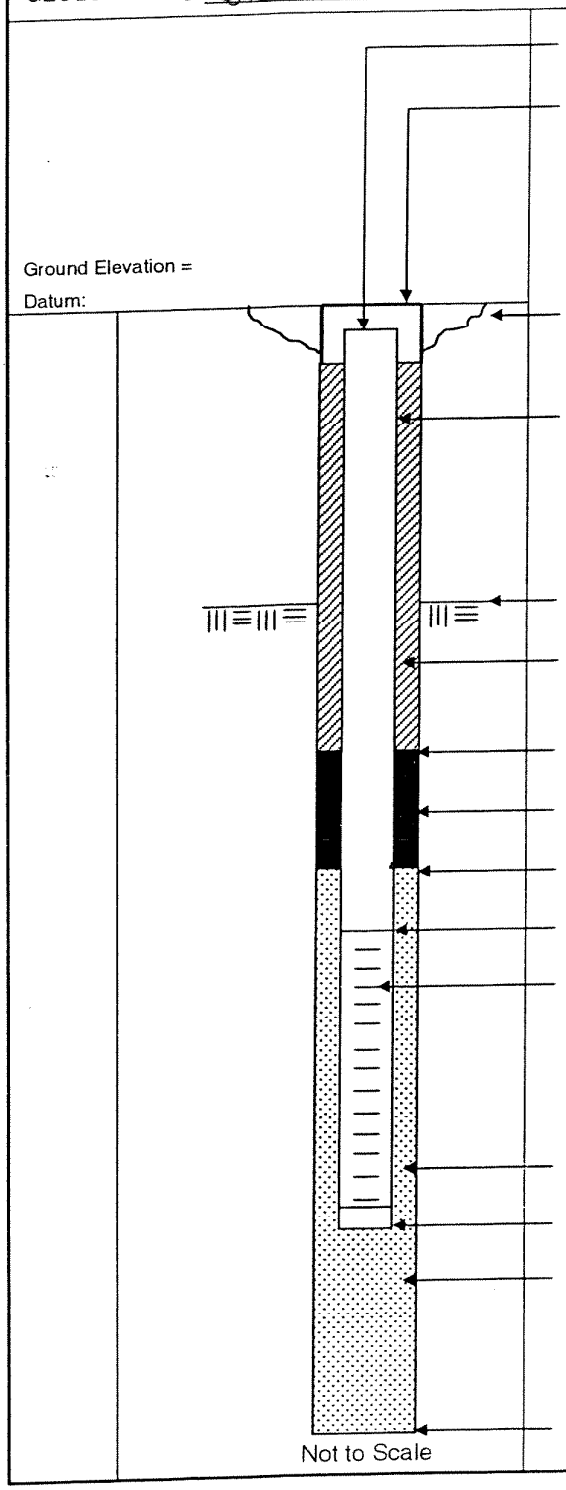
MONITORING WELL SHEET (SINGLE-CASED)

PROJECT: Cecil Field | DRILLING Co.: Partridge | BORING No.: SB-03

PROJECT No.: N4248 | DRILLER: Jeff Weatherford | DATE COMPLETED: 9/10/02

SITE: Truck Stand | DRILLING METHOD: HSA | NORTHING:

GEOLOGIST: C Gleaton | DEV. METHOD: Sub. pump | EASTING:



Elevation / Depth of Top of Riser: 10.18ft.

Elevation / Height of Top of Surface Casing: 10 ft

I.D. of Surface Casing: 8"

Type of Surface Casing: Steel

Type of Surface Seal: Concrete

I.D. of Riser: 2inch

Type of Riser: PVC

Borehole Diameter: 8inch

Elevation / Depth Top of Rock: N/A

Type of Backfill: Types I-II Portland Cement

Elevation / Depth of Seal: 125ft

Type of Seal: 30/65 Sand

Elevation / Depth of Top of Filter Pack: 128ft

Elevation / Depth of Top of Screen: 130ft

Type of Screen: PVC

Slot Size x Length: 0.010in x 5'ft

I.D. of Screen: 2inch

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 135ft

Elevation / Depth of Bottom of Filter Pack: 135.5ft

Type of Backfill Below Well: 20/30 Sand

Elevation / Total Depth of Borehole: 135.5ft

MONITORING WELL MATERIALS
CERTIFICATE OF CONFORMANCE

Well Designation: CEF-372-16DR
Site Name: Truck Stand
Date Installed: 9/10/02
Project Name: Cecil Field

Site Geologist: C Gleaton
Drilling Company: Partridge
Driller: Jeff Weatherford
Project Number: IN92481dWOOSC120

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	Sch 40 PVC 2in Dia	Alantic Drilling Supply, Jax Fl	No
Well Screen	Sch 40 PVC 2in 0.010 slots	ADS Jax Fl	No
End Cap	Sch 40 PVC 2in 6inch long	ADS Jax Fl	No
Drilling Fluid	None		
Drilling Fluid Additives	None		
Backfill Material	None		
Annular Filter Pack	Standard 20/30 Grade Sand	Standard Sand Jax Fl	No
Bentonite Seal	Standard 30/65 Grade Sand	Standard Sand Jax Fl	No
Annular Grout	Portland Cemente Type I-II	Lehigh Cement Allentown, PA	No
Surface Cement	Quikrete Concrete	Quikrete Company Altanta GA	No
Protective Casing	8in Steel manhole	ADS Jax Fl	No
Paint	None		
Rod Lubricant	None		
Compressor Oil	None		

To the best of my knowledge, I certify that the above described materials were used during installation of this monitoring well.

Signature of Site Geologist: C. Gleaton

BORING LOG

Tetra Tech NUS, Inc.

Page 1 of 1

372-24D

PROJECT NAME: NAS CECIL FIELD
PROJECT NUMBER: N3996
DRILLING COMPANY: TRANSAMERICAN
DRILLING RIG: Deitrich D-120

BORING NO.: CEF-~~076~~
DATE: 12/10/02
GEOLOGIST: ~~Louis Johnson~~ Scott McGuire
DRILLER: Louis Johnson

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: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0-4'			Brown Fine Sand				Ø	0	0
				~~4-5~~0~~5~~	SRM		~~Brn Fine sand~~		H_2O 5" H'			0	0
				4-9'			Brn Fi sa		H_2O 5" H' 6'			0	0
				9-15			Brn Fi sa					0	0
				15-20			Brn Fi sa					0	0
				20-25			Brn Fi sa					0	0
				25-30			Brn Fi sa					0	0
				30-~~3~~5			Brn Fi sa					0	0
				~~3~~5-40			Brn Fi sa					0	0
				40-45			Brn Fi sa					0	0
				45-50			Brn Fi sa					0	0

* When rock c[illegible]r rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

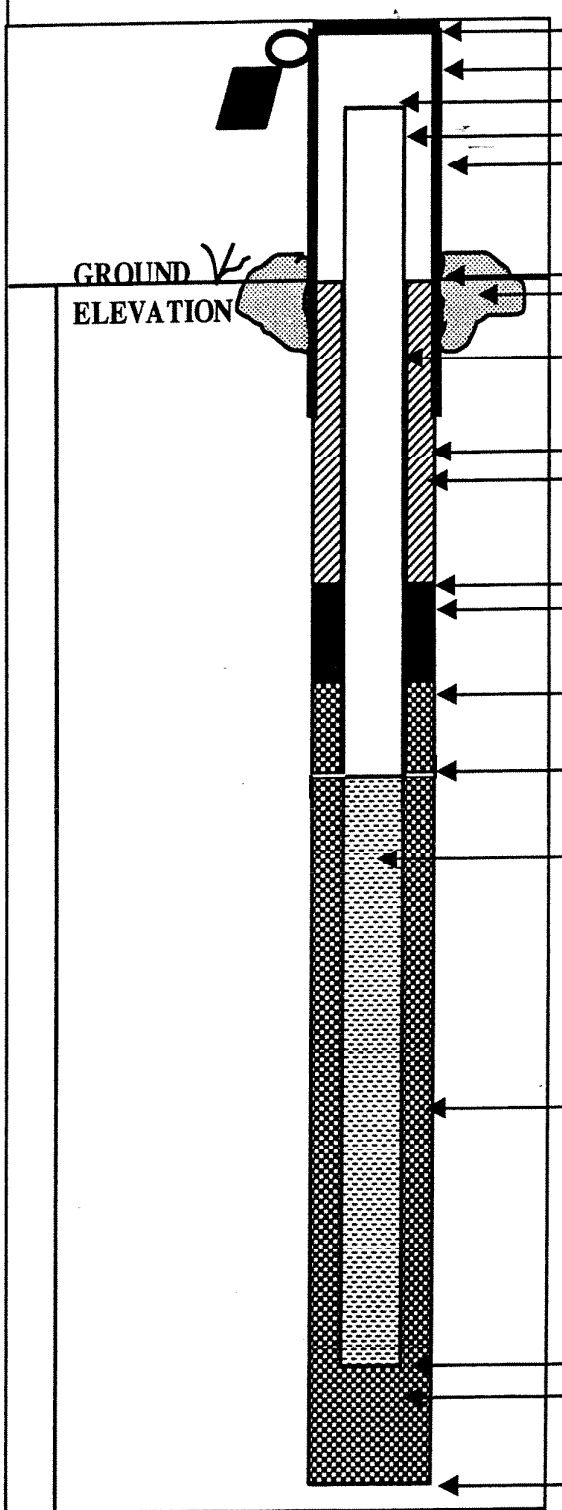
Converted to Well: Yes X No

Well I.D. #: CEF-~~076~~ 372-24D

BORING NO.: CEF-372-24D

Tetra Tech NUS, Inc. **OVERBURDEN* MONITORING WELL SHEET**

PROJECT:	NAS Cecil Field	DRILLING Co.:	Trans America	BORING No.:	372-24D
PROJECT No.:	N3996	DRILLER:	Louis Johnson	DATE COMPLETED:	12/10/02
SITE:	North Fuel Farm	DRILLING METHOD:	Hollow stem	NORTHING:	
GEOLOGIST:	S. McGuire	DEV. METHOD:	Sub. pump	EASTING:	



ELEVATION OF TOP OF SURFACE CASING:* (Depth)	18 ft
STICK -UP TOP OF SURFACE CASING:	N/A
ELEVATION OF TOP OF RISER PIPE: (Depth)	10.15 ft.
RISER STICK-UP ABOVE GROUND SURFACE:	8
I.D. OF SURFACE CASING:	8 inch
TYPE OF SURFACE CASING:	8 in. steel, bolt down manhole cover
GROUND ELEVATION:	
TYPE OF SURFACE SEAL:	Concrete pad 2x2x6"
RISER PIPE I.D.:	2"
TYPE OF RISER PIPE:	monoflex, sch 40
BOREHOLE DIAMETER:	8"
TYPE OF SEAL:	Portland Cement
ELEVATION / DEPTH OF SEAL:	140'
TYPE OF SEAL:	30-65 sand
ELEVATION / DEPTH TOP OF FILTER PACK:	143'
ELEVATION / DEPTH TOP OF SCREEN:	145'
TYPE OF SCREEN:	monoflex, sch 40
SLOT SIZE X LENGTH:	.010 x 5'
I.D. OF SCREEN:	2"
TYPE OF FILTER PACK:	20-30 sand
ELEVATION / DEPTH BOTTOM OF SCREEN:	150'
ELEVATION / DEPTH BOTTOM OF FILTER PACK:	150.5'
TYPE OF BACKFILL BELOW WELL:	20-30 sand
ELEVATION / DEPTH OF BOREHOLE:	150.5'

* Above-grade casing = SURFACE CASING

MONITORING WELL MATERIALS
CERTIFICATE OF CONFORMANCE

Well Designation: CEF-~~876~~ 372-24D
Site Name: NORTH FUEL FARM
Date Installed: 12/10/02
Project Name: SARA, NORTH FUEL FARM

Site Geologist: MERVIN W. DALE
Drilling Company: TRANSAMERICAN
Driller: Louis Johnson
Project Number: N3996 J60050320

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	Mono Flex 2x10' sch 40	Atlantic Drilling Supply / Jax	NO
Well Screen	Mono Flex 2x5' sch 40 .010	Atlantic Drilling Supply / Jax	NO
End Cap / well Point	Locking cap/PVC	Atlantic Drilling Supply / Jax	NO
Drilling Fluid	—		—
Drilling Fluid Additives	—		—
Backfill Material	—		—
Annular Filter Pack	Standard sand 20-30	Standrard sand / Jax	NO
~~Bentonite~~ Seal	Standard Sand 30-65	Standard sand / Jax	NO
Annular Grout	Portland Cement ~~QuikCrete~~ QuikCrete	Florida Irrigation / Jax	NO
Surface Cement MW-4	QuikCrete	QuikCrete Co. Atlanta, GA.	NO
Protective Casing MW-4	— 8 in. steel manhole, bolted	ADS, JAX, FL	NO
Paint	—		—
Rod Lubricant	—		—
Compressor Oil	—		—
55 Gallon Drums (2)	55 Gallon	Duval Container / Jax 355-0711	NO

To the best of my knowledge, I certify that the above described materials were used during installation of this monitoring well.

Signature of Site Geologist: Scott R. McGuire M.W. Dale

ATTACHMENT B

GROUNDWATER ANALYTICAL REPORT

SEPTEMBER 2002 SAMPLING EVENT

Southeast ACCUTEST Laboratories

06/05/03

Technical Report for

Tetra Tech, NUS

NAS Cecil Field-CTO-248

N4248 WR#46 Truck Stand

Accutest Job Number: F14731

Report to:

Tetra Tech, NUS

dalem@ttnus.com

ATTN: Merv Dale

Total number of pages in report: 10

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.

Harry Behzadi, Ph.D.
Laboratory Director

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

Sample Summary

Tetra Tech, NUS

Job No: F14731

NAS Cecil Field-CTO-248
Project No: N4248 WR#46 Truck Stand

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F14731-1	09/24/02	11:35	AP	09/25/02	AQ	Ground Water	CEF-372-16DR-01
F14731-2	09/24/02	11:35	AP	09/25/02	AQ	Ground Water	CEF-372-22S-01
F14731-3	09/24/02	12:55	AP	09/25/02	AQ	Ground Water	CEF-372-23S-01
F14731-4	09/24/02	00:00	AP	09/25/02	AQ	Ground Water	CEF-372-DU01-01

Report of Analysis

Client Sample ID:	CEF-372-16DR-01		
Lab Sample ID:	F14731-1	Date Sampled:	09/24/02
Matrix:	AQ - Ground Water	Date Received:	09/25/02
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B0011856.D	1	10/04/02	JG	n/a	n/a	VB522
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.51	1.0	0.50	ug/l	J
108-88-3	Toluene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	13.7	1.0	0.70	ug/l	
1330-20-7	Xylene (total)	3.3	3.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		86-115%
17060-07-0	1,2-Dichloroethane-D4	107%		78-125%
2037-26-5	Toluene-D8	91%		87-113%
460-00-4	4-Bromofluorobenzene	86%		84-117%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-372-16DR-01		
Lab Sample ID:	F14731-1	Date Sampled:	09/24/02
Matrix:	AQ - Ground Water	Date Received:	09/25/02
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE010505.D	1	10/03/02	MRE	10/01/02	OP5995	GEE475
Run #2 [a]	EE010530.D	2	10/04/02	MRE	10/01/02	OP5995	GEE475

	Initial Volume	Final Volume
Run #1	890 ml	1.0 ml
Run #2	890 ml	1.0 ml

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene [b]	ND [c]	18	18	ug/l	
208-96-8	Acenaphthylene	ND [c]	9.0	2.2	ug/l	
120-12-7	Anthracene	ND	2.2	1.1	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	0.11	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	0.11	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	0.11	ug/l	
218-01-9	Chrysene	ND	2.2	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	0.11	ug/l	
206-44-0	Fluoranthene	ND	2.2	0.56	ug/l	
86-73-7	Fluorene	ND [c]	4.5	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	0.11	ug/l	
91-20-3	Naphthalene	65.9 [c]	4.5	1.1	ug/l	
90-12-0	1-Methylnaphthalene	35.5 [c]	4.5	1.1	ug/l	
91-57-6	2-Methylnaphthalene	30.7 [c]	4.5	1.1	ug/l	
85-01-8	Phenanthrene	ND	2.2	1.1	ug/l	
129-00-0	Pyrene	ND	2.2	0.56	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%	95%	32-142%
92-94-4	p-Terphenyl	40%	41%	30-128%

(a) All hits confirmed by spectral match using a diode array detector.
(b) Elevated reporting limits due to matrix interference.
(c) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-372-22S-01		
Lab Sample ID:	F14731-2	Date Sampled:	09/24/02
Matrix:	AQ - Ground Water	Date Received:	09/25/02
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B0011857.D	1	10/04/02	JG	n/a	n/a	VB522
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	5.3	1.0	0.70	ug/l	
1330-20-7	Xylene (total)	2.1	3.0	1.0	ug/l	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		86-115%
17060-07-0	1,2-Dichloroethane-D4	106%		78-125%
2037-26-5	Toluene-D8	93%		87-113%
460-00-4	4-Bromofluorobenzene	93%		84-117%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-372-22S-01		
Lab Sample ID:	F14731-2	Date Sampled:	09/24/02
Matrix:	AQ - Ground Water	Date Received:	09/25/02
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE010508.D	1	10/04/02	MRE	10/01/02	OP5995	GEE475
Run #2 [a]	EE010533.D	2	10/04/02	MRE	10/01/02	OP5995	GEE475

	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2	970 ml	1.0 ml

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND [b]	8.2	2.1	ug/l	
208-96-8	Acenaphthylene	ND [b]	8.2	2.1	ug/l	
120-12-7	Anthracene	ND	2.1	1.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.21	0.10	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.21	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.21	0.10	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.21	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.21	0.10	ug/l	
218-01-9	Chrysene	ND [b]	4.1	2.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.21	0.10	ug/l	
206-44-0	Fluoranthene	ND	2.1	0.52	ug/l	
86-73-7	Fluorene	ND [b]	4.1	2.1	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.21	0.10	ug/l	
91-20-3	Naphthalene	49.9 [b]	4.1	1.0	ug/l	
90-12-0	1-Methylnaphthalene	45.7 [b]	4.1	1.0	ug/l	
91-57-6	2-Methylnaphthalene	47.0 [b]	4.1	1.0	ug/l	
85-01-8	Phenanthrene	ND	2.1	1.0	ug/l	
129-00-0	Pyrene	ND	2.1	0.52	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	139%	128%	32-142%
92-94-4	p-Terphenyl	90%	91%	30-128%

(a) All hits confirmed by spectral match using a diode array detector.
(b) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-372-23S-01		
Lab Sample ID:	F14731-3	Date Sampled:	09/24/02
Matrix:	AQ - Ground Water	Date Received:	09/25/02
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B0011858.D	1	10/04/02	JG	n/a	n/a	VB522
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.70	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	107%		78-125%
2037-26-5	Toluene-D8	91%		87-113%
460-00-4	4-Bromofluorobenzene	97%		84-117%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-372-23S-01		
Lab Sample ID:	F14731-3	Date Sampled:	09/24/02
Matrix:	AQ - Ground Water	Date Received:	09/25/02
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	EE010534.D	1	10/04/02	MRE	10/01/02	OP5995	GEE475
Run #2							

	Initial Volume	Final Volume
Run #1	890 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.5	1.1	ug/l	
208-96-8	Acenaphthylene	ND	4.5	1.1	ug/l	
120-12-7	Anthracene	ND	2.2	1.1	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	0.11	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	0.11	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	0.11	ug/l	
218-01-9	Chrysene	ND	2.2	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	0.11	ug/l	
206-44-0	Fluoranthene	ND	2.2	0.56	ug/l	
86-73-7	Fluorene	ND	2.2	1.1	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	0.11	ug/l	
91-20-3	Naphthalene	1.4	2.2	0.56	ug/l	J
90-12-0	1-Methylnaphthalene	2.0	2.2	0.56	ug/l	J
91-57-6	2-Methylnaphthalene	0.63	2.2	0.56	ug/l	J
85-01-8	Phenanthrene	ND	2.2	1.1	ug/l	
129-00-0	Pyrene	ND	2.2	0.56	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	62%		32-142%
92-94-4	p-Terphenyl	68%		30-128%

(a) All hits confirmed by spectral match using a diode array detector.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-372-DU01-01		
Lab Sample ID:	F14731-4	Date Sampled:	09/24/02
Matrix:	AQ - Ground Water	Date Received:	09/25/02
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B0011859.D	1	10/04/02	JG	n/a	n/a	VB522
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.70	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		86-115%
17060-07-0	1,2-Dichloroethane-D4	108%		78-125%
2037-26-5	Toluene-D8	92%		87-113%
460-00-4	4-Bromofluorobenzene	98%		84-117%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-372-DU01-01		
Lab Sample ID:	F14731-4	Date Sampled:	09/24/02
Matrix:	AQ - Ground Water	Date Received:	09/25/02
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	EE010535.D	1	10/04/02	MRE	10/01/02	OP5995	GEE475
Run #2							

	Initial Volume	Final Volume
Run #1	890 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.5	1.1	ug/l	
208-96-8	Acenaphthylene	ND	4.5	1.1	ug/l	
120-12-7	Anthracene	ND	2.2	1.1	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	0.11	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	0.11	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	0.11	ug/l	
218-01-9	Chrysene	ND	2.2	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	0.11	ug/l	
206-44-0	Fluoranthene	ND	2.2	0.56	ug/l	
86-73-7	Fluorene	ND	2.2	1.1	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	0.11	ug/l	
91-20-3	Naphthalene	1.3	2.2	0.56	ug/l	J
90-12-0	1-Methylnaphthalene	1.3	2.2	0.56	ug/l	J
91-57-6	2-Methylnaphthalene	ND	2.2	0.56	ug/l	
85-01-8	Phenanthrene	ND	2.2	1.1	ug/l	
129-00-0	Pyrene	ND	2.2	0.56	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	64%		32-142%
92-94-4	p-Terphenyl	70%		30-128%

(a) All hits confirmed by spectral match using a diode array detector.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

F14731

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 0296 | PAGE 1 OF ____

PROJECT NO: N4248	FACILITY: TRUCK STAND NASCA	PROJECT MANAGER P. Callahan	PHONE NUMBER 813 806 0702	LABORATORY NAME AND CONTACT: ACCUTEST
SAMPLERS (SIGNATURE) Alan J Pate MQ		FIELD OPERATIONS LEADER M. DALE	PHONE NUMBER 904 636 4125	ADDRESS 4405 VINELAND Rd. SUITE C-15
		CARRIER/WAYBILL NUMBER Fedex 834707904298		CITY, STATE ORLANDO, FL 32811

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

	DATE YEAR 2002	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS BTEX (8260B)	MTBE (8260B)	PAHs (8310)						COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)										G	G	G						
PRESERVATIVE USED										HCL	HCL	–						
1	9/24	1135	CEF-372-16DR-01	372-16DR	0	34.80	GW	G	15	X	X	X						Cool to 4°C
2	9/24	1135	CEF-372-225-01	372-225	0	14.15	GW	G	5	X	X	X						
3	9/24	1255	CEF-372-233-01	372-233	0	14.09	GW	G	5	X	X	X						N4248 NR46
4	9/24	0000	CEF-DUP01-01	–			GW	G	5	X	X	X						
			372 MD															

1. RELINQUISHED BY Alan J Pate	DATE 9/24/02	TIME 1630	1. RECEIVED BY Mina Mohammed	DATE 9-25-02	TIME 0900
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TINUS-001

TINUS JACKSONVILLE Fax:9042810070 Sep 25 2002 6:26 P.02

ATTACHMENT C

GROUNDWATER ANALYTICAL REPORT

JANUARY 2003 SAMPLING EVENT

Southeast ACCUTEST Laboratories

06/05/03

Technical Report for

Tetra Tech, NUS

NAS Cecil Field-CTO-248

N4248 WR105(SD)

Accutest Job Number: F16142

Report to:

Tetra Tech, NUS

dalem@ttnus.com

ATTN: Merv Dale

Total number of pages in report: 4

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

Sample Summary

Tetra Tech, NUS

Job No: F16142

NAS Cecil Field-CTO-248
Project No: N4248 WR105(SD)

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F16142-1	01/07/03	14:10	RM	01/10/03	AQ	Ground Water	CEF-372-24D-01

Report of Analysis

Client Sample ID:	CEF-372-24D-01		
Lab Sample ID:	F16142-1	Date Sampled:	01/07/03
Matrix:	AQ - Ground Water	Date Received:	01/10/03
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0014146.D	1	01/13/03	KW	n/a	n/a	VC621
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.66	1.0	0.50	ug/l	J
108-88-3	Toluene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.70	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.62	1.0	0.50	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		86-115%
17060-07-0	1,2-Dichloroethane-D4	92%		78-125%
2037-26-5	Toluene-D8	95%		87-113%
460-00-4	4-Bromofluorobenzene	95%		84-117%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-372-24D-01		
Lab Sample ID:	F16142-1	Date Sampled:	01/07/03
Matrix:	AQ - Ground Water	Date Received:	01/10/03
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	AA013901.D	1	01/16/03	SM	01/13/03	OP6731	GAA660
Run #2							

	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2		

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.2	1.0	ug/l	
208-96-8	Acenaphthylene	ND	4.2	1.0	ug/l	
120-12-7	Anthracene	ND	2.1	1.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.21	0.10	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.21	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.21	0.10	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.21	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.21	0.10	ug/l	
218-01-9	Chrysene	ND	2.1	1.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.21	0.10	ug/l	
206-44-0	Fluoranthene	ND	2.1	0.52	ug/l	
86-73-7	Fluorene	ND	2.1	1.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.21	0.10	ug/l	
91-20-3	Naphthalene	4.6	2.1	0.52	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.1	0.52	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.1	0.52	ug/l	
85-01-8	Phenanthrene	ND	2.1	1.0	ug/l	
129-00-0	Pyrene	ND	2.1	0.52	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	74%		32-142%
92-94-4	p-Terphenyl	42%		30-128%

(a) All hits confirmed by spectral match using a diode array detector.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 0390 F16142 | PAGE 1 OF 1

PROJECT NO: NJ4248	FACILITY: NASCF TRUCK STAND	PROJECT MANAGER PAUL CALLIGAN	PHONE NUMBER 813-806-0202	LABORATORY NAME AND CONTACT: ACCUTEST Sue Bell
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER MERV DALE	PHONE NUMBER 904-636-6125	ADDRESS 4405 VINELAND Rd., C-15
		CARRIER/WAYBILL NUMBER		CITY, STATE ORLANDO, FL 32811

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

	DATE YEAR 2003	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)									COMMENTS
										PRESERVATIVE USED									
										TYPE OF ANALYSIS * SELECT VOCs SW846, 8260B; PAHs SW846, 8310									
												HCL							
												H_2SO_4							
1	1/7	1440	CRF-372-240-01	241			GW	G	5	3	2								Cool to 4°C
	1/7	1100																	NJ4248 — WE105
																			* Report only BTEX, MTBE

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	1/10/03	1300	1. RECEIVED BY	1/10/03	1350
2. RELINQUISHED BY	1/10/03	15:10	2. RECEIVED BY Muna Mohammed	1/10/03	1510
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 4/02R FORM NO. TINUS-001