N60200.AR.004245
NAS CECIL FIELD, FL
5090.3a

SUPPLEMENTAL SITE ASSESSMENT LETTER REPORT FOR BUILDING 199 TANK 199

NAS CECIL FIELD FL

8/3/2005

TETRA TECH NUS INC

TETRA TECH NUS, INC.
8640 Philips Highway, Suite 16 • Jacksonville, FL 32256
Tel 904.636.6125 • Fax 904.636.6165 • www.tetratech.com

003

Document Tracking Number 05JAX0075

August 3, 2005

Project Number N9945

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 III Contract Number N62467-94-D0888
Contract Task Order Number 0361

Subject: Supplemental Site Assessment Letter Report
Building 199, Tank 199
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Supplemental Assessment Letter Report for the referenced Contract Task Order (CTO) for the subject site. This report has been prepared for the United States Navy Southern Division, Naval Facilities Engineering Command (NAVFAC EFD SOUTH) under CTO 0361, for the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888. This report provides the results of the supplemental assessment activities and offers a limited review of prior site investigation results to aid in evaluating current site conditions and recommending future actions at the site. Figure 1 shows the general location of this site.

SUPPLEMENTAL ASSESSMENT OBJECTIVES

The objective of the supplemental assessment at Building 199 was to evaluate the site's current groundwater conditions. The assessment data will be used to recommend appropriate future actions at the site.

MONITORING WELL INSTALLATION

In February 2005, well borings were advanced using direct-push technology to a total depth of 13 feet (ft) below grade (see Figure 2). The two wells were each constructed with 10 ft of 0.010-inch machine-slot well screen and completed with flush mounted concrete pads. Monitoring well CEF-199-07SR was a replacement for CEF-199-07S, which was destroyed, and CEF-199-11S was installed as a new downgradient well due to shifting groundwater flow patterns. The Monitoring Well (Construction) Sheets, Certificates of Conformance, and Monitoring Well Development Records for each well are provided in Attachment A. The top-of-casing (TOC) elevations of these two new wells were surveyed in March 2005, and the data set from the registered surveyor is provided in Attachment B.

GROUNDWATER SAMPLING AND ANALYSIS

On February 21, 2005, TtNUS personnel mobilized to Building 199 to conduct the groundwater sampling event. The sampling activities were completed on February 21, 2005, in accordance with Florida Department of Environmental Protection (FDEP) Standard Operating Procedures for Field Activities (DEP-SOP-001/01) dated January 2002. A copy of the field data record for the water level measurements is included in Attachment C.

Water level measurements were recorded from the monitoring wells on site on February 21, 2005. The depth-to-water measurements coupled with TOC elevation data were used to calculate groundwater elevations (see Table 1). Depth to groundwater ranged from 3.22 to 5.65 ft below top of casing (BTOC) for the shallow wells. The groundwater flow direction at the site is indicated on Figure 2.

The sampling team collected groundwater samples from three monitoring wells (CEF-199-01S, CEF-199-04S, and CEF-199-11S) and one replacement well (CEF-199-07SR). The samples were packed on ice and transported to Accutest Laboratories in Orlando, Florida. The samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) using United States Environmental Protection Agency (USEPA) Method 8260B. The laboratory analytical results from this supplemental assessment are summarized in Tables 2 and 3. Groundwater sampling logs are provided in Attachment C. Copies of the laboratory analytical report and chain-of-custody documentation are provided in Attachment D.

GROUNDWATER ANALYTICAL RESULTS

The analytical results for the groundwater samples collected at Building 199 from this supplemental assessment have been compared to the appropriate groundwater cleanup target levels (GCTLs). Volatile organic compounds (VOCs) were detected in the source well CEF-199-1S; however, the detected compounds were below their respective GCTLs. The VOC compounds benzene, ethylbenzene, and xylenes were detected at concentrations of 0.51 I micrograms per liter (μg/L) [GCTL 1.0 μg/L], 1.7 μg/L [GCTL 30 μg/L], and 2.2 I μg/L [GCTL 20 μg/L], respectively. The concentrations of BTEX in the perimeter monitoring wells were below the method detection limits. Groundwater analytical results are indicated on Figure 3.

SUPPLEMENTAL ASSESSMENT SUMMARY

The water level data collected as part of the supplemental assessment indicates that groundwater flow is generally to the north. This conclusion generally agrees with the flow data direction given in the SAR and subsequent annual monitoring reports.

The concentrations of BTEX detected in source well CEF-199-1S have decreased since the previous annual sampling event with each of the concentrations below their respective GCTLs. The concentrations of BTEX in perimeter wells CEF-199-4S and CEF-199-7SR were similar to the concentrations reported during the previous sampling event. The concentrations of BTEX in the samples collected from the perimeter wells were below their respective GCTLs.

RECOMMENDATIONS

Based on the results of the Supplemental Assessment and a review of the historical data for this site, TtNUS recommends that the annual monitoring program be continued as specified in the Natural Attenuation Monitoring Plan Approval Order issued by the FDEP dated October 5, 2004.

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,

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

Mervin W. Dale, P.G.
Florida Professional Geologist
P.G. Number 001917

MERVIN W. DALE
LICENSE
NO. 1917
STATE OF
FLORIDA
PROFESSIONAL GEOLOGIST

PC/md

Attachments (10)

pc: Gabe Magwood, NAVFAC EFD SOUTH
Debbie Humbert (Cover Letter Only)
Mark Perry/File (Unbound)
CTO 361 File

TABLES

TABLE 1

GROUNDWATER ELEVATION DATA
TANK 199
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Monitoring Well Identification	Well Depth (ft, BTOC)	TOC Elevation (ft, msl)	January 5, 2001		TOC Elevation (ft, msl) Resurveyed 6/14/01	January 8, 2002		February 18, 2003		January 27, 2004		May 10, 2004		February 21, 2005	
			DTW	WLE		DTW	WLE	DTW	WLE	DTW	WLE	DTW	WLE	DTW	WLE
CEF-199-1S	11.36	77.93	4.85	73.08	76.78	4.58	72.20	1.85	74.93	6.87	69.91	7.78	69.00	5.62	71.16
CEF-199-3S	NA	75.98	3.74	72.24	74.64	3.59	71.05	2.70	71.94	4.32	70.32	3.67	70.97	3.22	71.42
CEF-199-4S	11.52	77.16	4.23	72.93	75.83	4.09	71.74	2.64	73.19	5.45	70.38	4.97	70.86	4.36	71.47
CEF-199-5S	NA	76.05	3.75	72.30	74.71	3.70	71.01	2.81	71.90	4.55	70.16	3.81	70.90	3.71	71.00
CEF-199-6S	NA	75.48	2.93	72.55	74.14	3.57	70.57	1.69	72.45	2.32	71.82	NM-D	NM-D	3.57	70.57
CEF-199-7S	13.24	77.14	4.11	73.03	75.80	3.69	72.11	2.08	73.72	NM-D	NM-D	NM-D	NM-D	NM-D	NM-D
CEF-199-7SR	13.00	75.40	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	5.02	70.38
CEF-199-8S	NA	77.42	4.90	72.52	76.08	4.62	71.46	2.78	73.30	6.42	69.66	7.21	68.87	5.62	70.46
CEF-199-9S	NA	77.07	4.58	72.49	75.73	4.30	71.43	2.43	73.30	6.07	69.66	6.86	68.87	5.33	70.40
CEF-199-10S	NA	77.66	4.96	72.70	76.32	4.69	71.63	3.17	73.15	6.56	69.76	7.25	69.07	5.65	70.67
CEF-199-11S	NA	76.47	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	5.65	70.82

Notes:

DTW = depth to water, ft BTOC

WLE = water level elevation, ft msl

msl = mean sea level

NA = not available

NM-D = not measured, damaged well

TABLE 2

SUMMARY OF DETECTIONS - FEBRUARY 2004
TANK 199
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Analyte	Contaminated Well	Perimeter Monitoring Wells			MOP Approval Order Action Levels for Contaminated Well/Perimeter Wells	Milestone Objectives for CEF-199-1S at the end of the Year 1	NADSC[2]/GCTL[1]
	CEF-199-1S	CEF-199-4S	CEF-199-7SR	CEF-199-11S			
Date Sample Collected	2/21/2005	2/21/2005	2/21/2005	2/21/2005			
VOCs (USEPA Method 8260B) (µg/L)							
Benzene	0.51 I	<0.50	<0.50	<0.50	100/1	4	100/1
Ethylbenzene	1.7	<0.50	<0.50	<0.50	300/30	None	300/30
Toluene	<0.50	<0.50	<0.50	<0.50	400/40	None	400/40
Total Xylene	2.2 I	<1.0	<1.0	<1.0	None	None	200/20

Notes:

MOP = Monitoring Only Plan

< = less than

I = Result greater than the method detection limit, but less than the reporting limit

1- GCTLs are based on Chapter 62-777, Florida Administrative Code (FAC), Table I.

2 - NADSC = Natural Attenuation Default Source Concentrations as listed in Chapter 62-777, FAC, Table V.

TABLE 3

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

Location: CEF-199- Duplicate, as noted (Dup) Sample Date Well Depth, ft	FDEP GCTL FAC 62-777	**1S (Source)**									
		12/96 11.36	12/98 11.36	7/99 11.36	2/00 11.36	1/01 11.36	1/02 11.36	Dup 1/02 11.36	2/03 11.36	Dup 2/03 11.36	1/04 11.36
VOCs (µg/L)											
BENZENE	1	**8.1**	**3.1**	**7.0**	**1.7**	0.53	**1.9**	**1.8**	1 U	1 U	**5**
ETHYLBENZENE	30	11	5	7	4.7	2.8	1.5	1.4	1 U	1 U	6.5
TOLUENE	40	4.5	ND	ND	ND	1 U	0.58J	0.54J	1 U	1 U	1 U
XYLENES	20	**52**	1	ND	ND	3 U	3 U	3 U	3 U	3 U	3 U
1,4-DICHLOROBENZENE	75	NA	NA	41	ND	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	NA	NA	7	ND	1 U	2.1	2.0	1 U	1 U	1 U
Semivolatile Organic Compounds (µg/L)											
NAPHTHALENE	20	NA	NA	**57**	**33**	4.2	10.3	6.4	2.2 U	2.2 U	4.7
1-METHYLNAPHTHALENE	20	NA	NA	**96**	**53**	4.3	17.8	13.0	2.2 U	2.2 U	2.1
2-METHYLNAPHTHALENE	20	NA	NA	**83**	**61**	2.5	15.2	10.6	2.2 U	2.2 U	2.2
FLUORENE	280	NA	NA	11	0.3	4 U	3.6J	2.7J	2.2 U	2.2 U	2.6
ANTHRACENE	2100	NA	NA	2.8	ND	4 U	2 U	2 U	2.2 U	2.2 U	2.1 U
BENZO(A)ANTHRACENE	0.2	NA	NA	**3**	ND	0.4 U	0.2 U	0.2 U	1.3 U	0.86 U	0.21 U
Total Petroleum Hydrocarbons (mg/L)											
TRPH (C8-C40)	5	NA	NA	**5.4**	3.7	**28.4**	1.59	1.58	3.19	1.34	4.52

See notes at end of table.

TABLE 3

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

Location: CEF-199-	FDEP GCTL FAC 62-777	**1S**			**4S (Perimeter)**						
Duplicate, as noted (Dup)		Dup									
Sample Date		1/04	2/04	2/05	12/98	7/99	2/00	1/01	1/02	2/03	1/04
Well Depth, ft		11.36	11.36	11.36	11.52	11.52	11.52	11.52	11.52	11.52	11.52
VOCs (µg/L)											
BENZENE	1	**4.7**	**4.8**	0.51 I	ND	ND	ND	1 U	1 U	1 U	1 U
ETHYLBENZENE	30	6.1	10.8	1.7	ND	ND	ND	1 U	1 U	1 U	1 U
TOLUENE	40	1 U	1 U	0.50 U	ND	ND	ND	1 U	1 U	1 U	1 U
XYLENES	20	3 U	3 U	2.2 I	ND	ND	ND	3 U	3 U	3 U	3 U
1,4-DICHLOROBENZENE	75	1 U	1 U	NA	NA	ND	ND	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	1 U	1 U	NA	NA	ND	ND	1 U	1 U	1 U	1 U
Semivolatile Organic Compounds (µg/L)											
NAPHTHALENE	20	4.6	NA	NA	NA	ND	ND	2 U	2 U	2 U	2.1 U
1-METHYLNAPHTHALENE	20	1.7	NA	NA	NA	ND	ND	2 U	2 U	2 U	2.1 U
2-METHYLNAPHTHALENE	20	1.8	NA	NA	NA	ND	ND	2 U	2 U	2 U	2.1 U
FLUORENE	280	2.5	NA	NA	NA	ND	ND	2 U	2 U	2 U	2.1 U
ANTHRACENE	2100	2.1 U	NA	NA	NA	ND	ND	2 U	2 U	2 U	2.1 U
BENZO(A)ANTHRACENE	0.2	0.21 U	NA	NA	NA	ND	ND	0.2 U	0.2 U	0.2 U	0.21 U
Total Petroleum Hydrocarbons (mg/L)											
TRPH (C8-C40)	5	1.56	4.02	NA	NA	ND	ND	0.258	0.25 U	0.26 U	0.27 U

See notes at end of table.

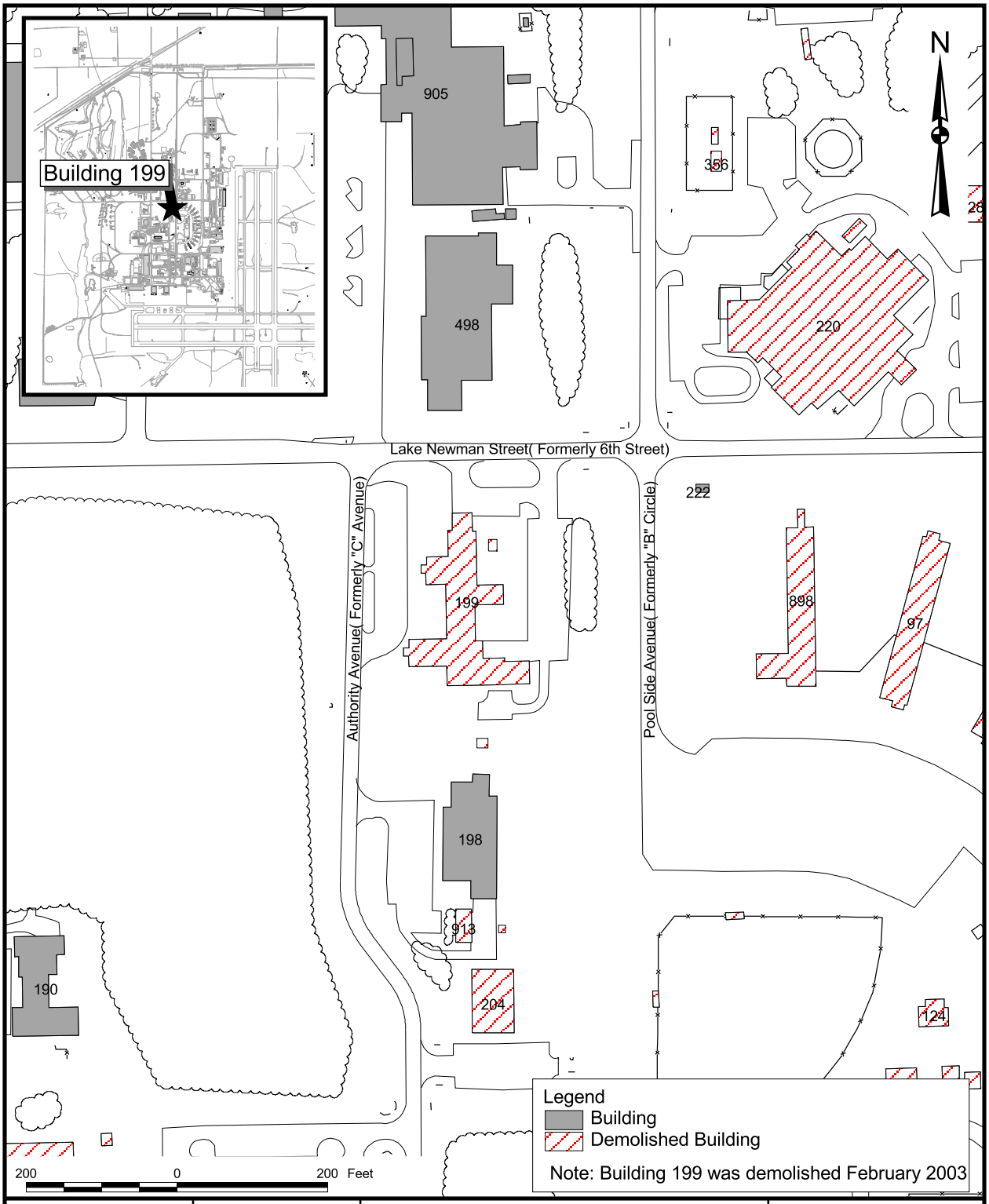
TABLE 3

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

Location: CEF-199-	FDEP GCTL FAC 62-777	**4S**	**CEF-199-7S (Perimeter)**						**6S**	**11S**
Duplicate, as noted (Dup)										
Sample Date		2/05	7/99	2/00	1/01	1/02	2/03	2/05*	1/04	2/05
Well Depth, ft		11.52	13.24	13.24	13.24	13.24	13.24	13.00*	13.00	13.00
VOCs (µg/L)										
BENZENE	1	0.50 U	ND	ND	1 U	1 U	1 U	0.50 U	1 U	0.50 U
ETHYLBENZENE	30	0.50 U	ND	ND	1 U	1 U	1 U	0.50 U	1 U	0.50 U
TOLUENE	40	0.50 U	ND	ND	1 U	1 U	1 U	0.50 U	1 U	0.50 U
XYLENES	20	1 U	ND	ND	3 U	3 U	3 U	1 U	3 U	1 U
1,4-DICHLOROBENZENE	75	NA	ND	ND	1 U	1 U	1 U	NA	1 U	NA
1,2-DICHLOROBENZENE	600	NA	ND	ND	1 U	1 U	1 U	NA	1 U	NA
Semivolatile Organic Compounds (µg/L)										
NAPHTHALENE	20	NA	ND	ND	2.2 U	2 U	2.1 U	NA	2.2 U	NA
1-METHYLNAPHTHALENE	20	NA	ND	ND	2.2 U	2 U	2.1 U	NA	2.2 U	NA
2-METHYLNAPHTHALENE	20	NA	ND	ND	2.2 U	2 U	2.1 U	NA	2.2 U	NA
FLUORENE	280	NA	ND	ND	2.2 U	2 U	2.1 U	NA	2.2 U	NA
ANTHRACENE	2100	NA	ND	ND	2.2 U	2 U	2.1 U	NA	2.2 U	NA
BENZO(A)ANTHRACENE	0.2	NA	ND	ND	0.22 U	0.2 U	0.21 U	NA	0.22 U	NA
Total Petroleum Hydrocarbons (mg/L)										
TRPH (C8-C40)	5	NA	ND	ND	0.480	0.28 U	0.26 U	NA	0.27 U	NA

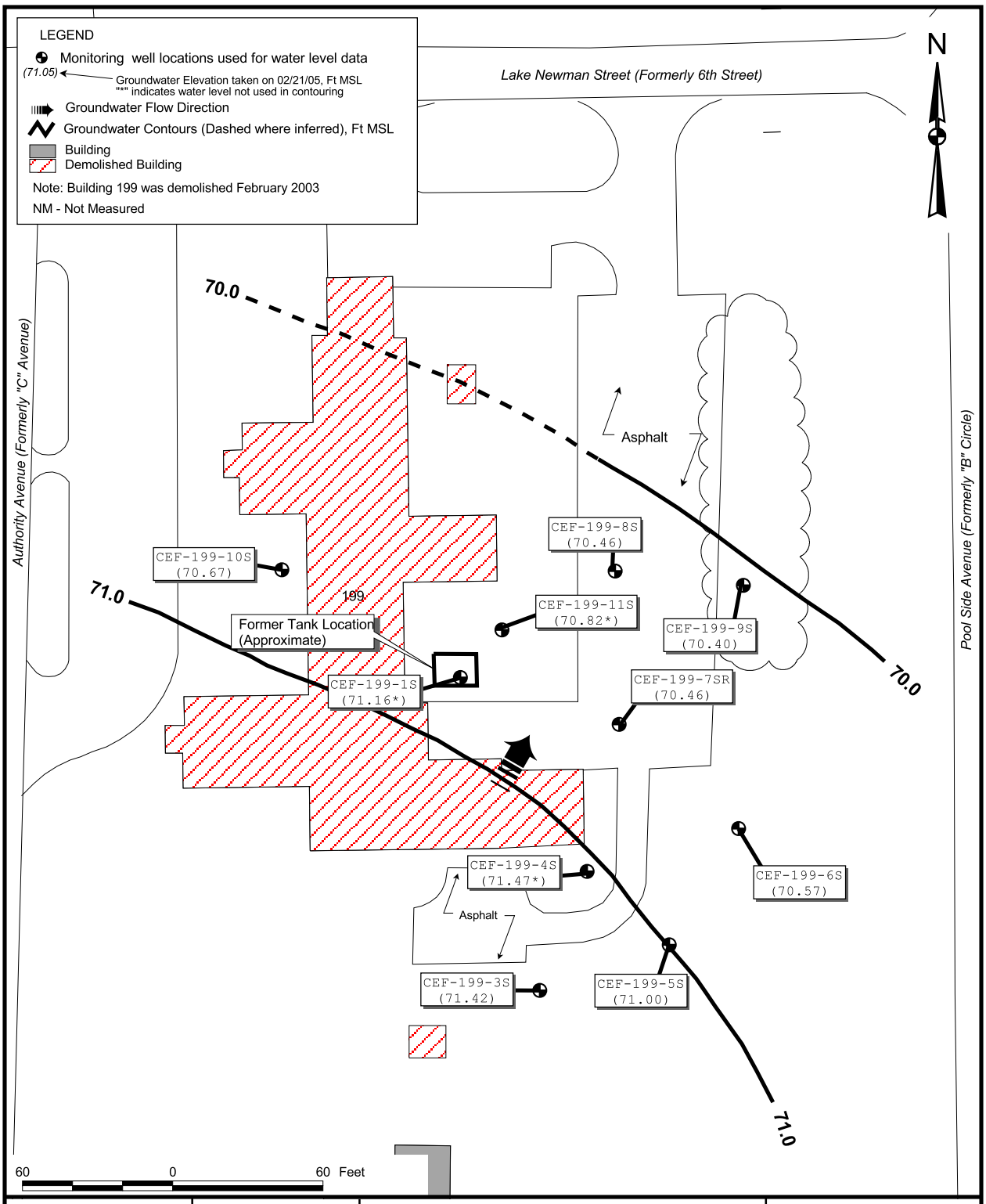
Notes:
Bold values are greater than GCTL.
mg/L = milligrams per liter
NA = not analyzed
ND = not detected
U = undetected at detection limit shown
J = estimated
I = result greater than the method detection limit, but less than the reporting limit
* = Result is from replacement well CEF-199-7SR

FIGURES



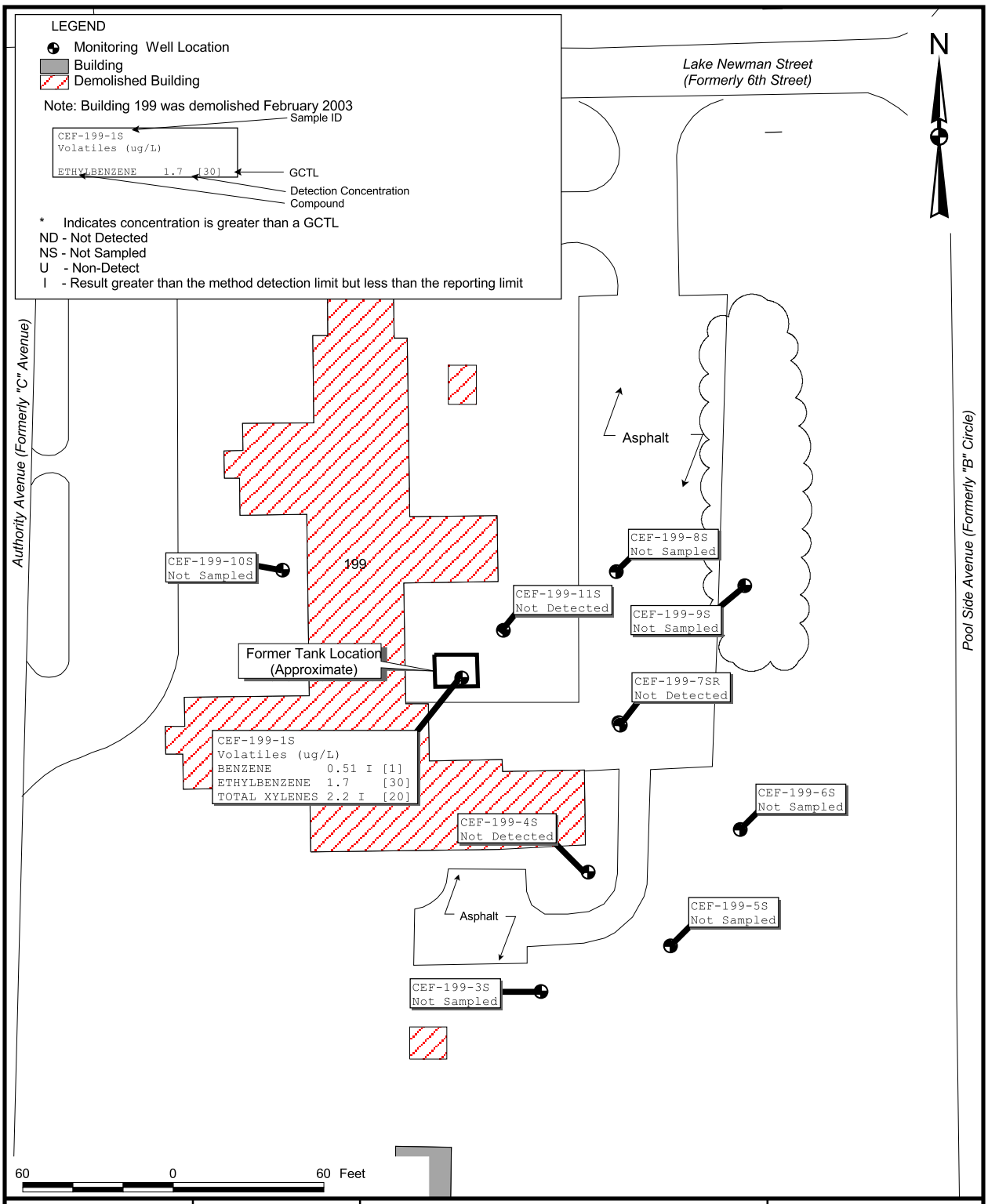
DRAWN BY MJJ	DATE 08Apr05	SITE LOCATION MAP FEBRUARY 2005 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 9945
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV 0

P:\GIS\NAS_CecilField\Bldg0199-7.apr 08Apr05 MJJ Site Location Layout



DRAWN BY MJJ	DATE 08Apr05	GROUNDWATER FLOW MAP FEBRUARY 2005 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 9945
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2 / REV 0

P:\GIS\NAS_CecilField\Bldg0199-7.apr 22Apr05 CF GroundwaterPotentiometricLayout



DRAWN BY MJJ	DATE 08Apr05	GROUNDWATER ANALYTICAL RESULTS FEBRUARY 2005 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 9945
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3 / REV 0

P:\GIS\NAS_CecilField\Bldg0199-7.apr 08Apr05 MJJ Groundwater ExceedanceLayout

ATTACHMENT A

MONITORING WELL INSTALLATION FORMS

Tetra Tech NUS, Inc.

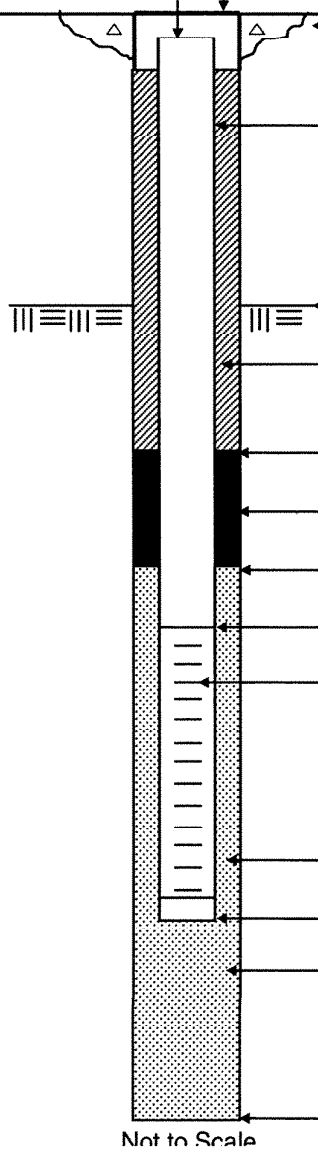
WELL No.: CEF-199-7SR

MONITORING WELL SHEET

PROJECT:	Tank 199, LTM	DRILLING Co.:	Miller Drilling	BORING No.:	001
PROJECT No.:	N4248	DRILLER:	Haz Huntoon	DATE COMPLETED:	10/21/04
SITE:	Tank 199, CEF	DRILLING METHOD:	DPT	NORTHING:	
GEOLOGIST:	M. Dale	DEV. METHOD:	Peristaltic	EASTING:	

Ground Elevation =

Datum:



Elevation / Depth of Top of Riser: /2"

Elevation / Height of Top of Surface Casing: /1"

I.D. of Surface Casing: 8"

Type of Surface Casing: Steel boltdown manhole

Type of Surface Seal: Concrete 2' x 2' x 6" pad

I.D. of Riser: 0.75"

Type of Riser: Sch. 40 PVC

Borehole Diameter: 3"

Elevation / Depth Top of Rock: N/A

Type of Backfill: Type I/II Portland Cement

Elevation / Depth of Seal: / 1.5'

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: / 2.0'

Elevation / Depth of Top of Screen: / 3.0'

Type of Screen: Sch. 40 PVC (pre-pack)

Slot Size x Length: 0.010" x 10'

I.D. of Screen: 0.75"

Type of Filter Pack: #1 Sand

Elevation / Depth of Bottom of Screen: / 13.0'

Elevation / Depth of Bottom of Filter Pack: / 13.0'

Type of Backfill Below Well: Native Soil

Elevation / Total Depth of Borehole: / 13.0'

MONITORING WELL MATERIALS
CERTIFICATE OF CONFORMANCE

Well Designation: CEF-199-7SR
Site Name: TANK 199
Date Installed: 10-21-04
Project Name: TANK 199 CTM

Site Geologist: MERVIN W. DALE
Drilling Company: Miller DRILLING
Driller: HAZ HUNTOON
Project Number: N4248

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	Sch. 40 PVC 3/4" I.D., 10 FT. SECTIONS, Flush Thread	Geoinsight, LAS CRUCES, NM	NO
Well Screen	Sch. 40 PVC, 3/4" I.D., 5 FT. SECTIONS, 0.010" slots, pre-pack	GEOINSIGHT, LAS CRUCES, NM	NO
End Cap	Sch. 40 PVC, 3/4" I.D., 2" Long	GEOINSIGHT, LAS CRUCES, NM	NO
Drilling Fluid	Potable water	Firehydrant at Bldg. 177 (fire sta.)	NO
Drilling Fluid Additives	None	—	—
Backfill Material	None	—	—
Annular Filter Pack	Filter Sand No. 1	DSI*, CHRISTIANA, TN.	NO
~~Bentonite~~ Seal, Fine Sand	30/65 Sand	STANDARD SAND, JACKSONVILLE, FL	NO
Annular Grout	Type II Portland Cement	CEMEX	
Surface Cement	Quikrete Concrete	Quikrete, Atlanta, GA.	NO
Protective Casing	Steel Boltdown Manhole, Flush Mt. 8" DIAM.	PEMCO, HIALEAH, FL	NO
Paint	None	—	—
Rod Lubricant	None	—	—
Compressor Oil	None	—	—

* DSI = DRILLERS SERVICE, INC.

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: Mervin W. Dale

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-199-75R
Site: 199
Date Installed: 10/21/04
Date Developed: 10/26/04
Dev. Method: Pump
Pump Type: ~~PERISTALTIC~~ Submersible

Depth to Bottom (ft.): 13.25'
Static Water Level Before (ft.): –
Static Water Level After (ft.): –
Screen Length (ft.): 10
Specific Capacity: N/A
Casing ID (in.): 0.75"

Responsible Personnel: C. METZ
Drilling Co.: MILLER
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units: mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
3:40		0	–	–	–	–	–	–
3:50		7.5		25.09	5.48	0.193	250	
4:00		15		24.92	5.45	0.196	140	
4:10		22.5		24.90	5.42	0.188	100	
4:20		30		24.98	5.40	0.180	90	
4:30		37.5		24.99	5.40	0.179	45	
4:40		45		24.97	5.41	0.179	23	

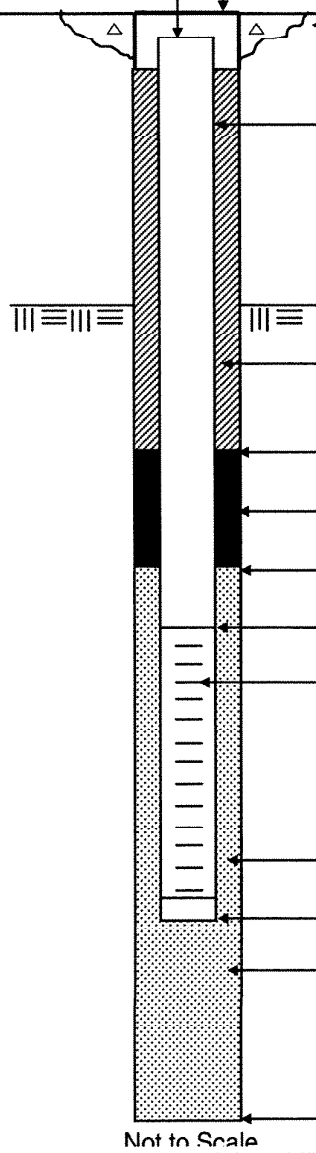
Tetra Tech NUS, Inc.

WELL No.: CEF-199-11S

MONITORING WELL SHEET

PROJECT:	Tank 199, LTM	DRILLING Co.:	Miller Drilling	BORING No.:	002
PROJECT No.:	N4248	DRILLER:	Haz Huntoon	DATE COMPLETED:	10/21/04
SITE:	Tank 199, CEF	DRILLING METHOD:	DPT	NORTHING:	
GEOLOGIST:	M. Dale	DEV. METHOD:	Peristaltic	EASTING:	

Ground Elevation =
Datum:



Elevation / Depth of Top of Riser: /2"

Elevation / Height of Top of Surface Casing: /1"

I.D. of Surface Casing: 8"

Type of Surface Casing: Steel boltdown manhole

Type of Surface Seal: Concrete
2' x 2' x 6" pad

I.D. of Riser: 0.75"

Type of Riser: Sch. 40 PVC

Borehole Diameter: 3"

Elevation / Depth Top of Rock: N/A

Type of Backfill: Type I/II Portland Cement

Elevation / Depth of Seal: / 1.5'

Type of Seal: 30/65 Fine Sand

Elevation / Depth of Top of Filter Pack: / 2.0'

Elevation / Depth of Top of Screen: / 3.0'

Type of Screen: Sch. 40 PVC (pre-pack)

Slot Size x Length: 0.010" x 10'

I.D. of Screen: 0.75"

Type of Filter Pack: #1 Sand

Elevation / Depth of Bottom of Screen: / 13.0'

Elevation / Depth of Bottom of Filter Pack: / 13.0'

Type of Backfill Below Well:
Native Soil

Elevation / Total Depth of Borehole: / 13.0'

MONITORING WELL MATERIALS
CERTIFICATE OF CONFORMANCE

Well Designation: CEF-199-115
Site Name: TANK 199
Date Installed: 10-21-04
Project Name: TANK 199 LTM

Site Geologist: MERVIN W. DALE
Drilling Company: Miller DRILLING
Driller: HAZ HUNTOON
Project Number: N4248

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	Sch.40 PVC, 3/4" I.D., 10 FT. SECTIONS, Flush Thread	Geoinsight, LAS CRUCES, NM	NO
Well Screen	Sch.40 PVC, 3/4" I.D., 5 FT. SECTIONS, 0.010" slots, pre-pack	GEOINSIGHT, LAS CRUCES, NM	NO
End Cap	Sch.40 PVC, 3/4" I.D., 2" Long	GEOINSIGHT, LAS CRUCES, NM	NO
Drilling Fluid	Potable water	Fire hydrant at Bldg. 177 (fire sta.)	NO
Drilling Fluid Additives	None	—	—
Backfill Material	None	—	—
Annular Filter Pack	Filter Sand No. 1	DSI*, CHRISTIANA, TN.	NO
~~Bentonite~~ Seal, FINE SAND	30/65 Sand	STANDARD SAND, JACKSONVILLE, FL	NO
Annular Grout	Type II Portland Cement	CEMEX	
Surface Cement	Quikrete Concrete	Quikrete, Atlanta, GA.	NO
Protective Casing	Steel Boltdown Manhole, Flush Mt. 8" DIAM.	PEMCO, HIALEAH, FL	NO
Paint	None	—	—
Rod Lubricant	None	—	—
Compressor Oil	None	—	—

* DSI = DRILLERS SERVICE, INC.

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: Mervin W. Dale

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: CEF-199-11S
Site: 199
Date Installed: 10/21/04
Date Developed: 10/26/04
Dev. Method: Pump
Pump Type: ~~PERISTALTIC~~ Submersible

Depth to Bottom (ft.): 14' TOC
Static Water Level Before (ft.): —
Static Water Level After (ft.): —
Screen Length (ft.): 10'
Specific Capacity: N/A
Casing ID (in.): 0.75"

Responsible Personnel: C. METZ
Drilling Co.: MILLER
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units: mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
16:45		0	—	—	—	—	—	—
16:55		7.5		24.63	6.50	0.748	210	
~~15~~17:05		15		24.63	6.56	0.770	24	
17:15		22.5		24.60	6.56	0.779	16	
17:25		30		24.64	6.55	0.781	18	
17:35		37.5		24.52	6.55	0.781	15	
17:45		45		24.50	6.55	0.781	13	

ATTACHMENT B

WELL SURVEY DATA

TETRA TECH - SITES 293,815,199,81 AND 21
SURVEYED : 3/01/05

Site 293 Monitoring Wells

	Northing	Easting	Elevation	Description
51	2144149	377675.7	75.095	CEF-29323S NG
52	2144148	377675.7	75.131	CEF-29323S CONC
53	2144148	377675.7	74.882	CEF-29323S PVC

Site 815 Soil Borings

55	2145754	377966.4	75.916	CEF815 B01
56	2145752	378060	75.97	CEF815 B02
57	2145666	378054.8	76.073	CEF815 B03
54	2145666	377971.9	76.071	CEF815 B04
60	2145722	377997.5	75.697	CEF815 B05
59	2145722	378027.7	75.725	CEF815 B06
58	2145692	378027.8	75.866	CEF815 B07
61	2145692	377997.9	75.795	CEF815 B08

Site 199 Monitoring Wells

	2144943	376059.9	76.61	CEF-199-11S NG	*
62	2144943	376060.2	76.701	CEF199-11S CHK CONC	
	2144943	376059.9	76.47	CEF-199-11S PVC	*
63	2144906	376106.5	75.644	CEF199-7SR NG	
	2144905	376106.7	75.73	CEF-199-7SR NG	*
64	2144906	376106.7	75.718	CEF199-7SR CONC	
	2144905	376106.7	75.77	CEF199-7SR CONC	*
65	2144905	376106.7	75.403	CEF199-7SR PVC	
	2144905	376106.7	75.48	CEF199-7SR PVC	*

*This well data from survey on 12/03/04.

Site 81 Monitoring Wells

66	2146370	375806.7	77.92	CEF-81-5I NG
67	2146369	375806.8	78.064	CEF-81-5I CONC
68	2146369	375806.7	77.839	CEF-81-5I PVC
69	2146408	375816	78.012	CEF-81-1D NG
70	2146407	375815.8	78.066	CEF-81-1D CONC
71	2146407	375815.7	77.773	CEF-81-1D PVC
72	2146408	375838.9	77.733	CEF-81-2I NG
73	2146407	375838.8	77.703	CEF-81-2I CONC
74	2146407	375838.7	77.419	CEF-81-2I PVC
75	2146437	375808.4	78.015	CEF-81-3I NG
76	2146436	375808.7	78.094	CEF-81-3I CONC
77	2146435	375808.7	77.777	CEF-81-3I PVC
78	2146407	375780.8	77.719	CEF-81-4I NG
79	2146406	375780.9	77.992	CEF-81-4I CONC
80	2146406	375781.1	77.539	CEF-81-4I PVC

Site 21 Monitoring Wells

85	2146672	372845.8	73.286	CEF21-09S NG
86	2146673	372845.7	73.409	CEF21-09S CONC
87	2146673	372845.5	73.203	CEF21-09S PVC

NG = natural ground; CONC = concrete pad; PVC = top-of-casing on well.

ATTACHMENT C

FIELD SAMPLING FORMS

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

COPY

Project Name: Annual Monitor
Project No.: N9945 5X0 050 130
Location: TANK 199, NAS CF
Personnel: PC/AP
Weather Conditions: 70°F Cloudy
Measuring Device: Slope Indicator
Tidally Influenced: Yes ___ No X
Remarks:

Well or Piezometer Number CEF-199-	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	PID (ppm) BK/BH
1S	2/21/05	1316		11.36	5.62			0.0/0.0
3S		1308			3.22			0.0/0.0
4S		1310		11.52	4.36			0.0/0.0
5S		1309			3.71			1.7/0.0
6S		1311			3.57			0.0/0.0
7SR		1312		~13	5.02			0.7/0.0
8S		1314			5.62			0.0/0.0
9S		1313			5.33			0.0/0.0
10S		1317			5.65			0.0/0.0
11S		1315		~13	5.86			0.4/0.0

ppm=parts per million; BK=background; and BH=borehole of the well.

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

COPY

Project Site Name: Annual Monitor, TANK 199
Project No.: N9945

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 199GL1501
Sample Location: CEE-199-1S
Sampled By: PL/AP
C.O.C. No.: 199-022105
Type of Sample:
[ ] Low Concentration
[X] High Concentration

SAMPLING DATA

Date: 2/21/05	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1350	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	CLEAR	6.56	0.705	19.04	9.1	0.25	-114.4	

PURGE DATA

Date: 2/21/05	Time	pH	S.C.	Temp (°C)	Turbidity	DO		ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0								
Well Casing Diameter: 2 inch								
Well Casing Material: Sch. 40 PVC								
Total Well Depth (TD): 11.4	See Low Flow Purge Sheet for data.							
Static Water Level (WL): 5.62								
One Casing Volume(gal/L): 3.6								
Start Purge (hrs): 1323								
End Purge (hrs): 1348								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 7.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Select VOCs *	HCl	3-40mL vials	✓

OBSERVATIONS / NOTES

* BTEX only

Lab Accutest

SLIGHT SHEEN IN BUCKET + IN SAMPLES.

Circle if Applicable:

MS/MSD

Duplicate ID No.: NONE

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: TANK 199
PROJECT NUMBER: N9945

WELL ID.: CEF-199-01S
DATE: 2/21/05

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Cum. Vol. (Liters)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1323	5.62	300	–	–	–	–	–	–	–	START PURGE
1328	5.89	300	1.5	6.51	0.688	17.2	0.47	19.22	-5.2	
1333	5.89	300	3.0	6.55	0.691	15.4	0.30	18.87	-69.8	
1338	5.89	300	4.5	6.55	0.700	12.0	0.24	18.88	-86.3	
1343	5.89	300	6.0	6.56	0.703	10.3	0.26	19.02	-105.9	
1348		300	7.5	6.56	0.705	9.1	0.25	19.04	-114.4	

SAMPLE TIME 1350

SIGNATURE(S):

PAGE 2 **OF** 2

COPY

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

COPY

Project Site Name: Annual Monitor, TANK 199
Project No.: N9945

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 199GL4501
Sample Location: CEF-199-45
Sampled By: PL/AP
C.O.C. No.: 199-022105
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 2/21/05 Time: 1600	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Other
Method: Low Flow Peristaltic	CLEAR	5.74	0.311	20.96	5.2	0.15	-51.8	

PURGE DATA

Date: 2/21/05	Time	pH	S.C.	Temp (°C)	Turbidity	DO		ORP
Method: Low Flow Peristaltic	See Low Flow Purge Sheet for data.							
Monitor Reading (ppm): 0.0								
Well Casing Diameter: 2 inch								
Well Casing Material: Sch. 40 PVC								
Total Well Depth (TD): 11.45								
Static Water Level (WL): 4.36								
One Casing Volume(gal/L): 4.3								
Start Purge (hrs): 1526								
End Purge (hrs): 1556								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 9.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Select VOCs *	HCl	3-40 ml vials.	✓

OBSERVATIONS / NOTES

* BTEX only

Lab Accutest

Circle if Applicable:

MS/MSD

Duplicate ID No.: NONE

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Tank 199
PROJECT NUMBER: N9945

WELL ID.: CEF-199-045
DATE: 2/21/05

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Cum. Vol. (Liters)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1526	4.36	300	—	—	—	—	—	—	—	Start Purge
1536	4.97	300	3.0	5.75	0.295	18.5	0.26	20.84	56.0	
1541	5.14	300	4.5	5.74	0.299	9.8	0.19	20.76	5.4	
1546	5.17	300	6.0	5.73	0.304	7.2	0.21	20.89	-20.5	
1551	5.16	300	7.5	5.74	0.308	6.1	0.18	20.92	-42.5	
1556	5.17	300	9.0	5.74	0.311	5.2	0.15	20.96	-51.8	
Sample Time 1600										

SIGNATURE(S): [signature]

COPY

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET** COPY

Project Site Name: Annual Monitor, Tank 199
Project No.: N9945

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 199GL07SR01
Sample Location: CEF-199-7SR
Sampled By: PC/AP
C.O.C. No.: 199-022105
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 2/21/05	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1520	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	Clear	6.07	0.413	20.29	17.6	0.19	-10.3	

PURGE DATA

Date: 2/21/05	Time	pH	S.C.	Temp (°C)	Turbidity	DO		ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.7								
Well Casing Diameter: 0.75 inch								
Well Casing Material: Sch. 40 PVC								
Total Well Depth (TD): 13.1								
Static Water Level (WL): 5.02								
One Casing Volume(gal): 1.52								
Start Purge (hrs): 1449								
End Purge (hrs): 1519								
Total Purge Time (min): 30								
Total Vol. Purged (gal): 6.0								

See Low Flow Purge Sheet for data.

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Select VOCs*	HCl	3-40 ml vials	✓

OBSERVATIONS / NOTES

*BTEX only

Lab: Accutest

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
	None	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: TANK 199
PROJECT NUMBER: W9945

WELL ID.: CEF-199-75'R
DATE: 2/21/05

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Cum. Vol. (Liters)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1449	5.02	200	—	—	—	—	—	—	—	START PURGE
1459	6.02	200	2.0	6.10	0.409	112	1.38	20.15	74.2	
1504	6.09	200	3.0	6.07	0.407	50.2	0.34	20.25	29.5	
1509	6.09	200	4.0	6.06	0.409	30.8	0.26	20.27	6.9	
1514	6.09	200	5.0	6.07	0.412	20.4	0.22	20.28	-4.4	
1519	6.09	200	6.0	6.07	0.413	17.6	0.19	20.29	-10.3	
	SAMPLE	TIME	1520							

SIGNATURE(S):

COPY

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

COPY

Project Site Name: Annual Monitor, TANK 199
Project No.: N9945

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 199GL115 01
Sample Location: CEF-199-115
Sampled By: PL/AP
C.O.C. No.: 199-022105
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 2/21/05	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1440	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	CLEAR	6.15	0.532	21.05	13.1	0.25	30.2	

PURGE DATA

Date: 2/21/05	Time	pH	S.C.	Temp (°C)	Turbidity	DO		ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.4								
Well Casing Diameter: 0.75 inch								
Well Casing Material: Sch. 40 PVC								
Total Well Depth (TD): 12.85								
Static Water Level (WL): 5.86								
One Casing Volume(gal/~~0.45~~) 1.36								
Start Purge (hrs): 1358								
End Purge (hrs): 1438								
Total Purge Time (min): 40								
Total Vol. Purged (gal/~~0~~) 6.0								

See Low Flow Purge Sheet for data.

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Select VOCs *	HCl	3-40 ml vials.	✓

OBSERVATIONS / NOTES

* BTEX only

Lab: Accutest

Circle if Applicable:

MS/MSD

Duplicate ID No.: None

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Tank 199
PROJECT NUMBER: N9945

WELL ID.: CEF-199-115
DATE: 2/21/05

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Cum. Vol. (Liters)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1358	5.86	300	—	—	—	—	—	—	—	Start Purge
1408	8.84	300	3.0	5.89	0.449	37.2	0.62	20.02	36.9	
1418	10.20	100	4.0	6.06	0.496	26.5	0.60	20.85	-13.5	
1423	10.20	100	4.5	6.08	0.514	21.6	0.69	21.08	7.3	
1428	10.20	100	5.0	6.12	0.527	17.9	0.63	21.08	16.4	
1433	10.20	100	5.5	6.14	0.530	14.8	0.34	21.03	26.0	
1438	10.20	100	6.0	6.15	0.532	13.1	0.25	21.05	30.2	
	Sample Time 1440									

SIGNATURE(S): [illegible]

COPY

ATTACHMENT D

LABORATORY REPORT

Southeast
ACCUTEST
Laboratories

03/02/05

Technical Report for

Tetra Tech NUS

NAS Cecil Field-CTO #361

N9945/PO 1000892/ Tank 199

Accutest Job Number: F29951

Sampling Date: 02/21/05

Report to:

gleatonc@ttnus.com
calliganp@ttnus.com

ATTN: Distribution3

Total number of pages in report: 34

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

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

Sections: 1 2 3 4 5

Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary 4
Section 3: Sample Results 5
3.1: F29951-1: 199EL00101 5
3.2: F29951-2: 199GL1S01 6
3.3: F29951-3: 199FL00101 7
3.4: F29951-4: 199GL11S01 8
3.5: F29951-5: 199GL7SR01 9
3.6: F29951-6: 199GL4S01 10
Section 4: Misc. Forms **11**
4.1: Chain of Custody 12
Section 5: GC/MS Volatiles - QC Data Summaries 14
5.1: Method Blank Summary 15
5.2: Blank Spike Summary 16
5.3: Matrix Spike/Matrix Spike Duplicate Summary 17
5.4: Instrument Performance Checks (BFB) 18
5.5: Internal Standard Area Summaries 20
5.6: Surrogate Recovery Summaries 21
5.7: Initial and Continuing Calibration Summaries 22

Sample Summary

Tetra Tech NUS

Job No: F29951

NAS Cecil Field-CTO #361
Project No: N9945/PO 1000892/ Tank 199

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F29951-1	02/21/05	13:20	AP	02/23/05	AQ	Ground Water	199EL00101
F29951-2	02/21/05	13:50	AP	02/23/05	AQ	Ground Water	199GL1S01
F29951-3	02/21/05	13:55	AP	02/23/05	AQ	Ground Water	199FL00101
F29951-4	02/21/05	14:40	AP	02/23/05	AQ	Ground Water	199GL11S01
F29951-5	02/21/05	15:20	AP	02/23/05	AQ	Ground Water	199GL7SR01
F29951-6	02/21/05	16:00	AP	02/23/05	AQ	Ground Water	199GL4S01

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** F29951

Site: NAS Cecil Field-CTO #361 **Report Date:** 3/1/2005 8:22:36 AM

6 Samples were collected on 02/21/2005 and were received at Accutest on 02/23/2005 properly preserved, at 3.8 Deg. C and intact. These Samples received an Accutest job number of F29951. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS by Method SW846 8260B

Matrix: AQ **Batch ID:** VJ585

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F29951-3MS, F29951-3MSD were used as the QC samples indicated.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Date: March 1, 2005

Ellen Pampel, Inorganic QA (signature on file)

Tuesday, March 01, 2005

Report of Analysis

Client Sample ID:	199EL00101		
Lab Sample ID:	F29951-1	Date Sampled:	02/21/05
Matrix:	AQ - Ground Water	Date Received:	02/23/05
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO #361		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J013871.D	1	02/24/05	RM	n/a	n/a	VJ585
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	1.0 U	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		86-115%
17060-07-0	1,2-Dichloroethane-D4	109%		73-126%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	94%		83-119%

U = Not detected MDL - Method Detection Limit I = Result > = MDL but < RL J = Estimated value
RL = Reporting Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	199GL1S01		
Lab Sample ID:	F29951-2	Date Sampled:	02/21/05
Matrix:	AQ - Ground Water	Date Received:	02/23/05
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO #361		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J013877.D	1	02/24/05	RM	n/a	n/a	VJ585
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.51	1.0	0.50	ug/l	I
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	1.7	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	2.2	3.0	1.0	ug/l	I

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		86-115%
17060-07-0	1,2-Dichloroethane-D4	112%		73-126%
2037-26-5	Toluene-D8	90%		86-112%
460-00-4	4-Bromofluorobenzene	96%		83-119%

U = Not detected MDL - Method Detection Limit I = Result > = MDL but < RL J = Estimated value
RL = Reporting Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	199FL00101		
Lab Sample ID:	F29951-3	Date Sampled:	02/21/05
Matrix:	AQ - Ground Water	Date Received:	02/23/05
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO #361		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J013872.D	1	02/24/05	RM	n/a	n/a	VJ585
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	1.0 U	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		86-115%
17060-07-0	1,2-Dichloroethane-D4	110%		73-126%
2037-26-5	Toluene-D8	90%		86-112%
460-00-4	4-Bromofluorobenzene	95%		83-119%

U = Not detected MDL - Method Detection Limit I = Result > = MDL but < RL J = Estimated value
RL = Reporting Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	199GL11S01		
Lab Sample ID:	F29951-4	Date Sampled:	02/21/05
Matrix:	AQ - Ground Water	Date Received:	02/23/05
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO #361		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J013873.D	1	02/24/05	RM	n/a	n/a	VJ585
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	1.0 U	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		86-115%
17060-07-0	1,2-Dichloroethane-D4	112%		73-126%
2037-26-5	Toluene-D8	91%		86-112%
460-00-4	4-Bromofluorobenzene	95%		83-119%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit
L = Indicates value exceeds calibration range
I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	199GL7SR01		
Lab Sample ID:	F29951-5	Date Sampled:	02/21/05
Matrix:	AQ - Ground Water	Date Received:	02/23/05
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO #361		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J013874.D	1	02/24/05	RM	n/a	n/a	VJ585
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	1.0 U	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		86-115%
17060-07-0	1,2-Dichloroethane-D4	111%		73-126%
2037-26-5	Toluene-D8	90%		86-112%
460-00-4	4-Bromofluorobenzene	95%		83-119%

U = Not detected MDL - Method Detection Limit I = Result > = MDL but < RL J = Estimated value
RL = Reporting Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	199GL4S01		
Lab Sample ID:	F29951-6	Date Sampled:	02/21/05
Matrix:	AQ - Ground Water	Date Received:	02/23/05
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Cecil Field-CTO #361		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J013875.D	1	02/24/05	RM	n/a	n/a	VJ585
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.50 U	1.0	0.50	ug/l	
108-88-3	Toluene	0.50 U	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	0.50 U	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	1.0 U	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		86-115%
17060-07-0	1,2-Dichloroethane-D4	112%		73-126%
2037-26-5	Toluene-D8	89%		86-112%
460-00-4	4-Bromofluorobenzene	96%		83-119%

U = Not detected MDL - Method Detection Limit I = Result > = MDL but < RL J = Estimated value
RL = Reporting Limit V = Indicates analyte found in associated method blank
L = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 199-022105 F29951 | PAGE 1 OF 1

PROJECT NO: CTO 361, N9945
FACILITY: TANK 199, NASCF
PROJECT MANAGER: M. PAUL CALLICAN
PHONE NUMBER: 813 806 0202
LABORATORY NAME AND CONTACT: ACCUTEST H. WARDREY
SAMPLERS (SIGNATURE): Alan Pate
FIELD OPERATIONS LEADER: Mike Dale
PHONE NUMBER: 904 636 6125
ADDRESS: 4405 Vineland Rd. C-15
CARRIER/WAYBILL NUMBER: Courier
CITY, STATE: ORLANDO, FL 32811

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: HCl

TYPE OF ANALYSIS: 8260B BTEX only

	DATE YEAR 2005	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	8260B BTEX only							COMMENTS
1	2/21	1320	199EL00101				QC	G	3	✓							Cool to 4°c
2	2/21	1350	199GL1S01				GW	G	3	✓							
3	2/21	1355	199FL00101				GW	G	3	✓							Work Release
4	2/21	1440	199GL11S01				GW	G	3	✓							1000892
5	2/21	1520	199GL7SR01				GW	G	3	✓							
6	2/21	1600	199GL4S01				GW	G	3	✓							

1. RELINQUISHED BY: Kevin W. Dale	DATE 2/22/05	TIME 1146	1. RECEIVED BY: [illegible]	DATE 2-22-05	TIME 11:48
2. RELINQUISHED BY: Accutest	DATE	TIME	2. RECEIVED BY: [illegible]	DATE 2-23-05	TIME 8:00
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

3.4

4/02R

4.1 4

F29951: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F29951 CLIENT: tetra tech PROJECT: tank 199, NASCF

DATE/TIME RECEIVED: 2-23-05 / ~~2-22-05~~ 8:10 pm # OF COOLERS RECEIVED: 1 COOLER TEMPS: 3.8

METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS:

COOLER INFORMATION

- [X] CUSTODY SEAL NOT PRESENT/INTACT
- [ ] NO COC RECEIVED
- [ ] ANALYSES NOT MARKED ON COC
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- [X] TRIP BLANK NOT PROVIDED
- [ ] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] SAMPLE RECEIVED PAST HOLD TIME
- [ ] TIMES ON COC DON'T MATCH LABEL
- [ ] ID'S ON COC DON'T MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED

SOIL INFORMATION

NUMBER OF ENCORES ? Ø

NUMBER OF 5035 FIELD KITS ? Ø

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE Steven Carson / 2-23-05 TECHNICIAN SIGNATURE/DATE 2/23/05

ASBD02/04/05

4.1

4

F29951: Chain of Custody
Page 2 of 2

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ585-MB	J013870.D	1	02/24/05	RM	n/a	n/a	VJ585

The QC reported here applies to the following samples: Method: SW846 8260B

F29951-1, F29951-2, F29951-3, F29951-4, F29951-5, F29951-6

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

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	106%	86-115%
17060-07-0	1,2-Dichloroethane-D4	106%	73-126%
2037-26-5	Toluene-D8	92%	86-112%
460-00-4	4-Bromofluorobenzene	93%	83-119%

Blank Spike Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VJ585-BS	J013869.D	1	02/24/05	RM	n/a	n/a	VJ585

The QC reported here applies to the following samples: Method: SW846 8260B

F29951-1, F29951-2, F29951-3, F29951-4, F29951-5, F29951-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.0	92	80-120
100-41-4	Ethylbenzene	25	22.7	91	82-115
108-88-3	Toluene	25	22.6	90	81-114
1330-20-7	Xylene (total)	75	69.4	93	81-118

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	102%	86-115%
17060-07-0	1,2-Dichloroethane-D4	102%	73-126%
2037-26-5	Toluene-D8	97%	86-112%
460-00-4	4-Bromofluorobenzene	95%	83-119%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F29951-3MS	J013878.D	1	02/24/05	RM	n/a	n/a	VJ585
F29951-3MSD	J013879.D	1	02/24/05	RM	n/a	n/a	VJ585
F29951-3	J013872.D	1	02/24/05	RM	n/a	n/a	VJ585

The QC reported here applies to the following samples: Method: SW846 8260B

F29951-1, F29951-2, F29951-3, F29951-4, F29951-5, F29951-6

CAS No.	Compound	F29951-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U		25	22.5	90	22.7	91	1	72-125/7
100-41-4	Ethylbenzene	1.0 U		25	22.5	90	22.3	89	1	73-119/8
108-88-3	Toluene	1.0 U		25	22.4	90	22.4	90	0	67-123/8
1330-20-7	Xylene (total)	3.0 U		75	70.0	93	69.5	93	1	73-122/7

CAS No.	Surrogate Recoveries	MS	MSD	F29951-3	Limits
1868-53-7	Dibromofluoromethane	103%	103%	109%	86-115%
17060-07-0	1,2-Dichloroethane-D4	109%	109%	110%	73-126%
2037-26-5	Toluene-D8	95%	96%	90%	86-112%
460-00-4	4-Bromofluorobenzene	95%	95%	95%	83-119%

Instrument Performance Check (BFB)

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample:	VJ583-BFB	Injection Date:	02/22/05
Lab File ID:	J013831.D	Injection Time:	12:59
Instrument ID:	GCMSJ		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	25826	25.1		Pass
75	30.0 - 60.0% of mass 95	52749	51.2		Pass
95	Base peak, 100% relative abundance	102933	100.0		Pass
96	5.0 - 9.0% of mass 95	6808	6.6		Pass
173	Less than 2.0% of mass 174	151	0.15	(0.2) [a]	Pass
174	50.0 - 100.0% of mass 95	75816	73.7		Pass
175	5.0 - 9.0% of mass 174	5221	5.1	(6.9) [a]	Pass
176	95.0 - 101.0% of mass 174	73480	71.4	(96.9) [a]	Pass
177	5.0 - 9.0% of mass 176	5057	4.9	(6.9) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VJ583-IC583	J013832.D	02/22/05	13:19	00:20	Initial cal 1
VJ583-IC583	J013833.D	02/22/05	13:47	00:48	Initial cal 2
VJ583-IC583	J013834.D	02/22/05	14:15	01:16	Initial cal 3
VJ583-ICC583	J013835.D	02/22/05	14:45	01:46	Initial cal 4
VJ583-IC583	J013836.D	02/22/05	15:13	02:14	Initial cal 5
VJ583-IC583	J013837.D	02/22/05	15:42	02:43	Initial cal 6
VJ583-ICV583	J013838.D	02/22/05	16:10	03:11	Initial cal verification 40PPB
VJ583-BS	J013839.D	02/22/05	16:38	03:39	Blank Spike
VJ583-MB	J013840.D	02/22/05	17:07	04:08	Method Blank

Instrument Performance Check (BFB)

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample:	VJ585-BFB	Injection Date:	02/24/05
Lab File ID:	J013866.D	Injection Time:	09:57
Instrument ID:	GCMSJ		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	23669	23.8		Pass
75	30.0 - 60.0% of mass 95	50794	51.0		Pass
95	Base peak, 100% relative abundance	99557	100.0		Pass
96	5.0 - 9.0% of mass 95	6928	7.0		Pass
173	Less than 2.0% of mass 174	296	0.3	(0.42) [a]	Pass
174	50.0 - 100.0% of mass 95	69781	70.1		Pass
175	5.0 - 9.0% of mass 174	5258	5.3	(7.5) [a]	Pass
176	95.0 - 101.0% of mass 174	67872	68.2	(97.3) [a]	Pass
177	5.0 - 9.0% of mass 176	4882	4.9	(7.2) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VJ585-CC583	J013868.D	02/24/05	11:08	01:11	Continuing cal 4
VJ585-BS	J013869.D	02/24/05	12:28	02:31	Blank Spike
VJ583-BS	J013869.D	02/24/05	12:28	02:31	Blank Spike
VJ585-MB	J013870.D	02/24/05	13:01	03:04	Method Blank
F29951-1	J013871.D	02/24/05	13:40	03:43	199EL00101
F29951-3	J013872.D	02/24/05	14:08	04:11	199FL00101
F29951-4	J013873.D	02/24/05	14:36	04:39	199GL11S01
F29951-5	J013874.D	02/24/05	15:04	05:07	199GL7SR01
F29951-6	J013875.D	02/24/05	15:32	05:35	199GL4S01
F29951-2	J013877.D	02/24/05	16:40	06:43	199GL1S01
F29951-3MS	J013878.D	02/24/05	17:08	07:11	Matrix Spike
F29951-3MSD	J013879.D	02/24/05	17:36	07:39	Matrix Spike Duplicate
ZZZZZZ	J013880.D	02/24/05	18:04	08:07	(unrelated sample)
ZZZZZZ	J013881.D	02/24/05	18:32	08:35	(unrelated sample)
ZZZZZZ	J013882.D	02/24/05	19:00	09:03	(unrelated sample)
ZZZZZZ	J013883.D	02/24/05	19:28	09:31	(unrelated sample)

Volatile Internal Standard Area Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Check Std:	VJ585-CC583	Injection Date:	02/24/05
Lab File ID:	J013868.D	Injection Time:	11:08
Instrument ID:	GCMSJ	Method:	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT
Check Std	1480089	11.15	1115442	14.73	713860	17.28	191443	8.06
Upper Limit [a]	2960178	11.65	2230884	15.23	1427720	17.78	382886	8.56
Lower Limit [b]	740045	10.65	557721	14.23	356930	16.78	95722	7.56

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT
VJ585-BS	1545428	11.15	1206690	14.73	746934	17.28	219546	8.06
VJ583-BS	1545428	11.15	1206690	14.73	746934	17.28	219546	8.06
VJ585-MB	1508089	11.15	1249038	14.73	728428	17.28	224276	8.06
F29951-1	1403528	11.15	1174751	14.73	685406	17.28	202075	8.05
F29951-3	1372388	11.15	1160939	14.73	661360	17.28	193152	8.05
F29951-4	1323797	11.15	1118467	14.73	649158	17.28	195805	8.06
F29951-5	1298769	11.15	1098561	14.73	635992	17.28	196059	8.05
F29951-6	1294928	11.15	1100699	14.73	624295	17.28	193249	8.05
F29951-2	1250168	11.15	1060142	14.73	606639	17.28	195490	8.05
F29951-3MS	1344734	11.15	1071520	14.73	672253	17.27	212329	8.05
F29951-3MSD	1389846	11.15	1096245	14.73	689090	17.28	223868	8.05
ZZZZZZ	1438729	11.15	1076619	14.73	686754	17.28	221576	8.05
ZZZZZZ	1547505	11.15	1170476	14.73	754452	17.28	239807	8.05
ZZZZZZ	1585467	11.15	1278445	14.73	776754	17.28	247311	8.05
ZZZZZZ	1602341	11.15	1229660	14.73	771096	17.28	244993	8.05

IS 1 = Fluorobenzene
IS 2 = Chlorobenzene-D5
IS 3 = 1,4-Dichlorobenzene-d4
IS 4 = Tert Butyl Alcohol-D10

(a) Upper Limit = +100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Surrogate Recovery Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
F29951-1	J013871.D	108.0	109.0	91.0	94.0
F29951-2	J013877.D	111.0	112.0	90.0	96.0
F29951-3	J013872.D	109.0	110.0	90.0	95.0
F29951-4	J013873.D	108.0	112.0	91.0	95.0
F29951-5	J013874.D	110.0	111.0	90.0	95.0
F29951-6	J013875.D	110.0	112.0	89.0	96.0
F29951-3MS	J013878.D	103.0	109.0	95.0	95.0
F29951-3MSD	J013879.D	103.0	109.0	96.0	95.0
VJ585-BS	J013869.D	102.0	102.0	97.0	95.0
VJ585-MB	J013870.D	106.0	106.0	92.0	93.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	86-115%
S2 = 1,2-Dichloroethane-D4	73-126%
S3 = Toluene-D8	86-112%
S4 = 4-Bromofluorobenzene	83-119%

Initial Calibration Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ583-ICC583
Lab FileID: J013835.D

Response Factor Report MSVOA6

Method : C:\MSDCHEM\1\METHODS\MSJ0222.M (RTE Integrator)
Title : SW-846 Method 5030B/8260B & EPA 624
Last Update : Tue Feb 22 16:13:47 2005
Response via : Initial Calibration

Calibration Files
1 =J013832.D 2 =J013833.D 3 =J013834.D 4 =J013835.D
5 =J013836.D 6 =J013837.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorobenzene	----------ISTD----------							
2)		Dichlorodifluoromet	0.255	0.349	0.307	0.306	0.309	0.301	0.305	9.73
3)	P	Chloromethane	0.525	0.676	0.589	0.599	0.577	0.552	0.586	8.78
4)	C	Vinyl Chloride	0.290	0.454	0.379	0.390	0.398	0.359	0.378	14.17
		---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9981								
		Response Ratio = 0.00000 + 0.42786 *A + -0.03213 *A^2								
5)		Bromomethane	0.181	0.185	0.146	0.138	0.128	0.113	0.148	19.52
		---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9996								
		Response Ratio = 0.00000 + 0.15818 *A + -0.02259 *A^2								
6)		Chloroethane	0.148	0.198	0.168	0.168	0.162	0.148	0.165	11.11
7)		Trichlorofluorometh	0.304	0.456	0.384	0.386	0.375	0.354	0.376	13.14
8)		Ethyl Ether	0.231	0.280	0.255	0.253	0.253	0.243	0.252	6.46
9)		1,2-Dichlorotrifluo	0.288	0.435	0.383	0.383	0.369	0.358	0.369	12.89
10)	C	1,1-Dichloroethene	0.415	0.620	0.543	0.538	0.520	0.509	0.524	12.58
11)		Freon 113	0.255	0.306	0.269	0.256	0.242	0.239	0.261	9.40
12)		Carbon Disulfide	0.806	1.138	1.000	0.997	0.960	0.941	0.973	11.04
13)		Iodomethane	0.315	0.450	0.404	0.411	0.399	0.392	0.395	11.19
14)		Acrolein	0.037	0.022	0.028	0.029	0.030	0.028	0.029	16.04
		---- Linear regr., Force(0,0) ---- Coefficient = 0.9973								
		Response Ratio = 0.00000 + 0.02895 *A								
15)		Allyl chloride	0.533	0.675	0.619	0.620	0.634	0.581	0.610	7.93
16)		Methylene Chloride	0.714	0.655	0.593	0.575	0.549	0.538	0.604	11.24
17)		Acetone	0.158	0.116	0.109	0.109	0.119	0.105	0.119	16.38
		---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9951								
		Response Ratio = 0.00000 + 0.12294 *A + -0.00162 *A^2								
18)		Methyl acetate	0.206	0.237	0.225	0.225	0.222	0.212	0.221	4.95
19)		trans-1,2-Dichloroe	0.476	0.612	0.536	0.529	0.513	0.498	0.527	8.88
20)		Hexane	0.453	0.391	0.346	0.333	0.325	0.311	0.360	14.74
		---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9999								
		Response Ratio = 0.00000 + 0.35296 *A + -0.02078 *A^2								
21)		Methyl Tert Butyl E	0.633	0.724	0.670	0.670	0.643	0.644	0.664	4.97
22)		Acetonitrile	0.040	0.039	0.035	0.037	0.037	0.035	0.037	5.96
23)		Di-isopropyl ether	1.172	1.421	1.347	1.337	1.293	1.247	1.303	6.64
24)		Chloroprene	0.381	0.598	0.556	0.569	0.583	0.529	0.536	14.86
		---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9983								
		Response Ratio = 0.00000 + 0.62057 *A + -0.04281 *A^2								
25)	P	1,1-Dichloroethane	0.519	0.700	0.640	0.629	0.611	0.589	0.615	9.75
26)		Acrylonitrile	0.119	0.079	0.100	0.103	0.108	0.098	0.101	13.04
		---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9975								
		Response Ratio = 0.00000 + 0.11147 *A + -0.00123 *A^2								

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ583-ICC583
Lab FileID: J013835.D

27)		ETBE	0.946	1.086	1.015	0.996	0.954	0.946	0.991	5.56
28)		Vinyl acetate	0.522	0.443	0.536	0.540	0.525	0.459	0.504	8.36
29)		cis-1,2-Dichloroeth	0.250	0.316	0.287	0.284	0.279	0.271	0.281	7.63
30)		2,2-Dichloropropane	0.355	0.521	0.487	0.499	0.490	0.476	0.471	12.53
31)		Bromochloromethane	0.098	0.117	0.111	0.109	0.105	0.100	0.107	6.62
32)		Cyclohexane	0.703	0.715	0.619	0.608	0.593	0.570	0.635	9.45
33)	C	Chloroform	0.480	0.620	0.567	0.549	0.529	0.500	0.541	9.26
34)		Ethyl acetate	0.227	0.307	0.270	0.265	0.257	0.251	0.263	9.95
35)		Tetrahydrofuran	0.113	0.102	0.082	0.083	0.082	0.077	0.090	15.93

---- Linear regr., Force(0,0) ---- Coefficient = 0.9985
Response Ratio = 0.00000 + 0.07908 *A

36)	S	Dibromofluoromethan	0.280	0.278	0.273	0.269	0.263	0.255	0.270	3.50
37)		Carbon Tetrachlorid	0.282	0.456	0.418	0.420	0.409	0.393	0.396	15.04

---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9999
Response Ratio = 0.00000 + 0.43761 *A + -0.02199 *A^2

38)		1,1,1-Trichloroetha	0.346	0.517	0.474	0.472	0.458	0.440	0.451	12.73
39)		2-Butanone	0.170	0.156	0.153	0.153	0.161	0.145	0.156	5.51
40)		1,1-Dichloropropene	0.307	0.437	0.403	0.400	0.393	0.375	0.386	11.37
41)		Propionitrile	0.042	0.045	0.042	0.041	0.041	0.037	0.041	5.90
42)		Methacrylonitrile	0.192	0.240	0.223	0.191	0.178	0.151	0.196	16.24

---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9992
Response Ratio = 0.00000 + 0.22950 *A + -0.00389 *A^2

43)		Benzene	0.989	1.229	1.061	1.000	0.924	0.870	1.012	12.34

---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9998
Response Ratio = 0.00000 + 1.08523 *A + -0.10901 *A^2

44)		TAME	0.712	0.912	0.851	0.835	0.800	0.785	0.816	8.29
45)	S	1,2-Dichloroethane-	0.412	0.414	0.419	0.400	0.393	0.384	0.404	3.40
46)		1,2-Dichloroethane	0.468	0.547	0.517	0.511	0.493	0.470	0.501	6.03
47)		Trichloroethene	0.232	0.315	0.296	0.284	0.274	0.259	0.277	10.44
48)		Methylcyclohexane	0.451	0.517	0.479	0.466	0.453	0.432	0.466	6.33
49)		Dibromomethane	0.155	0.180	0.175	0.175	0.172	0.167	0.171	5.10
50)	C	1,2-Dichloropropane	0.282	0.373	0.354	0.352	0.344	0.333	0.340	9.18
51)		Bromodichloromethan	0.342	0.443	0.434	0.431	0.419	0.405	0.412	8.94
52)		Methyl methacrylate	0.216	0.279	0.286	0.301	0.311	0.284	0.280	11.86

---- Linear regr., Force(0,0) ---- Coefficient = 0.9962
Response Ratio = 0.00000 + 0.29353 *A

53)		2-Chloroethyl vinyl	0.076	0.104	0.108	0.109	0.110	0.106	0.102	12.73

---- Linear regr., Force(0,0) ---- Coefficient = 0.9992
Response Ratio = 0.00000 + 0.10726 *A

54)		cis-1,3-Dichloropro	0.392	0.517	0.504	0.509	0.500	0.482	0.484	9.58
55)	I	Chlorobenzene-d5	----------ISTD----------							
56)	S	Toluene-d8	1.280	1.304	1.342	1.406	1.493	1.546	1.395	7.65
57)	C	Toluene	1.246	1.521	1.435	1.448	1.488	1.472	1.435	6.80
58)		2-Nitropropane	0.071	0.093	0.100	0.106	0.115	0.113	0.100	16.13

---- Quadratic regr., Force(0,0) ---- Coefficient = 0.9991
Response Ratio = 0.00000 + 0.10610 *A + 0.00074 *A^2

59)		4-Methyl-2-pentanon	0.355	0.422	0.427	0.428	0.439	0.422	0.416	7.27
60)		trans-1,3-Dichlorop	0.412	0.570	0.585	0.609	0.628	0.630	0.572	14.33

---- Linear regr., Force(0,0) ---- Coefficient = 0.9998
Response Ratio = 0.00000 + 0.62635 *A

Initial Calibration Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ583-ICC583
Lab FileID: J013835.D

```
61)      Tetrachloroethene   0.240 0.359 0.335 0.337 0.343 0.341 0.326  13.10
             ---- Linear regr., Force(0,0) ----  Coefficient =  0.9999
               Response Ratio = 0.00000 + 0.34105 *A

62)      Ethyl methacrylate  0.258 0.351 0.383 0.400 0.440 0.419 0.375  17.37
             ---- Linear regr., Force(0,0) ----  Coefficient =  0.9982
               Response Ratio = 0.00000 + 0.42249 *A

63)      1,1,2-Trichloroetha 0.219 0.267 0.268 0.277 0.284 0.284 0.266   9.15
64)      Dibromochloromethan 0.235 0.304 0.327 0.343 0.361 0.365 0.322  15.08
             ---- Linear regr., Force(0,0) ----  Coefficient =  0.9995
               Response Ratio = 0.00000 + 0.36083 *A

65)      1,3-Dichloropropane 0.486 0.588 0.577 0.596 0.614 0.612 0.579   8.23
66)      1,2-Dibromoethane   0.220 0.305 0.307 0.320 0.335 0.334 0.303  14.08
67)      2-hexanone          0.231 0.293 0.305 0.318 0.339 0.320 0.301  12.45
68)      1-Chlorohexane      1.466 0.487 0.479 0.491 0.510 0.506 0.656  60.42
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9994
               Response Ratio = 0.00000 + 0.49098 *A + 0.00847 *A^2

69) C    Ethylbenzene        1.466 1.737 1.604 1.617 1.634 1.625 1.614   5.39
70) P    Chlorobenzene       0.743 0.950 0.888 0.894 0.900 0.886 0.877   7.94
71)      1,1,1,2-Tetrachloro 0.253 0.319 0.319 0.327 0.332 0.333 0.314   9.69
72)      m,p-Xylene          1.081 1.407 1.329 1.316 1.303 1.277 1.285   8.51
73)      o-Xylene            1.084 1.460 1.447 1.480 1.485 1.474 1.405  11.23
74)      Styrene             0.655 0.977 0.996 1.007 1.020 1.017 0.945  15.12
             ---- Linear regression ----  Coefficient =  1.0000
               Response Ratio = -0.00758 + 1.02158 *A

75) P    Bromoform           0.157 0.197 0.221 0.236 0.249 0.251 0.219  16.54
             ---- Linear regr., Force(0,0) ----  Coefficient =  0.9994
               Response Ratio = 0.00000 + 0.24854 *A

76)      Isopropylbenzene    1.089 1.552 1.503 1.528 1.550 1.539 1.460  12.51

77) I    1,4-Dichlorobenzene-d ----------------ISTD--------------------
78) S    4-Bromofluorobenzen 1.164 1.165 1.178 1.204 1.244 1.262 1.203   3.48
79)      cis-1,4-Dichloro-2- 0.161 0.164 0.181 0.210 0.217 0.232 0.194  15.13
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9997
               Response Ratio = 0.00000 + 0.18489 *A + 0.02339 *A^2

80)      n-Propylbenzene     2.772 3.713 3.465 3.437 3.456 3.335 3.363   9.38
81)      Bromobenzene        0.567 0.725 0.671 0.659 0.649 0.628 0.650   8.01
82) P    1,1,2,2-Tetrachloro 0.588 0.701 0.654 0.640 0.635 0.604 0.637   6.22
83)      1,3,5-Trimethylbenz 1.799 2.402 2.259 2.207 2.189 2.137 2.166   9.28
84)      2-Chlorotoluene     1.865 2.384 2.233 2.138 2.112 2.062 2.132   8.14
85)      trans-1,4-Dichloro- 0.131 0.158 0.186 0.200 0.201 0.210 0.181  16.85
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9998
               Response Ratio = 0.00000 + 0.18664 *A + 0.00569 *A^2

86)      1,2,3-Trichloroprop 0.156 0.181 0.177 0.171 0.170 0.162 0.169   5.37
87)      Cyclohexanone       0.018 0.012 0.016 0.016 0.018 0.017 0.016  13.46
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9977
               Response Ratio = 0.00000 + 0.01719 *A + -0.00005 *A^2

88)      4-Chlorotoluene     1.867 2.410 2.274 2.249 2.208 2.142 2.192   8.31
89)      tert-Butylbenzene   1.147 1.577 1.472 1.428 1.395 1.367 1.398  10.25
90)      1,2,4-Trimethylbenz 2.153 2.484 2.281 2.188 2.136 2.048 2.215   6.86
91)      Pentachloroethane   0.308 0.400 0.378 0.365 0.364 0.334 0.358   9.13
92)      sec-Butylbenzene    2.217 3.152 2.900 2.839 2.770 2.691 2.761  11.21
```

Initial Calibration Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ583-ICC583
Lab FileID: J013835.D

```
 93)     4-Isopropyltoluene  1.633 2.368 2.235 2.150 2.098 2.035 2.086   12.01
 94)     1,3-Dichlorobenzene 1.046 1.306 1.224 1.201 1.173 1.144 1.182    7.33
 95)     1,4-Dichlorobenzene 1.046 1.275 1.170 1.139 1.111 1.085 1.138    7.00
 96)     n-Butylbenzene      0.983 1.538 1.485 1.460 1.446 1.408 1.387   14.61
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  1.0000
               Response Ratio = 0.00000 + 1.50941 *A + -0.04988 *A^2

 97)     Benzyl Chloride     0.135 0.204 0.216 0.227 0.232 0.231 0.207   17.85
             ---- Linear regr., Force(0,0) ----  Coefficient =  0.9999
               Response Ratio = 0.00000 + 0.23018 *A

 98)     1,2-Dichlorobenzene 1.058 1.235 1.144 1.115 1.083 1.050 1.114    6.17
 99)     1,2-Dibromo-3-Chlor 0.098 0.109 0.105 0.101 0.096 0.099 0.101    4.56
             ---- Linear regr., Force(0,0) ----  Coefficient =  0.9995
               Response Ratio = 0.00000 + 0.09834 *A

100)     Hexachlorobutadiene 0.370 0.460 0.418 0.393 0.376 0.371 0.398    8.94
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9997
               Response Ratio = 0.00000 + 0.40752 *A + -0.01903 *A^2

101)     1,2,4-Trichlorobenz 0.633 0.786 0.733 0.681 0.641 0.649 0.687    8.81
             ---- Linear regr., Force(0,0) ----  Coefficient =  0.9991
               Response Ratio = 0.00000 + 0.65171 *A

102)     Naphthalene         1.057 1.057 1.017 0.936 0.845 0.831 0.957   10.70
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9989
               Response Ratio = 0.00000 + 0.98332 *A + -0.07993 *A^2

103)     1,2,3-Trichlorobenz 0.465 0.531 0.492 0.447 0.402 0.394 0.455   11.63
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9987
               Response Ratio = 0.00000 + 0.47300 *A + -0.04154 *A^2

104)     2-Methylnaphthalene 0.017 0.063 0.070 0.069 0.060 0.090 0.061   39.66
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9780
               Response Ratio = 0.00000 + 0.03809 *A + 0.02436 *A^2

105)     1-Methylnaphthalene 0.037 0.048 0.051 0.049 0.046 0.069 0.050   21.13
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9829
               Response Ratio = 0.00000 + 0.02595 *A + 0.02049 *A^2


106) I   Tert Butyl Alcohol-d1 ----------------ISTD---------------------
107)     Ethanol             0.117 0.148 0.105 0.110 0.104 0.117 0.117   13.87
             ---- Linear regr., Force(0,0) ----  Coefficient =  0.9936
               Response Ratio = 0.00000 + 0.11239 *A

108)     Tert Butyl Alcohol  0.899 1.007 0.877 0.905 0.916 0.908 0.918    4.92
109)     tert Amyl alcohol   0.179 0.095 0.127 0.118 0.113 0.102 0.122   24.43
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9994
               Response Ratio = 0.00000 + 0.13154 *A + -0.00722 *A^2

110)     Isobutyl alcohol    0.231 0.355 0.337 0.337 0.348 0.322 0.322   14.22
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9988
               Response Ratio = 0.00000 + 0.36322 *A + -0.00474 *A^2

111)     1,4-Dioxane         0.067 0.077 0.074 0.075 0.077 0.075 0.074    4.91
             ---- Quadratic regr., Force(0,0) ----  Coefficient =  0.9997
               Response Ratio = 0.00000 + 0.07670 *A + -0.00006 *A^2

 ----------------------------------------------------------------------------
```

Initial Calibration Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ583-ICC583
Lab FileID: J013835.D

(#) = Out of Range

MSJ0222.M Wed Feb 23 07:42:09 2005

5.7 5

Initial Calibration Verification

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ583-ICV583
Lab FileID: J013838.D

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\022205\J013838.D Vial: 7
Acq On : 22 Feb 2005 4:10 pm Operator: RondaM
Sample : ICV583-40PPB Inst : MSVOA6
Misc : ms4167,VJ583,,,,, Multiplr: 1.00
MS Integration Params: Rteint.p

Method : C:\MSDCHEM\1\METHODS\MSJ0222.M (RTE Integrator)
Title : SW-846 Method 5030B/8260B & EPA 624
Last Update : Tue Feb 22 16:13:47 2005
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Fluorobenzene	1.000	1.000	0.0	109	0.00	11.15
2		Dichlorodifluoromethane	0.305	0.351	-15.1	125	0.00	4.26
3	P	Chloromethane	0.586	0.619	-5.6	112	0.00	4.60
			Amount	Calc.	%Drift			
4	C	Vinyl Chloride	40.000	38.676	3.3	109	0.00	4.81
5		Bromomethane	40.000	37.911	5.2	106	0.00	5.46
			AvgRF	CCRF	%Dev			
6		Chloroethane	0.165	0.170	-3.0	110	0.00	5.70
7		Trichlorofluoromethane	0.376	0.387	-2.9	109	0.00	6.00
8		Ethyl Ether		NA				
9		1,2-Dichlorotrifluoroetha	0.369	0.382	-3.5	108	0.00	6.76
10	C	1,1-Dichloroethene	0.524	0.516	1.5	104	0.00	6.85
11		Freon 113	0.261	0.246	5.7	105	0.00	6.90
12		Carbon Disulfide	0.973	0.894	8.1	98	0.00	6.96
13		Iodomethane	0.395	0.404	-2.3	107	0.00	7.11
			Amount	Calc.	%Drift			
14		Acrolein	200.000	266.392	-33.2#	144	0.00	7.35
			AvgRF	CCRF	%Dev			
15		Allyl chloride	0.610	0.592	3.0	104	0.00	7.56
16		Methylene Chloride	0.604	0.553	8.4	105	0.00	7.73
			Amount	Calc.	%Drift			
17		Acetone	200.000	191.753	4.1	112	0.00	7.77
			AvgRF	CCRF	%Dev			
18		Methyl acetate	0.221	0.219	0.9	106	0.00	7.92
19		trans-1,2-Dichloroethene	0.527	0.518	1.7	106	0.00	7.97
			Amount	Calc.	%Drift			
20		Hexane	40.000	39.486	1.3	109	0.00	8.05
			AvgRF	CCRF	%Dev			
21		Methyl Tert Butyl Ether	0.664	0.781	-17.6	127	0.00	8.09
22		Acetonitrile	0.037	0.037	0.0	108	0.00	8.46
23		Di-isopropyl ether	1.303	1.361	-4.5	111	0.00	8.57
			Amount	Calc.	%Drift			
24		Chloroprene	40.000	40.166	-0.4	113	0.00	8.80

Initial Calibration Verification

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ583-ICV583
Lab FileID: J013838.D

			AvgRF	CCRF	%Dev			
25	P	1,1-Dichloroethane	0.615	0.632	-2.8	109	0.00	8.84
			Amount	Calc.	%Drift			
26		Acrylonitrile	200.000	203.771	-1.9	115	0.00	8.88
			AvgRF	CCRF	%Dev			
27		ETBE	0.991	1.130	-14.0	123	0.00	9.09
28		Vinyl acetate	0.504	0.367	27.2#	74	0.00	9.09
29		cis-1,2-Dichloroethene	0.281	0.289	-2.8	111	0.00	9.57
30		2,2-Dichloropropane	0.471	0.474	-0.6	103	0.00	9.72
31		Bromochloromethane	0.107	0.122	-14.0	122	0.00	9.84
32		Cyclohexane	0.635	0.663	-4.4	119	0.00	9.88
33	C	Chloroform	0.541	0.543	-0.4	108	0.00	9.89
34		Ethyl acetate		----------NA----------				
			Amount	Calc.	%Drift			
35		Tetrahydrofuran	40.000	44.762	-11.9	117	0.00	10.13
			AvgRF	CCRF	%Dev			
36	S	Dibromofluoromethane	0.270	0.264	2.2	107	0.00	10.13
			Amount	Calc.	%Drift			
37		Carbon Tetrachloride	40.000	39.066	2.3	106	0.00	10.14
			AvgRF	CCRF	%Dev			
38		1,1,1-Trichloroethane	0.451	0.464	-2.9	107	0.00	10.22
39		2-Butanone	0.156	0.151	3.2	107	0.00	10.25
40		1,1-Dichloropropene	0.386	0.393	-1.8	107	0.00	10.35
41		Propionitrile	0.041	0.042	-2.4	112	0.00	10.65
			Amount	Calc.	%Drift			
42		Methacrylonitrile	400.000	366.621	8.3	105	0.00	10.67
43		Benzene	40.000	40.517	-1.3	110	0.00	10.67
			AvgRF	CCRF	%Dev			
44		TAME	0.816	0.819	-0.4	107	0.00	10.73
45	S	1,2-Dichloroethane-d4	0.404	0.385	4.7	105	0.00	10.82
46		1,2-Dichloroethane	0.501	0.485	3.2	103	0.00	10.90
47		Trichloroethene	0.277	0.284	-2.5	109	0.00	11.36
48		Methylcyclohexane	0.466	0.491	-5.4	115	0.00	11.38
49		Dibromomethane	0.171	0.171	0.0	106	0.00	11.88
50	C	1,2-Dichloropropane	0.340	0.355	-4.4	110	0.00	11.98
51		Bromodichloromethane	0.412	0.425	-3.2	107	0.00	12.03
			Amount	Calc.	%Drift			
52		Methyl methacrylate	40.000	37.917	5.2	101	0.00	12.12
53		2-Chloroethyl vinyl ether	200.000	326.923	-63.5#	175	0.00	12.61
			AvgRF	CCRF	%Dev			
54		cis-1,3-Dichloropropene	0.484	0.484	0.0	104	0.00	12.75
55	I	Chlorobenzene-d5	1.000	1.000	0.0	107	0.00	14.73
56	S	Toluene-d8	1.395	1.417	-1.6	108	0.00	12.97
57	C	Toluene	1.435	1.481	-3.2	110	0.00	13.03
			Amount	Calc.	%Drift			
58		2-Nitropropane	200.000	197.750	1.1	109	0.00	13.28

Initial Calibration Verification

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ583-ICV583
Lab FileID: J013838.D

			AvgRF	CCRF	%Dev			
59		4-Methyl-2-pentanone	0.416	0.409	1.7	103	0.00	13.39
			Amount	Calc.	%Drift			
60		trans-1,3-Dichloropropene	40.000	38.679	3.3	107	0.00	13.47
61		Tetrachloroethene	40.000	41.192	-3.0	112	0.00	13.50
62		Ethyl methacrylate	40.000	42.020	-5.1	119	0.00	13.55
			AvgRF	CCRF	%Dev			
63		1,1,2-Trichloroethane	0.266	0.273	-2.6	106	0.00	13.66
			Amount	Calc.	%Drift			
64		Dibromochloromethane	40.000	37.483	6.3	106	0.00	13.89
			AvgRF	CCRF	%Dev			
65		1,3-Dichloropropane	0.579	0.585	-1.0	106	0.00	13.98
66		1,2-Dibromoethane	0.303	0.317	-4.6	107	0.00	14.20
67		2-hexanone	0.301	0.311	-3.3	105	0.00	14.31
			Amount	Calc.	%Drift			
68		1-Chlorohexane	40.000	43.214	-8.0	118	0.00	14.64
			AvgRF	CCRF	%Dev			
69	C	Ethylbenzene	1.614	1.644	-1.9	109	0.00	14.73
70	P	Chlorobenzene	0.877	0.913	-4.1	110	0.00	14.75
71		1,1,1,2-Tetrachloroethane	0.314	0.311	1.0	102	0.00	14.80
72		m,p-Xylene	1.285	1.322	-2.9	108	0.00	14.87
73		o-Xylene	1.405	1.475	-5.0	107	0.00	15.36
			Amount	Calc.	%Drift			
74		Styrene	40.000	40.275	-0.7	109	0.00	15.42
75	P	Bromoform	40.000	36.583	8.5	103	0.00	15.51
			AvgRF	CCRF	%Dev			
76		Isopropylbenzene	1.460	1.641	-12.4	115	0.00	15.69
77	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	105	0.00	17.28
78	S	4-Bromofluorobenzene	1.203	1.209	-0.5	106	0.00	16.05
			Amount	Calc.	%Drift			
79		cis-1,4-Dichloro-2-butene	40.000	39.124	2.2	100	0.00	16.07
			AvgRF	CCRF	%Dev			
80		n-Propylbenzene	3.363	3.603	-7.1	110	0.00	16.14
81		Bromobenzene	0.650	0.661	-1.7	106	0.00	16.20
82	P	1,1,2,2-Tetrachloroethane	0.637	0.661	-3.8	109	0.00	16.21
83		1,3,5-Trimethylbenzene	2.166	2.278	-5.2	109	0.00	16.32
84		2-Chlorotoluene	2.132	2.135	-0.1	105	0.00	16.37
			Amount	Calc.	%Drift			
85		trans-1,4-Dichloro-2-Bute	80.000	43.929	45.1#	55	0.00	16.40
			AvgRF	CCRF	%Dev			
86		1,2,3-Trichloropropane	0.169	0.173	-2.4	106	0.00	16.40
			Amount	Calc.	%Drift			
87		Cyclohexanone	200.000	200.391	-0.2	109	0.00	16.50
			AvgRF	CCRF	%Dev			
88		4-Chlorotoluene	2.192	2.292	-4.6	107	0.00	16.54

Initial Calibration Verification

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ583-ICV583
Lab FileID: J013838.D

89	tert-Butylbenzene	1.398	1.477	-5.7	109	0.00	16.70
90	1,2,4-Trimethylbenzene	2.215	2.228	-0.6	107	0.00	16.77
91	Pentachloroethane	0.358	0.380	-6.1	110	0.00	16.78
92	sec-Butylbenzene	2.761	2.861	-3.6	106	0.00	16.89
93	4-Isopropyltoluene	2.086	2.313	-10.9	113	0.00	17.02
94	1,3-Dichlorobenzene	1.182	1.251	-5.8	110	0.00	17.21
95	1,4-Dichlorobenzene	1.138	1.175	-3.3	109	0.00	17.30
	----------	Amount	Calc.	%Drift	----------		
96	n-Butylbenzene	40.000	41.228	-3.1	109	0.00	17.49
97	Benzyl Chloride	40.000	40.101	-0.3	107	0.00	17.54
	----------	AvgRF	CCRF	%Dev	----------		
98	1,2-Dichlorobenzene	1.114	1.154	-3.6	109	0.00	17.77
	----------	Amount	Calc.	%Drift	----------		
99	1,2-Dibromo-3-Chloropropa	40.000	41.540	-3.8	106	0.00	18.61
100	Hexachlorobutadiene	40.000	44.102	-10.3	115	0.00	19.27
101	1,2,4-Trichlorobenzene	40.000	44.316	-10.8	112	0.00	19.36
102	Naphthalene	40.000	43.110	-7.8	111	0.00	19.75
103	1,2,3-Trichlorobenzene	40.000	44.272	-10.7	114	0.00	19.98
104	2-Methylnaphthalene		----------NA----------				
105	1-Methylnaphthalene		----------NA----------				
	----------	AvgRF	CCRF	%Dev	----------		
106 I	Tert Butyl Alcohol-d10	1.000	1.000	0.0	115	0.01	8.06
	----------	Amount	Calc.	%Drift	----------		
107	Ethanol	800.000	883.449	-10.4	130	0.00	6.68
	----------	AvgRF	CCRF	%Dev	----------		
108	Tert Butyl Alcohol	0.918	0.942	-2.6	120	0.01	8.16
	----------	Amount	Calc.	%Drift	----------		
109	tert Amyl alcohol		----------NA----------				
110	Isobutyl alcohol	800.000	771.668	3.5	115	0.00	10.76
111	1,4-Dioxane	1600.000	918.322	42.6#	67	0.00	12.25

(#) = Out of Range SPCC's out = 0 CCC's out = 0
J013835.D MSJ0222.M Wed Feb 23 07:58:22 2005

5.7 5

Continuing Calibration Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ585-CC583
Lab FileID: J013868.D

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\022405\J013868.D Vial: 3
Acq On : 24 Feb 2005 11:08 am Operator: RondaM
Sample : CC583-4 Inst : MSV0A6
Misc : ms4167,VJ585,,,,, Multiplr: 1.00
MS Integration Params: Rteint.p

Method : C:\MSDCHEM\1\METHODS\MSJ0222.M (RTE Integrator)
Title : SW-846 Method 5030B/8260B & EPA 624
Last Update : Wed Feb 23 17:06:28 2005
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Fluorobenzene	1.000	1.000	0.0	96	0.00	11.15
2		Dichlorodifluoromethane	0.305	0.270	11.5	85	0.00	4.26
3	P	Chloromethane	0.586	0.567	3.2	91	0.01	4.61
			Amount	Calc.	%Drift			
4	C	Vinyl Chloride	40.000	38.161	4.6	95	0.00	4.82
5		Bromomethane	40.000	40.518	-1.3	99	0.01	5.47
			AvgRF	CCRF	%Dev			
6		Chloroethane	0.165	0.170	-3.0	98	0.00	5.70
7		Trichlorofluoromethane	0.376	0.415	-10.4	104	0.00	6.00
8		Ethyl Ether	0.252	0.253	-0.4	96	0.00	6.45
9		1,2-Dichlorotrifluoroetha	0.369	0.397	-7.6	100	0.00	6.77
10	C	1,1-Dichloroethene	0.524	0.560	-6.9	100	0.00	6.85
11		Freon 113	0.261	0.264	-1.1	100	0.01	6.91
12		Carbon Disulfide	0.973	1.016	-4.4	98	0.00	6.96
13		Iodomethane	0.395	0.415	-5.1	97	0.00	7.11
			Amount	Calc.	%Drift			
14		Acrolein	200.000	181.569	9.2	87	0.00	7.35
			AvgRF	CCRF	%Dev			
15		Allyl chloride	0.610	0.634	-3.9	99	0.00	7.56
16		Methylene Chloride	0.604	0.622	-3.0	104	0.00	7.73
			Amount	Calc.	%Drift			
17		Acetone	200.000	159.727	20.1#	83	0.00	7.77
			AvgRF	CCRF	%Dev			
18		Methyl acetate	0.221	0.224	-1.4	96	0.00	7.92
19		trans-1,2-Dichloroethene	0.527	0.537	-1.9	98	0.00	7.97
			Amount	Calc.	%Drift			
20		Hexane	40.000	41.465	-3.7	101	0.00	8.05
			AvgRF	CCRF	%Dev			
21		Methyl Tert Butyl Ether	0.664	0.687	-3.5	99	0.00	8.09
22		Acetonitrile	0.037	0.037	0.0	97	0.00	8.46
23		Di-isopropyl ether	1.303	1.339	-2.8	97	0.00	8.57
			Amount	Calc.	%Drift			
24		Chloroprene	40.000	40.350	-0.9	100	0.00	8.80

Continuing Calibration Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ585-CC583
Lab FileID: J013868.D

			AvgRF	CCRF	%Dev			
25	P	1,1-Dichloroethane	0.615	0.637	-3.6	98	0.00	8.84
			Amount	Calc.	%Drift			
26		Acrylonitrile	200.000	178.161	10.9	89	0.00	8.88
			AvgRF	CCRF	%Dev			
27		ETBE	0.991	1.006	-1.5	97	0.00	9.08
28		Vinyl acetate	0.504	0.488	3.2	87	0.00	9.09
29		cis-1,2-Dichloroethene	0.281	0.288	-2.5	98	0.00	9.57
30		2,2-Dichloropropane	0.471	0.510	-8.3	98	0.00	9.72
31		Bromochloromethane	0.107	0.109	-1.9	97	0.00	9.83
32		Cyclohexane	0.635	0.628	1.1	99	0.00	9.88
33	C	Chloroform	0.541	0.555	-2.6	97	0.00	9.89
34		Ethyl acetate	0.263	0.273	-3.8	99	0.00	9.97
			Amount	Calc.	%Drift			
35		Tetrahydrofuran	40.000	39.479	1.3	91	0.00	10.14
			AvgRF	CCRF	%Dev			
36	S	Dibromofluoromethane	0.270	0.273	-1.1	98	0.00	10.13
			Amount	Calc.	%Drift			
37		Carbon Tetrachloride	40.000	41.640	-4.1	100	0.00	10.14
			AvgRF	CCRF	%Dev			
38		1,1,1-Trichloroethane	0.451	0.490	-8.6	100	0.00	10.22
39		2-Butanone	0.156	0.143	8.3	90	0.00	10.25
40		1,1-Dichloropropene	0.386	0.406	-5.2	98	0.00	10.35
41		Propionitrile	0.041	0.039	4.9	93	0.00	10.65
			Amount	Calc.	%Drift			
42		Methacrylonitrile	400.000	376.375	5.9	95	0.00	10.67
43		Benzene	40.000	40.085	-0.2	96	0.00	10.67
			AvgRF	CCRF	%Dev			
44		TAME	0.816	0.823	-0.9	95	0.00	10.73
45	S	1,2-Dichloroethane-d4	0.404	0.407	-0.7	98	0.00	10.82
46		1,2-Dichloroethane	0.501	0.516	-3.0	97	0.00	10.90
47		Trichloroethene	0.277	0.297	-7.2	101	0.00	11.36
48		Methylcyclohexane	0.466	0.479	-2.8	99	0.00	11.39
49		Dibromomethane	0.171	0.173	-1.2	95	0.00	11.88
50	C	1,2-Dichloropropane	0.340	0.346	-1.8	95	0.00	11.98
51		Bromodichloromethane	0.412	0.432	-4.9	97	0.00	12.03
			Amount	Calc.	%Drift			
52		Methyl methacrylate	40.000	39.849	0.4	94	0.00	12.12
53		2-Chloroethyl vinyl ether	200.000	189.447	5.3	90	0.00	12.61
			AvgRF	CCRF	%Dev			
54		cis-1,3-Dichloropropene	0.484	0.506	-4.5	96	0.00	12.75
55	I	Chlorobenzene-d5	1.000	1.000	0.0	95	0.00	14.73
56	S	Toluene-d8	1.395	1.403	-0.6	95	0.00	12.97
57	C	Toluene	1.435	1.455	-1.4	96	0.00	13.03
			Amount	Calc.	%Drift			
58		2-Nitropropane	200.000	196.378	1.8	96	0.00	13.28

Continuing Calibration Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ585-CC583
Lab FileID: J013868.D

			AvgRF	CCRF	%Dev			
59		4-Methyl-2-pentanone	0.416	0.421	-1.2	94	0.00	13.39
			Amount	Calc.	%Drift			
60		trans-1,3-Dichloropropene	40.000	38.841	2.9	95	0.00	13.46
61		Tetrachloroethene	40.000	40.538	-1.3	98	0.00	13.50
62		Ethyl methacrylate	40.000	36.662	8.3	92	0.00	13.55
			AvgRF	CCRF	%Dev			
63		1,1,2-Trichloroethane	0.266	0.273	-2.6	94	0.00	13.66
			Amount	Calc.	%Drift			
64		Dibromochloromethane	40.000	38.498	3.8	97	0.00	13.89
			AvgRF	CCRF	%Dev			
65		1,3-Dichloropropane	0.579	0.583	-0.7	93	0.00	13.98
66		1,2-Dibromoethane	0.303	0.313	-3.3	93	0.00	14.20
67		2-hexanone	0.301	0.299	0.7	90	0.00	14.31
			Amount	Calc.	%Drift			
68		1-Chlorohexane	40.000	40.156	-0.4	97	0.00	14.64
			AvgRF	CCRF	%Dev			
69	C	Ethylbenzene	1.614	1.617	-0.2	95	0.00	14.73
70	P	Chlorobenzene	0.877	0.887	-1.1	94	0.00	14.75
71		1,1,1,2-Tetrachloroethane	0.314	0.334	-6.4	97	0.00	14.80
72		m,p-Xylene	1.285	1.319	-2.6	96	0.00	14.87
73		o-Xylene	1.405	1.485	-5.7	96	0.00	15.36
			Amount	Calc.	%Drift			
74		Styrene	40.000	39.565	1.1	95	0.00	15.41
75	P	Bromoform	40.000	37.736	5.7	95	0.00	15.51
			AvgRF	CCRF	%Dev			
76		Isopropylbenzene	1.460	1.554	-6.4	97	0.00	15.69
77	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	100	0.00	17.28
78	S	4-Bromofluorobenzene	1.203	1.139	5.3	94	0.00	16.05
			Amount	Calc.	%Drift			
79		cis-1,4-Dichloro-2-butene	40.000	38.761	3.1	94	0.00	16.07
			AvgRF	CCRF	%Dev			
80		n-Propylbenzene	3.363	3.315	1.4	96	0.00	16.14
81		Bromobenzene	0.650	0.624	4.0	94	0.00	16.20
82	P	1,1,2,2-Tetrachloroethane	0.637	0.609	4.4	95	0.00	16.21
83		1,3,5-Trimethylbenzene	2.166	2.199	-1.5	99	0.00	16.32
84		2-Chlorotoluene	2.132	2.058	3.5	96	0.00	16.37
			Amount	Calc.	%Drift			
85		trans-1,4-Dichloro-2-Bute	80.000	76.927	3.8	94	0.00	16.40
			AvgRF	CCRF	%Dev			
86		1,2,3-Trichloropropane	0.169	0.161	4.7	94	0.00	16.40
			Amount	Calc.	%Drift			
87		Cyclohexanone	200.000	204.997	-2.5	106	-0.01	16.50
			AvgRF	CCRF	%Dev			
88		4-Chlorotoluene	2.192	2.137	2.5	95	0.00	16.54

Continuing Calibration Summary

Job Number: F29951
Account: TETFLTAM Tetra Tech NUS
Project: NAS Cecil Field-CTO #361

Sample: VJ585-CC583
Lab FileID: J013868.D

89	tert-Butylbenzene	1.398	1.456	-4.1	102	0.00	16.70
90	1,2,4-Trimethylbenzene	2.215	2.180	1.6	99	0.00	16.76
91	Pentachloroethane	0.358	0.367	-2.5	100	0.00	16.78
92	sec-Butylbenzene	2.761	2.867	-3.8	101	0.00	16.89
93	4-Isopropyltoluene	2.086	2.201	-5.5	102	0.00	17.02
94	1,3-Dichlorobenzene	1.182	1.199	-1.4	100	0.00	17.21
95	1,4-Dichlorobenzene	1.138	1.130	0.7	99	0.00	17.30
	----------	Amount	Calc.	%Drift		----------	
96	n-Butylbenzene	40.000	41.270	-3.2	103	0.00	17.49
97	Benzyl Chloride	40.000	40.576	-1.4	102	0.00	17.54
	----------	AvgRF	CCRF	%Dev		----------	
98	1,2-Dichlorobenzene	1.114	1.169	-4.9	105	0.00	17.77
	----------	Amount	Calc.	%Drift		----------	
99	1,2-Dibromo-3-Chloropropa	40.000	52.742	-31.9#	128	0.00	18.61
100	Hexachlorobutadiene	40.000	54.728	-36.8#	134	0.00	19.27
101	1,2,4-Trichlorobenzene	40.000	59.933	-49.8#	143	0.00	19.35
102	Naphthalene	40.000	78.614	-96.5#	180	0.00	19.74
103	1,2,3-Trichlorobenzene	40.000	81.248	-103.1#	184	0.00	19.98
104	2-Methylnaphthalene	40.000	222.160	-455.4#	1175	-0.01	21.07
105	1-Methylnaphthalene	40.000	218.258	-445.6#	1278	-0.01	21.31
	----------	AvgRF	CCRF	%Dev		----------	
106 I	Tert Butyl Alcohol-d10	1.000	1.000	0.0	94	0.01	8.06
	----------	Amount	Calc.	%Drift		----------	
107	Ethanol	800.000	870.929	-8.9	105	0.00	6.68
	----------	AvgRF	CCRF	%Dev		----------	
108	Tert Butyl Alcohol	0.918	0.896	2.4	93	0.01	8.16
	----------	Amount	Calc.	%Drift		----------	
109	tert Amyl alcohol	400.000	370.812	7.3	90	0.00	10.73
110	Isobutyl alcohol	800.000	768.570	3.9	94	0.00	10.76
111	1,4-Dioxane	1600.000	1544.417	3.5	92	0.00	12.24

(#) = Out of Range SPCC's out = 0 CCC's out = 0
J013835.D MSJ0222.M Thu Feb 24 12:54:40 2005