



December 8, 2014

Lynn Nakashima
Berkeley Regional Office
700 Heinz Avenue, Suite 200C
Berkeley, California 94710

**Subject: LBNL Fiber Optic Distributed Acoustic Sensor (DAS) Survey Sampling Results
Richmond Field Station Site
Berkeley Global Campus at Richmond Bay
University of California, Berkeley**

Dear Ms. Nakashima:

On behalf of the University of California, Berkeley, Tetra Tech, Inc. collected soil samples at the Richmond Field Station Site at the Berkeley Global Campus at Richmond Bay. The objective of the sampling effort was to characterize near-surface soil in the area where workers will excavate two trenches to install fiber optic cables for the Lawrence Berkeley National Laboratory Fiber Optic Distributed Acoustic Sensor (DAS) Survey. The sampling and reporting for this project have been conducted consistent with the Final Soil Management Plan (SMP), Removal Action Workplan, Attachment C, dated June 18, 2014. The SMP Form A, Form B, and draft sampling strategy memorandum were submitted to DTSC on November 4, 2014; the sampling strategy memorandum was updated and submitted to DTSC on November 12, 2014.

The DAS project consists of two trenches approximately 2 feet deep and 1 foot wide to be installed west of Building 400. A north-south oriented trench will extend approximately 330 feet, and an east-west oriented trench will extend approximately 280 feet. An array of geophones will be placed on the surface as well as a small mobile trailer at the intersection of the trenches. Three temporary power poles will be installed: two in imported fill at Building 400 and one within undisturbed soil.

Sampling was conducted on November 26, 2014; trench installation is scheduled for the week of December 8, 2014. Samples were collected at two depths at five locations for a total of ten samples. This letter provides the rationale for the selected sampling locations, a summary of field sampling protocols, and results. Figure 1 presents the sampling locations, Tables 1 through 4 present the sample results, and the laboratory report is provided in Attachment 1.

Sample Locations

The DAS project is located with SMP Area 16, as identified in the SMP, Figure C-5. The sampling approach was based on the SMP Area 16 low density frequency, as identified in the SMP, Table C-3. Samples were collected at two depths at five locations within the proposed trench area, as proposed in the sampling strategy memorandum. Sample locations were placed approximately equidistant from each

other, consistent with the sampling strategy. The east-west transect was slightly shorter than presented in the sampling strategy, so the sample locations were modified in the field to meet the intent of the sampling strategy of equidistant locations. The sample originally proposed near the power pole location was collected from the actual location where the power pole is to be placed. Soil samples at all locations were collected from depths of 0-0.5 and 1.5-2 feet below ground surface.

Field Sampling Protocols

Soil samples were collected with the assistance of an auger attachment mounted to small Bobcat track loader. The auger attachment was used to loosen the soil for the shallow sample and used to arrive at the bottom sample depth for the deeper sample. At each sample depth interval, a disposable plastic scoop was used to collect the soil sample. The sampling protocol followed these steps:

1. The field sampler used a disposable plastic scoop to collect the soil sample.
2. One 16-ounce jar of soil was collected for each sample.
3. The jars were labeled and packed into an insulated cooler. The sample was transported under chain-of custody procedures directly to Curtis and Tompkins Laboratory in Berkeley, California.
4. Samples were analyzed on a 5-day turnaround.

All sample collection protocols were consistent with the SMP Final Sampling and Analysis Plan for the Soil Management Plan, Exhibit C2; there were no deviations.

Analyses Summary and Screening Criteria

Soil samples were analyzed for arsenic, lead, mercury, polychlorinated biphenyls (PCB), and polycyclic aromatic hydrocarbons (PAH), as identified in the SMP Table C-3. The analytical methods are listed below.

- Arsenic, lead, and mercury analysis by EPA 6020A/7471A
- PCB analysis by EPA 8082A
- PAH analysis by EPA 8270 SIM

The laboratory was instructed to homogenize the arsenic, lead, mercury, and PCB samples before analyses.

Tables 1 through 3 present the analytical results of the soil samples along with screening levels identified in the SMP Table C-1. No concentrations in the soil samples exceed the Category I screening criteria. The analytical results are presented in Attachment 1.

Conclusions

The soil sample concentrations are below SMP Category I screening criteria; therefore concentrations are (1) below the risk-based concentration for the construction worker, and (2) support that the soil is suitable for reuse within the project boundary.

The complete SMP Form B with signatures will be submitted to DTSC this week. Consistent with the SMP, no further reporting is required for this project.

If you have any questions or comments regarding this submittal, please call me at (510) 302-6283.

Sincerely,


Jason Brodersen, PG
Program Manager

Enclosure: Figure, Tables 1 through 3, Attachment



**TABLE 1.
METALS SOIL SAMPLING RESULTS
REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)**

	Arsenic	Lead	Mercury
<i>Commercial worker</i>	0.224	320	275
<i>Construction worker</i>	1.58	320	77.0
<i>Maintenance worker</i>	1.58	320	1,920
<i>Off-Site Receptors</i>	745	--	41,200
<i>Other</i>	16 (1)		
<i>Category I Criteria</i>	16	320	77.0
<i>Category II Criteria</i>	16	800	275
Disposal Criteria			
<i>TTLIC Criteria</i>	500	1,000	20
Sample Location - (depth in feet)			
DAS01 (0-0.5)	6	27	0.2
DAS01 (1.5-2)	6.1	14	0.2
DAS02 (0-0.5)	4.1	13	0.13
DAS02 (1.5-2)	4.2	18	0.2
DAS03 (0-0.5)	6.4	13	0.37
DAS03 (1.5-2)	3.7	6.4	0.036
DAS04 (0-0.5)	6.1	22	0.71
DAS04 (1.5-2)	4.9	13	0.17
DAS05 (0-0.5)	6.2	30	0.31
DAS05 (1.5-2)	5	13	0.14

Notes:

Bold values indicate that the result exceeded the Category I criterion.

Screening criteria based on the Final Soil Management Plan, Table C-1, July 18, 2014

1 Background concentration

-- Not applicable

TTLIC Total Threshold Limits Concentration

**TABLE 2.
PAH SOIL SAMPLING RESULTS
REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)**

	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Anthracene	Benzo(a)Anthracene	Benzo(a)Pyrene	Benzo(b)Fluoranthene	Benzo(g,h,i)Perylene	Benzo(k)Fluoranthene	Chrysene	Dibenz(a,h)Anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)Pyrene	Naphthalene	Phenanthrene	Pyrene	BAP (EQ)
Commercial worker	36.4	1,510	22,600	100,000	0.880	0.145	0.88	11,300	0.880	8.80	0.145	15,100	15,100	0.880	18.0	15,100	11,300	0.145
Construction worker	243	403	6,050	30,200	5.87	0.963	5.87	3,020	5.87	58.7	0.963	4,030	4,030	5.87	450	4,030	3,020	1.0
Maintenance worker	243	10,100	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	1.0
Off-Site Receptors	--	--	--	--	11,500	1,150	11,500	--	11,500	115,000	2,670	--	--	11,500	3.57	--	--	1,150
Other	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.4 (1)
Category I Criteria	36.4	403	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
Category II Criteria	364	4,030	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
Disposal Criteria																		
<i>TTL</i> Criteria																		
Sample Location - (depth in feet)																		
DAS01 (0-0.5)	0.0059 U	0.0059 U	0.0059 U	0.0059 U	0.0074	0.013	0.019	0.0054 J	0.0062	0.011	0.0018 J	0.015	0.0059 U	0.0051 J	0.0059 U	0.0077	0.015	0.018
DAS01 (1.5-2)	0.011 U	0.011 U	0.011 U	0.011 U	0.0099 J	0.016	0.023	0.0086 J	0.0075 J	0.015	0.0027 J	0.02	0.011 U	0.0064 J	0.011 U	0.011 J	0.018	0.023
DAS02 (0-0.5)	0.0057 U	0.0057 U	0.0057 U	0.0016 J	0.011	0.018	0.024	0.008	0.0075	0.014	0.0028 J	0.021	0.0057 U	0.007	0.0057 U	0.0071	0.019	0.025
DAS02 (1.5-2)	0.0015 J	0.0026 J	0.012	0.039	0.1	0.13	0.18	0.028	0.053	0.1	0.012	0.29	0.012	0.031	0.0039 J	0.15	0.19	0.17
DAS03 (0-0.5)	0.006 U	0.006 U	0.006 U	0.006 U	0.0055 J	0.0083	0.011	0.0077	0.0033 J	0.0077	0.002 J	0.01	0.006 U	0.0061	0.006 U	0.0048 J	0.0095	0.013
DAS03 (1.5-2)	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0015 J	0.0014 J	0.0062 U	0.0062 U	0.0062 U	0.0016 J	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0016 J	0.00015
DAS04 (0-0.5)	0.0057 U	0.0057 U	0.0057 U	0.0046 J	0.034	0.056	0.097	0.022	0.035	0.04	0.0066	0.065	0.0012 J	0.023	0.0057 U	0.021	0.052	0.078
DAS04 (1.5-2)	0.0058 U	0.0058 U	0.0058 U	0.0019 J	0.012	0.015	0.02	0.0073	0.0069	0.011	0.0021 J	0.024	0.0058 U	0.0069	0.0058 U	0.0092	0.018	0.021
DAS05 (0-0.5)	0.006 U	0.006 U	0.006 U	0.006 U	0.0055 J	0.0092	0.012	0.0061	0.0038 J	0.0074	0.0016 J	0.012	0.006 U	0.0061	0.006 U	0.0053 J	0.011	0.013
DAS05 (1.5-2)	0.0057 U	0.0057 U	0.0057 U	0.0057 U	0.0058	0.0081	0.011	0.0064	0.0033 J	0.0071	0.002 J	0.013	0.0057 U	0.0062	0.0057 U	0.0049 J	0.01	0.012

Notes:

Bold values indicate that the result exceeded the Category I criterion.

Screening criteria based on the Final Soil Management Plan, Table C-1, July 18, 2014.

1 Ambient concentration

-- Not applicable

J Estimated value

TTL Total Threshold Limits Concentration

U Not detected

**TABLE 3.
PCB SOIL SAMPLING RESULTS
REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)**

	Aroclor-1260	Total PCBs
<i>Commercial worker</i>	0.528	--
<i>Construction worker</i>	3.50	--
<i>Maintenance worker</i>	3.50	--
<i>Off-Site Receptors</i>	5,620	--
<i>Other</i>	1 (1)	1 (1)
<i>Category I Criteria</i>	1	1
<i>Category II Criteria</i>	1	1
Disposal Criteria		
<i>TTLIC Criteria</i>	--	--
Sample Location - (depth in feet)		
DAS01 (0-0.5)	0.0077 J	0.0077
DAS01 (1.5-2)	0.0054 J	0.0054
DAS02 (0-0.5)	0.003 J	0.003
DAS02 (1.5-2)	0.0035 J	0.0035
DAS03 (0-0.5)	0.011 U	0
DAS03 (1.5-2)	0.012 U	0
DAS04 (0-0.5)	0.0045 J	0.0045
DAS04 (1.5-2)	0.011 U	0
DAS05 (0-0.5)	0.012 U	0
DAS05 (1.5-2)	0.011 U	0

Notes:

Bold values indicate that the result exceeded the Category I criterion.

Screening criteria based on the Final Soil Management Plan, Table C-1, July 18, 2014.

- 1 Other criteria for PCBs are based on Toxic Substances Control Act (TSCA) criteria for high occupancy areas with no cap.
- Not applicable
- NA Not available
- J Estimated value
- U Not detected



Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

Laboratory Job Number 262855

ANALYTICAL REPORT

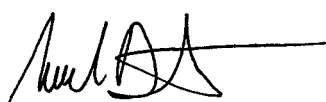
Semivolatile Organics by GC/MS SIM

Tetra Tech EMI
1999 Harrison Street
Oakland, CA 94612

Project : 103S225322.02
Location : Seismic
Level : IV

<u>Sample ID</u>	<u>Lab ID</u>
RFS20141126DAS0401	262855-001
RFS20141126DAS0402	262855-002
RFS20141126DAS0501	262855-003
RFS20141126DAS0502	262855-004
RFS20141126DAS0301	262855-005
RFS20141126DAS0302	262855-006
RFS20141126DAS0201	262855-007
RFS20141126DAS0202	262855-008
RFS20141126DAS0101	262855-009
RFS20141126DAS0102	262855-010

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. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Mike J. Dahlquist
Project Manager
mike.dahlquist@ctberk.com

Date: 12/05/2014

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

Laboratory number: 262855
Client: Tetra Tech EMI
Project: 103S225322.02
Location: Seismic
Request Date: 11/26/14
Samples Received: 11/26/14

This data package contains sample and QC results for ten soil samples, requested for the above referenced project on 11/26/14. See attached cooler receipt form for any sample receipt problems or discrepancies.

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

Low internal standard responses were observed for perylene-d12 in the MS/MSD of RFS20141126DAS0401 (lab # 262855-001).

High recoveries were observed for many analytes in the MS/MSD of RFS20141126DAS0401 (lab # 262855-001); the LCS was within limits, and the associated RPDs were within limits.

RFS20141126DAS0102 (lab # 262855-010) was diluted due to the dark and viscous nature of the sample extract.

No other analytical problems were encountered.

Chain of Custody

262855

135 Main St. Suite 1800 San Francisco, CA 94105 415-543-4880 Fax 415-543-5480

Lab PO#: 14 CAK 25 Lab: CURTIS + Tompkins TIEMI technical contact: SARA WOLLEY TIEMI project manager: JASON BRORDERSEN

No./Container Types

Preservative Added

Analysis Required

Table with columns: Project name (SPASMIC), Project (C/O) number (1035225322.02), Sample ID, Sample Location (Pt. ID), Date, Time, Matrix, MS / MSD, and various analysis checkboxes (VOA, SVOA, Fe/P/C/Bs, Metals, TPH Purgeables, TPH Extractables).

Table with columns: Name (print), Company Name, Date, Time. Includes entries for QUINN JOHNSON and Pat Gonzalez.

Turnaround time/remarks:

* ARSENIC, lead, mercury only (individual analysis), LAB to homogenize samples ONLY for metals, PCBs TAT - 5 Days. ** DONT HOMOGENIZE PAH

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 262855 Date Received 11/26/14 Number of coolers 1
Client Tetra Tech Project 103S225322-02

Date Opened 11/25 By (print) MC (sign) [Signature]
Date Logged in 1 By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

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

7. Temperature documentation: * Notify PM if temperature exceeds 6°C
Type of ice used: Wet, Blue/Gel, None Temp(°C)
Samples Received on ice & cold without a temperature blank; temp. taken with IR gun
Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES NO

If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Results & QC Summary

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0401	Batch#:	217953
Lab ID:	262855-001	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Moisture: 11%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	38	4.8
Naphthalene	ND	5.7	1.1
1-Methylnaphthalene	ND	5.7	1.1
2-Methylnaphthalene	ND	5.7	1.1
Acenaphthylene	ND	5.7	1.1
Acenaphthene	ND	5.7	1.1
Fluorene	1.2 J	5.7	1.1
Phenanthrene	21	5.7	1.1
Anthracene	4.6 J	5.7	1.1
Fluoranthene	65	5.7	1.1
Pyrene	52	5.7	1.1
Benzo(a)anthracene	34	5.7	1.1
Chrysene	40	5.7	1.1
Benzo(b)fluoranthene	97	5.7	1.1
Benzo(k)fluoranthene	35	5.7	1.1
Benzo(a)pyrene	56	5.7	1.1
Indeno(1,2,3-cd)pyrene	23	5.7	1.1
Dibenz(a,h)anthracene	6.6	5.7	1.1
Benzo(g,h,i)perylene	22	5.7	1.4

Surrogate	%REC	Limits
Nitrobenzene-d5	70	46-120
2-Fluorobiphenyl	74	52-120
Terphenyl-d14	84	54-132

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0402	Batch#:	217953
Lab ID:	262855-002	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Moisture: 12%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	39	4.9
Naphthalene	ND	5.8	1.2
1-Methylnaphthalene	ND	5.8	1.2
2-Methylnaphthalene	ND	5.8	1.2
Acenaphthylene	ND	5.8	1.2
Acenaphthene	ND	5.8	1.2
Fluorene	ND	5.8	1.2
Phenanthrene	9.2	5.8	1.2
Anthracene	1.9 J	5.8	1.2
Fluoranthene	24	5.8	1.2
Pyrene	18	5.8	1.2
Benzo(a)anthracene	12	5.8	1.2
Chrysene	11	5.8	1.2
Benzo(b)fluoranthene	20	5.8	1.2
Benzo(k)fluoranthene	6.9	5.8	1.2
Benzo(a)pyrene	15	5.8	1.2
Indeno(1,2,3-cd)pyrene	6.9	5.8	1.2
Dibenz(a,h)anthracene	2.1 J	5.8	1.2
Benzo(g,h,i)perylene	7.3	5.8	1.4

Surrogate	%REC	Limits
Nitrobenzene-d5	69	46-120
2-Fluorobiphenyl	79	52-120
Terphenyl-d14	91	54-132

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0501	Batch#:	217953
Lab ID:	262855-003	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	40	2.1
Naphthalene	ND	6.0	1.2
1-Methylnaphthalene	ND	6.0	1.2
2-Methylnaphthalene	ND	6.0	1.2
Acenaphthylene	ND	6.0	1.2
Acenaphthene	ND	6.0	1.2
Fluorene	ND	6.0	1.2
Phenanthrene	5.3 J	6.0	1.2
Anthracene	ND	6.0	1.2
Fluoranthene	12	6.0	1.2
Pyrene	11	6.0	1.2
Benzo(a)anthracene	5.5 J	6.0	1.2
Chrysene	7.4	6.0	1.2
Benzo(b)fluoranthene	12	6.0	1.2
Benzo(k)fluoranthene	3.8 J	6.0	1.2
Benzo(a)pyrene	9.2	6.0	1.2
Indeno(1,2,3-cd)pyrene	6.1	6.0	1.2
Dibenz(a,h)anthracene	1.6 J	6.0	1.2
Benzo(g,h,i)perylene	6.1	6.0	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	67	46-120
2-Fluorobiphenyl	69	52-120
Terphenyl-d14	68	54-132

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

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0502	Batch#:	217953
Lab ID:	262855-004	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Moisture: 12%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	38	2.0
Naphthalene	ND	5.7	1.1
1-Methylnaphthalene	ND	5.7	1.1
2-Methylnaphthalene	ND	5.7	1.1
Acenaphthylene	ND	5.7	1.1
Acenaphthene	ND	5.7	1.1
Fluorene	ND	5.7	1.1
Phenanthrene	4.9 J	5.7	1.1
Anthracene	ND	5.7	1.1
Fluoranthene	13	5.7	1.1
Pyrene	10	5.7	1.1
Benzo(a)anthracene	5.8	5.7	1.1
Chrysene	7.1	5.7	1.1
Benzo(b)fluoranthene	11	5.7	1.1
Benzo(k)fluoranthene	3.3 J	5.7	1.1
Benzo(a)pyrene	8.1	5.7	1.1
Indeno(1,2,3-cd)pyrene	6.2	5.7	1.1
Dibenz(a,h)anthracene	2.0 J	5.7	1.1
Benzo(g,h,i)perylene	6.4	5.7	1.1

Surrogate	%REC	Limits
Nitrobenzene-d5	81	46-120
2-Fluorobiphenyl	76	52-120
Terphenyl-d14	73	54-132

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0301	Batch#:	217953
Lab ID:	262855-005	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Moisture: 17%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	40	2.1
Naphthalene	ND	6.0	1.2
1-Methylnaphthalene	ND	6.0	1.2
2-Methylnaphthalene	ND	6.0	1.2
Acenaphthylene	ND	6.0	1.2
Acenaphthene	ND	6.0	1.2
Fluorene	ND	6.0	1.2
Phenanthrene	4.8 J	6.0	1.2
Anthracene	ND	6.0	1.2
Fluoranthene	10	6.0	1.2
Pyrene	9.5	6.0	1.2
Benzo(a)anthracene	5.5 J	6.0	1.2
Chrysene	7.7	6.0	1.2
Benzo(b)fluoranthene	11	6.0	1.2
Benzo(k)fluoranthene	3.3 J	6.0	1.2
Benzo(a)pyrene	8.3	6.0	1.2
Indeno(1,2,3-cd)pyrene	6.1	6.0	1.2
Dibenz(a,h)anthracene	2.0 J	6.0	1.2
Benzo(g,h,i)perylene	7.7	6.0	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	68	46-120
2-Fluorobiphenyl	65	52-120
Terphenyl-d14	67	54-132

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0302	Batch#:	217953
Lab ID:	262855-006	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Moisture: 18%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	41	2.2
Naphthalene	ND	6.2	1.2
1-Methylnaphthalene	ND	6.2	1.2
2-Methylnaphthalene	ND	6.2	1.2
Acenaphthylene	ND	6.2	1.2
Acenaphthene	ND	6.2	1.2
Fluorene	ND	6.2	1.2
Phenanthrene	ND	6.2	1.2
Anthracene	ND	6.2	1.2
Fluoranthene	1.6 J	6.2	1.2
Pyrene	1.6 J	6.2	1.2
Benzo(a)anthracene	ND	6.2	1.2
Chrysene	ND	6.2	1.2
Benzo(b)fluoranthene	1.5 J	6.2	1.2
Benzo(k)fluoranthene	ND	6.2	1.2
Benzo(a)pyrene	ND	6.2	1.2
Indeno(1,2,3-cd)pyrene	ND	6.2	1.2
Dibenz(a,h)anthracene	ND	6.2	1.2
Benzo(g,h,i)perylene	1.4 J	6.2	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	79	46-120
2-Fluorobiphenyl	74	52-120
Terphenyl-d14	73	54-132

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0201	Batch#:	217953
Lab ID:	262855-007	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Moisture: 14%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	38	2.0
Naphthalene	ND	5.7	1.1
1-Methylnaphthalene	ND	5.7	1.1
2-Methylnaphthalene	ND	5.7	1.1
Acenaphthylene	ND	5.7	1.1
Acenaphthene	ND	5.7	1.1
Fluorene	ND	5.7	1.1
Phenanthrene	7.1	5.7	1.1
Anthracene	1.6 J	5.7	1.1
Fluoranthene	21	5.7	1.1
Pyrene	19	5.7	1.1
Benzo(a)anthracene	11	5.7	1.1
Chrysene	14	5.7	1.1
Benzo(b)fluoranthene	24	5.7	1.1
Benzo(k)fluoranthene	7.5	5.7	1.1
Benzo(a)pyrene	18	5.7	1.1
Indeno(1,2,3-cd)pyrene	7.0	5.7	1.1
Dibenz(a,h)anthracene	2.8 J	5.7	1.1
Benzo(g,h,i)perylene	8.0	5.7	1.1

Surrogate	%REC	Limits
Nitrobenzene-d5	65	46-120
2-Fluorobiphenyl	65	52-120
Terphenyl-d14	64	54-132

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0202	Batch#:	217953
Lab ID:	262855-008	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Moisture: 12%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	38	2.0
Naphthalene	3.9 J	5.7	1.1
1-Methylnaphthalene	1.5 J	5.7	1.1
2-Methylnaphthalene	2.6 J	5.7	1.1
Acenaphthylene	ND	5.7	1.1
Acenaphthene	12	5.7	1.1
Fluorene	12	5.7	1.1
Phenanthrene	150	5.7	1.1
Anthracene	39	5.7	1.1
Fluoranthene	290	5.7	1.1
Pyrene	190	5.7	1.1
Benzo(a)anthracene	100	5.7	1.1
Chrysene	100	5.7	1.1
Benzo(b)fluoranthene	180	5.7	1.1
Benzo(k)fluoranthene	53	5.7	1.1
Benzo(a)pyrene	130	5.7	1.1
Indeno(1,2,3-cd)pyrene	31	5.7	1.1
Dibenz(a,h)anthracene	12	5.7	1.1
Benzo(g,h,i)perylene	28	5.7	1.1

Surrogate	%REC	Limits
Nitrobenzene-d5	73	46-120
2-Fluorobiphenyl	76	52-120
Terphenyl-d14	60	54-132

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0101	Batch#:	217953
Lab ID:	262855-009	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Moisture: 14%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	39	2.1
Naphthalene	ND	5.9	1.2
1-Methylnaphthalene	ND	5.9	1.2
2-Methylnaphthalene	ND	5.9	1.2
Acenaphthylene	ND	5.9	1.2
Acenaphthene	ND	5.9	1.2
Fluorene	ND	5.9	1.2
Phenanthrene	7.7	5.9	1.2
Anthracene	ND	5.9	1.2
Fluoranthene	15	5.9	1.2
Pyrene	15	5.9	1.2
Benzo(a)anthracene	7.4	5.9	1.2
Chrysene	11	5.9	1.2
Benzo(b)fluoranthene	19	5.9	1.2
Benzo(k)fluoranthene	6.2	5.9	1.2
Benzo(a)pyrene	13	5.9	1.2
Indeno(1,2,3-cd)pyrene	5.1 J	5.9	1.2
Dibenz(a,h)anthracene	1.8 J	5.9	1.2
Benzo(g,h,i)perylene	5.4 J	5.9	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	70	46-120
2-Fluorobiphenyl	69	52-120
Terphenyl-d14	68	54-132

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

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0102	Batch#:	217953
Lab ID:	262855-010	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	2.000		

Moisture: 9%

Analyte	Result	RL	MDL
1,4-Dioxane	ND	74	3.9
Naphthalene	ND	11	2.2
1-Methylnaphthalene	ND	11	2.2
2-Methylnaphthalene	ND	11	2.2
Acenaphthylene	ND	11	2.2
Acenaphthene	ND	11	2.2
Fluorene	ND	11	2.2
Phenanthrene	11 J	11	2.2
Anthracene	ND	11	2.2
Fluoranthene	20	11	2.2
Pyrene	18	11	2.2
Benzo(a)anthracene	9.9 J	11	2.2
Chrysene	15	11	2.2
Benzo(b)fluoranthene	23	11	2.2
Benzo(k)fluoranthene	7.5 J	11	2.2
Benzo(a)pyrene	16	11	2.2
Indeno(1,2,3-cd)pyrene	6.4 J	11	2.2
Dibenz(a,h)anthracene	2.7 J	11	2.2
Benzo(g,h,i)perylene	8.6 J	11	2.2

Surrogate	%REC	Limits
Nitrobenzene-d5	75	46-120
2-Fluorobiphenyl	73	52-120
Terphenyl-d14	72	54-132

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 #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC767690	Batch#:	217953
Matrix:	Soil	Prepared:	12/01/14
Units:	ug/Kg	Analyzed:	12/02/14

Analyte	Result	RL	MDL
1,4-Dioxane	ND	33	4.2
Naphthalene	ND	5.0	0.99
1-Methylnaphthalene	ND	5.0	0.99
2-Methylnaphthalene	ND	5.0	0.99
Acenaphthylene	ND	5.0	0.99
Acenaphthene	ND	5.0	0.99
Fluorene	ND	5.0	0.99
Phenanthrene	ND	5.0	0.99
Anthracene	ND	5.0	0.99
Fluoranthene	ND	5.0	0.99
Pyrene	ND	5.0	0.99
Benzo(a)anthracene	ND	5.0	0.99
Chrysene	ND	5.0	0.99
Benzo(b)fluoranthene	ND	5.0	0.99
Benzo(k)fluoranthene	ND	5.0	0.99
Benzo(a)pyrene	ND	5.0	0.99
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0
Dibenz(a,h)anthracene	ND	5.0	0.99
Benzo(g,h,i)perylene	ND	5.0	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	86	46-120
2-Fluorobiphenyl	95	52-120
Terphenyl-d14	102	54-132

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report
Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC767691	Batch#:	217953
Matrix:	Soil	Prepared:	12/01/14
Units:	ug/Kg	Analyzed:	12/02/14

Analyte	Spiked	Result	%REC	Limits
1,4-Dioxane	99.60	32.77	33	12-120
Naphthalene	33.20	20.75	63	52-120
1-Methylnaphthalene	33.20	20.86	63	49-120
2-Methylnaphthalene	33.20	21.60	65	52-120
Acenaphthylene	33.20	19.79	60	39-120
Acenaphthene	33.20	20.48	62	43-120
Fluorene	33.20	21.44	65	46-120
Phenanthrene	33.20	20.11	61	42-120
Anthracene	33.20	19.21	58	37-120
Fluoranthene	33.20	22.92	69	38-120
Pyrene	33.20	18.64	56	39-120
Benzo(a)anthracene	33.20	20.08	60	36-120
Chrysene	33.20	18.41	55	35-120
Benzo(b)fluoranthene	33.20	25.81	78	39-120
Benzo(k)fluoranthene	33.20	24.17	73	36-120
Benzo(a)pyrene	33.20	24.40	73	38-120
Indeno(1,2,3-cd)pyrene	33.20	24.76	75	35-120
Dibenz(a,h)anthracene	33.20	22.91	69	31-120
Benzo(g,h,i)perylene	33.20	24.57	74	39-120

Surrogate	%REC	Limits
Nitrobenzene-d5	71	46-120
2-Fluorobiphenyl	74	52-120
Terphenyl-d14	79	54-132

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8270C-SIM
Field ID:	RFS20141126DAS0401	Batch#:	217953
MSS Lab ID:	262855-001	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/01/14
Basis:	dry	Analyzed:	12/02/14
Diln Fac:	1.000		

Type: MS Moisture: 11%
 Lab ID: QC767692

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,4-Dioxane	<4.807	113.5	36.95	33	12-120
Naphthalene	<1.131	37.82	24.20	64	51-120
1-Methylnaphthalene	<1.131	37.82	25.51	67	51-120
2-Methylnaphthalene	<1.131	37.82	26.19	69	50-121
Acenaphthylene	<1.131	37.82	24.03	64	46-120
Acenaphthene	<1.131	37.82	30.07	80	47-120
Fluorene	1.207	37.82	28.88	73	43-120
Phenanthrene	20.84	37.82	108.2	231 *	27-139
Anthracene	4.581	37.82	42.23	100	34-130
Fluoranthene	64.85	37.82	204.9	370 *	18-141
Pyrene	51.61	37.82	169.8	313 *	21-143
Benzo(a)anthracene	33.65	37.82	109.8	201 *	18-128
Chrysene	40.10	37.82	109.5	184 *	16-126
Benzo(b)fluoranthene	96.74	37.82	193.7	256 *	18-134
Benzo(k)fluoranthene	34.63	37.82	93.22	155 *	15-135
Benzo(a)pyrene	56.01	37.82	142.1	228 *	21-135
Indeno(1,2,3-cd)pyrene	23.46	37.82	46.11	60	3-121
Dibenz(a,h)anthracene	6.625	37.82	22.53	42	6-120
Benzo(g,h,i)perylene	22.17	37.82	40.19	48	1-120

Surrogate	%REC	Limits
Nitrobenzene-d5	76	46-120
2-Fluorobiphenyl	74	52-120
Terphenyl-d14	86	54-132

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

Laboratory Job Number 262855

ANALYTICAL REPORT


PCBs

Tetra Tech EMI
1999 Harrison Street
Oakland, CA 94612

Project : 103S225322.02
Location : Seismic
Level : IV

<u>Sample ID</u>	<u>Lab ID</u>
RFS20141126DAS0401	262855-001
RFS20141126DAS0402	262855-002
RFS20141126DAS0501	262855-003
RFS20141126DAS0502	262855-004
RFS20141126DAS0301	262855-005
RFS20141126DAS0302	262855-006
RFS20141126DAS0201	262855-007
RFS20141126DAS0202	262855-008
RFS20141126DAS0101	262855-009
RFS20141126DAS0102	262855-010

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. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Mike J. Dahlquist
Project Manager
mike.dahlquist@ctberk.com

Date: 12/05/2014

CA ELAP# 2896, NELAP# 4044-001

**CASE NARRATIVE
PCBS (EPA 8082)**

Laboratory number: 262855
Client: Tetra Tech EMI
Project: 103S225322.02
Location: Seismic
Request Date: 11/26/14
Samples Received: 11/26/14

This data package contains sample and QC results for ten soil samples, requested for the above referenced project on 11/26/14. 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.

No analytical problems were encountered.

Chain of Custody

262855



Chain of Custody Record No. 6925

135 Main St. Suite 1800
San Francisco, CA 94105
415-543-4880
Fax 415-543-5480

Preservative Added	
NO	NO
NO	NO
NO	NO

Lab PO#: 14 CAK 25
Lab: CURTIS + TOMPKINS
TIEMI technical contact: SARA WOLLEY
TIEMI project manager: JASON BRODERSEN
Project name: SEISMIC
Project (C/O) number: 1035225322.02

No./Container Types

40 ml VOA	X
1 liter Amber	X
500 ml Poly	X
Sieve	X
Glass Jar - 16 oz	X
VOA	X
SVA	X
Res/PCBs 8082A	X
Metals 6020/7471A	X
TPH Purgeables	X
TPH Extractables	X
FAH - EPA 8270S	X

Analysis Required

Sample ID	Sample Location (Pt. ID)	Date	Time	Matrix	MS / MSD	
					Field samplers' signatures:	Field samplers' signatures:
1	RF520141120DAS0401	11/26/14	0835	SOIL	Quinn Johnson	
2	RF520141120DAS0402		0850			
3	RF520141120DAS0501		0913			
4	RF520141120DAS0502		0922			
5	RF520141120DAS0301		0932			
6	RF520141120DAS0302		0950			
7	RF520141120DAS0201		1000			
8	RF520141120DAS0202		1010			
9	RF520141120DAS0101		1020			
10	RF520141120DAS0102		1025			

Relinquished by:	Name (print)	Company Name	Date	Time
Pat Gonzalez	QUINN JOHNSON	Tetra Tech	11/26/14	11:18
Pat Gonzalez	Pat Gonzalez	CET	11/26/14	11:18
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

Turnaround time/remarks:
 * ARSENIC, lead, mercury only (individual analysis) ; LAB to homogenize samples only for metals, PCBs
 TAT - 5 Days
 ** DONT HOMOGENIZE FAH

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 262855 Date Received 11/26/14 Number of coolers 1
Client Tetra Tech Project 103S225322-02

Date Opened 11/25 By (print) MC (sign) [Signature]
Date Logged in 1 By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

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

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet, Blue/Gel, None Temp(°C)

Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

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

8. Were Method 5035 sampling containers present? YES NO
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES NO
If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Results & QC Summary

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0401	Batch#:	218022
Lab ID:	262855-001	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 11%

Analyte	Result	RL	MDL
Aroclor-1016	ND	11	2.7
Aroclor-1221	ND	22	7.2
Aroclor-1232	ND	11	3.5
Aroclor-1242	ND	11	3.2
Aroclor-1248	ND	11	3.5
Aroclor-1254	ND	11	2.8
Aroclor-1260	4.5 J	11	1.8

Surrogate	%REC	Limits
TCMX	108	60-140
Decachlorobiphenyl	109	36-133

J= Estimated value

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0402	Batch#:	218022
Lab ID:	262855-002	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 12%

Analyte	Result	RL	MDL
Aroclor-1016	ND	11	2.7
Aroclor-1221	ND	22	7.3
Aroclor-1232	ND	11	3.6
Aroclor-1242	ND	11	3.3
Aroclor-1248	ND	11	3.5
Aroclor-1254	ND	11	2.8
Aroclor-1260	ND	11	1.8

Surrogate	%REC	Limits
TCMX	71	60-140
Decachlorobiphenyl	71	36-133

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0501	Batch#:	218022
Lab ID:	262855-003	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 16%

Analyte	Result	RL	MDL
Aroclor-1016	ND	12	2.8
Aroclor-1221	ND	23	7.6
Aroclor-1232	ND	12	3.7
Aroclor-1242	ND	12	3.4
Aroclor-1248	ND	12	3.7
Aroclor-1254	ND	12	2.9
Aroclor-1260	ND	12	1.9

Surrogate	%REC	Limits
TCMX	79	60-140
Decachlorobiphenyl	68	36-133

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0502	Batch#:	218022
Lab ID:	262855-004	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 12%

Analyte	Result	RL	MDL
Aroclor-1016	ND	11	2.7
Aroclor-1221	ND	22	7.3
Aroclor-1232	ND	11	3.5
Aroclor-1242	ND	11	3.3
Aroclor-1248	ND	11	3.5
Aroclor-1254	ND	11	2.8
Aroclor-1260	ND	11	1.8

Surrogate	%REC	Limits
TCMX	68	60-140
Decachlorobiphenyl	66	36-133

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0301	Batch#:	218022
Lab ID:	262855-005	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 17%

Analyte	Result	RL	MDL
Aroclor-1016	ND	11	2.8
Aroclor-1221	ND	23	7.6
Aroclor-1232	ND	11	3.7
Aroclor-1242	ND	11	3.4
Aroclor-1248	ND	11	3.6
Aroclor-1254	ND	11	2.9
Aroclor-1260	ND	11	1.8

Surrogate	%REC	Limits
TCMX	74	60-140
Decachlorobiphenyl	72	36-133

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0302	Batch#:	218022
Lab ID:	262855-006	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 18%

Analyte	Result	RL	MDL
Aroclor-1016	ND	12	2.9
Aroclor-1221	ND	23	7.7
Aroclor-1232	ND	12	3.8
Aroclor-1242	ND	12	3.5
Aroclor-1248	ND	12	3.7
Aroclor-1254	ND	12	3.0
Aroclor-1260	ND	12	1.9

Surrogate	%REC	Limits
TCMX	75	60-140
Decachlorobiphenyl	75	36-133

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0201	Batch#:	218022
Lab ID:	262855-007	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 14%

Analyte	Result	RL	MDL
Aroclor-1016	ND	11	2.8
Aroclor-1221	ND	23	7.5
Aroclor-1232	ND	11	3.7
Aroclor-1242	ND	11	3.4
Aroclor-1248	ND	11	3.6
Aroclor-1254	ND	11	2.9
Aroclor-1260	3.0 J	11	1.8

Surrogate	%REC	Limits
TCMX	95	60-140
Decachlorobiphenyl	88	36-133

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

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0202	Batch#:	218022
Lab ID:	262855-008	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 12%

Analyte	Result	RL	MDL
Aroclor-1016	ND	11	2.7
Aroclor-1221	ND	22	7.3
Aroclor-1232	ND	11	3.5
Aroclor-1242	ND	11	3.3
Aroclor-1248	ND	11	3.5
Aroclor-1254	ND	11	2.8
Aroclor-1260	3.5 J	11	1.8

Surrogate	%REC	Limits
TCMX	85	60-140
Decachlorobiphenyl	70	36-133

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

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0101	Batch#:	218022
Lab ID:	262855-009	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 14%

Analyte	Result	RL	MDL
Aroclor-1016	ND	11	2.8
Aroclor-1221	ND	22	7.4
Aroclor-1232	ND	11	3.6
Aroclor-1242	ND	11	3.3
Aroclor-1248	ND	11	3.6
Aroclor-1254	ND	11	2.8
Aroclor-1260	7.7 J	11	1.8

Surrogate	%REC	Limits
TCMX	87	60-140
Decachlorobiphenyl	61	36-133

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

Polychlorinated Biphenyls (PCBs)

Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	RFS20141126DAS0102	Batch#:	218022
Lab ID:	262855-010	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	dry	Analyzed:	12/03/14
Diln Fac:	1.000		

Moisture: 9%

Analyte	Result	RL	MDL
Aroclor-1016	ND	11	2.6
Aroclor-1221	ND	21	7.1
Aroclor-1232	ND	11	3.4
Aroclor-1242	ND	11	3.2
Aroclor-1248	ND	11	3.4
Aroclor-1254	ND	11	2.7
Aroclor-1260	5.4 J	11	1.7

Surrogate	%REC	Limits
TCMX	86	60-140
Decachlorobiphenyl	70	36-133

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

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC767960	Batch#:	218022
Matrix:	Soil	Prepared:	12/02/14
Units:	ug/Kg	Analyzed:	12/03/14

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.6	2.4
Aroclor-1221	ND	19	6.4
Aroclor-1232	ND	9.6	3.1
Aroclor-1242	ND	9.6	2.9
Aroclor-1248	ND	9.6	3.1
Aroclor-1254	ND	9.6	2.4
Aroclor-1260	ND	9.6	1.6

Surrogate	%REC	Limits
TCMX	107	60-140
Decachlorobiphenyl	110	36-133

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC767961	Batch#:	218022
Matrix:	Soil	Prepared:	12/02/14
Units:	ug/Kg	Analyzed:	12/03/14

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	164.6	191.8	117	58-144
Aroclor-1260	164.6	192.8	117	55-146

Surrogate	%REC	Limits
TCMX	112	60-140
Decachlorobiphenyl	116	36-133

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.02	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	218022
MSS Lab ID:	262691-002	Sampled:	11/19/14
Matrix:	Soil	Received:	11/19/14
Units:	ug/Kg	Prepared:	12/02/14
Basis:	as received	Analyzed:	12/03/14
Diln Fac:	1.000		

Type: MS Lab ID: QC767962

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.401	166.9	175.9	105	51-155
Aroclor-1260	12.72	166.9	205.5	116	38-155

Surrogate	%REC	Limits
TCMX	104	60-140
Decachlorobiphenyl	106	36-133

Type: MSD Lab ID: QC767963

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	167.4	128.4	77	51-155	31	38
Aroclor-1260	167.4	136.7	74	38-155	41	55

Surrogate	%REC	Limits
TCMX	74	60-140
Decachlorobiphenyl	58	36-133

RPD= Relative Percent Difference



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

Laboratory Job Number 262855

ANALYTICAL REPORT

Metals

Tetra Tech EMI
1999 Harrison Street
Oakland, CA 94612

Project : 103S225322.02
Location : Seismic
Level : IV

<u>Sample ID</u>	<u>Lab ID</u>
RFS20141126DAS0401	262855-001
RFS20141126DAS0402	262855-002
RFS20141126DAS0501	262855-003
RFS20141126DAS0502	262855-004
RFS20141126DAS0301	262855-005
RFS20141126DAS0302	262855-006
RFS20141126DAS0201	262855-007
RFS20141126DAS0202	262855-008
RFS20141126DAS0101	262855-009
RFS20141126DAS0102	262855-010

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. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature:

Mike J. Dahlquist
Project Manager
mike.dahlquist@ctberk.com

Date: 12/05/2014

CA ELAP# 2896, NELAP# 4044-001

**CASE NARRATIVE
METALS (EPA 6020 AND EPA 7471A)**

Laboratory number: 262855
Client: Tetra Tech EMI
Project: 103S225322.02
Location: Seismic
Request Date: 11/26/14
Samples Received: 11/26/14

This data package contains sample and QC results for ten soil samples, requested for the above referenced project on 11/26/14. See attached cooler receipt form for any sample receipt problems or discrepancies.

Metals (EPA 6020 and EPA 7471A):

Low recoveries were observed for mercury in the MS/MSD of RFS20141126DAS0401 (lab # 262855-001); the BS/BSD were within limits, and the associated RPD was within limits.

High % difference was observed for arsenic in the serial dilution of RFS20141126DAS0401 (lab # 262855-001).

No other analytical problems were encountered.

Chain of Custody

262855

Chain of Custody Record No. 6925

Preservative Added

N/N	N/N	N/N	N/N	N/N	N/N
N/N	N/N	N/N	N/N	N/N	N/N

Lab PO#: 14 CAK 25	Lab: CURTIS + Tompkins	MS / MSD	
TIEMI technical contact: SARA WOLLEY	Field samplers: QUINN JOHNSON	Date	Time
TIEMI project manager: JASON BRORDERSEN	Field samplers' signatures: <i>[Signature]</i>	Date	Time
Sample ID	Sample Location (Pt. ID)	Date	Time
Project (C/O) number: 1035225322.02			
1	RF520141120 DAS0401	11/26/14	0835
2	RF520141120 DAS0402		0850
3	RF520141120 DAS0501		0913
4	RF520141120 DAS0502		0922
5	RF520141120 DAS0301		0932
6	RF520141120 DAS0302		0950
7	RF520141120 DAS0201		1000
8	RF520141120 DAS0202		1010
9	RF520141120 DAS0101		1020
10	RF520141120 DAS0102		1025

No./Container Types

40 ml VOA	
1 liter Amber	
500 ml Poly	
Sieve	
Glass Jar - 16 oz	

Analysis Required

VOA	
SVA	X
PCBs	X
Metals	X
TPH Purgeables	X
TPH Extractables	X
FAH - EPA 8270	X

Relinquished by: <i>[Signature]</i>	Name (print): QUINN JOHNSON	Company Name: Tetra Tech	Date: 11/26/14	Time: 11:18
Received by: <i>[Signature]</i>	Name (print): Pat Gonzalez	Company Name: CET	Date: 11/26/14	Time: 11:19
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

Turnaround time/remarks:
* Arsenic, lead, mercury only (individual analysis), LAB to homogenize samples ONLY for metals, PCBs
TAT - 5 Days
*** DON'T HOMOGENIZE FAH

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 262855 Date Received 11/26/14 Number of coolers 1
Client Tetra Tech Project 103S225322-02

Date Opened 11/25 By (print) MC (sign) [Signature]
Date Logged in 1 By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

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

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet, Blue/Gel, None Temp(°C)

Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

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

8. Were Method 5035 sampling containers present? YES NO

If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES NO

If YES, Who was called? By Date:

COMMENTS

Results & QC Summary

Arsenic			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.02	Analysis:	EPA 6020
Analyte:	Arsenic	Batch#:	217906
Matrix:	Soil	Sampled:	11/26/14
Units:	mg/Kg	Received:	11/26/14
Basis:	dry	Prepared:	11/26/14
Diln Fac:	25.00	Analyzed:	12/01/14

Field ID	Type	Lab ID	Result	RL	MDL	Moisture
RFS20141126DAS0401	SAMPLE	262855-001	6.1	0.28	0.076	11%
RFS20141126DAS0402	SAMPLE	262855-002	4.9	0.28	0.076	12%
RFS20141126DAS0501	SAMPLE	262855-003	6.2	0.30	0.087	16%
RFS20141126DAS0502	SAMPLE	262855-004	5.0	0.28	0.077	12%
RFS20141126DAS0301	SAMPLE	262855-005	6.4	0.28	0.076	17%
RFS20141126DAS0302	SAMPLE	262855-006	3.7	0.30	0.090	18%
RFS20141126DAS0201	SAMPLE	262855-007	4.1	0.29	0.087	14%
RFS20141126DAS0202	SAMPLE	262855-008	4.2	0.27	0.075	12%
RFS20141126DAS0101	SAMPLE	262855-009	6.0	0.28	0.078	14%
RFS20141126DAS0102	SAMPLE	262855-010	6.1	0.27	0.080	9%
	BLANK	QC767493	ND	0.25	0.069	

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Lead			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.02	Analysis:	EPA 6020
Analyte:	Lead	Batch#:	217906
Matrix:	Soil	Sampled:	11/26/14
Units:	mg/Kg	Received:	11/26/14
Basis:	dry	Prepared:	11/26/14
Diln Fac:	25.00	Analyzed:	12/01/14

Field ID	Type	Lab ID	Result	RL	MDL	Moisture
RFS20141126DAS0401	SAMPLE	262855-001	22	0.28	0.074	11%
RFS20141126DAS0402	SAMPLE	262855-002	13	0.28	0.074	12%
RFS20141126DAS0501	SAMPLE	262855-003	30	0.30	0.085	16%
RFS20141126DAS0502	SAMPLE	262855-004	13	0.28	0.074	12%
RFS20141126DAS0301	SAMPLE	262855-005	13	0.28	0.074	17%
RFS20141126DAS0302	SAMPLE	262855-006	6.4	0.30	0.088	18%
RFS20141126DAS0201	SAMPLE	262855-007	13	0.29	0.084	14%
RFS20141126DAS0202	SAMPLE	262855-008	18	0.27	0.073	12%
RFS20141126DAS0101	SAMPLE	262855-009	27	0.28	0.076	14%
RFS20141126DAS0102	SAMPLE	262855-010	14	0.27	0.078	9%
	BLANK	QC767493	ND	0.25	0.067	

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Mercury by Cold Vapor AA			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S225322.02	Analysis:	EPA 7471A
Analyte:	Mercury	Batch#:	218094
Matrix:	Soil	Sampled:	11/26/14
Units:	mg/Kg	Received:	11/26/14
Basis:	dry	Prepared:	12/04/14
Diln Fac:	1.000	Analyzed:	12/05/14

Field ID	Type	Lab ID	Result	RL	MDL	Moisture
RFS20141126DAS0401	SAMPLE	262855-001	0.71	0.020	0.0013	11%
RFS20141126DAS0402	SAMPLE	262855-002	0.17	0.018	0.0012	12%
RFS20141126DAS0501	SAMPLE	262855-003	0.31	0.019	0.0013	16%
RFS20141126DAS0502	SAMPLE	262855-004	0.14	0.021	0.0014	12%
RFS20141126DAS0301	SAMPLE	262855-005	0.37	0.021	0.0014	17%
RFS20141126DAS0302	SAMPLE	262855-006	0.036	0.019	0.0012	18%
RFS20141126DAS0201	SAMPLE	262855-007	0.13	0.019	0.0012	14%
RFS20141126DAS0202	SAMPLE	262855-008	0.20	0.018	0.0012	12%
RFS20141126DAS0101	SAMPLE	262855-009	0.20	0.019	0.0012	14%
RFS20141126DAS0102	SAMPLE	262855-010	0.20	0.017	0.0011	9%
	BLANK	QC768243	ND	0.017	0.0011	

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Arsenic			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.02	Analysis:	EPA 6020
Analyte:	Arsenic	Diln Fac:	25.00
Field ID:	RFS20141126DAS0401	Batch#:	217906
MSS Lab ID:	262855-001	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	mg/Kg	Prepared:	11/26/14
Basis:	dry	Analyzed:	12/01/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	Moisture	RPD	Lim
BS	QC767494		25.00	24.81	99	80-120			
BSD	QC767495		25.00	23.19	93	80-120		7	20
MS	QC767496	6.081	29.57	31.37	86	75-120	11%		
MSD	QC767497		28.37	31.14	88	75-120	11%	3	27

RPD= Relative Percent Difference

Batch QC Report

Lead			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.02	Analysis:	EPA 6020
Analyte:	Lead	Diln Fac:	25.00
Field ID:	RFS20141126DAS0401	Batch#:	217906
MSS Lab ID:	262855-001	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	mg/Kg	Prepared:	11/26/14
Basis:	dry	Analyzed:	12/01/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	Moisture	RPD	Lim
BS	QC767494		25.00	26.63	107	80-120			
BSD	QC767495		25.00	25.80	103	80-120		3	20
MS	QC767496	21.55	29.57	48.82	92	68-127	11%		
MSD	QC767497		28.37	47.85	93	68-127	11%	0	29

RPD= Relative Percent Difference

Batch QC Report

Arsenic			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.02	Analysis:	EPA 6020
Analyte:	Arsenic	Basis:	dry
Field ID:	RFS20141126DAS0401	Diln Fac:	125.0
Type:	Serial Dilution	Batch#:	217906
MSS Lab ID:	262855-001	Sampled:	11/26/14
Lab ID:	QC767498	Received:	11/26/14
Matrix:	Soil	Analyzed:	12/01/14
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	Moisture %	Diff	Lim
6.081	0.2754	6.802	1.137	11%	12 *	10

*= Value outside of QC limits; see narrative

RL= Reporting Limit

Batch QC Report

Lead			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.02	Analysis:	EPA 6020
Analyte:	Lead	Basis:	dry
Field ID:	RFS20141126DAS0401	Diln Fac:	125.0
Type:	Serial Dilution	Batch#:	217906
MSS Lab ID:	262855-001	Sampled:	11/26/14
Lab ID:	QC767498	Received:	11/26/14
Matrix:	Soil	Analyzed:	12/01/14
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	Moisture %	Diff	Lim
21.55	0.2754	22.60	1.103	11%	5	10

RL= Reporting Limit

Batch QC Report

Arsenic			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.02	Analysis:	EPA 6020
Analyte:	Arsenic	Basis:	dry
Field ID:	RFS20141126DAS0401	Diln Fac:	25.00
Type:	Post Digest Spike	Batch#:	217906
MSS Lab ID:	262855-001	Sampled:	11/26/14
Lab ID:	QC767499	Received:	11/26/14
Matrix:	Soil	Analyzed:	12/01/14
Units:	mg/Kg		

MSS Result	Spiked	Result	%REC	Limits	Moisture
6.081	68.85	70.64	94	75-125	11%

Batch QC Report

Lead			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.02	Analysis:	EPA 6020
Analyte:	Lead	Basis:	dry
Field ID:	RFS20141126DAS0401	Diln Fac:	25.00
Type:	Post Digest Spike	Batch#:	217906
MSS Lab ID:	262855-001	Sampled:	11/26/14
Lab ID:	QC767499	Received:	11/26/14
Matrix:	Soil	Analyzed:	12/01/14
Units:	mg/Kg		

MSS Result	Spiked	Result	%REC	Limits	Moisture
21.55	68.85	93.07	104	75-125	11%

Batch QC Report

Mercury by Cold Vapor AA			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S225322.02	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	RFS20141126DAS0401	Batch#:	218094
MSS Lab ID:	262855-001	Sampled:	11/26/14
Matrix:	Soil	Received:	11/26/14
Units:	mg/Kg	Prepared:	12/04/14
Basis:	dry	Analyzed:	12/05/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	Moisture	RPD	Lim
BS	QC768244		0.2083	0.2091	100	80-120			
BSD	QC768245		0.2083	0.2068	99	80-120		1	20
MS	QC768246	0.7117	0.2341	0.8675	67 *	69-136	11%		
MSD	QC768247		0.2508	0.8668	62 *	69-136	11%	2	35

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Batch QC Report

Mercury by Cold Vapor AA			
Lab #:	262855	Location:	Seismic
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S225322.02	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	dry
Field ID:	RFS20141126DAS0401	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	218094
MSS Lab ID:	262855-001	Sampled:	11/26/14
Lab ID:	QC768248	Received:	11/26/14
Matrix:	Soil	Analyzed:	12/05/14
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	Moisture %	Diff	Lim
0.7117	0.01971	0.6922	0.09856	11%	3	10

RL= Reporting Limit