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FIRST SEMI-ANNUAL SECOND YEAR GROUNDWATER MONITORING LETTER REPORT FOR BP WELLS SITE NAS CECIL FIELD FL

12/3/2009

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Project Number 112G02267

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Bob Martinez Center
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Reference: CLEAN Contract Number N62470-08-D-1001
Contract Task Order JM09

Subject: Groundwater Monitoring Report, 1st Semi-Annual, 2nd Year - July 2009
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Semi-Annual Groundwater Monitoring Report for the referenced Contract Task Order for the BP Wells Site. This Groundwater Monitoring Report was prepared for Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62470-08-D-1001.

The primary objective of current activities at this site is to conduct semi-annual monitoring of groundwater associated with the shallow and intermediate zones of the surficial aquifer. The sampling program is being conducted in accordance with the revised Natural Attenuation Monitoring Plan (NAMP) submitted to the Florida Department of Environmental Protection (FDEP) on May 29, 2008, based on Chapter 62-770.690, Florida Administrative Code. The NAMP is provided in Attachment A. This report summarizes the field operations and analytical results for the sampling event conducted during the week of July 13, 2009, for the subject site. The work was performed in general accordance with FDEP Standard Operating Procedures (SOPs) under DEP-SOP-001/01.

BACKGROUND

The BP Wells Site is located on the north-south flightline, southeast of Building 880. During assessment activities in 1999 and 2000, five shallow wells (CEF-BP-1S through CEF-BP-4S and CEF-BP-6S) and one intermediate well (CEF-BP-5I) were installed at the site and subsequently sampled. The groundwater was determined to be contaminated with petroleum-related hydrocarbons. After this initial assessment, TtNUS conducted a Site Assessment to identify the extent of groundwater contamination as well as the groundwater flow direction.

Based on the results of this Site Assessment, a NAMP was submitted to FDEP in 2000, which issued a NAMP Approval Order (NAMPAO) on August 31, 2000. In accordance with this NAMPAO, TtNUS

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performed the first two semi-annual monitoring events in April and October of 2001 and found that hydrocarbon concentrations (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, toluene, and total xylenes) in groundwater exceeded Natural Attenuation Default Concentrations (NADCs) during both sampling events. The second monitoring report recommended that a Remedial Action Plan (RAP) be prepared for this site because the contaminant concentrations at the source well were greater than the NADC and because there was a significant increase in contaminant concentrations. On February 20, 2002, FDEP concurred that a RAP was warranted. Injection wells CEF-BP-7S through CEF-BP-9S were installed during these Remedial Actions. In April 2004, TtNUS submitted an Enhanced Natural Attenuation Treatability Study Work Plan for the BP Wells Site. No action was taken until a groundwater sampling event was performed in November 2006 in conjunction with Tank G82 Site. The two sites were sampled at the same time because they are adjacent to each other. Groundwater analytical results confirmed that natural attenuation was occurring at the site and that concentrations of contaminants of concern (COCs) had been decreasing over time.

In May 2008, CH2M Hill submitted an updated NAMP for both Building G-82 (Tank G-82) and the BP Wells Site based on the results of the November 2006 groundwater sampling event. FDEP has verbally approved the NAMP but is waiting on a sealed report before approving it in writing.

Semi-annual sampling in accordance with the updated NAMP began in July 2008. The Groundwater Cleanup Target Levels (GCTLs) for ethylbenzene, total xylenes, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and isopropyl benzene were exceeded in the source well CEF-BP-1S during the July 2008 sampling event. The July 2008 concentration of isopropyl benzene in downgradient well CEF-BP-6S also slightly exceeded its GCTL.

During the January 2009 sampling event, the GCTL and NADCs for ethylbenzene, xylenes, naphthalene, isopropyl benzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene were exceeded at CEF-BP-1S. The January 2009 concentration of isopropyl benzene and 1,2,4-trimethylbenzene were also exceeded in downgradient well CEF-BP-6S.

FIELD OPERATIONS

Based on discussions at the May 2009 BCT meeting, a decision was made (Decision No. 755; Meeting Minute No. 2553) to collect groundwater samples from existing wells CEF-BP-1S, CEF-BP-4S, CEF-BP-5I, CEF-BP-6S, CEF-BP-7S, CEF-BP-8S, and CEF-BP-9S. Monitoring wells CEF-BP-2S and CEF-BP-3S were temporarily eliminated for this sampling event in order to sample CEF-7S, CEF-BP-08S, and CEF-BP-09S to delineate the source area more closely. Based on results, the program might return to the original NAMP program or be revised base on new data obtained. Monitoring well locations are provided on Figure 1.

Sampling was conducted on July 15 through July 17, 2009. The samples were collected and placed on ice and subsequently delivered via FedEx under chain of custody to Empirical Laboratories in Nashville, Tennessee, for analysis. The laboratory analyzed the samples from CEF-BP-1S, CEF-BP-5I, and CEF-BP-6S for volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method SW-846 8260B; for polynuclear aromatic hydrocarbons (PAHs) including 1-methylnaphthalene and 2-methylnaphthalene, using USEPA Method 8270; for total recoverable petroleum hydrocarbons (TRPH) using the Florida Petroleum-Range Organics (FL-PRO) method; for sulfate, nitrate, and nitrite using USEPA Method 300.0; for sulfide using Method SM4500-S2F; and for alkalinity using Method 310.2. The laboratory analyzed the samples from CEF-BP-4S, CEF-BP-7S, CEF-BP-8S, and CEF-BP-9S for VOCs using USEPA Method SW-846 8260B; PAHs including 1-methylnaphthalene and 2-methylnaphthalene using USEPA Method 8270; and TPH using the FL-PRO method.

Prior to obtaining groundwater samples, synoptic water levels and total well depths were measured and recorded on a site-specific groundwater measurement sheet for all wells at the BP Wells site. On July 15,

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2009, the depth to water at the BP Wells Site ranged from 4.98 feet below top of casing (btoc) (CEF-BP-1S) to 6.19 feet btoc (CEF-BP-3S). Depth-to-water measurements, top-of-casing elevations, and groundwater elevations are presented in Table 1. General sampling protocols were in accordance with FDEP SOPs and TtNUS SOP SA-1.1.

Based on results obtained (as presented below), the downgradient monitoring well CEF-BP-06S was resampled on August 17, 2009.

RESULTS

The groundwater elevation data and flow direction for the shallow zone across the BP Wells Site are shown on Figure 2. Based on the data, the inferred direction of groundwater flow in the shallow zone of the surficial aquifer is predominantly east-southeast.

Concentrations reported by the laboratory for groundwater samples collected during this sampling event were compared to FDEP GCTLs and NADCs. The data and standards are presented in Table 2, and the VOC results are presented on Figure 3. The field forms are provided in Attachment B and the Groundwater Analytical Report – July 2009 is provided in Attachment C. The laboratory data for CEF-BP-1S indicate that concentrations of total xylenes [770 micrograms per liter (µg/L)], naphthalene (160 µg/L), isopropyl benzene (19 µg/L), 1,2,4-trimethylbenzene (480 µg/L), and 1,3,5-trimethylbenzene (150 µg/L) exceeded their respective GCTLs and NADCs. Ethylbenzene was also detected in CEF-BP-1S at a concentration of 220 µg/L, exceeding its GCTL. Isopropyl benzene, 1,2,4-trimethylbenzene, indeno(1,2,3-cd)pyrene, and total xylenes were also detected in CEF-BP-6S at concentrations exceeding GCTLs. Concentrations of the remaining analytes in CEF-BP-1S and CEF-BP-6S were either less than method detection limits (MDLs) or less than GCTLs.

Based on decisions made at the May 2009 BCT meeting, wells CEF-BP-7S, CEF-BP-8S, and CEF-BP-9S were sampled for VOCs and PAHs due to their close proximity to source well CEF-BP-1S. Benzo(a)anthracene, benzo(b)flouranthene, and indeno(1,2,3-cd)pyrene were detected at concentrations exceeding GCTLs in CEF-BP-7S. Benzo(a)anthracene was detected in excess of its GCTL in CEF-BP-8S. Benzo(a)anthracene and indeno(1,2,3-cd)pyrene were detected at concentrations exceeding GCTLs in CEF-BP-9S. Dibenzo(a)anthracene was detected at concentrations greater than its GCTL and NADC in CEF-BP-7S and CEF-BP-9S. In all of the other wells sampled, all of the other analytes were either not detected or were detected at estimated concentrations less than GCTLs. Note that PAHs were detected above GCTLs in the upgradient well (CEF-BP-7S) and downgradient well (CEF-BP-9S), but not in source area well (CEF-BP-1S) during the same sampling event, as shown in Figure 4. VOCs were identified as exceeding GCTLs in the source area well (CEF-BP-1S) but were not detected in the upgradient or downgradient wells.

These results were presented at the August 12, 2009 BCT meeting and based on the exceedances observed in downgradient monitoring well CEF-BP-06S, a decision was made to resample this well (Meeting Minute No. 2565, Decision No. 761). CEF-BP-06S was resampled for VOCs and PAHs (natural attenuation parameters were not required) on August 17, 2009. Prior to sampling, the tubing in the well was replaced with new tubing. Total xylenes concentrations observed in the sample decreased by half (from 22 µg/L to 10 µg/L), no longer exceeding the GCTL for this parameter. Isopropyl benzene and 1,2,4-trimethylbenzene concentrations were less than the previously recorded concentrations, but continued to exceed the GCTL for each of these parameters. Results for the PAH parameters remained relatively unchanged between the sampling and resampling events.

Geochemical data were collect and analyzed during the July sampling event in accordance with the 2008 NAMP. The natural attenuation parameters included dissolved oxygen (DO), dissolved carbon

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dioxide/alkalinity, methane, nitrate/nitrite, and sulfate/sulfide. Low-flow pumping and adherence to FDEP SOPs were conducted during DO analyses. The results are provided in Table 2.

Dissolved Oxygen
Geochemical measurements of DO were made in the field using a CHEMetrics test kit (Model K-7501), which can obtain accurate determinations of DO between 0.05 and 12 milligrams per liter (mg/L). Field-measured DO concentrations in July 2009 ranged from 0.5 mg/L in CEF-BP-1S to 0.9 mg/L in downgradient well CEF-BP-6S.

Dissolved Carbon Dioxide/Alkalinity
Dissolved carbon dioxide was measured in the field using CHEMetrics test kits (Models K-1910, K-1920, and K-1925). Field-measured dissolved carbon dioxide concentrations ranged from 38 mg/L (CEF-BP-1S) to 55 mg/L (CEF-BP-6S). Alkalinity is a measure of the acid-neutralizing capacity of water, usually expressed as mg/L of calcium carbonate ($CaCO_3$). Laboratory-measured alkalinity values at the BP Wells Site ranged from 4.29 mg/L (CEF-BP-5I) to 125 mg/L (CEF-BP-1S).

Methane
Methanogenesis is an anaerobic biodegradation process whereby methane-producing microbes utilize carbon dioxide as an electron acceptor and generate methane as a byproduct of fermentation. Concentrations of methane ranged from non-detect in CEF-BP-2S to 640 mg/L in CEF-BP-1S.

Sulfate/Sulfide
Sulfate concentrations ranged from to 4.91 mg/L in the source well CEF-BP-1S to 11.4 mg/L in CEF-BP-5I. Concentrations of sulfate were greater in downgradient wells than in the source well. Sulfide was not detected in CEF-BP-5I and CEF-BP-6S, but it was detected at a low concentration of 0.96 mg/L at CEF-BP-1S.

Nitrate/Nitrite
Nitrate ranged from non-detect in CEF-BP-1S to 0.279 mg/L in CEF-BP-6S. Nitrite concentrations ranged from non-detect in CEF-BP-5I and CEF-BP-6S to 0.15 mg/L in CEF-BP-1S.

CONCLUSIONS AND RECOMMENDATIONS

The shallow groundwater flow direction in the area of BP Wells Site is to the east-southeast, which is consistent with previous sampling events since 2000.

GCTLs and NADCs for total xylenes, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and isopropyl benzene were exceeded in source well CEF-BP-1S, and the GCTL for 2-methylnaphthalene was exceeded in CEF-BP-1S. The GCTL for indeno(1,2,3-cd)pyrene was exceeded in CEF-BP-1S and in CEF-BP-6S. Benzo(a)anthracene, benzo(b)flouranthene, and indeno(1,2,3-cd)pyrene were detected at concentrations exceeding GCTLs in CEF-BP-7S. Benzo(a)anthracene was detected in excess of its GCTL in CEF-BP-8S. Benzo(a)anthracene and indeno(1,2,3-cd)pyrene were detected at concentrations exceeding GCTLs in CEF-BP-9S. Dibenzo(a)anthracene was detected at concentrations greater than its GCTL and NADC in CEF-BP-7S and CEF-BP-9S.

The following observation for source well CEF-BP-1S are based on the data collected in July 2009:

- Total xylenes continued to be detected at a concentration greater than three times the NADC of 200 µg/L.
- Naphthalene continued to be detected at a concentration greater than the NADC of 140 µg/L.
- Isopropyl benzene continued to be detected at a concentration greater than two times the NADC of 8 µg/L.

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- 1,2,4-Trimethylbenzene was detected at a concentration greater than four times the NADC of 100 µg/L.
- 1,3,5-Trimethylbenzene exceeded its NADC of 100 µg/L.

Concentrations of isopropyl benzene, 1,2,4-trimethylbenzene, indeno(1,2,3-cd)pyrene, and total xylenes exceeded their respective GCTLs of in CEF-BP-6S.

No other analytes were detected in excess of GCTLs in any of the other wells sampled. In the two wells that did have detections in excess of the GCTL, the concentration were within the same range, however CEF-BP-06S appears to have an increasing trend. In accordance with the August 2009 BCT meeting, CEF-BP-6S was resampled on August 17, 2009 with new tubing for the same parameters, except for the geochemical data. Exceedances of the GCTLs for ethylbenzene, isopropyl benzene and 1,2,4-trimethylbenzene were still detected in CEF-BP-6S; however, the concentration of xylenes was detected less than its GCTL in the resampling event at CEF-BP-6S. There were no significant changes to the PAH parameters, with no exceedances.

Natural attenuation parameters were collected in accordance with the 2008 NAMP. Currently no background concentrations are available for comparison of these results, therefore only limited information can be drawn from data collected. The data collected to date is sufficient for current purposes, and therefore it is recommended that the geochemical parameter analysis portion of the 2008 NAMP be discontinued.

It is recommended that the program continue, sampling on a semi-annual basis and the modified well sampling program be continued. The modified sampling program includes the following monitoring wells: CEF-BP-1S, -4S, -6S, -7S, -8S, -9S, and CEF-BP-5I. The next sampling event, 2nd Semi-Annual, 2nd Year, is currently scheduled to be conducted in January 2010.

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@tetratech.com or Robert Simcik at (412) 921-8163.

Sincerely,

Kara J. Wimble

Kara Wimble
Project Scientist

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

Attachments (5)

c: A. Sanford, NAVFAC SE (1 copy)
M. Halil, CH2M Hill (electronic only)
J. Trepanowski, TtNUS (CD)
M. Speranza, TtNUS (letter only)
M. Jonnet, TtNUS (Cecil DMS)
R. Simcik, TtNUS (Bookcase File)
J. Johnson, TtNUS (Information Repository)
S. Currie/Tetra Tech NUS File JM09 (1 copy)

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CERTIFICATION

The information contained herein is based on the investigation data and information obtained from previously submitted reports. 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 Groundwater Monitoring Report, 1st Semi - Annual, 2nd Year-July 2009 was submitted for the OU Wells Site at Former Naval Air Station Cecil Field, Jacksonville, Florida, and should not be construed to apply to any other site.

ROBERT FRANK SINCIC
CENSE
No. 00061263
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FLORIDA
PROFESSIONAL ENGINEER

December 3, 2009
Robert F. Sincic, P.E.
P.E. License Number 61263

TABLES

Table 1
Groundwater Elevation and Monitoring Well Construction Data

1st Semi-Annual, 2nd Year - July 2009 Groundwater Sampling Event
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Well Number	Total Depth of Well (feet btoc)	Top of Casing Elevation (feet above msl)	9/23/2002		1/6/2003		4/17/2003	
			Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)
CEF-BP-1S	14.72	71.28	5.10	66.18	6.00	65.28	5.75	65.53
CEF-BP-2S	14.48	71.78	5.42	66.36	6.41	65.37	6.14	65.64
CEF-BP-3S	14.57	72.38	6.32	66.06	NA	NA	6.98	65.40
CEF-BP-4S	14.75	72.28	6.30	65.98	NA	NA	6.96	65.32
CEF-BP-5I	34.39	71.63	5.45	66.18	NA	NA	6.11	65.52
CEF-BP-6S	14.20	71.87	5.79	66.08	6.72	65.15	6.44	65.43

Well Number	Total Depth of Well (feet btoc)	Top of Casing Elevation (feet above msl)	7/17/2003		7/24/2008		1/26/2009		7/15/2009	
			Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)
CEF-BP-1S	14.72	71.28	4.63	66.65	NM	NM	7.82	63.46	4.98	66.30
CEF-BP-2S	14.48	71.78	5.02	66.76	5.80	65.98	8.24	63.54	5.37	66.41
CEF-BP-3S	14.57	72.38	5.90	66.48	6.62	65.76	9.03	63.35	6.19	66.19
CEF-BP-4S	14.75	72.28	5.86	66.42	6.55	65.73	8.96	63.32	6.13	66.15
CEF-BP-5I	34.39	71.63	5.01	66.62	5.78	65.85	8.19	63.44	5.31	66.32
CEF-BP-6S	14.20	71.87	5.35	66.52	6.09	65.78	8.48	63.39	5.64	66.23

msl = Mean sea level.
btoc = Below top of casing.
NA = Not available.
NM = Not measured.

Table 2
Summary of Detections in Groundwater

1st Semi-Annual, 2nd Year - July 2009 Groundwater Sampling Event
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Constituent	FDEP GCTL	NADC	Monitoring Well						
			CEF-BP-1S			CEP-BP-2S		CEP-BP-3S	
			7/23/2008	1/26/2009	7/14/2009	7/23/2008	1/27/2009	7/28/2008 Sample	7/28/2008 Duplicate
VOCs (USEPA Method 8260B) (µg/L)									
1,2,4-Trimethylbenzene	10	100	**440 [G]**	**664 [G] [N]**	**480 [G] [N]**	0.38 U	0.22 U	0.38 U	0.38 U
1,3,5-Trimethylbenzene	10	100	**140 [G]**	**212 [G] [N]**	**150 [G] [N]**	0.22 U	0.2 U	0.22 U	0.22 U
Ethylbenzene	30	300	**200 [G]**	**304 [G] [N]**	**220 [G]**	0.34 U	0.43 U	0.34 U	0.34 U
Isopropyl benzene	0.8	8	**20 [G] [N]**	**28.1 [G] [N]**	**19 [G] [N]**	0.23 U	0.2 U	0.23 U	0.23 U
Naphthalene	14	140	**110 [G]**	**183 [G] [N]**	**160 [G] [N]**	0.35 U	1 U	0.35 U	0.35 U
Toluene	40	400	2.8 U	1.9 J	1.4 U	0.28 U	0.35 U	0.28 U	0.28 U
Total Xylenes	20	200	**670 [G] [N]**	**705 [G] [N]**	**770 [G] [N]**	0.38 U	1.2 U	0.38 U	0.38 U
VOC Gasses (USEPA Method 8260B) (µg/L)									
Methane	NA	NA	30	504	640	0.4 U	0.4 J	NA	NA
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-Methylnaphthalene	28	280	7.3	16.4	12	0.01 U	0.24 U	0.01 U	0.01 U
2-Methylnaphthalene	28	280	17	**31.3 [G]**	22	0.02 U	0.24 U	0.02 U	0.02 U
Acenaphthene	20	200	0.08 J	0.48 U	0.3 U	0.02 U	0.48 U	0.02 U	0.02 U
Acenaphthylene	210	2100	0.01 U	0.48 U	0.023 U	0.01 U	0.48 U	0.01 U	0.01 U
Benzo(a)anthracene	0.05	5	0.01 U	0.048 U	0.023 U	0.01 U	0.048 U	0.01 U	0.01 U
Benzo(a)pyrene	0.2	2	0.01 U	0.048 U	0.078 J	0.01 U	0.048 U	0.01 U	0.01 U
Benzo(b)flouranthene	0.05	5	0.01 U	0.048 U	0.023 U	0.01 U	0.048 U	0.01 U	0.01 U
Benzo(k)flouranthene	0.5	50	0.03 U	0.048 U	0.023 U	0.03 U	0.048 U	0.03 U	0.03 U
Chrysene	4.8	480	0.01 U	0.095 U	0.023 U	0.01 U	0.095 U	0.01 U	0.01 U
Dibenzo(a,h)anthracene	0.005	0.05	0.02 U	0.048 U	0.0046 U	0.02 U	0.048 U	0.02 U	0.02 U
Fluoranthene	280	2,800	0.04 J	0.24 U	0.046 U	0.01 U	0.24 U	0.01 U	0.01 U
Fluorene	280	2,800	0.1	0.48 U	0.3 U	0.01 U	0.48 U	0.01 U	0.01 U
Indeno(1,2,3-cd)pyrene	0.05	5	0.02 U	0.048 U	**0.43 J**	0.02 U	0.048 U	0.02 U	0.02 U
Phenanthrene	210	2100	0.11	0.24 U	0.28	0.02 U	0.24 U	0.03 J	0.04 J

Table 2
Summary of Detections in Groundwater

1st Semi-Annual, 2nd Year - July 2009 Groundwater Sampling Event
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Constituent	FDEP GCTL	NADC	Monitoring Well						
			CEF-BP-1S			CEP-BP-2S		CEP-BP-3S	
			7/23/2008	1/26/2009	7/14/2009	7/23/2008	1/27/2009	7/28/2008 Sample	7/28/2008 Duplicate
Petroleum Hydrocarbons (FL-PRO) (µg/L)									
TPH	5000	50,000	2,520	2,580	3,700	42 U	160 U	35 U	35 U
Other (mg/L)									
Alkalinity	NA	NA	99	152	125	110	141	NA	NA
Nitrate as N	10	NA	0.14 J	0.050 U	0.05 U	0.05 J	0.61	NA	NA
Nitrite	1	NA	0.002 U	**2.3**	0.15	0.002 U	0.87	NA	NA
Sulfate	250	NA	7.8	7.6	4.91 J	11	4.8	NA	NA
Sulfide	NA	NA	0.45 U	0.6 U	0.96	0.45 U	0.6 U	NA	NA

Table 2
Summary of Detections in Groundwater

1st Semi-Annual, 2nd Year - July 2009 Groundwater Sampling Event
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Constituent	FDEP GCTL	NADC	Monitoring Well						
			CEP-BP-3S	CEF-BP-4S				CEF-BP-5I	
			1/28/2009	7/23/2008	1/28/2009		7/14/2009	7/23/2008	1/26/2009
					Sample	Duplicate			
VOCs (USEPA Method 8260B) (µg/L)									
1,2,4-Trimethylbenzene	10	100	0.22 U	0.38 U	0.22 U	2.2 U	0.14 U	0.38 U	0.22 U
1,3,5-Trimethylbenzene	10	100	0.2 U	0.22 U	0.2 U	0.2 U	0.1 U	0.22 U	0.2 U
Ethylbenzene	30	300	0.43 U	0.34 U	0.43 U	0.43 U	0.1 U	0.34 U	0.43 U
Isopropyl benzene	0.8	8	0.2 U	0.23 U	0.2 U	0.2 U	0.11 U	0.23 U	0.2 U
Naphthalene	14	140	1 U	0.35 U	1 U	1 U	0.12 U	0.35 U	1 U
Toluene	40	400	0.35 U	0.28 U	0.35 U	0.35 U	0.14 U	0.28 U	0.35 U
Total Xylenes	20	200	1.2 U	0.38 U	1.2 U	1.2 U	0.21 U	0.38 U	1.2 U
VOC Gasses (USEPA Method 8260B) (µg/L)									
Methane	NV	NV	NA	NA	NA	NA	NA	0.4 J	0.21 J
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-Methylnaphthalene	28	280	0.24 U	0.01 U	0.24 U	0.24 U	0.3 U	0.01 U	0.24 U
2-Methylnaphthalene	28	280	0.24 U	0.02 U	0.24 U	0.24 U	0.3 U	0.3 J	0.24 U
Acenaphthene	20	200	0.48 U	0.02 U	0.48 U	0.48 U	0.3 U	0.02 U	0.48 U
Acenaphthylene	210	2100	0.48 U	0.01 U	0.48 U	0.48 U	0.023 U	0.01 U	0.48 U
Benzo(a)anthracene	0.05	5	0.048 U	0.01 U	0.048 U	0.048 U	0.023 U	0.01 U	0.048 U
Benzo(a)pyrene	0.2	2	0.048 U	0.01 U	0.048 U	0.048 U	0.023 U	0.01 U	0.048 U
Benzo(b)flouranthene	0.05	5	0.048 U	0.01 U	0.048 U	0.048 U	0.023 U	0.01 U	0.048 U
Benzo(k)flouranthene	0.5	50	0.048 U	0.03 U	0.048 U	0.048 U	0.023 U	0.03 U	0.048 U
Chrysene	4.8	480	0.095 U	0.01 U	0.095 U	0.095 U	0.023 U	0.01 U	0.095 U
Dibenzo(a,h)anthracene	0.005	0.05	0.048 U	0.02 U	0.048 U	0.048 U	0.0046 U	0.02 U	0.048 U
Fluoranthene	280	2800	0.24 U	0.01 U	0.24 U	0.24 U	0.046 U	0.01 U	0.24 U
Fluorene	280	2800	0.48 U	0.01 U	0.48 U	0.48 U	0.3 U	0.01 U	0.48 U
Indeno(1,2,3-cd)pyrene	0.05	5	0.048 U	0.02 U	0.048 U	0.048 U	0.023 U	0.02 U	0.048 U
Phenanthrene	210	2100	0.24 U	0.02 U	0.24 U	0.24 U	0.023 U	0.02 U	0.24 U

Table 2
Summary of Detections in Groundwater

1st Semi-Annual, 2nd Year - July 2009 Groundwater Sampling Event
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Constituent	FDEP GCTL	NADC	Monitoring Well						
			CEP-BP-3S	CEF-BP-4S				CEF-BP-5I	
			1/28/2009	7/23/2008	1/28/2009 Sample	1/28/2009 Duplicate	7/14/2009	7/23/2008	1/26/2009
Petroleum Hydrocarbons (FL-PRO) (µg/L)									
TPH	5000	50,000	160 U	42 U	160 U	160 U	160 U	42 U	160 U
Other (mg/L)									
Alkalinity	NV	NV	NA	NA	NA	NA	NA	13	2.5 U
Nitrate as N	10	NV	NA	NA	NA	NA	NA	0.36 J	0.12
Nitrite	1	NV	NA	NA	NA	NA	NA	0.002 U	1
Sulfate	250	NV	NA	NA	NA	NA	NA	9.8	13.1
Sulfide	NV	NV	NA	NA	NA	NA	NA	0.45 U	0.66 J

Table 2
Summary of Detections in Groundwater

1st Semi-Annual, 2nd Year - July 2009 Groundwater Sampling Event
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Constituent	FDEP GCTL	NADC	Monitoring Well						
			CEF-BP-5I	CEF-BP-6S				CEF-BP-7S	CEF-BP-8S
			7/14/2009	7/23/2008	1/26/2009	7/14/2009	8/17/2009	7/15/2009	7/15/2009
VOCs (USEPA Method 8260B) (µg/L)									
1,2,4-Trimethylbenzene	10	100	0.18 J	0.38 U	**17.8 [G]**	**28 [G]**	**19 [G]**	0.1 U	0.1 U
1,3,5-Trimethylbenzene	10	100	0.1 U	0.22 U	2.2	5.3	3.1	0.13 U	0.13 U
Ethylbenzene	30	300	0.1 U	6.5	17.3	18	12	0.13 U	0.13 U
Isopropyl benzene	0.8	8	0.11 U	**1.1 [G]**	**2 [G]**	**2.3 [G]**	**1.3 [G]**	0.15 U	0.15 U
Naphthalene	14	140	0.12 U	0.91 J	8.3	11	9.8	0.1 U	0.1 U
Toluene	40	400	0.14 U	0.28 U	0.35 U	0.16 J	0.1 U	0.1 U	0.1 U
Total Xylenes	20	200	0.21 U	0.53 J	10.9	**22 [G]**	10	0.22 U	0.22 U
VOC Gasses (USEPA Method 8260B) (µg/L)									
Methane	NA	NA	0.5 U	218	520	420	NA	NA	NA
PAHs (USEPA Method 8270C SIM) (µg/L)									
1-Methylnaphthalene	28	280	0.3 U	0.31	0.99	1.3	2.1	0.3 U	0.3 U
2-Methylnaphthalene	28	280	0.3 U	0.28	1.3	1.6	3.1	0.3 U	0.3 U
Acenaphthene	20	200	0.3 U	0.02 U	0.48 U	0.3 U	0.32 U	0.3 U	0.3 U
Acenaphthylene	210	2100	0.023 U	0.01 U	0.48 U	0.023 U	0.24 U	0.039 J	0.023 U
Benzo(a)anthracene	0.05	5	0.023 U	0.03 J	0.048 U	0.097	0.024 U	**0.16 [G]**	0.023 U
Benzo(a)pyrene	0.2	2	0.023 U	0.01 U	0.048 U	0.023 U	0.024 U	0.058 J	0.023 U
Benzo(b)flouranthene	0.05	5	0.023 U	0.01 U	0.048 U	0.023 J	0.024 U	**0.086 J [G]**	0.023 U
Benzo(k)flouranthene	0.5	50	0.023 U	0.03 U	0.048 U	0.1	0.024 U	0.14	0.1
Chrysene	4.8	480	0.023 U	0.01 U	0.095 U	0.023 U	0.024 U	0.053 J	0.023 U
Dibenzo(a,h)anthracene	0.005	0.05	0.0046 U	0.02 U	0.048 U	0.0046 U	0.019 U	**0.19 [G]**	0.0046 U
Fluoranthene	280	2800	0.046 U	0.01 U	0.24 U	0.1	0.048 U	0.046 U	0.046 U
Fluorene	280	2800	0.3 U	0.03 J	0.48 U	0.3 U	0.032 U	0.3 U	0.3 U
Indeno(1,2,3-cd)pyrene	0.05	5	0.023 U	0.02 U	0.048 U	0.023 U	0.027 J	**0.35 [G]**	0.23 U
Phenanthrene	210	2100	0.023 U	0.02 U	0.24 U	0.026 J	0.068 J	0.023 U	0.23 U

Table 2
Summary of Detections in Groundwater

1st Semi-Annual, 2nd Year - July 2009 Groundwater Sampling Event
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Constituent	FDEP GCTL	NADC	Monitoring Well						
			CEF-BP-5I	CEF-BP-6S				CEF-BP-7S	CEF-BP-8S
			7/14/2009	7/23/2008	1/26/2009	7/14/2009	8/17/2009	7/15/2009	7/15/2009
Petroleum Hydrocarbons (FL-PRO) (µg/L)									
TPH	5000	50,000	160 U	106 J	428	180 J		160 U	160 U
Other (mg/L)									
Alkalinity	NV	NV	4.29	160	141	103	NA	NA	NA
Nitrate as N	10	NV	0.219	0.004 U	0.05 U	0.279	NA	NA	NA
Nitrite	1	NV	0.050 U	0.002 U	**1.9 [G]**	0.05 U	NA	NA	NA
Sulfate	250	NV	11.4	10	15.4	10.1	NA	NA	NA
Sulfide	NV	NV	0.800 U	0.45 U	1.1	0.8 U	NA	NA	NA

Table 2
Summary of Detections in Groundwater

1st Semi-Annual, 2nd Year - July 2009 Groundwater Sampling Event
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Constituent	FDEP GCTL	NADC	Monitoring Well	
			CEF-BP-9S	
			7/15/2009	
			Sample	Duplicate
VOCs (USEPA Method 8260B) (µg/L)				
1,2,4-Trimethylbenzene	10	100	0.1 U	0.1 U
1,3,5-Trimethylbenzene	10	100	0.13 U	0.13 U
Ethylbenzene	30	300	0.13 U	0.13 U
Isopropyl benzene	0.8	8	0.15 U	0.15 U
Naphthalene	14	140	0.1 U	0.1 U
Toluene	40	400	0.1 U	0.1 U
Total Xylenes	20	200	0.22 U	0.22 U
VOC Gasses (USEPA Method 8260B) (µg/L)				
Methane	NA	NA	NS	NS
PAHs (USEPA Method 8270C SIM) (µg/L)				
1-Methylnaphthalene	28	280	0.3 U	0.3 U
2-Methylnaphthalene	28	280	0.3 U	0.3 U
Acenaphthene	20	200	0.3 U	0.3 U
Acenaphthylene	210	2100	0.023 U	0.023 U
Benzo(a)anthracene	0.05	5	**0.097 [G]**	**0.098 [G]**
Benzo(a)pyrene	0.2	2	0.023 U	0.023 U
Benzo(b)flouranthene	0.05	5	0.025 J	0.027 J
Benzo(k)flouranthene	0.5	50	0.11	0.11
Chrysene	4.8	480	0.023 U	0.023 U
Dibenzo(a,h)anthracene	0.005	0.05	0.0046 U	**0.17 [G]**
Fluoranthene	280	2800	0.046 U	0.046 U
Fluorene	280	2800	0.3 U	0.3 U
Indeno(1,2,3-cd)pyrene	0.05	5	0.023 UJ	**0.32 J [G]**
Phenanthrene	210	2100	0.23 U	0.23 U

Table 2
Summary of Detections in Groundwater

1st Semi-Annual, 2nd Year - July 2009 Groundwater Sampling Event
BP Wells Site
Naval Air Station Cecil Field
Jacksonville, Florida

Constituent	FDEP GCTL	NADC	Monitoring Well	
			CEF-BP-9S	
			7/15/2009	
			Sample	Duplicate
Petroleum Hydrocarbons (FL-PRO) (µg/L)				
TPH	5000	50,000	160 U	160 U
Other (mg/L)				
Alkalinity	NV	NV	NA	NA
Nitrate	10	NV	NA	NA
Nitrite	1	NV	NA	NA
Sulfate	250	NV	NA	NA
Sulfide	NV	NV	NA	NA

Notes:
* = due to the high levels of xylenes, the laboratory had to dilute the samples 10 times and were not able to get the MDL down below its GCTL.
[G] indicates that the concentration exceeds the FDEP GCTLs.
[N] indicates that the concentration exceeds the Natural Attenuation Default Concentration (NADC).
GCTL = Groundwater Cleanup Target Level.
J - Estimated value.
µg/L = micrograms per liter
mg/L = milligrams per liter
NV = No value presented in the FDEP 62-777, F.A. C..
NI = Not Included in CH2M Hill 2007 Groundwater Monitoring Report.
NA = Not analyzed
PAH = polynuclear aromatic hydrocarbon
TPH = total petroleum hydrocarbons
U = Less than laboratory method detection limit (MDL).

FIGURES

DRAWN BY MJJ	DATE 19Sept08	MONTORING WELL LOCATION MAP 2ND SEMI-ANNUAL, 1ST YEAR GROUNDWATER MONITORING REPORT BP WELLS SITE NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 2267
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHEDULE-AREA			APPROVED BY / DATE
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 1 / REV 0

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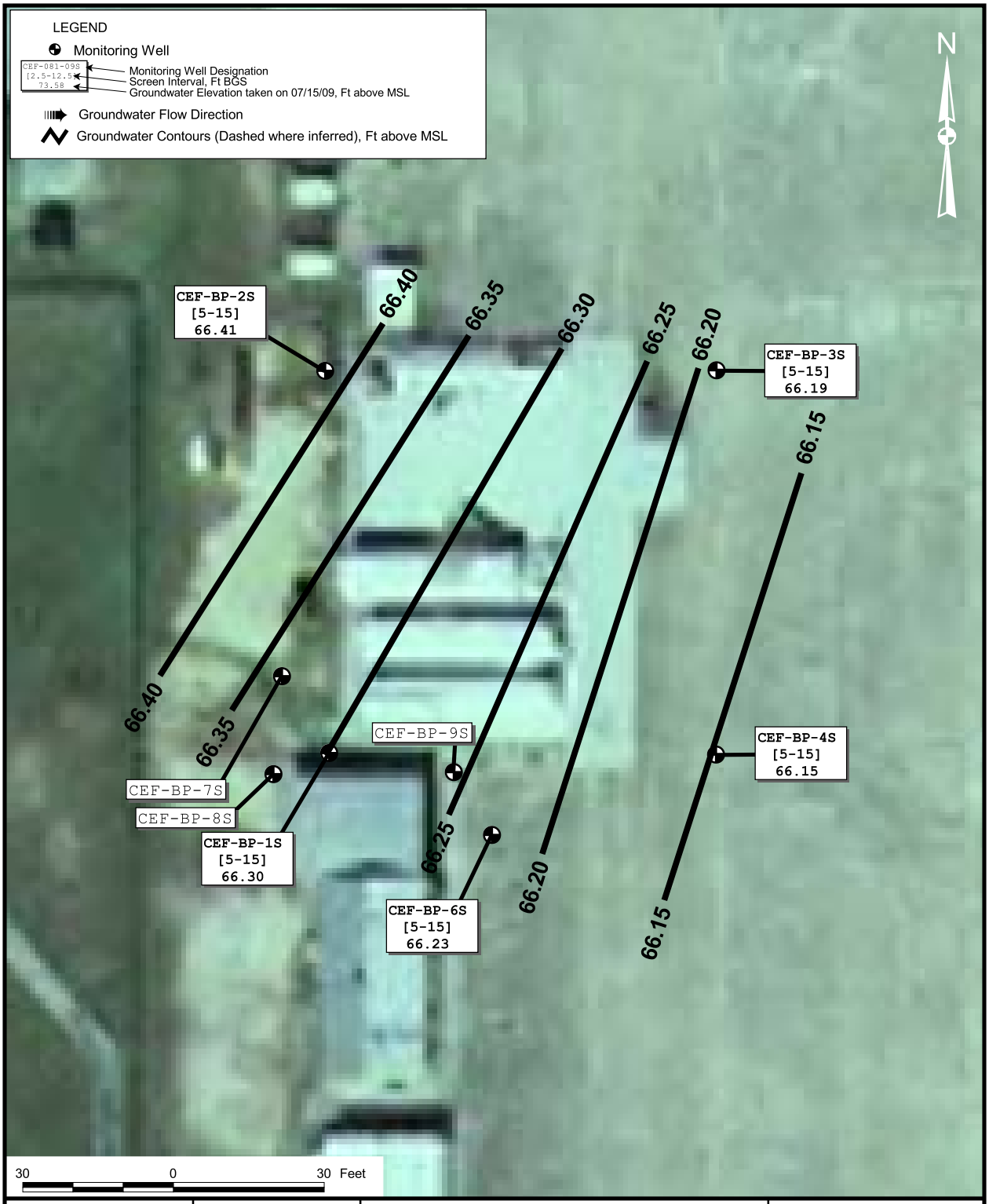

DRAWN BY MJJ	DATE 30Mar09	GROUNDWATER FLOW MAP (07/15/09) 1ST SEMI-ANNUAL, 2ND YEAR GROUNDWATER MONITORING REPORT BP WELLS SITE NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 2267
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2 / REV 0

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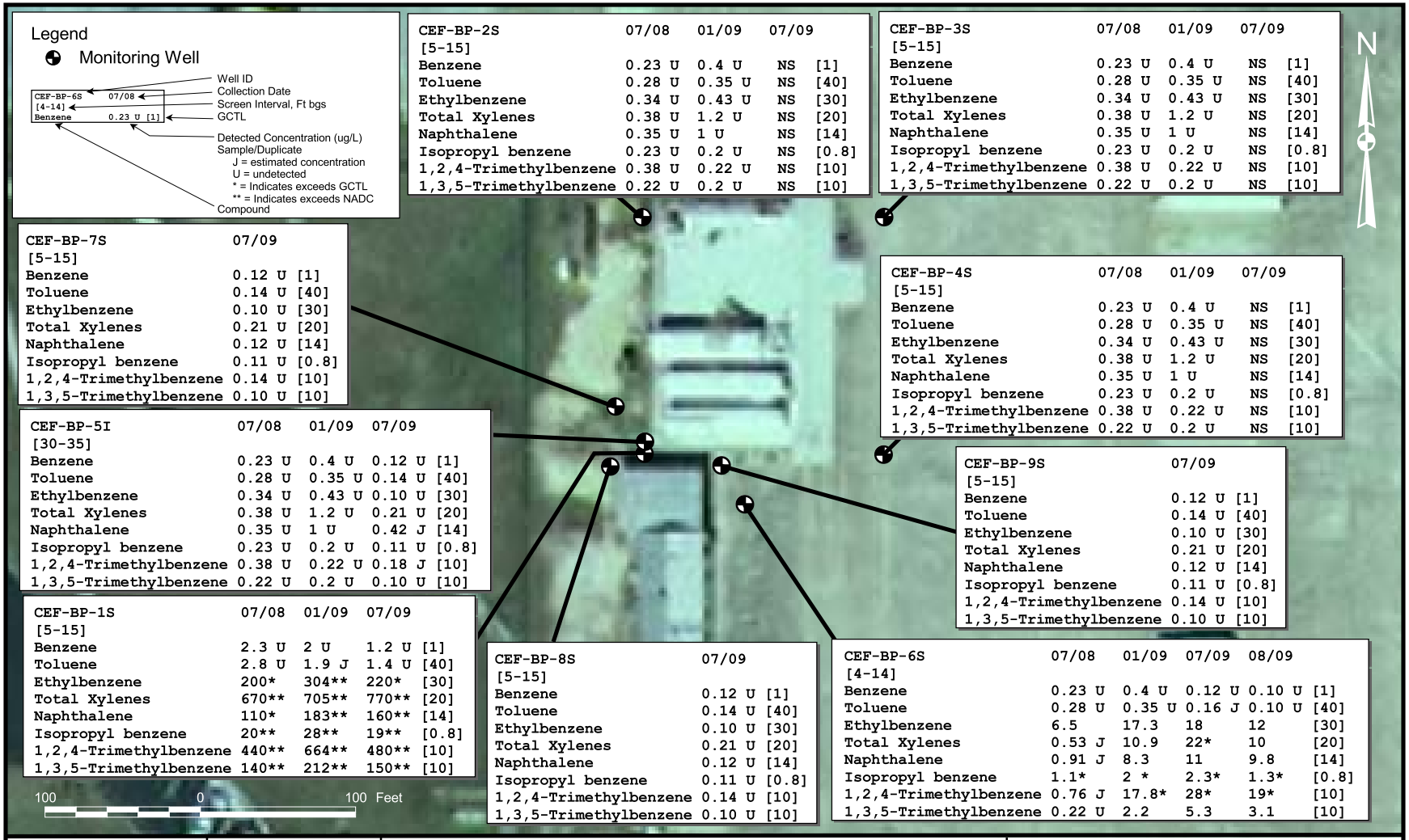

CEF-BP-2S	07/08	01/09	07/09	
[5-15]				
Benzene	0.23 U	0.4 U	NS	[1]
Toluene	0.28 U	0.35 U	NS	[40]
Ethylbenzene	0.34 U	0.43 U	NS	[30]
Total Xylenes	0.38 U	1.2 U	NS	[20]
Naphthalene	0.35 U	1 U	NS	[14]
Isopropyl benzene	0.23 U	0.2 U	NS	[0.8]
1,2,4-Trimethylbenzene	0.38 U	0.22 U	NS	[10]
1,3,5-Trimethylbenzene	0.22 U	0.2 U	NS	[10]

CEF-BP-3S	07/08	01/09	07/09	
[5-15]				
Benzene	0.23 U	0.4 U	NS	[1]
Toluene	0.28 U	0.35 U	NS	[40]
Ethylbenzene	0.34 U	0.43 U	NS	[30]
Total Xylenes	0.38 U	1.2 U	NS	[20]
Naphthalene	0.35 U	1 U	NS	[14]
Isopropyl benzene	0.23 U	0.2 U	NS	[0.8]
1,2,4-Trimethylbenzene	0.38 U	0.22 U	NS	[10]
1,3,5-Trimethylbenzene	0.22 U	0.2 U	NS	[10]

CEF-BP-7S	07/09	
[5-15]		
Benzene	0.12 U	[1]
Toluene	0.14 U	[40]
Ethylbenzene	0.10 U	[30]
Total Xylenes	0.21 U	[20]
Naphthalene	0.12 U	[14]
Isopropyl benzene	0.11 U	[0.8]
1,2,4-Trimethylbenzene	0.14 U	[10]
1,3,5-Trimethylbenzene	0.10 U	[10]

CEF-BP-4S	07/08	01/09	07/09	
[5-15]				
Benzene	0.23 U	0.4 U	NS	[1]
Toluene	0.28 U	0.35 U	NS	[40]
Ethylbenzene	0.34 U	0.43 U	NS	[30]
Total Xylenes	0.38 U	1.2 U	NS	[20]
Naphthalene	0.35 U	1 U	NS	[14]
Isopropyl benzene	0.23 U	0.2 U	NS	[0.8]
1,2,4-Trimethylbenzene	0.38 U	0.22 U	NS	[10]
1,3,5-Trimethylbenzene	0.22 U	0.2 U	NS	[10]

CEF-BP-5I	07/08	01/09	07/09	
[30-35]				
Benzene	0.23 U	0.4 U	0.12 U	[1]
Toluene	0.28 U	0.35 U	0.14 U	[40]
Ethylbenzene	0.34 U	0.43 U	0.10 U	[30]
Total Xylenes	0.38 U	1.2 U	0.21 U	[20]
Naphthalene	0.35 U	1 U	0.42 J	[14]
Isopropyl benzene	0.23 U	0.2 U	0.11 U	[0.8]
1,2,4-Trimethylbenzene	0.38 U	0.22 U	0.18 J	[10]
1,3,5-Trimethylbenzene	0.22 U	0.2 U	0.10 U	[10]

CEF-BP-9S	07/09	
[5-15]		
Benzene	0.12 U	[1]
Toluene	0.14 U	[40]
Ethylbenzene	0.10 U	[30]
Total Xylenes	0.21 U	[20]
Naphthalene	0.12 U	[14]
Isopropyl benzene	0.11 U	[0.8]
1,2,4-Trimethylbenzene	0.14 U	[10]
1,3,5-Trimethylbenzene	0.10 U	[10]

CEF-BP-1S	07/08	01/09	07/09	
[5-15]				
Benzene	2.3 U	2 U	1.2 U	[1]
Toluene	2.8 U	1.9 J	1.4 U	[40]
Ethylbenzene	200*	304**	220*	[30]
Total Xylenes	670**	705**	770**	[20]
Naphthalene	110*	183**	160**	[14]
Isopropyl benzene	20**	28**	19**	[0.8]
1,2,4-Trimethylbenzene	440**	664**	480**	[10]
1,3,5-Trimethylbenzene	140**	212**	150**	[10]

CEF-BP-8S	07/09	
[5-15]		
Benzene	0.12 U	[1]
Toluene	0.14 U	[40]
Ethylbenzene	0.10 U	[30]
Total Xylenes	0.21 U	[20]
Naphthalene	0.12 U	[14]
Isopropyl benzene	0.11 U	[0.8]
1,2,4-Trimethylbenzene	0.14 U	[10]
1,3,5-Trimethylbenzene	0.10 U	[10]

CEF-BP-6S	07/08	01/09	07/09	08/09	
[4-14]					
Benzene	0.23 U	0.4 U	0.12 U	0.10 U	[1]
Toluene	0.28 U	0.35 U	0.16 J	0.10 U	[40]
Ethylbenzene	6.5	17.3	18	12	[30]
Total Xylenes	0.53 J	10.9	22*	10	[20]
Naphthalene	0.91 J	8.3	11	9.8	[14]
Isopropyl benzene	1.1*	2 *	2.3*	1.3*	[0.8]
1,2,4-Trimethylbenzene	0.76 J	17.8*	28*	19*	[10]
1,3,5-Trimethylbenzene	0.22 U	2.2	5.3	3.1	[10]

MJJ	DATE 01Aug09	DRAWN BY	CONTRACT NUMBER 2267
CHECKED BY	DATE	APPROVED BY	DATE
COST/SCHEDULE-AREA		APPROVED BY	DATE
SCALE AS NOTED		DRAWING NO. FIGURE 3	REV 0

NAVFAC

VOC ANALYTICAL RESULTS
1ST SEMI-ANNUAL, 2ND YEAR
GROUNDWATER MONITORING REPORT
BP WELLS SITE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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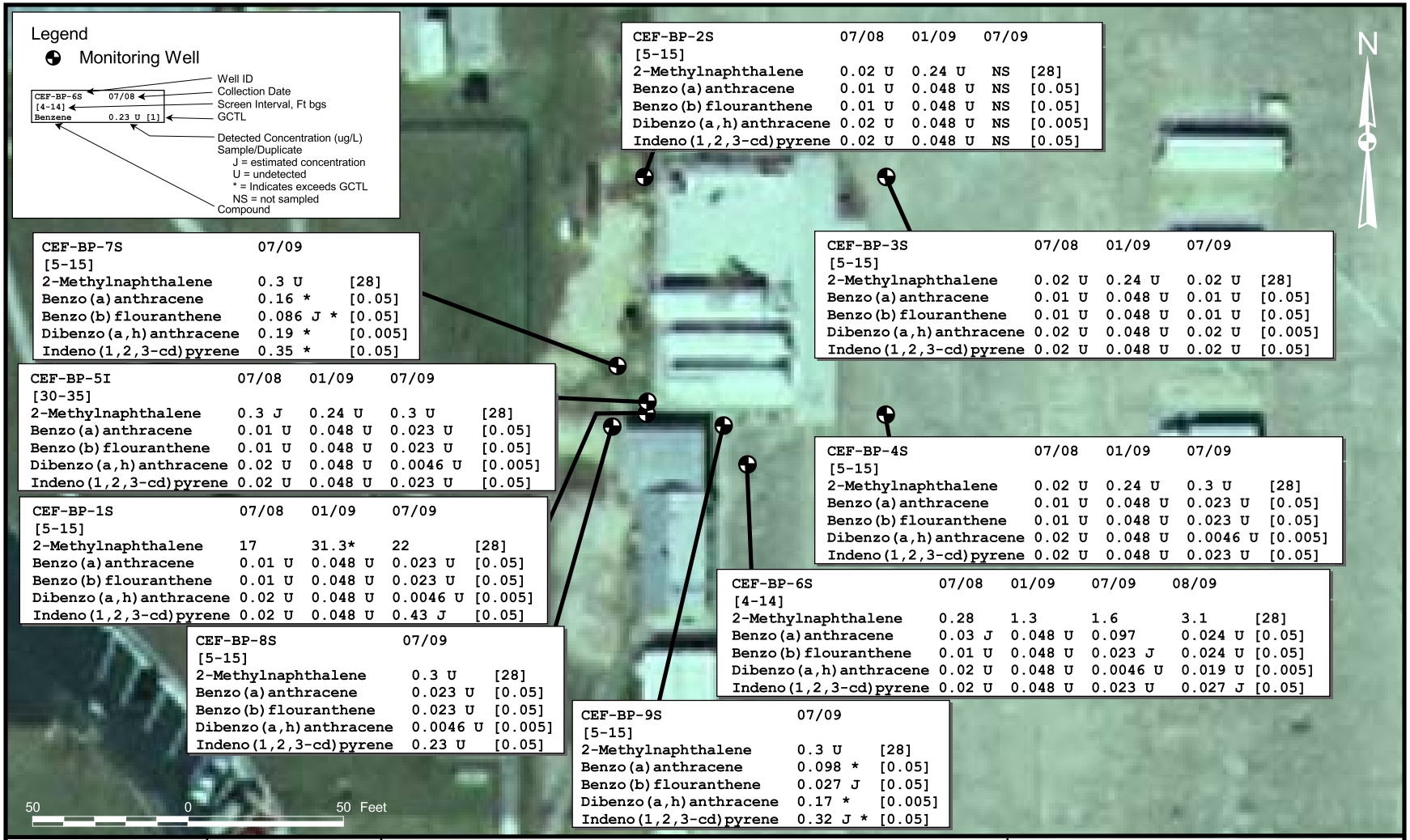

CEF-BP-2S	07/08	01/09	07/09	
[5-15]				
2-Methylnaphthalene	0.02 U	0.24 U	NS	[28]
Benzo(a)anthracene	0.01 U	0.048 U	NS	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	NS	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	NS	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	NS	[0.05]

CEF-BP-7S	07/09	
[5-15]		
2-Methylnaphthalene	0.3 U	[28]
Benzo(a)anthracene	0.16 *	[0.05]
Benzo(b)flouranthene	0.086 J *	[0.05]
Dibenzo(a,h)anthracene	0.19 *	[0.005]
Indeno(1,2,3-cd)pyrene	0.35 *	[0.05]

CEF-BP-3S	07/08	01/09	07/09	
[5-15]				
2-Methylnaphthalene	0.02 U	0.24 U	0.02 U	[28]
Benzo(a)anthracene	0.01 U	0.048 U	0.01 U	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	0.01 U	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	0.02 U	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	0.02 U	[0.05]

CEF-BP-5I	07/08	01/09	07/09	
[30-35]				
2-Methylnaphthalene	0.3 J	0.24 U	0.3 U	[28]
Benzo(a)anthracene	0.01 U	0.048 U	0.023 U	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	0.023 U	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	0.0046 U	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	0.023 U	[0.05]

CEF-BP-4S	07/08	01/09	07/09	
[5-15]				
2-Methylnaphthalene	0.02 U	0.24 U	0.3 U	[28]
Benzo(a)anthracene	0.01 U	0.048 U	0.023 U	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	0.023 U	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	0.0046 U	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	0.023 U	[0.05]

CEF-BP-1S	07/08	01/09	07/09	
[5-15]				
2-Methylnaphthalene	17	31.3*	22	[28]
Benzo(a)anthracene	0.01 U	0.048 U	0.023 U	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	0.023 U	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	0.0046 U	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	0.43 J	[0.05]

CEF-BP-6S	07/08	01/09	07/09	08/09	
[4-14]					
2-Methylnaphthalene	0.28	1.3	1.6	3.1	[28]
Benzo(a)anthracene	0.03 J	0.048 U	0.097	0.024 U	[0.05]
Benzo(b)flouranthene	0.01 U	0.048 U	0.023 J	0.024 U	[0.05]
Dibenzo(a,h)anthracene	0.02 U	0.048 U	0.0046 U	0.019 U	[0.005]
Indeno(1,2,3-cd)pyrene	0.02 U	0.048 U	0.023 U	0.027 J	[0.05]

CEF-BP-8S	07/09	
[5-15]		
2-Methylnaphthalene	0.3 U	[28]
Benzo(a)anthracene	0.023 U	[0.05]
Benzo(b)flouranthene	0.023 U	[0.05]
Dibenzo(a,h)anthracene	0.0046 U	[0.005]
Indeno(1,2,3-cd)pyrene	0.23 U	[0.05]

CEF-BP-9S	07/09	
[5-15]		
2-Methylnaphthalene	0.3 U	[28]
Benzo(a)anthracene	0.098 *	[0.05]
Benzo(b)flouranthene	0.027 J	[0.05]
Dibenzo(a,h)anthracene	0.17 *	[0.005]
Indeno(1,2,3-cd)pyrene	0.32 J *	[0.05]

MJJ	DATE 01Aug09	DRAWN BY	CONTRACT NUMBER 2267
CHECKED BY	DATE	APPROVED BY	DATE
COST/SCHEDULE-AREA		APPROVED BY	DATE
SCALE AS NOTED		DRAWING NO. FIGURE 4	REV 0

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PAH ANALYTICAL RESULTS
1ST SEMI-ANNUAL, 2ND YEAR
GROUNDWATER MONITORING REPORT
BP WELLS SITE
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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ATTACHMENT A

NATURAL ATTENUATION MONITORING PLAN

Natural Attenuation Monitoring Work Plan, Building G-82 (Tank G-82) and BP Wells Sites,

Former Naval Air Station Cecil Field, Jacksonville, Florida

PREPARED FOR: Cecil Field Base Cleanup Team

PREPARED BY: CH2M HILL Project Team

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1.0 Introduction

This technical memorandum outlines the long-term monitored natural attenuation (MNA) program requirements to be implemented at the Building G-82 (Tank G-82) and the BP Wells Sites at the former Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. Figure 1 shows the location of the sites within NAS Cecil Field.

CH2M HILL Constructors, Inc. (CH2M HILL) conducted a site-wide groundwater sampling event during November 2006. Geochemical data were evaluated to determine if natural attenuation was occurring in groundwater at the two sites and if parameter concentrations were decreasing in response to naturally occurring degradation processes. The evaluation involved comparing geochemical data from source area and downgradient monitoring wells to background values measured in upgradient wells. Based on these results, a long-term monitoring program for natural attenuation parameters was developed for implementation, as described below.

1.1 Site Background

The MNA program focuses on the Building G-82 and BP Wells Sites.

1.1.1 Building G-82 Site

The Building G-82 Site comprised an air traffic control tower and underground storage tank (UST) G-82 located at the former NAS Cecil Field in Jacksonville, Florida. Tank G-82 was used to store diesel fuel for emergency generators. Tank G-82 was removed in June 1997. Soil and groundwater have been impacted near the UST as a result of leaks originating from Tank G-82. The leaking tank released an unknown volume of fuel to the environment.

Following the removal of Tank G-82, a piezometer (CEF-G-82-1S, see Figure 2) was installed near the former location of the tank in January 1998. The hydrocarbon compounds 1-methylnaphthalene and 2-methylnaphthalene were detected in groundwater samples collected from CEF-G-82-1S at concentrations that exceeded Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Levels (GCTLs). In January 1999, Harding Lawson Associates (HLA) performed additional sampling and prepared a

Confirmatory Sampling Report (CSR) recommending the completion of additional site assessment (SA) to determine the extent of hydrocarbons in the soil and groundwater.

Between October 1999 and July 2000, Tetra Tech NUS, Inc. (TtNUS) conducted the SA at Building G-82. Five shallow monitoring wells (CEF-G-82-2S through 6S) and one intermediate monitoring well (CEF-G-82-2I) were installed, and samples were collected to determine the extent of hydrocarbons in the soil and groundwater. TtNUS recommended excavation of 280 cubic yards (yd^3) of soil that contained volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs) that exceeded FDEP Soil Cleanup Target Levels (SCTLs). Following soil removal, TtNUS recommended MNA as the remedial approach for groundwater.

During 2001, CH2M HILL was contracted by Southern Division Naval Facilities Engineering Command (NAVFAC) to perform the soil excavation work. The objective of the work was to excavate and dispose of the soil exceeding the FDEP SCTLs. Soil removal continued until either headspace readings using an organic vapor analyzer (OVA) were below 10 parts per million (ppm) or predetermined excavation boundaries (foundation boundaries and concrete aircraft apron) were reached. Approximately 148 tons of petroleum-impacted soil was removed. Following completion of the excavation activities, confirmation samples were collected from the north and south excavation walls to verify that remaining soil met the SCTLs. The analytical results from these samples indicated that the north and south excavation extent was complete. However, OVA readings from the east and west excavation walls indicated headspace concentrations exceeded 10 ppm, suggesting petroleum-impacted soil with concentrations above the SCTLs likely remained outside the limits of excavation. However, due to the close proximity of the excavation to the foundation of Building G-82 and the aircraft apron, excavation activities were terminated to prevent potential damage to the infrastructure.

Following the removal action in October 2001, TtNUS performed a supplemental assessment of the site. The results of the supplemental assessment and the associated sampling were presented in the Site Assessment Report Addendum (SARA) (TtNUS, 2001).

As part of the SARA, subsurface soil samples were collected from six locations along Building G-82 and along the flightline apron. These samples were collected outside the excavation area to evaluate residual contamination following the removal action. The samples were collected at a depth of 5 to 6 feet below land surface and were analyzed for VOCs, PAHs, and Total Recoverable Petroleum Hydrocarbons (TRPH). Based on the results of the original six samples, Synthetic Precipitation Leaching Procedure (SPLP) analyses were also performed. The SARA concluded that approximately 49 yd^3 of contaminated soil remained along Building G-82 and the flightline apron. TRPH was present above its SCTLs. Xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected in the leachate of the SPLP samples at concentrations that exceed their respective GCTLs.

In April, 2002, the Base Realignment and Closure (BRAC) team (BCT) recommended sampling of subsurface soil for the purpose of identifying the TRPH subclassification. Three samples were collected; however, one sample contained TRPH below the SCTLs and was not subclassified. Of the two samples that were analyzed for TRPH hydrocarbon-chain speciation, one sample contained concentrations of one fraction (C12 – C16, aliphatic) that exceeded its subclassification SCTLs. Based on these results, TtNUS recommended a

pilot-scale air sparging treatability study for the site. These findings were presented to the BCT at the May 15, 2002, meeting. The BCT agreed that an air sparging treatability pilot study should be performed.

No action was taken until a site-wide groundwater sampling event in November 2006. The results of the sampling event (discussed in Section 1.2) indicated that natural attenuation was occurring and the concentration of the contaminants of concern had been decreasing in the absence of active remediation.

A technical memorandum presenting the groundwater sampling results was prepared by CH2M HILL and presented to FDEP (CH2M HILL, 2007). A copy of this technical memorandum is included in Attachment 1. During the September 2007 BCT meeting, FDEP agreed that, based on the 2006 site-wide groundwater sampling results, no active remediation, such as air sparging, was needed at the Building G-82 Site.

1.1.2 BP Wells Site

The BP Wells Site is located on the north-south flightline, southeast of Building 880, on the west edge of the flightline apron. From 1999 to 2000, assessment activities were performed to determine the extent of hydrocarbons in soil and groundwater beneath the BP Wells Site. A due diligence investigation was conducted by Golder Associates, Inc. (1999) for the new property tenants (Jacksonville Airport Authority and Air Kaman). Four shallow wells (CEF-BP-1S through 4S, and CEF-BP-6S) and one intermediate well (CEF-BP-5I) were installed at the site (Figure 2). The reported results indicated the presence of hydrocarbons in groundwater beneath the site.

Subsequently, the Navy directed TtNUS to conduct an SA. The SA confirmed the presence of contaminated groundwater and identified the groundwater flow direction to the southeast. A Site Assessment Report (SAR) (2000) was submitted to the FDEP recommending that a natural attenuation monitoring plan be implemented at the site. The FDEP approved the plan and issued a Natural Attenuation Monitoring Plan Approval Order (NAMPAO) on August 31, 2000. In accordance with the NAMPAO, TtNUS performed the first two semiannual groundwater sampling events in April and October of 2001. Because the hydrocarbon concentrations at the source well were greater than the applicable natural attenuation default concentrations (NADCs) and because the contaminant concentrations appeared to be increasing, the second monitoring report recommended that the semiannual monitoring program be suspended and that a Remedial Action Plan (RAP) be prepared for the site. On February 20, 2002, the FDEP agreed that a RAP was warranted. Subsequently, TtNUS recommended that a treatability study be performed to evaluate the effectiveness of in-situ enhanced bioremediation at the site. In-situ Submerged Oxygen Curtain (iSOC™) technology was to be evaluated to perform this test. In April 2004, TtNUS submitted an Enhanced Natural Attenuation Treatability Study (ENATS) Work Plan for the BP Wells Site.

Similar to the Building G-82 Site, no action was taken until a site-wide groundwater sampling event was conducted in November 2006. The results of the sampling event, discussed in Section 1.2, indicate that natural attenuation was occurring at the site and the concentration of the contaminants of concern had been decreasing.

1.1.3 Remedial Action Objectives

The remedial action objective for the Building G-82 and BP Wells Sites is to achieve cleanup of groundwater contaminant concentrations to levels below the Florida GCTLs with a short-term remedial action objective to achieve reduction of contaminant concentrates to below the Florida NADCs.

1.2 Natural Attenuation Monitoring

1.2.1 Groundwater Contamination Summary

In November 2006, the following monitoring wells were sampled for contaminant characterization:

- Building G-82 Site: CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S.
- BP Wells Site: CEF-BP-1S, CEF-BP-2S, CEF-BP-3S, CEF-BP-4S, CEF-BP-5I, and CEF-BP-6S.

Groundwater samples from both sites were analyzed for VOCs (U.S. Environmental Protection Agency [EPA] Method 8260B), PAHs (EPA Method 8310), and TRPH (Florida Petroleum Residual Organic [FL-PRO] Method).

Building G-82 Site

In November 2006, the following compounds were detected at concentrations exceeding the GCTLs: isopropylbenzene (cumene), naphthalene, and 1-methylnaphthalene in wells CEF-G82-1S and CEF-G82-2S; 2-methylnaphthalene in well CEF-G82-2S; and benzo(a)pyrene and dibenz(a,h)anthracene in well CEF-G82-1S. The benzo(a)pyrene detection of 7.95 micrograms per liter (µg/L) and the dibenz(a,h)anthracene detection of 35.9 µg/L in well CEF-G82-1S also exceeded NADC criteria of 2 µg/L and 0.05 µg/L, respectively.

Only groundwater sampled from wells CEF-G82-1S and CEF-G82-2S contained constituents at levels exceeding GCTLs during the November 2006 sampling event. Groundwater sampled from the surrounding monitoring wells (CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S) and the well screened below the shallow monitoring wells (CEF-G82-2I) did not contain constituents of concern at elevated levels.

The following parameters were historically detected at concentrations above the GCTLs in well CEF-BP-2S: benzene, ethylbenzene, total xylenes, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. In general, the concentrations of VOCs (benzene, ethylbenzene, and total xylenes) in well CEF-G82-2S decreased in concentration when compared to previous sampling events, suggesting that biodegradation of these compounds is occurring. Concentrations of the PAH compounds 1-methylnaphthalene, 2-methylnaphthalene, benzo(a)pyrene, and dibenz(a,h)anthracene increased slightly compared to historical results. However, because PAHs are less mobile and tend to be more persistent than VOCs, it is expected that future monitoring will indicate that PAHs decrease over time, similarly to the VOCs, at this site. A summary of the historical analytical results from the Building G-82 Site is presented as the third attachment in Attachment 1.

BP Wells Site

In November 2006, the following compounds were detected at concentrations exceeding the GCTLs: isopropylbenzene (cumene), ethylbenzene, total xylenes, 1,3,5-trimethylbenzene, and 1,2,4- trimethylbenzene. All exceedances occurred in well CEF-BP-1S; however, one of these detections exceeded NADC criteria. The remaining wells at the BP Wells Site did not show any exceedances of either the GCTLs or NADC criteria.

Comparison of the November 2006 test data with historical sampling data collected in 2003 (2003 data is presented as the second attachment in Attachment 1) indicates that hydrocarbon concentrations in groundwater beneath the BP Wells Site have decreased in concentration.

1.2.2 Future Remedial Action

Future remedial action at the Building G-82 and BP Wells Sites includes long-term monitoring of natural attenuation in groundwater for an initial period of 3 years. Additional monitoring requirements will be evaluated at the end of the third year of monitoring.

1.3 Long-Term Monitoring for Natural Attenuation

1.3.1 Objectives

The objective of long-term monitoring for natural attenuation at the Building G-82 and BP Wells Sites is to collect the physical and chemical data necessary to monitor changes in dissolved hydrocarbon concentrations and verify that conditions continue to be favorable for natural attenuation to occur. Remediation for groundwater will be complete when dissolved hydrocarbon concentrations naturally attenuate to concentration below the Florida GCTLs.

1.3.2 Significance of Natural Attenuation Parameters for Long-Term Monitoring

Monitoring key natural attenuation parameters will help determine if water quality conditions remain favorable for biological degradation of hydrocarbons to occur and if parameter concentrations continue to decrease in response to the degradation processes. The following parameters will be evaluated during each sampling event: dissolved oxygen (DO), Oxidation Reduction Potential (ORP), pH, nitrates/nitrite, sulfate, sulfide, and methane. Groundwater quality in background wells will be compared to wells containing parameters in exceedance of GCTLs. A discussion of the MNA measurements made during the November 2006 sampling event is provided below.

Dissolved Oxygen (DO)

DO measurements were made to determine the distribution of DO in groundwater relative to the distribution of dissolved hydrocarbons. In the absence of hydrocarbons, DO concentrations in groundwater typically range from 1.0 to 1.5 milligrams per liter (mg/L) depending on water temperature (i.e., DO concentrations are higher in cold water and lower in warm water). DO is often depleted in groundwater contaminated with hydrocarbons as a result of in-situ biodegradation. Oxygen is consumed and carbon dioxide is produced in the biodegradation process.

In groundwater beneath the Building G-82 Site, DO concentrations ranged from 0.36 mg/L (CEF-G82-2I) to 0.84 mg/L (CEF-G82-5S). The DO concentrations measured in wells CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-4S, and CEF-G82-6S were below those in the background well CEF-G82-3S. These data suggest that subsurface conditions are

suboptimal for aerobic hydrocarbon biodegradation. However, general reductions in VOC concentrations over time suggest that anaerobic biodegradation of contaminants may be occurring.

DO concentrations at the BP Wells Site ranged from 0.6 mg/L (CEF-BP-1S) to 1.50 mg/L (CEF-BP-3S) as measured using the Chemetrics® field test kits during the November 2006 sampling event. The DO concentration of 0.6 mg/L in well CEF-BP-1S was slightly below the DO measured in the upgradient (background) well CEF-BP-2S at 0.8 mg/L. With the exception of well CEF-BP-1S, which showed slightly elevated VOCs, the DO readings at the site were generally similar to background levels. These data suggest that subsurface conditions are suboptimal for aerobic hydrocarbon biodegradation. However, contaminant concentration reductions suggest that anaerobic biodegradation of contaminants may be occurring.

Oxidation Reduction Potential (ORP)

ORP is a measure of the relative tendency of ions in solution to transfer electrons. As electron acceptors are utilized, the ORP of the groundwater decreases. As DO is consumed, the ORP will decline and perhaps become negative.

ORP across the BP Wells Site ranged from -126.0 millivolts (mV) to 186.7 mV. Negative ORP levels were measured at only two well locations: CEF-BP-1S (-117.9 mV) and CEF-BP-6S (-126.0 mV). The negative ORP detected in groundwater sampled from these locations suggests that reducing conditions are prevalent in the vicinity of well CEF-BP-1S. This was the only well with parameter concentrations above GCTLs.

ORP across the Building G-82 Site ranged from -127.2 mV to 233.8 mV. ORP levels were similar in wells CEF-G82-1S (-127.2 mV) and CEF-G82-2S (-126.0 mV). These were the only monitoring wells with significantly negative ORP, and they were also the only wells with contaminant concentrations above GCTLs. Similar to the BP Wells Site, these results suggest that reducing conditions are prevalent in the vicinity of the wells showing elevated contaminant concentrations in groundwater.

pH

The pH of groundwater has an effect on the presence and activity of microbial populations in groundwater. Microbes capable of degrading petroleum hydrocarbons generally prefer pH values varying from 6 to 8 standard units.

At the BP Wells Site, groundwater pH values ranged from 5.13 (CEF-BP-5I) to 6.49 (CEF-BP-1S) with a background value of 6.37 (CEF-BP-2S), generally within the preferred range of values for microbial activity. Further, pH in groundwater sampled from monitoring well CEF-BP-1S, the only well with parameter concentrations above GCTLs, was 6.49.

At the Building G-82 Site, the pH values ranged from 4.97 (CEF-G82-4S) to 6.02 (CEF-G82-2S) with a background value of 5.81 (CEF-G82-3S), indicating that optimal pH conditions for microbial activity were not present at all locations at this site. However, pH values in the vicinity of CEF-G82-1S and CEF-G82-2S (the two wells with contaminant concentrations exceeding GCTLs) were 5.96 and 6.02, respectively, indicating that in this area of the site, pH is generally within the range optimal for microbial activity.

Nitrates/Nitrite

After DO has been depleted, biodegradation of hydrocarbons may continue anaerobically using total nitrate/nitrite as electron acceptors (denitrification). Nitrate/nitrite concentrations will be lower in the wells containing hydrocarbons (such as benzene, toluene, ethylbenzene, and xylenes [BTEX]), if biodegradation is occurring. Nitrate and nitrite were detected in seven of the eight monitoring wells in which the parameters were analyzed.

At the BP Wells Site, nitrate and nitrite were detected in three of the four monitoring wells in which the parameter was analyzed. The nitrate and nitrite concentrations, ranging from non-detect to 561 µg/L in the downgradient wells, were lower than the concentration of the background well CEF-BP-2S (733 µg/L). No nitrate/nitrite was detected in groundwater sampled from CEF-BP-1S, the only monitoring well with contaminant concentrations exceeding GCTLs, suggesting that reducing conditions are favorable for denitrification in this area.

At the Building G-82 Site, the nitrate and nitrite concentrations ranging from 44 to 66 µg/L in the downgradient wells were similar to the concentration in background well CEF-G82-3S (72 µg/L). The presence of nitrate and nitrite in the areas of impacted groundwater suggests that conditions are unfavorable for denitrification..

Sulfate/Sulfide

After DO and total nitrogen have been depleted in the aquifer, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed sulfate reduction, and results in the production of sulfide. Portions of the hydrocarbon plume undergoing anaerobic biodegradation may have depleted sulfate concentrations and caused elevated sulfide concentrations. Sulfate reducing conditions are favorable at redox potentials of -200 mV and pH of 7.

Sulfate was detected in each of the four wells that were monitored for the parameter at the BP Wells Site. The concentrations of sulfate were higher in the downgradient wells than in the background well. The presence of sulfate in the areas of impacted groundwater at concentrations higher than background and low sulfide concentrations suggest that conditions favorable for sulfate reduction are not present.

Sulfate was detected in two of the four wells that were monitored for the parameter at the Building G-82 Site. The concentrations of sulfate were lower in the downgradient wells than the background well. Sulfate was not present in groundwater sampled from CEF-G82-1S, (the area of highest levels of contaminants of concern) and was detected at levels below those detected in the background sample in groundwater sampled from CEF-G82-2S (the only other site monitoring well to contain contaminants at levels exceeding GCTLs); additionally, sulfide was detected in groundwater sampled from CEF-G82-1S and CEF-G82-2S at levels exceeding those detected in the background sample. The absence or limited presence of sulfate in the areas of impacted groundwater at concentrations lower than background, coupled with the presence of sulfide at concentrations higher than background, suggests that subsurface conditions at the site may be favorable for sulfate reduction in these areas.

Methane

The presence of methane in groundwater at concentrations above background is a good indicator that methanogenesis is occurring. During methanogenesis, carbon dioxide is used as an electron acceptor and methane is formed. The presence of methane in groundwater is also indicative of strong reducing conditions.

Dissolved methane was detected in three of the four wells analyzed at the BP Wells Site. The concentration of methane exceeded background concentrations in wells CEF-BP-1S, CEF-BP-5I, and CEF-BP-6S. The presence of methane above background concentrations may be indicative of anaerobic microbial degradation of hydrocarbons occurring at the site.

Dissolved methane was detected in each of the four wells analyzed at the Building G-82 Site. The concentration of methane exceeded background (estimated 1.63 µg/L) significantly in wells CEF-G82-1S (1,340 µg/L) and CEF-G82-2S estimated 680 µg/L), suggesting anaerobic microbial degradation of hydrocarbons is occurring in these source areas.

2.0 Sampling and Analysis Plan for Natural Attenuation Monitoring

This section describes the sampling procedures that will be followed during execution of the work scope. Analytical methods, data quality objectives, protocol for equipment decontamination, and procedures used for the collection of samples for waste characterization are discussed in this section.

2.1 Sampling Objectives

The objective of long-term monitoring for natural attenuation at the Building G-82 and BP Wells Sites is to collect the physical and chemical data necessary to monitor changes in dissolved hydrocarbon concentrations and verify that conditions continue to be favorable for natural attenuation to occur. Remediation for groundwater will be complete when dissolved hydrocarbon concentrations naturally attenuate to concentration below the Florida GCTLs. In order to achieve these objectives, the following tasks will be performed:

- Measure water levels quarterly to obtain the data required to prepare potentiometric surface maps and to evaluate fluctuations in groundwater elevation.
- Collect the following water quality measurements from 13 wells (CEF-BP-1S, CEF-BP-2S, CEF-BP-3S, CEF-BP-4S, CEF-BP-5I, CEF-BP-6S, CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S) during the well purging process to evaluate the physical parameters of the aquifer: pH, conductivity, turbidity, DO, ORP, and temperature.
- Collect groundwater samples from 13 wells (CEF-BP-1S, CEF-BP -2S, CEF-BP-3S, CEF-BP-4S, CEF-BP-5I, CEF-BP-6S, CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S) for the analysis of BTEX and naphthalene by EPA Method 8260B, PAHs (16 PAHs including both 1-methylnaphthalene and 2-methylnaphthalene) by EPA Method 8270SIM, and TPH by the FL-PRO Method.
- Collect groundwater samples from eight wells (CEF-BP-1S, CEF-BP-2S, CEF-BP-5I, CEF-BP-6S, CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, and CEF-G82-3S) for the analysis of sulfate/sulfide, alkalinity, nitrate/nitrite, and methane.

Details regarding completion of these tasks are described below.

2.2 Monitoring Well Network

The following eight wells will be analyzed for the MNA parameters: dissolved methane (Method RSK 175), nitrate/nitrite and sulfate (EPA Method 300.0), and sulfide (Method SM4500-S_2 F):

- BP Wells Site: CEF-BP-1S, CEF-BP-2S, CEF-BP-5I, and CEF-BP-6S.
- Building G-82 Site: CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, and CEF-G82-3S.

The following 13 wells will be analyzed for BTEX and naphthalene by EPA Method 8260B, PAHs (including 1-methylnaphthalene and 2-methylnaphthalene) by EPA Method 8270SIM, and TRPH by the FL-PRO Method:

- BP Wells Site: CEF-BP-1S, CEF-BP-2S, CEF-BP-3S, CEF-BP-4S, CEF-BP-5I, and CEF-BP-6S.
- Building G-82 Site: CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S.

Requirements for sample collection, preservation, and analysis are listed in Table 1.

2.3 Frequency of Monitoring

Based on discussions during the January 2008 NASCF BCT Meeting, groundwater will be monitored on a quarterly basis for the first year of long-term monitoring for the Building G-82 Site and on a semiannually basis for the BP Wells Site. During the second year, semiannual groundwater will be performed at both sites. During the third year, annual groundwater monitoring will performed at both sites. After the completion of the third year of monitoring, the natural attenuation progress will be evaluated to determine if additional monitoring is necessary.

2.4 Data Quality Levels for Measurement Data

The samples will be collected in accordance with the EPA Region IV Field Branches Quality System and Technical Procedures, November 2007, and the FDEP Standard Operating Procedures (SOPs).

The sampling team will be qualified under the Navy Installation Restoration Chemical Data Quality Manual (IRCDQM), 1999 sampling requirements. A Navy-, U.S. Army Corps of Engineers (USACE)-, or Air Force Center for Engineering and the Environment (AFCEE)- and FDEP-approved laboratory will be used for all sample analyses.

TABLE 1
Requirements for Sample Collection, Preservation, and Analysis

Sample Task	Sample Point	Matrix	Sampling Frequency (Note 1)	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
Groundwater Sampling													
Groundwater Sampling	Monitoring Wells (6 wells – BP Wells Site; 7 wells – Bldg G-82 Site)	Water	1st & 3rd Quarter – 1st yr; Semiannually 2nd yr; Annually 3rd yr	13 + 2 DUP + 1 MS/MSD = 17 (per event); 85 total	Grab	Hand Bailer	14 days	DQO Level IV, CCI Level C	BTEX and naphthalene	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 mL vials
	Monitoring Wells (7 wells – Bldg G-82 Site)		2nd & 4th Quarter – 1st yr;	7 + 1 DUP + 1 MS/MSD = 10; 20 total					PAH including 1- & 2-methylnapthalene	8270SIM	7 days ext; 40-days analysis	Cool to 4°C	(2) 1-L amber glass
									TRPH	FL-PRO	7 days ext; 40-days analysis	HCl pH< 2; Cool to 4°C	(2) 1-L amber glass
	Monitoring Wells (4 wells – BP Wells Site; 4 wells – Bldg G-82 Site)	Water	1st & 3rd Quarter – 1 yr; Semiannually 2nd yr; Annually 3rd yr	8 + 1 DUP + 1 MS/MSD = 11 (per event) – 55 total	Grab	Hand Bailer	14 days		Sulfate	300.0 / 300.1	28 days	Cool to 4°C	(1) 500-mL plastic
	Monitoring Wells (4 wells – Bldg G-82 Site)		2nd & 4th Quarter – 1st yr;	4 + 1 DUP + 1 MS/MSD = 7; 14 total					Sulfide	SM 4500-S2-F	7 days	Cool to 4°C, pH>9 w/NaOH; add Zinc Acetate	(1) 1000-mL plastic
									Nitrate	300.0	48 hours	Cool to 4°C	(1) 500-mL plastic
									Nitrite	300.0	48 hours	Cool to 4°C	(1) 500-mL plastic
									Methane	RSK-175	14 days	Cool to 4°C, pH <2 w/HCl, no headspace	(2) 40 mL vials

TABLE 1
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	Equipment Rinsate Blank	Water	1 per 10% of sampling	1 per event	Prepared in Field	Analyte-free water, SS funnel	14 days		BTEX and naphthalene	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 mL vials
									PAH including 1- & 2-methylnapthalene	8270SIM	7 days ext; 40-days analysis	Cool to 4°C	(2) 1-L amber glass
									TRPH	FL-PRO	7 days ext; 40-days analysis	HCl pH< 2; Cool to 4°C	(2) 1-L amber glass
									Sulfate	300.0 / 300.1	28 days	Cool to 4°C	(1) 500-mL plastic
									Sulfide	SM 4500-S2-F	7 days	Cool to 4°C, pH>9 w/NaOH; add Zinc Acetate	(1) 1000-mL plastic
									Nitrate	300.0 / 300.1	48 hours	Cool to 4°C	(1) 500-mL plastic
									Nitrite	300.0 / 300.1	48 hours	Cool to 4°C	(1) 500-mL plastic
									Methane	RSK-175	14 days	Cool to 4°C, pH <2 w/HCl, no headspace	(2) 40 mL vials
	Trip Blank	Water	1 per cooler containing volatile samples	7	Prepared by Lab	N/A	14 days		BTEX and naphthalene	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 mL vials
Waste Characterization Sampling													
Disposal of Liquid Waste from well development, purge water, etc.	55-gallon drums containing liquid waste	Water	One per event	7	Grab	Drum thief or dip jar	7 days	DQO Level III, CCI Level B	TCL Volatiles	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 ml vial
									TCL Semi-volatiles	8270C	7 days ext; 40-days analysis	Cool to 4°C	(2) 1-L amber glass

TABLE 1
Requirements for Sample Collection, Preservation, and Analysis

Sample Task	Sample Point	Matrix	Sampling Frequency (Note 1)	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
									TCL Pesticides	8081A	7 days ext; 40-days analysis		(2) 1-L amber glass
									Herbicides	8151A	7 days ext; 40-days analysis		(2) 1-L amber glass
									PCBs	8082	7 days ext; 40-days analysis		(2) 1-L amber glass
									TAL Metals	6010B/7470 A	180 days; Hg = 28 days	HNO_3 pH< 2; Cool to 4°C	(1) 500ml HDPE
									Ignitability	1010A/1030	ASAP	Cool to 4°C	(1) 500ml HDPE
									Corrosivity	9040B	ASAP		

Note 1: BTEX + Naphthalene, PAHs, TRPH, and MNA parameters will be collected from wells at both sites during the 1st and 3rd quarterly events in the first year; during both semiannual events in the second year; and annually during the 3rd year. Only the wells at the Building G-82 Site will be collected for these parameters during the 2nd and 4th quarterly events in the first year.

DQO – Data Quality Objective
MS/MSD – Matrix Spike/Matrix Spike Duplicate
PCBs – polychlorinated biphenyls
TAL – Target Analyte List
TCL – Target Compound List

2.5 Groundwater Sampling and Analyses

Samples will be collected from all BP Wells Site and Building G-82 Site wells and analyzed for BTEX and naphthalene, PAHs, and TRPH. In addition, samples will be collected from four wells at each site (eight total) for MNA analyses. Groundwater samples will be collected following the EPA's procedures for low-flow groundwater sampling. The procedure outlined below is based on the EPA's report entitled, "Ground Water Issue: Low-Flow (Minimal-Drawdown) Ground-Water Sampling Procedures," (EPA, 1996) and is as follows:

1. Slowly lower the decontaminated pump or pump intake to the middle of the screened interval to minimize excessive mixing of the stagnant water in the casing above the screen with water within screened zone and to minimize re-suspension of solids that may have accumulated at the bottom of the well.

2. Once the pump is positioned in the well, an airtight flow-through cell (equipped with a YSI-type water quality meter) will be connected to the water discharge line.

3. A water level meter will then be lowered into the well to monitor changes in water level during pumping. Once purging begins, water level measurements will be monitored, and pumping rates will be adjusted so that the rate is between 0.1 to 0.3 liter per minute (L/min) to maintain minimal drawdown.

4. While purging, field parameters (DO, pH, temperature, conductivity, salinity, turbidity, and ORP) will be measured every 3 to 5 minutes using a YSI-type meter and will be recorded until all parameters have stabilized for 3 consecutive readings. Once field parameter stabilization is achieved, the sample bottles will be filled.

5. Water samples will be collected by directing the groundwater discharge stream from the pump so that it runs down the inside of the sample bottle with a minimum amount of splashing. To minimize VOC loss, samples to be analyzed for BTEX and naphthalene will be collected first, followed by the analyses for PAHs, TRPH, sulfate/sulfide, alkalinity, nitrate/nitrite, total organic carbon, and ferrous iron. The sample bottles for each analysis are as follows:

   – BTEX and naphthalene by EPA Method 8260B: Three 40-milliliter (mL) volatile organic analytic (VOA) vials containing a hydrochloric acid (HCl) preservative. Fill bottles so there is no headspace within the bottles.

   – PAHs by EPA Method 8270SIM: Two 1-liter amber bottles. Fill to the top of the bottle.

   – TRPH by the FL-PRO Method: Two 1-liter amber bottles containing either hydrochloric acid (HCl) or sulfuric acid (H_2SO_4) preservative. Fill to the top of the bottle.

   – Sulfide by Method SM 4500S_2-F: One 1,000-mL bottle containing sodium hydroxide (NaOH) and zinc acetate preservative for sulfide. Fill to the top of each bottle.

   – Nitrate, nitrite, and sulfate by EPA Method 300.0: One 1000-mL plastic bottle. Fill to the top of the bottle.

- Methane by RSK-175: Two 40-mL VOA vials or amber glass bottle containing either HCl preservative. Fill with no headspace.

6. Cap each bottle and affix label to the bottle. Label information will include laboratory, project name and number, sample identification, station identification, preservative, analysis, sampler's initials, sample date, and time. Place samples in appropriate containers and pack with ice in coolers.

Requirements for sample collection, preservation, and analysis are listed in Table 1. Samples will be delivered to the laboratory as soon as possible to allow the samples to be analyzed within the specified holding times. Requirements for quality assurance/quality control (QA/QC) samples are listed in Table 1.

Residual purge water collected during sampling will be transferred to a 55-gallon drum and will be characterized in accordance with this Sampling and Analysis Plan and disposed of based on the results of sampling analyses.

2.6 Waste Characterization and Incidental Waste Stream Sampling and Analyses

Waste characterization samples will be collected to evaluate the handling and treatment and disposal requirements of accumulated decontamination water and purge water. Water characterization samples will be collected from containment drums prior to disposal. One composite sample (and one grab for VOC analysis) will be collected per event. Water samples will be collected as follows and analyzed for the parameters listed in Table 1:

1. Use a bailer or dip jar and collect a water sample from its containment.
2. Fill the sample containers for volatile analyses first (grab sample). The 40-mL vials will be filled so that there is no headspace in each vial.
3. Then fill the sample containers for the remaining analyses.
4. Label and package the samples for shipment to the laboratory.

2.7 Equipment Decontamination

Sampling methods and equipment have been selected to minimize decontamination requirements and the possibility of cross-contamination. The following procedure will be used for all sampling equipment used to collect routine samples undergoing trace organic or inorganic analyses.

Reusable sampling equipment will be decontaminated before the initial sample is collected and between sampling locations using the following procedure:

1. Clean with potable water and Alconox® or equivalent laboratory grade detergent using a brush, if necessary, to remove particulate matter and surface films.
2. Rinse thoroughly with potable water.
3. Rinse thoroughly with analyte-free water.
4. Rinse thoroughly with isopropanol (pesticide-grade). Do not rinse polyvinyl chloride or plastic items with isopropanol.

5. Rinse thoroughly with organic/analyte-free water.
6. Allow equipment to air dry completely.

2.8 Sample Documentation

Sampling documentation will include the following:

- Numbered Chain-of-Custody Forms
- Sample log book, which includes the following information:
  - Name of laboratories and contacts to which the samples were sent, turnaround time requested, and data results, when possible
  - Termination of a sample point or parameter and reasons
  - Unusual appearance or odor of a sample
  - Measurements, volume of flow, temperature, and weather conditions
  - Details of QC samples obtained
  - Field analytical equipment, and equipment utilized to make physical measurements
  - Calculations, results, and calibration data for field sampling, field analytical, and field physical measurement equipment
  - Sampling station identification
  - Date and time of sample collection
  - Sampler(s)' name(s) and company
  - How the sample was collected
  - Weather conditions that may affect the sample (e.g., rain, extreme heat or cold, wind, etc.)
- Sample Labels
- Custody Seals

2.9 Field Quality Control

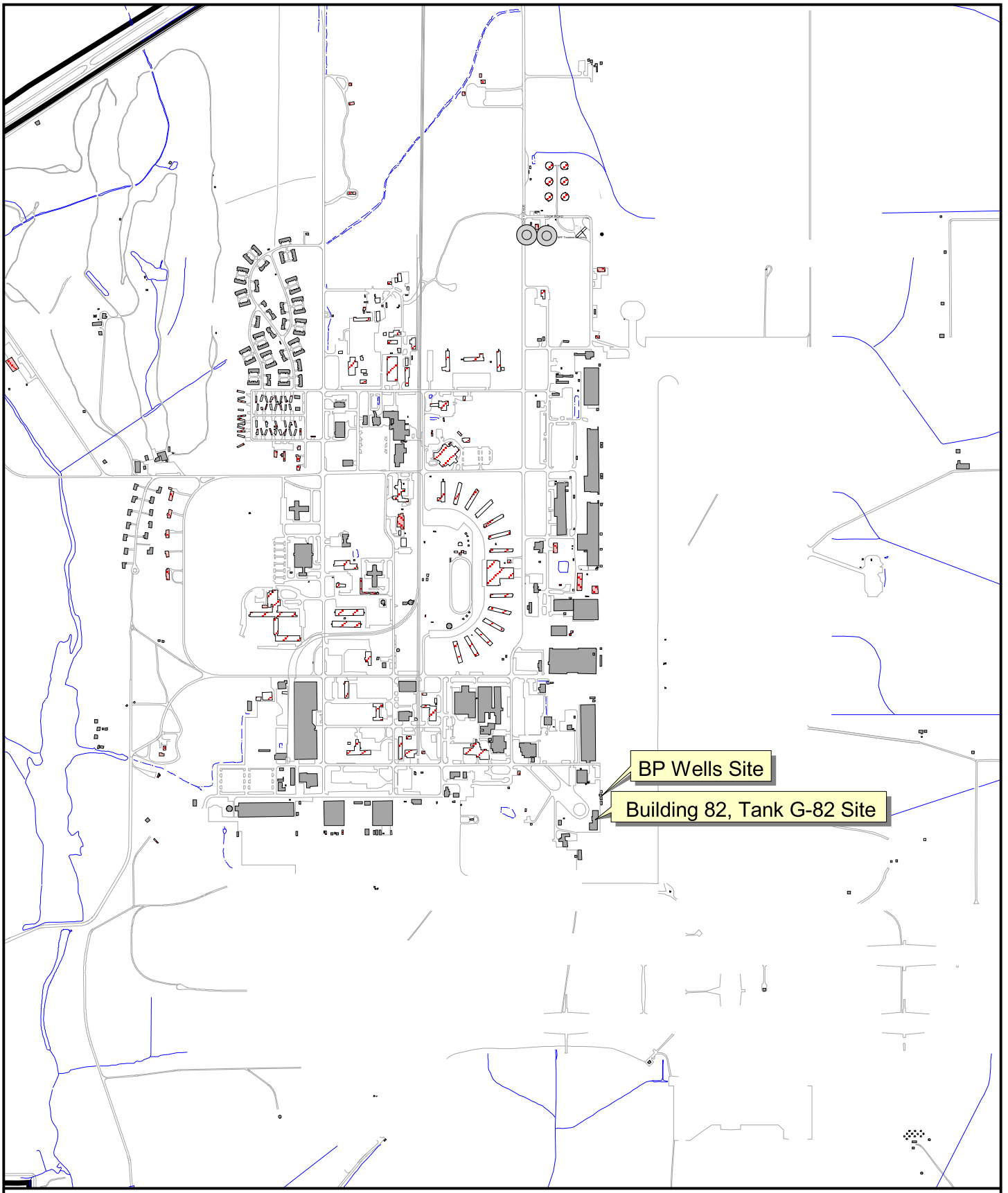
Field duplicate samples and equipment blank samples will be collected at a minimum frequency of 10 percent times the total number of samples (rounded to nearest whole number) collected for an analysis. One trip blank sample will be provided at a frequency of one per sample cooler containing volatile samples. MS/MSDs will be required at a frequency of one per sample event or a minimum of 5 percent of the total number (rounded to nearest whole number) of samples collected for an analysis. QC samples are not required for waste characterization. Quantity and frequency are detailed in Table 1.

2.10 Reporting

A report will be compiled at the completion of each of the monitoring events. Each performance monitoring report will include a description of the field sampling event, field data, updated potentiometric surface maps, validated analytical data from the monitoring event, a discussion of the MNA parameters, and charts showing trends of contaminants of concern concentrations over the period of the MNA long-term monitoring.

Figures

NOTE: Original figure created in color



N

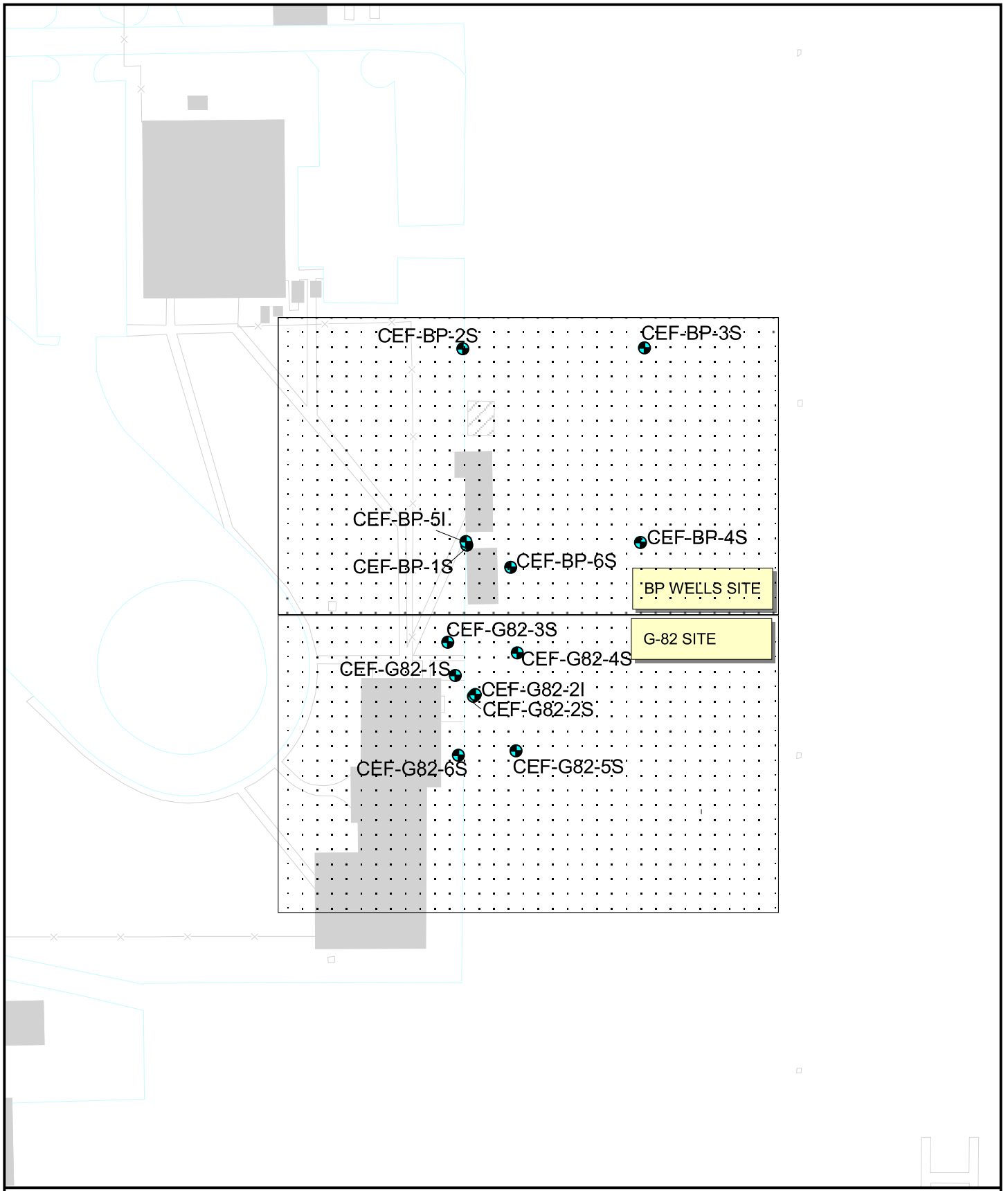
0 1000 2000 Feet

1 inch = 1376.99 feet

Figure 1
Site Location
Bldg. G-82 and BP Wells Sites
Former NAS Cecil Field, Jacksonville, FL

CH2MHILL

File Path: c:\gis\nas_cecilfield.apr, Date: 30 Oct 2006 14:38, User: SNAIK1, NAS Cecil Field Area [Florida State Plane Coordinate System NAD 83 Units Feet] - Figure 1-1 Site Location



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0 80 160 Feet

1 inch = 124 feet

Figure 2
Locations of Groundwater Monitoring Wells
Building G-82 and BP Wells Sites
Former NAS Cecil Field, Jacksonville, FL

CH2MHILL

File Path: c:\gis\nas_cecilfield.apr, Date: 05 May 2008 13:35, User: SNAIK1, NAS Cecil Field Area [Florida State Plane Coordinate System NAD 83 Units Feet] - Figure 2 Locations of Groundwater Monitoring Wells

Attachment 1

2007 CH2M HILL Technical Memorandum

Evaluation of Groundwater Analytical Results from BP Wells Site and Building 82 (Tank G82) Former Naval Air Station Cecil Field, Jacksonville, Florida

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CTO 0086 Project File

DATE: April 27, 2007

1.0 Introduction

This technical memorandum summarizes the findings from the sitewide groundwater monitoring conducted by CH2M HILL Constructors, Inc. (CH2M HILL) at the BP Wells Site and Building 82 Site (Tank G-82) at the former Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. This site-wide groundwater monitoring effort was conducted to assess current groundwater quality conditions and to evaluate whether natural attenuation of site contaminants is occurring at these two sites. This work was conducted based on the methodology described in the *Work Plan Addendum No. 18, CTO 86, NAS Cecil Field, Jacksonville, Florida* (CH2M HILL, November 2006).

2.0 Groundwater Monitoring

Figure 1 shows the locations of the BP Wells site and the Building G-82 site. Figure 2 shows the locations of the monitoring wells at these two sites.

The following monitoring wells at the BP well site and the Building G-82 Site were sampled in November 2006 for contaminant characterization:

- **BP Wells Site**: CEF-BP-1S, CEF-BP -2S, CEF-BP -3S, CEF-BP -4S, CEF-BP -5I, and –6S
- **Building G82 Site**: CEF-G82-1S, CEF-G82 -2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5I, and CEF-G82–6S

The groundwater samples from both sites were analyzed for the following parameters: volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B, polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8310, and total recoverable petroleum hydrocarbons (TRPH) by the Florida Petroleum Residual Organic (FL PRO) method. The analytical results of these samples are summarized in Table 1.

The following groundwater monitoring wells were sampled for the monitored natural attenuation (MNA) parameters:

- **BP Wells Site:** CEF-BP-1S, CEF-BP -2S, CEF-BP -5I, and CEF-BP –6S
- **Building G82 Site:** CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, and CEF-G82–3S

The groundwater samples were analyzed for the following MNA parameters: dissolved methane by EPA Method 8315, nitrate and nitrite by EPA Method 353.2, sulfate by EPA Method 375.4, sulfide by EPA Method 376.2, total organic carbon (TOC) by EPA Method 415.1 and total inorganic carbon (TIC) by EPA Method 415.1. The MNA groundwater analytical results are summarized in Table 2.

The groundwater in each monitoring well was tested in the field for pH, conductivity, turbidity, dissolved oxygen (DO), oxidation reducing potential (ORP) and temperature, as part of the sampling protocol. The results of the field tests are included in Table 2. The analytical laboratory and data validation reports for the groundwater sampling event are included in Attachment 1.

3.0 Summary of Findings from Groundwater Sampling

3.1 Contaminant Characterization Sampling Results

BP Wells Site

The following parameters were detected concentrations above the Florida Groundwater Cleanup Target Levels (GCTLs) during the November 2006 sampling event: isopropyl-benzene (cumene), ethylbenzene, total xylenes, 1,3,5-trimethylbenzene, and 1,2,4-trimethylbenzene. All reported exceedances were in well CEF-BP-1S. None of these detections exceeded the Florida Natural Attenuation Default Concentration (NADC) criteria. The remaining wells at the BP Wells site did not show any exceedances of either the GCTLs or NADC criteria.

A summary of the 2003 historical analytical results from the BP Well Site is included in Attachment 2. The following parameters were detected historically at concentrations above the GCTLs in well CEF-BP-1S: ethylbenzene, total xylenes, 1,3,5-trimethylbenzene, and 1,2,4-trimethylebenzene. In general, these site groundwater constituents at the BP Wells Site have decreased in concentrations when compared to the previous sampling events conducted during 2003.

Building G-82 Site

The following parameters were detected at concentrations above the GCTLs during the November 2006 monitoring well sampling event: isopropylbenzene (cumene), naphthalene and 1-methylnaphthalene in wells CEF-G82-1S and CEF-G82-2S; 2-methylnaphthalene in well CEF-G82-2S; and benzo(a)pyrene and dibenz(a,h)anthracene in well CEF-G82-1S. The benzo(a)pyrene detection of 7.95 micrograms per liter (µg/L) and the dibenz(a,h)anthracene detection of 35.9 µg/L in well CEF-G82-1S also exceeded NADC standards of 2 µg/L and 0.05 µg/L, respectively.

A summary of the historical analytical results from the Building 82 Site is presented in Attachment 3. No parameters were detected historically at concentrations above the GCTLs in well CEF-G82-1S. The following parameters were historically detected at concentrations above the GCTLs in well CEF-BP-2S: benzene, ethylbenzene, total xylenes, 1-methyl-naphthalene, 2-methylnaphthalene, and naphthalene. In general, the concentrations of VOCs (benzene, ethylbenzene, and total xylenes) in well CEF-G82-2S from the November 2006 sampling event decreased in concentrations when compared to the previous sampling events. However, the concentrations of PAHs 1-methylnaphthalene, 2-methylnaphthalene, benzo(a)pyrene and dibenz(a,h)anthracene increased slightly when compared with historical results.

3.2 MNA Analytical Results

Geochemical data were evaluated to determine if natural attenuation is continuing to occur in groundwater at the two sites and if parameter concentrations are decreasing in response to naturally-occurring degradation processes. The evaluation involves comparing geochemical data from source area and downgradient monitoring wells to background values measured in upgradient wells. The parameters evaluated included DO, ORP, pH, nitrate and nitrite, sulfate and sulfide, and dissolved methane. A discussion of the results of each parameter is presented below.

3.2.1 BP Wells Site

Dissolved Oxygen

DO measurements were recorded in each monitoring well during the November 2006 groundwater sampling event. Typically, DO concentrations below 1.0 milligram per liter (mg/L) indicate conditions are anoxic and a reducing environment is present. DO concentrations at the BP Wells Site ranged from 0.6 mg/L (CEF-BP-1S) to 1.50 mg/L (CEF-BP-3S) as measured using the Chemetrics® field test kits. The DO concentration of 0.6 mg/L in well CEF-BP-1S was slightly below the DO measured in the upgradient (background) well CEF-BP-2S at 0.8 mg/L. With the exception of well CEF-BP-1S, which showed slightly elevated VOCs, the DO readings at the site are generally similar to background levels. These data suggest that subsurface conditions are suboptimal for aerobic hydrocarbon biodegradation. However, contaminant concentration reductions indicate that anaerobic biodegradation of contaminants could be occurring.

Oxidation/Reduction Potential (Redox potential)

Redox potential is a measure of the relative tendency of ions in solution to transfer electrons. As electron acceptors are utilized, the redox potential of the groundwater decreases. As DO is consumed, the redox potential will decline and become negative. Redox potentials across the BP Well Site ranged from –126 millivolts (mV) to 186.7 mV. The lowest redox level was measured in CEF BP-6S. Negative redox potentials were also measured in source area monitoring well CEF-BP-1S, which suggests that reducing conditions are favorable for biodegradation in the vicinity of CEF-BP-1S. This is the only well with parameter concentrations above GCTLs.

pH

The pH of groundwater has an effect on the presence and activity of microbial populations in groundwater. Microbes capable of degrading petroleum hydrocarbons generally prefer pH values varying from 6 to 8 standard units. The pH values range from 5.13 (CEF-BP-5I) to 6.49 (CEF-BP-1S) with a background value of 6.37 (CEF-BP-2S), generally within the preferred range of values for microbial activity.

Nitrate/Nitrite

After DO has been depleted, biodegradation of hydrocarbons may continue anaerobically using total nitrate and nitrite as electron acceptors (denitrification). Nitrate and nitrite concentrations will be lower in the wells containing hydrocarbons if biodegradation is occurring. Nitrate and nitrite were detected in three of the four monitoring wells in which the parameter was analyzed. The nitrate and nitrite concentrations, ranging from non-detect to 561 ug/L in the downgradient wells, were lower than the concentrations of the background well CEF-BP-2S (733 ug/L). The presence of nitrate/nitrite in the areas of impacted groundwater suggests that reducing conditions favorable for denitrification are not present.

Sulfate/Sulfide

After DO and total nitrogen have been depleted in the aquifer, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed sulfate reduction and results in the production of sulfide. Portions of the plume containing hydrocarbons and undergoing anaerobic biodegradation may have depleted the sulfate concentrations and elevated the sulfide concentrations. Sulfate reducing conditions are favorable at redox potentials of –200 mV and ph of 7. Sulfate was detected in each of the four wells that were monitored for the parameter. The concentrations of sulfate were higher in the downgradient wells than in the background well. The presence of sulfate in the areas of impacted groundwater at concentrations higher than background and low sulfide concentrations suggest that conditions favorable for sulfate reduction are not present.

Dissolved Methane

The presence of methane in groundwater at concentrations above background is a good indicator that methanogenesis is occurring. During methanogenesis, carbon dioxide is used as an electron acceptor and methane is formed. The presence of methane in groundwater is indicative of strong reducing conditions. Methane was detected in three of the four wells analyzed. The concentration of methane exceeded background concentrations in wells CEF-BP-1S, CEF-BP -5I, and CEF-BP-6S. The presence of methane above background concentrations may be indicative of anaerobic microbial degradation of hydrocarbons occurring at the site.

3.2.2 Building G-82 Site

Dissolved Oxygen

DO concentrations in groundwater at the Building G-82 site ranged from 0.36 mg/L (in well CEF-G82-2I) to 0.84 mg/L (in well CEF-G82-5S). The DO concentrations measured in wells CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-4S, and CEF-G82–6S were below those in

the background well CEF-G82-3S. These data suggest that subsurface conditions are suboptimal for aerobic hydrocarbon biodegradation. However, general reductions in VOC concentrations over time indicate that biological degradation of contaminants is occurring.

Oxidation/Reduction Potential

Redox potentials across the Building G-82 Site ranged from –127.2 mV to 233.8 mV. The lowest redox level was measured in well CEF-G82-2S at -127.2 mV. Significantly negative redox potentials were measured only in monitoring wells CEF-G82-1S and CEF-G82–2I, suggesting that reducing conditions are prevalent in the vicinity of these wells, which are the only wells with contaminant concentrations above GCTLs.

pH

The pH of groundwater has an effect on the presence and activity of microbial populations in groundwater. Microbes capable of degrading petroleum hydrocarbons generally prefer pH values varying from 6 to 8 standard units. The pH values range from 4.97 (CEF-G82-4S) to 6.02 (CEF-G82-2S) with a background value of 5.81 (CEF-G82-3S), indicating that optimal pH conditions for microbial activity are not present at all locations at this site.

Nitrate/Nitrite

Nitrate and nitrite were detected in each of the four monitoring wells in which the parameter was analyzed. The nitrate and nitrite concentrations ranging from 44 to 66 ug/L in the downgradient wells were similar to the concentration in background well CEF-G82-3S (72 µg/L). The presence of nitrate and nitrite in the areas of impacted groundwater suggests that reducing conditions favorable for denitrification are not present.

Sulfate/Sulfide

Sulfate was detected in two of the four wells that were monitored for the parameter. The concentrations of sulfate were lower in the downgradient wells than the background well. The presence of sulfate in the areas of impacted groundwater at concentrations higher than background suggests that subsurface conditions at the site may not be favorable for sulfate reduction.

Dissolved Methane

Dissolved methane was detected in each of the four wells analyzed. The concentration of methane exceeded background in wells CEF-G82-1S, CEF-G82-2I, and CEF-G82-2S. Because methane is not present in gasoline or diesel fuel, the presence of methane above background concentrations may be indicative of anaerobic microbial degradation of hydrocarbons.

4.0 Conclusions

At the BP Wells Site, the following parameters were detected at concentrations above the GCTLs during the November 2006 sampling event: isopropylbenzene (cumene), ethylbenzene, total xylenes, 1,3,5-trimethylbenzene, and 1,2,4-trimethylebenzene in well CEF-BP-1S. Contaminant concentrations exceeded the GCTLs at only one monitoring well (CEF-BP-1S). Based on the laboratory analytical results, site contaminant concentrations in remaining wells at the BP Well site did not exceed GCTLs, and none of the detected

concentrations at this site exceed the NADC criteria. In general, the November 2006 site groundwater contaminant concentrations at the BP Wells site have decreased when compared to the historical sampling events. The MNA sampling data indicate that anaerobic degradation processes may be prevalent at the site.

Based on the analytical results, the residual groundwater contamination at this site appears to remain localized around the source area well CEF-BP-1S and does not appear to have migrated downgradient since the last sampling event in October 2003. Additionally, the impervious paved surface at the site acts as a barrier against the infiltration of precipitation, thus reducing the contaminant migration potential.

At the Building G-82 Site, the following parameters were detected at concentrations above the GCTLs during the well November 2006 sampling event: isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, benzo(a)pyrene and dibenz(a,h)-anthracene. Only the dibenz(a,h)anthracene detection in well CEF-G82-1S exceeded the NADC criteria.

In summary, the concentrations of VOCs (benzene, ethylbenzene, and xylenes) in the source area well CEF-G82-2S have decreased in concentrations when compared to the previous sampling events, and the concentrations of PAHs have remained similar in CEF-G82-2S and increased slightly in well CEF-G82-1S, when compared to the historical results.

The single NADC exceedance in the source well CEF-G82-1S of dibenz(a,h)anthracene and the appearance of benzo(a)pyrene (two compounds which were not previously detected at the site above laboratory detection limits) appear to be anomalous. The PAH concentrations in CEF-G82-1S should be monitored further to establish concentration trends over time.

Tables

TABLE 1

Groundwater Analytical Results

Bldg. G82 and BP Site Groundwater

Parameter			BP WELL SITE							Building 82 Tank G82 Site							
	Station ID		CEF-BP-1S	CEF-BP-2S	CEF-BP-3S	CEF-BP-4S		CEF-BP-5I	CEF-BP-6S	CEF-G82-1S	CEF-G82-2I		CEF-G82-2S	CEF-G82-3S	CEF-G82-4S	CEF-G82-5S	CEF-G82-6S
	Sample ID		86BP1SW061108	86BP2SW061107	86BP3SW061102	86BP4SW061102	86BPDPW061102	86BP5IW061107	86BP6SW061108	86G821SW061108	86G822IW061106	86G82DPW061106	86G822SW061106	86G823SW061106	86G824SW061102	86G825SW061102	86G826SW061102
	Sample Date		11/8/2006	11/7/2006	11/2/2006	11/2/2006	11/2/2006	11/7/2006	11/8/2006	11/8/2006	11/6/2006	11/6/2006	11/6/2006	11/6/2006	11/2/2006	11/2/2006	11/2/2006
	GCTL[1]	NADC					FIELD DUP					FIELD DUP					
SW8260B	Units in ug/L																
1,1,2-trichloro-1,2,2-trifluoroethane	210000	2100000	1.15 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	70	700	3.34 JB	5 U	5 U	5 U	5 U	5 U	3.39 JB	3.44 JB	1.08 J	5 U	5 U	5 U	3.55 J	3.57 J	5 U
1,2,4-Trimethylbenzene	10	100	**60.8 JB**	5 U	0.201 J	5 U	5 U	5 U									
1,3,5-Trimethylbenzene (Mesitylene)	10	100	**19 JB**	5 U	0.224 J	5 U	5 U	5 U									
1,2-Dichlorobenzene	600	6000	5 UJ	5 U	0.277 J	5 U	5 U	5 U	5 UJ	5 UJ	5 U	0.35 J	5 U	5 UJ	5 U	5 U	5 U
1,3-Dichlorobenzene	210	2100	5 U	5 U	0.25 JB	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	6300	63000	5.42 JB	89	25 UJ	25 UJ	25 UJ	25 U	25 JB	32.8 JB	3.25 J	6.72 B	18 J	15.9 B	7.38 JB	17.1 JB	25 U
Benzene	1	10	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.447 J	5 U	5 U	5 U	5 U	5 U
Bromomethane	9.8	98	5 U	5 UJ	5 U	5 U	5 U	5 UJ	0.924 JB	5 U	5 UJ	0.74 B	5 UJ	0.926 B	5 U	5 U	5 U
cyclohexane	NE	NE	5.74	5 U	5 U	5 U	5 U	5 U	5 U	3.97 J	5 U	5 U	2.62 J	5 U	5 U	5 U	5 U
Ethylbenzene	30	300	**53.1**	5 U	5 U	5 U	5 U	5 U	0.458 J	6.21	5 U	5 U	11.1	5 U	0.433 J	5 U	5 U
Isopropylbenzene (Cumene)	0.8	8	**5.61**	5 U	0.179 J	5 U	5 U	5 U	5 U	**3.66 J**	5 U	5 U	**4.02 J**	5 U	5 U	5 U	5 U
methylcyclohexane	NE	NE	9.53	5 U	0.173 J	5 U	5 U	5 U	3.95 J	4.04 J	5 U	5 U	3.23 J	5 U	5 U	5 U	5 U
Methylene chloride	5	50	10 U	10 U	1.74 JB	1.58 JB	1.46 JB	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene (PCE)	3	30	5 UJ	5 U	0.406 J	0.233 J	5 U	5 U	5 UJ	5 UJ	5 U	5 UJ	5 U	5 UJ	5 U	5 U	5 U
Toluene	40	400	3.16 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes, total	20	200	**101 J**	10 U	0.61 J	10 U	10 U	10 U	10 UJ	12.1 J	10 U	10 UJ	5.89 J	10 UJ	10 U	10 U	10 U
SW8310																	
1-methylnaphthalene	28	280	8.66 J	1 U	1 U	1 U	1 U	1 U	1 U	**48.8**	1 U	1 U	**138 J**	1 U	6.11 J	1 U	1 U
2-Methylnaphthalene	28	280	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	**65.9 J**	1 U	1 U	1 U	1 U
Acenaphthylene	210	2100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	5.54 J	1 U	1 U	1 U	1 U
Benzo(a)pyrene	0.2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**7.95 J**	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenz(a,h)anthracene	0.005	0.05	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**35.9 J**	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Fluorene	280	2800	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.51 J	0.5 U	0.5 U	3.98 J	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	14	140	6.47	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**40.7 J**	0.5 U	0.5 U	**56.5 J**	0.5 U	0.5 U	0.5 U	0.5 U
FLPRO																	
Petroleum hydrocarbons	5000	50000	459 B	126 B	86.4 B	112 B	114 B	69 JB	133 B	613 B	59 JB	59 JB	878 JB	54 JB	202 B	274 B	86 B

Notes:
All concentrations reported in micrograms per liter (ug/L).
GCTL - Groundwater Cleanup Target Level
NADC - Natural Attenuation Default Concentration
1 = Ch 62-777 FAC GCTLs reported in µg/L
U - The analyte was analyzed for, but not detected.
J - Result is estimated
UJ- Value non-detect, estimated.
JB- Estimated value; the analyte was detected in the associated method and/or calibration blank.
NE - Not Established at time of rule adoption
Bold indicates concentration exceeds GCTL.
Shaded indicates concentration exceeds NADC.

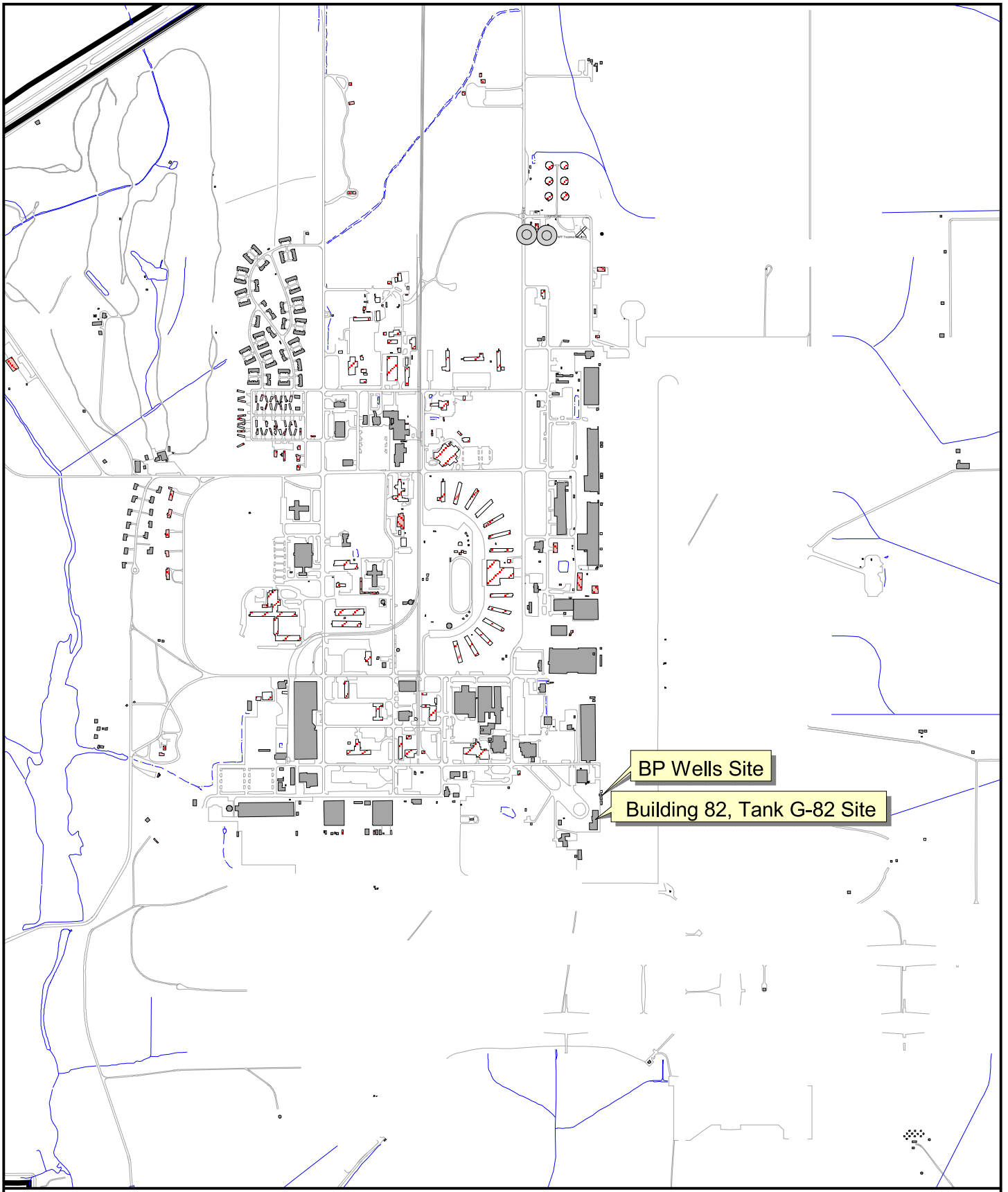
TABLE 2
MNA Parameter Results
Bldg. G82 and BP Site Groundwater

Station ID	CEF-BP-1S	CEF-BP-2S	CEF-BP-3S	CEF-BP-4S		CEF-BP-5I	CEF-BP-6S	CEF-G82-1S	CEF-G82-2I		CEF-G82-2S	CEF-G82-3S	CEF-G82-4S	CEF-G82-5S	CEF-G82-6S
Sample ID	86BP1SW061108	86BP2SW061107	86BP3SW061102	86BP4SW061102	86BPDPW061102	86BP5IW061107	86BP6SW061108	86G821SW061108	86G822IW061106	86G82DPW061106	86G822SW061106	86G823SW061106	86G824SW061102	86G825SW061102	86G826SW061102
Sample Date	11/8/2006	11/7/2006	11/2/2006	11/2/2006	11/2/2006	11/7/2006	11/8/2006	11/8/2006	11/6/2006	11/6/2006	11/6/2006	11/6/2006	11/2/2006	11/2/2006	11/2/2006
					FIELD DUP					FIELD DUP					
Parameter	**Units in ug/L**														
Nitrogen, nitrate (as n)	10 U	709 B	NA	NA	NA	561 B	10 U	10 U	10 U	10 U	36	65	NA	NA	NA
Nitrogen, nitrite	10 U	24	NA	NA	NA	10 U	3 J	44	66	59	18	7 J	NA	NA	NA
Sulfate (as SO4)	6300	4200 J	NA	NA	NA	10400	8600	5000 U	5000 J	5400	6800	31600	NA	NA	NA
E376.1															
Sulfide	4000 U	1600 J	NA	NA	NA	3200 J	4000 U	8000	3200 JB	3200 JB	5200 JB	2800 JB	NA	NA	NA
E415.1															
Total Inorganic Carbon	9400	6000	NA	NA	NA	24600	6800	6500	9600 JB	8400 JB	24900 JB	20000 JB	NA	NA	NA
Total organic carbon	9000	2300	NA	NA	NA	1000 U	8100	16700	910 J	1100	9900	7700	NA	NA	NA
RSK-175															
Methane	7.8	2 U	NA	NA	NA	1.26 J	1230	1340	2.27 JB	2.09 JB	680 JB	1.63 JB	NA	NA	NA
Field Parameteters															
pH	6.49	6.37	6.24	6.43	6.43	5.13	5.96	5.96	5.08	5.08	6.02	5.81	4.97	5.25	5
Cond. (mmhos/cm)	399	199	176	248	248	87	210	210	54	54	262	265	93	129	97
Dissolved Oxygen (mg/L) Field	0.3	0.53	1.97	0.69	0.69	1.07	0.37	0.37	0.36	0.36	0.51	0.78	0.64	0.84	0.65
Dissolved Oxygen (mg/L) Chemets	0.6	0.8	1.5	1	1	1	0.8	0.6	0.3	0.3	0.6	0.8	0.6	1	1
Dissolved Oxygen (mg/L) Hach	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8	1
ORP (mV)	-117.9	129.9	186.7	76.5	76.5	261	-126	-126	-7	-7	-127.2	200.4	99.4	69.7	233.8
Temp. (^{o}C)	24.4	25.5	28.5	28.2	28.2	23.79	23.28	23.2	23.6	23.6	24.5	24.4	28.5	26.9	24.5
Turbidity (NTUs)	0.33	7.6	7.57	29.7	29.7	0.73	3.67	61.7	99.3	99.3	21.1	3.92	4.3	5.83	24

J - Result is estimated.
UJ- Value non-detect, estimated.
JB- Estimated value; the analyte was detected in the associated method and/or calibration blank.
mS/cm = millisiemans per centimeter
NTU = nephelometric turbidity units
mg/L = milligrams per liter
^{o}C = degrees Celsius
ORP = oxygen reducing potential
mV = millivolts
NA - Not analyzed

Figures

NOTE: Original figure created in color



N

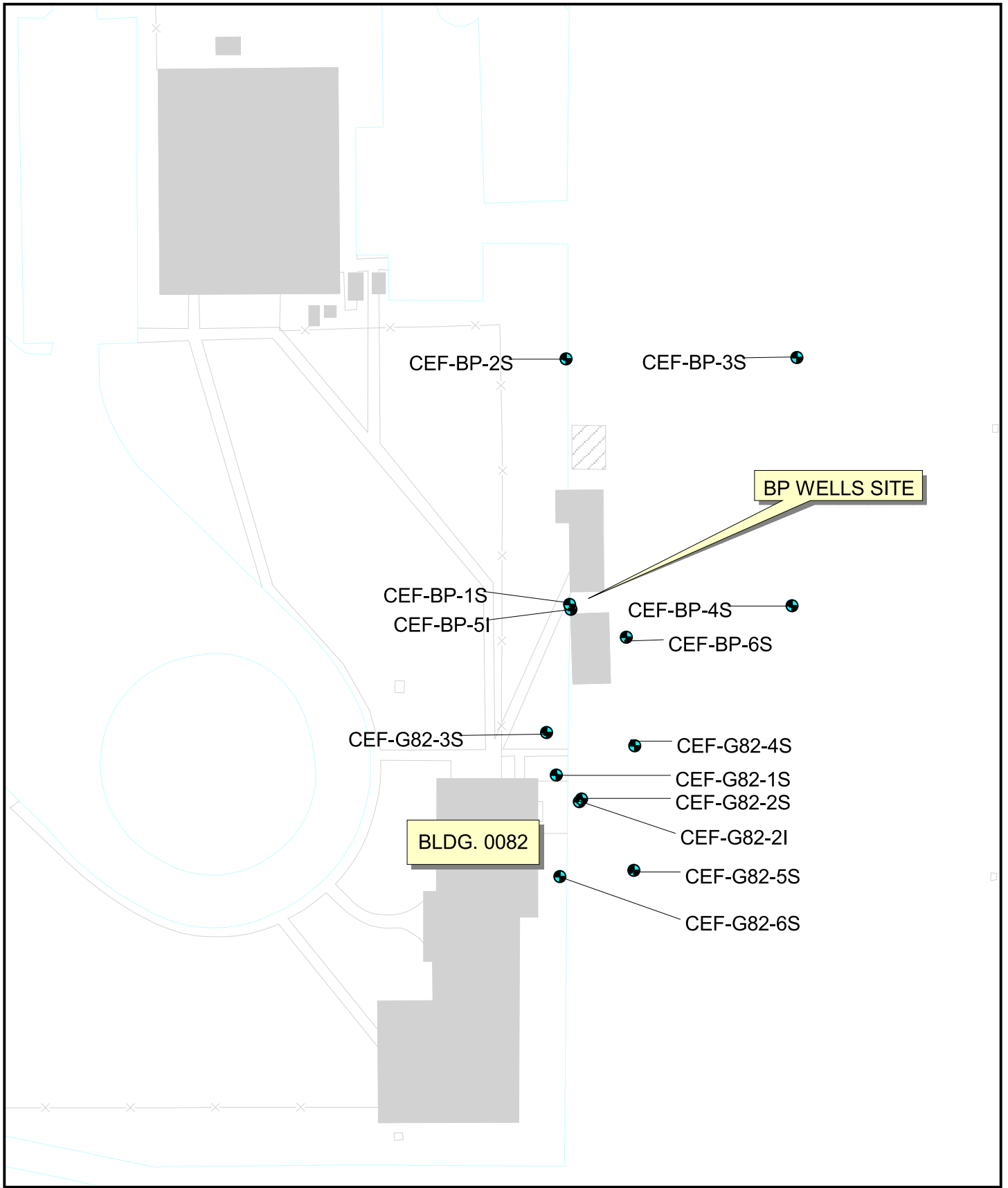
0 1000 2000 Feet

1 inch = 1376.99 feet

Figure 1
Site Location
Bldg. G-82 and BP Wells Sites
Former NAS Cecil Field, Jacksonville, FL

CH2MHILL

File Path: c:\gis\nas_cecilfield.apr, Date: 30 Oct 2006 14:38, User: SNAIK1, NAS Cecil Field Area [Florida State Plane Coordinate System NAD 83 Units Feet] - Figure 1-1 Site Location



Monitoring Wells

N

0 60 120 Feet

1 inch = 78 feet

Figure 2
Locations of Groundwater Monitoring Wells
BP Wells and Bldg. G-82 Sites
Former NAS Cecil Field, Jacksonville, FL

CH2MHILL

File Path: c:\gis\nas_cecilfield.apr, Date: 25 Apr 2007 19:18, User: SNAIK1, NAS Cecil Field Area [Florida State Plane Coordinate System NAD 83 Units Feet] - Figure 1-2 Locations of Groundwater Monitoring Wells

Attachment 1

Laboratory Analytical Reports
(provided on CD)

Attachment 2

BP Well Site Historical Analytical Results

Historical Detects in BP Wells - NAS Cecil Field

LOCID	SAMPLEID	QCTYPE	CAS	PARAMETER	RESULT	UNIT	QUALIFIER	FRACTION	MATR	SAMPLEDATE	SAMPLECODE
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	71-43-2	BENZENE	0.56	UG/L	J	OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	TTNUS001	TOTAL PETROLEUM HYDROCA	0.561	MG/L		PET	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	208-96-8	ACENAPHTHYLENE	2	UG/L		OS	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7439-95-4	MAGNESIUM	9420	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-23-5	SODIUM	2430	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7439-97-6	MERCURY	0.11	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-66-6	ZINC	45.5	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	91-20-3	NAPHTHALENE	3.9	UG/L		OS	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	108-88-3	TOLUENE	38.5	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	1330-20-7	TOTAL XYLENES	114	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-09-7	POTASSIUM	2260	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	100-41-4	ETHYLBENZENE	20.9	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7439-89-6	IRON	209	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-39-3	BARIUM	5.6	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-70-2	CALCIUM	26800	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	45.9	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	16.1	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	91-57-6	2-METHYLNAPHTHALENE	2.7	UG/L		OS	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	TTNUS054	M+P-XYLENES	67.1	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	108-67-8	1,3,5-TRIMETHYLBENZENE	13.5	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	95-63-6	1,2,4-TRIMETHYLBENZENE	39.7	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	100-41-4	ETHYLBENZENE	15	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	95-47-6	O-XYLENE	19.1	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	108-88-3	TOLUENE	30.1	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP-GW-01S-01-D	FD	95-63-6	1,2,4-TRIMETHYLBENZENE	144	UG/L		OV	GW	04/11/2001	DUP
CEF-BP-1S	CEF-BP-GW-01S-01-D	FD	108-67-8	1,3,5-TRIMETHYLBENZENE	49.9	UG/L		OV	GW	04/11/2001	DUP
CEF-BP-1S	CEF-BP-GW-01S-01-D	FD	1330-20-7	TOTAL XYLENES	432	UG/L		OV	GW	04/11/2001	DUP
CEF-BP-1S	CEF-BP-GW-01S-01A	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	156	UG/L		OV	GW	05/22/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-01A	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	53.8	UG/L		OV	GW	05/22/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-01A	NM	1330-20-7	TOTAL XYLENES	634	UG/L		OV	GW	05/22/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-02A	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	360	UG/L		OV	GW	11/06/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-02A	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	124	UG/L		OV	GW	11/06/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-02A	NM	1330-20-7	TOTAL XYLENES	894	UG/L		OV	GW	11/06/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-03	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	262	UG/L		OV	GW	10/03/2002	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-03	NM	100-41-4	ETHYLBENZENE	117	UG/L		OV	GW	10/03/2002	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-03	NM	1330-20-7	TOTAL XYLENES	658	UG/L		OV	GW	10/03/2002	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	224	UG/L		OV	GW	01/06/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	71.5	UG/L		OV	GW	01/06/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04	NM	100-41-4	ETHYLBENZENE	161	UG/L		OV	GW	01/06/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04	NM	1330-20-7	TOTAL XYLENES	811	UG/L		OV	GW	01/06/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04A	NM	14797-55-8	NITRATE	0.41	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04A	NM	TTNUS003	TOTAL ORGANIC CARBON	12	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04A	NM	74-82-8	METHANE	14	UG/L		OV	GW	01/30/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	74-82-8	METHANE	6.55	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	14797-55-8	NITRATE	0.12	MG/L		MISC	GW	04/17/2003	DUP

Historical Detects in BP Wells - NAS Cecil Field

LOCID	SAMPLEID	QCTYPE	CAS	PARAMETER	RESULT	UNIT	QUALIFIER	FRACTION	MATR	SAMPLEDATE	SAMPLECODE
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	TTNUS003	TOTAL ORGANIC CARBON	11.7	MG/L		MISC	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	95-63-6	1,2,4-TRIMETHYLBENZENE	273	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	108-67-8	1,3,5-TRIMETHYLBENZENE	144	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	100-41-4	ETHYLBENZENE	184	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	1330-20-7	TOTAL XYLENES	542	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01-06	NM	74-82-8	METHANE	24.5	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	38.4	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	118	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	100-41-4	ETHYLBENZENE	48	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	1330-20-7	TOTAL XYLENES	236	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	TTNUS003	TOTAL ORGANIC CARBON	13	MG/L		MISC	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	1330-20-7	TOTAL XYLENES	1040	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	TTNUS003	TOTAL ORGANIC CARBON	12.4	MG/L		MISC	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	74-82-8	METHANE	28.3	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	108-67-8	1,3,5-TRIMETHYLBENZENE	130	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	95-63-6	1,2,4-TRIMETHYLBENZENE	460	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	100-41-4	ETHYLBENZENE	207	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7429-90-5	ALUMINUM	1790	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-70-2	CALCIUM	41200	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7439-95-4	MAGNESIUM	1010	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-39-3	BARIUM	11.5	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-50-8	COPPER	1.2	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7439-89-6	IRON	758	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7439-97-6	MERCURY	0.19	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-66-6	ZINC	8.6	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-23-5	SODIUM	12100	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-62-2	VANADIUM	9.2	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-09-7	POTASSIUM	3270	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP-GW-02S-04A	NM	74-82-8	METHANE	1.4	UG/L		OV	GW	01/30/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-04A	NM	14797-55-8	NITRATE	0.88	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-04A	NM	TTNUS003	TOTAL ORGANIC CARBON	4	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-05	NM	14797-55-8	NITRATE	0.34	MG/L		MISC	GW	04/17/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-05	NM	TTNUS003	TOTAL ORGANIC CARBON	4.7	MG/L		MISC	GW	04/17/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-05	NM	74-82-8	METHANE	5.76	UG/L		OV	GW	04/17/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-06	NM	TTNUS003	TOTAL ORGANIC CARBON	4.8	MG/L		MISC	GW	07/17/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-2S-07	NM	TTNUS003	TOTAL ORGANIC CARBON	4.6	MG/L		MISC	GW	10/16/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-2S-07	NM	14797-55-8	NITRATE	0.33	MG/L		MISC	GW	10/16/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-2S-07	NM	74-82-8	METHANE	12.9	UG/L		OV	GW	10/16/2003	NORMAL
CEF-BP-6S	CEF-BP1-GW-06S-01	NM	67-64-1	ACETONE	26.3	UG/L		OV	GW	03/27/2000	NORMAL
CEF-BP-6S	CEF-BP1-GW-06S-01	NM	67-66-3	CHLOROFORM	1.1	UG/L		OV	GW	03/27/2000	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-04A	NM	14797-55-8	NITRATE	0.13	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-04A	NM	TTNUS003	TOTAL ORGANIC CARBON	9	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-04A	NM	74-82-8	METHANE	136	UG/L		OV	GW	01/30/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-05	NM	14797-55-8	NITRATE	0.71	MG/L		MISC	GW	04/17/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-05	NM	TTNUS003	TOTAL ORGANIC CARBON	6.1	MG/L		MISC	GW	04/17/2003	NORMAL

Historical Detects in BP Wells - NAS Cecil Field

LOCID	SAMPLEID	QCTYPE	CAS	PARAMETER	RESULT	UNIT	QUALIFIER	FRACTION	MATR	SAMPLEDATE	SAMPLECODE
CEF-BP-6S	CEF-BP-GW-06S-05	NM	100-41-4	ETHYLBENZENE	1.2	UG/L		OV	GW	04/17/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-05	NM	74-82-8	METHANE	149	UG/L		OV	GW	04/17/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-06-D	FD	100-41-4	ETHYLBENZENE	0.51	UG/L	J	OV	GW	07/17/2003	DUP
CEF-BP-6S	CEF-BP-GW-06S-06-D	FD	TTNUS003	TOTAL ORGANIC CARBON	6.6	MG/L		MISC	GW	07/17/2003	DUP
CEF-BP-6S	CEF-BP-GW-06S-06-D	FD	14797-55-8	NITRATE	0.33	MG/L		MISC	GW	07/17/2003	DUP
CEF-BP-6S	CEF-BP-GW-06S-06-D	FD	74-82-8	METHANE	87.2	UG/L		OV	GW	07/17/2003	DUP
CEF-BP-6S	CEF-BP-GW-6S-07	NM	TTNUS003	TOTAL ORGANIC CARBON	8.5	MG/L		MISC	GW	10/16/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-6S-07	NM	14797-55-8	NITRATE	0.34	MG/L		MISC	GW	10/16/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-6S-07	NM	74-82-8	METHANE	738	UG/L		OV	GW	10/16/2003	NORMAL

Attachment 3

Building G82 Site Historical Analytical Results

TABLE 3-1

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER
SITE ASSESSMENT REPORT BUILDING 82, TANK G82
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 1 OF 2

Location Sample Number Sample Date Well Depth, Feet	FDEP GCTL, FAC 62-777	CEF-G82-1S CEF-G82-GW-1S-01 07-Oct-99 15	CEF-G82-2S CEF-G82-GW-2S-01 07-Oct-99 14	CEF-G82-3S CEF-G82-GW-3S-01 07-Oct-99 14	CEF-G82-2I CEF-G82-GW-2I-02 22-Feb-00 35
Volatile Organic Compounds (ug/L)					
BENZENE	1	1 U	19 J	1 U	1 U
CHLOROFORM	5.7	1 U	2 U	1 U	1.2
ETHYLBENZENE	30	3.3	50 J	1 U	1 U
TOLUENE	40	1 U	6.8	1 U	1 U
XYLENES,TOTAL	20	3.8	196	3 U	3 U
Semivolatile Organic Compounds (ug/L)					
1-METHYLNAPHTHALENE	20	8.7 J	53.4 J	1.1 UJ	2.4 U
2-METHYLNAPHTHALENE	20	11.6 J	53.9 J	1.1 UJ	2.4 U
ACENAPHTHENE	20	1 UJ	1.8 J	1.1 UJ	2.4 U
ACENAPHTHYLENE	210	1 UJ	1.8 J	1.1 UJ	2.4 U
FLUORANTHENE	280	1 UJ	2.3 J	1.1 UJ	2.4 U
FLUORENE	280	1.9 J	6.3 J	1.1 UJ	2.4 U
NAPHTHALENE	20	6.8 J	24.5 J	1.1 UJ	2.4 U
PHENANTHRENE	210	4 J	18.7 J	1.1 UJ	2.4 U
Total Petroleum Hydrocarbons (mg/L)					
TRPH (C8-C40)	5	1.19	3.57	0.5 U	NM

Notes:

GCTL- Groundwater Cleanup Target Level
Shaded values are greater than criteria.
µg/L - migrogram per liter
mg/L - milligram per liter
NM - Not measured
U - Not detected at detection limit shown
J - Estimated value

ATTACHMENT B

FIELD SAMPLING FORMS
(JULY 2009)
(AUGUST 2009 – RESAMPLING)

JULY 2009 FIELD SAMPLING FORMS

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **G82/BP Wells**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-BP-1S	SAMPLE ID: CEF-BP-1S-200907 14	DATE: 07 / 14 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 15	STATIC DEPTH TO WATER (ft): 4.87	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) 6.2 Liters 3x = 18.6 L

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) _____ Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10	PURGE INITIATED AT: 1210	PURGE ENDED AT: 1300	TOTAL VOLUME PURGED (Liters): 20

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1210	—	—	400								
1251	16.4	16.4	400	4.90	6.52	25.24	.308	0.28	6.67	-129.0	clear
1254	~~17.6~~ 1.2	17.6	400	4.91	6.52	25.23	.307	0.29	8.31	-149.0	clear
1257	1.2	18.8	400	4.91	6.52	25.20	.309	.25	6.69	-156.4	clear
1300	1.2	20	400	4.91	6.51	25.18	.308	.21	6.46	-165.3	clear
1305	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1305	SAMPLING ENDED AT: 1400
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute): 400	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____ FILTER SIZE: ____ µm		DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
BTEX/ Naphthalen	3	CG	40 ml	HCL			8260B	
PAHS	1	AG	1 L	None			8270 SIM	
Sulfide	1	PE	250 ml	Zinc acetate and sodium hydroxide			EPA method 376.1	
Sulfate	1	PE	500 ml	None			EPA method 300.00	
Nitrate/Nitrite							EPA method 300.00	
Alkalinity							EPA Method 310.0	
Methane	2	CG	40 ml	None			Method RSK 175	

REMARKS: Petroleum odor around well

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **NAS Cecil Field G82/BP Wells** Sample ID No.: **CEF-BP-1S-200907**

Project No.: **112GN0394** Sample Location: **CEF-BP-1S**

Sampled By: **Jeff Krone** Duplicate: ☐

Field Analyst: **Jeff Krone** Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): ☐

SAMPLING DATA:

Date: 7/20/09	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (^{0}C)	ORP (Eh) (+/- mv)
Time: 1300							
Method: Peristaltic	clear	6.51	.308	6.46	.81	25.18	-165.3

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: Chemetrics K-7501 or K-7512 Range ☒ 0 - 1.0 mg/L ☐ 1 - 12 mg/L Analysis Time: 1340

Concentration: .5 mg/L

Notes:

Sulfide (S^{2-}):

Equipment: DR-890 Analysis Time: 1342

Program/Module: 93 / 610 nm Concentration: .07 mg/L

Notes:

Carbon Dioxide:

Equipment: (Range: 10 to 100 mg/L) Analysis Time: 1343

CHEMetrics K1910, K1920, or K1925. Concentration: 38 mg/L

Notes:

Alkalinity:

Equipment: (Range: 10 to 100 mg/L) Analysis Time: 1345

CHEMetrics K9810, K9815, or K9820. Concentration: 70 mg/L

Notes:

~~**Ferrous Iron (Fe^{2+}):**~~

~~Equipment: DR-890~~ ~~IR-18C Color Wheel~~ ~~Analysis Time:~~

~~Program/Module: 33 / 500nm~~ ~~Concentration: mg/L~~

~~Filtered:~~ ☐

~~Notes:~~

~~**Hydrogen Sulfide (H_2S):**~~

~~Equipment: HS-C~~ ~~Analysis Time:~~

~~Exceeded 5.0 mg/L range on color chart:~~ ☐ ~~Concentration: mg/L~~

~~Notes:~~

QA/QC Checklist:

All data fields have been completed as necessary: ☒

Correct measurement units are cited in the SAMPLING DATA block: ☒

Multiplication is correct for each *Multiplier* table: ☒

Final concentration is within the appropriate *Range Used* block: ☒

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☒

Title block is initialized by person who performed the QA/QC Checklist: ☒

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **G82/BP Wells**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-BP-4S	SAMPLE ID: CEF-BP-4S-200907 14	DATE: 7 / 14 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH:	STATIC DEPTH TO WATER (ft): 6.04	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
1x = 6.2L _____ Liters 3x = 18.6 L

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
_____ Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10	PURGE INITIATED AT: 1530	PURGE ENDED AT: 1609	TOTAL VOLUME PURGED (Liters): 19.5

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1530	—	—	~~400~~ 500	—	—	—	—	—	—	—	—
1600	15	15	500	6.12	6.31	27.96	.227	1.17	5.82	-98.4	clear
1603	1.5	16.5	500	6.12	6.31	27.94	.226	1.19	5.04	-98.2	clear
1606	1.5	18.0	500	6.12	6.31	27.96	.226	1.20	4.81	-97.7	clear
1609	1.5	19.5	500	6.12	6.31	27.99	.226	1.20	4.23	-97.2	clear
1615	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1615	SAMPLING ENDED AT: 1640
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute): 500	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
BTEX/ Naphthalen	3	CG	40 ml	HCl			8260B	
PAHS	1	AG	1 L	None			8270 SIM	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **G82/BP Wells**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-BP-5I	SAMPLE ID: CEF-BP-5I-200907 12	DATE: 7 / 14 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 30 - 35	STATIC DEPTH TO WATER (ft): 5.21	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
3x-9.3 3.1 _____ Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
_____ Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 32	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 32	PURGE INITIATED AT: 1355	PURGE ENDED AT: 1426	TOTAL VOLUME PURGED (Liters): 12.4

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1355	—	—	~~300~~ 400	—	—	—	—	—	—	—	—
1420	10.0	10.0	400	5.27	5.07	23.97	.068	0.49	1.26	-61.9	clear
1423	1.2	11.2	400	5.27	5.05	23.97	.068	0.51	1.13	-63.2	clear
1426	1.2	12.4	400	5.27	5.05	23.98	.068	.51	1.01	-60.9	clear
1430	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1430	SAMPLING ENDED AT: 1500
PUMP OR TUBING DEPTH IN WELL (feet): 32	SAMPLE PUMP FLOW RATE (mL per minute): 400	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
BTEX/ Naphthalen	3	CG	40 ml	HCl			8260B	
PAHS	1	AG	1 L	None			8270 SIM	
Sulfide	1	PE	250 ml	Zinc acetate and sodium hydroxide			EPA method 376.1	
Sulfate	1	PE	500 ml	None			EPA method 300.00	
Nitrate/Nitrite							EPA method 300.00	
Alkalinity							EPA Method 310.0	
Methane	2	CG	40 ml	None			Method RSK 175	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **NAS Cecil Field G82/BP Wells**
Sample ID No.: **CEF-BP-05I-200907**
Project No.: **112GN0394**
Sample Location: **CEF-BP-05I**
Sampled By: **Jeff Krone**
Duplicate: ☐
Field Analyst: **Jeff Krone**
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials):

SAMPLING DATA:

Date: / Time:	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (^{0}C)	ORP (Eh) (+/- mv)	
Method: Peristaltic								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:
Equipment: Chemetrics K-7501 or K-7512
Range ☒ 0 - 1.0 mg/L ☐ 1 - 12 mg/L
Analysis Time: 1510
Concentration: .7 mg/L
Notes:

Sulfide (S^{2-}):
Equipment: DR-890
Program/Module: 93 / 610 nm
Analysis Time: 1519
Concentration: .04 mg/L
Notes:

Carbon Dioxide:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K1910, K1920, or K1925.
Analysis Time: 1523
Concentration: 45 mg/L
Notes:

Alkalinity:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K9810, K9815, or K9820.
Analysis Time: 1515
Concentration: 00 mg/L
Notes:

~~**Ferrous Iron (Fe2+):**~~
~~Equipment: DR-890~~ ~~IR-18C Color Wheel~~
~~Program/Module: 33 / 500nm~~
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Filtered:~~ ☐
~~Notes:~~

~~**Hydrogen Sulfide (H2S):**~~
~~Equipment: HS-C~~
~~Exceeded 5.0 mg/L range on color chart:~~ ☐
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Notes:~~

QA/QC Checklist:
All data fields have been completed as necessary: ☐
Correct measurement units are cited in the SAMPLING DATA block: ☐
Multiplication is correct for each *Multiplier* table: ☐
Final concentration is within the appropriate *Range Used* block: ☐
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐
Title block is initialized by person who performed the QA/QC Checklist: ☐

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **G82/BP Wells**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-BP-6S	SAMPLE ID: CEF-BP-6S-200907 14	DATE: 7/ 14 /2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 5-15	STATIC DEPTH TO WATER (ft): 5.67	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) 1x = 6.21 _____ Liters 3x = 18.6 L

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
_____ Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10	PURGE INITIATED AT: 1010	PURGE ENDED AT: 1104	TOTAL VOLUME PURGED (Liters): 21.6

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1010	—	—	400	—							
1055	18	18	400	5.76	6.24	27.21	.268	.86	5.19	11.6	
1058	1.2	19.2	400	5.78	6.15	26.95	.267	1.29	3.98	-51.6	
1101	~~20.4~~ 1.2	20.4	400	5.78	6.15	26.94	.268	1.31	3.27	-59.7	
1104	1.2	21.6	400	5.78	6.15	26.91	.265	1.40	3.11	-67.7	
1109	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1109	SAMPLING ENDED AT: 1200
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute): 400	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
BTEX/ Naphthalen	3	CG	40 ml	HCl			8260B	
PAHS	1	AG	1 L	None			8270 SIM	
Sulfide	1	PE	250 ml	Zinc acetate and sodium hydroxide			EPA method 376.1	
Sulfate	1	PE	500 ml	None			EPA method 300.00	
Nitrate/Nitrite							EPA method 300.00	
Alkalinity							EPA Method 310.0	
Methane	2	CG	40 ml	None			Method RSK 175	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **NAS Cecil Field G82/BP Wells**
Sample ID No.: **CEF-BP-6S-200907**
Project No.: **112GN0394**
Sample Location: **CEF--BP-6S**
Sampled By: **Jeff Krone**
Duplicate: ☐
Field Analyst: **Jeff Krone**
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): JR

SAMPLING DATA:

Date: 7/14/09	Color	pH	S.C.	Turbidity	DO	Temp.	ORP (Eh)
Time: 1109	(Visual)	(SU)	(mS/cm)	(NTU)	(Meter, mg/l)	(^{0}C)	(+/- mv)
Method: Peristaltic	clear	6.15	.265	3.11	1.40	26.91	-67.7

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:
Equipment: Chemetrics K-7501 or K-7512
Range ☒ 0 - 1.0 mg/L ☐ 1 - 12 mg/L
Analysis Time: 1215
Concentration: .9 mg/L
Notes:

Sulfide (S^{2-}):
Equipment: DR-890
Program/Module: 93 / 610 nm
Analysis Time: 1218
Concentration: .05 mg/L
Notes:

Carbon Dioxide:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K1910, K1920, or K1925.
Analysis Time: 1221
Concentration: .55 mg/L
Notes:

Alkalinity:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K9810, K9815, or K9820.
Analysis Time: 1223
Concentration: 80 mg/L
Notes:

~~**Ferrous Iron (Fe^{2+}):**~~
~~Equipment: DR-890~~ ~~IR-18C Color Wheel~~
~~Program/Module: 33 / 500nm~~
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Filtered:~~ ☐
~~Notes:~~

~~**Hydrogen Sulfide (H_2S):**~~
~~Equipment: HS-C~~
~~Exceeded 5.0 mg/L range on color chart:~~ ☐
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Notes:~~

QA/QC Checklist:
All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final concentration is within the appropriate *Range Used* block: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **G82/BP Wells**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-BP-7S	SAMPLE ID: CEF-BP-7S-200907 15	DATE: 7 / 15 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 5-15'	STATIC DEPTH TO WATER (ft): 5.18	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) 3x = 18.6 6.2 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10	PURGE INITIATED AT: 1215	PURGE ENDED AT: 1259	TOTAL VOLUME PURGED (Liters): 22.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1215	—	—	500	—	—	—	—	—	—	—	—
1253	19	19	500	5.21	6.33	25.21	.204	4.30	6.22	27.7	clear
1256	1.5	20.5	500	5.21	6.32	25.24	.203	4.30	5.61	28.4	clear
1259	1.5	22.0	500	5.21	6.33	25.23	.203	4.28	5.11	29.1	clear
1303	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1303	SAMPLING ENDED AT: 1320
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute): 500	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: ____ FILTER SIZE: ____ µm		DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOCs	3	CG	40 ml	HCl			8260B	
PAHs	2	AG	1 L	none			8270C	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **G82/BP Wells**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-BP-8S	SAMPLE ID: CEF-BP-8S-200907 15	DATE: 7 / 15 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 5-15'	STATIC DEPTH TO WATER (ft): 5.41	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
3x: 18.6 6.2 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10	PURGE INITIATED AT: 1110	PURGE ENDED AT: 1157	TOTAL VOLUME PURGED (Liters): 23.5

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1110	—	—	500	—							
1148	19	19	500	5.49	6.14	24.83	.191	2.08	8.99	4.8	clear
1151	1.5	20.5	500	5.49	6.14	24.86	.191	2.07	7.84	4.2	clear
1154	1.5	22.0	500	5.49	6.14	24.85	.192	2.08	6.73	4.1	clear
1157	1.5	23.5	500	5.49	6.14	24.83	.191	2.06	6.01	4.2	clear
1202	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1202	SAMPLING ENDED AT: 1230
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute): 500	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: ____ FILTER SIZE: ____ µm		DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOCs	3	CG	40 ml	HCl			8260B	
PAHs	2	AG	1 L	none			SW-846 8270C	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **G82/BP Wells**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-BP-9S	SAMPLE ID: CEF-BP-9S-200907 15	DATE: 7/ 15 /2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 5-15'	STATIC DEPTH TO WATER (ft) 5.37	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) 3x= 18.6 L 6.2 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) _____ Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10	PURGE INITIATED AT: 0935	PURGE ENDED AT: 1026	TOTAL VOLUME PURGED (Liters): 24.4

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
0935	—	—	400	—							
1020	22	22	400	5.39	6.12	25.49	.255	2.70	3.77	88.8	clear
1023	1.2	23.2	400	5.39	6.13	25.50	.254	2.69	2.13	82.2	clear
1026	1.2	24.4	400	5.39	6.13	25.51	.253	2.69	1.93	76.6	clear
1030 Sample time											

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1030	SAMPLING ENDED AT: 1100
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	CEF-BP-DUP01-20090711
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: ____ FILTER SIZE: ____ µm		DUPLICATE: (Y) N

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOCs	3	CG	40 ml	HCl			8260B	
PAHs	2	AG	1 L	none			SW-846/8270C	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Bldg G82 and BP Wells Site
Project No.: 1126 0 2267
Location: NAS Cecil Field
Personnel: Jeff Kron
Weather Conditions:
Measuring Device: Heron
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-BP-1S	7/15/09	0951	71.28	14.72	4.98			
CEF-BP-2S	"	0943	71.78	14.48	5.37			
CEF-BP-3S		0945	72.38	14.57	6.19			
CEF-BP-4S		0942	72.28	14.75	6.13			
CEF-BP-5I		0950	71.63	34.39	5.31			
CEF-BP-6S		0940	37.87	14.2	5.64			
CEF-BP-7S		0948			5.17			
CEF-BP-8S		0953			5.40			
CEF-BP-9S		0935			5.37			
CEF-G82-1S			71.46	15.00				
CEF-G82-2I			71.60	35.00				
CEF-G-82-2S			71.23	14.00				
CEF-G82-4S			71.74	15.00				
CEF-G82-5S			71.53	15.00				
CEF-G82-6S			71.95	15.00				

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

YSI EQUIPMENT CALIBRATION SHEET

PROJECT NAME : NAS Cecil Field

INSTRUMENT NAME/MODEL: YSI 556 MPS

SITE NAME: G82/BP Wells

MANUFACTURER: YSI

PROJECT No.: 112GN0394

SERIAL NUMBER:

		Date of Calibration	Person Performing Calibration	Machine Serial No.	Machine Settings	Instrument Readings		Calibration Standard (Lot#/Expiration Date)	Comments
		(mm/dd/yy)	(Name)			Pre-cal	Post-cal		
pH (4)	(S.U.)	7/15/09	Jeff Kron	0631594		3.93	4.00	Lot# 2804813 Exp.Date: 4/10	
pH ~~(10)~~ 7.00	(S.U.)	"	"	"		7.06	7.00	Lot# 1803830 Exp.Date: 3/10	
D.O.	%				JK ~~1.413~~	90.1 ~~1.422~~	100.1 ~~1.413~~	Lot# Exp.Date:	
Cond.	(mS/cm)				1.413	1.422	1.413	Lot# 801111 Exp.Date: 6/10	
Temp.	°C							Lot# Exp.Date:	
ORP	(mV)				270	228.4	270	Lot# G 2989 Exp.Date: 1/13	
								Lot# Exp.Date:	
pH (4)	(S.U.)							Lot# Exp.Date:	
pH (10)	(S.U.)							Lot# Exp.Date:	
D.O.	%							Lot# Exp.Date:	
Cond.	(mS/cm)							Lot# Exp.Date:	
Temp.	°C							Lot# Exp.Date:	
ORP	(mV)							Lot# Exp.Date:	

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : YSI 556 mps

PROJECT NAME : Cecil Field BP Wells

MANUFACTURER : Serial # 06J1594 AH

PROJECT NUMBER : 112602267

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
7/14/09		4.00	4.14		4.00		Lot# 28043 13 exp 4/10
		7.00	6.86		7.00		" 1803830 exp 3/10
	conducivity	1.413	1.413		1.413		801111 exp 6/10
	ORP	240	242.0		240.0		G2889 exp 1/13
	D.O		106.4		100.0		
Lamotte 2020e Turbidimeter 7/14/09	10 NTUs						
	10 NTU		10.23		10.00		P891234 exp 4/10
	01 NTU		0.80		1.00		P994875 exp 8/10
7/15/09	10 NTU		12.5		10.0		
	01 NTU		1.04		1.00		

AUGUST 2009 RESAMPLING
FIELD SAMPLING FORMS

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **G82/BP Wells**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-BP-6S 20090817	SAMPLE ID: CEF-BP-6S-200907	DATE: 8/17 /2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 5-15	STATIC DEPTH TO WATER (ft): 6.42	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) 15 – 6.42 .1632 = 1.40 x 3.785 = 5.30L
Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGE INITIATED AT:	PURGE ENDED AT:	TOTAL VOLUME PURGED (Liters):

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1035	–	–	200	6.42					14.38	–	clear
~~1145~~	~~14~~	~~14~~	~~200~~								
1155	16	16	200	6.60	6.07	28.16	263	0.42	12.73	-42.5	clear
1159	0.8	16.8	200	6.60	6.12	28.10	260	0.40	11.21	-41.3	clear
1202	0.6	17.4	200	6.60	6.14	28.11	255	0.39	9.56	-50.3	clear
1205	0.6	18.0	200	6.60	6.15	28.05	252	0.38	8.46	-52.0	clear
1210	Sample Time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ ~~Jeff Krone~~ Pete Johnson	SAMPLER(S) SIGNATURES: [signature]	SAMPLING INITIATED AT: 1210	SAMPLING ENDED AT: 1230
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute): 200	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____ FILTER SIZE: ____ µm	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
BTEX/ Naphthalen	3	CG	40 ml	HCl			8260B	
PAHS	~~1~~ 2	AG	1 L	None			8270 SIM	
~~Sulfide~~	1	PE	250 ml	Zinc acetate and sodium hydroxide			EPA method 376.1	
Sulfate	1	PE	500 ml	None			EPA method 300.00	
Nitrate/Nitrite							EPA method 300.00	
Alkalinity							EPA Method 310.0	
Methane	2	CG	40 ml	None			Method RSK 175	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

6.42
14.23

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 615-345-1115 ♦ (fax) 615-846-5426

7244

Send Results to:	Send Invoice to:	Analysis Requirements:	Lab Use Only:
Name Tobrena Skeen	Name	VOC (limited list) 8260B	VOA Headspace Y N NA
Company Tetra Tech	Company	PAH + MNA 8270SIM	Field Filtered Y N NA
Address	Address	TRPH (PL = PRO)	Correct Containers Y N NA
City	City		Discrepancies Y N NA
State, Zip	State, Zip		Cust. Seals Intact Y N NA
Phone 412-921-8582	Phone		Containers Intact Y N NA
Fax	Fax		Airbill #:
E-mail tobrena.skeen@tetratech.com	E-mail		CAR #:
Project No./Name:	Sampler's (Signature):		

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	VOC (limited list) 8260B	PAH + MNA 8270SIM	TRPH (PL = PRO)	Comments	No. of Bottles	Lab Use Only Containers/Pres.
	8-17-09 1210	CEF-BP-MW-GS-2009 0817	GW	X	X	X	cool to 4°C	7	
	8-17-09 1230	Trip blank #7143	N/A	X			cool to 4°C	2	

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time 8-17-09 1815	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	*Temperature*

REMARKS:

Details:

Page 1 of 1

Cooler No. 1 of 1

Date Shipped 8-17-09

Shipped By

Turnaround

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

ATTACHMENT C
GROUNDWATER ANALYTICAL REPORT
(JULY 2009)
(AUGUST 2009 – RESAMPLING)

Full analytical package provided in electronic version

JULY 2009 GROUNDWATER ANALYTICAL REPORT

Analytical Report

Main Data Package - Inorganics

Tetra Tech NUS, Inc.
Foster Plaza 7
661 Anderson Drive
Pittsburgh, PA 15220

SDG #CecilBP001

Empirical Laboratories, LLC
621 Mainstream Drive, Suite 270
Nashville, TN 37228
615-345-1115

Janice Shilling
Project Manager

July 31, 2009

THIS DOCUMENT MEETS NELAC STANDARDS
NELAC Certification #TN473

TABLE OF CONTENTS
SDG #CecilBP001

	Page No.
Table of Contents	i
Inorganic Case Narrative	1
Parameters Requested	3
Chain of Custody & Sample Receipt Confirmation Forms	5
Sample Delivery Group Assignment Form	9
Wet Chemistry Data	
Analytical Sample Listing	10
QC Result Forms	13
Initial & Continuing Calibration Verification	17
Blank Summary Form	18
Logs	19
Last Page	21

INORGANIC CASE NARRATIVE
TETRA TECH NUS, Inc.
CECILBP001
Work Order # 0907117
July, 2009

Empirical Laboratories ID	Client ID
0907117-01	CEF-BP-6S-20090714
0907117-02	CEF-BP-1S-20090714
0907117-03	CEF-BP-5I-20090714

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in the case narrative, as verified by the following signature.

Betty DeVille
Inorganic Lab Manager

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception Report is attached to the Chain-of-Custody included with this data package.

II. HOLDING TIMES

A. Sample Preparation: All holding times were met.

B. Sample Analysis: All holding times were met.

METHODS

US EPA Methods for Chemical Analysis of Water and Waste
Method 300.0 was used to analyze nitrogen nitrate (as N), nitrogen nitrite (as N) and sulfate using a Dionex DX500.

Note: For all samples analyzed by method 300.0 all samples and analytes were manually integrated for one of the following reasons:
(A) The peak was manually integrated as it was not integrated in the original chromatogram.
(B) The peak was manually integrated due to resolution or coelution issues in the original chromatogram.
(C) The peak was manually integrated to correct the baseline from the original chromatogram.
(D) The peak was manually integrated to identify the correct peak as the incorrect peak was identified in the original chromatogram.
(E) The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

INORGANIC CASE NARRATIVE
TETRA TECH NUS, Inc.
CECILBP001
Work Order # 0907117
July, 2009

All raw data is labeled with the letter applicable to why the peak was manually integrated. Please find a copy of the un-integrated data and the integrated data included in the level IV data package.

Standard Methods 20th Edition
Method SM2320B was used to analyze alkalinity. Titrimetric method.
Method SM4500S2CF was used to analyze sulfide. Titrimetric method.

Note: The "I" flag indicates that the analyte result is between the laboratory reporting limit and the laboratory MDL. All methods performed according to EPA guidelines and Empirical Laboratories Standard Operating Procedures.

PREPARATION

All methods performed according to EPA guidelines and Empirical Laboratories Standard Operating Procedures.

ANALYSIS:

A. Calibration: All calibration criteria were met.

B. Blanks: All blank criteria were met.

C. Spikes: All matrix spikes quality control criteria were met.

D. Duplicates: All duplicate quality control criteria were met.

E. Samples: All sample analysis proceeded normally.

F. Laboratory Control Samples: All percent recovery quality control criteria were met.

WORK ORDER

Printed: 7/15/2009 12:17:41PM

0907117

Empirical Laboratories, LLC

Client: Tetra Tech NUS, Inc. (T010)
Project: ~~BP WELLS~~ Cecil Field (BP Wells)

Project Manager: Janice Shilling
Project Number: TET09_JM09

Report To:
Tetra Tech NUS, Inc. (T010)
Tobrena Skeen
Foster Plaza 7, 661 Anderson Drive
Pittsburgh, PA 15220
Phone: (412) 921-8182
Fax: (412) 921-4040

Invoice To:
Tetra Tech NUS, Inc. (T010)
Accounts Payable
Foster Plaza 7, 661 Anderson Drive
Pittsburgh, PA 15220
Phone :(412) 921-8182
Fax: (412) 921-4040

Date Due: 07/29/2009 16:00 (10 day TAT)
Received By: William Schwab
Logged In By: William Schwab

Date Received: 07/15/2009 08:15
Date Logged In: 07/15/2009 12:06

Samples Received at: 4.4°C
Custody Seals No
Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confin Yes

Analysis	Due	TAT	Expires	Comments
0907117-01 CEF-BP-6S-20090714 [Water] Sampled 07/14/2009 11:09 Eastern				
SMS_PAH_8270C_3510_SIM	07/24/2009 14:00	10	07/21/2009 10:09	
VGC_RSK175_MEE	07/24/2009 14:00	10	07/28/2009 10:09	
VOC_8260B_REG	07/24/2009 14:00	10	07/28/2009 10:09	
WC_ALKALINITY_2320B	07/24/2009 14:00	10	07/28/2009 10:09	
WC_ANIONS_300.0 (Regular)	07/24/2009 14:00	10	08/11/2009 10:09	SO4
WC_ANIONS_300.0 (Short Hold)	07/24/2009 14:00	10	07/16/2009 10:09	NO2, NO3
WC_SULFIDE_4500S2CF	07/24/2009 14:00	10	07/21/2009 10:09	DISSOLVED SULFIDE
SGC_FLPRO_3510C	07/24/2009 14:00	10	07/21/2009 10:09	
0907117-02 CEF-BP-1S-20090714 [Water] Sampled 07/14/2009 13:05 Eastern				
WC_ANIONS_300.0 (Short Hold)	07/24/2009 14:00	10	07/16/2009 12:05	NO2, NO3
SGC_FLPRO_3510C	07/24/2009 14:00	10	07/21/2009 12:05	
SMS_PAH_8270C_3510_SIM	07/24/2009 14:00	10	07/21/2009 12:05	
VGC_RSK175_MEE	07/24/2009 14:00	10	07/28/2009 12:05	
VOC_8260B_REG	07/24/2009 14:00	10	07/28/2009 12:05	
WC_ANIONS_300.0 (Regular)	07/24/2009 14:00	10	08/11/2009 12:05	SO4
WC_SULFIDE_4500S2CF	07/24/2009 14:00	10	07/21/2009 12:05	DISSOLVED SULFIDE
WC_ALKALINITY_2320B	07/24/2009 14:00	10	07/28/2009 12:05	

CecilBP001 WM

WORK ORDER

Printed: 7/15/2009 12:17:41PM

0907117

Empirical Laboratories, LLC

Client: Tetra Tech NUS, Inc. (T010)
Project: BP WELLS

Project Manager: Janice Shilling
Project Number: TET09_JM09

Analysis	Due	TAT	Expires	Comments
0907117-03 CEF-BP-5I-20090714 [Water] Sampled 07/14/2009 14:30 Eastern				
SGC_FLPRO_3510C	07/24/2009 14:00	10	07/21/2009 13:30	
SMS_PAH_8270C_3510_SIM	07/24/2009 14:00	10	07/21/2009 13:30	
VGC_RSK175_MEE	07/24/2009 14:00	10	07/28/2009 13:30	
VOC_8260B_REG	07/24/2009 14:00	10	07/28/2009 13:30	
WC_ALKALINITY_2320B	07/24/2009 14:00	10	07/28/2009 13:30	
WC_ANIONS_300.0 (Regular)	07/24/2009 14:00	10	08/11/2009 13:30	SO4
WC_ANIONS_300.0 (Short Hold)	07/24/2009 14:00	10	07/16/2009 13:30	NO2, NO3
WC_SULFIDE_4500S2CF	07/24/2009 14:00	10	07/21/2009 13:30	DISSOLVED SULFIDE
0907117-04 CEF-BP-4S-20090714 [Water] Sampled 07/14/2009 16:15 Eastern				
SGC_FLPRO_3510C	07/24/2009 14:00	10	07/21/2009 15:15	
SMS_PAH_8270C_3510_SIM	07/24/2009 14:00	10	07/21/2009 15:15	
VOC_8260B_REG	07/24/2009 14:00	10	07/28/2009 15:15	
0907117-05 Trip Blank [Water] Sampled 07/14/2009 00:00 Eastern				
VOC_8260B_REG	07/24/2009 14:00	10	07/27/2009 23:00	MINIMAL VOLUME!!!

Reviewed By

Date

CecilBP001 WM

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 26433 | PAGE ___ OF ___

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
12602267	Cecil Field	Rob Simcick	4129217231	Empirical Laboratories
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: Kara Wimble	PHONE NUMBER: 904 636-6125	ADDRESS: 621 mainstream Dr Suite 270
		CARRIER/WAYBILL NUMBER: Fedex 866052744376		CITY, STATE: Nashville, TN 37228

00ehsp001 WM

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G P P

PRESERVATIVE USED: HCl none H_2SO_4 HCl none $NaOH$

DATE YEAR 2009	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAP (G) COMP (C)	No. OF CONTAINERS	VOC's Limited 8260B	PAHs 8270C SIM	TRPH FLPRO	methane RSK175	Alkalinity 310.1	Anions EPA 300	Dissolved Sulfide		COMMENTS	
7/14	1109	CEF-BP-6S-20090714				GW	G	13	X	X	X	X	X	X			Cool to 4° c	-01
7/14	1305	CEF-BP-1S-20090714				GW	G	13	X	X	X	X	X	X				-02
7/14	1430	CEF-BP-5I-20090714				GW	G	13	X	X	X	X	X	X				-03
7/14	1615	CEF-BP-4S-20090714				GW	G	7	X	X	X							-04
7/14		Trip Blank (1 vial broken removed)						1									0907117	-05

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
	7/14/09	1800			
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME
				7/15/09	08:15

COMMENTS

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

4/02R
FORM NO. TtNUS-001

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 0907117 Number of Coolers: 1 of 3

Client: Tetra Tech NUS Project: Cecil Field

Date/Time Received: **07/15/09 08:15** Date cooler(s) opened: **07/15/09**

Opened By (print): **WILLIAM SCHWAB** (signature): [signature]

Circle response below as appropriate

1. How did the samples arrive?: FedEx UPS DHL Hand Delivered

EL Courier Other: _____

If applicable, enter airbill number here: 1469

2. Were custody seals on outside of cooler(s)? ..... Yes (No)

How many: — Seal date: — Seal Initials: —

3. Were custody seals unbroken and intact at the date and time of arrival?	Yes	No	(N/A)
4. Were custody papers sealed in a plastic bag included in the sample cooler?	(Yes)	No	N/A
5. Were custody papers filled out properly (ink, signed, etc.)?	(Yes)	No	N/A
6. Did you sign custody papers in the appropriate place for acceptance?	(Yes)	No	N/A
7. Was project identifiable from custody papers?	(Yes)	No	N/A
8. If required, was enough ice present in the cooler(s)?	(Yes)	No	N/A

Type of Coolant: (WET) DRY BLUE NONE Temperature of Samples upon Receipt: 4.4°C

Dates samples were logged-in: **07/15/09**

9. Initial this form to acknowledge login of sample(s): (Name): **WILLIAM SCHWAB** (Initial): WS

10. Were all bottle lids intact and sealed tightly?	(Yes)	No	N/A
11. Did all bottles arrive unbroken?	(Yes)	No	N/A
12. Was all required bottle label information complete?	(Yes)	No	N/A
13. Did all bottle labels agree with custody papers?	(Yes)	No	N/A
14. Were correct containers used for the analyses indicated?	(Yes)	No	N/A
15. Were preservative levels correct in all applicable sample containers?	(Yes)	No	N/A
16. Was residual chlorine present in any applicable sample containers?	Yes	No	(N/A)
17. Was sufficient amount of sample sent for the analyses required?	(Yes)	No	N/A
18. Was headspace present in any included VOA vials?	Yes	(No)	N/A

If Non-Conformance issues were present, list by sample ID: _____

_____ CAR#: _____

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: _____ Number of Coolers: 3 of 3

Client: Tetra Tech NUS Project: Cecil Field

Date/Time Received: **07/15/09 08:15** Date cooler(s) opened: **07/15/09**

Opened By (print): **WILLIAM SCHWAB** (signature): _____

Circle response below as appropriate

1. How did the samples arrive?: FedEx UPS DHL Hand Delivered

EL Courier Other: _____

If applicable, enter airbill number here: 4376

2. Were custody seals on outside of cooler(s)? ..... Yes (No)

How many: — Seal date: — Seal Initials: —

3. Were custody seals unbroken and intact at the date and time of arrival?	Yes	No	(N/A)
4. Were custody papers sealed in a plastic bag included in the sample cooler?	(Yes)	No	N/A
5. Were custody papers filled out properly (ink, signed, etc.)?	(Yes)	No	N/A
6. Did you sign custody papers in the appropriate place for acceptance?	(Yes)	No	N/A
7. Was project identifiable from custody papers?	(Yes)	No	N/A
8. If required, was enough ice present in the cooler(s)?	(Yes)	No	N/A

Type of Coolant: (WET) DRY BLUE NONE Temperature of Samples upon Receipt: 0-3°C

Dates samples were logged-in: **07/15/09**

9. Initial this form to acknowledge login of sample(s): (Name): **WILLIAM SCHWAB** (Initial): _____

10. Were all bottle lids intact and sealed tightly?	Yes	No	N/A
11. Did all bottles arrive unbroken?	Yes	No	N/A
12. Was all required bottle label information complete?	Yes	No	N/A
13. Did all bottle labels agree with custody papers?	Yes	No	N/A
14. Were correct containers used for the analyses indicated?	Yes	No	N/A
15. Were preservative levels correct in all applicable sample containers?	Yes	No	N/A
16. Was residual chlorine present in any applicable sample containers?	Yes	No	N/A
17. Was sufficient amount of sample sent for the analyses required?	Yes	No	N/A
18. Was headspace present in any included VOA vials?	Yes	No	N/A

If Non-Conformance issues were present, list by sample ID: _____

_____ CAR#: _____

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: _____ Number of Coolers: 2 of 3

Client: Tetra Tech NUS Project: Cecil Field

Date/Time Received: **07/15/09 08:15** Date cooler(s) opened: **07/15/09**

Opened By (print): **WILLIAM SCHWAB** (signature): [signature]

Circle response below as appropriate

1. How did the samples arrive?: FedEx UPS DHL Hand Delivered

EL Courier Other: _____

If applicable, enter airbill number here: 1458

2. Were custody seals on outside of cooler(s)? ..... Yes (No)

How many: — Seal date: — Seal Initials: —

3. Were custody seals unbroken and intact at the date and time of arrival? ..... Yes No (N/A)
4. Were custody papers sealed in a plastic bag included in the sample cooler? ..... (Yes) No N/A
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (Yes) No N/A
6. Did you sign custody papers in the appropriate place for acceptance? ..... (Yes) No N/A
7. Was project identifiable from custody papers? ..... (Yes) No N/A
8. If required, was enough ice present in the cooler(s)? ..... (Yes) No N/A

Type of Coolant: (WET) DRY BLUE NONE Temperature of Samples upon Receipt: 2.4°C

Dates samples were logged-in: **07/15/09**

9. Initial this form to acknowledge login of sample(s): (Name): **WILLIAM SCHWAB** (Initial): _____
10. Were all bottle lids intact and sealed tightly? ..... Yes No N/A
11. Did all bottles arrive unbroken? ..... Yes No N/A
12. Was all required bottle label information complete? ..... Yes No N/A
13. Did all bottle labels agree with custody papers? ..... Yes No N/A
14. Were correct containers used for the analyses indicated? ..... Yes No N/A
15. Were preservative levels correct in all applicable sample containers? ..... Yes No N/A
16. Was residual chlorine present in any applicable sample containers? ..... Yes No N/A
17. Was sufficient amount of sample sent for the analyses required? ..... Yes No N/A
18. Was headspace present in any included VOA vials? ..... Yes No N/A

If Non-Conformance issues were present, list by sample ID: _____

_____ CAR#: _____

Sample Delivery Group Assignment Form

CLIENT: Tetra Tech NUS, Inc. (T010)
PROJECT NAME: Cecil Field (BP Wells)
SDG #: CECILBP001
MATRIX: Water

QC LEVEL: EDD/III
Report Due: 7/29/2009 - 7/30/2009
Client Sample Count: 7

Sample Type	Sampled	Received	Lab ID	Client ID	E300.0	FLPRO	RSK175	SM2320B	SM4500S2CF	SW8260B	SW8270C
Client Sample	07/14/09	07/15/09	0907117-01	CEF-BP-6S-20090714	X	X	X	X	X	X	X
Client Sample	07/14/09	07/15/09	0907117-02	CEF-BP-1S-20090714	X	X	X	X	X	X	X
Client Sample	07/14/09	07/15/09	0907117-03	CEF-BP-5I-20090714	X	X	X	X	X	X	X
Client Sample	07/14/09	07/15/09	0907117-04	CEF-BP-4S-20090714		X				X	X
Trip Blank	07/14/09	07/15/09	0907117-05	Trip Blank						X	
Field Duplicate	07/15/09	07/16/09	0907145-01	CEF-BP-DUP01-2009		X				X	X
Client Sample	07/15/09	07/16/09	0907145-02	CEF-BP-9S-2009		X				X	X
Client Sample	07/15/09	07/16/09	0907145-03	CEF-BP-8S-2009		X				X	X
Client Sample	07/15/09	07/16/09	0907145-04	CEF-BP-7S-2009		X				X	X
Trip Blank	07/15/09	07/16/09	0907145-05	Trip Blank						X	

Laboratory Analytical Results Report

Client Sample ID: CEF-BP-6S-20090714
Lab Sample ID: 0907117-01
Sample Matrix: Water

Sample Collection Date/Time: 07/14/2009 11:09
Sample Received Date/Time: 07/15/2009 08:15

Analyte	Result	MDL	RL	Units	Dilution	Analyzed	Method	Batch	Notes
Classical Chemistry Parameters									
Alkalinity, Total (as CACO3)	**103**	1.00	1.00	mg/L	1	07/23/09 15:28	SM2320B	9G23012	
Sulfide	ND	0.800	2.40	mg/L	0.8	07/20/09 14:08	SM4500S2 CF	9G20018	U
Anions by IC									
Sulfate as SO4	**10.1**	1.00	5.00	mg/L	1	07/15/09 16:59	E300.0	9G15021	
Nitrate as N	**0.279**	0.0500	0.150	mg/L	1	07/15/09 16:59	E300.0	9G15021	
Nitrite as N	ND	0.0500	0.250	mg/L	1	07/15/09 16:59	E300.0	9G15021	U

Laboratory Analytical Results Report

Client Sample ID: CEF-BP-1S-20090714
Lab Sample ID: 0907117-02
Sample Matrix: Water

Sample Collection Date/Time: 07/14/2009 13:05
Sample Received Date/Time: 07/15/2009 08:15

Analyte	Result	MDL	RL	Units	Dilution	Analyzed	Method	Batch	Notes
Classical Chemistry Parameters									
Alkalinity, Total (as CACO3)	**125**	1.00	1.00	mg/L	1	07/23/09 15:35	SM2320B	9G23012	
Sulfide	**0.960**	0.800	2.40	mg/L	0.8	07/20/09 14:09	SM4500S2 CF	9G20018	I
Anions by IC									
Sulfate as SO4	**4.91**	1.00	5.00	mg/L	1	07/15/09 17:16	E300.0	9G15021	I
Nitrate as N	ND	0.0500	0.150	mg/L	1	07/15/09 17:16	E300.0	9G15021	U
Nitrite as N	ND	0.0500	0.250	mg/L	1	07/15/09 17:16	E300.0	9G15021	U

Laboratory Analytical Results Report

Client Sample ID: CEF-BP-5I-20090714
Lab Sample ID: 0907117-03
Sample Matrix: Water

Sample Collection Date/Time: 07/14/2009 14:30
Sample Received Date/Time: 07/15/2009 08:15

Analyte	Result	MDL	RL	Units	Dilution	Analyzed	Method	Batch	Notes
Classical Chemistry Parameters									
Alkalinity, Total (as CACO3)	**4.29**	1.00	1.00	mg/L	1	07/23/09 15:39	SM2320B	9G23012	
Sulfide	ND	0.800	2.40	mg/L	0.8	07/20/09 14:09	SM4500S2 CF	9G20018	U
Anions by IC									
Sulfate as SO4	**11.4**	1.00	5.00	mg/L	1	07/15/09 17:34	E300.0	9G15021	
Nitrate as N	**0.219**	0.0500	0.150	mg/L	1	07/15/09 17:34	E300.0	9G15021	
Nitrite as N	ND	0.0500	0.250	mg/L	1	07/15/09 17:34	E300.0	9G15021	U

Classical Chemistry Parameters - Quality Control

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9G20018											
Blank			Prepared & Analyzed: 07/20/2009								
Sulfide	ND	0.800	2.40	mg/L							U
LCS			Prepared & Analyzed: 07/20/2009								
Sulfide	1367	83.3	250	mg/L	1347		101	75-125			
LCS Dup			Prepared & Analyzed: 07/20/2009								
Sulfide	1300	83.3	250	mg/L	1347		96.5	75-125	5.00	20	
Batch 9G23012											
Blank			Prepared & Analyzed: 07/23/2009								
Alkalinity, Total (as CACO3)	ND	1.00	1.00	mg/L							U
LCS			Prepared & Analyzed: 07/23/2009								
Alkalinity, Total (as CACO3)	223.3	1.00	1.00	mg/L	200.0		112	80-120			

Anions by IC - Quality Control

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9G15021											
Blank			Prepared & Analyzed: 07/15/2009								
Nitrate as N	ND	0.0500	0.150	mg/L							U
Nitrite as N	ND	0.0500	0.250	mg/L							U
Sulfate as SO4	ND	1.00	5.00	mg/L							U
LCS			Prepared & Analyzed: 07/15/2009								
Nitrate as N	3.823	0.0500	0.150	mg/L	3.616		106	90-110			
Nitrite as N	5.011	0.0500	0.250	mg/L	4.864		103	90-110			
Sulfate as SO4	23.25	1.00	5.00	mg/L	24.00		96.9	90-110			

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit

Legend

A Value reported is the arithmetic mean (average) of two or more determinations. This code shall be used if the results of two or more discrete and separate samples are averaged. These samples shall have been processed and analyzed (e.g., laboratory replicate samples, field duplicates, etc.) independently. Do not use this code if the data are the result of replicate analysis on the same sample aliquot, extract or digestate. Under most conditions, replicate values shall be reported as individual analyses.

B Results based upon colony counts outside the acceptable range. This code applies to microbiological tests and specifically to membrane filter colony counts. The code is to be used if the colony count is generated from a plate in which the total number of coliform colonies is outside the method indicated ideal range. This code is not to be used if a 100 mL sample has been filtered and the colony county is less than the lower value of the ideal range.

F When reporting species: F indicates the female sex.

H Value based on field kit determination; results may not be accurate. This code shall be used if a field screening test (i.e., field gas chromatograph data, immunoassay, vendor-supplied field kit, etc.) was used to generate the value and the field kit or method has not been recognized by the Department as equivalent to laboratory methods.

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

J Estimated value; value may not be accurate. This code shall be used in the following instances:

1. Surrogate recovery limits have been exceeded;
2. No known quality control criteria exist 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; or
5. The data are questionable because of improper laboratory or field protocols (e.g., composite sample was collected instead of a grab sample).

Note: a "J" value shall be accompanied by justification for its use.

A "J" value shall not be used if another code applies (e.g., K, L, M, T, V, Y, I).

K Off-scale low. Actual value is known to be less than the value given. This code shall be used if:

1. The value is less than the lowest calibration standard and the calibration curve is known to be non-linear; or
2. The value is known to be less than the reported value based on sample size, dilution or some other variable.

This code shall not be used to report values that are less than the laboratory practical quantitation limit or laboratory method detection limit.

L Off-scale high. Actual value is known to be greater than value given. To be used when the concentration of the analyte is above the acceptable level for quantitation (exceeds the linear range or highest calibration standard) and the calibration curve is known to exhibit a negative deflection.

M When reporting chemical analyses: presence of material is verified but not quantified; the actual value is less than the value given. The reported value shall be the laboratory practical quantitation limit. This code shall be used if the level is too low to permit accurate quantification, but the estimated concentration is greater than the method detection limit. If the value is less than the method detection limit use "T" below.

N Presumptive evidence of presence of material. This qualifier shall be used if:

1. The component has been tentatively identified based on mass spectral library search; or
2. There is an indication that the analyte is present, but quality control requirements for confirmation were not met (i.e., presence of analyte was not confirmed by alternative procedures).

O Sampled, but analysis lost or not performed.

Q Sample held beyond the accepted holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for sample preparation or analysis.

T Value reported is less than the laboratory method detection limit. The value is reported for informational purposes, only and shall not be used in statistical analysis.

U Indicates that the compound was analyzed for but not detected. This symbol shall be used to indicate that the specified component was not detected. The value associated with the qualifier shall be the laboratory method detection limit. Unless requested by the client, less than the method detection limit values shall not be reported (see "T" above).

V Indicates that the analyte was detected in both the sample and the associated method blank. Note: the value in the blank shall not be subtracted from associated samples.

Y The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

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

? Data are rejected and should not be used. Some or all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.

* Not reported due to interference.

The following codes deal with certain aspects of field activities. The codes shall be used if the laboratory has knowledge of the specific sampling event. The codes shall be added by the organization collecting samples if they apply:

D Measurement was made in the field (i.e., in situ). This applies to any value (except pH, specific conductance, dissolved oxygen, temperature, total residual chlorine, transparency, or salinity) that was obtained under field conditions using approved analytical methods. If the parameter code specifies a field measurement (e.g., "Field pH"), this code is not required.

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Empirical Laboratories Contract: Tetra Tech NUS, Inc.

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: 0907117

Initial Calibration Source: EM Science, Fisher

Continuing Calibration Source: EM Science, Fisher

Concentration Units: mg/kg

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)
Nitrogen, Nitrate (as N)	2.5	2.594	103.8	2.5	2.601	104.0		
Nitrogen, Nitrite (as N)	2.5	2.734	109.4	2.5	2.711	108.4		
Sulfate	25.0	25.169	100.7	25.0	24.186	96.7		

FORM II (PART 1) - IN

3
BLANKS

Lab Name: Empirical Laboratories Contract: Tetra Tech NUS, Inc.

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 0907117

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (mg/L or mg/kg): mg/kg

Analyte	Initial Calib. Blank (mg/L)	C	Continuing Calibration Blank (mg/L) 1	C	2	C	3	C	Preparation Blank	C
Nitrogen, Nitrate (as N)	0.050	U	0.050	U					0.050	U
Nitrogen, Nitrite (as N)	0.050	U	0.050	U					0.050	U
Sulfate	1.0	U	1.0	U					1.0	U

FORM III - IN

Empirical Laboratories

EMPIRICAL LABORATORIES, LLC
LABORATORY SAMPLE CUSTODY FORM
WALK-IN REFRIGERATOR

Sample Log # (s)	Time/Date/Initials Removed	Time/Date/Initials Returned (Note if all Sample Used)	Notes/ Comments	Task Performed
0907104-01-04 0907062-01-05	11:15 7/15/09 KH	KH 7/15/09	(X4) metals.	metals/Hg
07100-2,3,5,9,10 07104-1-4	AF 7/15/09 11:45			EXP
7099-01-02 tot & sol. 7116-01-03 tot & sol.	7/15/09 12:47	KH 7/15/09 15:03	7116-from log in	metals
7118-01-02 tot & sol. 7086-19	↓	↓	filter & pres 7118 (sol) from log in	↓
7038-01 7044-01	VM 7-15-09 1324	VM 7-15-09 1650		N_2/N_3
7048-01 7076-03 7100-02 to 03	↓	↓		↓
07062-01-05 sol. 07046-07	07072-01-04 KH 7/15/09 14:11	KH 7/15/09 15:03		metals.
07118-1-2	AF 7/15/09 14:20			EXP
07111-01,02 07117-01 to 03	14:45 KBG 7/15/09	15:15 KBG 7/15/09		Anions
07110-01 to 04 07061-08,09	↓	↓		↓
07086-02,12				
07097-04 to 06	15:35 KBG 7/15/09	16:45 KBG 7/15/09		%Solids
07086-14-19 07099-01-02 tot & sol.	7/15/09 15:55	KH 7/15/09 16:20		Hg
07104-01-04 07118-01-02				
07062-01-05 sol. 07116-01-03 tot & sol.				
7074-02 7111-01,02	VM 7-16-09 800	VM 7-16-09 1145		T phos
7124-01 7125-02	↓	↓		↓
7111-01 to 02	VM 7-16-09 8:25			ophos
0707-11,12	AF 7/16/09 9:45			Herb

CecilBP001 WM

Empirical Laboratories

EMPIRICAL LABORATORIES, LLC
LABORATORY SAMPLE CUSTODY FORM
WALK-IN REFRIGERATOR

Sample Log # (s)	Time/Date/Initials Removed	Time/Date/Initials Returned (Note if all Sample Used)	Notes/ Comments	Task Performed
7163-17,3	17:35 7/17/09 JLD			Pest/PCB
7107-02	JG 7/17/09 17:32	JG 7/17/09 17:47		TSS
7143-08,09, 10,11	VM 7-18-09 1050		VM 7-18-09 1230 used all	O+G
7164-1-16	↓	↓	from-log-12	↓
0907169	9:17 7-20-09 RB	~~9:17~~ 10:10 7-20-09 RB	From Log-in	Metals
7147-12 7163-3-7,14-17	9:50 7/20/09 JLD			Herb.
7105-04-03 7133-14 7156-01-04	JG 7/20/09 9:50	JG 7/20/09 14:13		TCLP
07110-01,03 07111-01,02	10:10 KDG 7/20/09	13:50 KDG 7/20/09		Cl04-
0907047-0907061 0907079-0907086	10:50 7-20-09 RB	11:50 7-20-09 RB		TOC
0907110 0907111 0907157	↓	↓		↓
7103-01, 7112-01 7125-01 7134-01	VM 7-20-09 1130	VM 7-20-09 1345		TKN
7135-02,03 7149-01,02	↓	↓		↓
7172-04	↓	↓		↓
07117-01,03	12:45 KDG 7/20/09	—	used all	Sulfide
0907105-04	JG 7/20/09 14:12	JG 7/20/09 16:15		TCLP
0907133-01,2,4-8, 10-13	15:24 7/20/09 JLD			EXPL
0907136-1-3 0907137-1-6	↓			↓
7125-01 7135-01	VM 7-20-09 1530	VM 7-20-09 1730		NO_2/NO_3
7158-01-> 18	↓	↓		
7147-2,12,14,15,16, 21,24,25,29,30,31, 33,34 7163-2,4,6,7,11,12,17	MS 7-21-09 06:40 ↓			BNA ↓

CecilBP001 WM

Empirical Laboratories

EMPIRICAL LABORATORIES, LLC
LABORATORY SAMPLE CUSTODY FORM
WALK-IN REFRIGERATOR

Sample Log # (s)	Time/Date/Initials Removed	Time/Date/Initials Returned (Note if all Sample Used)	Notes/ Comments	Task Performed
07129-01	09:15 KBG 7/23/09 RS	09:45 KBG 7/23/09		pH
0907059 0907173	9:45 7-23-09	11:20 7-23-09 RS		TOC
07187-02-04 07194-02	10:00 7/23/09 JLD			Expl.
07117-1,3,4	10:20 7/23/09 JLD			PAH SIM
07101-01,705,07710 07117-01703	11:15 KBG 7/23/09	15:45 KBG 7/23/09		Alkalinity
7196-09	JG 7/23/09 11:35			TCLP
0907101	8:25 7-24-09 RS ~~7-23-09~~	10:35 7-24-09 RS		TOC
7144-01-04(Sol & tot) 7183-01-02(tot & sol) 7188-01,03 tot & sol. 7202-01-02 tot & sol.	8:34 7/24/09 KH	11:45 KH 7/24/09		metals/Hg
0907203	9:33 7-24-09 RS	10:09 7-24-09 RS		Metals
07169-9-11	AF 7/24/09 10:15			DRO
07173-1-3 07184-1 07183-1-3 07188-1,3 07202-1-2 07205-1	AF 7/24/09 10:15			BNA
7158 01-03	JG 7/24/09 10:32	JG 7/24/09 13:37		(O)
7158-01-20,22,23 7171-01-02	KH 7/24/09 11:49	KH 7/24/09 12:36		Mercury
7182-02,03,04 7208-01 tot & sol			from login	
7142-1-17	KH 7/24/09 3:20 pm		USED ALL	VPH
7115-1-3	DLS 7.24.09 4:50pm			VPH
07212-01703	12:30 KBG 7/24/09	17:20 KBG 7/24/09	from log-in	Anions
7169-1-4 7180-1-13	DLS 7.24.09 8:48pm			VPH
7142-2,8,9	DLS 7.24.09 8:29pm			VPH

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-1S
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0711702D

Level: (low/med) LOW Date Sampled: 07/14/09 13:05

% Moisture: not dec. _____ Date Analyzed: 07/19/09 09:49

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 10.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	1.2	10		UD
100-41-4	Ethylbenzene	1.0	10	220	D
98-82-8	Isopropylbenzene	1.1	8.0	19	D
91-20-3	Naphthalene	1.2	10	160	VD
108-88-3	Toluene	1.4	10		UD
95-63-6	1,2,4-Trimethylbenzene	1.4	10	480	D
108-67-8	1,3,5-Trimethylbenzene	1.0	10	150	D
1330-20-7	Xylene(total)	2.1	10	770	D

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-4S
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0711704

Level: (low/med) LOW Date Sampled: 07/14/09 16:15

% Moisture: not dec. _____ Date Analyzed: 07/19/09 08:50

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.12	1.0		U
100-41-4	Ethylbenzene	0.10	1.0		U
98-82-8	Isopropylbenzene	0.11	0.80		U
91-20-3	Naphthalene	0.12	1.0		U
108-88-3	Toluene	0.14	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.14	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.10	1.0		U
1330-20-7	Xylene(total)	0.21	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-5I
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0711703

Level: (low/med) LOW Date Sampled: 07/14/09 14:30

% Moisture: not dec. _____ Date Analyzed: 07/19/09 08:20

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.12	1.0		U
100-41-4	Ethylbenzene	0.10	1.0		U
98-82-8	Isopropylbenzene	0.11	0.80		U
91-20-3	Naphthalene	0.12	1.0	0.42	IV
108-88-3	Toluene	0.14	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.14	1.0	0.18	I
108-67-8	1,3,5-Trimethylbenzene	0.10	1.0		U
1330-20-7	Xylene(total)	0.21	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-6S
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0711701

Level: (low/med) LOW Date Sampled: 07/14/09 11:09

% Moisture: not dec. _____ Date Analyzed: 07/19/09 07:51

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.12	1.0		U
100-41-4	Ethylbenzene	0.10	1.0	18	
98-82-8	Isopropylbenzene	0.11	0.80	2.3	
91-20-3	Naphthalene	0.12	1.0	11	V
108-88-3	Toluene	0.14	1.0	0.16	I
95-63-6	1,2,4-Trimethylbenzene	0.14	1.0	28	
108-67-8	1,3,5-Trimethylbenzene	0.10	1.0	5.3	
1330-20-7	Xylene(total)	0.21	1.0	22	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-7S-2009

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0714504

Level: (low/med) LOW Date Sampled: 07/15/09 13:03

% Moisture: not dec. _____ Date Analyzed: 07/24/09 07:08

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0		U
98-82-8	Isopropylbenzene	0.15	0.80		U
91-20-3	Naphthalene	0.10	1.0		U
108-88-3	Toluene	0.10	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0		U
1330-20-7	Xylene(total)	0.22	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-8S-2009

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0714503

Level: (low/med) LOW Date Sampled: 07/15/09 12:02

% Moisture: not dec. _____ Date Analyzed: 07/24/09 06:38

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0		U
98-82-8	Isopropylbenzene	0.15	0.80		U
91-20-3	Naphthalene	0.10	1.0	0.10	IV
108-88-3	Toluene	0.10	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0		U
1330-20-7	Xylene(total)	0.22	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-9S-2009

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0714502

Level: (low/med) LOW Date Sampled: 07/15/09 10:30

% Moisture: not dec. _____ Date Analyzed: 07/24/09 01:12

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0		U
98-82-8	Isopropylbenzene	0.15	0.80		U
91-20-3	Naphthalene	0.10	1.0		U
108-88-3	Toluene	0.10	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0		U
1330-20-7	Xylene(total)	0.22	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-D
UP01-2009

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0714501

Level: (low/med) LOW Date Sampled: 07/15/09 :

% Moisture: not dec. _____ Date Analyzed: 07/24/09 00:43

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0		U
98-82-8	Isopropylbenzene	0.15	0.80		U
91-20-3	Naphthalene	0.10	1.0		U
108-88-3	Toluene	0.10	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0		U
1330-20-7	Xylene(total)	0.22	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0711705

Level: (low/med) LOW Date Sampled: 07/14/09 :

% Moisture: not dec. _____ Date Analyzed: 07/19/09 01:28

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.12	1.0		U
100-41-4	Ethylbenzene	0.10	1.0		U
98-82-8	Isopropylbenzene	0.11	0.80		U
91-20-3	Naphthalene	0.12	1.0	0.21	IV
108-88-3	Toluene	0.14	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.14	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.10	1.0		U
1330-20-7	Xylene(total)	0.21	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0714505

Level: (low/med) LOW Date Sampled: 07/15/09 :

% Moisture: not dec. _____ Date Analyzed: 07/24/09 06:08

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0		U
98-82-8	Isopropylbenzene	0.15	0.80		U
91-20-3	Naphthalene	0.10	1.0	0.13	IV
108-88-3	Toluene	0.10	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0		U
1330-20-7	Xylene(total)	0.22	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0723

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 9G25001-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 07/23/09 15:41

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0		U
98-82-8	Isopropylbenzene	0.15	0.80		U
91-20-3	Naphthalene	0.10	1.0	0.25	I
108-88-3	Toluene	0.10	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0		U
1330-20-7	Xylene(total)	0.22	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0723E

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 9G25004-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3BLK01E

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 07/24/09 05:09

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0		U
98-82-8	Isopropylbenzene	0.15	0.80		U
91-20-3	Naphthalene	0.10	1.0	0.34	I
108-88-3	Toluene	0.10	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0		U
1330-20-7	Xylene(total)	0.22	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0723ELCS

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 9G25004-BS1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3LCS01E

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 07/24/09 03:41

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0	56	
100-41-4	Ethylbenzene	0.13	1.0	51	
98-82-8	Isopropylbenzene	0.15	0.80	44	
91-20-3	Naphthalene	0.10	1.0	51	V
108-88-3	Toluene	0.10	1.0	50	
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0	53	
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0	54	
1330-20-7	Xylene(total)	0.22	1.0	140	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0723LCS

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 9G25001-BS1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3LCS01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 07/23/09 14:13

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0	53	
100-41-4	Ethylbenzene	0.13	1.0	49	
98-82-8	Isopropylbenzene	0.15	0.80	43	
91-20-3	Naphthalene	0.10	1.0	54	V
108-88-3	Toluene	0.10	1.0	48	
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0	53	
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0	53	
1330-20-7	Xylene(total)	0.22	1.0	140	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V4BLK0718E

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 9G20011-BLK

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4BLK01E

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 07/19/09 00:59

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.12	1.0		U
100-41-4	Ethylbenzene	0.10	1.0		U
98-82-8	Isopropylbenzene	0.11	0.80		U
91-20-3	Naphthalene	0.12	1.0	0.28	I
108-88-3	Toluene	0.14	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.14	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.10	1.0		U
1330-20-7	Xylene(total)	0.21	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V4BLK0718ELCS

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 9G20011-BS1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4LCS01E

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 07/18/09 23:01

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.12	1.0	51	
100-41-4	Ethylbenzene	0.10	1.0	54	
98-82-8	Isopropylbenzene	0.11	0.80	59	
91-20-3	Naphthalene	0.12	1.0	60	V
108-88-3	Toluene	0.14	1.0	53	
95-63-6	1,2,4-Trimethylbenzene	0.14	1.0	45	
108-67-8	1,3,5-Trimethylbenzene	0.10	1.0	49	
1330-20-7	Xylene(total)	0.21	1.0	160	

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V4BLK0718ELCSD

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 9G20011-BSD1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4LCD01E

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 07/19/09 10:18

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.12	1.0	49	
100-41-4	Ethylbenzene	0.10	1.0	54	
98-82-8	Isopropylbenzene	0.11	0.80	58	
91-20-3	Naphthalene	0.12	1.0	53	V
108-88-3	Toluene	0.14	1.0	51	
95-63-6	1,2,4-Trimethylbenzene	0.14	1.0	46	
108-67-8	1,3,5-Trimethylbenzene	0.10	1.0	49	
1330-20-7	Xylene(total)	0.21	1.0	170	

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-6S
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-01

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 006F0601

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 11:09

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/16/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 15:08

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
	PRO-8-40------Petroleum Range	0.16	0.46	0.18	~~J~~ I

7/3/09

FORM I PRO

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-1S
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-02

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 007F0701

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 13:05

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/16/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 15:34

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
	PRO-8-40------Petroleum Range	0.16	0.46	3.7	

FORM I PRO

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-5I
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-03

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 008F0801

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 14:30

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/16/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 16:00

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
	PRO-8-40------Petroleum Range	0.16	0.46		U

FORM I PRO

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-4S
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-04

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 009F0901

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 16:15

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/16/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 16:26

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
	PRO-8-40------Petroleum Range	0.16	0.46		U

FORM I PRO

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-D
UP01-2009

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-01

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 013F1301

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/15/09 :

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/21/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 18:09

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
	PRO-8-40------Petroleum Range	0.16	0.46		U

FORM I PRO

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-9S-2009

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-02

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 014F1401

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/15/09 10:30

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/21/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 18:35

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
PRO-8-40------	Petroleum Range	0.16	0.46		U

FORM I PRO

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-8S-2009

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-03

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 015F1501

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/15/09 12:02

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/21/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 19:01

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
	PRO-8-40------Petroleum Range	0.16	0.46		U

FORM I PRO

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-7S-2009

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-04

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 016F1601

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/15/09 13:03

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/21/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 19:27

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
	PRO-8-40------Petroleum Range	0.16	0.46		U

FORM I PRO

FORM 2
WATER PRO SURROGATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Column(1): ZB-5MS ID: 0.32 (mm)

	CLIENT SAMPLE NO.	S1 %REC #	FBP %REC #	S3 %REC #	S4 %REC #	S5 %REC #	S6 %REC #	TOT OUT
01	9G15039-BLK1	109	108					0
02	9G15039-BLK1	100	96					0
03	9G15039-BLK1	101	101					0
04	CEF-BP-6S-20	103	99					0
05	CEF-BP-1S-20	89	84					0
06	CEF-BP-5I-20	106	105					0
07	CEF-BP-4S-20	78	89					0
08	9G20022-BLK1	103	104					0
09	9G20022-BLK1	106	106					0
10	9G20022-BLK1	96	94					0
11	CEF-BP-DUP01	68	78					0
12	CEF-BP-9S-20	68	85					0
13	CEF-BP-8S-20	89	84					0
14	CEF-BP-7S-20	78	90					0
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

		EL QC LIMITS	SPIKE CONC (mg/L)
S1	= Ortho-Terphenyl	(30-140)	0.050
S2 (FBP)	= 2-Fluorobiphenyl	(50-150)	0.050

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate results reported from a diluted analysis

FORM 3
WATER PRO LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix Spike - Client Sample No.: 9G15039-BLK1

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC #	QC. LIMITS REC.
Petroleum Range	3.200	0.0000	2.789	87	55-118

COMPOUND	SPIKE ADDED (mg/L)	LCSD CONCENTRATION (mg/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Range	3.200	3.101	97	10	30	55-118

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM III PRO

FORM 3
WATER PRO LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix Spike - Client Sample No.: 9G20022-BLK1

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC #	QC. LIMITS REC.
Petroleum Range	3.200	0.0000	3.345	104	55-118

COMPOUND	SPIKE ADDED (mg/L)	LCSD CONCENTRATION (mg/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Petroleum Range	3.200	3.175	99	5	30	55-118

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM III PRO

FORM 4
PRO METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

9G15039-BLK1

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Lab Sample ID: 9G15039-BLK1 Lab File ID: 003F0301

Matrix (soil/water) WATER Extraction: (SepF/Cont/Sonc/Soxh) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 07/16/09

Date Analyzed (1): 07/22/09 Date Analyzed (2):

Time Analyzed (1): 1350 Time Analyzed (2):

Instrument ID (1): GCFID2 Instrument ID (2):

Column (1): ZB-5MS ID: 0.32(mm) Column (2): ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	9G15039-BLK1	9G15039-BS1	07/22/09	
02	9G15039-BLK1	9G15039-BSD1	07/22/09	
03	CEF-BP-6S-20	0907117-01	07/22/09	
04	CEF-BP-1S-20	0907117-02	07/22/09	
05	CEF-BP-5I-20	0907117-03	07/22/09	
06	CEF-BP-4S-20	0907117-04	07/22/09	
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS:

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

9G15039-BLK1

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 9G15039-BLK1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 003F0301

% Moisture: _____ decanted: (Y/N)___ Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/16/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 13:50

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
	PRO-8-40------Petroleum Range	0.17	0.50		U

FORM I PRO

FORM 4
PRO METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

9G20022-BLK1

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Lab Sample ID: 9G20022-BLK1 Lab File ID: 010F1001

Matrix (soil/water) WATER Extraction: (SepF/Cont/Sonc/Soxh) SEPF

Sulfur Cleanup (Y/N) N Date Extracted: 07/21/09

Date Analyzed (1): 07/22/09 Date Analyzed (2):

Time Analyzed (1): 1652 Time Analyzed (2):

Instrument ID (1): GCFID2 Instrument ID (2):

Column (1): ZB-5MS ID: 0.32(mm) Column (2): ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	9G20022-BLK1	9G20022-BS1	07/22/09	
02	9G20022-BLK1	9G20022-BSD1	07/22/09	
03	CEF-BP-DUP01	0907145-01	07/22/09	
04	CEF-BP-9S-20	0907145-02	07/22/09	
05	CEF-BP-8S-20	0907145-03	07/22/09	
06	CEF-BP-7S-20	0907145-04	07/22/09	
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS:

FORM 1
PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

9G20022-BLK1

Lab Name: EMPIRICAL LABS Contract: TETRA TECH.

Lab Code: Case No.: SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 9G20022-BLK1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 010F1001

% Moisture: _____ decanted: (Y/N)___ Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/21/09

Concentrated Extract Volume: 2.0(mL) Date Analyzed: 07/22/09 16:52

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
	PRO-8-40------Petroleum Range	0.17	0.50		U

FORM I PRO

FORM 6
PRO ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA21837

Instrument ID: GCFID2 Calibration Date(s): 03/16/07 05/06/09

Column: ZB-5MS ID: 0.32 (mm) Calibration Time(s): 1021 1835

LAB FILE ID: RF8500: 004R0201 RF5950: 005R0201 RF4250: 006R0201
RF2550: 007R0201 RF850: 008R0201

COMPOUND	RF8500	RF5950	RF4250	RF2550	RF850
Petroleum Range	1489.816	1663.197	1610.314	1947.654	1623.614
Ortho-Terphenyl	1924.120	1915.920	1939.840	2346.080	1977.120
2-Fluorobiphenyl	1481.240	1614.720	1563.640	1911.560	1527.400

JVG 5.8.09

WL 5/8/09

FORM VI PRO

FORM 6
PRO ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA21837

Instrument ID: GCFID2 Calibration Date(s): 03/16/07 05/06/09

Column: ZB-5MS ID: 0.32 (mm) Calibration Time(s): 1021 1835

RF85: 009R0201

COMPOUND	RF85	CURVE	COEFFICENT A1	%RSD OR R^2
Petroleum Range	D2069.859	AVRG	1734.07579	12.9
Ortho-Terphenyl	2551.200	AVRG	2109.04667	12.9
2-Fluorobiphenyl	ϕ2061.800	AVRG	1693.39333	13.9

FORM VI PRO

FORM 6
PRO ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA21837

Instrument ID: GCFID2 Calibration Date(s): 03/16/07 05/06/09

Column: ZB-5MS ID: 0.32 (mm) Calibration Time(s): 1021 1835

LAB FILE ID: RT1: 004R0201 RT2: 005R0201 RT3: 006R0201
RT4: 007R0201 RT5: 008R0201

COMPOUND	RT1	RT2	RT3	RT4	RT5
Petroleum Range	9.014	9.014	9.014	9.014	9.014
Ortho-Terphenyl	8.567	8.560	8.553	8.553	8.547
2-Fluorobiphenyl	5.887	5.880	5.877	5.873	5.873

FORM VI PRO

FORM 6
PRO ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA21837

Instrument ID: GCFID2 Calibration Date(s): 03/16/07 05/06/09

Column: ZB-5MS ID: 0.32 (mm) Calibration Time(s): 1021 1835

RT6: 009R0201

COMPOUND	RT6	MEAN RT	RT WINDOW FROM	RT WINDOW TO
Petroleum Range	9.014	9.014	1.957	16.070
Ortho-Terphenyl	8.550	8.555	8.410	8.690
2-Fluorobiphenyl	5.873	5.877	5.823	5.923

FORM VI PRO

Empirical Laboratories, LLC

ICV

~~CONTINUING CALIBRATION~~ COMPOUNDS

JLB 5.8.09

Instrument ID: gcfid2.i Injection Date: 06-MAY-2009 19:01
Lab File ID: 009F0901.D Init. Cal. Date(s): 16-MAR-2007 06-MAY-2009
Analysis Type: Init. Cal. Times: 10:21 18:35
Lab Sample ID: PRO ICV 09D0233 Quant Type: ESTD
Method: \\ELABNSH05\TARGET\chem\gcfid2.i\050609.b\FLPROR.m

COMPOUND	RRF	RF4250	MIN RRF	%D	MAX %D
S 1 Petroleum Range	1734	1466	0.010	-15.4	25.0

NL
5/8/09

Empirical Laboratories, LLC

JG 7.23.09

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: gcfid2.i Injection Date: 22-JUL-2009 13:17
Lab File ID: 002F0201.D Init. Cal. Date(s): 16-MAR-2007 06-MAY-2009
Analysis Type: Init. Cal. Times: 10:21 18:35
Lab Sample ID: PRO CCV 09D0232 Quant Type: ESTD
Method: \\ELABNSH05\TARGET\chem\gcfid2.i\072209.b\FLPROR.m

COMPOUND	RRF	RF4250	MIN RRF	%D	MAX %D	
S 1 Petroleum Range	1734	1934	0.010	11.5	25.0	
$ 2 2-Fluorobiphenyl	1693	2091	0.010	23.5	25.0	
$ 3 Ortho-Terphenyl	2109	2690	0.010	27.5	25.0	<-

BP 072209

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-6S
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-01

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0711701

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 11:09

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/16/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/18/09 17:17

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23	0.13	IV
56-55-3	Benzo(a)anthracene	0.023	0.092	0.095	VJ2
205-99-2	Benzo(b)fluoranthene	0.023	0.092		UJ1
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.12	V
191-24-2	Benzo(g,h,i)perylene	0.023	0.092	0.13	V
50-32-8	Benzo(a)pyrene	0.023	0.092		U
218-01-9	Chrysene	0.023	0.092		U
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092	0.28	V
206-44-0	Fluoranthene	0.046	0.23	0.10	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092	0.40	J2
90-12-0	1-Methylnaphthalene	0.30	0.92	1.3	
91-57-6	2-Methylnaphthalene	0.30	0.92	1.8	
91-20-3	Naphthalene	0.30	0.92	5.6	
85-01-8	Phenanthrene	0.023	0.092	0.024	IV
129-00-0	Pyrene	0.046	0.23	0.092	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-6S
-20090714RE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-01RE

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0711701RE

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 11:09

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/23/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/24/09 20:36

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23		U
56-55-3	Benzo(a)anthracene	0.023	0.092	0.097	
205-99-2	Benzo(b)fluoranthene	0.023	0.092	0.023	I
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.10	
191-24-2	Benzo(g,h,i)perylene	0.023	0.092		U
50-32-8	Benzo(a)pyrene	0.023	0.092		U
218-01-9	Chrysene	0.023	0.092		U
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092		U
206-44-0	Fluoranthene	0.046	0.23	0.10	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092		U
90-12-0	1-Methylnaphthalene	0.30	0.92	1.3	
91-57-6	2-Methylnaphthalene	0.30	0.92	1.6	
91-20-3	Naphthalene	0.30	0.92	5.3	
85-01-8	Phenanthrene	0.023	0.092	0.026	IV
129-00-0	Pyrene	0.046	0.23	0.095	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-1S
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-02

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0711702

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 13:05

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/16/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/18/09 17:53

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23	0.18	IV
56-55-3	Benzo(a)anthracene	0.023	0.092	0.17	VJ2
205-99-2	Benzo(b)fluoranthene	0.023	0.092	0.077	IVJ1
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.17	V
191-24-2	Benzo(g,h,i)perylene	0.023	0.092	0.17	V
50-32-8	Benzo(a)pyrene	0.023	0.092	0.078	I
218-01-9	Chrysene	0.023	0.092	0.074	IV
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092	0.34	V
206-44-0	Fluoranthene	0.046	0.23	0.20	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092	0.43	J2
90-12-0	1-Methylnaphthalene	0.30	0.92	12	
91-57-6	2-Methylnaphthalene	0.30	0.92	22	
91-20-3	Naphthalene	0.30	0.92	180	L
85-01-8	Phenanthrene	0.023	0.092	0.28	V
129-00-0	Pyrene	0.046	0.23	0.19	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-1S
-20090714DL

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-02DL

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0711702D

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 13:05

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted: 07/16/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/24/09 22:24

Injection Volume: 0.5(uL) Dilution Factor: 25.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	7.6	23		UD
208-96-8	Acenaphthylene	0.58	2.3		UD
120-12-7	Anthracene	1.2	5.8		UD
56-55-3	Benzo(a)anthracene	0.58	2.3		UD
205-99-2	Benzo(b)fluoranthene	0.58	2.3		UD
207-08-9	Benzo(k)fluoranthene	0.58	2.3		UD
191-24-2	Benzo(g,h,i)perylene	0.58	2.3		UD
50-32-8	Benzo(a)pyrene	0.58	2.3		UD
218-01-9	Chrysene	0.58	2.3		UD
53-70-3	Dibenz(a,h)anthracene	0.12	2.3		UD
206-44-0	Fluoranthene	1.2	5.8	2.2	IVD
86-73-7	Fluorene	7.6	23		UD
193-39-5	Indeno(1,2,3-cd)pyrene	0.58	2.3		UD
90-12-0	1-Methylnaphthalene	7.6	23	19	ID
91-57-6	2-Methylnaphthalene	7.6	23	39	D
91-20-3	Naphthalene	7.6	23	140	D
85-01-8	Phenanthrene	0.58	2.3		UD
129-00-0	Pyrene	1.2	5.8	2.0	IVD

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-5I
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-03

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0711703

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 14:30

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/16/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/18/09 18:28

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23	0.12	IV
56-55-3	Benzo(a)anthracene	0.023	0.092		U
205-99-2	Benzo(b)fluoranthene	0.023	0.092		UJ1
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.10	V
191-24-2	Benzo(g,h,i)perylene	0.023	0.092		U
50-32-8	Benzo(a)pyrene	0.023	0.092		U
218-01-9	Chrysene	0.023	0.092		U
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092	0.20	V
206-44-0	Fluoranthene	0.046	0.23	0.098	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092		U
90-12-0	1-Methylnaphthalene	0.30	0.92		U
91-57-6	2-Methylnaphthalene	0.30	0.92		U
91-20-3	Naphthalene	0.30	0.92		U
85-01-8	Phenanthrene	0.023	0.092		U
129-00-0	Pyrene	0.046	0.23	0.091	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-5I
-20090714RE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-03RE

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0711703RE

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 14:30

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/23/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/24/09 21:12

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23	0.13	IV
56-55-3	Benzo(a)anthracene	0.023	0.092	0.098	
205-99-2	Benzo(b)fluoranthene	0.023	0.092		U
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.10	
191-24-2	Benzo(g,h,i)perylene	0.023	0.092		U
50-32-8	Benzo(a)pyrene	0.023	0.092		U
218-01-9	Chrysene	0.023	0.092		U
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092		U
206-44-0	Fluoranthene	0.046	0.23	0.10	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092		U
90-12-0	1-Methylnaphthalene	0.30	0.92		U
91-57-6	2-Methylnaphthalene	0.30	0.92		U
91-20-3	Naphthalene	0.30	0.92		U
85-01-8	Phenanthrene	0.023	0.092	0.026	IV
129-00-0	Pyrene	0.046	0.23	0.095	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-4S
-20090714

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-04

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0711704

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 16:15

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/16/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/18/09 19:04

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23	0.12	IV
56-55-3	Benzo(a)anthracene	0.023	0.092	0.093	VJ2
205-99-2	Benzo(b)fluoranthene	0.023	0.092		UJ1
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.10	V
191-24-2	Benzo(g,h,i)perylene	0.023	0.092		U
50-32-8	Benzo(a)pyrene	0.023	0.092		U
218-01-9	Chrysene	0.023	0.092		U
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092	0.20	V
206-44-0	Fluoranthene	0.046	0.23	0.10	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092		U
90-12-0	1-Methylnaphthalene	0.30	0.92		U
91-57-6	2-Methylnaphthalene	0.30	0.92		U
91-20-3	Naphthalene	0.30	0.92		U
85-01-8	Phenanthrene	0.023	0.092		U
129-00-0	Pyrene	0.046	0.23	0.093	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-4S
-20090714RE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907117-04RE

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0711704RE

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/14/09 16:15

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/23/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/24/09 21:48

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23	0.14	IV
56-55-3	Benzo(a)anthracene	0.023	0.092	0.11	
205-99-2	Benzo(b)fluoranthene	0.023	0.092	0.029	I
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.11	
191-24-2	Benzo(g,h,i)perylene	0.023	0.092		U
50-32-8	Benzo(a)pyrene	0.023	0.092		U
218-01-9	Chrysene	0.023	0.092		U
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092		U
206-44-0	Fluoranthene	0.046	0.23	0.12	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092		U
90-12-0	1-Methylnaphthalene	0.30	0.92		U
91-57-6	2-Methylnaphthalene	0.30	0.92		U
91-20-3	Naphthalene	0.30	0.92		U
85-01-8	Phenanthrene	0.023	0.092	0.049	IV
129-00-0	Pyrene	0.046	0.23	0.11	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-D
UP01-2009

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-01

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0714501

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/15/09 :

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/21/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/25/09 14:13

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23	0.13	IV
56-55-3	Benzo(a)anthracene	0.023	0.092	0.098	
205-99-2	Benzo(b)fluoranthene	0.023	0.092	0.027	I
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.11	
191-24-2	Benzo(g,h,i)perylene	0.023	0.092		U
50-32-8	Benzo(a)pyrene	0.023	0.092		U
218-01-9	Chrysene	0.023	0.092		U
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092	0.17	
206-44-0	Fluoranthene	0.046	0.23	0.10	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092	0.32	
90-12-0	1-Methylnaphthalene	0.30	0.92		U
91-57-6	2-Methylnaphthalene	0.30	0.92		U
91-20-3	Naphthalene	0.30	0.92		U
85-01-8	Phenanthrene	0.023	0.092	0.026	IV
129-00-0	Pyrene	0.046	0.23	0.096	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-9S-2009

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-02

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0714502

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/15/09 10:30

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/21/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/25/09 14:49

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23	0.13	IV
56-55-3	Benzo(a)anthracene	0.023	0.092	0.097	
205-99-2	Benzo(b)fluoranthene	0.023	0.092	0.025	I
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.11	
191-24-2	Benzo(g,h,i)perylene	0.023	0.092		U
50-32-8	Benzo(a)pyrene	0.023	0.092		U
218-01-9	Chrysene	0.023	0.092		U
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092		U
206-44-0	Fluoranthene	0.046	0.23	0.11	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092		U
90-12-0	1-Methylnaphthalene	0.30	0.92		U
91-57-6	2-Methylnaphthalene	0.30	0.92		U
91-20-3	Naphthalene	0.30	0.92		U
85-01-8	Phenanthrene	0.023	0.092	0.027	IV
129-00-0	Pyrene	0.046	0.23	0.10	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-8S-2009

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-03

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0714503

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/15/09 12:02

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/21/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/25/09 15:25

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092		U
120-12-7	Anthracene	0.046	0.23	0.13	IV
56-55-3	Benzo(a)anthracene	0.023	0.092		U
205-99-2	Benzo(b)fluoranthene	0.023	0.092		U
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.10	
191-24-2	Benzo(g,h,i)perylene	0.023	0.092		U
50-32-8	Benzo(a)pyrene	0.023	0.092		U
218-01-9	Chrysene	0.023	0.092		U
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092		U
206-44-0	Fluoranthene	0.046	0.23	0.095	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092		U
90-12-0	1-Methylnaphthalene	0.30	0.92		U
91-57-6	2-Methylnaphthalene	0.30	0.92		U
91-20-3	Naphthalene	0.30	0.92		U
85-01-8	Phenanthrene	0.023	0.092		U
129-00-0	Pyrene	0.046	0.23	0.088	IV

FORM I SV

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-7S-2009

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: 0907145-04

Sample wt/vol: 1080 (g/mL) ML Lab File ID: 0714504

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 07/15/09 13:03

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/21/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/25/09 16:01

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.92		U
208-96-8	Acenaphthylene	0.023	0.092	0.039	I
120-12-7	Anthracene	0.046	0.23	0.18	IV
56-55-3	Benzo(a)anthracene	0.023	0.092	0.16	
205-99-2	Benzo(b)fluoranthene	0.023	0.092	0.086	I
207-08-9	Benzo(k)fluoranthene	0.023	0.092	0.14	
191-24-2	Benzo(g,h,i)perylene	0.023	0.092		U
50-32-8	Benzo(a)pyrene	0.023	0.092	0.058	I
218-01-9	Chrysene	0.023	0.092	0.053	I
53-70-3	Dibenz(a,h)anthracene	0.0046	0.092	0.19	
206-44-0	Fluoranthene	0.046	0.23	0.18	IV
86-73-7	Fluorene	0.30	0.92		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.023	0.092	0.35	
90-12-0	1-Methylnaphthalene	0.30	0.92		U
91-57-6	2-Methylnaphthalene	0.30	0.92		U
91-20-3	Naphthalene	0.30	0.92		U
85-01-8	Phenanthrene	0.023	0.092	0.085	IV
129-00-0	Pyrene	0.046	0.23	0.16	IV

FORM I SV

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FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

	CLIENT SAMPLE NO.	S1 (TBP) #	S2 (FBP) #	S3 (TPH) #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	SBLK0716BW1	75	77	132						0
02	SBLK0716BW1L	88	64	94						0
03	SBLK0716BW1L	88	65	106						0
04	CEF-BP-6S-20	104	58	130						0
05	CEF-BP-1S-20	98	52	68						0
06	CEF-BP-5I-20	64	58	57						0
07	CEF-BP-4S-20	78	61	62						0
08	SBLK0723BW1	83	108	169*						1
09	SBLK0723BW1L	88	97	154						0
10	SBLK0723BW1L	87	93	129						0
11	CEF-BP-6S-20	114	82	86						0
12	CEF-BP-5I-20	94	101	130						0
13	CEF-BP-4S-20	101	96	109						0
14	CEF-BP-1S-20	609D	0D	0D						0
15	SBLK0721BW1	130	94	120						0
16	SBLK0721BW1L	136	91	159						0
17	SBLK0721BW1L	142	98	107						0
18	CEF-BP-DUP01	130	81	92						0
19	CEF-BP-9S-20	144	88	116						0
20	CEF-BP-8S-20	129	84	86						0
21	CEF-BP-7S-20	152	92	119						0
22										
23										
24										
25										
26										
27										
28										
29										
30										

	EL QC LIMITS	SPIKE CONC (UG/L)
S1 (TBP) = 2,4,6-Tribromophenol	(34-167)	2.0
S2 (FBP) = 2-Fluorobiphenyl	(34-167)	1.0
S3 (TPH) = Terphenyl-d14	(34-167)	1.0

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate results reported from a diluted analysis

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

	CLIENT SAMPLE NO.	S1 (TBP)#	S2 (FBP)#	S3 (TPH)#	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	SBLK0723BW1	83	108	169*						1
02	SBLK0723BW1L	88	97	154						0
03	SBLK0723BW1L	87	93	129						0
04	CEF-BP-6S-20	114	82	86						0
05	CEF-BP-5I-20	94	101	130						0
06	CEF-BP-4S-20	101	96	109						0
07										
08										
09										
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	EL QC LIMITS	SPIKE CONC (UG/L)
S1 (TBP) = 2,4,6-Tribromophenol	(34-167)	2.0
S2 (FBP) = 2-Fluorobiphenyl	(34-167)	1.0
S3 (TPH) = Terphenyl-d14	(34-167)	1.0

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate results reported from a diluted analysis

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix Spike - Client Sample No.: SBLK0716BW1

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	LCS CONCENTRATION (UG/L)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	1.000	0.0000	0.7232	72	35-120
Acenaphthylene	1.000	0.0000	0.9111	91	40-115
Anthracene	1.000	0.1633	0.9710	81	45-120
Benzo(a)anthracene	1.000	0.1495	1.156	101	45-120
Benzo(b)fluoranthene	1.000	0.04638	0.5723	52	35-130
Benzo(k)fluoranthene	1.000	0.1412	0.8278	69	30-135
Benzo(g,h,i)perylene	1.000	0.3368	0.7619	42	25-135
Benzo(a)pyrene	1.000	0.0000	0.6763	68	45-120
Chrysene	1.000	0.07136	0.9943	92	45-120
Dibenz(a,h)anthracene	1.000	0.3863	1.144	76	30-140
Fluoranthene	1.000	0.1407	1.146	100	45-125
Fluorene	1.000	0.0000	0.8554	86	40-120
Indeno(1,2,3-cd)pyrene	1.000	0.0000	0.7665	77	30-140
1-Methylnaphthalene	1.000	0.0000	0.6378	64	35-115
2-Methylnaphthalene	1.000	0.0000	0.7040	70	35-115
Naphthalene	1.000	0.0000	0.7012	70	30-115
Phenanthrene	1.000	0.05238	0.9418	89	40-130
Pyrene	1.000	0.1317	1.149	102	35-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix Spike - Client Sample No.: SBLK0716BW1

COMPOUND	SPIKE ADDED (UG/L)	LCSD CONCENTRATION (UG/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	1.000	0.7261	73	0	40	35-120
Acenaphthylene	1.000	0.9219	92	1	40	40-115
Anthracene	1.000	0.9385	78	3	40	45-120
Benzo(a)anthracene	1.000	0.9956	85	15	40	45-120
Benzo(b)fluoranthene	1.000	0.6418	60	11	40	35-130
Benzo(k)fluoranthene	1.000	0.6975	56	17	40	30-135
Benzo(g,h,i)perylene	1.000	0.9306	59	20	40	25-135
Benzo(a)pyrene	1.000	0.8589	86	24	40	45-120
Chrysene	1.000	0.8979	83	10	40	45-120
Dibenz(a,h)anthracene	1.000	1.143	76	0	40	30-140
Fluoranthene	1.000	1.096	96	4	40	45-125
Fluorene	1.000	0.8538	85	0	40	40-120
Indeno(1,2,3-cd)pyrene	1.000	0.8282	83	8	40	30-140
1-Methylnaphthalene	1.000	0.6313	63	1	40	35-115
2-Methylnaphthalene	1.000	0.6910	69	2	40	35-115
Naphthalene	1.000	0.6519	65	7	40	30-115
Phenanthrene	1.000	0.9330	88	1	40	40-130
Pyrene	1.000	1.100	97	4	40	35-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 18 outside limits
Spike Recovery: 0 out of 36 outside limits

COMMENTS: _____

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix Spike - Client Sample No.: SBLK0721BW1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	1.000	0.0000	0.8441	84	41-132
Acenaphthylene	1.000	0.0000	1.022	102	43-140
Anthracene	1.000	0.1381	0.9608	82	50-139
Benzo(a)anthracene	1.000	0.0000	1.060	106	58-141
Benzo(b)fluoranthene	1.000	0.0000	0.9822	98	42-156
Benzo(k)fluoranthene	1.000	0.0000	0.8075	81	49-165
Benzo(g,h,i)perylene	1.000	0.0000	0.7505	75	12-171
Benzo(a)pyrene	1.000	0.0000	0.8825	88	31-142
Chrysene	1.000	0.0000	0.7189	72	51-155
Dibenz(a,h)anthracene	1.000	0.0000	0.9230	92	28-153
Fluoranthene	1.000	0.1127	1.145	103	47-158
Fluorene	1.000	0.0000	0.9593	96	40-140
Indeno(1,2,3-cd)pyrene	1.000	0.0000	1.117	112	20-167
1-Methylnaphthalene	1.000	0.0000	0.7057	70	35-131
2-Methylnaphthalene	1.000	0.0000	0.7568	76	36-121
Naphthalene	1.000	0.0000	0.6344	63	39-125
Phenanthrene	1.000	0.03403	0.9938	96	46-144
Pyrene	1.000	0.09903	1.149	105	39-158

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix Spike - Client Sample No.: SBLK0721BW1

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	1.000	0.9138	91	8	40	41-132
Acenaphthylene	1.000	1.099	110	7	40	43-140
Anthracene	1.000	0.9530	81	1	40	50-139
Benzo(a)anthracene	1.000	1.127	113	6	40	58-141
Benzo(b)fluoranthene	1.000	1.047	105	6	40	42-156
Benzo(k)fluoranthene	1.000	0.8368	84	4	40	49-165
Benzo(g,h,i)perylene	1.000	0.7893	79	5	40	12-171
Benzo(a)pyrene	1.000	0.8981	90	2	40	31-142
Chrysene	1.000	0.7674	77	6	40	51-155
Dibenz(a,h)anthracene	1.000	0.9828	98	6	40	28-153
Fluoranthene	1.000	1.098	98	4	40	47-158
Fluorene	1.000	1.001	100	4	40	40-140
Indeno(1,2,3-cd)pyrene	1.000	1.147	115	3	40	20-167
1-Methylnaphthalene	1.000	0.7701	77	9	40	35-131
2-Methylnaphthalene	1.000	0.8309	83	9	40	36-121
Naphthalene	1.000	0.7043	70	10	40	39-125
Phenanthrene	1.000	1.003	97	1	40	46-144
Pyrene	1.000	1.078	98	6	40	39-158

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 18 outside limits
Spike Recovery: 0 out of 36 outside limits

COMMENTS: _____

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix Spike - Client Sample No.: SBLK0723BW1

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	LCS CONCENTRATION (UG/L)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	1.000	0.0000	0.9598	96	35-120
Acenaphthylene	1.000	0.0000	1.077	108	40-115
Anthracene	1.000	0.1465	0.8944	75	45-120
Benzo(a)anthracene	1.000	0.0000	1.027	103	45-120
Benzo(b)fluoranthene	1.000	0.0000	0.9832	98	35-130
Benzo(k)fluoranthene	1.000	0.0000	0.8801	88	30-135
Benzo(g,h,i)perylene	1.000	0.0000	1.031	103	25-135
Benzo(a)pyrene	1.000	0.0000	0.6588	66	45-120
Chrysene	1.000	0.0000	0.9979	100	45-120
Dibenz(a,h)anthracene	1.000	0.0000	0.9127	91	30-140
Fluoranthene	1.000	0.1081	0.8760	77	45-125
Fluorene	1.000	0.0000	1.014	101	40-120
Indeno(1,2,3-cd)pyrene	1.000	0.0000	0.9515	95	30-140
1-Methylnaphthalene	1.000	0.0000	0.8823	88	35-115
2-Methylnaphthalene	1.000	0.0000	0.9479	95	35-115
Naphthalene	1.000	0.0000	0.8187	82	30-115
Phenanthrene	1.000	0.04132	1.000	96	40-130
Pyrene	1.000	0.09895	0.8728	77	35-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix Spike - Client Sample No.: SBLK0723BW1

COMPOUND	SPIKE ADDED (UG/L)	LCSD CONCENTRATION (UG/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	1.000	0.9238	92	4	40	35-120
Acenaphthylene	1.000	1.058	106	2	40	40-115
Anthracene	1.000	0.9016	76	1	40	45-120
Benzo(a)anthracene	1.000	1.000	100	3	40	45-120
Benzo(b)fluoranthene	1.000	0.8823	88	11	40	35-130
Benzo(k)fluoranthene	1.000	0.8823	88	0	40	30-135
Benzo(g,h,i)perylene	1.000	1.046	105	1	40	25-135
Benzo(a)pyrene	1.000	0.6819	68	3	40	45-120
Chrysene	1.000	0.9008	90	10	40	45-120
Dibenz(a,h)anthracene	1.000	0.9056	90	1	40	30-140
Fluoranthene	1.000	0.9472	84	8	40	45-125
Fluorene	1.000	0.9965	100	2	40	40-120
Indeno(1,2,3-cd)pyrene	1.000	0.9934	99	4	40	30-140
1-Methylnaphthalene	1.000	0.8575	86	3	40	35-115
2-Methylnaphthalene	1.000	0.9167	92	3	40	35-115
Naphthalene	1.000	0.7652	76	7	40	30-115
Phenanthrene	1.000	0.9991	96	0	40	40-130
Pyrene	1.000	0.9239	82	6	40	35-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 18 outside limits
Spike Recovery: 0 out of 36 outside limits

COMMENTS: _____

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

SBLK0716BW1

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Lab File ID: S1BW0716 Lab Sample ID: SBLK0716BW1

Instrument ID: BNA4 Date Extracted: 07/16/09

Matrix: (soil/water) WATER Date Analyzed: 07/18/09

Level:(low/med) LOW GPC Cleanup: (Y/N) N Time Analyzed: 1529

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK0716BW1L	SBLK0716BW1LCS	S1LW0716	07/18/09
02	SBLK0716BW1L	SBLK0716BW1LCS	S1DW0716	07/18/09
03	CEF-BP-6S-20	0907117-01	0711701	07/18/09
04	CEF-BP-1S-20	0907117-02	0711702	07/18/09
05	CEF-BP-5I-20	0907117-03	0711703	07/18/09
06	CEF-BP-4S-20	0907117-04	0711704	07/18/09
07	CEF-BP-1S-20	0907117-02DL	0711702D	07/24/09
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COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0716BW1

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: SBLK0716BW1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S1BW0716

% Moisture: _____ decanted: (Y/N)___ Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/16/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/18/09 15:29

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.33	1.0		U
208-96-8	Acenaphthylene	0.025	0.10		U
120-12-7	Anthracene	0.050	0.25	0.16	I
56-55-3	Benzo(a)anthracene	0.025	0.10	0.15	
205-99-2	Benzo(b)fluoranthene	0.025	0.10	0.046	I
207-08-9	Benzo(k)fluoranthene	0.025	0.10	0.14	
191-24-2	Benzo(g,h,i)perylene	0.025	0.10	0.34	
50-32-8	Benzo(a)pyrene	0.025	0.10		U
218-01-9	Chrysene	0.025	0.10	0.071	I
53-70-3	Dibenz(a,h)anthracene	0.0050	0.10	0.39	
206-44-0	Fluoranthene	0.050	0.25	0.14	I
86-73-7	Fluorene	0.33	1.0		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.025	0.10		U
90-12-0	1-Methylnaphthalene	0.33	1.0		U
91-57-6	2-Methylnaphthalene	0.33	1.0		U
91-20-3	Naphthalene	0.33	1.0		U
85-01-8	Phenanthrene	0.025	0.10	0.052	I
129-00-0	Pyrene	0.050	0.25	0.13	I

FORM I SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

SBLK0721BW1

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Lab File ID: S1BW0721 Lab Sample ID: SBLK0721BW1

Instrument ID: BNA4 Date Extracted: 07/21/09

Matrix: (soil/water) WATER Date Analyzed: 07/25/09

Level:(low/med) LOW GPC Cleanup: (Y/N) N Time Analyzed: 1225

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK0721BW1L	SBLK0721BW1LCS	S1LW0721	07/25/09
02	SBLK0721BW1L	SBLK0721BW1LCS	S1DW0721	07/25/09
03	CEF-BP-DUP01	0907145-01	0714501	07/25/09
04	CEF-BP-9S-20	0907145-02	0714502	07/25/09
05	CEF-BP-8S-20	0907145-03	0714503	07/25/09
06	CEF-BP-7S-20	0907145-04	0714504	07/25/09
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COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0721BW1

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: SBLK0721BW1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S1BW0721

% Moisture: _____ decanted: (Y/N)___ Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/21/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/25/09 12:25

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.33	1.0		U
208-96-8	Acenaphthylene	0.025	0.10		U
120-12-7	Anthracene	0.050	0.25	0.14	I
56-55-3	Benzo(a)anthracene	0.025	0.10		U
205-99-2	Benzo(b)fluoranthene	0.025	0.10		UJ1
207-08-9	Benzo(k)fluoranthene	0.025	0.10		U
191-24-2	Benzo(g,h,i)perylene	0.025	0.10		U
50-32-8	Benzo(a)pyrene	0.025	0.10		U
218-01-9	Chrysene	0.025	0.10		U
53-70-3	Dibenz(a,h)anthracene	0.0050	0.10		U
206-44-0	Fluoranthene	0.050	0.25	0.11	I
86-73-7	Fluorene	0.33	1.0		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.025	0.10		U
90-12-0	1-Methylnaphthalene	0.33	1.0		U
91-57-6	2-Methylnaphthalene	0.33	1.0		U
91-20-3	Naphthalene	0.33	1.0		U
85-01-8	Phenanthrene	0.025	0.10	0.034	I
129-00-0	Pyrene	0.050	0.25	0.099	I

FORM I SV

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

SBLK0723BW1

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Lab File ID: S1BW0723 Lab Sample ID: SBLK0723BW1

Instrument ID: BNA4 Date Extracted: 07/23/09

Matrix: (soil/water) WATER Date Analyzed: 07/24/09

Level:(low/med) LOW GPC Cleanup: (Y/N) N Time Analyzed: 1849

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK0723BW1L	SBLK0723BW1LCS	S1LW0723	07/24/09
02	SBLK0723BW1L	SBLK0723BW1LCS	S1DW0723	07/24/09
03	CEF-BP-6S-20	0907117-01RE	0711701RE	07/24/09
04	CEF-BP-5I-20	0907117-03RE	0711703RE	07/24/09
05	CEF-BP-4S-20	0907117-04RE	0711704RE	07/24/09
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COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0723BW1

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Matrix: (soil/water) WATER Lab Sample ID: SBLK0723BW1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S1BW0723

% Moisture: _____ decanted: (Y/N)___ Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:07/23/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 07/24/09 18:49

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.33	1.0		U
208-96-8	Acenaphthylene	0.025	0.10		U
120-12-7	Anthracene	0.050	0.25	0.15	I
56-55-3	Benzo(a)anthracene	0.025	0.10		U
205-99-2	Benzo(b)fluoranthene	0.025	0.10		U
207-08-9	Benzo(k)fluoranthene	0.025	0.10		U
191-24-2	Benzo(g,h,i)perylene	0.025	0.10		U
50-32-8	Benzo(a)pyrene	0.025	0.10		U
218-01-9	Chrysene	0.025	0.10		U
53-70-3	Dibenz(a,h)anthracene	0.0050	0.10		U
206-44-0	Fluoranthene	0.050	0.25	0.11	I
86-73-7	Fluorene	0.33	1.0		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.025	0.10		U
90-12-0	1-Methylnaphthalene	0.33	1.0		U
91-57-6	2-Methylnaphthalene	0.33	1.0		U
91-20-3	Naphthalene	0.33	1.0		U
85-01-8	Phenanthrene	0.025	0.10	0.041	I
129-00-0	Pyrene	0.050	0.25	0.099	I

FORM I SV

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA39443SIM

Lab File ID: DF0714B1 DFTPP Injection Date: 07/14/09

Instrument ID: BNA4 DFTPP Injection Time: 1409

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	37.0
68	Less than 2.0% of mass 69	0.6 (1.4)1
69	Mass 69 relative abundance	40.8
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	40.0 - 60.0% of mass 198	53.5
197	Less than 1.0% of mass 198	0.4
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	23.5
365	Greater than 1.0% of mass 198	3.66
441	Present, but less than mass 443	15.2
442	Greater than 40.0% of mass 198	107.1
443	17.0 - 23.0% of mass 442	21.5 (20.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD0.025PPM	STD0.025PPM	CAL1C	07/14/09	1427
02	STD0.05PPM	STD0.05PPM	CAL1D	07/14/09	1503
03	STD0.1PPM	STD0.1PPM	CAL1E	07/14/09	1539
04	STD0.25PPM	STD0.25PPM	CAL1F	07/14/09	1615
05	STD0.5PPM	STD0.5PPM	CAL1G	07/14/09	1651
06	STD1.0PPM	STD1.0PPM	CAL2	07/14/09	1727
07	STD2.0PPM	STD2.0PPM	CAL3	07/14/09	1803
08	STD5.0PPM	STD5.0PPM	CAL4	07/14/09	1839
09	STD10PPM	STD10PPM	CAL5	07/14/09	1915
10	STD20PPM	STD20PPM	CAL6	07/14/09	1951
11	STD40PPM	STD40PPM	CAL7	07/14/09	2027
12	STD50PPM	STD50PPM	CAL8	07/14/09	2103
13	ICV-5PPM	ICV-5PPM	ICV5A	07/14/09	2327
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FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Lab File ID: DF0718B1 DFTPP Injection Date: 07/18/09

Instrument ID: BNA4 DFTPP Injection Time: 1008

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	35.7
68	Less than 2.0% of mass 69	0.6 (1.4)1
69	Mass 69 relative abundance	39.7
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	40.0 - 60.0% of mass 198	53.6
197	Less than 1.0% of mass 198	0.6
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	23.9
365	Greater than 1.0% of mass 198	3.80
441	Present, but less than mass 443	17.4
442	Greater than 40.0% of mass 198	122.8
443	17.0 - 23.0% of mass 442	24.7 (20.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD5PPM	STD5PPM	CCV1ATTCECIL	07/18/09	1138
02	SBLK0716BW1	SBLK0716BW1	S1BW0716	07/18/09	1529
03	SBLK0716BW1L	SBLK0716BW1LCS	S1LW0716	07/18/09	1605
04	SBLK0716BW1L	SBLK0716BW1LCS	S1DW0716	07/18/09	1641
05	CEF-BP-6S-20	0907117-01	0711701	07/18/09	1717
06	CEF-BP-1S-20	0907117-02	0711702	07/18/09	1753
07	CEF-BP-5I-20	0907117-03	0711703	07/18/09	1828
08	CEF-BP-4S-20	0907117-04	0711704	07/18/09	1904
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FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Lab File ID: DF0724B1 DFTPP Injection Date: 07/24/09

Instrument ID: BNA4 DFTPP Injection Time: 1455

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	35.6
68	Less than 2.0% of mass 69	0.6 (1.4)1
69	Mass 69 relative abundance	41.4
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	40.0 - 60.0% of mass 198	54.7
197	Less than 1.0% of mass 198	0.5
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	23.0
365	Greater than 1.0% of mass 198	3.57
441	Present, but less than mass 443	14.3
442	Greater than 40.0% of mass 198	101.6
443	17.0 - 23.0% of mass 442	20.6 (20.3)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD5PPM	STD5PPM	LOW1TTCECIL	07/24/09	1513
02	SBLK0723BW1	SBLK0723BW1	S1BW0723	07/24/09	1849
03	SBLK0723BW1L	SBLK0723BW1LCS	S1LW0723	07/24/09	1925
04	SBLK0723BW1L	SBLK0723BW1LCS	S1DW0723	07/24/09	2001
05	CEF-BP-6S-20	0907117-01RE	0711701RE	07/24/09	2036
06	CEF-BP-5I-20	0907117-03RE	0711703RE	07/24/09	2112
07	CEF-BP-4S-20	0907117-04RE	0711704RE	07/24/09	2148
08	CEF-BP-1S-20	0907117-02DL	0711702D	07/24/09	2224
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FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Lab File ID: DF0725B1 DFTPP Injection Date: 07/25/09

Instrument ID: BNA4 DFTPP Injection Time: 0943

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	37.6
68	Less than 2.0% of mass 69	0.7 (1.6)1
69	Mass 69 relative abundance	43.2
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	56.7
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.0
275	10.0 - 30.0% of mass 198	22.0
365	Greater than 1.0% of mass 198	3.17
441	Present, but less than mass 443	11.8
442	Greater than 40.0% of mass 198	83.1
443	17.0 - 23.0% of mass 442	17.5 (21.0)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD5PPM	STD5PPM	LOW1WTTCECIL	07/25/09	1000
02	SBLK0721BW1	SBLK0721BW1	S1BW0721	07/25/09	1225
03	SBLK0721BW1L	SBLK0721BW1LCS	S1LW0721	07/25/09	1301
04	SBLK0721BW1L	SBLK0721BW1LCS	S1DW0721	07/25/09	1337
05	CEF-BP-DUP01	0907145-01	0714501	07/25/09	1413
06	CEF-BP-9S-20	0907145-02	0714502	07/25/09	1449
07	CEF-BP-8S-20	0907145-03	0714503	07/25/09	1525
08	CEF-BP-7S-20	0907145-04	0714504	07/25/09	1601
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FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Lab File ID (Standard): CCV1ATTCECIL Date Analyzed: 07/18/09

Instrument ID: BNA4 Time Analyzed: 1138

		IS1(PHN) AREA #	RT #	IS2(PRY) AREA #	RT #	AREA #	RT #
	12 HOUR STD	43129	13.30	19133	25.06		
	UPPER LIMIT	86258	13.80	38266	25.56		
	LOWER LIMIT	21565	12.80	9567	24.56		
	CLIENT SAMPLE NO.						
01	SBLK0716BW1	44661	13.30	15812	25.06		
02	SBLK0716BW1L	49335	13.30	25661	25.06		
03	SBLK0716BW1L	52926	13.30	28650	25.06		
04	CEF-BP-6S-20	52434	13.30	30333	25.06		
05	CEF-BP-1S-20	49984	13.30	30219	25.06		
06	CEF-BP-5I-20	52285	13.30	33906	25.05		
07	CEF-BP-4S-20	51018	13.30	29652	25.06		
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IS1 (PHN) = Phenanthrene-d10
IS2 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Lab File ID (Standard): LOW1TTCECIL Date Analyzed: 07/24/09

Instrument ID: BNA4 Time Analyzed: 1513

		IS1(PHN) AREA #	RT #	IS2(PRY) AREA #	RT #	AREA #	RT #
	12 HOUR STD	22095	12.86	9860	24.63		
	UPPER LIMIT	44190	13.36	19720	25.13		
	LOWER LIMIT	11048	12.36	4930	24.13		
	CLIENT SAMPLE NO.						
01	SBLK0723BW1	21469	12.86	5080	24.63		
02	SBLK0723BW1L	22767	12.86	6221	24.63		
03	SBLK0723BW1L	25882	12.86	8730	24.63		
04	CEF-BP-6S-20	30653	12.86	16445	24.63		
05	CEF-BP-5I-20	24717	12.86	8254	24.63		
06	CEF-BP-4S-20	25877	12.86	10885	24.63		
07	CEF-BP-1S-20	24096	12.86	7894	24.63		
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IS1 (PHN) = Phenanthrene-d10
IS2 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CECILBP001

Lab File ID (Standard): LOW1WTTCECIL Date Analyzed: 07/25/09

Instrument ID: BNA4 Time Analyzed: 1000

		IS1(PHN) AREA #	RT #	IS2(PRY) AREA #	RT #	AREA #	RT #
	12 HOUR STD	26461	12.86	13185	24.63		
	UPPER LIMIT	52922	13.36	26370	25.13		
	LOWER LIMIT	13231	12.36	6593	24.13		
	CLIENT SAMPLE NO.						
01	SBLK0721BW1	23787	12.86	10236	24.63		
02	SBLK0721BW1L	27277	12.86	16799	24.63		
03	SBLK0721BW1L	24575	12.86	12290	24.62		
04	CEF-BP-DUP01	24511	12.86	12721	24.62		
05	CEF-BP-9S-20	24922	12.86	12171	24.62		
06	CEF-BP-8S-20	23841	12.86	11954	24.62		
07	CEF-BP-7S-20	25928	12.86	13154	24.62		
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20							
21							
22							

IS1 (PHN) = Phenanthrene-d10
IS2 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract: Pah sim w.m

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA29527

Instrument ID: BNA4 Calibration Date(s): 07/14/09 07/14/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 1427 2103

LAB FILE ID: RF0.025: CAL1C RF0.04: RF0.05: CAL1D
RF0.1: CAL1E RF0.25: CAL1F

COMPOUND	RF0.025	RF0.04	RF0.05	RF0.1	RF0.25
Acenaphthene	1.041		1.038	1.071	1.109
Acenaphthylene	1.103		1.053	1.054	1.155
Anthracene	0.721		0.669	0.702	0.814
Benzo(a)anthracene	1.320		1.111	0.991	1.299
Benzo(b)fluoranthene	1.056		0.881	0.867	1.055
Benzo(k)fluoranthene	0.938		0.993	1.123	1.425
Benzo(g,h,i)perylene	1.765		0.976	0.996	1.091
Benzo(a)pyrene	0.727		0.659	0.652	0.774
Chrysene	2.575		2.116	2.067	2.690
Dibenz(a,h)anthracene	0.745		0.421	0.578	0.479
Fluoranthene	0.654		0.599	0.588	0.671
Fluorene	0.864		0.837	0.880	0.978
Hexachlorocyclopentadiene	0.068		0.050	0.047	0.068
Indeno(1,2,3-cd)pyrene	1.314		0.508	0.435	0.390
2-Methylnaphthalene	1.025		1.023	1.047	1.086
1-Methylnaphthalene	1.008		1.012	1.034	1.068
Naphthalene	2.272		2.316	2.317	2.339
N-Nitroso-di-n-propylamine	0.337		0.338	0.354	0.389
Phenanthrene	1.249		1.197	1.244	1.339
Pyrene	0.648		0.606	0.603	0.702
Hexachlorobutadiene	0.359		0.364	0.371	0.375
Hexachlorobenzene	0.419		0.414	0.426	0.440
Pentachlorophenol					0.012
Isophorone	0.877		0.798	0.807	0.849
Bis(2-ethylhexyl)phthalate	0.112		0.108	0.110	0.098
Di-n-octylphthalate					
2,4,6-Tribromophenol	0.034		0.028	0.026	0.040
2-Fluorobiphenyl	1.325		1.324	1.350	1.402
Terphenyl-d14	1.836		1.231	1.113	1.731

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA29527

Instrument ID: BNA4 Calibration Date(s): 07/14/09 07/14/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 1427 2103

LAB FILE ID: RF0.5: CAL1G RF0.75: RF1: CAL2
RF2: CAL3 RF5: CAL4

COMPOUND	RF0.5	RF0.75	RF1	RF2	RF5
Acenaphthene	1.007		1.074	1.038	1.019
Acenaphthylene	1.132		1.293	1.344	1.419
Anthracene	0.939		0.984	1.129	1.248
Benzo(a)anthracene	1.186		1.252	1.533	1.557
Benzo(b)fluoranthene	1.044		1.109	1.319	1.628
Benzo(k)fluoranthene	1.789		1.942	2.134	2.081
Benzo(g,h,i)perylene	1.071		1.259	1.148	1.404
Benzo(a)pyrene	0.795		0.903	1.101	1.411
Chrysene	2.184		2.171	2.173	1.847
Dibenz(a,h)anthracene	0.528		0.815	0.762	1.062
Fluoranthene	0.797		0.814	0.976	1.127
Fluorene	0.986		1.069	1.087	1.108
Hexachlorocyclopentadiene	0.056		0.068	0.081	0.090
Indeno(1,2,3-cd)pyrene	0.363		0.457	0.453	0.710
2-Methylnaphthalene	0.975		1.060	1.000	0.975
1-Methylnaphthalene	0.963		1.028	0.952	0.937
Naphthalene	2.030		2.126	1.937	1.862
N-Nitroso-di-n-propylamine	0.371		0.426	0.421	0.439
Phenanthrene	1.360		1.340	1.359	1.386
Pyrene	0.843		0.859	1.020	1.155
Hexachlorobutadiene	0.324		0.344	0.311	0.307
Hexachlorobenzene	0.410		0.420	0.401	0.398
Pentachlorophenol	0.022		0.024	0.045	0.085
Isophorone	0.791		0.900	0.911	0.930
Bis(2-ethylhexyl)phthalate	0.138		0.116	0.179	0.373
Di-n-octylphthalate	0.170		0.137	0.182	0.380
2,4,6-Tribromophenol	0.048		0.063	0.096	0.135
2-Fluorobiphenyl	1.265		1.337	1.239	1.210
Terphenyl-d14	1.302		1.218	1.247	1.060

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA29527

Instrument ID: BNA4 Calibration Date(s): 07/14/09 07/14/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 1427 2103

LAB FILE ID: RF10: CAL5 RF20: CAL6 RF40: CAL7
RF50: CAL8

COMPOUND	RF10	RF20	RF40	RF50
Acenaphthene	0.942	0.807	0.766	0.729
Acenaphthylene	1.353	1.184	1.135	1.101
Anthracene	1.233	1.124		
Benzo(a)anthracene	1.649	1.452	1.509	1.572
Benzo(b)fluoranthene	1.616	1.491	1.463	1.494
Benzo(k)fluoranthene	1.992	1.703		
Benzo(g,h,i)perylene	1.373	1.250		
Benzo(a)pyrene	1.482	1.406	1.350	1.284
Chrysene	1.751			
Dibenz(a,h)anthracene	1.132	1.096	1.012	0.970
Fluoranthene	1.182	1.121	1.038	0.977
Fluorene	1.038	0.905	0.818	0.781
Hexachlorocyclopentadiene	0.099	0.100	0.132	0.151
Indeno(1,2,3-cd)pyrene	0.990	0.978	0.969	
2-Methylnaphthalene	0.885	0.750	0.717	0.699
1-Methylnaphthalene	0.857	0.718	0.689	
Naphthalene	1.669	1.341		
N-Nitroso-di-n-propylamine	0.390	0.303	0.327	0.321
Phenanthrene	1.318	1.176	1.107	1.032
Pyrene	1.214	1.151	1.074	1.012
Hexachlorobutadiene	0.282	0.240		
Hexachlorobenzene	0.370	0.331	0.317	0.302
Pentachlorophenol	0.133	0.168		
Isophorone	0.903	0.818	0.822	0.824
Bis(2-ethylhexyl)phthalate	0.618	0.767		
Di-n-octylphthalate	0.754	1.056	1.174	
2,4,6-Tribromophenol	0.152	0.150	0.154	0.146
2-Fluorobiphenyl	1.108	0.923	0.880	
Terphenyl-d14	0.991	0.849	0.846	0.895

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA29527

Instrument ID: BNA4 Calibration Date(s): 07/14/09 07/14/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 1427 2103

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
Acenaphthene	AVRG		0.97002997		13.4
Acenaphthylene	AVRG		1.19383318		10.5
Anthracene	LINR	-2.91e-002	1.14990592		0.998
Benzo(a)anthracene	LINR	9.016e-002	1.54670226		0.999
Benzo(b)fluoranthene	LINR	-3.02e-002	1.48501446		1.000
Benzo(k)fluoranthene	2ORDR	0.10813652	0.39915142	5.385e-003	1.000
Benzo(g,h,i)perylene	LINR	-4.34e-002	1.27821565		0.997
Benzo(a)pyrene	LINR	-0.1206552	1.31956057		0.998
Chrysene	AVRG		2.17494216		13.9
Dibenz(a,h)anthracene	LINR	-0.1571206	0.99628995		0.997
Fluoranthene	LINR	-0.2856109	1.00999186		0.997
Fluorene	AVRG		0.94600711		11.9
Hexachlorocyclopentadiene	2ORDR	0.21792092	10.4228830	-0.5145305	0.999
Indeno(1,2,3-cd)pyrene	LINR	0.36721812	0.98172508		0.998
2-Methylnaphthalene	AVRG		0.93682569		14.9
1-Methylnaphthalene	AVRG		0.93332085		13.6
Naphthalene	2ORDR	6.479e-002	0.39541860	1.287e-002	1.000
N-Nitroso-di-n-propylamine	AVRG		0.36804312		12.2
Phenanthrene	AVRG		1.25898475		8.9
Pyrene	LINR	-0.2706244	1.04478183		0.997
Hexachlorobutadiene	AVRG		0.32762960		13.4
Hexachlorobenzene	AVRG		0.38741146		11.9
Pentachlorophenol	2ORDR	0.78898428	8.28879303	-0.7726945	0.995
Isophorone	AVRG		0.85247782		5.8
Bis(2-ethylhexyl)phthalate	2ORDR	0.49367272	1.87964876	-4.e-002	0.992
Di-n-octylphthalate	2ORDR	1.62455230	0.98757653	-3.69e-003	0.995
2,4,6-Tribromophenol	LINR	0.45942074	0.15026451		0.999
2-Fluorobiphenyl	AVRG		1.21493859		14.3
Terphenyl-d14	LINR	-0.3450622	0.87001904		0.998

FORM VI SV

SEMIVOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA29527

Instrument ID: BNA4 Calibration Date: 07/14/09 Time: 2327

Lab File ID: ICV5A Init. Calib. Date(s): 07/14/09 07/14/09

Init. Calib. Times: 1427 2103

COMPOUND	$\overline{RRF}$	RRF5	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Acenaphthene	0.970	0.995	5.000	5.128		AVRG	2.6	25.0
Acenaphthylene	1.194	1.418	5.000	5.939		AVRG	18.8	25.0
Anthracene	0.956	1.238	5.000	5.353		LINR	7.0	25.0
Benzo(a)anthracene	1.369	1.665	5.000	5.472		LINR	9.4	25.0
Benzo(b)fluoranthene	1.252	1.614	5.000	5.404		LINR	8.1	25.0
Benzo(k)fluoranthene	1.612	2.063	5.000	4.798		2ORDR	-4.0	25.0
Benzo(g,h,i)perylene	1.233	1.284	5.000	4.979		LINR	-0.4	25.0
Benzo(a)pyrene	1.045	1.450	5.000	5.375		LINR	7.5	25.0
Chrysene	2.175	1.834	5.000	4.217		AVRG	-15.6	25.0
Dibenz(a,h)anthracene	0.800	1.047	5.000	5.095		LINR	1.9	25.0
Fluoranthene	0.879	1.137	5.000	5.343		LINR	6.8	25.0
Fluorene	0.946	1.081	5.000	5.716		AVRG	14.3	25.0
Hexachlorocyclopentadiene	0.084	0.100	5.000	5.300	0.050	2ORDR	6.0	25.0
Indeno(1,2,3-cd)pyrene	0.688	0.809	5.000	4.487		LINR	-10.2	25.0
2-Methylnaphthalene	0.937	0.957	5.000	5.109		AVRG	2.2	25.0
1-Methylnaphthalene	0.933	0.915	5.000	4.904		AVRG	-1.9	25.0
Naphthalene	2.021	1.793	5.000	4.643		2ORDR	-7.1	25.0
N-Nitroso-di-n-propylamine	0.368	0.428	5.000	5.810	0.050	AVRG	16.2	25.0
Phenanthrene	1.259	1.357	5.000	5.391		AVRG	7.8	25.0
Pyrene	0.907	1.158	5.000	5.274		LINR	5.5	25.0
Hexachlorobutadiene	0.328	0.300	5.000	4.585	0.050	AVRG	-8.3	25.0
Hexachlorobenzene	0.387	0.394	5.000	5.084	0.050	AVRG	1.7	25.0
Pentachlorophenol	0.070	0.109	5.000	5.074	0.050	2ORDR	1.5	25.0
Isophorone	0.852	0.954	5.000	5.597	0.050	AVRG	11.9	25.0
Bis(2-ethylhexyl)phthalate	0.262	0.505	5.000	4.982	0.050	2ORDR	-0.3	25.0
Di-n-octylphthalate	0.550	0.543	5.000	4.281	0.050	2ORDR	-14.4	25.0

ICV SV

AUGUST 2009 RESAMPLING
GROUNDWATER ANALYTICAL REPORT

ORGANIC CASE NARRATIVE
Tetra Tech NUS, Inc./Nas Cecil Field (BP Wells) JM09
Work Order: 0908124

Sampled	Received	Lab ID	Client ID
08/17/09	08/18/09	0908124-01	CEF-BP-MW-6S-200908
08/17/09	08/18/09	0908124-02	Trip Blank#7143

Volatiles

Method: The samples were analyzed by USEPA SW-846 Methods 5030B/8260B (purge and trap then capillary column GC/MS) for waters upon receipt to the laboratory in satisfactory condition.
Comments: The volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following note/exceptions:

- Samples were analyzed for an abbreviated target list of benzene, ethylbenzene, isopropylbenzene, naphthalene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene and xylene (total).
- One or more analytes were detected at concentrations below ½ the quantitation limits in one or more of the method blanks. Reported concentrations in the associated samples are qualified with a "V".
- V3BLK0821LCS\LCSD Results: Isopropylbenzene exceeded the upper recovery limit of 125% at 126%/120%. All other recoveries and relative percent differences were within limits.
- Quantitation signals were manually integrated in order to accurately reflect the peak areas based on the technical judgment of the analyst. A listing of the manual integrations performed and reason for the integration is included with the logs. Before and after "pictures" are available at the laboratory where manual integrations were performed.

Low Concentration PAH Samples

Method: The samples were analyzed by USEPA SW-846 Methods 3510C/8270C (separatory funnel extraction followed by capillary column GC/MS) for waters upon receipt to the laboratory in satisfactory condition.
Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following note/exceptions:

- Note: These samples were analyzed for full-scan, low-concentration PAHs by employing a combination of sensitivity enhancing techniques in the extraction and analysis processes..
- One or more target analytes were detected in the method blank at concentrations less than ½ the quantitation limit. Positive results in associated samples for these compounds are qualified with a "V".
- Quantitation signals were manually integrated in order to accurately reflect the peak areas based on the technical judgment of the analyst. A listing of the manual integrations performed and reason for the integration is included with the logs. Before and after "pictures" are available at the laboratory where manual integrations were performed.

Petroleum Range Organics

Method: The samples were analyzed by the Florida Petroleum Range Organics Method (FL-PRO, separatory funnel or sonication extraction followed by capillary column GC/FID) for waters or soils upon receipt to the laboratory in satisfactory condition.
Comments: The analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following note:

- As is necessary for all GC/LC chromatography, manual integrations were performed to correctly quantitate target analytes. A "before" chromatogram and "after" chromatogram is available at the laboratory for all sample analyses to provide information regarding the manual integrations performed.

I certify that, to the best of my knowledge and based upon my inquiry of those individuals immediately responsible for obtaining the information, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in the case narrative, as verified by the following signature.

Marcia K. McGinnity
Senior Project Manager

ANALYTICAL REPORT TERMS AND QUALIFIERS (ORGANIC)

MDL: The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The MDL is determined from analysis of a sample containing the analyte in a given matrix.

EQL: The estimated quantitation limit (EQL), also known as the reporting limit (RL), is defined as the estimated concentration above which quantitative results can be obtained with a specific degree of confidence. Empirical Laboratories defines the EQL to be at or near the lowest standard of the calibration curve.

U: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the MDL.

D: When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".

I: The presence of an "I" to the right of an analytical result indicates that the reported result is estimated. The data pass the identification criteria indicating that the compound is present, but the calculated result is less than the EQL/RL.

L: The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with a "L". Usually the sample will be rerun at a dilution to quantitate the flagged compound.

V: The presence of a "V" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero.

J1: The reported analyte concentration may have a low bias as the CCV exceeded the limit on the low side.

J2: The reported analyte concentration may have a high bias as the CCV exceeded the limit on the high side.

M: The presence of an "M" to the right of an analytical result indicates that the sample matrix interfered with the quantitation of the analyte. In GC and HPLC, results are reported from the column with the lower concentration.

I: The presence of an "I" to the right of an analytical result that the presence of a qualitative interference could have caused a false positive or over estimation of the analyte. In GC and HPLC, results are reported from the column with the lower concentration.

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 615-345-1115 ♦ (fax) 615-846-5426

7244

0908124 ORIG

Send Results to:

Name Tobrena Skeen
Company Tetra Tech NUS
Address
City
State, Zip
Phone 412-921-8582
Fax
E-mail tobrena.skeen@tetratech.com

Project No./Name:

Send Invoice to:

Name
Company
Address
City
State, Zip
Phone
Fax
E-mail

Sampler's (Signature):

Analysis Requirements:

Lab Use Only:

VOA Headspace	Y	(N)	NA
Field Filtered	Y	(N)	NA
Correct Containers	(Y)	N	NA
Discrepancies	Y	(N)	NA
Cust. Seals Intact	(Y)	N	NA
Containers Intact	(Y)	N	NA

Airbill #: 5677

CAR #: –

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	VOC (limited list) 8260B	PAH + 1,4-Dioxane 8270SIM	TRPH (IR=PRO)	Comments	No. of Bottles	Lab Use Only Containers/Pres.
0908124-01	8-17-09 1310	CEF-BP-MW-GS-2009 0817	GW	X	X	X	cool to 4°C	7	2H-SU 2H 35-H
-02	8-17-09 1230	Trip blank #7143	N/A	X			cool to 4°C	2	2S-HY

	Date/Time	Received By: (Signature)
Sample Kit Prep'd by: (Signature) WS		
Relinquished by: (Signature)	8-17-09 1815	Received By: (Signature)
Relinquished by: (Signature)		Received By: (Signature)
Received for Laboratory by: (Signature)	8/18/09	Temperature 3.1°C

REMARKS:

Details:

Page 1 of 1

Cooler No. 1 of 1

Date Shipped 8-17-09

Shipped By

Turnaround

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

08:20

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 0908124 Number of Coolers: 1 of 1

Client: Tetra Tech Project: Cecil Field SM-09

Date/Time Received: **8/18/09** **08:20** Date cooler(s) opened: **8/18/09**

Opened By (print): **WILLIAM SCHWAB** (signature): [signature]

Circle response below as appropriate

1. How did the samples arrive?: FedEx UPS DHL Hand Delivered

EL Courier Other: _____

If applicable, enter airbill number here: 5677

2. Were custody seals on outside of cooler(s)? ..... Yes No

How many: 1 Seal date: 8/17/09 Seal Initials: ?

3. Were custody seals unbroken and intact at the date and time of arrival? ..... Yes No N/A
4. Were custody papers sealed in a plastic bag included in the sample cooler? ..... Yes No N/A
5. Were custody papers filled out properly (ink, signed, etc.)? ..... Yes No N/A
6. Did you sign custody papers in the appropriate place for acceptance? ..... Yes No N/A
7. Was project identifiable from custody papers? ..... Yes No N/A
8. If required, was enough ice present in the cooler(s)? ..... Yes No N/A

Type of Coolant: WET DRY BLUE NONE Temperature of Samples upon Receipt: 3.1°C

Dates samples were logged-in: **8/18/09**

9. Initial this form to acknowledge login of sample(s): (Name): **WILLIAM SCHWAB** (Initial): WS
10. Were all bottle lids intact and sealed tightly? ..... Yes No N/A
11. Did all bottles arrive unbroken? ..... Yes No N/A
12. Was all required bottle label information complete? ..... Yes No N/A
13. Did all bottle labels agree with custody papers? ..... Yes No N/A
14. Were correct containers used for the analyses indicated? ..... Yes No N/A
15. Were preservative levels correct in all applicable sample containers? ..... Yes No N/A
16. Was residual chlorine present in any applicable sample containers? ..... Yes No N/A
17. Was sufficient amount of sample sent for the analyses required? ..... Yes No N/A
18. Was headspace present in any included VOA vials? ..... Yes No N/A

If Non-Conformance issues were present, list by sample ID: _____

_____ CAR#: _____

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-MW
-6S-200908

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Matrix: (soil/water) WATER Lab Sample ID: 0908124-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0812401

Level: (low/med) LOW Date Sampled: 08/17/09 12:10

% Moisture: not dec. _____ Date Analyzed: 08/21/09 17:35

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0	12	
98-82-8	Isopropylbenzene	0.15	1.0	1.3	
91-20-3	Naphthalene	0.10	1.0	9.8	V
108-88-3	Toluene	0.10	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0	19	
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0	3.1	
1330-20-7	Xylene(total)	0.22	1.0	10	

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLA
NK #7143

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Matrix: (soil/water) WATER Lab Sample ID: 0908124-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0812402

Level: (low/med) LOW Date Sampled: 08/17/09 12:30

% Moisture: not dec. _____ Date Analyzed: 08/21/09 14:52

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0		U
98-82-8	Isopropylbenzene	0.15	1.0		U
91-20-3	Naphthalene	0.10	1.0		U
108-88-3	Toluene	0.10	1.0	0.26	I
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0		U
1330-20-7	Xylene(total)	0.22	1.0		U

FORM I VOA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

	CLIENT SAMPLE NO.	SMC1 (DFM) #	SMC2 (DCE) #	SMC3 (TOL) #	SMC4 (BFB) #	TOT OUT
01	V3BLK0821LCS	97	98	97	105	0
02	V3BLK0821	99	100	102	102	0
03	TRIP BLANK #	104	106	103	99	0
04	CEF-BP-MW-6S	105	108	103	101	0
05	V3BLK0821LCS	101	101	97	108	0
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		EL QC LIMITS	SPIKE CONC (ug/L)
SMC1 (DFM)	= Dibromofluoromethane	(85-120)	30
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(80-135)	30
SMC3 (TOL)	= Toluene-d8	(85-115)	30
SMC4 (BFB)	= Bromofluorobenzene	(85-120)	30

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate results reported from a diluted analysis

FORM 3
WATER VOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Matrix Spike - Client Sample No.: V3BLK0821

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Benzene	50.00	0.0000	55.19	110	80-120
Ethylbenzene	50.00	0.0000	58.08	116	75-125
Isopropylbenzene	50.00	0.0000	62.78	126*	75-125
Naphthalene	50.00	0.2348	57.13	114	55-140
Toluene	50.00	0.0000	51.36	103	75-120
1,2,4-Trimethylbenzene	50.00	0.0000	57.62	115	75-130
1,3,5-Trimethylbenzene	50.00	0.0000	57.41	115	75-130
Xylene(total)	150.0	0.0000	169.4	113	75-130

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	50.00	51.99	104	6	30	80-120
Ethylbenzene	50.00	55.08	110	5	30	75-125
Isopropylbenzene	50.00	60.26	120	4	30	75-125
Naphthalene	50.00	62.77	125	9	30	55-140
Toluene	50.00	47.69	95	7	30	75-120
1,2,4-Trimethylbenzene	50.00	55.70	111	3	30	75-130
1,3,5-Trimethylbenzene	50.00	53.29	106	7	30	75-130
Xylene(total)	150.0	160.8	107	5	30	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 8 outside limits
Spike Recovery: 1 out of 16 outside limits

COMMENTS: _____

FORM III VOA

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V3BLK0821

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Lab File ID: V3BLK01 Lab Sample ID: 9H24012-BLK1

Date Analyzed: 08/21/09 Time Analyzed: 1321

Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA3

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V3BLK0821LCS	9H24012-BS1	V3LCS01	1152
02	TRIP BLANK #	0908124-02	0812402	1452
03	CEF-BP-MW-6S	0908124-01	0812401	1735
04	V3BLK0821LCS	9H24012-BSD1	V3LCSD01	2106
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V3BLK0821

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Matrix: (soil/water) WATER Lab Sample ID: 9H24012-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V3BLK01

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 08/21/09 13:21

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.11	1.0		U
100-41-4	Ethylbenzene	0.13	1.0		U
98-82-8	Isopropylbenzene	0.15	1.0		U
91-20-3	Naphthalene	0.10	1.0	0.23	I
108-88-3	Toluene	0.10	1.0		U
95-63-6	1,2,4-Trimethylbenzene	0.10	1.0		U
108-67-8	1,3,5-Trimethylbenzene	0.13	1.0		U
1330-20-7	Xylene(total)	0.22	1.0		U

FORM I VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Lab File ID: V3BFB01 BFB Injection Date: 08/19/09

Instrument ID: VOA3 BFB Injection Time: 1659

GC Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	31.8
75	30.0 - 60.0% of mass 95	48.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.4 (0.5)1
174	Greater than 50.0% of mass 95	75.6
175	5.0 - 9.0% of mass 174	6.4 (8.5)1
176	95.0 - 101.0% of mass 174	71.9 (95.1)1
177	5.0 - 9.0% of mass 176	5.2 (7.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	V3STD0.25PPB	V3STD0.25PPB	V3STD01	08/19/09	1830
02	V3STD0.5PPB	V3STD0.5PPB	V3STD02	08/19/09	1901
03	V3STD1PPB	V3STD1PPB	V3STD03	08/19/09	1931
04	V3STD2PPB	V3STD2PPB	V3STD04	08/19/09	2002
05	V3STD10PPB	V3STD10PPB	V3STD05	08/19/09	2032
06	V3STD20PPB	V3STD20PPB	V3STD06	08/19/09	2102
07	V3STD50PPB	V3STD50PPB	V3STD07	08/19/09	2132
08	V3BLK0721LCS	V3BLK0721LCS	V3ICV01	08/19/09	2202
09	V3STD100PPB	V3STD100PPB	V3STD08	08/19/09	2232
10	V3STD200PPB	V3STD200PPB	V3STD09	08/19/09	2302
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page 1 of 1

FORM V VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Lab File ID: V3BFB01 BFB Injection Date: 08/21/09

Instrument ID: VOA3 BFB Injection Time: 1052

GC Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	29.7
75	30.0 - 60.0% of mass 95	46.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.7 (0.8)1
174	Greater than 50.0% of mass 95	88.0
175	5.0 - 9.0% of mass 174	6.8 (7.8)1
176	95.0 - 101.0% of mass 174	87.7 (99.7)1
177	5.0 - 9.0% of mass 176	5.8 (6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	V3STD100PPB	V3STD100PPB	V3CCV01	08/21/09	1122
02	V3BLK0821LCS	9H24012-BS1	V3LCS01	08/21/09	1152
03	V3BLK0821	9H24012-BLK1	V3BLK01	08/21/09	1321
04	TRIP BLANK #	0908124-02	0812402	08/21/09	1452
05	CEF-BP-MW-6S	0908124-01	0812401	08/21/09	1735
06	V3BLK0821LCS	9H24012-BSD1	V3LCSD01	08/21/09	2106
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page 1 of 1

FORM V VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Lab File ID (Standard): V3CCV01 Date Analyzed: 08/21/09

Instrument ID: VOA3 Time Analyzed: 1122

GC Column: RTX-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

		IS1(FLB) AREA #	RT #	IS2(CBZ) AREA #	RT #	IS3(DCB) AREA #	RT #
	12 HOUR STD	1096623	12.92	541136	16.44	650333	18.45
	UPPER LIMIT	2193246	13.42	1082272	16.94	1300666	18.95
	LOWER LIMIT	548312	12.42	270568	15.94	325167	17.95
	CLIENT SAMPLE NO.						
01	V3BLK0821LCS	1095269	12.92	529997	16.44	650283	18.45
02	V3BLK0821	1038414	12.92	464365	16.44	537657	18.45
03	TRIP BLANK #	968244	12.92	416419	16.44	508657	18.45
04	CEF-BP-MW-6S	956715	12.92	406033	16.44	514534	18.46
05	V3BLK0821LCS	1067268	12.92	525802	16.44	665862	18.45
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17							
18							
19							
20							
21							
22							

IS1 (FLB) = Fluorobenzene
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

page 1 of 1

FORM VIII VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date(s): 08/19/09 08/19/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1830 2302

LAB FILE ID: RF0.25: V3STD01 RF0.5: V3STD02 RF1: V3STD03
RF2: V3STD04 RF10: V3STD05

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF10
Acetone	0.184	0.211	0.196	0.072	0.162
Acrolein	0.013	0.012	0.008	0.006	0.006
Acrylonitrile		0.134	0.128	0.131	0.132
tert-Amyl Methyl Ether	1.988	1.330	0.834	0.672	0.559
Benzene			0.785	0.808	0.831
Bromobenzene			0.497	0.581	0.598
Bromochloromethane			0.084	0.114	0.118
Bromodichloromethane			0.228	0.241	0.252
Bromoform		0.265	0.248	0.260	0.291
Bromomethane	0.294	0.139	0.084	0.082	0.041
2-Butanone			0.086	0.090	0.147
t-Butyl alcohol		0.015	0.014	0.024	0.023
n-Butylbenzene			1.069	1.149	1.204
sec-Butylbenzene			1.424	1.708	1.715
tert-Butylbenzene			1.419	1.515	1.475
Carbon disulfide	2.048	1.333	0.565	0.621	0.563
Carbon tetrachloride			0.210	0.228	0.216
Chlorobenzene			1.475	1.560	1.491
Chloroethane	0.369	0.210	0.102	0.124	0.119
2-Chloroethyl vinyl ether		0.150	0.134	0.149	0.175
Chloroform			0.384	0.379	0.368
Chloromethane			0.380	0.386	0.343
2-Chlorotoluene			1.240	1.387	1.426
4-Chlorotoluene			1.297	1.340	1.452
Cyclohexane	0.507	0.458	0.365	0.412	0.365
Dibromochloromethane	0.575	0.545	0.370	0.386	0.430
1,2-Dibromo-3-chloropropane			0.084	0.094	0.095
1,2-Dibromoethane	0.590	0.475	0.440	0.492	0.478
Dibromomethane	0.154	0.178	0.131	0.138	0.140
1,2-Dichlorobenzene			1.041	1.068	1.089
1,3-Dichlorobenzene			1.093	1.099	1.158
1,4-Dichlorobenzene			1.161	1.233	1.229
Dichlorodifluoromethane		0.083	0.154	0.167	0.195
1,1-Dichloroethane			0.409	0.473	0.452
1,2-Dichloroethane		0.502	0.362	0.372	0.361
1,1-Dichloroethene		0.276	0.160	0.167	0.155
cis-1,2-Dichloroethene	0.617	0.468	0.219	0.213	0.222

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date(s): 08/19/09 08/19/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1830 2302

LAB FILE ID: RF0.25: V3STD01 RF0.5: V3STD02 RF1: V3STD03
RF2: V3STD04 RF10: V3STD05

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF10
1,2-Dichloroethene(total)	0.678	0.475	0.211	0.208	0.206
trans-1,2-Dichloroethene		0.482	0.203	0.204	0.191
1,2-Dichloropropane			0.254	0.264	0.262
1,3-Dichloropropane	1.027	0.940	0.780	0.814	0.803
2,2-Dichloropropane			0.211	0.228	0.216
1,1-Dichloropropene			0.226	0.252	0.234
cis-1,3-Dichloropropene			0.253	0.269	0.298
trans-1,3-Dichloropropene	0.745	0.689	0.483	0.526	0.581
Ethylbenzene			2.151	2.306	2.383
Ethyl methacrylate			0.436	0.515	0.587
Hexachlorobutadiene			0.248	0.304	0.275
2-Hexanone		0.145	0.338	0.508	0.594
Iodomethane	0.286	0.213	0.074	0.092	0.136
Isopropylbenzene			1.590	1.844	1.882
p-Isopropyltoluene			1.063	1.200	1.205
Methyl acetate		0.354	0.262	0.329	0.340
Methylene chloride	0.916	0.729	0.214	0.282	0.255
Methyl cyclohexane	0.286	0.231	0.220	0.264	0.236
Methyl methacrylate	0.067	0.216	0.243	0.245	0.262
4-Methyl-2-pentanone		0.201	0.232	0.291	0.326
MTBE	0.610	0.495	0.484	0.508	0.498
Naphthalene	1.126	1.082	1.020	0.942	0.973
n-Propylbenzene			1.870	1.924	2.029
Styrene			1.270	1.312	1.571
1,1,1,2-Tetrachloroethane			0.384	0.402	0.456
1,1,2,2-Tetrachloroethane	0.379	0.431	0.441	0.467	0.457
Tetrachloroethene			0.584	0.657	0.586
Tetrahydrofuran			0.105	0.103	0.102
Toluene			1.557	1.420	1.311
1,2,3-Trichlorobenzene			0.598	0.529	0.550
1,2,4-Trichlorobenzene			0.651	0.644	0.600
1,1,1-Trichloroethane			0.264	0.279	0.277
1,1,2-Trichloroethane		0.512	0.373	0.385	0.373
Trichloroethene			0.209	0.219	0.208
Trichlorofluoromethane		0.428	0.284	0.354	0.307
Trichlorotrifluoroethane	0.231	0.232	0.180	0.204	0.172
1,2,3-Trichloropropane	0.173	0.197	0.177	0.169	0.182

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date(s): 08/19/09 08/19/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1830 2302

LAB FILE ID: RF0.25: V3STD01 RF0.5: V3STD02 RF1: V3STD03
RF2: V3STD04 RF10: V3STD05

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF10
1,2,4-Trimethylbenzene			1.290	1.450	1.564
1,3,5-Trimethylbenzene			1.330	1.390	1.515
Vinyl acetate		0.464	0.471	0.501	0.554
Vinyl chloride		0.309	0.194	0.244	0.219
m,p-Xylene			1.700	1.830	1.949
Xylene(total)			5.110	5.594	5.938
1-Chlorohexane	1.890	1.144	0.645	0.649	0.553
Di-isopropyl ether	0.671	1.753	0.899	0.950	1.077
ETBE		1.029	0.675	0.685	0.722
Dibromofluoromethane	0.265	0.260	0.262	0.264	0.257
1,2-Dichloroethane-d4	0.059	0.060	0.059	0.060	0.057
Toluene-d8	2.315	2.333	2.314	2.345	2.276
Bromofluorobenzene	0.940	0.937	0.925	0.942	0.963

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date(s): 08/19/09 08/19/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1830 2302

LAB FILE ID: RF20: V3STD06 RF50: V3STD07 RF100: V3STD08
RF200: V3STD09

COMPOUND	RF20	RF50	RF100	RF200
Acetone	0.127	0.162	0.162	0.172
Acrolein	0.006	0.006	0.008	0.014
Acrylonitrile	0.136	0.139	0.140	0.144
tert-Amyl Methyl Ether	0.537	0.566	0.581	0.590
Benzene	0.793	0.824	0.846	0.818
Bromobenzene	0.582	0.598	0.617	0.613
Bromochloromethane	0.113	0.116	0.123	0.127
Bromodichloromethane	0.243	0.261	0.283	0.292
Bromoform	0.306	0.366	0.394	0.389
Bromomethane	0.042	0.050	0.071	0.105
2-Butanone	0.163	0.171	0.180	0.191
t-Butyl alcohol	0.024	0.025	0.027	0.030
n-Butylbenzene	1.274	1.344	1.366	1.288
sec-Butylbenzene	1.765	1.867	1.899	1.701
tert-Butylbenzene	1.484	1.542	1.558	1.424
Carbon disulfide	0.594	0.615	0.665	0.686
Carbon tetrachloride	0.226	0.253	0.280	0.304
Chlorobenzene	1.366	1.413	1.386	1.198
Chloroethane	0.112	0.123	0.133	0.134
2-Chloroethyl vinyl ether	0.178	0.193	0.200	0.199
Chloroform	0.340	0.354	0.365	0.375
Chloromethane	0.324	0.331	0.322	0.314
2-Chlorotoluene	1.440	1.430	1.441	1.336
4-Chlorotoluene	1.435	1.554	1.575	1.390
Cyclohexane	0.410	0.435	0.472	0.502
Dibromochloromethane	0.424	0.468	0.481	0.459
1,2-Dibromo-3-chloropropane	0.106	0.124	0.134	0.144
1,2-Dibromoethane	0.477	0.499	0.492	0.450
Dibromomethane	0.142	0.141	0.149	0.155
1,2-Dichlorobenzene	1.075	1.112	1.130	1.058
1,3-Dichlorobenzene	1.125	1.156	1.171	1.116
1,4-Dichlorobenzene	1.181	1.182	1.179	1.066
Dichlorodifluoromethane	0.193	0.221	0.230	0.236
1,1-Dichloroethane	0.429	0.444	0.465	0.485
1,2-Dichloroethane	0.346	0.353	0.364	0.381
1,1-Dichloroethene	0.160	0.169	0.184	0.194
cis-1,2-Dichloroethene	0.216	0.221	0.233	0.242

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date(s): 08/19/09 08/19/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1830 2302

LAB FILE ID: RF20: V3STD06 RF50: V3STD07 RF100: V3STD08
RF200: V3STD09

COMPOUND	RF20	RF50	RF100	RF200
1,2-Dichloroethene(total)	0.201	0.208	0.221	0.230
trans-1,2-Dichloroethene	0.186	0.195	0.209	0.218
1,2-Dichloropropane	0.260	0.268	0.286	0.292
1,3-Dichloropropane	0.742	0.754	0.732	0.657
2,2-Dichloropropane	0.214	0.229	0.237	0.252
1,1-Dichloropropene	0.241	0.266	0.284	0.296
cis-1,3-Dichloropropene	0.301	0.332	0.357	0.368
trans-1,3-Dichloropropene	0.580	0.626	0.640	0.581
Ethylbenzene	2.287	2.380	2.301	1.858
Ethyl methacrylate	0.622	0.661	0.671	0.607
Hexachlorobutadiene	0.292	0.298	0.327	0.334
2-Hexanone	0.564	0.611	0.582	0.526
Iodomethane	0.155	0.187	0.254	0.274
Isopropylbenzene	1.862	2.004	1.972	
p-Isopropyltoluene	1.258	1.327	1.370	1.296
Methyl acetate	0.330	0.347	0.357	0.370
Methylene chloride	0.205	0.232	0.236	0.238
Methyl cyclohexane	0.258	0.280	0.304	0.317
Methyl methacrylate	0.286	0.324	0.348	0.370
4-Methyl-2-pentanone	0.337	0.368	0.379	0.388
MTBE	0.490	0.531	0.569	0.596
Naphthalene	1.077	1.198	1.204	1.362
n-Propylbenzene	2.084	2.185	2.198	1.897
Styrene	1.520	1.667	1.646	1.415
1,1,1,2-Tetrachloroethane	0.436	0.479	0.495	0.449
1,1,2,2-Tetrachloroethane	0.462	0.470	0.461	0.438
Tetrachloroethene	0.556	0.585	0.595	0.541
Tetrahydrofuran	0.096	0.102	0.109	0.119
Toluene	1.223	1.232	1.207	1.045
1,2,3-Trichlorobenzene	0.554	0.599	0.618	0.676
1,2,4-Trichlorobenzene	0.609	0.656	0.686	0.740
1,1,1-Trichloroethane	0.274	0.286	0.311	0.331
1,1,2-Trichloroethane	0.360	0.367	0.358	0.318
Trichloroethene	0.208	0.222	0.232	0.235
Trichlorofluoromethane	0.324	0.351	0.382	0.400
Trichlorotrifluoroethane	0.181	0.187	0.200	0.210
1,2,3-Trichloropropane	0.172	0.188	0.187	0.173

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date(s): 08/19/09 08/19/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1830 2302

LAB FILE ID: RF20: V3STD06 RF50: V3STD07 RF100: V3STD08
RF200: V3STD09

COMPOUND	RF20	RF50	RF100	RF200
1,2,4-Trimethylbenzene	1.573	1.662	1.656	1.538
1,3,5-Trimethylbenzene	1.521	1.638	1.659	1.497
Vinyl acetate	0.593	0.634	0.675	0.697
Vinyl chloride	0.225	0.233	0.243	0.233
m,p-Xylene	1.855	1.906	1.762	
Xylene(total)	5.683	5.869	5.479	4.171
1-Chlorohexane	0.582	0.618	0.638	0.558
Di-isopropyl ether	1.057	1.123	1.197	1.216
ETBE	0.729	0.789	0.833	0.854
Dibromofluoromethane	0.257	0.252	0.251	0.260
1,2-Dichloroethane-d4	0.058	0.055	0.057	0.063
Toluene-d8	2.217	2.146	2.092	1.963
Bromofluorobenzene	0.949	0.956	0.928	0.895

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date(s): 08/19/09 08/19/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1830 2302

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
Acetone	LINR	0.00000000	0.16948276		0.998
Acrolein	2ORDR	0.00000000	155.632104	-180.96525	1.000
Acrylonitrile	AVRG		0.13550950		3.9
tert-Amyl Methyl Ether	LINR	0.00000000	0.58660091		1.000
Benzene	AVRG		0.81498911		2.6
Bromobenzene	AVRG		0.58384739		7.0
Bromochloromethane	AVRG		0.11361145		12.3
Bromodichloromethane	AVRG		0.25731931		9.0
Bromoform	LINR	0.00000000	0.38859580		0.999
Bromomethane	2ORDR	0.00000000	17.4554224	-11.369963	0.996
2-Butanone	LINR	0.18389190	0.19191010		0.999
t-Butyl alcohol	LINR	0.50676597	3.01e-002		0.997
n-Butylbenzene	AVRG		1.24215289		8.6
sec-Butylbenzene	AVRG		1.72561996		9.0
tert-Butylbenzene	AVRG		1.48828702		3.6
Carbon disulfide	LINR	0.00000000	0.67814757		0.999
Carbon tetrachloride	AVRG		0.24537316		14.4
Chlorobenzene	AVRG		1.41259731		8.2
Chloroethane	LINR	0.00000000	0.13293931		0.999
2-Chloroethyl vinyl ether	AVRG		0.17223429		14.7
Chloroform	AVRG		0.36647196		4.1
Chloromethane	AVRG		0.34289076		8.4
2-Chlorotoluene	AVRG		1.38577459		5.4
4-Chlorotoluene	AVRG		1.43485648		7.2
Cyclohexane	AVRG		0.43650638		12.1
Dibromochloromethane	AVRG		0.45986312		14.7
1,2-Dibromo-3-chloropropane	LINR	0.00000000	0.14075477		0.996
1,2-Dibromoethane	AVRG		0.48826860		8.8
Dibromomethane	AVRG		0.14776419		9.4
1,2-Dichlorobenzene	AVRG		1.08190033		2.9
1,3-Dichlorobenzene	AVRG		1.13122550		2.7
1,4-Dichlorobenzene	AVRG		1.17583863		4.7
Dichlorodifluoromethane	LINR	0.00000000	0.23379375		0.999
1,1-Dichloroethane	AVRG		0.45121250		5.8
1,2-Dichloroethane	AVRG		0.38029246		13.3
1,1-Dichloroethene	LINR	0.00000000	0.19050568		0.998
cis-1,2-Dichloroethene	LINR	0.00000000	0.23936102		0.999

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date(s): 08/19/09 08/19/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1830 2302

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
1,2-Dichloroethene(total)	LINR	0.00000000	0.22725771		0.999
trans-1,2-Dichloroethene	LINR	0.00000000	0.21515636		0.999
1,2-Dichloropropane	AVRG		0.26931239		5.2
1,3-Dichloropropane	AVRG		0.80529451		14.0
2,2-Dichloropropane	AVRG		0.22705601		6.4
1,1-Dichloropropene	AVRG		0.25712140		10.1
cis-1,3-Dichloropropene	AVRG		0.31101331		13.9
trans-1,3-Dichloropropene	AVRG		0.60573089		13.2
Ethylbenzene	AVRG		2.23799868		8.2
Ethyl methacrylate	AVRG		0.58556676		14.3
Hexachlorobutadiene	AVRG		0.29687925		10.0
2-Hexanone	LINR	0.00000000	0.54223254		0.996
Iodomethane	2ORDR	0.00000000	4.65594332	-0.5605538	0.997
Isopropylbenzene	LINR	0.00000000	1.97416501		1.000
p-Isopropyltoluene	AVRG		1.24569630		8.2
Methyl acetate	AVRG		0.33616793		9.8
Methylene chloride	LINR	0.00000000	0.23713833		1.000
Methyl cyclohexane	AVRG		0.26626796		12.5
Methyl methacrylate	LINR	0.00000000	0.36367180		0.998
4-Methyl-2-pentanone	LINR	0.00000000	0.38514184		0.999
MTBE	AVRG		0.53134276		9.1
Naphthalene	AVRG		1.10928514		11.8
n-Propylbenzene	AVRG		2.02676849		6.7
Styrene	AVRG		1.48591443		10.6
1,1,1,2-Tetrachloroethane	AVRG		0.44308147		8.9
1,1,2,2-Tetrachloroethane	AVRG		0.44501135		6.4
Tetrachloroethene	AVRG		0.58641173		6.3
Tetrahydrofuran	LINR	0.00000000	0.11660006		0.996
Toluene	AVRG		1.28495017		12.8
1,2,3-Trichlorobenzene	AVRG		0.58921370		8.4
1,2,4-Trichlorobenzene	AVRG		0.65535252		7.2
1,1,1-Trichloroethane	AVRG		0.28908467		8.1
1,1,2-Trichloroethane	AVRG		0.38089683		14.9
Trichloroethene	AVRG		0.21901044		5.2
Trichlorofluoromethane	AVRG		0.35395705		13.7
Trichlorotrifluoroethane	AVRG		0.19978847		11.0
1,2,3-Trichloropropane	AVRG		0.17988713		5.1

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date(s): 08/19/09 08/19/09

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1830 2302

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
1,2,4-Trimethylbenzene	AVRG		1.53345391		8.4
1,3,5-Trimethylbenzene	AVRG		1.50737451		7.9
Vinyl acetate	LINR	0.00000000	0.68969268		0.999
Vinyl chloride	AVRG		0.23755544		13.9
m,p-Xylene	AVRG		1.83391740		5.0
Xylene(total)	AVRG		5.40645784		11.3
1-Chlorohexane	LINR	0.00000000	0.57801214		0.995
Di-isopropyl ether	LINR	0.00000000	1.20712701		0.999
ETBE	AVRG		0.78958261		14.8
Dibromofluoromethane	AVRG		0.25880903		1.9
1,2-Dichloroethane-d4	AVRG		5.866e-002		3.9
Toluene-d8	AVRG		2.22240783		5.9
Bromofluorobenzene	AVRG		0.93728292		2.1

FORM VI VOA

VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date: 08/19/09 Time: 2202

Lab File ID: V3ICV01 Init. Calib. Date(s): 08/19/09 08/19/09

Heated Purge: (Y/N) N Init. Calib. Times: 1830 2302

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D	
Acetone	0.161	0.164	100.0	96.50		LINR	-3.5	25.0	
Acrolein	0.009	0.026	250.0	760.2		2ORDR	204.1	25.0	<
Acrylonitrile	0.136	0.144	250.0	264.9		AVRG	6.0	25.0	
tert-Amyl Methyl Ether	0.851	0.584	50.00	49.74		LINR	-0.5	25.0	
Benzene	0.815	0.847	50.00	51.97		AVRG	3.9	25.0	
Bromobenzene	0.584	0.598	50.00	51.24		AVRG	2.5	25.0	
Bromochloromethane	0.114	0.114	50.00	50.25		AVRG	0.5	25.0	
Bromodichloromethane	0.257	0.281	50.00	54.54		AVRG	9.1	25.0	
Bromoform	0.315	0.353	50.00	45.44	0.100	LINR	-9.1	25.0	
Bromomethane	0.101	0.058	50.00	47.59		2ORDR	-4.8	25.0	
2-Butanone	0.147	0.179	100.0	98.66		LINR	-1.3	25.0	
t-Butyl alcohol	0.023	0.027	250.0	237.7		LINR	-4.9	25.0	
n-Butylbenzene	1.242	1.315	50.00	52.94		AVRG	5.9	25.0	
sec-Butylbenzene	1.726	1.933	50.00	56.02		AVRG	12.0	25.0	
tert-Butylbenzene	1.488	1.613	50.00	54.20		AVRG	8.4	25.0	
Carbon disulfide	0.854	0.690	50.00	50.87		LINR	1.7	25.0	
Carbon tetrachloride	0.245	0.258	50.00	52.56		AVRG	5.1	25.0	
Chlorobenzene	1.413	1.402	50.00	49.62	0.300	AVRG	-0.8	25.0	
Chloroethane	0.158	0.125	50.00	47.20		LINR	-5.6	25.0	
2-Chloroethyl vinyl ether	0.172	0.210	100.0	121.7		AVRG	21.7	25.0	
Chloroform	0.366	0.346	50.00	47.21		AVRG	-5.6	25.0	
Chloromethane	0.343	0.335	50.00	48.86	0.100	AVRG	-2.3	25.0	
2-Chlorotoluene	1.386	1.471	50.00	53.09		AVRG	6.2	25.0	
4-Chlorotoluene	1.435	1.520	50.00	52.95		AVRG	5.9	25.0	
Cyclohexane	0.436	0.476	50.00	54.49		AVRG	9.0	25.0	
Dibromochloromethane	0.460	0.488	50.00	53.03		AVRG	6.0	25.0	
1,2-Dibromo-3-chloropropane	0.112	0.119	50.00	42.29		LINR	-15.4	25.0	
1,2-Dibromoethane	0.488	0.487	50.00	49.90		AVRG	-0.2	25.0	
Dibromomethane	0.148	0.140	50.00	47.39		AVRG	-5.2	25.0	
1,2-Dichlorobenzene	1.082	1.100	50.00	50.84		AVRG	1.7	25.0	
1,3-Dichlorobenzene	1.131	1.168	50.00	51.62		AVRG	3.2	25.0	
1,4-Dichlorobenzene	1.176	1.234	50.00	52.46		AVRG	4.9	25.0	
Dichlorodifluoromethane	0.185	0.236	50.00	50.58		LINR	1.2	25.0	
1,1-Dichloroethane	0.451	0.454	50.00	50.26	0.100	AVRG	0.5	25.0	
1,2-Dichloroethane	0.380	0.370	50.00	48.67		AVRG	-2.6	25.0	
1,1-Dichloroethene	0.183	0.178	50.00	46.80		LINR	-6.4	25.0	
cis-1,2-Dichloroethene	0.294	0.218	50.00	45.46		LINR	-9.1	25.0	

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VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date: 08/19/09 Time: 2202

Lab File ID: V3ICV01 Init. Calib. Date(s): 08/19/09 08/19/09

Heated Purge: (Y/N) N Init. Calib. Times: 1830 2302

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2-Dichloroethene(total)	0.293	0.212	100.0	93.34		LINR	-6.6	25.0
trans-1,2-Dichloroethene	0.236	0.206	50.00	47.89		LINR	-4.2	25.0
1,2-Dichloropropane	0.269	0.280	50.00	52.08		AVRG	4.2	25.0
1,3-Dichloropropane	0.805	0.730	50.00	45.34		AVRG	-9.3	25.0
2,2-Dichloropropane	0.227	0.220	50.00	48.40		AVRG	-3.2	25.0
1,1-Dichloropropene	0.257	0.279	50.00	54.19		AVRG	8.4	25.0
cis-1,3-Dichloropropene	0.311	0.343	50.00	55.08		AVRG	10.2	25.0
trans-1,3-Dichloropropene	0.606	0.655	50.00	54.07		AVRG	8.1	25.0
Ethylbenzene	2.238	2.399	50.00	53.59		AVRG	7.2	25.0
Ethyl methacrylate	0.586	0.677	50.00	57.79		AVRG	15.6	25.0
Hexachlorobutadiene	0.297	0.336	50.00	56.63		AVRG	13.2	25.0
2-Hexanone	0.484	0.617	100.0	113.7		LINR	13.7	25.0
Iodomethane	0.186	0.251	50.00	55.47		2ORDR	10.9	25.0
Isopropylbenzene	1.859	2.330	50.00	59.03		LINR	18.0	25.0
p-Isopropyltoluene	1.246	1.332	50.00	53.46		AVRG	6.9	25.0
Methyl acetate	0.336	0.362	50.00	53.84		AVRG	7.7	25.0
Methylene chloride	0.367	0.215	50.00	45.33		LINR	-9.3	25.0
Methyl cyclohexane	0.266	0.290	50.00	54.45		AVRG	8.9	25.0
Methyl methacrylate	0.262	0.345	50.00	47.48		LINR	-5.0	25.0
4-Methyl-2-pentanone	0.315	0.379	100.0	98.42		LINR	-1.6	25.0
MTBE	0.531	0.559	50.00	52.60		AVRG	5.2	25.0
Naphthalene	1.109	1.360	50.00	61.28		AVRG	22.6	25.0
n-Propylbenzene	2.027	2.094	50.00	51.67		AVRG	3.3	25.0
Styrene	1.486	1.679	50.00	56.48		AVRG	13.0	25.0
1,1,1,2-Tetrachloroethane	0.443	0.480	50.00	54.16		AVRG	8.3	25.0
1,1,2,2-Tetrachloroethane	0.445	0.472	50.00	53.09	0.300	AVRG	6.2	25.0
Tetrachloroethene	0.586	0.550	50.00	46.90		AVRG	-6.2	25.0
Tetrahydrofuran	0.105	0.111	50.00	47.52		LINR	-5.0	25.0
Toluene	1.285	1.241	50.00	48.30		AVRG	-3.4	25.0
1,2,3-Trichlorobenzene	0.589	0.652	50.00	55.30		AVRG	10.6	25.0
1,2,4-Trichlorobenzene	0.655	0.703	50.00	53.65		AVRG	7.3	25.0
1,1,1-Trichloroethane	0.289	0.283	50.00	49.02		AVRG	-2.0	25.0
1,1,2-Trichloroethane	0.381	0.344	50.00	45.23		AVRG	-9.5	25.0
Trichloroethene	0.219	0.226	50.00	51.53		AVRG	3.1	25.0
Trichlorofluoromethane	0.354	0.366	50.00	51.73		AVRG	3.4	25.0
Trichlorotrifluoroethane	0.200	0.212	50.00	53.11		AVRG	6.2	25.0
1,2,3-Trichloropropane	0.180	0.178	50.00	49.64		AVRG	-0.7	25.0

VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SDGA55305

Instrument ID: VOA3 Calibration Date: 08/19/09 Time: 2202

Lab File ID: V3ICV01 Init. Calib. Date(s): 08/19/09 08/19/09

Heated Purge: (Y/N) N Init. Calib. Times: 1830 2302

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2,4-Trimethylbenzene	1.533	1.717	50.00	55.99		AVRG	12.0	25.0
1,3,5-Trimethylbenzene	1.507	1.627	50.00	53.97		AVRG	7.9	25.0
Vinyl acetate	0.574	0.676	100.0	98.00		LINR	-2.0	25.0
Vinyl chloride	0.238	0.221	50.00	46.44		AVRG	-7.1	25.0
Xylene(total)	5.406	5.904	150.0	159.2		AVRG	9.2	25.0
1-Chlorohexane	0.808	0.643	50.00	55.63		LINR	11.2	25.0
Di-isopropyl ether	1.105	1.177	50.00	48.74		LINR	-2.5	25.0
ETBE	0.790	0.831	50.00	52.65		AVRG	5.3	25.0
Dibromofluoromethane	0.259	0.260	30.00	30.18		AVRG	0.6	25.0
1,2-Dichloroethane-d4	0.059	0.059	30.00	29.98		AVRG	-0.1	25.0
Toluene-d8	2.222	2.132	30.00	28.77		AVRG	-4.1	25.0
Bromofluorobenzene	0.937	0.963	30.00	30.83		AVRG	2.8	25.0

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Instrument ID: VOA3 Calibration Date: 08/21/09 Time: 1122

Lab File ID: V3CCV01 Init. Calib. Date(s): 08/19/09 08/19/09

Heated Purge: (Y/N) N Init. Calib. Times: 1830 2302

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF100	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Acetone	0.161	0.136	200.0	160.8		LINR	-19.6	
Acrolein	0.009	0.003	500.0	232.6		2ORDR	-53.5	
Acrylonitrile	0.136	0.130	500.0	481.7		AVRG	-3.6	
tert-Amyl Methyl Ether	0.851	0.572	100.0	97.49		LINR	-2.5	
Benzene	0.815	0.843	100.0	103.4		AVRG	3.4	
Bromobenzene	0.584	0.619	100.0	106.0		AVRG	6.0	
Bromochloromethane	0.114	0.122	100.0	107.2		AVRG	7.2	
Bromodichloromethane	0.257	0.281	100.0	109.4		AVRG	9.4	
Bromoform	0.315	0.385	100.0	99.05	0.100	LINR	-0.9	
Bromomethane	0.101	0.064	100.0	95.60		2ORDR	-4.4	
2-Butanone	0.147	0.149	200.0	160.8		LINR	-19.6	
t-Butyl alcohol	0.023	0.024	500.0	411.8		LINR	-17.6	
n-Butylbenzene	1.242	1.362	100.0	109.6		AVRG	9.6	
sec-Butylbenzene	1.726	1.867	100.0	108.2		AVRG	8.2	
tert-Butylbenzene	1.488	1.555	100.0	104.5		AVRG	4.5	
Carbon disulfide	0.854	0.650	100.0	95.90		LINR	-4.1	
Carbon tetrachloride	0.245	0.272	100.0	110.9		AVRG	10.9	
Chlorobenzene	1.413	1.418	100.0	100.4	0.300	AVRG	0.4	
Chloroethane	0.158	0.142	100.0	107.2		LINR	7.2	
2-Chloroethyl vinyl ether	0.172	0.174	200.0	202.6		AVRG	1.3	
Chloroform	0.366	0.362	100.0	98.88		AVRG	-1.1	20.0
Chloromethane	0.343	0.324	100.0	94.64	0.100	AVRG	-5.4	
2-Chlorotoluene	1.386	1.443	100.0	104.1		AVRG	4.1	
4-Chlorotoluene	1.435	1.580	100.0	110.1		AVRG	10.1	
Cyclohexane	0.436	0.465	100.0	106.6		AVRG	6.6	
Dibromochloromethane	0.460	0.485	100.0	105.4		AVRG	5.4	
1,2-Dibromo-3-chloropropane	0.112	0.123	100.0	87.16		LINR	-12.8	
1,2-Dibromoethane	0.488	0.491	100.0	100.6		AVRG	0.6	
Dibromomethane	0.148	0.147	100.0	99.66		AVRG	-0.3	
1,2-Dichlorobenzene	1.082	1.107	100.0	102.3		AVRG	2.3	
1,3-Dichlorobenzene	1.131	1.171	100.0	103.5		AVRG	3.5	
1,4-Dichlorobenzene	1.176	1.178	100.0	100.2		AVRG	0.2	
Dichlorodifluoromethane	0.185	0.223	100.0	95.43		LINR	-4.6	
1,1-Dichloroethane	0.451	0.465	100.0	103.0	0.100	AVRG	3.0	
1,2-Dichloroethane	0.380	0.367	100.0	96.43		AVRG	-3.6	
1,1-Dichloroethene	0.183	0.179	100.0	93.86		LINR	-6.1	20.0
cis-1,2-Dichloroethene	0.294	0.232	100.0	97.11		LINR	-2.9	

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Instrument ID: VOA3 Calibration Date: 08/21/09 Time: 1122

Lab File ID: V3CCV01 Init. Calib. Date(s): 08/19/09 08/19/09

Heated Purge: (Y/N) N Init. Calib. Times: 1830 2302

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF100	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2-Dichloroethene(total)	0.293	0.219	200.0	193.0		LINR	-3.5	
trans-1,2-Dichloroethene	0.236	0.206	100.0	95.87		LINR	-4.1	
1,2-Dichloropropane	0.269	0.285	100.0	105.9		AVRG	5.9	20.0
1,3-Dichloropropane	0.805	0.727	100.0	90.29		AVRG	-9.7	
2,2-Dichloropropane	0.227	0.285	100.0	125.3		AVRG	25.3	
1,1-Dichloropropene	0.257	0.283	100.0	110.1		AVRG	10.1	
cis-1,3-Dichloropropene	0.311	0.366	100.0	117.7		AVRG	17.7	
trans-1,3-Dichloropropene	0.606	0.655	100.0	108.2		AVRG	8.2	
Ethylbenzene	2.238	2.354	100.0	105.2		AVRG	5.2	20.0
Ethyl methacrylate	0.586	0.654	100.0	111.6		AVRG	11.6	
Hexachlorobutadiene	0.297	0.328	100.0	110.3		AVRG	10.3	
2-Hexanone	0.484	0.553	200.0	204.0		LINR	2.0	
Iodomethane	0.186	0.239	100.0	100.6		2ORDR	0.6	
Isopropylbenzene	1.859	1.996	100.0	101.1		LINR	1.1	
p-Isopropyltoluene	1.246	1.360	100.0	109.1		AVRG	9.1	
Methyl acetate	0.336	0.328	100.0	97.73		AVRG	-2.3	
Methylene chloride	0.367	0.234	100.0	98.83		LINR	-1.2	
Methyl cyclohexane	0.266	0.302	100.0	113.6		AVRG	13.6	
Methyl methacrylate	0.262	0.330	100.0	90.83		LINR	-9.2	
4-Methyl-2-pentanone	0.315	0.358	200.0	185.7		LINR	-7.1	
MTBE	0.531	0.544	100.0	102.3		AVRG	2.3	
Naphthalene	1.109	1.170	100.0	105.4		AVRG	5.4	
n-Propylbenzene	2.027	2.192	100.0	108.2		AVRG	8.2	
Styrene	1.486	1.669	100.0	112.3		AVRG	12.3	
1,1,1,2-Tetrachloroethane	0.443	0.500	100.0	112.9		AVRG	12.9	
1,1,2,2-Tetrachloroethane	0.445	0.432	100.0	97.12	0.300	AVRG	-2.9	
Tetrachloroethene	0.586	0.601	100.0	102.5		AVRG	2.5	
Tetrahydrofuran	0.105	0.101	100.0	86.44		LINR	-13.6	
Toluene	1.285	1.230	100.0	95.71		AVRG	-4.3	20.0
1,2,3-Trichlorobenzene	0.589	0.601	100.0	102.0		AVRG	2.0	
1,2,4-Trichlorobenzene	0.655	0.688	100.0	105.0		AVRG	5.0	
1,1,1-Trichloroethane	0.289	0.308	100.0	106.5		AVRG	6.5	
1,1,2-Trichloroethane	0.381	0.353	100.0	92.66		AVRG	-7.3	
Trichloroethene	0.219	0.229	100.0	104.7		AVRG	4.7	
Trichlorofluoromethane	0.354	0.370	100.0	104.4		AVRG	4.4	
Trichlorotrifluoroethane	0.200	0.200	100.0	99.89		AVRG	-0.1	
1,2,3-Trichloropropane	0.180	0.177	100.0	98.48		AVRG	-1.5	

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.V08124

Instrument ID: VOA3 Calibration Date: 08/21/09 Time: 1122

Lab File ID: V3CCV01 Init. Calib. Date(s): 08/19/09 08/19/09

Heated Purge: (Y/N) N Init. Calib. Times: 1830 2302

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF100	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2,4-Trimethylbenzene	1.533	1.678	100.0	109.4		AVRG	9.4	
1,3,5-Trimethylbenzene	1.507	1.631	100.0	108.2		AVRG	8.2	
Vinyl acetate	0.574	0.683	200.0	198.0		LINR	-1.0	
Vinyl chloride	0.238	0.239	100.0	100.7		AVRG	0.7	20.0
Xylene(total)	5.406	5.504	300.0	296.9		AVRG	1.8	
1-Chlorohexane	0.808	0.639	100.0	110.6		LINR	10.6	
Di-isopropyl ether	1.105	1.208	100.0	100.0		LINR	0.0	
ETBE	0.790	0.831	100.0	105.3		AVRG	5.3	
Dibromofluoromethane	0.259	0.257	30.00	29.76		AVRG	-0.8	
1,2-Dichloroethane-d4	0.059	0.057	30.00	29.10		AVRG	-3.0	
Toluene-d8	2.222	2.118	30.00	28.58		AVRG	-4.7	
Bromofluorobenzene	0.937	0.948	30.00	30.35		AVRG	1.2	

LSAMP_ID	LAB_CHEM	MANUALS	
V3STD09	ETBE	D	

9475

Sequence Name: C:\msdchem\1\sequence\081909V3.s
Comment: EPA8260B/524.2/624
Operator: JH
Data Path: C:\MSDCHEM\1\DATA\081909V3\
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line			Sample Name/Misc Info		
1)	Blank	100	PREBLK01	VWATER3	V3BLK;;;;;;
2)	Sample	50	V3BFB01	VWATER3	V3BFB 50NG;;;;;; 8-19-09 1659
3)	Blank	1	PREBLK02	VWATER3	V3BLK;;;;;;
4)	Blank	2	PREBLK03	VWATER3	V3BLK;;;;;;
5)	Calibration	3	V3STD01	VWATER3	V3STD0.25ppb;;;;;;
6)	Calibration	4	V3STD02	VWATER3	V3STD0.5ppb;;;;;;
7)	Calibration	5	V3STD03	VWATER3	V3STD1ppb;;;;;;
8)	Calibration	6	V3STD04	VWATER3	V3STD2ppb;;;;;;
9)	Calibration	7	V3STD05	VWATER3	V3STD10ppb;;;;;;
10)	Calibration	8	V3STD06	VWATER3	V3STD20ppb;;;;;;
11)	Calibration	9	V3STD07	VWATER3	V3STD50ppb;;;;;;
12)	Spike	10	V3ICV01	VWATER3	V3BLK0721LCS;;;;;;
13)	Calibration	11	V3STD08	VWATER3	V3STD100ppb;;;;;;
14)	Calibration	12	V3STD09	VWATER3	V3STD200ppb;;;;;;
15)	Spike	13	V3LCS01	VWATER3	V3BLK0819LCS;;;;;;
16)	DailyCal	14	V3CCVA9	VWATER3	V3STD100ppb;;;;;; AIX
17)	Spike	15	V3RL01	VWATER3	V3RLSTD1.0ppb;;;;;;
18)	Blank	100	BLANK01	VWATER3	V3BLK;;;;;;
19)	Blank	100	V3BLK01	VWATER3	V3BLK0819;;;;;;
20)	Sample	16	WP-151	VWATER3	V3PTWP-151;;;;;;
21)	Sample	17	WS-078	VWATER3	V3PTWS-078;;;;;;
22)	Sample	18	V3PTWS-078;;;;;;	THM	8-20-09 0300
	Datafile		WS-078THM		
	Method		VWATER3		
23)	Blank	19	BLANK02	VWATER3	V3BLK;;;;;;
24)	Blank	20	BLANK03	VWATER3	V3BLK;;;;;;
25)	Sample	50	V3BFB01E	VWATER3	V3BFB 50NG;;;;;;
26)	DailyCal	21	V3CCV01E	VWATER3	V3STD100ppb;;;;;;
27)	Spike	22	V3LCS01E	VWATER3	V3BLK0819ELCS;;;;;;
28)	Spike	23	V3RL01E	VWATER3	V3RLSTD1.0ppb;;;;;;
29)	Blank	100	BLANK01E	VWATER3	V3BLK;;;;;;
30)	Blank	100	V3BLK01E	VWATER3	V3BLK0819E;;;;;;
31)	Sample	24	0811001	VWATER3	0908110-01;;;;;; tb/vial1
32)	Sample	25	0804701	VWATER3	0908047-01;;;;;; vial1
33)	Sample	26	0804702	VWATER3	0908047-02;;;;;; vial1
34)	Sample	27	0804704	VWATER3	0908047-04;;;;;; vial1
35)	Sample	28	0810601	VWATER3	0908106-01;;;;;; vial2
36)	Sample	29	0810007D	VWATER3	0908100-07;;;;;; vial1 2x
37)	Sample	30	0811002D	VWATER3	0908110-02;;;;;; vial1 5x
38)	Sample	31	0811003D	VWATER3	0908110-03;;;;;; vial1 5x
39)	Sample	32	0811004D	VWATER3	0908110-04;;;;;; vial1 5x
40)	Sample	33	0811005D	VWATER3	0908110-05;;;;;; vial1 10x
41)	Sample	34	0812201T	VWATER3	0908122-01;;;;;; tclp10x
42)	Sample	35	0811204T	VWATER3	0908112-04;;;;;; tclp10x
43)	Sample	36	0810007M	VWATER3	0908100-07;;;;;; vial1 2xms

Sequence Name: C:\msdchem\1\sequence\081909V3.s

9476

	Line Type	Vial	DataFile	Method	Sample Name
4)	Sample	37	0810007S	VWATER3	0908100-07;;;;;; vial1 2xmsd
5)	Sample	38	0811204M	VWATER3	0908112-04;;;;;; tclp10xms
6)	Sample	100	V3BFB	VWATER3	V3BFB 50NG;;;;;;

9477

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Sequence Name: C:\msdchem\1\sequence\081909V3.s
      Comment: EPA8260B/524.2/624
     Operator: JH
    Data Path: C:\MSDCHEM\1\DATA\081909V3\
nstrument Control   Pre-Seq Cmd:
)ata Analysis       Pre-Seq Cmd:

nstrument Control  Post-Seq Cmd:
)ata Analysis      Post-Seq Cmd:

Method Sections To Run      On A Barcode Mismatch
 (X) Full Method              (X) Inject Anyway
 ( ) Reprocessing Only        ( ) Don't Inject

-----------------------------------------------------------------------
Line                    Sample Name/Misc Info
-----------------------------------------------------------------------
1   Type: Blank         V3BLK;;;;;;
    Vial: 100           ;3;BLANK;;;gm-all.sub;#9G0357
    Method   : VWATER3.M
    Datafile: PREBLK01.D
    Bar Code:                       Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
2   Type: Sample        V3BFB 50NG;;;;;;
    Vial: 50            ;3;;;;gm-all.sub;#09H0277
    Method   : VWATER3.M
    Datafile: V3BFB01.D
    Bar Code:                       Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
3   Type: Blank         V3BLK;;;;;;
    Vial: 1             ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: PREBLK02.D
    Bar Code:                       Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
4   Type: Blank         V3BLK;;;;;;
    Vial: 2             ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: PREBLK03.D
    Bar Code:                       Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
5   Type: Calibration V3STD0.25ppb;;;;;;
    Vial: 3             ;1;;;1;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3STD01.D
    LvlId:      UpdRF:No Upd UpdRT:No Upd UpdQI:No Upd
    Bar Code:                       Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
6   Type: Calibration V3STD0.5ppb;;;;;;
    Vial: 4             ;1;;;2;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3STD02.D
    LvlId:      UpdRF:No Upd UpdRT:No Upd UpdQI:No Upd
    Bar Code:                       Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method

Sequence Last Modified  Wed Aug 19 18:57:05 2009        Page: 1
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9478

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---------------------------------------------------------------------------
7   Type: Calibration V3STD1ppb;;;;;;
    Vial: 5            ;1;;;3;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3STD03.D
    LvlId:      UpdRF:No Upd UpdRT:No Upd UpdQI:No Upd
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------------
8   Type: Calibration V3STD2ppb;;;;;;
    Vial: 6            ;1;;;4;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3STD04.D
    LvlId:      UpdRF:No Upd UpdRT:No Upd UpdQI:No Upd
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------------
9   Type: Calibration V3STD10ppb;;;;;;
    Vial: 7            ;1;;;5;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3STD05.D
    LvlId:      UpdRF:No Upd UpdRT:No Upd UpdQI:No Upd
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------------
10  Type: Calibration V3STD20ppb;;;;;;
    Vial: 8            ;1;;;6;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3STD06.D
    LvlId:      UpdRF:No Upd UpdRT:No Upd UpdQI:No Upd
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------------
11  Type: Calibration V3STD50ppb;;;;;;
    Vial: 9            ;1;;;7;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3STD07.D
    LvlId:      UpdRF:No Upd UpdRT:No Upd UpdQI:No Upd
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------------
12  Type: Spike        V3BLK0721LCS;;;;;;
    Vial: 10           ;3;LCS;;;gm-all.sub;#09G0357,09H0417
    Method   : VWATER3.M
    Datafile: V3ICV01.D
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------------
13  Type: Calibration V3STD100ppb;;;;;;
    Vial: 11           ;1;;;8;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3STD08.D
    LvlId:      UpdRF:No Upd UpdRT:No Upd UpdQI:No Upd
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------------
14  Type: Calibration V3STD200ppb;;;;;;
    Vial: 12           ;1;;;9;gm-all.sub;#09G0357, #09H0416
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9479

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    Method   : VWATER3.M
    Datafile: V3STD09.D
    LvlId:      UpdRF:No Upd UpdRT:No Upd UpdQI:No Upd
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
15  Type: Spike        V3BLK0819LCS;;;;;;
    Vial: 13           ;3;LCS;;;gm-all.sub;#09G0357,09H0417
    Method   : VWATER3.M
    Datafile: V3LCS01.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
16  Type: DailyCal     V3STD100ppb;;;;;; AIX
    Vial: 14           ;;;;;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3CCVA9.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
17  Type: Spike        V3RLSTD1.0ppb;;;;;;
    Vial: 15           ;3;LCS;;;gm-all.sub;#09G0357,09H0417
    Method   : VWATER3.M
    Datafile: V3RL01.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
18  Type: Blank        V3BLK;;;;;;
    Vial: 100          ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: BLANK01.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
19  Type: Blank        V3BLK0819;;;;;;
    Vial: 100          ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: V3BLK01.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
20  Type: Sample       V3PTWP-151;;;;;;
    Vial: 16           ;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: WP-151.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
21  Type: Sample       V3PTWS-078;;;;;;
    Vial: 17           ;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: WS-078.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
22  Type: Sample       V3PTWS-078;;;;;; THM
```

9480

```
    Vial: 18            ;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: WS-078THM.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
23  Type: Blank         V3BLK;;;;;;
    Vial: 19            ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: BLANK02.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
24  Type: Blank         V3BLK;;;;;;
    Vial: 20            ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: BLANK03.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
25  Type: Sample        V3BFB 50NG;;;;;;
    Vial: 50            ;3;;;;gm-all.sub;#09G0149
    Method   : VWATER3.M
    Datafile: V3BFB01E.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
26  Type: DailyCal      V3STD100ppb;;;;;;
    Vial: 21            ;;;;;gm-all.sub;#09G0357, #09H0416
    Method   : VWATER3.M
    Datafile: V3CCV01E.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
27  Type: Spike         V3BLK0819ELCS;;;;;;
    Vial: 22            ;3;LCS;;;gm-all.sub;#09G0357,09H0417
    Method   : VWATER3.M
    Datafile: V3LCS01E.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
28  Type: Spike         V3RLSTD1.0ppb;;;;;;
    Vial: 23            ;3;LCS;;;gm-all.sub;#09G0357,09H0417
    Method   : VWATER3.M
    Datafile: V3RL01E.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
29  Type: Blank         V3BLK;;;;;;
    Vial: 100           ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: BLANK01E.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
30  Type: Blank         V3BLK0819E;;;;;;
```

9481

```
    Vial: 100          ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: V3BLK01E.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
31  Type: Sample       0908110-01;;;;;; tb/vial1
    Vial: 24           sha.v08110;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811001.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
32  Type: Sample       0908047-01;;;;;; vial1
    Vial: 25           ch2.v08047;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0804701.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
33  Type: Sample       0908047-02;;;;;; vial1
    Vial: 26           ch2.v08047;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0804702.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
34  Type: Sample       0908047-04;;;;;; vial1
    Vial: 27           ch2.v08047;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0804704.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
35  Type: Sample       0908106-01;;;;;; vial2
    Vial: 28           gri.v08106;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0810601.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
36  Type: Sample       0908100-07;;;;;; vial1 2x
    Vial: 29           ch2.v08100;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0810007D.D
    Bar Code:                        Samp Amt: 0          Multiplr: 2
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
37  Type: Sample       0908110-02;;;;;; vial1 5x
    Vial: 30           sha.v08110;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811002D.D
    Bar Code:                        Samp Amt: 0          Multiplr: 5
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
38  Type: Sample       0908110-03;;;;;; vial1 5x
```

9482

```
    Vial: 31            sha.v08110;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811003D.D
    Bar Code:                        Samp Amt: 0          Multiplr: 5
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
39  Type: Sample        0908110-04;;;;;; vial1 5x
    Vial: 32            sha.v08110;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811004D.D
    Bar Code:                        Samp Amt: 0          Multiplr: 5
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
40  Type: Sample        0908110-05;;;;;; vial1 10x
    Vial: 33            sha.v08110;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811005D.D
    Bar Code:                        Samp Amt: 0          Multiplr: 10
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
41  Type: Sample        0908122-01;;;;;; tclp10x
    Vial: 34            tet.v08122;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0812201T.D
    Bar Code:                        Samp Amt: 0          Multiplr: 10
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
42  Type: Sample        0908112-04;;;;;; tclp10x
    Vial: 35            ses.v08112;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811204T.D
    Bar Code:                        Samp Amt: 0          Multiplr: 10
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
43  Type: Sample        0908100-07;;;;;; vial1 2xms
    Vial: 36            ch2.v08100;3;MS;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0810007M.D
    Bar Code:                        Samp Amt: 0          Multiplr: 2
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
44  Type: Sample        0908100-07;;;;;; vial1 2xmsd
    Vial: 37            ch2.v08100;3;MSD;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0810007S.D
    Bar Code:                        Samp Amt: 0          Multiplr: 2
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
45  Type: Sample        0908112-04;;;;;; tclp10xms
    Vial: 38            ses.v08112;3;MS;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811204M.D
    Bar Code:                        Samp Amt: 0          Multiplr: 10
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
46  Type: Sample        V3BFB 50NG;;;;;;
```

9483

```
Vial: 100          ;3;;;;gm-all.sub;#09G0149
Method   : VWATER3.M
Datafile: V3BFB.D
Bar Code:                        Samp Amt: 0          Multiplr: 1
Area% Report     :per Method        Lib. Search Rep :per Method
Quant Report     :per Method        Post-Quant Macro:per Method
CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
```

9484

Sequence Name: C:\msdchem\1\sequence\082109V3.s
Comment: EPA8260B/524.2/624
Operator: JH
Data Path: C:\MSDCHEM\1\DATA\082109V3\

Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line			Sample Name/Misc Info		
1)	Blank	100	PREBLK01	VWATER3	V3BLK;;;;;;
2)	Sample	41	S0813501	VWATER3	0908135-01;;;;;; 100x h2o scr
3)	Sample	42	S0813502	VWATER3	0908135-02;;;;;; 100x h2o scr
4)	Sample	50	V3BFB01	VWATER3	V3BFB 50NG;;;;;; 10:52 8-21-09 DL
5)	DailyCal	1	V3CCV01	VWATER3	V3STD100ppb;;;;;;
6)	Spike	2	V3LCS01	VWATER3	V3BLK0821LCS;;;;;;
7)	Spike	3	V3RL01	VWATER3	V3RLSTD1.0ppb;;;;;;
8)	Blank	100	BLANK01	VWATER3	V3BLK;;;;;;
9)	Blank	100	V3BLK01	VWATER3	V3BLK0821;;;;;;
10)	Sample	4	0811401	VWATER3	0908114-01;;;;;; tb/vial1
11)	Sample	5	0812166	VWATER3	0908121-66;;;;;; tb/vial1
12)	Sample	6	0812402	VWATER3	0908124-02;;;;;; tb/vial1
13)	Sample	7	0811002	VWATER3	0908110-02;;;;;; vial1
14)	Sample	8	0811003	VWATER3	0908110-03;;;;;; vial1
15)	Sample	9	0811004	VWATER3	0908110-04;;;;;; vial1
16)	Sample	10	0811402	VWATER3	0908114-02;;;;;; vial1
17)	Sample	11	0812401	VWATER3	0908124-01;;;;;; vial1
18)	Sample	12	0812505	VWATER3	0908125-05;;;;;; vial1
19)	Sample	13	0811403D	VWATER3	0908114-03;;;;;; vial1 2.5x
20)	Sample	14	0811404D	VWATER3	0908114-04;;;;;; vial1 2x
21)	Sample	15	0811407D	VWATER3	0908114-07;;;;;; vial1 2x
22)	Sample	16	0811405D	VWATER3	0908114-05;;;;;; vial1 5x
23)	Sample	17	0811406D	VWATER3	0908114-06;;;;;; vial1 5x
24)	Spike	18	V3LCSD01	VWATER3	V3BLK0821LCSD;;;;;; 21:06 8-21
25)	Blank	100	blank1	VWATER3	V3BLK;;;;;;
26)	Blank	100	blank2	VWATER3	V3BLK;;;;;;
27)	Sample	19	0712613D	VWATER3	0907126-13;;;;;; vial2
28)	Sample	100	V3BFB	VWATER3	V3BFB 50NG;;;;;;

9485

```
   Sequence Name:  C:\msdchem\1\sequence\082109V3.s
         Comment:  EPA8260B/524.2/624
        Operator:  JH
       Data Path:  C:\MSDCHEM\1\DATA\082109V3\
Instrument Control   Pre-Seq Cmd:
Data Analysis        Pre-Seq Cmd:

Instrument Control  Post-Seq Cmd:
Data Analysis       Post-Seq Cmd:

   Method Sections To Run      On A Barcode Mismatch
    (X) Full Method              (X) Inject Anyway
    ( ) Reprocessing Only        ( ) Don't Inject

   ---------------------------------------------------------------------
   Line                    Sample Name/Misc Info
   ---------------------------------------------------------------------
   1   Type: Blank         V3BLK;;;;;;
       Vial: 100           ;3;BLANK;;;gm-all.sub;#9G0357
       Method   : VWATER3.M
       Datafile: PREBLK01.D
       Bar Code:                       Samp Amt: 0          Multiplr: 1
       Area% Report     :per Method       Lib. Search Rep :per Method
       Quant Report     :per Method       Post-Quant Macro:per Method
       CR Database      :per Method       CR Spreadsheet  :per Method
   ---------------------------------------------------------------------
   2   Type: Sample        0908135-01;;;;;; 100x h2o scr
       Vial: 41            env.v08135;0;;;;gm-all.sub;#09G0357
       Method   : VWATER3.M
       Datafile: S0813501.D
       Bar Code:                       Samp Amt: 0          Multiplr: 100
       Area% Report     :per Method       Lib. Search Rep :per Method
       Quant Report     :per Method       Post-Quant Macro:per Method
       CR Database      :per Method       CR Spreadsheet  :per Method
   ---------------------------------------------------------------------
   3   Type: Sample        0908135-02;;;;;; 100x h2o scr
       Vial: 42            env.v08135;0;;;;gm-all.sub;#09G0357
       Method   : VWATER3.M
       Datafile: S0813502.D
       Bar Code:                       Samp Amt: 0          Multiplr: 100
       Area% Report     :per Method       Lib. Search Rep :per Method
       Quant Report     :per Method       Post-Quant Macro:per Method
       CR Database      :per Method       CR Spreadsheet  :per Method
   ---------------------------------------------------------------------
   4   Type: Sample        V3BFB 50NG;;;;;;
       Vial: 50            ;3;;;;gm-all.sub;#09H0277
       Method   : VWATER3.M
       Datafile: V3BFB01.D
       Bar Code:                       Samp Amt: 0          Multiplr: 1
       Area% Report     :per Method       Lib. Search Rep :per Method
       Quant Report     :per Method       Post-Quant Macro:per Method
       CR Database      :per Method       CR Spreadsheet  :per Method
   ---------------------------------------------------------------------
   5   Type: DailyCal      V3STD100ppb;;;;;;
       Vial: 1             ;;;;;gm-all.sub;#09G0357, #09H0416
       Method   : VWATER3.M
       Datafile: V3CCV01.D
       Bar Code:                       Samp Amt: 0          Multiplr: 1
       Area% Report     :per Method       Lib. Search Rep :per Method
       Quant Report     :per Method       Post-Quant Macro:per Method
       CR Database      :per Method       CR Spreadsheet  :per Method
   ---------------------------------------------------------------------
   6   Type: Spike         V3BLK0821LCS;;;;;;
       Vial: 2             ;3;LCS;;;gm-all.sub;#09G0357,09H0417
       Method   : VWATER3.M
       Datafile: V3LCS01.D
       Bar Code:                       Samp Amt: 0          Multiplr: 1
       Area% Report     :per Method       Lib. Search Rep :per Method
       Quant Report     :per Method       Post-Quant Macro:per Method
       CR Database      :per Method       CR Spreadsheet  :per Method
   ---------------------------------------------------------------------
   7   Type: Spike         V3RLSTD1.0ppb;;;;;;
```

```
Vial: 3            ;3;LCS;;;gm-all.sub;#09G0357,09H0417
Method   : VWATER3.M
Datafile: V3RL01.D
Bar Code:                    Samp Amt: 0          Multiplr: 1
Area% Report     :per Method        Lib. Search Rep :per Method
Quant Report     :per Method        Post-Quant Macro:per Method
CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
8   Type: Blank        V3BLK;;;;;;
    Vial: 100          ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: BLANK01.D
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
9   Type: Blank        V3BLK0821;;;;;;
    Vial: 100          ;3;BLANK;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: V3BLK01.D
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
10  Type: Sample       0908114-01;;;;;; tb/vial1
    Vial: 4            sha.v08114;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811401.D
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
11  Type: Sample       0908121-66;;;;;; tb/vial1
    Vial: 5            tet.v08121;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0812166.D
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
12  Type: Sample       0908124-02;;;;;; tb/vial1
    Vial: 6            tet.v08124;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0812402.D
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
13  Type: Sample       0908110-02;;;;;; vial1
    Vial: 7            sha.v08110;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811002.D
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
14  Type: Sample       0908110-03;;;;;; vial1
    Vial: 8            sha.v08110;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811003.D
    Bar Code:                    Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
15  Type: Sample       0908110-04;;;;;; vial1
```

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pH<2

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9487

```
    Vial: 9            sha.v08110;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811004.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
16  Type: Sample       0908114-02;;;;;; vial1
    Vial: 10           sha.v08114;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811402.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
17  Type: Sample       0908124-01;;;;;; vial1
    Vial: 11           tet.v08124;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0812401.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
18  Type: Sample       0908125-05;;;;;; vial1
    Vial: 12           tet.v08125;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0812505.D
    Bar Code:                        Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
19  Type: Sample       0908114-03;;;;;; vial1 2.5x
    Vial: 13           sha.v08114;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811403D.D
    Bar Code:                        Samp Amt: 0          Multiplr: 2.5
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
20  Type: Sample       0908114-04;;;;;; vial1 2x
    Vial: 14           sha.v08114;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811404D.D
    Bar Code:                        Samp Amt: 0          Multiplr: 2
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
21  Type: Sample       0908114-07;;;;;; vial1 2x
    Vial: 15           sha.v08114;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811407D.D
    Bar Code:                        Samp Amt: 0          Multiplr: 2
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
22  Type: Sample       0908114-05;;;;;; vial1 5x
    Vial: 16           sha.v08114;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811405D.D
    Bar Code:                        Samp Amt: 0          Multiplr: 5
    Area% Report     :per Method        Lib. Search Rep :per Method
    Quant Report     :per Method        Post-Quant Macro:per Method
    CR Database      :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
23  Type: Sample       0908114-06;;;;;; vial1 5x
```

pH<2

```
    Vial: 17              sha.v08114;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0811406D.D
    Bar Code:                          Samp Amt: 0          Multiplr: 5
    Area% Report      :per Method        Lib. Search Rep :per Method
    Quant Report      :per Method        Post-Quant Macro:per Method
    CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
24  Type: Spike           V3BLK0821LCSD;;;;;;
    Vial: 18              ;3;LCSD;;;gm-all.sub;#09G0357,09H0417
    Method   : VWATER3.M
    Datafile: V3LCSD01.D
    Bar Code:                          Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method        Lib. Search Rep :per Method
    Quant Report      :per Method        Post-Quant Macro:per Method
    CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
25  Type: Blank           V3BLK;;;;;;
    Vial: 100             ;3;BLANK;;;gm-all.sub;#9G0357
    Method   : VWATER3.M
    Datafile: blank1.D
    Bar Code:                          Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method        Lib. Search Rep :per Method
    Quant Report      :per Method        Post-Quant Macro:per Method
    CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
26  Type: Blank           V3BLK;;;;;;
    Vial: 100             ;3;BLANK;;;gm-all.sub;#9G0357
    Method   : VWATER3.M
    Datafile: blank2.D
    Bar Code:                          Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method        Lib. Search Rep :per Method
    Quant Report      :per Method        Post-Quant Macro:per Method
    CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
27  Type: Sample          0907126-13;;;;;; vial2
    Vial: 19              ch2.v07126;0;;;;gm-all.sub;#09G0357
    Method   : VWATER3.M
    Datafile: 0712613D.D
    Bar Code:                          Samp Amt: 0          Multiplr: 2
    Area% Report      :per Method        Lib. Search Rep :per Method
    Quant Report      :per Method        Post-Quant Macro:per Method
    CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
28  Type: Sample          V3BFB 50NG;;;;;;
    Vial: 100             ;3;;;;gm-all.sub;#09H0277
    Method   : VWATER3.M
    Datafile: V3BFB.D
    Bar Code:                          Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method        Lib. Search Rep :per Method
    Quant Report      :per Method        Post-Quant Macro:per Method
    CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
```

PREPARATION BENCH SHEET

9H24012

Empirical Laboratories, LLC

Instrument: VOA3

Prepared using: MS - VOC_5030B

0908124ORG

Matrix: Water

·inted: 8/24/2009 10:43:09AM

Surrogate used: 09G0357

Lab Number	Analysis	Prepared	Initial (mL)	Final (ml)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
0907126-13RE2	VOC_8260B_REG	08/21/2009 00:00	5	5				1	[redacted]	From 9G24007 by DCL on 08/24/2
0908110-02RE1	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted])	BTEX / MTBE
0908110-03RE1	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted]0)	BTEX / MTBE
0908110-04RE1	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted]00)	BTEX / MTBE
0908114-01	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted]0)	BTEX / MTBE
0908114-02	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted]00)	BTEX / MTBE
0908114-03	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted]00)	BTEX / MTBE
0908114-04	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted])	BTEX / MTBE
0908114-05	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted]	BTEX / MTBE
0908114-06	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted]	BTEX / MTBE
0908114-07	VOC_8260B_BTEXMI	08/21/2009 00:00	5	5				1	[redacted]	BTEX / MTBE
0908121-66	VOC_8260B_REG	08/21/2009 00:00	5	5				1	etra Tech NUS, Inc. (T010	
0908124-01	VOC_8260B_REG	08/21/2009 00:00	5	5				1	etra Tech NUS, Inc. (T010	
0908124-02	VOC_8260B_REG	08/21/2009 00:00	5	5				1	etra Tech NUS, Inc. (T010	
0908125-05	VOC_8260B_TCL	08/21/2009 00:00	5	5				1	etra Tech NUS, Inc. (T010	Run lo and hi vials!!!
9H24012-BLK1	QC	08/21/2009 00:00	5	5				1		
9H24012-BS1	QC	08/21/2009 00:00	5	5	09H0417		2.5	1		
9H24012-BSD1	QC	08/21/2009 00:00	5	5	09H0417		2.5	1		

Spiking Witnessed By Date

Preparation Reviewed By Date

Extracts Received By Date

Empirical Laboratories

Empirical Laboratories, LLC

LABORATORY SAMPLE CUSTODY FORM

HOBART REFRIGERATOR

Sample Log # (s)	Time/Date/Initials Removed	Time/Date/Initials Returned (Note if all Sample Used)	Notes/ Comments	Task Performed
8107 (2-16) 8113 (4-14)	8-19-09 3:05PM	8-19-09 3:40PM		VOA
8113 (15-23)	82009 / 310pm / DL			VOA
8113 (1-23)	8-21-09 8:15AM	8-21-09 8:50AM		VOA
8110 (2-4) 8114 (1-7)	855am / 82109 / DL			VOA
8121-06 8124 (1-8)				
8123-05				
8135 (1-2)	950am / 82409 / DL			VOA
8134 (1-2) 8137 (1-5,7)	10am / 82409 / DL		screens	VOA
8138 (1,2) 8139-01				
8141-01 8144 (1-9)				
8143 (1-18)				
8134 (1-2) 8135-01	8-24-09 8:15AM	8-24-09 9:40 AM		VOA
8023-20 8138 (1-2)	130pm / 82409 / DL			VOA
8139-01 8141-01				
8144 (1-9)				
8159 (1-8) 8162 (1-5)	210pm / 82409 / DL	3pm / 82409 / DL	screens	VOA
8163 (1-6) 8158 (1-2)				
8137 (1-7) 8159-(1-8)	315pm / 82509 / DL			VOA
8162 (1-5) 8163 (1-6)				
8158 (1-2)				

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-BP-MW
-6S-200908

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.B08124

Matrix: (soil/water) WATER Lab Sample ID: 0908124-01

Sample wt/vol: 1040 (g/mL) ML Lab File ID: 0812401

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 08/17/09 12:10

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:08/20/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 08/26/09 14:19

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.32	0.96		U
208-96-8	Acenaphthylene	0.024	0.096		U
120-12-7	Anthracene	0.048	0.24	0.081	I
56-55-3	Benzo(a)anthracene	0.024	0.096		U
205-99-2	Benzo(b)fluoranthene	0.024	0.096		U
207-08-9	Benzo(k)fluoranthene	0.024	0.096		U
191-24-2	Benzo(g,h,i)perylene	0.024	0.096		U
50-32-8	Benzo(a)pyrene	0.024	0.096		U
218-01-9	Chrysene	0.024	0.096		U
53-70-3	Dibenz(a,h)anthracene	0.019	0.096		U
206-44-0	Fluoranthene	0.048	0.24		U
86-73-7	Fluorene	0.32	0.96		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.024	0.096	0.027	I
90-12-0	1-Methylnaphthalene	0.32	0.96	2.1	
91-57-6	2-Methylnaphthalene	0.32	0.96	3.1	
91-20-3	Naphthalene	0.32	0.96	7.0	
85-01-8	Phenanthrene	0.024	0.096	0.068	IV
129-00-0	Pyrene	0.048	0.24		U

FORM I SV

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.B08124

	CLIENT SAMPLE NO.	S1 (FBP) #	S2 (TPH) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	SBLK0820BW2	74	85							0
02	SBLK0820BW2L	93	82							0
03	SBLK0820BW2L	77	88							0
04	CEF-BP-MW-6S	79	81							0
05										
06										
07										
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10										
11										
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	EL QC LIMITS	SPIKE CONC (UG/L)
S1 (FBP) = 2-Fluorobiphenyl	(34-167)	50
S2 (TPH) = Terphenyl-d14	(34-167)	50

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate results reported from a diluted analysis

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.B08124

Matrix Spike - Client Sample No.: SBLK0820BW2

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	1.000	0.0000	1.167	117	41-132
Acenaphthylene	1.000	0.0000	1.299	130	43-140
Anthracene	1.000	0.0000	1.104	110	50-139
Benzo(a)anthracene	1.000	0.0000	0.7088	71	58-141
Benzo(b)fluoranthene	1.000	0.0000	0.9768	98	42-156
Benzo(k)fluoranthene	1.000	0.0000	1.017	102	49-165
Benzo(g,h,i)perylene	1.000	0.0000	1.016	102	12-171
Benzo(a)pyrene	1.000	0.0000	0.7956	80	31-142
Chrysene	1.000	0.0000	0.9137	91	51-155
Dibenz(a,h)anthracene	1.000	0.0000	1.096	110	28-153
Fluoranthene	1.000	0.0000	0.9769	98	47-158
Fluorene	1.000	0.0000	1.146	115	40-140
Indeno(1,2,3-cd)pyrene	1.000	0.0000	1.225	122	20-167
1-Methylnaphthalene	1.000	0.0000	1.117	112	35-131
2-Methylnaphthalene	1.000	0.0000	1.204	120	36-121
Naphthalene	1.000	0.0000	1.243	124	39-125
Phenanthrene	1.000	0.03638	1.078	104	46-144
Pyrene	1.000	0.05102	0.9794	93	39-158

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.B08124

Matrix Spike - Client Sample No.: SBLK0820BW2

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Acenaphthene	1.000	1.026	103	13	40	41-132
Acenaphthylene	1.000	1.180	118	10	40	43-140
Anthracene	1.000	1.102	110	0	40	50-139
Benzo(a)anthracene	1.000	0.9431	94	28	40	58-141
Benzo(b)fluoranthene	1.000	0.9009	90	8	40	42-156
Benzo(k)fluoranthene	1.000	0.9822	98	3	40	49-165
Benzo(g,h,i)perylene	1.000	1.157	116	13	40	12-171
Benzo(a)pyrene	1.000	0.8352	84	5	40	31-142
Chrysene	1.000	1.080	108	17	40	51-155
Dibenz(a,h)anthracene	1.000	1.212	121	10	40	28-153
Fluoranthene	1.000	1.067	107	9	40	47-158
Fluorene	1.000	1.064	106	7	40	40-140
Indeno(1,2,3-cd)pyrene	1.000	1.394	139	13	40	20-167
1-Methylnaphthalene	1.000	0.9513	95	16	40	35-131
2-Methylnaphthalene	1.000	1.002	100	18	40	36-121
Naphthalene	1.000	1.007	101	21	40	39-125
Phenanthrene	1.000	1.074	104	0	40	46-144
Pyrene	1.000	1.076	102	9	40	39-158

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 18 outside limits
Spike Recovery: 0 out of 36 outside limits

COMMENTS: _____

FORM 4
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

SBLK0820BW2

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.B08124

Lab File ID: S2BW0820 Lab Sample ID: 9H19024-BLK1

Instrument ID: BNA3 Date Extracted: 08/20/09

Matrix: (soil/water) WATER Date Analyzed: 08/26/09

Level:(low/med) LOW GPC Cleanup: (Y/N) N Time Analyzed: 1224

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	SBLK0820BW2L	9H19024-BS1	S2LW0820	08/26/09
02	SBLK0820BW2L	9H19024-BSD1	S2DW0820	08/26/09
03	CEF-BP-MW-6S	0908124-01	0812401	08/26/09
04				
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30				

COMMENTS:

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLK0820BW2

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.B08124

Matrix: (soil/water) WATER Lab Sample ID: 9H19024-BLK1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S2BW0820

% Moisture: _____ decanted: (Y/N)___ Date Sampled: _____

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:08/20/09

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 08/26/09 12:24

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.33	1.0		U
208-96-8	Acenaphthylene	0.025	0.10		U
120-12-7	Anthracene	0.050	0.25		U
56-55-3	Benzo(a)anthracene	0.025	0.10		U
205-99-2	Benzo(b)fluoranthene	0.025	0.10		U
207-08-9	Benzo(k)fluoranthene	0.025	0.10		U
191-24-2	Benzo(g,h,i)perylene	0.025	0.10		U
50-32-8	Benzo(a)pyrene	0.025	0.10		U
218-01-9	Chrysene	0.025	0.10		U
53-70-3	Dibenz(a,h)anthracene	0.020	0.10		U
206-44-0	Fluoranthene	0.050	0.25		U
86-73-7	Fluorene	0.33	1.0		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.025	0.10		U
90-12-0	1-Methylnaphthalene	0.33	1.0		U
91-57-6	2-Methylnaphthalene	0.33	1.0		U
91-20-3	Naphthalene	0.33	1.0		U
85-01-8	Phenanthrene	0.025	0.10	0.036	I
129-00-0	Pyrene	0.050	0.25	0.051	I

FORM I SV

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA89545

Lab File ID: DF0818B1 DFTPP Injection Date: 08/18/09

Instrument ID: BNA3 DFTPP Injection Time: 1201

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	35.7
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	41.8
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	40.0 - 60.0% of mass 198	49.9
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	24.9
365	Greater than 1.0% of mass 198	2.98
441	Present, but less than mass 443	10.2
442	Greater than 40.0% of mass 198	66.1
443	17.0 - 23.0% of mass 442	13.0 (19.7)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CAL0.05PPM	CAL0.05PPM	CAL1	08/18/09	1221
02	CAL0.1PPM	CAL0.1PPM	CAL2	08/18/09	1259
03	CAL0.25PPM	CAL0.25PPM	CAL3	08/18/09	1338
04	CAL0.5PPM	CAL0.5PPM	CAL4	08/18/09	1416
05	CAL1.0PPM	CAL1.0PPM	CAL5	08/18/09	1454
06	CAL2.0PPM	CAL2.0PPM	CAL6	08/18/09	1533
07	CAL5.0PPM	CAL5.0PPM	CAL7	08/18/09	1611
08	CAL10PPM	CAL10PPM	CAL8	08/18/09	1649
09	CAL20PPM	CAL20PPM	CAL9	08/18/09	1727
10	CAL40PPM	CAL40PPM	CAL10	08/18/09	1805
11	CAL50PPM	CAL50PPM	CAL11	08/18/09	1844
12	ICV-5.0PPM	ICV-5.0PPM	ICV01	08/18/09	1922
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.B08124

Lab File ID: DF0826B1 DFTPP Injection Date: 08/26/09

Instrument ID: BNA3 DFTPP Injection Time: 1125

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	44.9
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	49.5
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	40.0 - 60.0% of mass 198	54.1
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.9
275	10.0 - 30.0% of mass 198	24.3
365	Greater than 1.0% of mass 198	2.78
441	Present, but less than mass 443	8.2
442	Greater than 40.0% of mass 198	53.4
443	17.0 - 23.0% of mass 442	10.5 (19.8)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV5.0PPM	CCV5.0PPM	CCV01TTCECIL	08/26/09	1145
02	SBLK0820BW2	9H19024-BLK1	S2BW0820	08/26/09	1224
03	SBLK0820BW2L	9H19024-BS1	S2LW0820	08/26/09	1302
04	SBLK0820BW2L	9H19024-BSD1	S2DW0820	08/26/09	1340
05	CEF-BP-MW-6S	0908124-01	0812401	08/26/09	1419
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
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FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.B08124

Lab File ID (Standard): CCV01TTCECIL Date Analyzed: 08/26/09

Instrument ID: BNA3 Time Analyzed: 1145

		IS1(PHN) AREA #	RT #	IS2(PRY) AREA #	RT #	AREA #	RT #
	12 HOUR STD	330158	16.78	190727	26.32		
	UPPER LIMIT	660316	17.28	381454	26.82		
	LOWER LIMIT	165079	16.28	95364	25.82		
	CLIENT SAMPLE NO.						
01	SBLK0820BW2	279564	16.78	102210	26.31		
02	SBLK0820BW2L	247501	16.78	119645	26.31		
03	SBLK0820BW2L	343138	16.78	225831	26.32		
04	CEF-BP-MW-6S	299423	16.78	140831	26.32		
05							
06							
07							
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IS1 (PHN) = Phenanthrene-d10
IS2 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA89545

Instrument ID: BNA3 Calibration Date(s): 08/18/09 08/18/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 1221 1844

LAB FILE ID: RF0.05: CAL1 RF0.1: CAL2 RF0.25: CAL3
RF0.5: CAL4 RF1: CAL5

COMPOUND	RF0.05	RF0.1	RF0.25	RF0.5	RF1
Acenaphthene	0.620	0.667	0.674	0.690	0.649
Acenaphthylene	0.741	0.775	0.760	0.810	0.810
Anthracene	0.735	0.733	0.885	0.930	0.957
Benzo(a)anthracene	0.558	0.528	0.711	0.742	0.717
Benzo(b)fluoranthene	0.774	0.713	0.875	0.957	1.086
Benzo(k)fluoranthene	0.832	0.913	1.266	1.416	1.559
Benzo(g,h,i)perylene	0.241	0.428	0.603	0.563	0.563
Benzo(a)pyrene	0.528	0.523	0.633	0.733	0.867
Chrysene	0.774	0.888	1.081	1.094	0.927
Dibenz(a,h)anthracene	0.209	0.332	0.378	0.413	0.388
Fluoranthene	0.851	0.762	0.908	1.037	1.069
Fluorene	0.658	0.714	0.712	0.744	0.756
Indeno(1,2,3-cd)pyrene	0.177	0.327	0.307	0.311	0.341
1-Methylnaphthalene	0.587	0.752	0.711	0.680	0.637
2-Methylnaphthalene	0.551	0.851	0.737	0.737	0.711
Naphthalene	1.079	1.265	1.131	1.099	1.032
Phenanthrene	1.025	1.064	1.138	1.139	1.089
Pyrene	0.757	0.766	1.025	1.100	1.142
2-Fluorobiphenyl	0.731	0.874	0.868	0.822	0.765
Terphenyl-d14	0.642	0.600	0.764	0.859	0.752

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA89545

Instrument ID: BNA3 Calibration Date(s): 08/18/09 08/18/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 1221 1844

LAB FILE ID: RF2: CAL6 RF5: CAL7 RF10: CAL8
RF20: CAL9 RF40: CAL10

COMPOUND	RF2	RF5	RF10	RF20	RF40
Acenaphthene	0.707	0.654	0.602	0.615	0.594
Acenaphthylene	0.946	0.888	0.821	0.852	0.809
Anthracene	1.039	1.111	1.073	1.030	1.031
Benzo(a)anthracene	0.752	1.090	1.041	1.071	
Benzo(b)fluoranthene	1.170	1.324	1.464	1.342	1.484
Benzo(k)fluoranthene	1.514	1.597	1.607	1.289	1.488
Benzo(g,h,i)perylene	0.838	0.834	0.866		
Benzo(a)pyrene	0.999	1.186	1.198	1.128	1.238
Chrysene	0.852	1.160	1.033	1.016	
Dibenz(a,h)anthracene	0.686	0.746	0.777	0.869	
Fluoranthene	1.080	1.325	1.257	1.167	1.155
Fluorene	0.809	0.787	0.747	0.741	0.739
Indeno(1,2,3-cd)pyrene	0.559	0.637	0.719		
1-Methylnaphthalene	0.720	0.628	0.571	0.610	0.559
2-Methylnaphthalene	0.798	0.704	0.618	0.674	0.633
Naphthalene	1.131	0.999	0.862	0.955	0.808
Phenanthrene	1.129	1.142	1.103	1.037	1.055
Pyrene	1.126	1.378	1.309	1.205	1.167
2-Fluorobiphenyl	0.864	0.770	0.700	0.759	0.694
Terphenyl-d14	0.733	0.914	0.880	0.810	0.788

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA89545

Instrument ID: BNA3 Calibration Date(s): 08/18/09 08/18/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 1221 1844

RF50: CAL11

COMPOUND	RF50
Acenaphthene	0.525
Acenaphthylene	0.714
Anthracene	1.000
Benzo(a)anthracene	
Benzo(b)fluoranthene	1.337
Benzo(k)fluoranthene	
Benzo(g,h,i)perylene	
Benzo(a)pyrene	1.140
Chrysene	
Dibenz(a,h)anthracene	
Fluoranthene	1.151
Fluorene	0.672
Indeno(1,2,3-cd)pyrene	
1-Methylnaphthalene	0.480
2-Methylnaphthalene	0.536
Naphthalene	
Phenanthrene	1.024
Pyrene	1.174
2-Fluorobiphenyl	0.599
Terphenyl-d14	0.805

FORM VI SV

FORM 6
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA89545

Instrument ID: BNA3 Calibration Date(s): 08/18/09 08/18/09

Column: FUSED SILICA ID: 0.25 (mm) Calibration Time(s): 1221 1844

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
Acenaphthene	AVRG		0.63598873		8.1
Acenaphthylene	AVRG		0.81147428		8.2
Anthracene	AVRG		0.95672641		13.3
Benzo(a)anthracene	LINR	0.00000000	1.06425824		0.998
Benzo(b)fluoranthene	LINR	0.00000000	1.39414201		0.996
Benzo(k)fluoranthene	LINR	0.00000000	1.46299520		0.995
Benzo(g,h,i)perylene	2ORDR	0.00000000	1.26197011	-1.26e-002	0.999
Benzo(a)pyrene	LINR	0.00000000	1.17607625		0.998
Chrysene	AVRG		0.98074541		13.0
Dibenz(a,h)anthracene	2ORDR	0.00000000	1.40975310	-1.49e-002	1.000
Fluoranthene	LINR	0.00000000	1.15719596		1.000
Fluorene	AVRG		0.73449200		6.0
Indeno(1,2,3-cd)pyrene	2ORDR	0.00000000	1.79015588	-5.6e-002	0.998
1-Methylnaphthalene	AVRG		0.63049837		12.8
2-Methylnaphthalene	AVRG		0.68638739		14.1
Naphthalene	AVRG		1.03600286		13.1
Phenanthrene	AVRG		1.08579349		4.4
Pyrene	LINR	0.00000000	1.17861846		0.999
2-Fluorobiphenyl	AVRG		0.76789447		11.2
Terphenyl-d14	AVRG		0.77719900		12.2

FORM VI SV

SEMIVOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: NA SAS No.: NA SDG No.: SDGA89545

Instrument ID: BNA3 Calibration Date: 08/18/09 Time: 1922

Lab File ID: ICV01 Init. Calib. Date(s): 08/18/09 08/18/09

Init. Calib. Times: 1221 1844

COMPOUND	$\overline{RRF}$	RRF5	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Acenaphthene	0.636	0.620	5.000	4.875		AVRG	-2.5	25.0
Acenaphthylene	0.811	0.834	5.000	5.139		AVRG	2.8	25.0
Anthracene	0.957	1.098	5.000	5.740		AVRG	14.8	25.0
Benzo(a)anthracene	0.801	1.067	5.000	5.011		LINR	0.2	25.0
Benzo(b)fluoranthene	1.139	1.456	5.000	5.223		LINR	4.5	25.0
Benzo(k)fluoranthene	1.348	1.586	5.000	5.419		LINR	8.4	25.0
Benzo(g,h,i)perylene	0.617	0.618	5.000	3.778		2ORDR	-24.4	25.0
Benzo(a)pyrene	0.925	1.191	5.000	5.064		LINR	1.3	25.0
Chrysene	0.980	1.105	5.000	5.635		AVRG	12.7	25.0
Dibenz(a,h)anthracene	0.533	0.569	5.000	3.892		2ORDR	-22.2	25.0
Fluoranthene	1.069	1.297	5.000	5.603		LINR	12.0	25.0
Fluorene	0.734	0.757	5.000	5.156		AVRG	3.1	25.0
Indeno(1,2,3-cd)pyrene	0.422	0.531	5.000	4.360		2ORDR	-12.8	25.0
1-Methylnaphthalene	0.630	0.578	5.000	4.584		AVRG	-8.3	25.0
2-Methylnaphthalene	0.686	0.640	5.000	4.666		AVRG	-6.7	25.0
Naphthalene	1.036	0.873	5.000	4.212		AVRG	-15.7	25.0
Phenanthrene	1.086	1.136	5.000	5.232		AVRG	4.6	25.0
Pyrene	1.104	1.345	5.000	5.704		LINR	14.1	25.0

ICV SV

FORM 7
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: TET.B08124

Instrument ID: BNA3 Calibration Date: 08/26/09 Time: 1145

Lab File ID: CCV01TTCECIL Init. Calib. Date(s): 08/18/09 08/18/09

Init. Calib. Times: 1221 1844

COMPOUND	$\overline{RRF}$	RRF5	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Acenaphthene	0.636	0.665	5.000	5.226		AVRG	4.5	20.0
Acenaphthylene	0.811	0.835	5.000	5.148		AVRG	3.0	20.0
Anthracene	0.957	1.035	5.000	5.410		AVRG	8.2	20.0
Benzo(a)anthracene	0.801	0.885	5.000	4.158		LINR	-16.8	20.0
Benzo(b)fluoranthene	1.139	1.362	5.000	4.886		LINR	-2.3	20.0
Benzo(k)fluoranthene	1.348	1.366	5.000	4.670		LINR	-6.6	20.0
Benzo(g,h,i)perylene	0.617	0.865	5.000	5.224		2ORDR	4.5	20.0
Benzo(a)pyrene	0.925	1.058	5.000	4.497		LINR	-10.1	20.0
Chrysene	0.980	0.937	5.000	4.777		AVRG	-4.4	20.0
Dibenz(a,h)anthracene	0.533	0.831	5.000	5.601		2ORDR	12.0	20.0
Fluoranthene	1.069	1.112	5.000	4.804		LINR	-3.9	20.0
Fluorene	0.734	0.774	5.000	5.267		AVRG	5.3	20.0
Indeno(1,2,3-cd)pyrene	0.422	0.725	5.000	5.754		2ORDR	15.1	20.0
1-Methylnaphthalene	0.630	0.620	5.000	4.916		AVRG	-1.7	20.0
2-Methylnaphthalene	0.686	0.717	5.000	5.223		AVRG	4.5	20.0
Naphthalene	1.036	1.072	5.000	5.172		AVRG	3.4	20.0
Phenanthrene	1.086	1.068	5.000	4.916		AVRG	-1.7	20.0
Pyrene	1.104	1.141	5.000	4.840		LINR	-3.2	20.0
2-Fluorobiphenyl	0.768	0.788	5.000	5.131		AVRG	2.6	
Terphenyl-d14	0.777	0.776	5.000	4.993		AVRG	-0.1	

FORM VII SV

PREPARATION BENCH SHEET

9H19024

Empirical Laboratories, LLC

10 µg/low IS ✓

rinted: 8/24/2009 5:38:25AM

0908124 ORG

52

Matrix: Water **Prepared using: EXT - EXT_3510** **Surrogate used: 09G0421**

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
0908124-01	SMS_PAH_8270C_351	08/20/2009 13:55	1040	1				500	etra Tech NUS, Inc. (T010	
0908125-05	SMS_PAH_8270C_351	08/20/2009 13:55	1060	1				500	etra Tech NUS, Inc. (T010	
9H19024-BLK1	QC	08/20/2009 13:55	1000	1				500		
9H19024-BS1	QC	08/20/2009 13:55	1000	1	09H0300		1000	500		
9H19024-BSD1	QC	08/20/2009 13:55	1000	1	09H0300 ✓		1000	500		

62

Spiking Witnessed By Date

Preparation Reviewed By Date

Extracts Received By Date

Sequence Name: C:\HPCHEM\1\SEQUENCE\081809B3.S
Comment: epa8270c/625
Operator: ADM
Data Path: C:\HPCHEM\1\DATA\081809b3\
Pre-Seq Cmd:
Post-Seq Cmd:

7309

M 8/18/9

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Low PAH's, Full Scan

Line	Type	Vial	DataFile	Method	Sample Name
1	DFTPP	1	DF0818B1	DFTPPBN3	DF0818B1;;;;;;4796 12:01, 8/18
2	Sample	2	CAL1	IXBN3SIM	cal0.05PPM;;;;;;9F0517
3	Sample	3	CAL2	IXBN3SIM	cal0.1PPM;;;;;;9F0518
4	Sample	4	CAL3	PAHLOW	cal0.25PPM;;;;;;9F0519
5	Sample	5	CAL4	IXBN3SIM	cal0.5PPM;;;;;;9F0520
6	Sample	6	CAL5	IXBN3SIM	cal1.0PPM;;;;;;9F0521
7	Sample	7	CAL6	IXBN3SIM	cal2.0PPM;;;;;;9F0522
8	Sample	8	CAL7	IXBN3SIM	cal5.0PPM;;;;;;9F0523
9	Sample	9	CAL8	IXBN3SIM	cal10PPM;;;;;;9F0524
10	Sample	10	CAL9	IXBN3SIM	cal20PPM;;;;;;9F0525
11	Sample	11	CAL10	IXBN3SIM	cal40PPM;;;;;;9H0399
12	Sample	12	CAL11	IXBN3SIM	cal50PPM;;;;;;9H0400
13	Sample	13	ICV01	IXBN3SIM	ICV-5.0PPM;;;;;;09F0526
14	Blank	14	S1BW0804	IXBN3SIM	SBLK0804BW1;;1000;1000;;UG/L;
15	Spike	15	S1LW0804	IXBN3SIM	SBLK0804BW1LCS;;1000;1000;;UG
16	Blank	16	S1BW0805	IXBN3SIM	SBLK0805BW1;;1000;1000;;UG/L;
17	Spike	17	S1LW0805	IXBN3SIM	SBLK0805BW1LCS;;1000;1000;;UG
18	Spike	18	S1DW0805	IXBN3SIM	SBLK0805BW1LCSD;;1000;1000;;U 22:33, 8/18
19	Sample	1	DF0818B2	DFTPPBN3	DF0818B2;;;;;;4796 23:08, 8/18
20	Sample	30	CCV01	IXBN3SIM	ccv5.0PPM;;;;;;9H0255
21	Sample	19	0726202	IXBN3SIM	0907262-02;;1070;1000;;UG/L;0
22	Sample	20	0800302	IXBN3SIM	0908003-02;;1080;1000;;UG/L;0
23	Sample	21	0800303	IXBN3SIM	0908003-03;;1080;1000;;UG/L;0
24	Sample	22	0801302	IXBN3SIM	0908013-02;;1080;1000;;UG/L;0
25	Sample	23	0801303	IXBN3SIM	0908013-03;;1080;1000;;UG/L;0
26	Sample	24	0801304	IXBN3SIM	0908013-04;;1080;1000;;UG/L;0
27	Spike	25	0726202M	IXBN3SIM	0907262-02;;1070;1000;;UG/L;0
28	Spike	26	0726202S	IXBN3SIM	0907262-02;;1070;1000;;UG/L;0 4:34, 8/19

ICAL

Last Modified: Wed Aug 19 10:12:38 2009 Page: 1

```
Sequence Name: C:\HPCHEM\1\SEQUENCE\081809B3.S
      Comment: epa8270c/625
     Operator: ADM
    Data Path: C:\HPCHEM\1\DATA\081809b3\
  Pre-Seq Cmd:
 Post-Seq Cmd:

Method Sections To Run      On A Barcode Mismatch
 (X) Full Method              (X) Inject Anyway
 ( ) Reprocessing Only        ( ) Don't Inject
```

7310

Line		Sample Name/Misc Info
1	Type: DFTPP	DF0818B1;;;;;;4796
	Vial: 1	;;;;;;;all.sub;
	Meth: DFTPPBN3.M	Barcode:
	Data: DF0818B1.D	Samp Amt: 0 Multiplr: 1
	Area% Report :per Method	Lib. Search Rep :per Method
	Quant Report :per Method	Post-Quant Macro:per Method
	CR Database :per Method	CR Spreadsheet :per Method
2	Type: Sample	cal0.05PPM;;;;;;9F0517
	Vial: 2	;;;;;;simbna.sub;9F0485
	Meth: IXBN3SIM.M	Barcode:
	Data: CAL1.D	Samp Amt: 0 Multiplr: 1
	Area% Report :per Method	Lib. Search Rep :per Method
	Quant Report :per Method	Post-Quant Macro:per Method
	CR Database :per Method	CR Spreadsheet :per Method
3	Type: Sample	cal0.1PPM;;;;;;9F0518
	Vial: 3	;;;;;;simbna.sub;9F0485
	Meth: IXBN3SIM.M	Barcode:
	Data: CAL2.D	Samp Amt: 0 Multiplr: 1
	Area% Report :per Method	Lib. Search Rep :per Method
	Quant Report :per Method	Post-Quant Macro:per Method
	CR Database :per Method	CR Spreadsheet :per Method
4	Type: Sample	cal0.25PPM;;;;;;9F0519
	Vial: 4	;;;;;;simbna.sub;9F0485
	Meth: PAHLOW.M	Barcode:
	Data: CAL3.D	Samp Amt: 0 Multiplr: 1
	Area% Report :per Method	Lib. Search Rep :per Method
	Quant Report :per Method	Post-Quant Macro:per Method
	CR Database :per Method	CR Spreadsheet :per Method
5	Type: Sample	cal0.5PPM;;;;;;9F0520
	Vial: 5	;;;;;;simbna.sub;9F0485
	Meth: IXBN3SIM.M	Barcode:
	Data: CAL4.D	Samp Amt: 0 Multiplr: 1
	Area% Report :per Method	Lib. Search Rep :per Method
	Quant Report :per Method	Post-Quant Macro:per Method
	CR Database :per Method	CR Spreadsheet :per Method
6	Type: Sample	cal1.0PPM;;;;;;9F0521
	Vial: 6	;;;;;;simbna.sub;9F0485
	Meth: IXBN3SIM.M	Barcode:
	Data: CAL5.D	Samp Amt: 0 Multiplr: 1
	Area% Report :per Method	Lib. Search Rep :per Method
	Quant Report :per Method	Post-Quant Macro:per Method
	CR Database :per Method	CR Spreadsheet :per Method
7	Type: Sample	cal2.0PPM;;;;;;9F0522
	Vial: 7	;;;;;;simbna.sub;9F0485
	Meth: IXBN3SIM.M	Barcode:
	Data: CAL6.D	Samp Amt: 0 Multiplr: 1
	Area% Report :per Method	Lib. Search Rep :per Method
	Quant Report :per Method	Post-Quant Macro:per Method
	CR Database :per Method	CR Spreadsheet :per Method

7311

```
---------------------------------------------------------------------
8   Type: Sample        cal5.0PPM;;;;;;9F0523
    Vial: 8             ;;;;;;simbna.sub;9F0485
    Meth: IXBN3SIM.M    Barcode:
    Data: CAL7.D        Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------
9   Type: Sample        cal10PPM;;;;;;9F0524
    Vial: 9             ;;;;;;simbna.sub;9F0485
    Meth: IXBN3SIM.M    Barcode:
    Data: CAL8.D        Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------
10  Type: Sample        cal20PPM;;;;;;9F0525
    Vial: 10            ;;;;;;simbna.sub;9F0485
    Meth: IXBN3SIM.M    Barcode:
    Data: CAL9.D        Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------
11  Type: Sample        cal40PPM;;;;;;9H0399
    Vial: 11            ;;;;;;simbna.sub;9F0485
    Meth: IXBN3SIM.M    Barcode:
    Data: CAL10.D       Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------
12  Type: Sample        cal50PPM;;;;;;9H0400
    Vial: 12            ;;;;;;simbna.sub;9F0485
    Meth: IXBN3SIM.M    Barcode:
    Data: CAL11.D       Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------
13  Type: Sample        ICV-5.0PPM;;;;;;09F0526
    Vial: 13            ;;;;;;simbna.sub;9F0485
    Meth: IXBN3SIM.M    Barcode:
    Data: ICV01.D       Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------
14  Type: Blank         SBLK0804BW1;;1000;1000;;UG/L;04-AUG-2009
    Vial: 14            ;3;BLANK;;;9H03031;pahsurr.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: S1BW0804.D    Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------
15  Type: Spike         SBLK0804BW1LCS;;1000;1000;;UG/L;04-AUG-2009
    Vial: 15            ;3;LCS;;;9H03031;pahsurr.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: S1LW0804.D    Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
---------------------------------------------------------------------
16  Type: Blank         SBLK0805BW1;;1000;1000;;UG/L;05-AUG-2009
    Vial: 16            ;3;BLANK;;;9H05007;pahsurr.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: S1BW0805.D    Samp Amt: 0          Multiplr: 1
```

```
   Area% Report     :per Method       Lib. Search Rep :per Method
   Quant Report     :per Method       Post-Quant Macro:per Method
   CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
17 Type: Spike        SBLK0805BW1LCS;;1000;1000;;UG/L;05-AUG-2009
   Vial: 17           ;3;LCS;;;9H05007;pahsurr.sub;
   Meth: IXBN3SIM.M   Barcode:
   Data: S1LW0805.D   Samp Amt: 0          Multiplr: 1
   Area% Report     :per Method       Lib. Search Rep :per Method
   Quant Report     :per Method       Post-Quant Macro:per Method
   CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
18 Type: Spike        SBLK0805BW1LCSD;;1000;1000;;UG/L;05-AUG-2009
   Vial: 18           ;3;LCSD;;;9H05007;pahsurr.sub;
   Meth: IXBN3SIM.M   Barcode:
   Data: S1DW0805.D   Samp Amt: 0          Multiplr: 1
   Area% Report     :per Method       Lib. Search Rep :per Method
   Quant Report     :per Method       Post-Quant Macro:per Method
   CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
19 Type: Sample       DF0818B2;;;;;;4796
   Vial: 1            ;;;;;;;all.sub;
   Meth: DFTPPBN3.M   Barcode:
   Data: DF0818B2.D   Samp Amt: 0          Multiplr: 1
   Area% Report     :per Method       Lib. Search Rep :per Method
   Quant Report     :per Method       Post-Quant Macro:per Method
   CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
20 Type: Sample       ccv5.0PPM;;;;;;9H0255
   Vial: 30           ;;;;;;simbna.sub;
   Meth: IXBN3SIM.M   Barcode:
   Data: CCV01.D      Samp Amt: 0          Multiplr: 1
   Area% Report     :per Method       Lib. Search Rep :per Method
   Quant Report     :per Method       Post-Quant Macro:per Method
   CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
21 Type: Sample       0907262-02;;1070;1000;;UG/L;04-AUG-2009
   Vial: 19           ch2.b07262;0;;;;9H03031;pahsurr.sub;
   Meth: IXBN3SIM.M   Barcode:
   Data: 0726202.D    Samp Amt: 0          Multiplr: 1
   Area% Report     :per Method       Lib. Search Rep :per Method
   Quant Report     :per Method       Post-Quant Macro:per Method
   CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
22 Type: Sample       0908003-02;;1080;1000;;UG/L;04-AUG-2009
   Vial: 20           ch2.b08003;0;;;;9H03031;pahsurr.sub;
   Meth: IXBN3SIM.M   Barcode:
   Data: 0800302.D    Samp Amt: 0          Multiplr: 1
   Area% Report     :per Method       Lib. Search Rep :per Method
   Quant Report     :per Method       Post-Quant Macro:per Method
   CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
23 Type: Sample       0908003-03;;1080;1000;;UG/L;04-AUG-2009
   Vial: 21           ch2.b08003;0;;;;9H03031;pahsurr.sub;
   Meth: IXBN3SIM.M   Barcode:
   Data: 0800303.D    Samp Amt: 0          Multiplr: 1
   Area% Report     :per Method       Lib. Search Rep :per Method
   Quant Report     :per Method       Post-Quant Macro:per Method
   CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
24 Type: Sample       0908013-02;;1080;1000;;UG/L;05-AUG-2009
   Vial: 22           ch2.b08013;0;;;;9H05007;pahsurr.sub;
   Meth: IXBN3SIM.M   Barcode:
   Data: 0801302.D    Samp Amt: 0          Multiplr: 1
   Area% Report     :per Method       Lib. Search Rep :per Method
   Quant Report     :per Method       Post-Quant Macro:per Method
   CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
25 Type: Sample       0908013-03;;1080;1000;;UG/L;05-AUG-2009
```

7312

```
    Vial: 23            ch2.b08013;0;;;;9H05007;pahsurr.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: 0801303.D     Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
26  Type: Sample        0908013-04;;1080;1000;;UG/L;05-AUG-2009
    Vial: 24            ch2.b08013;0;;;;9H05007;pahsurr.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: 0801304.D     Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
27  Type: Spike         0907262-02;;1070;1000;;UG/L;04-AUG-2009
    Vial: 25            ch2.b07262;3;MS;;;9H03031;pahsurr.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: 0726202M.D    Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
28  Type: Spike         0907262-02;;1070;1000;;UG/L;04-AUG-2009
    Vial: 26            ch2.b07262;3;MSD;;;9H03031;pahsurr.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: 0726202S.D    Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
```

7313

Sequence Name: C:\HPCHEM\1\SEQUENCE\082609B3.S
Comment: epa8270c/625
Operator: ADM
Data Path: C:\HPCHEM\1\DATA\082609b3\
Pre-Seq Cmd:
Post-Seq Cmd:

7328

M 8/26/9

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

LC/MS's

Line	Type	Vial	DataFile	Method	Sample Name
1	DailyCal	100	BLANK	DFTPPBN3	ccv5.0PPM;;;;;;9H0255
2	DFTPP	1	DF0826B1	DFTPPBN3	DF0826B1;;;;;;4796 11:25, 8/26
3	DailyCal	2	CCV01	IXBN3SIM	ccv5.0PPM;;;;;;9H0425
4	Blank	3	S2BW0820	IXBN3SIM	SBLK0820BW2;;1000;1000;;UG/L;
5	Spike	4	S2LW0820	IXBN3SIM	SBLK0820BW2LCS;;1000;1000;;UG
6	Spike	5	S2DW0820	IXBN3SIM	SBLK0820BW2LCSD;;1000;1000;;U
7	Sample	6	0812401	IXBN3SIM	0908124-01;;1040;1000;;UG/L;2
8	Sample	7	0812505	IXBN3SIM	0908125-05;;1060;1000;;UG/L;2
9	Blank	8	S1BW0825	IXBN3SIM	SBLK0825BW1;;1000;1000;;UG/L;
10	Spike	9	S1LW0825	IXBN3SIM	SBLK0825BW1LCS;;1000;1000;;UG
11	Sample	10	0809002R	IXBN3SIM	0908090-02;;1020;1000;;UG/L;2
12	Blank	11	S1BS0821	IXBN3SIM	SBLK0821BS1;;15;1000;;UG/KG;2 — RR again
13	Spike	12	S1LS0821	IXBN3SIM	SBLK0821BS1LCS;;15;1000;;UG/K
14	Sample	13	0812502D	IXBN3SIM	0908125-02;;15;1000;;UG/KG;21
15	Sample	14	0812503D	IXBN3SIM	0908125-03;;15;1000;;UG/KG;21
16	Sample	15	0812504D	IXBN3SIM	0908125-04;;15;1000;;UG/KG;21
17	Sample	16	0809508	IXBN3SIM	0908095-08;;15;1000;;UG/KG;14
18	Sample	17	0817504	IXBN3SIM	0908175-04;;1080;1000;;UG/L;2
19	Sample	18	0817505	IXBN3SIM	0908175-05;;1080;1000;;UG/L;2
20	Spike	19	812503DM	IXBN3SIM	0908125-03;;15;1000;;UG/KG;21 } RR w/ adjusted IS.
21	Spike	20	812503DS	IXBN3SIM	0908125-03;;15;1000;;UG/KG;21
22	Spike	21	0817505M	IXBN3SIM	0908175-05;;1080;1000;;UG/L;2 } out of time
23	Spike	22	0817505S	IXBN3SIM	0908175-05;;1080;1000;;UG/L;2 00:32, 8/27
24	DFTPP	1	DF0826B2	DFTPPBN3	DF0826B2;;;;;;4796 1:08, 8/27
25	Sample	2	CCV01E	IXBN3SIM	ccv5.0PPM;;;;;;9H0425
26	Blank	23	S1BS0826	IXBN3SIM	SBLK0826BS1;;15;1000;;UG/KG;2 — RR again
27	Spike	24	S1LS0826	IXBN3SIM	SBLK0826BS1LCS;;15;1000;;UG/K
28	Sample	25	0811502D	IXBN3SIM	0908115-02;;15;1000;;UG/KG;26 — RR in insert.
29	Sample	26	0811503D	IXBN3SIM	0908115-03;;15;1000;;UG/KG;26
30	Blank	11	S1BS821R	IXBN3SIM	SBLK0821BS1;;15;1000;;UG/KG;2 RR again in insert
31	Blank	23	S1BS826R	IXBN3SIM	SBLK0826BS1;;15;1000;;UG/KG;2 — RR again insert
32	Sample	27	0811504D	IXBN3SIM	0908115-04;;15;1000;;UG/KG;26
33	Sample	28	0811505D	IXBN3SIM	0908115-05;;15;1000;;UG/KG;26
34	Sample	29	0811506D	IXBN3SIM	0908115-06;;15;1000;;UG/KG;26
35	Sample	25	0811502D	IXBN3SIM	0908115-02;;15;1000;;UG/KG;26 ✓
36	Blank	11	S1BS821R	IXBN3SIM	SBLK0821BS1;;15;1000;;UG/KG;2 ✓
37	Blank	23	S1BS826R	IXBN3SIM	SBLK0826BS1;;15;1000;;UG/KG;2 ✓
38	Spike	19	812503DM	IXBN3SIM	0908125-03;;15;1000;;UG/KG;21 } out of time
39	Spike	20	812503DS	IXBN3SIM	0908125-03;;15;1000;;UG/KG;21
40	DFTPP	1	DF0826B3	DFTPPBN3	DF0826B3;;;;;;4796 14:56, 8/27

Sequence Name: C:\HPCHEM\1\SEQUENCE\082609B3.S
Comment: epa8270c/625
Operator: ADM
Data Path: C:\HPCHEM\1\DATA\082609b3\
Pre-Seq Cmd:
Post-Seq Cmd:

7329

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line		Sample Name/Misc Info		
1	Type: DailyCal	ccv5.0PPM;;;;;;9H0255		
	Vial: 100	;;;;;;pahsur.sub;		
	Meth: DFTPPBN3.M	Barcode:		
	Data: BLANK.D	Samp Amt: 0	Multiplr: 1	
	Area% Report	:per Method	Lib. Search Rep	:per Method
	Quant Report	:per Method	Post-Quant Macro	:per Method
	CR Database	:per Method	CR Spreadsheet	:per Method
2	Type: DFTPP	DF0826B1;;;;;;4796		
	Vial: 1	;;;;;;;all.sub;		
	Meth: DFTPPBN3.M	Barcode:		
	Data: DF0826B1.D	Samp Amt: 0	Multiplr: 1	
	Area% Report	:per Method	Lib. Search Rep	:per Method
	Quant Report	:per Method	Post-Quant Macro	:per Method
	CR Database	:per Method	CR Spreadsheet	:per Method
3	Type: DailyCal	ccv5.0PPM;;;;;;9H0425		
	Vial: 2	;;;;;;pahsur.sub;		
	Meth: IXBN3SIM.M	Barcode:		
	Data: CCV01.D	Samp Amt: 0	Multiplr: 1	
	Area% Report	:per Method	Lib. Search Rep	:per Method
	Quant Report	:per Method	Post-Quant Macro	:per Method
	CR Database	:per Method	CR Spreadsheet	:per Method
4	Type: Blank	SBLK0820BW2;;1000;1000;;UG/L;20-AUG-2009		
	Vial: 3	;3;BLANK;;;9H19024;pahsur.sub;		
	Meth: IXBN3SIM.M	Barcode:		
	Data: S2BW0820.D	Samp Amt: 0	Multiplr: 1	
	Area% Report	:per Method	Lib. Search Rep	:per Method
	Quant Report	:per Method	Post-Quant Macro	:per Method
	CR Database	:per Method	CR Spreadsheet	:per Method
5	Type: Spike	SBLK0820BW2LCS;;1000;1000;;UG/L;20-AUG-2009		
	Vial: 4	;3;LCS;;;9H19024;pahsur.sub;		
	Meth: IXBN3SIM.M	Barcode:		
	Data: S2LW0820.D	Samp Amt: 0	Multiplr: 1	
	Area% Report	:per Method	Lib. Search Rep	:per Method
	Quant Report	:per Method	Post-Quant Macro	:per Method
	CR Database	:per Method	CR Spreadsheet	:per Method
6	Type: Spike	SBLK0820BW2LCSD;;1000;1000;;UG/L;20-AUG-2009		
	Vial: 5	;3;LCSD;;;9H19024;pahsur.sub;		
	Meth: IXBN3SIM.M	Barcode:		
	Data: S2DW0820.D	Samp Amt: 0	Multiplr: 5	
	Area% Report	:per Method	Lib. Search Rep	:per Method
	Quant Report	:per Method	Post-Quant Macro	:per Method
	CR Database	:per Method	CR Spreadsheet	:per Method
7	Type: Sample	0908124-01;;1040;1000;;UG/L;20-AUG-2009		
	Vial: 6	tet.b08124;0;;;;9H19024;pahsur.sub;		
	Meth: IXBN3SIM.M	Barcode:		
	Data: 0812401.D	Samp Amt: 0	Multiplr: 1	
	Area% Report	:per Method	Lib. Search Rep	:per Method
	Quant Report	:per Method	Post-Quant Macro	:per Method
	CR Database	:per Method	CR Spreadsheet	:per Method

7330

```
8   Type: Sample        0908125-05;;1060;1000;;UG/L;20-AUG-2009
    Vial: 7             tet.b08125;0;;;;9H19024;pahsur.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: 0812505.D     Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
9   Type: Blank         SBLK0825BW1;;1000;1000;;UG/L;25-AUG-2009
    Vial: 8             ;3;BLANK;;;9H25002;pahsur.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: S1BW0825.D    Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
10  Type: Spike         SBLK0825BW1LCS;;1000;1000;;UG/L;25-AUG-2009
    Vial: 9             ;3;LCS;;;9H25002;pahsur.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: S1LW0825.D    Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
11  Type: Sample        0908090-02;;1020;1000;;UG/L;25-AUG-2009
    Vial: 10            ch2.b08090;0;;;;9H25002;pahsur.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: 0809002R.D    Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
12  Type: Blank         SBLK0821BS1;;15;1000;;UG/KG;21-AUG-2009
    Vial: 11            ;3;BLANK;;;9H20013;pahsur.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: S1BS0821.D    Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
13  Type: Spike         SBLK0821BS1LCS;;15;1000;;UG/KG;21-AUG-2009
    Vial: 12            ;3;LCS;;;9H20013;pahsur.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: S1LS0821.D    Samp Amt: 0          Multiplr: 1
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
14  Type: Sample        0908125-02;;15;1000;;UG/KG;21-AUG-2009
    Vial: 13            tet.b08125;0;;;;9H20013;pahsur.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: 0812502D.D    Samp Amt: 0          Multiplr: 5
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
15  Type: Sample        0908125-03;;15;1000;;UG/KG;21-AUG-2009
    Vial: 14            tet.b08125;0;;;;9H20013;pahsur.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: 0812503D.D    Samp Amt: 0          Multiplr: 5
    Area% Report      :per Method       Lib. Search Rep :per Method
    Quant Report      :per Method       Post-Quant Macro:per Method
    CR Database       :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
    Type: Sample        0908125-04;;15;1000;;UG/KG;21-AUG-2009
    Vial: 15            tet.b08125;0;;;;9H20013;pahsur.sub;
    Meth: IXBN3SIM.M    Barcode:
    Data: 0812504D.D    Samp Amt: 0          Multiplr: 5
```

7331

```
   Area% Report      :per Method        Lib. Search Rep :per Method
   Quant Report      :per Method        Post-Quant Macro:per Method
   CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
17 Type: Sample        0908095-08;;15;1000;;UG/KG;14-AUG-2009
   Vial: 16            tet.b08095;0;;;;9H13013;pahsur.sub;
   Meth: IXBN3SIM.M    Barcode:
   Data: 0809508.D     Samp Amt: 0          Multiplr: 1
   Area% Report      :per Method        Lib. Search Rep :per Method
   Quant Report      :per Method        Post-Quant Macro:per Method
   CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
18 Type: Sample        0908175-04;;1080;1000;;UG/L;25-AUG-2009
   Vial: 17            sha.b08175;0;;;;9H25002;pahsur.sub;
   Meth: IXBN3SIM.M    Barcode:
   Data: 0817504.D     Samp Amt: 0          Multiplr: 1
   Area% Report      :per Method        Lib. Search Rep :per Method
   Quant Report      :per Method        Post-Quant Macro:per Method
   CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
19 Type: Sample        0908175-05;;1080;1000;;UG/L;25-AUG-2009
   Vial: 18            sha.b08175;0;;;;9H25002;pahsur.sub;
   Meth: IXBN3SIM.M    Barcode:
   Data: 0817505.D     Samp Amt: 0          Multiplr: 1
   Area% Report      :per Method        Lib. Search Rep :per Method
   Quant Report      :per Method        Post-Quant Macro:per Method
   CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
20 Type: Spike         0908125-03;;15;1000;;UG/KG;21-AUG-2009
   Vial: 19            tet.b08125;3;MS;;;9H20013;pahsur.sub;
   Meth: IXBN3SIM.M    Barcode:
   Data: 812503DM.D    Samp Amt: 0          Multiplr: 5
   Area% Report      :per Method        Lib. Search Rep :per Method
   Quant Report      :per Method        Post-Quant Macro:per Method
   CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
   Type: Spike         0908125-03;;15;1000;;UG/KG;21-AUG-2009
   Vial: 20            tet.b08125;3;MSD;;;9H20013;pahsur.sub;
   Meth: IXBN3SIM.M    Barcode:
   Data: 812503DS.D    Samp Amt: 0          Multiplr: 5
   Area% Report      :per Method        Lib. Search Rep :per Method
   Quant Report      :per Method        Post-Quant Macro:per Method
   CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
22 Type: Spike         0908175-05;;1080;1000;;UG/L;25-AUG-2009
   Vial: 21            sha.b08175;3;MS;;;9H25002;pahsur.sub;
   Meth: IXBN3SIM.M    Barcode:
   Data: 0817505M.D    Samp Amt: 0          Multiplr: 1
   Area% Report      :per Method        Lib. Search Rep :per Method
   Quant Report      :per Method        Post-Quant Macro:per Method
   CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
23 Type: Spike         0908175-05;;1080;1000;;UG/L;25-AUG-2009
   Vial: 22            sha.b08175;3;MSD;;;9H25002;pahsur.sub;
   Meth: IXBN3SIM.M    Barcode:
   Data: 0817505S.D    Samp Amt: 0          Multiplr: 1
   Area% Report      :per Method        Lib. Search Rep :per Method
   Quant Report      :per Method        Post-Quant Macro:per Method
   CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
24 Type: DFTPP         DF0826B2;;;;;;4796
   Vial: 1             ;;;;;;;all.sub;
   Meth: DFTPPBN3.M    Barcode:
   Data: DF0826B2.D    Samp Amt: 0          Multiplr: 1
   Area% Report      :per Method        Lib. Search Rep :per Method
   Quant Report      :per Method        Post-Quant Macro:per Method
   CR Database       :per Method        CR Spreadsheet  :per Method
-----------------------------------------------------------------------
25 Type: Sample        ccv5.0PPM;;;;;;9H0425
```

7332

```
     Vial: 2            ;;;;;;pahsur.sub;
     Meth: IXBN3SIM.M   Barcode:
     Data: CCV01E.D     Samp Amt: 0          Multiplr: 1
     Area% Report     :per Method       Lib. Search Rep :per Method
     Quant Report     :per Method       Post-Quant Macro:per Method
     CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
     Type: Blank        SBLK0826BS1;;15;1000;;UG/KG;26-AUG-2009
     Vial: 23           ;3;BLANK;;;9H25012;pahsur.sub;
     Meth: IXBN3SIM.M   Barcode:
     Data: S1BS0826.D   Samp Amt: 0          Multiplr: 1
     Area% Report     :per Method       Lib. Search Rep :per Method
     Quant Report     :per Method       Post-Quant Macro:per Method
     CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
27   Type: Spike        SBLK0826BS1LCS;;15;1000;;UG/KG;26-AUG-2009
     Vial: 24           ;3;LCS;;;9H25012;pahsur.sub;
     Meth: IXBN3SIM.M   Barcode:
     Data: S1LS0826.D   Samp Amt: 0          Multiplr: 1
     Area% Report     :per Method       Lib. Search Rep :per Method
     Quant Report     :per Method       Post-Quant Macro:per Method
     CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
28   Type: Sample       0908115-02;;15;1000;;UG/KG;26-AUG-2009
     Vial: 25           tet.b08115;0;;;;9H25012;pahsur.sub;
     Meth: IXBN3SIM.M   Barcode:
     Data: 0811502D.D   Samp Amt: 0          Multiplr: 5
     Area% Report     :per Method       Lib. Search Rep :per Method
     Quant Report     :per Method       Post-Quant Macro:per Method
     CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
29   Type: Sample       0908115-03;;15;1000;;UG/KG;26-AUG-2009
     Vial: 26           tet.b08115;0;;;;9H25012;pahsur.sub;
     Meth: IXBN3SIM.M   Barcode:
     Data: 0811503D.D   Samp Amt: 0          Multiplr: 5
     Area% Report     :per Method       Lib. Search Rep :per Method
     Quant Report     :per Method       Post-Quant Macro:per Method
     CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
30   Type: Blank        SBLK0821BS1;;15;1000;;UG/KG;21-AUG-2009
     Vial: 11           ;3;BLANK;;;9H20013;pahsur.sub;
     Meth: IXBN3SIM.M   Barcode:
     Data: S1BS821R.D   Samp Amt: 0          Multiplr: 1
     Area% Report     :per Method       Lib. Search Rep :per Method
     Quant Report     :per Method       Post-Quant Macro:per Method
     CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
31   Type: Blank        SBLK0826BS1;;15;1000;;UG/KG;26-AUG-2009
     Vial: 23           ;3;BLANK;;;9H25012;pahsur.sub;
     Meth: IXBN3SIM.M   Barcode:
     Data: S1BS826R.D   Samp Amt: 0          Multiplr: 1
     Area% Report     :per Method       Lib. Search Rep :per Method
     Quant Report     :per Method       Post-Quant Macro:per Method
     CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
32   Type: Sample       0908115-04;;15;1000;;UG/KG;26-AUG-2009
     Vial: 27           tet.b08115;0;;;;9H25012;pahsur.sub;
     Meth: IXBN3SIM.M   Barcode:
     Data: 0811504D.D   Samp Amt: 0          Multiplr: 5
     Area% Report     :per Method       Lib. Search Rep :per Method
     Quant Report     :per Method       Post-Quant Macro:per Method
     CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
33   Type: Sample       0908115-05;;15;1000;;UG/KG;26-AUG-2009
     Vial: 28           tet.b08115;0;;;;9H25012;pahsur.sub;
     Meth: IXBN3SIM.M   Barcode:
     Data: 0811505D.D   Samp Amt: 0          Multiplr: 5
     Area% Report     :per Method       Lib. Search Rep :per Method
     Quant Report     :per Method       Post-Quant Macro:per Method
```

7333

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    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
 34 Type: Sample       0908115-06;;15;1000;;UG/KG;26-AUG-2009
    Vial: 29           tet.b08115;0;;;;9H25012;pahsur.sub;
    Meth: IXBN3SIM.M   Barcode:
    Data: 0811506D.D   Samp Amt: 0          Multiplr: 5
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
 35 Type: Sample       0908115-02;;15;1000;;UG/KG;26-AUG-2009
    Vial: 25           tet.b08115;0;;;;9H25012;pahsur.sub;
    Meth: IXBN3SIM.M   Barcode:
    Data: 0811502D.D   Samp Amt: 0          Multiplr: 5
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
 36 Type: Blank        SBLK0821BS1;;15;1000;;UG/KG;21-AUG-2009
    Vial: 11           ;3;BLANK;;;9H20013;pahsur.sub;
    Meth: IXBN3SIM.M   Barcode:
    Data: S1BS821R.D   Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
 37 Type: Blank        SBLK0826BS1;;15;1000;;UG/KG;26-AUG-2009
    Vial: 23           ;3;BLANK;;;9H25012;pahsur.sub;
    Meth: IXBN3SIM.M   Barcode:
    Data: S1BS826R.D   Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
 38 Type: Spike        0908125-03;;15;1000;;UG/KG;21-AUG-2009
    Vial: 19           tet.b08125;3;MS;;;9H20013;pahsur.sub;
    Meth: IXBN3SIM.M   Barcode:
    Data: 812503DM.D   Samp Amt: 0          Multiplr: 5
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
 39 Type: Spike        0908125-03;;15;1000;;UG/KG;21-AUG-2009
    Vial: 20           tet.b08125;3;MSD;;;9H20013;pahsur.sub;
    Meth: IXBN3SIM.M   Barcode:
    Data: 812503DS.D   Samp Amt: 0          Multiplr: 5
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
 40 Type: DFTPP        DF0826B3;;;;;;4796
    Vial: 1            ;;;;;;;all.sub;
    Meth: DFTPPBN3.M   Barcode:
    Data: DF0826B3.D   Samp Amt: 0          Multiplr: 1
    Area% Report     :per Method       Lib. Search Rep :per Method
    Quant Report     :per Method       Post-Quant Macro:per Method
    CR Database      :per Method       CR Spreadsheet  :per Method
-----------------------------------------------------------------------
```

Empirical Laboratories

EMPIRICAL LABORATORIES, LLC
LABORATORY SAMPLE CUSTODY FORM
WALK-IN REFRIGERATOR

Sample Log # (s)	Time/Date/Initials Removed	Time/Date/Initials Returned (Note if all Sample Used)	Notes/ Comments	Task Performed
0908048-01 0908050-01	13:15 KBG 8/19/09	15:30 KBG 8/19/09		React. Sulfide
0908060-02 0908122-01	↓	↓		↓
08126-1-3 08130-1-8	13:20 JLD 8/19/09			BNA
08126-1-3 08130-1-8	AF 8/19/09 14:00			EXP
8125.5	JLS 8.19.09 2:35pm			VPH
8128-01,02	VM 8-19-09 1500	VM 8-19-09 1540		NO_2/NO_3
8130-01-08 8136-05	KH 8/19/09 16:37	KH 8/19/09 16:56	filter & pres. (Bluetuft-06)	metals.
8121-65	9:45 8/20/09 JLD			PAH
8123-1	↓			PCB
8124-1	↓			FLPRO
8128-01,02	VM 8-20-09 918			~~o phos~~ NO_2/NO_3 (TN)
0908092-01→07 0908098-01→06	09:55 KBG 8/20/09	16:30 KBG 8/20/09		Anions
0908105-01,02 0908042-03	↓	↓		↓
8125.5	JLS 8.20.09 10:37am			VPH
8105-1,2 8108-1-3	BM 8-20-09 11:15			MEE's
8109-1-4 8113-16-22				
8124-1 8125-5	12:30 8/20/09 JLD			PAHSIM
8129-01 8140-07 8143-01	JG 8/20/09 13:54	JG 8/20/09 15:07		TSS
8146-01-09	KH 8/20/09 15:00	KH 8/20/09 15:17	filter & pres. from log in.	metals.
8092-1-7 8098-1-6	BM 8/20/09 15:30			MEE's

HOBART SAMPLE EXTRACT CUSTODY FORM

Sample Log #	Initials	Time/Date/Initials Inserted	Time/Date/Initials Removed	Screening Chemistry	Re-Analysis	Analysis	Dilution	Reason for Inserting/Removal Extra Cleanup	Pending	Extract Inserted Completed
8154-1-4	EXPL	14:25 8/25/09 TLD	Given to Analyst							X
08115-2-6 08125-2-4, (5)-H20	MA GPH	AF 8/25/09 16:45								X
8125-2-4-5 8124-1, 8121-65	LLBA		5:30 8/26/09 m			✓				
8090-2 KE 8175-4-5						✓				
8157-1, 8177-1-5 8154-1-4, 8158-1	BMA					✓				
08115-2-6 08183-5-9, 11-20	SM	AF 8/26/09 13:55								X
08183-10, 21-34	SM	AF 15:10 8/26/09								X
8115-2-6	LL PMM		5:30 8/27/09 m			✓				

V/LAB/HOBARTCUSTODYFORM

METHOD DETECTION AND REPORTING LIMITS

Laboratory: Empirical Laboratories, LLC
SDG: 0908124
Client: Tetra Tech NUS, Inc. (T010)
Project: Cecil Field (BP Wells)
Matrix: Water
Instrument: GL-GCTCFID

Analyte	MDL	MRL	Units	Method
Petroleum Range Organics	0.170	0.510	mg/L	FLPRO

ORGANIC ANALYSIS DATA SHEET

CEF-BP-MW-6S-20090817

Laboratory:	Empirical Laboratories, LLC			SDG:	0908124
Client:	Tetra Tech NUS, Inc. (T010)			Project:	Cecil Field (BP Wells)
Matrix:	Ground Water	Laboratory ID:	0908124-01	File ID:	012R0101.D
Sampled:	08/17/09 12:10	Prepared:	08/20/09 09:15	Analyzed:	08/31/09 18:17
Solids:		Preparation:	EXT_3510	Initial/Final:	1000 mL / 2 mL

Batch: 9H19021 Sequence: 9H23902 Calibration: 9244001 Instrument: GL-GCTCFIE

CAS NO.	COMPOUND	DILUTION	CONC. (mg/L)	Q
	Petroleum Range Organics	1	0.467	J

SYSTEM MONITORING COMPOUND	ADDED (mg/L)	CONC (mg/L)	% REC	QC LIMITS	Q
2-Fluorobiphenyl	0.05000	0.05511	110	50 - 150	
o-Terphenyl	0.05000	0.05654	113	30 - 140	

* Values outside of QC limits

SURROGATE STANDARD RECOVERY AND RT SUMMARY
FLPRO

Laboratory:	Empirical Laboratories, LLC	SDG:	0908124
Client:	Tetra Tech NUS, Inc. (T010)	Project:	Cecil Field (BP Wells)
Sequence:	9H23902	Instrument:	GL-GCTCFID
Matrix:	Water	Calibration:	9244001

Surrogate Compound	Spike Level mg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
Calibration Check (9H23902-CCV1)			Lab File ID: 008R0101.D		Analyzed: 08/31/09 16:48			
2-Fluorobiphenyl	25.00	97.0	75 - 125	4.15	4.1515	-0.0015	+/-1.0	
o-Terphenyl	25.00	120	75 - 125	6	6	0.0000	+/-1.0	
Blank (9H19021-BLK1)			Lab File ID: 009R0101.D		Analyzed: 08/31/09 17:10			
2-Fluorobiphenyl	0.05000	114	50 - 150	4.153	4.1515	0.0015	+/-1.0	
o-Terphenyl	0.05000	115	30 - 140	6	6	0.0000	+/-1.0	
LCS (9H19021-BS1)			Lab File ID: 010R0101.D		Analyzed: 08/31/09 17:33			
2-Fluorobiphenyl	0.05000	101	50 - 150	4.15	4.1515	-0.0015	+/-1.0	
o-Terphenyl	0.05000	96.9	30 - 140	6	6	0.0000	+/-1.0	
LCS Dup (9H19021-BSD1)			Lab File ID: 011R0101.D		Analyzed: 08/31/09 17:55			
2-Fluorobiphenyl	0.05000	118	50 - 150	4.15	4.1515	-0.0015	+/-1.0	
o-Terphenyl	0.05000	110	30 - 140	6	6	0.0000	+/-1.0	
CEF-BP-MW-6S-20090817 (0908124-01)			Lab File ID: 012R0101.D		Analyzed: 08/31/09 18:17			
2-Fluorobiphenyl	0.05000	110	50 - 150	4.15	4.1515	-0.0015	+/-1.0	
o-Terphenyl	0.05000	113	30 - 140	6	6	0.0000	+/-1.0	
Calibration Check (9H23902-CCV2)			Lab File ID: 013R0101.D		Analyzed: 08/31/09 18:39			
2-Fluorobiphenyl	25.00	90.9	75 - 125	4.15	4.1515	-0.0015	+/-1.0	
o-Terphenyl	25.00	97.8	75 - 125	6	6	0.0000	+/-1.0	

LCS / LCS DUPLICATE RECOVERY
FLPRO

Laboratory:	Empirical Laboratories, LLC	SDG:	0908124
Client:	Tetra Tech NUS, Inc. (T010)	Project:	Cecil Field (BP Wells)
Matrix:	Water		
Batch:	9H19021	Laboratory ID:	9H19021-BS1
Preparation:	EXT_3510	Initial/Final:	1000 mL / 2 mL

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC. #	QC LIMITS REC.
Petroleum Range Organics	3.200	2.844	88.9	55 - 118

ANALYTE	SPIKE ADDED (mg/L)	LCSD CONCENTRATION (mg/L)	LCSD % REC. #	% RPD #	QC LIMITS	
					RPD	REC.
Petroleum Range Organics	3.200	3.178	99.3	11.1	30	55 - 118

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

PREPARATION BATCH SUMMARY
FLPRO

Laboratory: Empirical Laboratories, LLC SDG: 0908124

Client: Tetra Tech NUS, Inc. (T010) Project: Cecil Field (BP Wells)

Batch: 9H19021 Batch Matrix: Water Preparation: EXT_3510

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
CEF-BP-MW-6S-20090817	0908124-01	08/20/09 09:15	1,000.00	2.00
Blank	9H19021-BLK1	08/20/09 09:15	1,000.00	2.00
LCS	9H19021-BS1	08/20/09 09:15	1,000.00	2.00
LCS Dup	9H19021-BSD1	08/20/09 09:15	1,000.00	2.00

METHOD BLANK DATA SHEET
FLPRO

Laboratory:	Empirical Laboratories, LLC			SDG:	0908124
Client:	Tetra Tech NUS, Inc. (T010)			Project:	Cecil Field (BP Wells)
Matrix:	Water	Laboratory ID:	9H19021-BLK1	File ID:	009R0101.D
Prepared:	08/20/09 09:15	Preparation:	EXT_3510	Initial/Final:	1000 mL / 2 mL
Analyzed:	08/31/09 17:10	Instrument:	GL-GCTCFID		
Batch:	9H19021	Sequence:	9H23902	Calibration:	9244001

CAS NO.	COMPOUND	CONC. (mg/L)	Q
	Petroleum Range Organics	0.510	U

SYSTEM MONITORING COMPOUND	ADDED (mg/L)	CONC (mg/L)	% REC	QC LIMITS	Q
2-Fluorobiphenyl	0.05000	0.05721	114	50 - 150	
o-Terphenyl	0.05000	0.05758	115	30 - 140	

INITIAL CALIBRATION DATA
FLPRO

Laboratory:	Empirical Laboratories, LLC	SDG:	0908124
Client:	Tetra Tech NUS, Inc. (T010)	Project:	Cecil Field (BP Wells)
Calibration:	9244001	Instrument:	GL-GCTCFID
Matrix:	Water	Calibration Date:	8/31/2009 7:53:50AM

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/L	RF	mg/L	RF	mg/L	RF	mg/L	RF	mg/L	RF	mg/L	RF
Petroleum Range Organics	8500	844.676	5950	759.0669	4250	697.8828	2550	843.8247	850	683.407	85	609.4
2-Fluorobiphenyl	25	1098.88	25	1006.32	25	965.6	25	1153.28	25	884.6	25	1003.28
o-Terphenyl	25	1043.44	25	935.2	25	825.4	25	939.56	25	855.44	25	985.4

INITIAL CALIBRATION DATA (Continued)
FLPRO

Laboratory:	Empirical Laboratories, LLC	SDG:	0908124
Client:	Tetra Tech NUS, Inc. (T010)	Project:	Cecil Field (BP Wells)
Calibration:	9244001	Instrument:	GL-GCTCFID
Matrix:	Water	Calibration Date:	8/31/2009 7:53:50AM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Petroleum Range Organics	739.7096	12.70088	1.046	1.972137E-02			20	
2-Fluorobiphenyl	1018.66	9.388704	4.1515	3.481816E-02			20	
o-Terphenyl	930.74	8.669301	6	0			20	

ICV

Empirical Laboratories, LLC

~~CONTINUING CALIBRATION COMPOUNDS~~

Instrument ID: gctcdfid.i Injection Date: 31-AUG-2009 16:31
Lab File ID: 007R0101.D Init. Cal. Date(s): 16-MAR-2007 31-AUG-2009
Analysis Type: Init. Cal. Times: 10:21 15:14
Lab Sample ID: SEQ-ICV1 Quant Type: ESTD
Method: \\ELABNSH05\TARGET\chem\gctcdfid.i\083109A.b\083109A.b\FLPROR.m

COMPOUND	RRF	RF4250	MIN RRF	%D	MAX %D
S 1 Petroleum Range	740	~~557~~ 592.1	0.010	~~24.7~~ 22.2	25.0

BM 090109

CONTINUING CALIBRATION CHECK
FLPRO

Laboratory:	Empirical Laboratories, LLC	SDG:	0908124
Client:	Tetra Tech NUS, Inc. (T010)	Project:	Cecil Field (BP Wells)
Instrument ID:	GL-GCTCFID	Calibration:	9244001
Lab File ID:	008R0101.D	Calibration Date:	08/31/09 07:53
Sequence:	9H23902	Injection Date:	08/31/09
Lab Sample ID:	9H23902-CCV1	Injection Time:	16:48

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	4381	739.7096	762.4969		3.1	25
2-Fluorobiphenyl	A	25.00	24.25	1018.66	988.12		-3.0	25
o-Terphenyl	A	25.00	29.90	930.74	1113		19.6	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

CONTINUING CALIBRATION CHECK
FLPRO

Laboratory:	Empirical Laboratories, LLC	SDG:	0908124
Client:	Tetra Tech NUS, Inc. (T010)	Project:	Cecil Field (BP Wells)
Instrument ID:	GL-GCTCFID	Calibration:	9244001
Lab File ID:	013R0101.D	Calibration Date:	08/31/09 07:53
Sequence:	9H23902	Injection Date:	08/31/09
Lab Sample ID:	9H23902-CCV2	Injection Time:	18:39

		CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	3847	739.7096	669.5633		-9.5	25
2-Fluorobiphenyl	A	25.00	22.73	1018.66	926.2		-9.1	25
o-Terphenyl	A	25.00	24.46	930.74	910.8		-2.1	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

ANALYSIS SEQUENCE SUMMARY
FLPRO

Laboratory:	Empirical Laboratories, LLC	SDG:	0908124
Client:	Tetra Tech NUS, Inc. (T010)	Project:	Cecil Field (BP Wells)
Sequence:	9H23902	Instrument:	GL-GCTCFID
Matrix:	Water	Calibration:	9244001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Check	9H23902-CCV1	008R0101.D	08/31/09 16:48
Blank	9H19021-BLK1	009R0101.D	08/31/09 17:10
LCS	9H19021-BS1	010R0101.D	08/31/09 17:33
LCS Dup	9H19021-BSD1	011R0101.D	08/31/09 17:55
CEF-BP-MW-6S-20090817	0908124-01	012R0101.D	08/31/09 18:17
Calibration Check	9H23902-CCV2	013R0101.D	08/31/09 18:39

Empirical Laboratories

EMPIRICAL LABORATORIES, LLC
LABORATORY SAMPLE CUSTODY FORM
WALK-IN REFRIGERATOR

Sample Log # (s)	Time/Date/Initials Removed	Time/Date/Initials Returned (Note if all Sample Used)	Notes/ Comments	Task Performed
0908048-01 0908050-01	13:15 KBG 8/19/09	15:30 KBG 8/19/09		React. Sulfide
0908060-02 0908122-01	↓	↓		↓
08126-1-3 08130-1-8	13:20 JLD 8/19/09			BNA
08126-1-3 08130-1-8	AF 8/19/09 14:00			EXP
8125.5	JLS 8.19.09 2:35pm			VPH
8128-01,02	VM 8-19-09 1500	VM 8-19-09 1540		NO_2/NO_3
8130-01-08 8136-05	KH 8/19/09 16:37	KH 8/19/09 16:56	filter & pres. all except (06)	metals.
8121-65	9:45 8/20/09 JLD			PAH
8123-1	↓			PCB
8124-1	↓			FLPRC
8128-01,02	VM 8-20-09 918			~~o phos~~ NO_2/NO_3 (TKN)
0908092-01-07 0908098-01-06	09:55 KBG 8/20/09	16:30 KBG 8/20/09		Anions
0908105-01,02 0908042-03	↓	↓		↓
8125.5	JLS 8.20.09 10:37am			VPH
8105-1,2 8108-1-3	BM 8-20-09 11:15			MEE's
8109-1-4 8113-16-22				
8124-1 8125-5	12:30 8/20/09 JLD			PAHSIM
8129-01 8140-07 8143-01	JG 8/20/09 13:54	JG 8/20/09 15:07		TSS
8146-01-09	KH 8/20/09 15:00	KH 8/20/09 15:17	filter & pres. from log in.	metals.
8092-1-7 8098-1-6	BM 8/20/09 15:30			MEE'S

HOBART SAMPLE EXTRACT CUSTODY FORM

Sample Log #'s	Location	Time/Date/Initials Inserted	Time/Date/Initials Removed	Reasons for Inserting/Removal: Screening/Cleanup	Re-Analysis	Autopsy	Dilution	Insufficient Volume	Insufficient Completed
8183 1-5-9, 11-20, 10, 21-34	LL PMH	8:00 8/31/09 M	6:00 8/28/09 M			✓			
8121-01-05; 8205 01-05	PMH	KAW 8/28/09 16:50							X
8196-01-09, 11; 8197-01-09	PMH	↓							X
8218-01-16	PCB	↓							X
8218 1-16	PCB	9:15 in 8/31/09 ~~16:5~~ WL	8:50 AM 8/31/09 WL	✓					X
8205-1-5 8121-1-5	BNA		9:55 8/31/09 M			✓			
8183-29, 10, 13, 16, 20 8183-32, 21, 23, 24, 33, 34, 9, 8, 5, 17	LL PMH		10:50 8/31/09 M		✓		✓		
8199-1-8	BNA		↓ 8/31/09 M			✓			
8186 1-20	LL PMH		12:45 8/31/09 M			✓			
08218-1-16	~~SIM~~ BNA		8/31/09 given to AF 14:00 analyst						X
8146 91-5, 8, 9 8154-1-4	Exp		8-31-09 JCS 2:17pm			X			
8130 1-8 8126-1-3	Exp		11			X			
08229-1-11	PKO	AF 8/31/09 15:45							X
08186-21-40	SIM	↓							X
0824-1	PKO		BM 8/31/09 12:00		X				

```
NAME SeqFileMacro
DELSEQUENCE
VERSION 3
SETPARAMS "BM", "", 0, 0, 1
SETDATAPATH "083109A"
SETMETHODPATH
SETPRESEQ ""
SETPOSTSEQ ""
SETCOMMENT
SETNAMEMODE 1
SETSIG1FLEX "SIG1", "0001"
SETSIG2FLEX "SIG2", "0001"
SETSEQLINE 1,1,"",-1,-1,-1,-1
SETSEQLINE 2,1,"FLPROR",1,13,1,-1
SETSEQLINE 2,2,"8015DROR",14,25,1,-1
DELSAMPLE 1,100
SETSAMPLE 1,"SEQ-CAL1",,,
SETINFO 1
SETINFO 1,"09D0223\"
SETSAMPLE 2,"SEQ-CAL2",,,
SETINFO 2
SETINFO 2,"09D0224\"
SETSAMPLE 3,"SEQ-CAL3",,,
SETINFO 3
SETINFO 3,"09D0225\"
SETSAMPLE 4,"SEQ-CAL4",,,
SETINFO 4
SETINFO 4,"09D0226\"
SETSAMPLE 5,"SEQ-CAL5",,,
SETINFO 5
SETINFO 5,"09D0227\"
SETSAMPLE 6,"SEQ-CAL6",,,
SETINFO 6
SETINFO 6,"09D0228\"
SETSAMPLE 7,"SEQ-ICV1",,,
SETINFO 7
SETINFO 7,"09D0233\"
SETSAMPLE 8,"SEQ-CCV1",,,
SETINFO 8
SETINFO 8,"09D0231\"
SETSAMPLE 9,"9H19021-BLK1",,,
SETSAMPLE 10,"9H19021-BS1",,,
SETSAMPLE 11,"9H19021-BSD1",,,
SETSAMPLE 12,"0908124-01",,,
SETSAMPLE 13,"SEQ-CCV2",,,
SETINFO 13
SETINFO 13,"09D0232\"
SETSAMPLE 14,"SEQ-CCV3",,,
SETINFO 14
SETINFO 14,"0980569\"
SETSAMPLE 15,"9H26018-BLK1",,,
SETSAMPLE 16,"9H26018-BS1",,,
SETSAMPLE 17,"0908187-05",,,
SETSAMPLE 18,"0908187-08",,,
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Barbara McBride
090109

good curve saved