



June 10, 2019

Lynn Nakashima  
Berkeley Regional Office  
700 Heinz Avenue, Suite 200C  
Berkeley, California 94710  
(510) 540-3839  
lnakashima@dtsc.ca.gov

**Subject: Northern Regional Library Facility (NRLF) Phase 4 Soil Sampling Results  
Richmond Field Station, University of California, Berkeley**

Dear Ms. Nakashima

Tetra Tech, Inc. was contracted by the University of California (UC) Berkeley to conduct sampling activities at Richmond Field Station in Richmond, California associated with the construction of the Northern Regional Library Facility (NRLF) Phase 4. The objective of the sampling effort was to characterize soil to be excavated and soil remaining in place under the NRLF Phase 4 foundation in accordance with the Soil Management Plan, Revision 1, dated April 12, 2017 (SMP). Consistent with the SMP, UC Berkeley submitted SMP Forms A and B to DTSC dated July 19, 2018.

This letter provides the rationale for the selected sampling locations, a summary of field sampling protocols, and sample results. This letter updates the summary letter dated September 20, 2018 and provides additional detail regarding the proposed construction design, as well as other information requested in DTSC's comment letter dated December 13, 2018.

### **Sample Location**

The project is located within SMP Areas 16, 17, and 24 and has the following chemicals of concern: arsenic, lead, mercury, polycyclic aromatic hydrocarbons (PAH), and polychlorinated biphenyls (PCB). SMP Areas 16, 17, and 24 are considered "low sampling density areas" for which a minimum of one sample location per 15,625 square feet is required. The area of the planned NRLF Phase 4 excavation requires a minimum of two samples, however for this sampling event, three locations were selected within the excavation footprint (see attached figure). The attached figure depicts the locations of eight borings SB1-SB8 to address geotechnical conditions within the proposed construction area. The environmental samples were collected from three of the eight geotechnical borings: SB3, SB5, and SB8.

### **Field Sampling Protocols**

The soil samples were collected on August 10, 2018. The soil boring locations were identified using survey flags prior to the start of field activities. Soil boring locations were sampled in the following order: SB3, followed by SB5 and finishing at SB8. Samples were collected in 0.5-foot depth intervals every 2 feet starting at the surface and extending to a depth of 2.5 feet below the depth of planned soil disturbance. Sample depths by location are presented below.

Sample Location	Excavation Depth (feet bgs)	Sample Depths (feet bgs)
NRLF4-SB3	5	0-0.5, 2-2.5, 4-4.5, 6-6.5, 7-7.5
NRLF4-SB5	6	0-0.5, 2-2.5, 4-4.5, 6-6.5, 8-8.5
NRLF4-SB8	7	0-0.5, 2-2.5, 4-4.5, 6-6.5, 8-8.5, 9-9.5

bgs = below ground surface

Soils from the top sample depth were collected by hand using a decontaminated trowel and samples at depth were collected using direct push drilling to the desired depth intervals. Sample cores were retrieved within disposable acetate liners in 4-foot sections. Following retrieval, the acetate liner was cut open and the appropriate sample intervals was identified by the field sampler. The entire 6-inch sample interval was removed from the core and placed directly into a labeled 32-ounce, wide mouth sample jar.

The labeled sample jars were safely packed and transported under chain-of-custody procedures directly to Enthalpy Laboratory in Berkeley, California. A copy of the chain-of-custody form is included in Attachment 1.

### Analytical Methods and Results

Enthalpy Laboratory analyzed the soil for arsenic, lead, mercury, PAHs, and PCBs using the U.S. Environmental Protection Agency (EPA) methods listed below.

- Arsenic, lead, and mercury analysis by EPA 6010B/7471A
- PCB analysis by EPA 8082/Soxhlet Extraction
- PAH analysis by EPA 8270 SIM

Analytical results were compared to Category I, Category II, and Maintenance Worker Screening Criteria presented in the *Final Soil Management Plan, Revision 1*, dated April 10, 2017. No metals or PCB results exceeded any of the criteria. PAH results for samples SB5.2-2.5, SB8.0-0.5, SB4.4-4.5, and SB8.8-8.5 exceeded the Category I Criteria for several individual PAHs. PAH sample results in adjacent borings at similar depths were well below all screening criteria.

The 95UCL for benzo(a)pyrene of 0.39 mg/kg exceeded the Category I criteria of 0.145 mg/kg and the 95UCL for benzo(a)pyrene equivalency quotient of 0.59 mg/kg exceeded the Category I Criteria of 0.4 mg/kg. None of the results exceeded the Category II or Maintenance Worker Screening Criteria. PAH exceedances are located at borings adjacent to the current NRLF building and may be associated with past construction-related activities.

Summary tables for detected concentrations are presented in Tables 1, 2, and 3. Complete analytical results are presented in Attachment 1.

### Recommendations

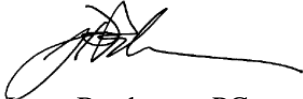
The NRLF Phase 4 construction project will remove all soils within the disturbed area a minimum of 3 feet bgs to a maximum of 7 feet bgs, for a total of between 5,000 and 7,000 cubic yards. Final depths will be determined in the field during construction by the geotechnical firm responsible for the building design. All soil disturbed will be removed from the project area and transported off-site for disposal. All exposed soils within the excavation will be covered with a minimum of 2 feet of clean fill, and

subsequently by the new NLRF Phase 4 building. UC Berkeley will provide DTSC with analytical data to characterize the imported clean fill prior to import activities.

Since all impacted soil will be removed off-site and native soil will be covered with 2 feet of clean fill, UC Berkeley will document the soil management and final building construction through submittal of SMP Form C, consistent with the SMP.

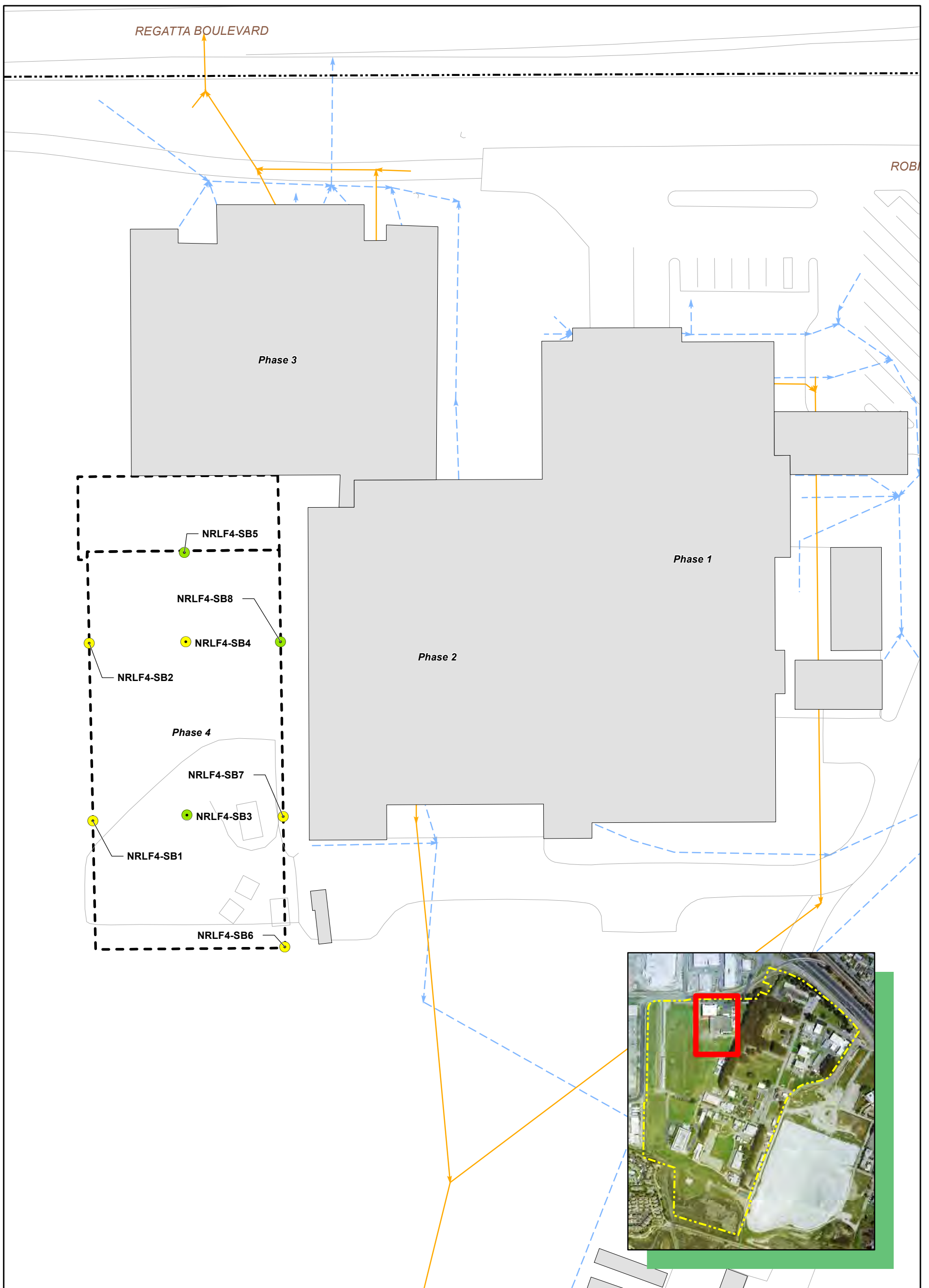
If you have any questions or comments regarding this submittal, please call me at (415) 497-9060.

Sincerely,

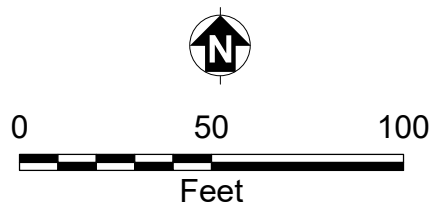
A handwritten signature in black ink, appearing to read 'J. Brodersen', with a long horizontal flourish extending to the right.

Jason Brodersen, PG  
Project Manager

Attachment 1: Analytical Results



- Sampled Soil Boring
- Soil Boring Not Sampled
- Richmond Field Station Site Boundary
- Existing RFS Sewer
- - - Underground Culvert
- - - Phase 4 Footprint
- - - Underground Culvert, Abandoned (Grouted at Manholes)
- ▨ Asphalt/Concrete Pads
- Buildings



Richmond Field Station Site  
University of California, Berkeley

**NRLF Phase 4  
Sampling Locations**

**Table 1: Metals Results Summary**

NRLF Phase 4 Soil Sampling

University of California, Berkeley, Richmond Field Station Site

Sample ID	Sample Location	Depth (feet bgs)	Units	ARSENIC	LEAD	MERCURY
<b>Category I Criteria</b>				16	320	77
<b>Category II On-Site Management Criteria</b>				16	800	275
<b>Maintenance Worker Screening Criteria</b>				16	320	1,920
NRLF4-SB3.0-0.5	SB3	0-0.5	mg/kg	1.9	5.8	11
NRLF4-SB3.2-2.5	SB3	2-2.5	mg/kg	3.6	9.5	0.036
NRLF4-SB3.4-4.5	SB3	4-4.5	mg/kg	4.4	9.9	0.48
NRLF4-SB3.6-6.5	SB3	6-6.5	mg/kg	7.4	8.4	0.038
NRLF4-SB3.7-7.5	SB3	7-7.5	mg/kg	5.2	8.2	0.16
NRLF4-SB5.0-0.5	SB5	0-0.5	mg/kg	7.7	27	11
NRLF4-SB5.2-2.5	SB5	2-2.5	mg/kg	4.8	21	0.65
NRLF4-SB5.4-4.5	SB5	4-4.5	mg/kg	3.4	8.5	0.36
NRLF4-SB5.6-6.5	SB5	6-6.5	mg/kg	3.8	7.8	0.061
NRLF4-SB5.8-8.5	SB5	8-8.5	mg/kg	3.5	9.9	0.75
NRLF4-SB8.0-0.5	SB8	0-0.5	mg/kg	5.8	26	1.5
NRLF4-SB8.2-2.5	SB8	2-2.5	mg/kg	5.5	9.9	0.038
NRLF4-SB8.4-4.5	SB8	4-4.5	mg/kg	4.4	8.4	0.63
NRLF4-SB8.6-6.5	SB8	6-6.5	mg/kg	6.8	6.2	0.093
NRLF4-SB8.8-8.5	SB8	8-8.5	mg/kg	5.6	6.1	0.13
NRLF4-SB8.9-9.5	SB8	9-9.5	mg/kg	8.3	7.8	0.14
<i>95UCL</i>			<i>mg/kg</i>	<i>5.9</i>	<i>14.4</i>	<i>10.8</i>

Screening criteria based on *Final Soil Management Plan, Revision 1*, dated April 10, 2017.

- J Estimated value below reporting limit
- mg/kg Milligrams per kilogram
- ND Nondetect at reporting limit listed
- 95UCL 95th upper confidence interval of the mean

**Table 2: Polychlorinated Biphenyl Summary**

NRLF Phase 4 Soil Sampling

University of California, Berkeley, Richmond Field Station Site

Sample ID	Sample Location	Depth (feet bgs)	Units	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	TOTAL AROCLORS
<b>Category I Criteria</b>				1	1	1	1	1	1	1	1
<b>Category II On-Site Management Criteria</b>				1	1	1	1	1	1	1	1
<b>Maintenance Worker Screening Criteria</b>				1	1	1	1	1	1	1	1
NRLF4-SB3.0-0.5	SB3	0-0.5	mg/kg	ND	ND	ND	ND	ND	ND	0.0099 J	0.0099 J
NRLF4-SB3.2-2.5	SB3	2-2.5	mg/kg	ND	ND	ND	ND	ND	ND	0.013 J	0.013 J
NRLF4-SB3.4-4.5	SB3	4-4.5	mg/kg	ND	ND	ND	ND	ND	ND	0.012 J	0.012 J
NRLF4-SB3.6-6.5	SB3	6-6.5	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
NRLF4-SB3.7-7.5	SB3	7-7.5	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
NRLF4-SB5.0-0.5	SB5	0-0.5	mg/kg	ND	ND	ND	ND	ND	ND	0.014 J	0.014 J
NRLF4-SB5.2-2.5	SB5	2-2.5	mg/kg	ND	ND	ND	ND	ND	ND	0.036	0.036
NRLF4-SB5.4-4.5	SB5	4-4.5	mg/kg	ND	ND	ND	ND	ND	ND	0.0057 J	0.0057 J
NRLF4-SB5.6-6.5	SB5	6-6.5	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND
NRLF4-SB5.8-8.5	SB5	8-8.5	mg/kg	ND	ND	ND	ND	ND	ND	0.0067 J	0.0067 J
NRLF4-SB8.0-0.5	SB8	0-0.5	mg/kg	ND	ND	ND	ND	ND	ND	0.022	0.022
NRLF4-SB8.2-2.5	SB8	2-2.5	mg/kg	ND	ND	ND	ND	ND	ND	0.0063 J	0.0063 J
NRLF4-SB8.4-4.5	SB8	4-4.5	mg/kg	ND	ND	ND	ND	ND	ND	0.0099 J	0.0099 J
NRLF4-SB8.6-6.5	SB8	6-6.5	mg/kg	ND	ND	ND	ND	ND	ND	0.0066 J	0.0066 J
NRLF4-SB8.8-8.5	SB8	8-8.5	mg/kg	ND	ND	ND	ND	ND	ND	0.012 J	0.012 J
NRLF4-SB8.9-9.5	SB8	9-9.5	mg/kg	ND	ND	ND	ND	ND	ND	0.014 J	0.014 J
			95UCL mg/kg	--	--	--	--	--	--	0.017	0.017

Screening criteria based on *Final Soil Management Plan, Revision 1*, dated April 10, 2017.

Total Aroclor values are calculated by summing the detected concentrations of Aroclors for each sample.

mg/kg

Milligrams per kilogram

ND

Not detected

--

Not available due to low number of detects

95UCL

95th upper confidence interval of the mean

**Table 3: Polycyclic Aromatic Hydrocarbon Results Summary**  
 NRLF Phase 4 Soil Sampling  
 University of California, Berkeley, Richmond Field Station Site

Sample ID	Sample Location	Depth (feet bgs)	Units	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H)PERYLENE	BENZO(K)FLUORANTHENE	CHRYSENE	DIBENZO(A,H)ANTHRACENE	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYRENE	NAPHTHALENE	PHENANTHRENE	PYRENE	BAP (EQ)
Category I Criteria				6,050	6,050	30,200	0.88	0.145	0.88	3,020	0.88	8.8	0.145	4,030	4,030	0.88	3.57	4,030	3,020	0.4
Category II On-Site Management Criteria				60,500	60,500	100,000	8.8	1.45	8.8	30,200	8.8	88	1.45	40,300	40,300	8.8	35.7	40,300	30,200	1.45
Maintenance Worker Screening Criteria				100,000	100,000	100,000	5.87	0.963	5.87	75,600	5.87	58.7	0.963	100,000	100,000	5.87	450	100,000	75,600	0.4
NRLF4-SB3.0-0.5	SB3	0-0.5	mg/kg	ND	ND	ND	0.0052 J	0.0075 J	0.011	0.009 J	0.0051 J	0.0086 J	ND	0.01 J	0.0053 J	0.0038 J	ND	0.0039 J	0.011	0.01
NRLF4-SB3.2-2.5	SB3	2-2.5	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00
NRLF4-SB3.4-4.5	SB3	4-4.5	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00
NRLF4-SB3.6-6.5	SB3	6-6.5	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00
NRLF4-SB3.7-7.5	SB3	7-7.5	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00
NRLF4-SB5.0-0.5	SB5	0-0.5	mg/kg	ND	ND	ND	0.043 J	0.049 J	0.086	0.049 J	0.032 J	0.066	0.011 J	0.11	ND	0.031 J	ND	0.042 J	0.100	0.08
NRLF4-SB5.2-2.5	SB5	2-2.5	mg/kg	0.089 J	ND	0.290	<b>0.940</b>	<b>0.870</b>	<b>1.200</b>	0.530	0.360	0.970	<b>0.150</b>	2.000	0.071 J	0.460	ND	1.200	1.800	<b>1.28</b>
NRLF4-SB5.4-4.5	SB5	4-4.5	mg/kg	ND	ND	ND	ND	ND	0.0018 J	0.0016 J	ND	0.0013 J	ND	0.0017 J	ND	ND	ND	ND	0.0017 J	0.00
NRLF4-SB5.6-6.5	SB5	6-6.5	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00
NRLF4-SB5.8-8.5	SB5	8-8.5	mg/kg	ND	ND	ND	0.0045 J	0.0086 J	0.013	0.010 J	0.0044 J	0.0097 J	ND	0.011 J	ND	0.0075 J	ND	0.0056 J	0.013	0.01
NRLF4-SB8.0-0.5	SB8	0-0.5	mg/kg	ND	ND	ND	0.180 J	<b>0.190</b>	0.250	0.170 J	0.095 J	0.210	0.040 J	0.370	ND	0.130 J	ND	0.150 J	0.350	0.29
NRLF4-SB8.2-2.5	SB8	2-2.5	mg/kg	ND	ND	ND	0.0031 J	0.0030 J	0.0045 J	0.0025 J	0.0013 J	0.0037 J	ND	0.0076	ND	0.0021 J	ND	0.0045 J	0.0067	0.00
NRLF4-SB8.4-4.5	SB8	4-4.5	mg/kg	0.017	ND	0.120	0.510	<b>0.450</b>	0.720	0.400	0.180	0.560	0.120	1.100	0.015	0.360	ND	0.490	1.100	<b>0.73</b>
NRLF4-SB8.6-6.5	SB8	6-6.5	mg/kg	ND	ND	0.0013 J	0.0080	0.0084	0.012	0.0052 J	0.0035 J	0.0089	0.0013 J	0.018	ND	0.0043 J	0.0021 J	0.0080	0.016	0.01
NRLF4-SB8.8-8.5	SB8	8-8.5	mg/kg	0.0050 J	ND	0.041	0.160	<b>0.150</b>	0.210	0.092	0.070	0.170	0.027	0.340	0.0047 J	0.084	0.0017 J	0.200	0.320	0.22
NRLF4-SB8.9-9.5	SB8	9-9.5	mg/kg	ND	ND	0.0050 J	0.022	0.021	0.032	0.017	0.010	0.024	0.0042 J	0.050	ND	0.013	ND	0.027	0.046	0.03
		95UCL	mg/kg	--	--	--	0.46	<b>0.39</b>	0.55	0.26	0.110	0.44	0.044	0.910	--	0.23	--	0.54	0.84	<b>0.59</b>

Screening criteria based on *Final Soil Management Plan, Revision 1*, dated April 10, 2017.

- BAP (EQ) Benzo(a)pyrene equivalency quotient
- 0.73** Bold concentrations above Category I criteria
- J Estimated value below reporting limit
- mg/kg Milligrams per kilogram
- ND Nondetect at reporting limit listed
- Not available due to low number of detects
- 95UCL 95th upper confidence interval of the mean

**ATTACHMENT 1**  
**ANALYTICAL RESULTS**





# Enthalpy Analytical

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 302238

## ANALYTICAL REPORT

Semivolatile Organics by GC/MS SIM

Tetra Tech EMI  
1999 Harrison Street  
Oakland, CA 94612

Project : 103S582307.01  
Location : RFS MFA  
Level : IV

<u>Sample ID</u>	<u>Lab ID</u>
NRLF4-SB3.0-0.5	302238-001
NRLF4-SB3.2-2.5	302238-002
NRLF4-SB3.4-4.5	302238-003
NRLF4-SB3.6-6.5	302238-004
NRLF4-SB3.7-7.5	302238-005
NRLF4-SB5.0-0.5	302238-006
NRLF4-SB5.2-2.5	302238-007
NRLF4-SB5.4-4.5	302238-008
NRLF4-SB5.6-6.5	302238-009
NRLF4-SB5.8-8.5	302238-010
NRLF4-SB8.0-0.5	302238-011
NRLF4-SB8.2-2.5	302238-012
NRLF4-SB8.4-4.5	302238-013
NRLF4-SB8.6-6.5	302238-014
NRLF4-SB8.8-8.5	302238-015
NRLF4-SB8.9-9.5	302238-016

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_

  
Mike Dahlquist  
Project Manager  
mike.dahlquist@enthalpy.com  
(510) 204-2225 Ext 13101

Date: 09/05/2018

**CASE NARRATIVE**  
**SEMIVOLATILE ORGANICS BY GC/MS SIM (EPA 8270C-SIM)**

Laboratory number: 302238  
Client: Tetra Tech EMI  
Project: 103S582307.01  
Location: RFS MFA  
Request Date: 08/10/18  
Samples Received: 08/10/18

This data package contains sample and QC results for sixteen soil samples, requested for the above referenced project on 08/10/18. See attached cooler receipt form for any sample receipt problems or discrepancies.

**Semivolatile Organics by GC/MS SIM (EPA 8270C-SIM):**

A number of samples were diluted due to the dark and viscous nature of the sample extracts.

No other analytical problems were encountered.

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB3.0-0.5	Batch#:	262666
Lab ID:	302238-001	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/21/18
Basis:	dry	Analyzed:	08/22/18
Diln Fac:	2.000		

Moisture: 2%

Analyte	Result	RL	MDL
Naphthalene	ND	10	2.0
Acenaphthylene	ND	10	2.0
Acenaphthene	ND	10	2.0
Fluorene	5.3 J	10	2.0
Phenanthrene	3.9 J	10	2.0
Anthracene	ND	10	2.0
Fluoranthene	10 J	10	2.0
Pyrene	11	10	2.0
Benzo(a)anthracene	5.2 J	10	2.0
Chrysene	8.6 J	10	2.0
Benzo(b)fluoranthene	11	10	2.0
Benzo(k)fluoranthene	5.1 J	10	2.0
Benzo(a)pyrene	7.5 J	10	2.0
Indeno(1,2,3-cd)pyrene	3.8 J	10	2.0
Dibenz(a,h)anthracene	ND	10	2.0
Benzo(g,h,i)perylene	9.0 J	10	2.0

Surrogate	%REC	Limits
Nitrobenzene-d5	76	43-120
2-Fluorobiphenyl	89	36-120
Terphenyl-d14	99	56-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB3.2-2.5	Batch#:	262666
Lab ID:	302238-002	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/21/18
Basis:	dry	Analyzed:	08/22/18
Diln Fac:	1.000		

Moisture: 15%

Analyte	Result	RL	MDL
Naphthalene	ND	5.9	1.2
Acenaphthylene	ND	5.9	1.2
Acenaphthene	ND	5.9	1.2
Fluorene	ND	5.9	1.2
Phenanthrene	ND	5.9	1.2
Anthracene	ND	5.9	1.2
Fluoranthene	ND	5.9	1.2
Pyrene	ND	5.9	1.2
Benzo(a)anthracene	ND	5.9	1.2
Chrysene	ND	5.9	1.2
Benzo(b)fluoranthene	ND	5.9	1.2
Benzo(k)fluoranthene	ND	5.9	1.2
Benzo(a)pyrene	ND	5.9	1.2
Indeno(1,2,3-cd)pyrene	ND	5.9	1.2
Dibenz(a,h)anthracene	ND	5.9	1.2
Benzo(g,h,i)perylene	ND	5.9	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	65	43-120
2-Fluorobiphenyl	65	36-120
Terphenyl-d14	88	56-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB3.4-4.5	Batch#:	262666
Lab ID:	302238-003	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/21/18
Basis:	dry	Analyzed:	08/22/18
Diln Fac:	1.000		

Moisture: 17%

Analyte	Result	RL	MDL
Naphthalene	ND	6.0	1.2
Acenaphthylene	ND	6.0	1.2
Acenaphthene	ND	6.0	1.2
Fluorene	ND	6.0	1.2
Phenanthrene	ND	6.0	1.2
Anthracene	ND	6.0	1.2
Fluoranthene	ND	6.0	1.2
Pyrene	ND	6.0	1.2
Benzo(a)anthracene	ND	6.0	1.2
Chrysene	ND	6.0	1.2
Benzo(b)fluoranthene	ND	6.0	1.2
Benzo(k)fluoranthene	ND	6.0	1.2
Benzo(a)pyrene	ND	6.0	1.2
Indeno(1,2,3-cd)pyrene	ND	6.0	1.2
Dibenz(a,h)anthracene	ND	6.0	1.2
Benzo(g,h,i)perylene	ND	6.0	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	67	43-120
2-Fluorobiphenyl	67	36-120
Terphenyl-d14	94	56-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB3.6-6.5	Batch#:	262666
Lab ID:	302238-004	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/21/18
Basis:	dry	Analyzed:	08/22/18
Diln Fac:	1.000		

Moisture: 18%

Analyte	Result	RL	MDL
Naphthalene	ND	6.0	1.2
Acenaphthylene	ND	6.0	1.2
Acenaphthene	ND	6.0	1.2
Fluorene	ND	6.0	1.2
Phenanthrene	ND	6.0	1.2
Anthracene	ND	6.0	1.2
Fluoranthene	ND	6.0	1.2
Pyrene	ND	6.0	1.2
Benzo(a)anthracene	ND	6.0	1.2
Chrysene	ND	6.0	1.2
Benzo(b)fluoranthene	ND	6.0	1.2
Benzo(k)fluoranthene	ND	6.0	1.2
Benzo(a)pyrene	ND	6.0	1.2
Indeno(1,2,3-cd)pyrene	ND	6.0	1.2
Dibenz(a,h)anthracene	ND	6.0	1.2
Benzo(g,h,i)perylene	ND	6.0	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	64	43-120
2-Fluorobiphenyl	53	36-120
Terphenyl-d14	89	56-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB3.7-7.5	Batch#:	262666
Lab ID:	302238-005	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/21/18
Basis:	dry	Analyzed:	08/22/18
Diln Fac:	1.000		

Moisture: 17%

Analyte	Result	RL	MDL
Naphthalene	ND	6.1	1.2
Acenaphthylene	ND	6.1	1.2
Acenaphthene	ND	6.1	1.2
Fluorene	ND	6.1	1.2
Phenanthrene	ND	6.1	1.2
Anthracene	ND	6.1	1.2
Fluoranthene	ND	6.1	1.2
Pyrene	ND	6.1	1.2
Benzo(a)anthracene	ND	6.1	1.2
Chrysene	ND	6.1	1.2
Benzo(b)fluoranthene	ND	6.1	1.2
Benzo(k)fluoranthene	ND	6.1	1.2
Benzo(a)pyrene	ND	6.1	1.2
Indeno(1,2,3-cd)pyrene	ND	6.1	1.2
Dibenz(a,h)anthracene	ND	6.1	1.2
Benzo(g,h,i)perylene	ND	6.1	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	65	43-120
2-Fluorobiphenyl	62	36-120
Terphenyl-d14	92	56-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB5.0-0.5	Batch#:	262666
Lab ID:	302238-006	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/21/18
Basis:	dry	Analyzed:	08/23/18
Diln Fac:	10.00		

Moisture: 4%

Analyte	Result	RL	MDL
Naphthalene	ND	53	11
Acenaphthylene	ND	53	11
Acenaphthene	ND	53	11
Fluorene	ND	53	11
Phenanthrene	42 J	53	11
Anthracene	ND	53	11
Fluoranthene	110	53	11
Pyrene	100	53	11
Benzo(a)anthracene	43 J	53	11
Chrysene	66	53	11
Benzo(b)fluoranthene	86	53	11
Benzo(k)fluoranthene	32 J	53	11
Benzo(a)pyrene	49 J	53	11
Indeno(1,2,3-cd)pyrene	31 J	53	11
Dibenz(a,h)anthracene	11 J	53	11
Benzo(g,h,i)perylene	49 J	53	11

Surrogate	%REC	Limits
Nitrobenzene-d5	DO	43-120
2-Fluorobiphenyl	DO	36-120
Terphenyl-d14	DO	56-120

J= Estimated value  
 DO= Diluted Out  
 ND= Not Detected at or above MDL  
 RL= Reporting Limit  
 MDL= Method Detection Limit



**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB5.2-2.5	Batch#:	262666
Lab ID:	302238-007	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/21/18
Basis:	dry	Analyzed:	08/31/18
Diln Fac:	20.00		

Moisture: 14%

Analyte	Result	RL	MDL
Naphthalene	ND	120	24
Acenaphthylene	ND	120	24
Acenaphthene	89 J	120	24
Fluorene	71 J	120	24
Phenanthrene	1,200	120	24
Anthracene	290	120	24
Fluoranthene	2,000	120	24
Pyrene	1,800	120	24
Benzo(a)anthracene	940	120	24
Chrysene	970	120	24
Benzo(b)fluoranthene	1,200	120	24
Benzo(k)fluoranthene	360	120	24
Benzo(a)pyrene	870	120	24
Indeno(1,2,3-cd)pyrene	460	120	24
Dibenz(a,h)anthracene	150	120	24
Benzo(g,h,i)perylene	530	120	24

Surrogate	%REC	Limits
Nitrobenzene-d5	DO	43-120
2-Fluorobiphenyl	DO	36-120
Terphenyl-d14	DO	56-120

J= Estimated value  
 DO= Diluted Out  
 ND= Not Detected at or above MDL  
 RL= Reporting Limit  
 MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB5.4-4.5	Batch#:	262768
Lab ID:	302238-008	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	dry	Analyzed:	08/30/18
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
Naphthalene	ND	5.9	1.2
Acenaphthylene	ND	5.9	1.2
Acenaphthene	ND	5.9	1.2
Fluorene	ND	5.9	1.2
Phenanthrene	ND	5.9	1.2
Anthracene	ND	5.9	1.2
Fluoranthene	1.7 J	5.9	1.2
Pyrene	1.7 J	5.9	1.2
Benzo(a)anthracene	ND	5.9	1.2
Chrysene	1.3 J	5.9	1.2
Benzo(b)fluoranthene	1.8 J	5.9	1.2
Benzo(k)fluoranthene	ND	5.9	1.2
Benzo(a)pyrene	ND	5.9	1.2
Indeno(1,2,3-cd)pyrene	ND	5.9	1.2
Dibenz(a,h)anthracene	ND	5.9	1.2
Benzo(g,h,i)perylene	1.6 J	5.9	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	53	43-120
2-Fluorobiphenyl	49	36-120
Terphenyl-d14	85	56-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB5.6-6.5	Batch#:	262768
Lab ID:	302238-009	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	dry	Analyzed:	08/30/18
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
Naphthalene	ND	6.0	1.2
Acenaphthylene	ND	6.0	1.2
Acenaphthene	ND	6.0	1.2
Fluorene	ND	6.0	1.2
Phenanthrene	ND	6.0	1.2
Anthracene	ND	6.0	1.2
Fluoranthene	ND	6.0	1.2
Pyrene	ND	6.0	1.2
Benzo(a)anthracene	ND	6.0	1.2
Chrysene	ND	6.0	1.2
Benzo(b)fluoranthene	ND	6.0	1.2
Benzo(k)fluoranthene	ND	6.0	1.2
Benzo(a)pyrene	ND	6.0	1.2
Indeno(1,2,3-cd)pyrene	ND	6.0	1.2
Dibenz(a,h)anthracene	ND	6.0	1.2
Benzo(g,h,i)perylene	ND	6.0	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	57	43-120
2-Fluorobiphenyl	43	36-120
Terphenyl-d14	92	56-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB5.8-8.5	Batch#:	262768
Lab ID:	302238-010	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	dry	Analyzed:	08/30/18
Diln Fac:	2.000		

Moisture: 15%

Analyte	Result	RL	MDL
Naphthalene	ND	12	2.4
Acenaphthylene	ND	12	2.4
Acenaphthene	ND	12	2.4
Fluorene	ND	12	2.4
Phenanthrene	5.6 J	12	2.4
Anthracene	ND	12	2.4
Fluoranthene	11 J	12	2.4
Pyrene	13	12	2.4
Benzo(a)anthracene	4.5 J	12	2.4
Chrysene	9.7 J	12	2.4
Benzo(b)fluoranthene	13	12	2.4
Benzo(k)fluoranthene	4.4 J	12	2.4
Benzo(a)pyrene	8.6 J	12	2.4
Indeno(1,2,3-cd)pyrene	7.5 J	12	2.4
Dibenz(a,h)anthracene	ND	12	2.4
Benzo(g,h,i)perylene	10 J	12	2.4

Surrogate	%REC	Limits
Nitrobenzene-d5	64	43-120
2-Fluorobiphenyl	66	36-120
Terphenyl-d14	93	56-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB8.0-0.5	Batch#:	262768
Lab ID:	302238-011	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	dry	Analyzed:	08/30/18
Diln Fac:	33.00		

Moisture: 8%

Analyte	Result	RL	MDL
Naphthalene	ND	180	36
Acenaphthylene	ND	180	36
Acenaphthene	ND	180	36
Fluorene	ND	180	36
Phenanthrene	150 J	180	36
Anthracene	ND	180	36
Fluoranthene	370	180	36
Pyrene	350	180	36
Benzo(a)anthracene	180 J	180	36
Chrysene	210	180	36
Benzo(b)fluoranthene	250	180	36
Benzo(k)fluoranthene	95 J	180	36
Benzo(a)pyrene	190	180	36
Indeno(1,2,3-cd)pyrene	130 J	180	36
Dibenz(a,h)anthracene	40 J	180	36
Benzo(g,h,i)perylene	170 J	180	36

Surrogate	%REC	Limits
Nitrobenzene-d5	DO	43-120
2-Fluorobiphenyl	DO	36-120
Terphenyl-d14	DO	56-120

J= Estimated value  
 DO= Diluted Out  
 ND= Not Detected at or above MDL  
 RL= Reporting Limit  
 MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB8.2-2.5	Batch#:	262768
Lab ID:	302238-012	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	dry	Analyzed:	08/30/18
Diln Fac:	1.000		

Moisture: 9%

Analyte	Result	RL	MDL
Naphthalene	ND	5.5	1.1
Acenaphthylene	ND	5.5	1.1
Acenaphthene	ND	5.5	1.1
Fluorene	ND	5.5	1.1
Phenanthrene	4.5 J	5.5	1.1
Anthracene	ND	5.5	1.1
Fluoranthene	7.6	5.5	1.1
Pyrene	6.7	5.5	1.1
Benzo(a)anthracene	3.1 J	5.5	1.1
Chrysene	3.7 J	5.5	1.1
Benzo(b)fluoranthene	4.5 J	5.5	1.1
Benzo(k)fluoranthene	1.3 J	5.5	1.1
Benzo(a)pyrene	3.0 J	5.5	1.1
Indeno(1,2,3-cd)pyrene	2.1 J	5.5	1.1
Dibenz(a,h)anthracene	ND	5.5	1.1
Benzo(g,h,i)perylene	2.5 J	5.5	1.1

Surrogate	%REC	Limits
Nitrobenzene-d5	71	43-120
2-Fluorobiphenyl	70	36-120
Terphenyl-d14	84	56-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB8.4-4.5	Batch#:	262768
Lab ID:	302238-013	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	dry		

Moisture: 15%

Analyte	Result	RL	MDL	Diln Fac	Analyzed
Naphthalene	ND	12	2.4	2.000	08/30/18
Acenaphthylene	ND	12	2.4	2.000	08/30/18
Acenaphthene	17	12	2.4	2.000	08/30/18
Fluorene	15	12	2.4	2.000	08/30/18
Phenanthrene	490	12	2.4	2.000	08/30/18
Anthracene	120	12	2.4	2.000	08/30/18
Fluoranthene	1,100	30	5.9	5.000	08/31/18
Pyrene	1,100	30	5.9	5.000	08/31/18
Benzo(a)anthracene	510	12	2.4	2.000	08/30/18
Chrysene	560	12	2.4	2.000	08/30/18
Benzo(b)fluoranthene	720	12	2.4	2.000	08/30/18
Benzo(k)fluoranthene	180	12	2.4	2.000	08/30/18
Benzo(a)pyrene	450	12	2.4	2.000	08/30/18
Indeno(1,2,3-cd)pyrene	360	12	2.4	2.000	08/30/18
Dibenz(a,h)anthracene	120	12	2.4	2.000	08/30/18
Benzo(g,h,i)perylene	400	12	2.4	2.000	08/30/18

Surrogate	%REC	Limits	Diln Fac	Analyzed
Nitrobenzene-d5	63	43-120	2.000	08/30/18
2-Fluorobiphenyl	64	36-120	2.000	08/30/18
Terphenyl-d14	105	56-120	2.000	08/30/18

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB8.6-6.5	Batch#:	262768
Lab ID:	302238-014	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	dry	Analyzed:	08/31/18
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
Naphthalene	2.1 J	6.0	1.2
Acenaphthylene	ND	6.0	1.2
Acenaphthene	ND	6.0	1.2
Fluorene	ND	6.0	1.2
Phenanthrene	8.0	6.0	1.2
Anthracene	1.3 J	6.0	1.2
Fluoranthene	18	6.0	1.2
Pyrene	16	6.0	1.2
Benzo(a)anthracene	8.0	6.0	1.2
Chrysene	8.9	6.0	1.2
Benzo(b)fluoranthene	12	6.0	1.2
Benzo(k)fluoranthene	3.5 J	6.0	1.2
Benzo(a)pyrene	8.4	6.0	1.2
Indeno(1,2,3-cd)pyrene	4.3 J	6.0	1.2
Dibenz(a,h)anthracene	1.3 J	6.0	1.2
Benzo(g,h,i)perylene	5.2 J	6.0	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	56	43-120
2-Fluorobiphenyl	47	36-120
Terphenyl-d14	78	56-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB8.8-8.5	Batch#:	262768
Lab ID:	302238-015	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	dry	Analyzed:	08/31/18
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
Naphthalene	1.7 J	5.9	1.2
Acenaphthylene	ND	5.9	1.2
Acenaphthene	5.0 J	5.9	1.2
Fluorene	4.7 J	5.9	1.2
Phenanthrene	200	5.9	1.2
Anthracene	41	5.9	1.2
Fluoranthene	340	5.9	1.2
Pyrene	320	5.9	1.2
Benzo(a)anthracene	160	5.9	1.2
Chrysene	170	5.9	1.2
Benzo(b)fluoranthene	210	5.9	1.2
Benzo(k)fluoranthene	70	5.9	1.2
Benzo(a)pyrene	150	5.9	1.2
Indeno(1,2,3-cd)pyrene	84	5.9	1.2
Dibenz(a,h)anthracene	27	5.9	1.2
Benzo(g,h,i)perylene	92	5.9	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	70	43-120
2-Fluorobiphenyl	64	36-120
Terphenyl-d14	91	56-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	NRLF4-SB8.9-9.5	Batch#:	262768
Lab ID:	302238-016	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	dry	Analyzed:	08/31/18
Diln Fac:	1.000		

Moisture: 17%

Analyte	Result	RL	MDL
Naphthalene	ND	6.0	1.2
Acenaphthylene	ND	6.0	1.2
Acenaphthene	ND	6.0	1.2
Fluorene	ND	6.0	1.2
Phenanthrene	27	6.0	1.2
Anthracene	5.0 J	6.0	1.2
Fluoranthene	50	6.0	1.2
Pyrene	46	6.0	1.2
Benzo(a)anthracene	22	6.0	1.2
Chrysene	24	6.0	1.2
Benzo(b)fluoranthene	32	6.0	1.2
Benzo(k)fluoranthene	10	6.0	1.2
Benzo(a)pyrene	21	6.0	1.2
Indeno(1,2,3-cd)pyrene	13	6.0	1.2
Dibenz(a,h)anthracene	4.2 J	6.0	1.2
Benzo(g,h,i)perylene	17	6.0	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	57	43-120
2-Fluorobiphenyl	55	36-120
Terphenyl-d14	80	56-120

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC944512	Batch#:	262666
Matrix:	Soil	Prepared:	08/21/18
Units:	ug/Kg	Analyzed:	08/21/18

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	1.0
Acenaphthylene	ND	5.0	1.0
Acenaphthene	ND	5.0	1.0
Fluorene	ND	5.0	1.0
Phenanthrene	ND	5.0	1.0
Anthracene	ND	5.0	1.0
Fluoranthene	ND	5.0	1.0
Pyrene	ND	5.0	1.0
Benzo(a)anthracene	ND	5.0	1.0
Chrysene	ND	5.0	1.0
Benzo(b)fluoranthene	ND	5.0	1.0
Benzo(k)fluoranthene	ND	5.0	1.0
Benzo(a)pyrene	ND	5.0	1.0
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0
Dibenz(a,h)anthracene	ND	5.0	1.0
Benzo(g,h,i)perylene	ND	5.0	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	94	43-120
2-Fluorobiphenyl	89	36-120
Terphenyl-d14	94	56-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC944513	Batch#:	262666
Matrix:	Soil	Prepared:	08/21/18
Units:	ug/Kg	Analyzed:	08/21/18

Analyte	Spiked	Result	%REC	Limits
Acenaphthene	33.33	29.68	89	54-120
Pyrene	33.33	33.01	99	65-120

Surrogate	%REC	Limits
Nitrobenzene-d5	96	43-120
2-Fluorobiphenyl	87	36-120
Terphenyl-d14	88	56-120

Batch QC Report

Semivolatile Organics by GC/MS SIM			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	ZZZZZZZZZZ	Batch#:	262666
MSS Lab ID:	302514-003	Sampled:	08/20/18
Matrix:	Soil	Received:	08/20/18
Units:	ug/Kg	Prepared:	08/21/18
Basis:	as received	Analyzed:	08/22/18
Diln Fac:	1.000		

Type: MS Lab ID: QC944514

Analyte	MSS Result	Spiked	Result	%REC	Limits
Acenaphthene	<0.9901	33.72	29.51	88	44-120
Pyrene	4.112	33.72	39.72	106	51-128

Surrogate	%REC	Limits
Nitrobenzene-d5	79	43-120
2-Fluorobiphenyl	84	36-120
Terphenyl-d14	92	56-120

Type: MSD Lab ID: QC944515

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Acenaphthene	33.83	29.31	87	44-120	1	39
Pyrene	33.83	39.47	105	51-128	1	50

Surrogate	%REC	Limits
Nitrobenzene-d5	77	43-120
2-Fluorobiphenyl	83	36-120
Terphenyl-d14	93	56-120

RPD= Relative Percent Difference

Batch QC Report

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC944917	Batch#:	262768
Matrix:	Soil	Prepared:	08/23/18
Units:	ug/Kg	Analyzed:	08/29/18

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	1.0
Acenaphthylene	ND	5.0	1.0
Acenaphthene	ND	5.0	1.0
Fluorene	ND	5.0	1.0
Phenanthrene	ND	5.0	1.0
Anthracene	ND	5.0	1.0
Fluoranthene	ND	5.0	1.0
Pyrene	ND	5.0	1.0
Benzo(a)anthracene	ND	5.0	1.0
Chrysene	ND	5.0	1.0
Benzo(b)fluoranthene	ND	5.0	1.0
Benzo(k)fluoranthene	ND	5.0	1.0
Benzo(a)pyrene	ND	5.0	1.0
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0
Dibenz(a,h)anthracene	ND	5.0	1.0
Benzo(g,h,i)perylene	ND	5.0	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	73	43-120
2-Fluorobiphenyl	78	36-120
Terphenyl-d14	79	56-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

**Semivolatile Organics by GC/MS SIM**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC944918	Batch#:	262768
Matrix:	Soil	Prepared:	08/23/18
Units:	ug/Kg	Analyzed:	08/29/18

Analyte	Spiked	Result	%REC	Limits
Acenaphthene	33.33	27.00	81	54-120
Pyrene	33.33	26.52	80	65-120

Surrogate	%REC	Limits
Nitrobenzene-d5	74	43-120
2-Fluorobiphenyl	78	36-120
Terphenyl-d14	78	56-120

Batch QC Report

Semivolatile Organics by GC/MS SIM			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3550C
Project#:	103S582307.01	Analysis:	EPA 8270C-SIM
Field ID:	ZZZZZZZZZZ	Batch#:	262768
MSS Lab ID:	302554-004	Sampled:	08/20/18
Matrix:	Soil	Received:	08/20/18
Units:	ug/Kg	Prepared:	08/23/18
Basis:	as received	Analyzed:	08/29/18
Diln Fac:	1.000		

Type: MS Lab ID: QC944919

Analyte	MSS Result	Spiked	Result	%REC	Limits
Acenaphthene	<0.9947	33.01	24.06	73	44-120
Pyrene	<0.9947	33.01	27.65	84	51-128

Surrogate	%REC	Limits
Nitrobenzene-d5	71	43-120
2-Fluorobiphenyl	65	36-120
Terphenyl-d14	83	56-120

Type: MSD Lab ID: QC944920

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Acenaphthene	33.13	23.28	70	44-120	4	39
Pyrene	33.13	27.09	82	51-128	2	50

Surrogate	%REC	Limits
Nitrobenzene-d5	67	43-120
2-Fluorobiphenyl	62	36-120
Terphenyl-d14	81	56-120

RPD= Relative Percent Difference





# Enthalpy Analytical

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 302238

**ANALYTICAL REPORT**

PCBs

Tetra Tech EMI  
1999 Harrison Street  
Oakland, CA 94612

Project : 103S582307.01  
Location : RFS MFA  
Level : IV

<u>Sample ID</u>	<u>Lab ID</u>
NRLF4-SB3.0-0.5	302238-001
NRLF4-SB3.2-2.5	302238-002
NRLF4-SB3.4-4.5	302238-003
NRLF4-SB3.6-6.5	302238-004
NRLF4-SB3.7-7.5	302238-005
NRLF4-SB5.0-0.5	302238-006
NRLF4-SB5.2-2.5	302238-007
NRLF4-SB5.4-4.5	302238-008
NRLF4-SB5.6-6.5	302238-009
NRLF4-SB5.8-8.5	302238-010
NRLF4-SB8.0-0.5	302238-011
NRLF4-SB8.2-2.5	302238-012
NRLF4-SB8.4-4.5	302238-013
NRLF4-SB8.6-6.5	302238-014
NRLF4-SB8.8-8.5	302238-015
NRLF4-SB8.9-9.5	302238-016

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_

Mike Dahlquist  
Project Manager

mike.dahlquist@enthalpy.com  
(510) 204-2225 Ext 13101

Date: 09/05/2018

**CASE NARRATIVE  
PCBS (EPA 8082)**

Laboratory number: 302238  
Client: Tetra Tech EMI  
Project: 103S582307.01  
Location: RFS MFA  
Request Date: 08/10/18  
Samples Received: 08/10/18

This data package contains sample and QC results for sixteen soil samples, requested for the above referenced project on 08/10/18. See attached cooler receipt form for any sample receipt problems or discrepancies.

**PCBs (EPA 8082):**

All samples underwent sulfuric acid cleanup using EPA Method 3665A.

All samples underwent sulfur cleanup using the copper option in EPA Method 3660B.

High response was observed for Aroclor-1260 in the CCV analyzed 08/16/18 21:16; this analyte was not detected at or above the RL in the associated samples.

Matrix spikes were not performed for this analysis in batch 262472 due to insufficient sample amount.

No other analytical problems were encountered.

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB3.0-0.5	Batch#:	262472
Lab ID:	302238-001	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 2%

Analyte	Result	RL	MDL
Aroclor-1016	ND	19	6.8
Aroclor-1221	ND	38	18
Aroclor-1232	ND	19	8.9
Aroclor-1242	ND	19	8.2
Aroclor-1248	ND	19	8.8
Aroclor-1254	ND	19	7.0
Aroclor-1260	9.9 J	19	4.4

Surrogate	%REC	Limits
Decachlorobiphenyl	119	37-170

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Polychlorinated Biphenyls (PCBs)			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB3.2-2.5	Batch#:	262472
Lab ID:	302238-002	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 15%

Analyte	Result	RL	MDL
Aroclor-1016	ND	22	8.0
Aroclor-1221	ND	45	21
Aroclor-1232	ND	22	10
Aroclor-1242	ND	22	9.6
Aroclor-1248	ND	22	10
Aroclor-1254	ND	22	8.2
Aroclor-1260	13 J	22	5.2

Surrogate	%REC	Limits
Decachlorobiphenyl	106	37-170

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB3.4-4.5	Batch#:	262472
Lab ID:	302238-003	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 17%

Analyte	Result	RL	MDL
Aroclor-1016	ND	23	8.3
Aroclor-1221	ND	47	22
Aroclor-1232	ND	23	11
Aroclor-1242	ND	23	10
Aroclor-1248	ND	23	11
Aroclor-1254	ND	23	8.6
Aroclor-1260	12 J	23	5.5

Surrogate	%REC	Limits
Decachlorobiphenyl	106	37-170

J= Estimated value  
 ND= Not Detected at or above MDL  
 RL= Reporting Limit  
 MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB3.6-6.5	Batch#:	262472
Lab ID:	302238-004	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 18%

Analyte	Result	RL	MDL
Aroclor-1016	ND	24	8.5
Aroclor-1221	ND	48	23
Aroclor-1232	ND	24	11
Aroclor-1242	ND	24	10
Aroclor-1248	ND	24	11
Aroclor-1254	ND	24	8.7
Aroclor-1260	ND	24	5.5

Surrogate	%REC	Limits
Decachlorobiphenyl	95	37-170

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB3.7-7.5	Batch#:	262472
Lab ID:	302238-005	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 17%

Analyte	Result	RL	MDL
Aroclor-1016	ND	23	8.3
Aroclor-1221	ND	47	22
Aroclor-1232	ND	23	11
Aroclor-1242	ND	23	10
Aroclor-1248	ND	23	11
Aroclor-1254	ND	23	8.6
Aroclor-1260	ND	23	5.4

Surrogate	%REC	Limits
Decachlorobiphenyl	105	37-170

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB5.0-0.5	Batch#:	262472
Lab ID:	302238-006	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 4%

Analyte	Result	RL	MDL
Aroclor-1016	ND	21	7.3
Aroclor-1221	ND	41	20
Aroclor-1232	ND	21	9.6
Aroclor-1242	ND	21	8.9
Aroclor-1248	ND	21	9.5
Aroclor-1254	ND	21	7.6
Aroclor-1260	14 J	21	4.8

Surrogate	%REC	Limits
Decachlorobiphenyl	101	37-170

J= Estimated value  
 ND= Not Detected at or above MDL  
 RL= Reporting Limit  
 MDL= Method Detection Limit



**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB5.2-2.5	Batch#:	262472
Lab ID:	302238-007	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 14%

Analyte	Result	RL	MDL
Aroclor-1016	ND	23	8.2
Aroclor-1221	ND	46	22
Aroclor-1232	ND	23	11
Aroclor-1242	ND	23	10
Aroclor-1248	ND	23	11
Aroclor-1254	ND	23	8.5
Aroclor-1260	36	23	5.4

Surrogate	%REC	Limits
Decachlorobiphenyl	97	37-170

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB5.4-4.5	Batch#:	262472
Lab ID:	302238-008	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
Aroclor-1016	ND	24	8.5
Aroclor-1221	ND	48	23
Aroclor-1232	ND	24	11
Aroclor-1242	ND	24	10
Aroclor-1248	ND	24	11
Aroclor-1254	ND	24	8.7
Aroclor-1260	5.7 J	24	5.5

Surrogate	%REC	Limits
Decachlorobiphenyl	104	37-170

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB5.6-6.5	Batch#:	262472
Lab ID:	302238-009	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
Aroclor-1016	ND	24	8.3
Aroclor-1221	ND	47	22
Aroclor-1232	ND	24	11
Aroclor-1242	ND	24	10
Aroclor-1248	ND	24	11
Aroclor-1254	ND	24	8.6
Aroclor-1260	ND	24	5.5

Surrogate	%REC	Limits
Decachlorobiphenyl	99	37-170

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB5.8-8.5	Batch#:	262472
Lab ID:	302238-010	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 15%

Analyte	Result	RL	MDL
Aroclor-1016	ND	23	8.1
Aroclor-1221	ND	46	22
Aroclor-1232	ND	23	11
Aroclor-1242	ND	23	9.8
Aroclor-1248	ND	23	10
Aroclor-1254	ND	23	8.4
Aroclor-1260	6.7 J	23	5.3

Surrogate	%REC	Limits
Decachlorobiphenyl	98	37-170

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB8.0-0.5	Batch#:	262472
Lab ID:	302238-011	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 8%

Analyte	Result	RL	MDL
Aroclor-1016	ND	21	7.4
Aroclor-1221	ND	41	20
Aroclor-1232	ND	21	9.7
Aroclor-1242	ND	21	8.9
Aroclor-1248	ND	21	9.5
Aroclor-1254	ND	21	7.6
Aroclor-1260	22	21	4.8

Surrogate	%REC	Limits
Decachlorobiphenyl	95	37-170

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB8.2-2.5	Batch#:	262472
Lab ID:	302238-012	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 9%

Analyte	Result	RL	MDL
Aroclor-1016	ND	20	7.2
Aroclor-1221	ND	41	19
Aroclor-1232	ND	20	9.4
Aroclor-1242	ND	20	8.7
Aroclor-1248	ND	20	9.3
Aroclor-1254	ND	20	7.4
Aroclor-1260	6.3 J	20	4.7

Surrogate	%REC	Limits
Decachlorobiphenyl	98	37-170

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB8.4-4.5	Batch#:	262472
Lab ID:	302238-013	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 15%

Analyte	Result	RL	MDL
Aroclor-1016	ND	22	7.9
Aroclor-1221	ND	45	21
Aroclor-1232	ND	22	10
Aroclor-1242	ND	22	9.6
Aroclor-1248	ND	22	10
Aroclor-1254	ND	22	8.2
Aroclor-1260	9.9 J	22	5.2

Surrogate	%REC	Limits
Decachlorobiphenyl	108	37-170

J= Estimated value  
 ND= Not Detected at or above MDL  
 RL= Reporting Limit  
 MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB8.6-6.5	Batch#:	262472
Lab ID:	302238-014	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
Aroclor-1016	ND	23	8.1
Aroclor-1221	ND	45	22
Aroclor-1232	ND	23	11
Aroclor-1242	ND	23	9.8
Aroclor-1248	ND	23	10
Aroclor-1254	ND	23	8.3
Aroclor-1260	6.6 J	23	5.3

Surrogate	%REC	Limits
Decachlorobiphenyl	103	37-170

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB8.8-8.5	Batch#:	262472
Lab ID:	302238-015	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
Aroclor-1016	ND	23	8.2
Aroclor-1221	ND	46	22
Aroclor-1232	ND	23	11
Aroclor-1242	ND	23	10
Aroclor-1248	ND	23	11
Aroclor-1254	ND	23	8.5
Aroclor-1260	12 J	23	5.4

Surrogate	%REC	Limits
Decachlorobiphenyl	100	37-170

J= Estimated value  
 ND= Not Detected at or above MDL  
 RL= Reporting Limit  
 MDL= Method Detection Limit

**Polychlorinated Biphenyls (PCBs)**

Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Field ID:	NRLF4-SB8.9-9.5	Batch#:	262472
Lab ID:	302238-016	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	ug/Kg	Prepared:	08/15/18
Basis:	dry	Analyzed:	08/16/18
Diln Fac:	1.000		

Moisture: 17%

Analyte	Result	RL	MDL
Aroclor-1016	ND	23	8.3
Aroclor-1221	ND	47	22
Aroclor-1232	ND	23	11
Aroclor-1242	ND	23	10
Aroclor-1248	ND	23	11
Aroclor-1254	ND	23	8.5
Aroclor-1260	14 J	23	5.4

Surrogate	%REC	Limits
Decachlorobiphenyl	109	37-170

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC943690	Batch#:	262472
Matrix:	Soil	Prepared:	08/15/18
Units:	ug/Kg	Analyzed:	08/16/18

Analyte	Result	RL	MDL
Aroclor-1016	ND	20	7.1
Aroclor-1221	ND	40	19
Aroclor-1232	ND	20	9.3
Aroclor-1242	ND	20	8.6
Aroclor-1248	ND	20	9.1
Aroclor-1254	ND	20	7.3
Aroclor-1260	ND	20	4.6

Surrogate	%REC	Limits
Decachlorobiphenyl	113	37-170

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S582307.01	Analysis:	EPA 8082
Matrix:	Soil	Batch#:	262472
Units:	ug/Kg	Prepared:	08/15/18
Diln Fac:	1.000	Analyzed:	08/16/18

Type: BS Lab ID: QC943691

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	500.0	562.5	113	59-160
Aroclor-1260	500.0	639.1	128	59-170

Surrogate	%REC	Limits
Decachlorobiphenyl	115	37-170

Type: BSD Lab ID: QC943692

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	500.0	517.8	104	59-160	8	35
Aroclor-1260	500.0	592.5	119	59-170	8	42

Surrogate	%REC	Limits
Decachlorobiphenyl	106	37-170

RPD= Relative Percent Difference



# Enthalpy Analytical

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 302238

## ANALYTICAL REPORT

Metals

Tetra Tech EMI  
1999 Harrison Street  
Oakland, CA 94612

Project : 103S582307.01  
Location : RFS MFA  
Level : IV

<u>Sample ID</u>	<u>Lab ID</u>
NRLF4-SB3.0-0.5	302238-001
NRLF4-SB3.2-2.5	302238-002
NRLF4-SB3.4-4.5	302238-003
NRLF4-SB3.6-6.5	302238-004
NRLF4-SB3.7-7.5	302238-005
NRLF4-SB5.0-0.5	302238-006
NRLF4-SB5.2-2.5	302238-007
NRLF4-SB5.4-4.5	302238-008
NRLF4-SB5.6-6.5	302238-009
NRLF4-SB5.8-8.5	302238-010
NRLF4-SB8.0-0.5	302238-011
NRLF4-SB8.2-2.5	302238-012
NRLF4-SB8.4-4.5	302238-013
NRLF4-SB8.6-6.5	302238-014
NRLF4-SB8.8-8.5	302238-015
NRLF4-SB8.9-9.5	302238-016

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_

Mike Dahlquist  
Project Manager

mike.dahlquist@enthalpy.com  
(510) 204-2225 Ext 13101

Date: 09/05/2018

**CASE NARRATIVE  
METALS (EPA 6010B AND EPA 7471A)**

Laboratory number: 302238  
Client: Tetra Tech EMI  
Project: 103S582307.01  
Location: RFS MFA  
Request Date: 08/10/18  
Samples Received: 08/10/18

This data package contains sample and QC results for sixteen soil samples, requested for the above referenced project on 08/10/18. See attached cooler receipt form for any sample receipt problems or discrepancies.

**Metals (EPA 6010B and EPA 7471A):**

Responses exceeding the instrument's linear range were observed for mercury in the MS/MSD of NRLF4-SB8.0-0.5 (lab # 302238-011).

High % differences were observed for mercury and lead in the serial dilution of NRLF4-SB3.0-0.5 (lab # 302238-001) and the serial dilution of NRLF4-SB8.0-0.5 (lab # 302238-011).

No other analytical problems were encountered.

Arsenic			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S582307.01	Analysis:	EPA 6010B
Analyte:	Arsenic	Batch#:	262458
Matrix:	Soil	Sampled:	08/10/18
Units:	mg/Kg	Received:	08/10/18
Basis:	dry	Prepared:	08/15/18
Diln Fac:	1.000	Analyzed:	08/15/18

Field ID	Type	Lab ID	Result	RL	MDL	Moisture
NRLF4-SB3.0-0.5	SAMPLE	302238-001	1.9	1.4	0.063	2%
NRLF4-SB3.2-2.5	SAMPLE	302238-002	3.6	1.8	0.084	15%
NRLF4-SB3.4-4.5	SAMPLE	302238-003	4.4	1.7	0.074	17%
NRLF4-SB3.6-6.5	SAMPLE	302238-004	7.4	1.7	0.076	18%
NRLF4-SB3.7-7.5	SAMPLE	302238-005	5.2	1.6	0.072	17%
NRLF4-SB5.0-0.5	SAMPLE	302238-006	7.7	1.5	0.066	4%
NRLF4-SB5.2-2.5	SAMPLE	302238-007	4.8	1.6	0.073	14%
NRLF4-SB5.4-4.5	SAMPLE	302238-008	3.4	1.6	0.072	16%
NRLF4-SB5.6-6.5	SAMPLE	302238-009	3.8	1.8	0.078	16%
NRLF4-SB5.8-8.5	SAMPLE	302238-010	3.5	1.6	0.072	15%
NRLF4-SB8.0-0.5	SAMPLE	302238-011	5.8	1.6	0.077	8%
NRLF4-SB8.2-2.5	SAMPLE	302238-012	5.5	1.6	0.077	9%
NRLF4-SB8.4-4.5	SAMPLE	302238-013	4.4	1.8	0.085	15%
NRLF4-SB8.6-6.5	SAMPLE	302238-014	6.8	1.8	0.080	16%
NRLF4-SB8.8-8.5	SAMPLE	302238-015	5.6	1.7	0.076	16%
NRLF4-SB8.9-9.5	SAMPLE	302238-016	8.3	1.8	0.079	17%
	BLANK	QC943627	ND	1.5	0.071	

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Lead			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S582307.01	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	262458
Matrix:	Soil	Sampled:	08/10/18
Units:	mg/Kg	Received:	08/10/18
Basis:	dry	Prepared:	08/15/18
Diln Fac:	1.000	Analyzed:	08/15/18

Field ID	Type	Lab ID	Result	RL	MDL	Moisture
NRLF4-SB3.0-0.5	SAMPLE	302238-001	5.8	0.95	0.054	2%
NRLF4-SB3.2-2.5	SAMPLE	302238-002	9.5	1.2	0.071	15%
NRLF4-SB3.4-4.5	SAMPLE	302238-003	9.9	1.1	0.063	17%
NRLF4-SB3.6-6.5	SAMPLE	302238-004	8.4	1.2	0.065	18%
NRLF4-SB3.7-7.5	SAMPLE	302238-005	8.2	1.1	0.062	17%
NRLF4-SB5.0-0.5	SAMPLE	302238-006	27	0.99	0.056	4%
NRLF4-SB5.2-2.5	SAMPLE	302238-007	21	1.1	0.062	14%
NRLF4-SB5.4-4.5	SAMPLE	302238-008	8.5	1.1	0.062	16%
NRLF4-SB5.6-6.5	SAMPLE	302238-009	7.8	1.2	0.067	16%
NRLF4-SB5.8-8.5	SAMPLE	302238-010	9.9	1.1	0.062	15%
NRLF4-SB8.0-0.5	SAMPLE	302238-011	26	1.1	0.066	8%
NRLF4-SB8.2-2.5	SAMPLE	302238-012	9.9	1.1	0.065	9%
NRLF4-SB8.4-4.5	SAMPLE	302238-013	8.4	1.2	0.072	15%
NRLF4-SB8.6-6.5	SAMPLE	302238-014	6.2	1.2	0.068	16%
NRLF4-SB8.8-8.5	SAMPLE	302238-015	6.1	1.2	0.065	16%
NRLF4-SB8.9-9.5	SAMPLE	302238-016	7.8	1.2	0.067	17%
	BLANK	QC943627	ND	1.0	0.061	

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit



Mercury by Cold Vapor AA			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S582307.01	Analysis:	EPA 7471A
Analyte:	Mercury	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	mg/Kg	Prepared:	08/22/18
Basis:	dry	Analyzed:	08/22/18
Batch#:	262697		

Field ID	Type	Lab ID	Result	RL	MDL	Moisture	Diln	Fac
NRLF4-SB3.0-0.5	SAMPLE	302238-001	11	0.36	0.063	2%	20.00	
NRLF4-SB3.2-2.5	SAMPLE	302238-002	0.036	0.021	0.0036	15%	1.000	
NRLF4-SB3.4-4.5	SAMPLE	302238-003	0.48	0.022	0.0039	17%	1.000	
NRLF4-SB3.6-6.5	SAMPLE	302238-004	0.038	0.020	0.0036	18%	1.000	
NRLF4-SB3.7-7.5	SAMPLE	302238-005	0.16	0.020	0.0035	17%	1.000	
NRLF4-SB5.0-0.5	SAMPLE	302238-006	11	0.37	0.065	4%	20.00	
NRLF4-SB5.2-2.5	SAMPLE	302238-007	0.65	0.019	0.0034	14%	1.000	
NRLF4-SB5.4-4.5	SAMPLE	302238-008	0.36	0.020	0.0035	16%	1.000	
NRLF4-SB5.6-6.5	SAMPLE	302238-009	0.061	0.021	0.0037	16%	1.000	
NRLF4-SB5.8-8.5	SAMPLE	302238-010	0.75	0.019	0.0033	15%	1.000	
NRLF4-SB8.0-0.5	SAMPLE	302238-011	1.5	0.17	0.029	8%	10.00	
NRLF4-SB8.2-2.5	SAMPLE	302238-012	0.038	0.019	0.0034	9%	1.000	
NRLF4-SB8.4-4.5	SAMPLE	302238-013	0.63	0.019	0.0034	15%	1.000	
NRLF4-SB8.6-6.5	SAMPLE	302238-014	0.093	0.020	0.0035	16%	1.000	
NRLF4-SB8.8-8.5	SAMPLE	302238-015	0.13	0.021	0.0036	16%	1.000	
NRLF4-SB8.9-9.5	SAMPLE	302238-016	0.14	0.019	0.0033	17%	1.000	
	BLANK	QC944623	ND	0.017	0.0029		1.000	

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Arsenic			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S582307.01	Analysis:	EPA 6010B
Analyte:	Arsenic	Diln Fac:	1.000
Field ID:	NRLF4-SB3.0-0.5	Batch#:	262458
MSS Lab ID:	302238-001	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	mg/Kg	Prepared:	08/15/18
Basis:	as received	Analyzed:	08/15/18

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC943628		52.63	52.74	100	80-120		
BSD	QC943629		51.02	51.79	102	80-120	1	20
MS	QC943630	1.837	54.35	57.71	103	80-124		
MSD	QC943631		52.08	54.03	100	80-124	2	20

RPD= Relative Percent Difference

Batch QC Report

Lead			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S582307.01	Analysis:	EPA 6010B
Analyte:	Lead	Diln Fac:	1.000
Field ID:	NRLF4-SB3.0-0.5	Batch#:	262458
MSS Lab ID:	302238-001	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	mg/Kg	Prepared:	08/15/18
Basis:	as received	Analyzed:	08/15/18

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC943628		52.63	52.89	100	80-120		
BSD	QC943629		51.02	52.11	102	80-120	2	20
MS	QC943630	5.700	54.35	51.75	85	75-125		
MSD	QC943631		52.08	48.87	83	75-125	2	20

RPD= Relative Percent Difference

Batch QC Report

Arsenic			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S582307.01	Analysis:	EPA 6010B
Analyte:	Arsenic	Basis:	as received
Field ID:	NRLF4-SB3.0-0.5	Diln Fac:	1.000
Type:	Post Digest Spike	Batch#:	262458
MSS Lab ID:	302238-001	Sampled:	08/10/18
Lab ID:	QC943632	Received:	08/10/18
Matrix:	Soil	Analyzed:	08/15/18
Units:	mg/Kg		

MSS Result	Spiked	Result	%REC	Limits
1.837	4.673	7.018	111	75-125

Batch QC Report

Lead			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S582307.01	Analysis:	EPA 6010B
Analyte:	Lead	Basis:	as received
Field ID:	NRLF4-SB3.0-0.5	Diln Fac:	1.000
Type:	Post Digest Spike	Batch#:	262458
MSS Lab ID:	302238-001	Sampled:	08/10/18
Lab ID:	QC943632	Received:	08/10/18
Matrix:	Soil	Analyzed:	08/15/18
Units:	mg/Kg		

MSS Result	Spiked	Result	%REC	Limits
5.700	4.673	9.734	86	75-125

Batch QC Report

Arsenic			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S582307.01	Analysis:	EPA 6010B
Analyte:	Arsenic	Basis:	as received
Field ID:	NRLF4-SB3.0-0.5	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	262458
MSS Lab ID:	302238-001	Sampled:	08/10/18
Lab ID:	QC943633	Received:	08/10/18
Matrix:	Soil	Analyzed:	08/15/18
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	% Diff	Lim
1.837	1.402	0.7800 J	1.402	NC	10

J= Estimated value  
 NC= Not Calculated  
 RL= Reporting Limit

Batch QC Report

Lead			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S582307.01	Analysis:	EPA 6010B
Analyte:	Lead	Basis:	as received
Field ID:	NRLF4-SB3.0-0.5	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	262458
MSS Lab ID:	302238-001	Sampled:	08/10/18
Lab ID:	QC943633	Received:	08/10/18
Matrix:	Soil	Analyzed:	08/15/18
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	% Diff	Lim
5.700	0.9346	6.432	1.168	13 *	10

\*= Value outside of QC limits; see narrative

RL= Reporting Limit

Batch QC Report

Mercury by Cold Vapor AA			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S582307.01	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	NRLF4-SB8.0-0.5	Batch#:	262697
MSS Lab ID:	302238-011	Sampled:	08/10/18
Matrix:	Soil	Received:	08/10/18
Units:	mg/Kg	Prepared:	08/22/18
Basis:	as received	Analyzed:	08/22/18

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC944624		0.1724	0.1725	100	80-120		
BSD	QC944625		0.1724	0.1763	102	80-120	2	20
MS	QC944626	1.414	0.1786	1.149 >LR	-148 NM	80-120		
MSD	QC944627		0.1724	1.202 >LR	-123 NM	80-120	NC	20

NC= Not Calculated

NM= Not Meaningful: Sample concentration > 4X spike concentration

>LR= Response exceeds instrument's linear range

RPD= Relative Percent Difference



Batch QC Report

Mercury by Cold Vapor AA			
Lab #:	302238	Location:	RFS MFA
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S582307.01	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Field ID:	NRLF4-SB8.0-0.5	Diln Fac:	50.00
Type:	Serial Dilution	Batch#:	262697
MSS Lab ID:	302238-011	Sampled:	08/10/18
Lab ID:	QC944628	Received:	08/10/18
Matrix:	Soil	Analyzed:	08/22/18
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	% Diff	Lim
1.414	0.1538	1.119	0.7692	21 *	10

\*= Value outside of QC limits; see narrative

RL= Reporting Limit



# Enthalpy Analytical

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 302238

## ANALYTICAL REPORT

Wet Chemistry

Tetra Tech EMI  
1999 Harrison Street  
Oakland, CA 94612

Project : 103S582307.01  
Location : RFS MFA  
Level : IV

<u>Sample ID</u>	<u>Lab ID</u>
NRLF4-SB3.0-0.5	302238-001
NRLF4-SB3.2-2.5	302238-002
NRLF4-SB3.4-4.5	302238-003
NRLF4-SB3.6-6.5	302238-004
NRLF4-SB3.7-7.5	302238-005
NRLF4-SB5.0-0.5	302238-006
NRLF4-SB5.2-2.5	302238-007
NRLF4-SB5.4-4.5	302238-008
NRLF4-SB5.6-6.5	302238-009
NRLF4-SB5.8-8.5	302238-010
NRLF4-SB8.0-0.5	302238-011
NRLF4-SB8.2-2.5	302238-012
NRLF4-SB8.4-4.5	302238-013
NRLF4-SB8.6-6.5	302238-014
NRLF4-SB8.8-8.5	302238-015
NRLF4-SB8.9-9.5	302238-016

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_

Mike Dahlquist  
Project Manager

mike.dahlquist@enthalpy.com  
(510) 204-2225 Ext 13101

Date: 09/05/2018

**CASE NARRATIVE  
WET CHEMISTRY (ASTM D2216-98/CLP)**

Laboratory number:           **302238**  
Client:                       **Tetra Tech EMI**  
Project:                      **103S582307.01**  
Location:                    **RFS MFA**  
Request Date:               **08/10/18**  
Samples Received:           **08/10/18**

This data package contains sample and QC results for sixteen soil samples, requested for the above referenced project on 08/10/18. See attached cooler receipt form for any sample receipt problems or discrepancies.

**Moisture (ASTM D2216-98/CLP):**

No analytical problems were encountered.

# CHAIN OF CUSTODY



Formerly Curtis & Tompkins Labs

2323 Fifth Street  
Berkeley, CA 94710

Phone (510) 486-0900  
Fax (510) 486-0532

Chain of Custody # \_\_\_\_\_

Project No: 1035582307.01 Sampler: Mike Ferris

Project Name: \_\_\_\_\_ Report To: Jason Braderson

Project P. O. No: \_\_\_\_\_ Company: Tetra Tech

EDD Format: Report Level  II  III  IV Telephone: \_\_\_\_\_

Turnaround Time:  RUSH  Standard Email: \_\_\_\_\_

C&T LOGIN # 302238

ANALYTICAL REQUEST																				
Lab No.	Sample ID.	SAMPLING		MATRIX		# of Containers	CHEMICAL PRESERVATIVE													
		Date Collected	Time Collected	Water	Solid		HCl	H2SO4	HNO3	NaOH	None									
	NRLF4-SB3.0-0.5	8/10/18		X		1														
	NRLF4-SB3.2-2.5			X		1														
	NRLF4-SB3.4-4.5			X		1														
	NRLF4-SB3.6-6.5			X		1														
	NRLF4-SB3.7-7.5			X		1														
	NRLF4-SB5.0-0.5			X		1														
	NRLF4-SB5.2-2.5			X		1														
	NRLF4-SB5.4-4.5			X		1														
	NRLF4-SB5.6-6.5			X		1														
	NRLF4-SB5.8-8.5			X		1														
	NRLF4-SB8.0-0.5			X		1														
	NRLF4-SB8.2-2.5			X		1														
	NRLF4-SB8.4-4.5			X		1														

EPA600/6-A/7471A A, PB, Hg  
 PCB - 5082A + 3650 SOX/TEH  
 PAH - 8270 SIM

Notes: \_\_\_\_\_

**SAMPLE RECEIPT**

Intact  
 Cold  
 On Ice  
 Ambient

**RELINQUISHED BY:**

[Signature] DATE 8/10 TIME: 1032

DATE: TIME:

DATE: TIME:

**RECEIVED BY:**

[Signature] DATE: 8/10/18 TIME: 10:17 AM

DATE: TIME:

DATE: TIME:

# CHAIN OF CUSTODY



Formerly Curtis & Tompkins Labs

2323 Fifth Street  
Berkeley, CA 94710

Phone (510) 486-0900  
Fax (510) 486-0532

Chain of Custody # \_\_\_\_\_

C&T LOGIN # 302258

Project No: \_\_\_\_\_ Sampler: Mike Ferrit  
 Project Name: \_\_\_\_\_ Report To: Jason Brodersen  
 Project P. O. No: \_\_\_\_\_ Company: Tetra Tech  
 EDD Format: Report Level  II  III  IV Telephone: \_\_\_\_\_  
 Turnaround Time:  RUSH  Standard Email: JASON.BRODERSEN@TETRA TECH.COM

## ANALYTICAL REQUEST

Lab No.	Sample ID.	SAMPLING		MATRIX		# of Containers	CHEMICAL PRESERVATIVE							
		Date Collected	Time Collected	Water	Solid		HCl	H2SO4	HNO3	NaOH	None			
	<u>NRLF4-SB8.6-6.5</u>	<u>8/10/18</u>			<u>X</u>	<u>1</u>								
	<u>NRLF4-SB8.8-8.5</u>	<u>I</u>			<u>X</u>	<u>1</u>								
	<u>NRLF4-SB8.9-9.5</u>	<u>I</u>			<u>X</u>	<u>1</u>								

<u>6010 A</u> <u>EPA 6010 A / 7471 A - As, Pb, Hg</u> <u>PbS - 8012 A + 3650 SXHLET</u> <u>PAH - 8270 SIM</u>																			
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

**SAMPLE RECEIPT**

Intact  
 Cold  
 On Ice  
 Ambient

**RELINQUISHED BY:**

[Signature] DATE: 8/10 TIME: 10:30

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**RECEIVED BY:**

Pat [Signature] DATE: 8/10/18 TIME: 10:17 AM

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**SAMPLE RECEIPT CHECKLIST**



Section 1: Login # 302238  
 Date Received: 8-10-18

Client: Tetra Tech  
 Project: 1035589, 307.01

Section 2: Samples received in a cooler?  Yes, how many? \_\_\_\_\_  No (skip Section 3 below)

If no cooler Sample Temp (°C): 20.0 using IR Gun #  A, or  B

Samples received on ice directly from the field. Cooling process had begun

If in cooler: Date Opened 8-10-18 By (print) TKY (sign) TKY

Shipping info (if applicable) \_\_\_\_\_

Are custody seals present?  No, or  Yes. If yes, where?  on cooler,  on samples,  on package

Date: \_\_\_\_\_ How many \_\_\_\_\_  Signature,  Initials,  None

Were custody seals intact upon arrival?  Yes  No  N/A

Section 3: **Important : Notify PM if temperature exceeds 6°C or arrive frozen.**

Packing in cooler: (if other, describe) \_\_\_\_\_

Bubble Wrap,  Foam blocks,  Bags,  None,  Cloth material,  Cardboard,  Styrofoam,  Paper towels

Samples received on ice directly from the field. Cooling process had begun

Type of ice used:  Wet,  Blue/Gel,  None Temperature blank(s) included?  Yes,  No

Temperature measured using  Thermometer ID: \_\_\_\_\_, or IR Gun #  A  B

Cooler Temp (°C): #1: 20.0, #2: \_\_\_\_\_, #3: \_\_\_\_\_, #4: \_\_\_\_\_, #5: \_\_\_\_\_, #6: \_\_\_\_\_, #7: \_\_\_\_\_

Section 4:	YES	NO	N/A
Were custody papers dry, filled out properly, and the project identifiable	<input checked="" type="checkbox"/>		
Were Method 5035 sampling containers present?		<input checked="" type="checkbox"/>	
If YES, what time were they transferred to freezer?			
Did all bottles arrive unbroken/unopened?	<input checked="" type="checkbox"/>		
Are there any missing / extra samples?		<input checked="" type="checkbox"/>	
Are samples in the appropriate containers for indicated tests?	<input checked="" type="checkbox"/>		
Are sample labels present, in good condition and complete?	<input checked="" type="checkbox"/>		
Does the container count match the COC?	<input checked="" type="checkbox"/>		
Do the sample labels agree with custody papers?	<input checked="" type="checkbox"/>		
Was sufficient amount of sample sent for tests requested?	<input checked="" type="checkbox"/>		
Did you change the hold time in LIMS for unpreserved VOAs?			<input checked="" type="checkbox"/>
Did you change the hold time in LIMS for preserved terracores?			<input checked="" type="checkbox"/>
Are bubbles > 6mm absent in VOA samples?			<input checked="" type="checkbox"/>
Was the client contacted concerning this sample delivery?		<input checked="" type="checkbox"/>	
If YES, who was called? _____ By _____ Date: _____			

Section 5:	YES	NO	N/A
Are the samples appropriately preserved? (if N/A, skip the rest of section 5)			<input checked="" type="checkbox"/>
Did you check preservatives for all bottles for each sample?			
Did you document your preservative check?			

pH strip lot# \_\_\_\_\_, pH strip lot# \_\_\_\_\_, pH strip lot# \_\_\_\_\_

Preservative added:

H2SO4 lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_

HCL lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_

HNO3 lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_

NaOH lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_

Section 6:  
 Explanations/Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Date Logged in 8-10-18

By (print) TKY (sign) TKY

Date Labeled 8-10-18

By (print) TKY (sign) TKY