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NAS CECIL FIELD, FL
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SECOND QUARTER FIRST YEAR GROUNDWATER MONITORING LETTER REPORT FOR BUILDING 815 WASH RACK AREA NAS CECIL FIELD FL

12/5/2008

TETRA TECH NUS INC

TETRA TECH

Document Tracking Number 08JAX0058

December 5, 2008

Project Number 112G01264

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 IV Contract Number N62467-04-D-0055
Contract Task Order 0102

Subject: Quarterly Groundwater Monitoring Report, 2nd Quarter, Year 1 Event – September 2008
Building 815 Wash Rack Area
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this 2nd Quarter, Year 1 Groundwater Monitoring Report for the Building 815 Wash Rack Area at Naval Air Station (NAS) Cecil Field. This report was prepared for the United States Navy, Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) IV Contract Number N62467-04-D-0055. This Quarterly Groundwater Monitoring Report summarizes the fieldwork and analytical results for the sampling event conducted in September 2008. The work was performed in general accordance with Florida Department of Environmental Protection (FDEP) Standard Operating Procedures (SOPs) under DEP-SOP-001/01.

BACKGROUND

Building 815 is an aircraft maintenance hangar located at the northern end of the flightline and the eastern end of Lake Newman Street (formerly 6th Street) (see Figure 1). An aircraft wash rack is located north of the hangar. Naphthalene contamination in groundwater was identified in wells at the wash rack in the 1999 Sampling and Analysis Report (SAR) for Hangar 815. There are no tanks associated with this area of contamination. During the SAR, two shallow monitoring wells were installed in the area of the wash rack. In addition, an area of soil contamination and a storm water retention pond in the wash rack area were investigated during the SAR. The results of the investigations of these areas are described in the Technical Memorandum for Potential Source of Contamination 56.

Between October 1999 and May 2000, TtNUS conducted three phases of Site Assessment (SA) activities. The first phase included installation and sampling of one monitoring well and sampling of five existing wells. These samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and total recoverable petroleum hydrocarbons (TRPH). Naphthalene and TRPH were the only contaminants detected in excess of FDEP Groundwater Cleanup Target Levels (GCTLs). The second phase involved the installation and sampling of one shallow monitoring well and

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continued to demonstrate a pattern of consistent decreasing concentrations of naphthalene since the first sampling event performed in accordance with FDEP-approved semi-annual monitoring in 2000. TRPH concentrations were less than the GCTL in CEF-815-1S and CEF-815-5S. COC concentrations in samples from NG-12S and CEF-059-028-015 were less than FDEP GCTLs.

Due to the decreasing trend in naphthalene concentrations in CEF-815-1S, the well at which the highest concentrations are consistently detected, and because the most recent naphthalene concentration in this well is significantly less than the NADC of 140 µg/L, TtNUS recommended in the 2008 SARA that regular monitoring of wells CEF-815-1S, NG-12S, CEF-815-5S, and CEF-059-015 for naphthalene be conducted over a 5-year period. The proposed sampling frequency was quarterly for the first year, semi-annual for years two and three, and annual for years four and five. FDEP approval of this long-term monitoring program, as proposed in the SARA submitted in May 2008, is pending at the time of the submittal of this report. The field activities and results from the 2nd Quarter, Year 1 sampling event are detailed below.

FIELD ACTIVITIES

On September 16, 2008, TtNUS collected groundwater samples from wells CEF-815-01S, NG-12S, CEF-815-05S, and CEF-059-028-015 for analysis of naphthalene using USEPA Method 8270C. Monitoring wells locations are shown on Figure 2. Low-flow purge sheets and groundwater sample log sheets from the September 2008 event are included as Attachment A. The samples were placed on ice immediately upon collection and hand-delivered under chain of custody to Columbia Analytical Services, Inc., in Jacksonville, Florida.

Water level measurements were recorded on September 16, 2008, from wells CEF-815-01S, CEF-815-05S, NG-12S, and CEF-059-028-015 prior to sampling activities. The depth to water ranged from 4.86 feet (CEF-815-01S) to 5.91 feet below top of casing (btoc) (CEF-059-028-015). The data were recorded on groundwater sample log sheets and low-flow purge data sheets provided in Attachment A. The depth-to-water measurements, top-of-casing elevations, and groundwater elevations are presented in Table 1. General protocols were in accordance with FDEP SOPs and TtNUS SOP SA-1.1.

RESULTS

Based on September 2008 data, shallow groundwater flow is to the southeast, which is consistent with historical data from the site. Groundwater elevation contours from September 2008 are shown on Figure 3.

During the September 2008 sampling event, naphthalene was detected at 72 µg/L, 42 µg/L, 0.51 µg/L, and 0.12 µg/L in CEF-815-01S, CEF-815-05S, NG-12S, and CEF-059-028-015, respectively. Naphthalene concentrations in CEF-815-01S (57.5 µg/L) [average of sample and duplicate results] and CEF-815-05S (42 µg/L) exceeded the FDEP GCTL of naphthalene of 14 µg/L. Naphthalene results in the perimeter monitoring wells NG-12S and CEF-059-028-015 remained less than the GCTL. Laboratory analytical results from the September 2008 sampling event are summarized in Table 2 and illustrated on Figure 4. The laboratory analytical report is provided as Attachment B.

CONCLUSIONS AND RECOMMENDATIONS

During the September 2008 sampling event, naphthalene concentrations in source wells CEF-815-01S and CEF-815-05S were greater the FDEP GCTL of 14 µg/L. With the exception of the September 2008 event, concentrations in CEF-815-01S have consistently decreased since the November 2000 sampling event. Concentrations in CEF-815-05S stayed the same as in June 2008, with a concentration of 42 µg/L. Overall, the groundwater flow direction appears to be consistent with historical estimates.

Based on the results of the 2nd Quarter, Year 1 sampling event, TtNUS recommends that groundwater sampling continue on a quarterly basis. The 3rd Quarter, Year 1 sampling event is scheduled for December 2008.

sampling of three other existing upgradient wells. The groundwater samples from the second phase were analyzed for select compounds (VOCs, SVOCs, and TRPH) detected during the first phase of SA activities. The third phase of work entailed resampling monitoring well CEF-815-4S for VOCs on May 11, 2000, to confirm the Phase II vinyl chloride result. During Phase III of SA activities, the vinyl chloride concentration was less than the FDEP GCTL in monitoring well CEF-815-4S. The extent of exceedances of naphthalene and TRPH in groundwater was delineated, and semi-annual monitoring was proposed and approved under Florida's Petroleum Program. Based on the 2000 Natural Attenuation Monitoring Plan Approval Order (NAMPAO) issued by FDEP, semi-annual monitoring was conducted at the site from 2000 to 2003.

On January 12, 2004, TtNUS submitted the Groundwater Monitoring Report documenting results from the July 2003 sampling event. Based on these results, TtNUS concluded that naphthalene concentrations in monitoring well CEF-815-1S were continuously exceeding the annual milestone cleanup objectives defined in the NAMPAO. TtNUS recommended that the monitoring program be discontinued and that a Remedial Action Plan (RAP) be developed for the site. FDEP concurred with discontinuing the monitoring program and recommended that a soil assessment be conducted prior to preparation of a RAP.

In January 2005, TtNUS collected soil samples in the 815 Wash Rack Area to determine if a continuing source of soil contamination was present in the vicinity of monitoring well CEF-815-1S. Eight samples were collected above the water table and capillary fringe from 2 to 4 feet below ground surface (bgs) and were analyzed for VOCs, SVOCs, polynuclear aromatic hydrocarbons (PAHs), and TRPH. All soil assessment results were less than the FDEP Soil Cleanup Target Level (SCTL), so the soil determined to not be the source of contamination.

As discussed during the February 2005 meeting, the NAS Cecil Field Base Realignment and Closure (BRAC) Cleanup Team (BCT) agreed to transfer the site from the Petroleum Program to the Installation Restoration (IR) Program so that site remediation could be conducted concurrently with adjacent Site 59. However, at the September 2007 BCT Meeting, it was decided that groundwater at the 815 Wash Rack Area would be transferred back to the Petroleum Program. Because nearly 2 years had passed since the last groundwater sampling event at the 815 Wash Rack Area and because a RAP had not been prepared for the site since its transfer to the IR Program, a Site Assessment Report Addendum (SARA) was recommended. The monitoring wells sampled and the analyses (naphthalene and TRPH) conducted for the SARA were those designated in the 2000 NAMPAO.

During the initial SARA field event on November 5, 2007, TtNUS collected groundwater samples from wells CEF-815-01S and NG-12S for baseline analysis of naphthalene using United States Environmental Protection Agency (USEPA) Method 8270C and TRPH using the Florida Petroleum Range Organics (FL-PRO) method. Monitoring well CEF-815-01S had a naphthalene concentration of 89 micrograms per liter (µg/L), greater than the FDEP GCTL of 14 µg/L. TRPH was detected at a concenration less than its GCTL in CEF-815-01S. Concentrations in the groundwater sample collected from NG-12S during the SARA were less than GCTLs.

During a second SARA field event on February 11, 2008, one shallow monitoring well was installed using hollow-stem auger drilling techniques to delineate the extent of naphthalene exceedance at the site. The well (CEF-815-05S) was installed approximately 30 feet southeast of CEF-815-1S, and was screened from approximately 4 to 14 bgs. The location of CEF-815-05S is shown on Figure 2. On February 12, 2008, groundwater samples were collected from wells CEF-815-1S, CEF-815-5S, NG-12S, and CEF-059-028-015 and analyzed for naphthalene using USEPA Method 8270C and for TRPH using FL-PRO. Water level measurements were recorded on February 12, 2008, from wells CEF-815-1S, CEF-815-5S, NG-12S, and CEF-059-028-015 prior to sampling activities. Based on the data from the February 2008 sampling event, shallow groundwater flow was to the southeast, which was consistent with historical data from the site. February 2008 samples from CEF-815-1S and CEF-815-5S had naphthalene concentrations of 69 µg/L and 37 µg/L, respectively. Although these results exceeded the FDEP GCTL of 14 µg/L, they were less than the Natural Attenuation Default Concentration (NADC) of 140 µg/L and

TETRA TECH

If you have any questions regarding this submittal, please feel free to contact Kara Wimble at (904) 730-4669, extension 217, or via e-mail at Kara.Wimble@ttnus.com.

Sincerely,

Robert Simcik, P.E.
Task Order Manager
P.E. Number 61263

Kara F. Wimble
Project Scientist

RS/rm

Attachments (4)

c: A. Sanford, NAVFAC SE (CD only)
M. Perry, TtNUS (unbound and CD)
R. Simcik, TtNUS (bookcase file)
D. Humbert, TtNUS (cover letter only)
CTO 102 Project File
J. Johnson, TtNUS (Information Repository)

CERTIFICATION

The information contained herein is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are determined to exist that differ from those described, the undersigned engineer should be notified to evaluate the effects of any additional information on the information described in this report. This Quarterly Groundwater Monitoring Report, 2nd Quarter, Year 1 Event 3 September 2008, was developed for the Building 815 Wash Rack Area at the former Naval Air Station Cecil Field and should not be construed to apply to any other site.

No. 00061263
STATE OF FLORIDA
PROFESSIONAL ENGINEER

December 5, 2008
Robert Simcik, P.E.
P.E. License Number 61263

TABLES

TABLE 1

GROUNDWATER ELEVATION DATA
1ST YEAR, 1ST QUARTERLY SAMPLING EVENT
BUILDING 815 WASH RACK AREA
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Monitoring Well Identification	Well Depth (feet btoc)	TOC Elevation (feet above msl)	May 1, 2001		December 17, 2001		June 19, 2002		January 9, 2003		July 24, 2003		February 12, 2008	
			Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)
CEF-815-1S	13.10	75.55	6.12	69.44	5.40	70.16	6.41	69.15	4.25	71.31	4.53	71.03	6.31	69.24
CEF-815-5S	14.40	75.65	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	6.56	69.09
NG-12S	13.40	75.69	6.39	69.30	5.63	70.06	6.68	69.01	4.69	71.00	4.83	70.86	6.54	69.15
CEF-059-028-015	15.00	76.05	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	7.16	68.89

Monitoring Well Identification	Well Depth (feet btoc)	TOC Elevation (feet above msl)	June 19, 2008		September 16, 2008	
			Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)
CEF-815-1S	13.10	75.55	6.40	69.15	4.86	70.69
CEF-815-5S	14.40	75.65	6.61	69.04	5.24	70.41
NG-12S	13.40	75.69	6.60	69.09	5.14	70.55
CEF-059-028-015	15.00	76.05	7.18	68.87	5.91	70.14

TOC = Top of casing.
btoc = Below top of casing.
msl = Mean sea level.
NM = Not measured.

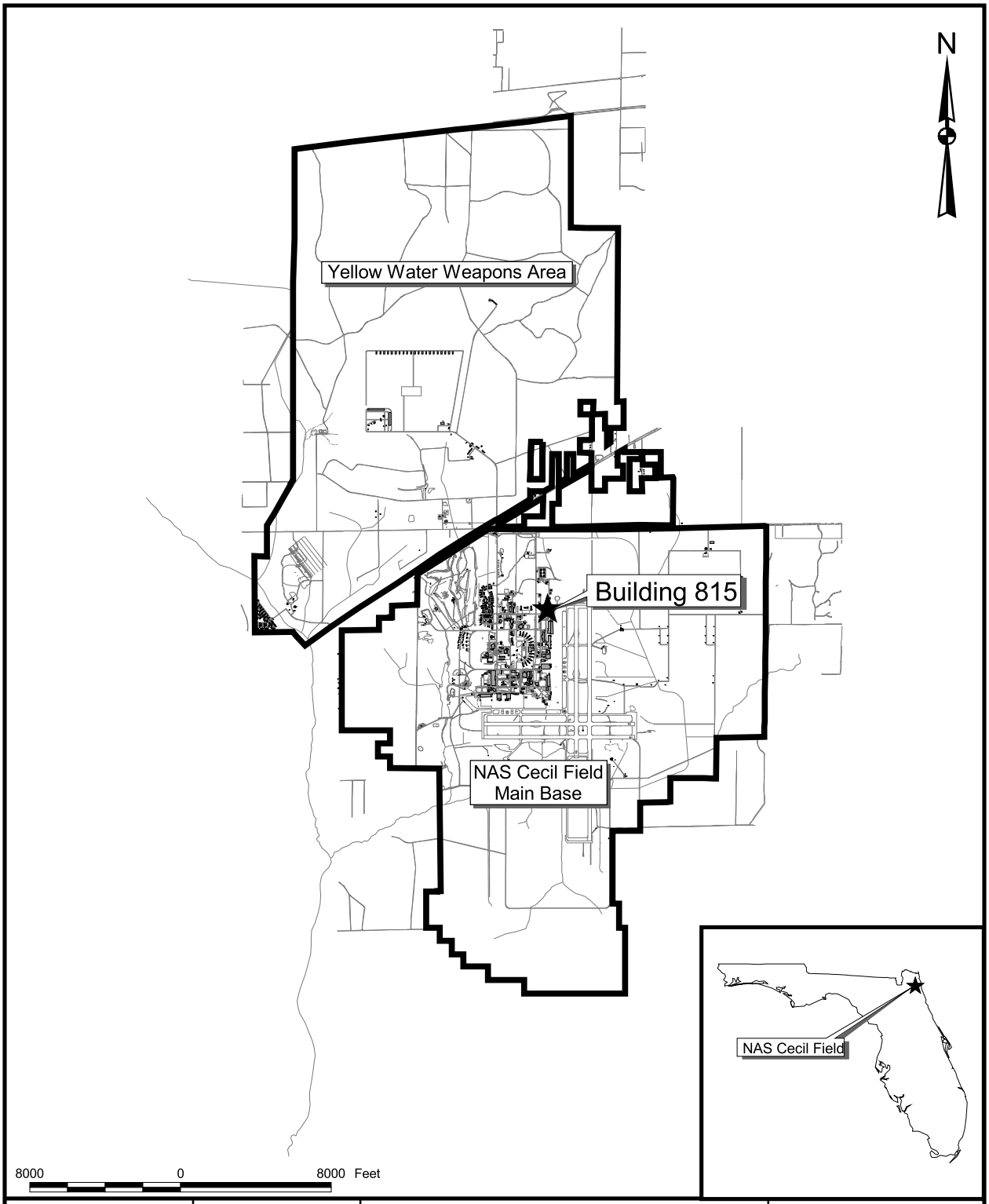
TABLE 2

GROUNDWATER ANALYTICAL DATA - NAPHTHALENE
1ST YEAR, 2nd QUARTER SAMPLING EVENT
BUILDING 815 WASH RACK AREA
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

WELL ID	SAMPLING DATE	RESULTS (µG/L)
GROUNDWATER CLEANUP TARGET LEVEL*		14
NATURAL ATTENTUATION DEFAULT CONCENTRATIONS*		140
CEF-815-1S	Nov-00	192
	May-01	250
	Dec-01	129
	Jun-02	299
	Jul-02	205
	Jan-03	152
	Jul-03	256
	Jan-06	140
	Nov-07	89
	Feb-08	69
	Jun-08	50
	Sep-08	72
CEF-815-5S	Feb-08	37
	Jun-08	42
	Sep-08	42
NG-12S	Nov-00	**9.2**
	May-01	**8.2**
	Dec-01	**7.1**
	Jun-02	**3.4**
	Jan-03	**13.2**
	Jul-03	39.9
	Jan-06	**13.6**
	Nov-07	**4.7**
	Feb-08	**3.3**
	Jun-08	**2.2**
	Sep-08	**0.51**
CEF-059-028-015	Feb-08	**0.1**
	Jun-08	**0.058**
	Sep-08	**0.12**

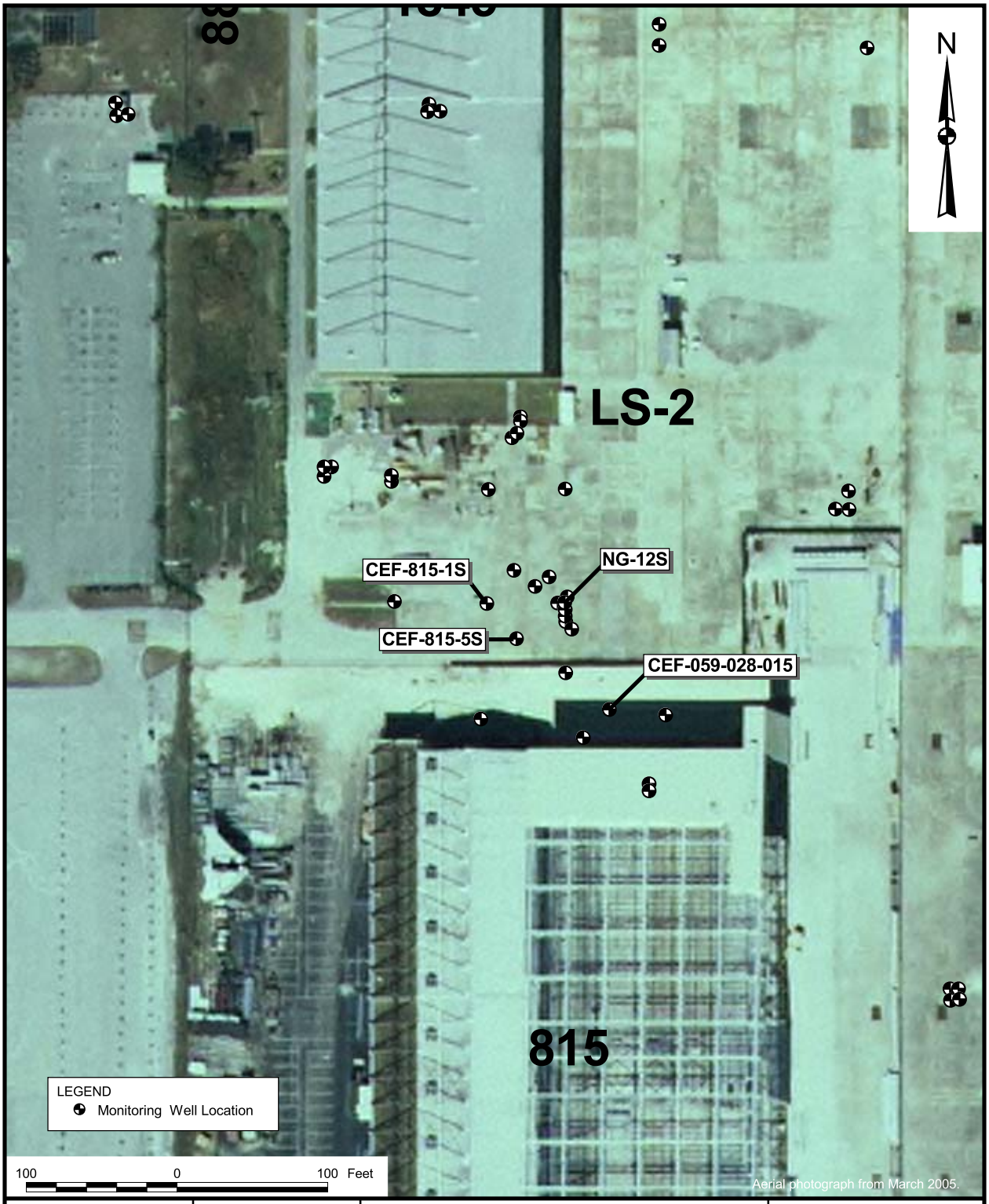
Bolded values exceed detection limit.
Shaded values exceed Groundwater Cleanup Target Level.
* Florida Administrative Code (F.A.C.) 62-777, (FDEP, 2005).

FIGURES



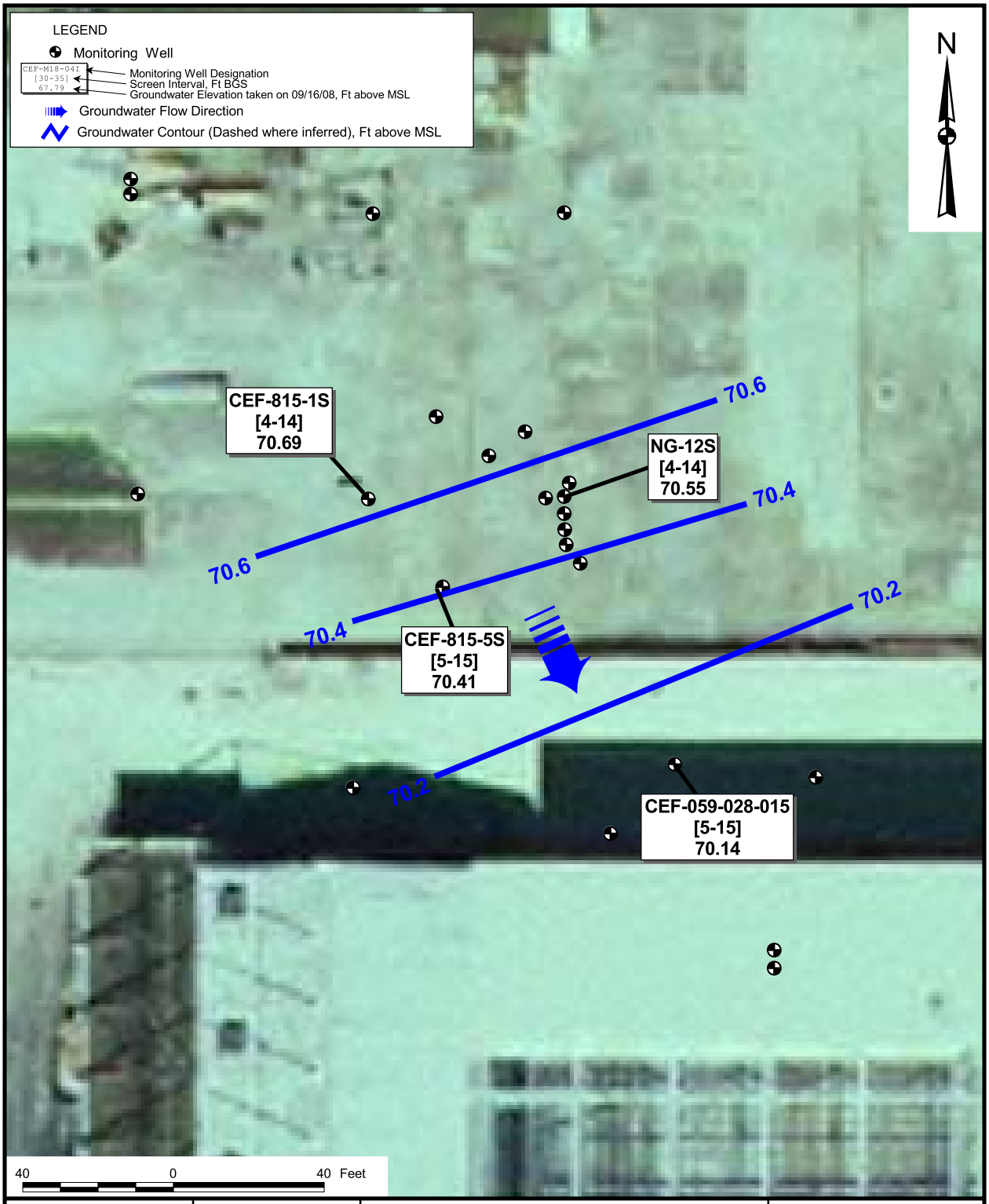
DRAWN BY MJJ	DATE 11Mar08	GENERAL LOCATION MAP BUILDING 815 WASH RACK AREA NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 1264
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV 0

P:\GIS\NAS_CecilField\Site-59_0815_20081111.apr 03Dec08 MJJ Layout000



DRAWN BY MJJ	DATE 11Mar08	SITE LAYOUT AND MONITORING WELL LOCATIONS BUILDING 815 WASH RACK AREA 2nd QUARTER, YEAR 1 EVENT - SEPTEMBER 2008 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 1264
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 2 / REV 0

P:\GIS\NAS_CecilField\Site-59_0815_20081111.apr 01Dec08 MJJ Layout001



DRAWN BY MJJ	DATE 11Nov08	GROUNDWATER FLOW MAP BUILDING 815 WASH RACK AREA 2nd QUARTER, YEAR 1 EVENT - SEPTEMBER 2008 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 1264
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3 / REV 0

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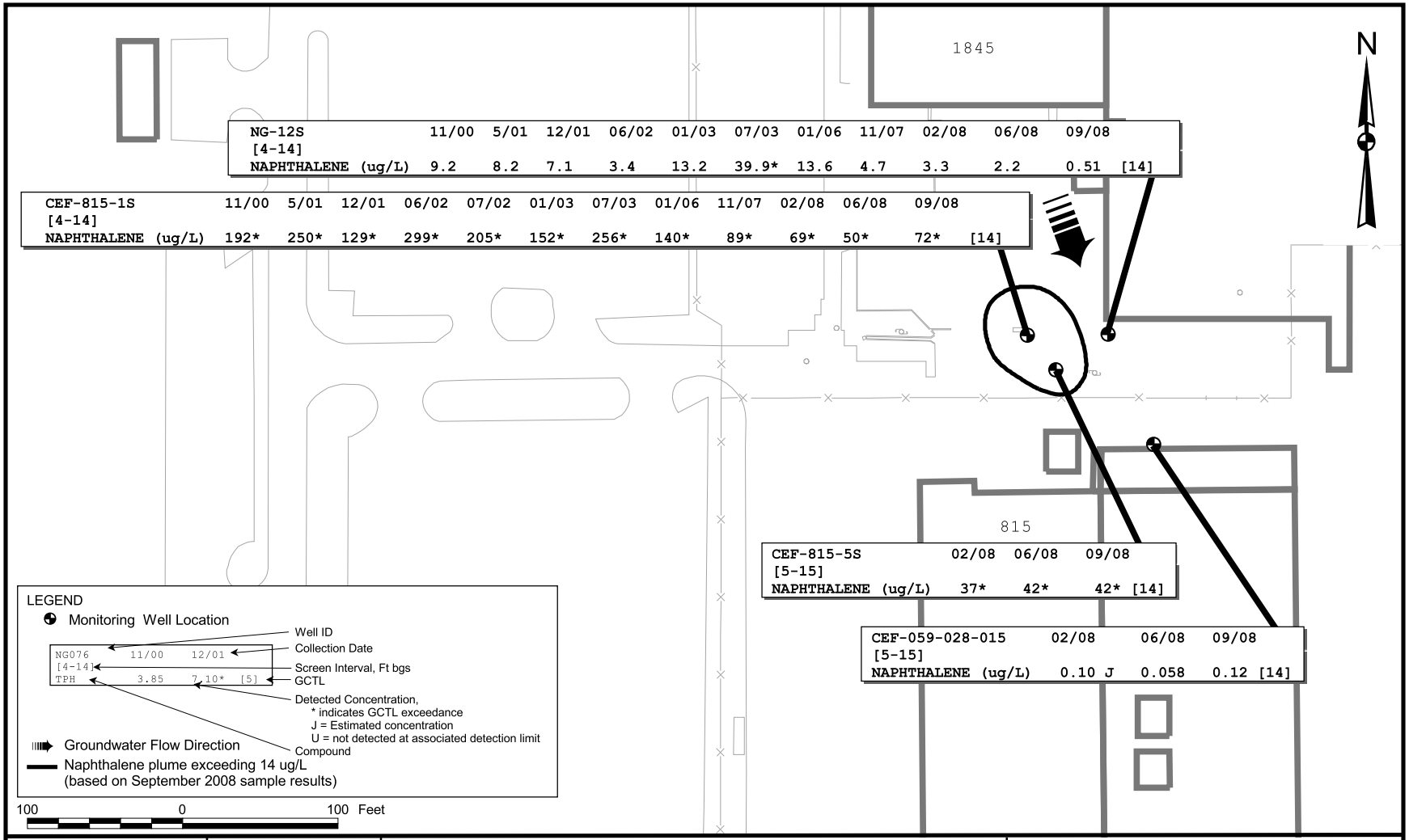

DRAWN BY	DATE
MJJ	11Nov08
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	AS NOTED

GROUNDWATER CONCENTRATIONS
BUILDING 815 WASH RACK AREA
2nd QUARTER, YEAR 1 EVENT - SEPTEMBER 2008
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NUMBER	
1264	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 4	REV 0

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ATTACHMENT A

FIELD LOG SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: 815 Wash Rack
Project No.: 112G01264
Location: NAS Cecil Field
Personnel: Jeff Krone
Weather Conditions: Partly cloudy 85°
Measuring Device: Solinst model 101
Tidally Influenced: Yes ___ No ___
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
CEF-815-1S	9/16/08	1030	75.56	13.10	4.86	—		
NG-12S	9/16/08	1141	75.69	13.40	5.14	—		
CEF-815-5S	9/16	1140	75.75	14.37	5.24	—		
CEF-059-028-015	9/16	1210	75.92	15.00	5.91	—		

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project / Site: 815 Wash Rack, Cecil Field
Project No.: 112G01264

Sample ID No.: CEF-815-1S-091608
Sample Location: CEF-815-1S

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: JK

SAMPLING DATA

Date: / Time:	Color	pH S.U.	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	
Method: Peristaltic								

PURGE DATA

Date:	9/16/08
Method:	Peristaltic
Monitor Reading (ppm):	0
Well Casing Diameter:	2"
Well Casing Material:	PVC
Total Well Depth (ft):	13.10
Static Water Level (ft):	4.86
One Screen Volume(gal/L):	
Start Purge (hrs):	1035
End Purge (hrs):	1135
Total Purge Time (min):	60
Total Vol. Purged (gal/L):	18 L

See Attached Low Flow Purge Data Sheet for Purge Data

13.10 - 4.86 = 8.24 x .16 = 1.32 x 3.785 = 4.996 L
3x = 5 L

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
Naphthalene 8270B		2- 1L Amber	CAS	

OBSERVATIONS / NOTES

LAB INFO

LAB: CAS
8540 Baycenter Road
Jacksonville, FL 32256
COC #:

Check if Collected:

☐ MS / MSD

☒ DUPLICATE / ID No.: CEF-815-1S-091608 DUP

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: 815 Wash Rack, NAS Cecil Field
PROJECT NUMBER: 112G01264

WELL ID.: CEF 815-1S-091608
DATE: 9/16/08

Time (Hrs.)	Water Level (Ft. below TOC)	Cum.Vol. (liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1035	4.86	0	300	—	—	—	—	—	—	—
1105	5.09	15	300	6.27	.543	1.33	0.11	28.87	-110.9	
1130	5.09	16.5	300	6.27	.536	0.08	0.12	28.92	-113.2	
1135	5.09	18.0	300	6.27	.540	0.09	0.10	28.96	-121.2	
1140	Sample time									

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project / Site: 815 Wash Rack, NAS Cecil Field
Project No.: 112G01264

Sample ID No.: CEF-059-028-015-091508
Sample Location: CEF-059-028-015

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: Jeff Krone

SAMPLING DATA

Date: 9/15/08 Time: 1650	Color	pH S.U.	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	
Method: Peristaltic	clear	5.64	.195	27.37	4.32	0.14	-18.5	

PURGE DATA

Date:	9/15/08
Method:	Peristaltic
Monitor Reading (ppm):	0
Well Casing Diameter:	2"
Well Casing Material:	PVC
Total Well Depth (ft):	15.00
Static Water Level (ft):	5.81
One Screen Volume(gal/L):	~~4.17L~~ 1.39
Start Purge (hrs):	1615
End Purge (hrs):	1650
Total Purge Time (min):	35 min
Total Vol. Purged (gal/L):	10.5L

See Attached Low Flow Purge Data Sheet for Purge Data

15.0 - 5.81 = 9.19 x .04 = 3.67 = 1.39L x 3.785 = 1x

3x = 4.17L

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements		Laboratory	Collected
8270B			2		
Naphthalene ~~8260B~~	~~H2SO4~~ None	X	~~2~~ 1L Amber	CAS	

OBSERVATIONS / NOTES

3x = 4.17L

LAB INFO

LAB: CAS
8540 Baycenter Road
Jacksonville, FL 32256
COC #:

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

3X=4.17
5X=6.95

PROJECT SITE NAME: 815 Wash Rack, NAS Cecil Field
PROJECT NUMBER: 112G01264

WELL ID.: CEF-059-028-015
DATE: 9/15/08

	Time (Hrs.)	Water Level (Ft. below TOC)	Cum.Vol. (liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
	1615	5.87	–	300							
3X	1629	6.83	4.2	300	5.76	.232	11.3	0.17	27.35	-18.5	
	1634	6.23	5.7	300	5.69	.207	10.90	0.16	27.36	-21.9	
5X	1639	6.24	7.2	300	5.64	.198	10.20	0.15	27.36	-16.4	
	1644	6.24	8.7	300	5.64	.195	9.32	0.14	27.37	-18.5	
	1650	Sample time									

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project / Site:	815 Wash Rack, NAS Cecil Field	Sample ID No.:	NG-12S -091508
Project No.:	112G01264	Sample Location:	NG-12S
[X] Monitoring Well [ ] Domestic Well [ ] Other:		Sampler:	JC

SAMPLING DATA

Date: 9/15/08 Time: 1515	Color	pH S.U.	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	
Method: Peristaltic	Clear	4.74	.080	30.15	.88	0.16	38.3	

PURGE DATA

Date:	9/15/08
Method:	Peristaltic
Monitor Reading (ppm):	0
Well Casing Diameter:	2"
Well Casing Material:	PVC
Total Well Depth (ft):	13.40
Static Water Level (ft):	5.11
One Screen Volume(gal/L):	1.326
Start Purge (hrs):	1408
End Purge (hrs):	1515
Total Purge Time (min):	67
Total Vol. Purged (gal/L):	20.1 L

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
8270B		2		
Naphthalene ~~8260B~~	~~HSO4~~ none	1L Amber	CAS	

OBSERVATIONS / NOTES

13.40 - 5.11 = 8.29 x .16 = 1.326 x 3.785 = 5.02 L

5.02 x 3

3 x = 15.06

LAB INFO

LAB: CAS
8540 Baycenter Road
Jacksonville, FL 32256

COC #:

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: 815 Wash Rack, NAS Cecil Field
PROJECT NUMBER: 112G01264

WELL ID.: NG-12S -091508
DATE: 9/15/08

Time (Hrs.)	Water Level (Ft. below TOC)	Cum.Vol. (liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1408	—	0	300	—	—	—	—	—	—	
1459	5.17	15.3	300	4.74	.079	10.99	0.19	30.29	43.6	
1503	5.18	16.2	300	4.72	.080	8.22	0.20	30.25	45.2	
1506	5.17	17.1	300	4.72	.080	2.88	0.16	30.18	38.9	
1509	5.18	18.0	300	4.74	.080	.88	0.16	30.15	38.3	
1515	Sample time									

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project / Site: 815 Wash Rack, NAS Cecil Field
Project No.: 112G01264

Sample ID No.: CEF-815-05S 091508
Sample Location: CEF-815-05S

[X] Monitoring Well
[ ] Domestic Well
[ ] Other:

Sampler: Jeff Krone

SAMPLING DATA

	Color	pH S.U.	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV
Date: 9/15/08 Time: ~~1254~~ 1400 Method: Peristaltic	Clear	4.87	0.83	28.61	.33	0.10	41.0

PURGE DATA

Date:	9/15/08
Method:	Peristaltic
Monitor Reading (ppm):	0
Well Casing Diameter:	2"
Well Casing Material:	PVC
Total Well Depth (ft):	14.47
Static Water Level (ft):	5.23
One Screen Volume(gal/L):	1.478
Start Purge (hrs):	1254
End Purge (hrs):	1400
Total Purge Time (min):	66
Total Vol. Purged (gal/L):	19.8

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
8270B		2		
Naphthalene ~~8260B~~	~~HSO4~~ none	~~1~~ 1L Amber	CAS	

OBSERVATIONS / NOTES

14.47 - 5.23 = 9.24 x .16 = 1.478 = ~~5.594~~
x 3.785 5.59 L

LAB INFO

LAB: CAS
8540 Baycenter Road
Jacksonville, FL 32256
COC #:

Check if Collected:

☐ MS / MSD ☐ DUPLICATE / ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: 815 Wash Rack, NAS Cecil Field
PROJECT NUMBER: 112G01264

WELL ID.: CEF-815-05S - 091508
DATE: 9/15/08

Time (Hrs.)	Water Level (Ft. below TOC)	Cum.Vol. (liters)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1254	5.23	—	300	—	—	—	—	—	—	—
1348	~~16.8~~ 5.24	16.8	300	—	—	—	—	—	—	—
1351	5.24	17.7	300	4.88	0.81	.33	0.08	28.53	42.5	
1354	5.24	18.6	300	4.88	0.83	.39	0.10	28.61	40.5	
1357	5.24	19.5	300	4.87	0.83	.33	0.10	28.61	41.0	
1400	Sample time									

SIGNATURE(S): [signature]

PAGE 2 OF 2

334-7228

ATTACHMENT B

LABORATORY ANALYTICAL REPORT

9143 Philips Highway, Suite 200 Jacksonville, FL 32256 (904) 739-2277 (904) 739-2011 fax

Columbia Analytical Services INC.
An Employee - Owned Company

September 30, 2008 Service Request No: J0804511

Tobrena Skeen
Tetra Tech NUS, Inc.
Foster Plaza 7
661 Andersen Drive
Pittsburgh, PA 15220

Laboratory Results for: 815 Wash Rack, Cecil Field/112G01264

Dear Tobrena:

Enclosed are the results of the sample(s) submitted to our laboratory on September 16, 2008. For your reference, these analyses have been assigned our service request number **J0804511**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance to the NELAC 2003 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 4409. You may also contact me via email at CMyers@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Craig R Myers

Craig Myers
Project Manager

Laboratory Manager: Greg Jordan
Quality Assurance Officer: Kathy Brungard

CAS Jacksonville is NELAC-accredited by the State of Florida, #E82502 valid through 6/30/09. Other state accreditations include: Georgia, #958 valid through 6/30/08; Louisiana, #02086 valid through 6/30/09; Texas, #T104704197-06-TX valid through 5/31/08; North Carolina, #527 valid through 12/31/08; South Carolina, #96021001 valid through 6/30/08.

NELAP Accredited ACIL Seal of Excellence Award 100% Recycled

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CAS Lab Reference No.: J0804511
Non CLP Tier III (w/o Raw Data)

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Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM	39

This report contains a total of 67 pages

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Tetra Tech NUS, Inc.	**Service Request No.:**	J0804511
Project:	815 Wash Rack	**Date Received:**	9/16/08
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III data deliverables including validation summary forms. When appropriate to the procedure, method blank results have been reported with each analytical test. Analytical procedures performed by the lab are validated in accordance with NELAC standards. Parameters that are included in the NELAC Fields of Testing but are not included in the lab's NELAC accreditation are identified in the discussion of each analytical procedure.

Sample Receipt

Five water samples were received for analysis at Columbia Analytical Services on 9/16/08. The samples were received in good condition and consistent with the accompanying chain of custody form. Samples are refrigerated at 4±2°C upon receipt at the lab except for aqueous samples designated for metals analyses, which were stored at room temperature.

Polynuclear Aromatic Hydrocarbons (PAHs) by GC-MS SIM

The samples were analyzed for PAHs using EPA Method 8270 SIM. The following observations were made regarding this delivery group.

Sample Notes and Discussion

The relative percent difference (RPD) between the results for sample CEF-815-1S-091608 and the duplicate sample CEF-815-1S-091608-DUP is significant. The samples were re-extracted out of hold time and the results from the original analysis were confirmed. In comparing the results of this round of sampling to the samples taken in February, the results are comparable (see results below). It is our opinion that either the duplicate is sample CEF-815-05S-091508 or something happened during the sampling of the duplicate.

CEF-815-1S-091608: Naphthalene result 72 ug/L; result in February 69 ug/L

CEF-815-05S-091508: Naphthalene result 42 ug/L; result in February 37 ug/L

NG-12S-091508: Naphthalene result 0.51 ug/L; result in February 3.3 ug/L

CEF-059-028-015-091508: Naphthalene result 0.12 ug/L; result in February 0.10 ug/L

Batch QC Notes and Discussion

Quality control samples for MS/DMS samples were performed using samples from another sample delivery group (SDG). The frequency requirement for quality control sample analysis was consistent with the project's requirements. Matrix specific quality control results have no bearing on sample data from a different matrix or location. Therefore, control of the batch has been evaluated using the method blank and the laboratory control sample.

Approved by Gary R Hey **Date** 9/30/08

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
J0804511-001	CEF-815-1S-091608	09/16/08	11:40
J0804511-002	CEF-815-1S-091608-DUP	09/16/08	11:40
J0804511-003	CEF-815-05S-091508	09/15/08	14:00
J0804511-004	NG-12S-091508	09/15/08	15:15
J0804511-005	CEF-059-028-015-091508	09/15/08	16:50

Florida DEP Data Qualifiers

B Results based upon colony counts outside the acceptable range.

D Measurement was made in the field.

H Value based on field kit determination; results may not be accurate.

i The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

J Estimated value (one of the following reasons is discussed in the project case narrative).
1. The result may be inaccurate because the surrogate recovery limits have been exceeded.
2. No known quality control criteria exists for the component.
3. The reported value failed to meet the established quality control criteria for either precision or accuracy.
4. The sample matrix interfered with the ability to make any accurate determination (e.g., primary and confirmation results show greater than 40% RPD).
5. The data is questionable because of improper laboratory or field protocols (e.g., GC/MS Tune did not meet method criteria).

K Off scale low. The value is less than the lowest calibration standard but greater than the method reporting limit (MRL).

L Off scale high. The analyte is above the upper limit of the linear calibration range.

M The MDL/MRL has been elevated because the analyte could not be accurately quantified due to matrix interference.

N Presumptive evidence of the analyte. Confirmation was not performed.

Q Sample held beyond the accepted holding time.

T Value reported is less than the laboratory method detection limit. The value is reported for informational purposes only.

U Indicates that the compound was analyzed for but not detected.

V Indicates that the analyte was detected in both the sample and the associated method blank.

Y The laboratory analysis was from an improperly preserved sample.

Z Too many colonies were present (TNTC). The numeric value represents the filtration volume.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Columbia Analytical Services™

Chain of Custody Documentation

9143 Philips Highway, Suite 200
Jacksonville, Florida 32256
Phone: (904) 739-2277 Fax (904) 739-2011
www.caslab.com

Columbia Analytical Services™

www.caslab.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

9143 Philips Highway, Ste 200 • Jacksonville, FL 32256 (904) 739-2277 • 800-695-7222 x06 • FAX (904) 739-2011

PAGE 1 OF 1

SR # J0S04511

CAS Contact

Project Name: 815 Wash Rack, Cecil Field	Project Number: 112G01264
Project Manager: Kara Wimple	Email Address: Kara.Wimple@tetratech.com
Company/Address: Tetratech NUS, 8640 Phillips Highway Suite 16, Jacksonville, Fl 32256	
Phone #: 904 636-6125	FAX#: 904 636-6125
Sampler's Signature:	Sampler's Printed Name: Jeff Krone

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

[redacted]

PRESERVATIVE: 0

NUMBER OF CONTAINERS

CLIENT SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	naphthalene 8270D	
CEF-815-15-091608		9/16/08	1140	GW	2	2
CEF-815-15-091608-DUP		9/16/08	1140	GW	2	2
CEF-815-055-091508		9/15/08	1400	GW	2	2
NG-125-091508		9/15/08	1515	GW	2	2
CEF-089-028-015-091508		9/15/08	1650	GW	2	2

3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

REMARKS/ ALTERNATE DESCRIPTION

SPECIAL INSTRUCTIONS/COMMENTS

Samples preserved at 4°C

See QAPP ☐

TURNAROUND REQUIREMENTS

____ RUSH (SURCHARGES APPLY)

X STANDARD

REQUESTED FAX DATE _____

REQUESTED REPORT DATE _____

REPORT REQUIREMENTS

____ I. Results Only

____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

____ V. Speicalized Forms / Custom Report

Edata ____ Yes ____ No

INVOICE INFORMATION

PO#

BILL TO:

SAMPLE RECEIPT: CONDITION/COOLER TEMP: _____ CUSTODY SEALS: Y N

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature:	Signature: Shawn Lightsey	Signature	Signature	Signature	Signature
Printed Name: Jeff Krone	Printed Name: Shawn Lightsey	Printed Name	Printed Name	Printed Name	Printed Name
Firm: Tetratech NUS	Firm: CAS	Firm	Firm	Firm	Firm
Date/Time: 9/16/08 1615	Date/Time: 9-16-08 1615	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator; Yellow - Lab Copy; Pink - Retained by Client

JSCOC-06/20/08

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

Client: Tetra Tech Service Request # J08 04511

Project: 815 Wash Rack

Cooler received on 9-16-08 and opened on 9-16-08 by sc

COURIER: CAS UPS FEDEX DHL CLIENT Tracking #

1	Were custody seals on outside of cooler?	Yes	No	N/A
2	Were seals intact, signed and dated?	Yes	No	N/A
3	Were custody papers properly filled out?	Yes	No	N/A
4	Temperature of cooler(s) upon receipt (Should be 4 +/- 2 degrees C) 0.5			
5	Correct Temperature?	Yes	No	N/A
6	Were Ice or Ice Packs present	Yes	No	N/A
7	Did all bottles arrive in good condition (unbroken, etc....)?	Yes	No	N/A
8	Were all bottle labels complete (sample ID, preservation, etc....)?	Yes	No	N/A
9	Did all bottle labels and tags agree with custody papers?	Yes	No	N/A
10	Were the correct bottles used for the tests indicated?	Yes	No	N/A
11	Were all of the preserved bottles received with the appropriate preservative?	Yes	No	N/A

HNO3 pH<2 H2SO4 pH<2 ZnAc2/NaOH pH>9 NaOH pH>12 HCl pH<2

Preservative additions noted below

12	Were all samples received within analysis holding times?	Yes	No	N/A
13	Were VOA vials checked for absence of air bubbles? If present, note below	Yes	No	N/A
14	Where did the bottles originate?	CAS	Client	

Sample ID	Reagent	Manuf. Lot # or CAS Chem ID	ml added	Inititials

Additional comments and/or explanation of all discrepancies noted above:

Client approval to run samples if discrepancies noted: Date:

SR # : J0804511 Date: 9-16-08 Initials: SC

Note that pH is checked and meets the required pH criterion listed in the column heading unless otherwise noted on cooler receipt form.

	Bottle Code																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	40mL	40mL	40mL	40mL	125mL	125mL	125mL	125mL	250mL	250mL	250mL	250mL	250mL	250mL	250mL	500mL	500mL	500mL	1L	1L	1L	1L	1L	2oz	4oz	8oz	16oz	5g	100mL	Misc.
Container	G	G	G	G	P	P	P	P	P	P	P	P	P	G	G	P	P	P	P	P	G	G	G	G	G	G	G	ENC	P	Misc.
Pres.		HCl	Sodium Thiosulfate	H2SO4		HCl	H2SO4	HNO3		H2SO4	HNO3	ZnAcetate NaOH	NaOH		HNO3		H2SO4	HNO3		HNO3		HCl	H2SO4					Sodium Thiosulfate	
Req. pH	N/A	<2	N/A	<2	N/A	<2	<2	<2	N/A	<2	<2	>9	>12	N/A	<2	N/A	<2	<2	N/A	<2	N/A	<2	<2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sample #	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-		-	-	-				-	-
-001																					2									
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Columbia Analytical Services™

Summary Package

9143 Philips Highway, Suite 200
Jacksonville, Florida 32256
Phone: (904) 739-2277 Fax (904) 739-2011
www.caslab.com

Organic Analysis:
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Summary Package

Sample and QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511

Cover Page - Organic Analysis Data Package
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Sample Name	Lab Code	Date Collected	Date Received
CEF-815-1S-091608	J0804511-001	09/16/2008	09/16/2008
CEF-815-1S-091608-DUP	J0804511-002	09/16/2008	09/16/2008
CEF-815-05S-091508	J0804511-003	09/15/2008	09/16/2008
NG-12S-091508	J0804511-004	09/15/2008	09/16/2008
CEF-059-028-015-091508	J0804511-005	09/15/2008	09/16/2008

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: William Mark

Name: William Mark

Date: 9/29/8

Title: Scientist III

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Collected:**	09/16/2008
Sample Matrix:	Water	**Date Received:**	09/16/2008

Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Sample Name:	CEF-815-1S-091608	**Units:**	ug/L
Lab Code:	J0804511-001	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**72**		1.1	0.27	10	09/17/08	09/22/08	JWG0803553	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorobiphenyl	53	22-105	09/18/08	Acceptable
p-Terphenyl-d14	59	25-127	09/18/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Collected:**	09/16/2008
Sample Matrix:	Water	**Date Received:**	09/16/2008

Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Sample Name:	CEF-815-1S-091608-DUP	**Units:**	ug/L
Lab Code:	J0804511-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**43**		1.1	0.27	10	09/17/08	09/22/08	JWG0803553	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorobiphenyl	50	22-105	09/18/08	Acceptable
p-Terphenyl-d14	57	25-127	09/18/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Collected:**	09/15/2008
Sample Matrix:	Water	**Date Received:**	09/16/2008

Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Sample Name:	CEF-815-05S-091508	**Units:**	ug/L
Lab Code:	J0804511-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**42**		1.1	0.27	10	09/17/08	09/22/08	JWG0803553	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorobiphenyl	53	22-105	09/18/08	Acceptable
p-Terphenyl-d14	62	25-127	09/18/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Collected:**	09/15/2008
Sample Matrix:	Water	**Date Received:**	09/16/2008

Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Sample Name:	NG-12S-091508	**Units:**	ug/L
Lab Code:	J0804511-004	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.51**		0.11	0.027	1	09/17/08	09/18/08	JWG0803553	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorobiphenyl	50	22-105	09/18/08	Acceptable
p-Terphenyl-d14	57	25-127	09/18/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Collected:**	09/15/2008
Sample Matrix:	Water	**Date Received:**	09/16/2008

Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Sample Name:	CEF-059-028-015-091508	**Units:**	ug/L
Lab Code:	J0804511-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.12**		0.11	0.027	1	09/17/08	09/18/08	JWG0803553	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorobiphenyl	56	22-105	09/18/08	Acceptable
p-Terphenyl-d14	59	25-127	09/18/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	JWG0803553-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.10	0.026	1	09/17/08	09/18/08	JWG0803553	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorobiphenyl	47	22-105	09/18/08	Acceptable
p-Terphenyl-d14	57	25-127	09/18/08	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264
Sample Matrix: Water

Service Request: J0804511

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Extraction Method: EPA 3510C
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
CEF-815-1S-091608	J0804511-001	53	59
CEF-815-1S-091608-DUP	J0804511-002	50	57
CEF-815-05S-091508	J0804511-003	53	62
NG-12S-091508	J0804511-004	50	57
CEF-059-028-015-091508	J0804511-005	56	59
Method Blank	JWG0803553-4	47	57
Lab Control Sample	JWG0803553-3	59	59

Surrogate Recovery Control Limits (%)

Sur1 =	2-Fluorobiphenyl	22-105
Sur2 =	p-Terphenyl-d14	25-127

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
Date Analyzed: 09/18/2008
Time Analyzed: 08:31

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

File ID: \\JACKSONVILLE1\ACQUDATA\MS02\DATA\MS028J18\0918
Instrument ID: MS02.i
Analysis Method: 8270C SIM

Lab Code: JWG0803569-2
Analysis Lot: JWG0803569
Column : RTX-5MS

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	RT	Area	RT	Area	RT
	Results ==>	299,301	4.20	138,760	5.94	301,635	7.64
	Upper Limit ==>	598,602	4.70	277,520	6.44	603,270	8.14
	Lower Limit ==>	149,651	3.70	69,380	5.44	150,818	7.14
	ICAL Result ==>	309,177	4.23	134,383	5.97	278,908	7.68
Associated Analyses							
Method Blank	JWG0803553-4	265,295	4.20	122,636	5.94	267,780	7.64
Lab Control Sample	JWG0803553-3	306,475	4.20	137,804	5.94	307,824	7.64
NG-12S-091508	J0804511-004	238,633	4.20	107,285	5.94	235,366	7.64
CEF-815-1S-091608	J0804511-001	294,537	4.21	110,452	5.94	295,014	7.65
CEF-815-1S-091608-DUP	J0804511-002	239,771	4.21	101,425	5.94	230,648	7.64
CEF-815-05S-091508	J0804511-003	238,342	4.21	100,277	5.94	231,228	7.64
CEF-059-028-015-091508	J0804511-005	228,071	4.20	104,593	5.94	237,797	7.64

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Analyzed:**	09/18/2008
		Time Analyzed:	08:31

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

File ID:	\\JACKSONVILLE1\ACQUDATA\MS02\DATA\MS028J18\0918	**Lab Code:**	JWG0803569-2
Instrument ID:	MS02.i	**Analysis Lot:**	JWG0803569
Analysis Method:	8270C SIM	**Column :**	RTX-5MS

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	455,586	10.83	420,970	12.50
	Upper Limit ==>	911,172	11.33	841,940	13.00
	Lower Limit ==>	227,793	10.33	210,485	12.00
	ICAL Result ==>	412,602	10.86	400,659	12.54
Associated Analyses					
Method Blank	JWG0803553-4	413,094	10.83	385,982	12.50
Lab Control Sample	JWG0803553-3	484,240	10.83	434,212	12.50
NG-12S-091508	J0804511-004	374,099	10.83	346,805	12.50
CEF-815-1S-091608	J0804511-001	400,548	10.83	363,611	12.51
CEF-815-1S-091608-DUP	J0804511-002	373,575	10.83	341,952	12.51
CEF-815-05S-091508	J0804511-003	374,639	10.83	340,976	12.51
CEF-059-028-015-091508	J0804511-005	373,568	10.83	341,158	12.50

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
Date Analyzed: 09/22/2008
Time Analyzed: 10:11

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

File ID: \\JACKSONVILLE1\ACQUDATA\MS02\DATA\MS028J22\0922
Instrument ID: MS02.i
Analysis Method: 8270C SIM

Lab Code: JWG0803616-2
Analysis Lot: JWG0803616
Column : RTX-5MS

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	RT	Area	RT	Area	RT
	Results ==>	341,527	4.20	162,205	5.93	327,329	7.63
	Upper Limit ==>	683,054	4.70	324,410	6.43	654,658	8.13
	Lower Limit ==>	170,764	3.70	81,103	5.43	163,665	7.13
	ICAL Result ==>	309,177	4.23	134,383	5.97	278,908	7.68
Associated Analyses							
CEF-815-1S-091608DL	J0804511-001	271,385	4.19	120,226	5.93	256,065	7.63
CEF-815-1S-091608-DUPDL	J0804511-002	276,317	4.19	122,701	5.93	257,605	7.63
CEF-815-05S-091508DL	J0804511-003	280,087	4.19	125,672	5.93	265,561	7.63

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
Date Analyzed: 09/22/2008
Time Analyzed: 10:11

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

File ID: \\JACKSONVILLE1\ACQUDATA\MS02\DATA\MS028J22\0922
Instrument ID: MS02.i
Analysis Method: 8270C SIM

Lab Code: JWG0803616-2
Analysis Lot: JWG0803616
Column : RTX-5MS

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	458,917	10.82	422,038	12.49
	Upper Limit ==>	917,834	11.32	844,076	12.99
	Lower Limit ==>	229,459	10.32	211,019	11.99
	ICAL Result ==>	412,602	10.86	400,659	12.54
Associated Analyses					
CEF-815-1S-091608DL	J0804511-001	361,884	10.82	314,960	12.49
CEF-815-1S-091608-DUPDL	J0804511-002	367,355	10.82	325,001	12.49
CEF-815-05S-091508DL	J0804511-003	377,341	10.82	327,548	12.49

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Extracted:**	09/17/2008
Sample Matrix:	Water	**Date Analyzed:**	09/18/2008

Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Extraction Method:	EPA 3510C	**Units:**	ug/L
Analysis Method:	8270C SIM	**Basis:**	NA
		Level:	Low
		Extraction Lot:	JWG0803553

	Lab Control Sample JWG0803553-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Naphthalene	3.24	5.00	65	42-104

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Extracted:**	09/17/2008
Sample Matrix:	Water	**Date Analyzed:**	09/18/2008
		Time Analyzed:	08:54

Method Blank Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Sample Name:	Method Blank	**File ID:**	J:\MS02\DATA\MS028J18\0918-04.D
Lab Code:	JWG0803553-4	**Instrument ID:**	MS02.i
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	JWG0803553

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	JWG0803553-3	J:\MS02\DATA\MS028J18\0918-05.D	09/18/08	09:18
NG-12S-091508	J0804511-004	J:\MS02\DATA\MS028J18\0918-20.D	09/18/08	15:10
CEF-815-1S-091608	J0804511-001	J:\MS02\DATA\MS028J18\0918-21.D	09/18/08	15:34
CEF-815-1S-091608-DUP	J0804511-002	J:\MS02\DATA\MS028J18\0918-22.D	09/18/08	15:58
CEF-815-05S-091508	J0804511-003	J:\MS02\DATA\MS028J18\0918-23.D	09/18/08	16:21
CEF-059-028-015-091508	J0804511-005	J:\MS02\DATA\MS028J18\0918-24.D	09/18/08	16:45
CEF-815-1S-091608	J0804511-001	J:\MS02\DATA\MS028J22\0922-09.D	09/22/08	13:49
CEF-815-1S-091608-DUP	J0804511-002	J:\MS02\DATA\MS028J22\0922-10.D	09/22/08	14:12
CEF-815-05S-091508	J0804511-003	J:\MS02\DATA\MS028J22\0922-11.D	09/22/08	14:36

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Tetra Tech NUS, Inc.	**Service Request:**	J0804511
Project:	815 Wash Rack, Cecil Field/112G01264	**Date Extracted:**	09/17/2008
Sample Matrix:	Water	**Date Analyzed:**	09/18/2008
		Time Analyzed:	09:18

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Sample Name:	Lab Control Sample	**File ID:**	J:\MS02\DATA\MS028J18\0918-05.D
Lab Code:	JWG0803553-3	**Instrument ID:**	MS02.i
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	JWG0803553

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	JWG0803553-4	J:\MS02\DATA\MS028J18\0918-04.D	09/18/08	08:54
NG-12S-091508	J0804511-004	J:\MS02\DATA\MS028J18\0918-20.D	09/18/08	15:10
CEF-815-1S-091608	J0804511-001	J:\MS02\DATA\MS028J18\0918-21.D	09/18/08	15:34
CEF-815-1S-091608-DUP	J0804511-002	J:\MS02\DATA\MS028J18\0918-22.D	09/18/08	15:58
CEF-815-05S-091508	J0804511-003	J:\MS02\DATA\MS028J18\0918-23.D	09/18/08	16:21
CEF-059-028-015-091508	J0804511-005	J:\MS02\DATA\MS028J18\0918-24.D	09/18/08	16:45
CEF-815-1S-091608	J0804511-001	J:\MS02\DATA\MS028J22\0922-09.D	09/22/08	13:49
CEF-815-1S-091608-DUP	J0804511-002	J:\MS02\DATA\MS028J22\0922-10.D	09/22/08	14:12
CEF-815-05S-091508	J0804511-003	J:\MS02\DATA\MS028J22\0922-11.D	09/22/08	14:36

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
Date Analyzed: 09/18/2008
Time Analyzed: 08:13

Tune Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

File ID: \\JACKSONVILLE1\ACQUDATA\MS02\DATA\MS028J18\0918-02.D
Instrument ID: MS02.i
Column:

Analysis Method: 8270C SIM
Analysis Lot: JWG0803569

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
127	198	10	80	35.9	320704	PASS
197	198	0	2	0.0	0	PASS
198	198	100	100	100.0	893952	PASS
199	198	5	9	7.1	63176	PASS
275	198	10	60	36.8	328960	PASS
365	198	1	100	5.8	52168	PASS
441	443	0	200	87.7	164672	PASS
442	198	40	200	103.6	926080	PASS
443	442	15	24	20.3	187712	PASS
51	198	10	80	25.7	229568	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	36.8	329088	PASS
70	69	0	2	0.6	2122	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	JWG0803569-2	J:\MS02\DATA\MS028J18\0918-03.	09/18/2008	08:31	
Method Blank	JWG0803553-4	J:\MS02\DATA\MS028J18\0918-04.	09/18/2008	08:54	
Lab Control Sample	JWG0803553-3	J:\MS02\DATA\MS028J18\0918-05.	09/18/2008	09:18	
NG-12S-091508	J0804511-004	J:\MS02\DATA\MS028J18\0918-20.	09/18/2008	15:10	
CEF-815-1S-091608	J0804511-001	J:\MS02\DATA\MS028J18\0918-21.	09/18/2008	15:34	
CEF-815-1S-091608-DUP	J0804511-002	J:\MS02\DATA\MS028J18\0918-22.	09/18/2008	15:58	
CEF-815-05S-091508	J0804511-003	J:\MS02\DATA\MS028J18\0918-23.	09/18/2008	16:21	
CEF-059-028-015-091508	J0804511-005	J:\MS02\DATA\MS028J18\0918-24.	09/18/2008	16:45	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
Date Analyzed: 09/22/2008
Time Analyzed: 09:53

Tune Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

File ID: \\JACKSONVILLE1\ACQUDATA\MS02\DATA\MS028J22\0922-02.D
Instrument ID: MS02.i
Column:

Analysis Method: 8270C SIM
Analysis Lot: JWG0803616

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
127	198	10	80	36.1	231744	PASS
197	198	0	2	0.0	0	PASS
198	198	100	100	100.0	641600	PASS
199	198	5	9	6.9	44448	PASS
275	198	10	60	34.4	220800	PASS
365	198	1	100	5.4	34560	PASS
441	443	0	200	90.6	93672	PASS
442	198	40	200	80.8	518208	PASS
443	442	15	24	20.0	103400	PASS
51	198	10	80	26.4	169536	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	43.2	277184	PASS
70	69	0	2	0.6	1756	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	JWG0803616-2	J:\MS02\DATA\MS028J22\0922-03.	09/22/2008	10:11	
CEF-815-1S-091608	J0804511-001	J:\MS02\DATA\MS028J22\0922-09.	09/22/2008	13:49	
CEF-815-1S-091608-DUP	J0804511-002	J:\MS02\DATA\MS028J22\0922-10.	09/22/2008	14:12	
CEF-815-05S-091508	J0804511-003	J:\MS02\DATA\MS028J22\0922-11.	09/22/2008	14:36	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
ICAL Date: 09/12/2008

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

ICAL ID: CAL1588
Instrument ID: MS02.i

Column: RTX-5MS

Level ID	File ID	Level ID	File ID
A	\\Jacksonville1\ACQUDATA\MS02\DATA\MS028J12\0912-0	E	\\Jacksonville1\ACQUDATA\MS02\DATA\MS028J12\0912-0
B	\\Jacksonville1\ACQUDATA\MS02\DATA\MS028J12\0912-0	F	\\Jacksonville1\ACQUDATA\MS02\DATA\MS028J12\0912-0
C	\\Jacksonville1\ACQUDATA\MS02\DATA\MS028J12\0912-0	G	\\Jacksonville1\ACQUDATA\MS02\DATA\MS028J12\0912-1
D	\\Jacksonville1\ACQUDATA\MS02\DATA\MS028J12\0912-0	H	\\Jacksonville1\ACQUDATA\MS02\DATA\MS028J12\0912-1

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	0.10	1.14	B	0.50	1.04	C	1.0	1.07	D	2.0	1.06	E	4.0	1.05
	F	5.0	1.03	G	8.0	1.03	H	20	0.966						
2-Fluorobiphenyl	A	0.10	1.57	B	0.50	1.58	C	1.0	1.70	D	2.0	1.67	E	4.0	1.70
	F	5.0	1.63	G	8.0	1.67	H	20	1.63						
p-Terphenyl-d14	A	0.10	0.926	B	0.50	0.829	C	1.0	0.833	D	2.0	0.824	E	4.0	0.814
	F	5.0	0.796	G	8.0	0.802	H	20	0.729						

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
ICAL Date: 09/12/2008

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

ICAL ID: CAL1588
Instrument ID: MS02.i

Column: RTX-5MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	4.6		≤ 15	1.05		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	3.0		≤ 15	1.64		0.01
p-Terphenyl-d14	SURR	AverageRF	% RSD	6.6		≤ 15	0.819		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
ICAL Date: 09/12/2008
Date Analyzed: 09/12/2008

Second Source Calibration Verification
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

ICAL Type: Internal Standard
Analysis Method: 8270C SIM

ICAL ID: CAL1588
Units: ug/mL

File ID: \\Jacksonville1\ACQUDATA\MS02\DATA\MS028J12\0912-13.D

Column ID: RTX-5MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	2.0	2.0	1.05	1.04	0	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
Date Analyzed: 09/18/2008

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

ICAL Type: Internal Standard
Analysis Method: 8270C SIM

ICAL Date: 09/12/2008
ICAL ID: CAL1588
Analysis Lot: JWG0803569
Units: ug/mL

File ID: \\JACKSONVILLE1\ACQUDATA\MS02\DATA\MS028J18\0918-03.D

Column ID: RTX-5MS

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	2.0	2.0	0.01	1.05	1.04	-1	NA	± 30 %	AverageRF
2-Fluorobiphenyl	2.0	2.0	0.01	1.64	1.65	1	NA	± 30 %	AverageRF
p-Terphenyl-d14	2.0	2.1	0.01	0.819	0.851	4	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511
Date Analyzed: 09/22/2008

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

ICAL Type: Internal Standard
Analysis Method: 8270C SIM

ICAL Date: 09/12/2008
ICAL ID: CAL1588
Analysis Lot: JWG0803616
Units: ug/mL

File ID: \\JACKSONVILLE1\ACQUDATA\MS02\DATA\MS028J22\0922-03.D

Column ID: RTX-5MS

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	2.0	2.0	0.01	1.05	1.06	1	NA	± 30 %	AverageRF
2-Fluorobiphenyl	2.0	1.9	0.01	1.64	1.55	-5	NA	± 30 %	AverageRF
p-Terphenyl-d14	2.0	1.9	0.01	0.819	0.766	-6	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511

Analysis Run Log
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Analysis Method: 8270C SIM

Analysis Lot: JWG0803569
Instrument ID: MS02.i
Column: RTX-5MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\0918-02.D	GC/MS Tuning - Generic	JWG0803569-1	9/18/2008	08:13		9/18/2008	08:13
\0918-03.D	Continuing Calibration Verification	JWG0803569-2	9/18/2008	08:31		9/18/2008	08:31
\0918-04.D	Method Blank	JWG0803553-4	9/18/2008	08:54		9/18/2008	08:54
\0918-05.D	Lab Control Sample	JWG0803553-3	9/18/2008	09:18		9/18/2008	09:18
\0918-06.D	ZZZZZZ	ZZZZZZ	9/18/2008	09:41		9/18/2008	09:41
\0918-07.D	ZZZZZZ	ZZZZZZ	9/18/2008	10:05		9/18/2008	10:05
\0918-08.D	ZZZZZZ	ZZZZZZ	9/18/2008	10:28		9/18/2008	10:28
\0918-09.D	ZZZZZZ	ZZZZZZ	9/18/2008	10:52		9/18/2008	10:52
\0918-10.D	ZZZZZZ	ZZZZZZ	9/18/2008	11:15		9/18/2008	11:15
\0918-11.D	ZZZZZZ	ZZZZZZ	9/18/2008	11:39		9/18/2008	11:39
\0918-12.D	ZZZZZZ	ZZZZZZ	9/18/2008	12:02		9/18/2008	12:02
\0918-13.D	ZZZZZZ	ZZZZZZ	9/18/2008	12:26		9/18/2008	12:26
\0918-14.D	ZZZZZZ	ZZZZZZ	9/18/2008	12:49		9/18/2008	12:49
\0918-15.D	ZZZZZZ	ZZZZZZ	9/18/2008	13:13		9/18/2008	13:13
\0918-16.D	ZZZZZZ	ZZZZZZ	9/18/2008	13:36		9/18/2008	13:36
\0918-17.D	ZZZZZZ	ZZZZZZ	9/18/2008	14:00		9/18/2008	14:00
\0918-18.D	ZZZZZZ	ZZZZZZ	9/18/2008	14:23		9/18/2008	14:23
\0918-19.D	ZZZZZZ	ZZZZZZ	9/18/2008	14:47		9/18/2008	14:47
\0918-20.D	NG-12S-091508	J0804511-004	9/18/2008	15:10		9/18/2008	15:10
\0918-21.D	CEF-815-1S-091608	J0804511-001	9/18/2008	15:34		9/18/2008	15:34
\0918-22.D	CEF-815-1S-091608-DUP	J0804511-002	9/18/2008	15:58		9/18/2008	15:58
\0918-23.D	CEF-815-05S-091508	J0804511-003	9/18/2008	16:21		9/18/2008	16:21
\0918-24.D	CEF-059-028-015-091508	J0804511-005	9/18/2008	16:45		9/18/2008	16:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264

Service Request: J0804511

Analysis Run Log
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Analysis Method: 8270C SIM

Analysis Lot: JWG0803616
Instrument ID: MS02.i
Column: RTX-5MS

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\0922-02.D	GC/MS Tuning - Generic	JWG0803616-1	9/22/2008	09:53		9/22/2008	09:53
\0922-03.D	Continuing Calibration Verification	JWG0803616-2	9/22/2008	10:11		9/22/2008	10:11
\0922-05.D	ZZZZZZ	ZZZZZZ	9/22/2008	12:16		9/22/2008	12:16
\0922-06.D	ZZZZZZ	ZZZZZZ	9/22/2008	12:39		9/22/2008	12:39
\0922-07.D	ZZZZZZ	ZZZZZZ	9/22/2008	13:02		9/22/2008	13:02
\0922-08.D	ZZZZZZ	ZZZZZZ	9/22/2008	13:25		9/22/2008	13:25
\0922-09.D	CEF-815-1S-091608	J0804511-001	9/22/2008	13:49		9/22/2008	13:49
\0922-10.D	CEF-815-1S-091608-DUP	J0804511-002	9/22/2008	14:12		9/22/2008	14:12
\0922-11.D	CEF-815-05S-091508	J0804511-003	9/22/2008	14:36		9/22/2008	14:36

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Tetra Tech NUS, Inc.
Project: 815 Wash Rack, Cecil Field/112G01264
Sample Matrix: Water

Service Request: J0804511
Date Extracted: 09/17/2008

Extraction Prep Log
Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS SIM

Extraction Method: EPA 3510C
Analysis Method: 8270C SIM

Extraction Lot: JWG0803553
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
CEF-815-1S-091608DL	J0804511-001	09/16/08	09/16/08	980ml	1.0ml	NA	
CEF-815-1S-091608	J0804511-001	09/16/08	09/16/08	980ml	1.0ml	NA	
CEF-815-1S-091608-DUPDL	J0804511-002	09/16/08	09/16/08	980ml	1.0ml	NA	
CEF-815-1S-091608-DUP	J0804511-002	09/16/08	09/16/08	980ml	1.0ml	NA	
CEF-815-05S-091508DL	J0804511-003	09/15/08	09/16/08	980ml	1.0ml	NA	
CEF-815-05S-091508	J0804511-003	09/15/08	09/16/08	980ml	1.0ml	NA	
NG-12S-091508	J0804511-004	09/15/08	09/16/08	980ml	1.0ml	NA	
CEF-059-028-015-091508	J0804511-005	09/15/08	09/16/08	980ml	1.0ml	NA	
Method Blank	JWG0803553-4	NA	NA	1000ml	1.0ml	NA	
Lab Control Sample	JWG0803553-3	NA	NA	1000ml	1.0ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis