Berkeley Global Campus at Richmond Bay
Soil Management Plan
Project Approval Checklist
University of California

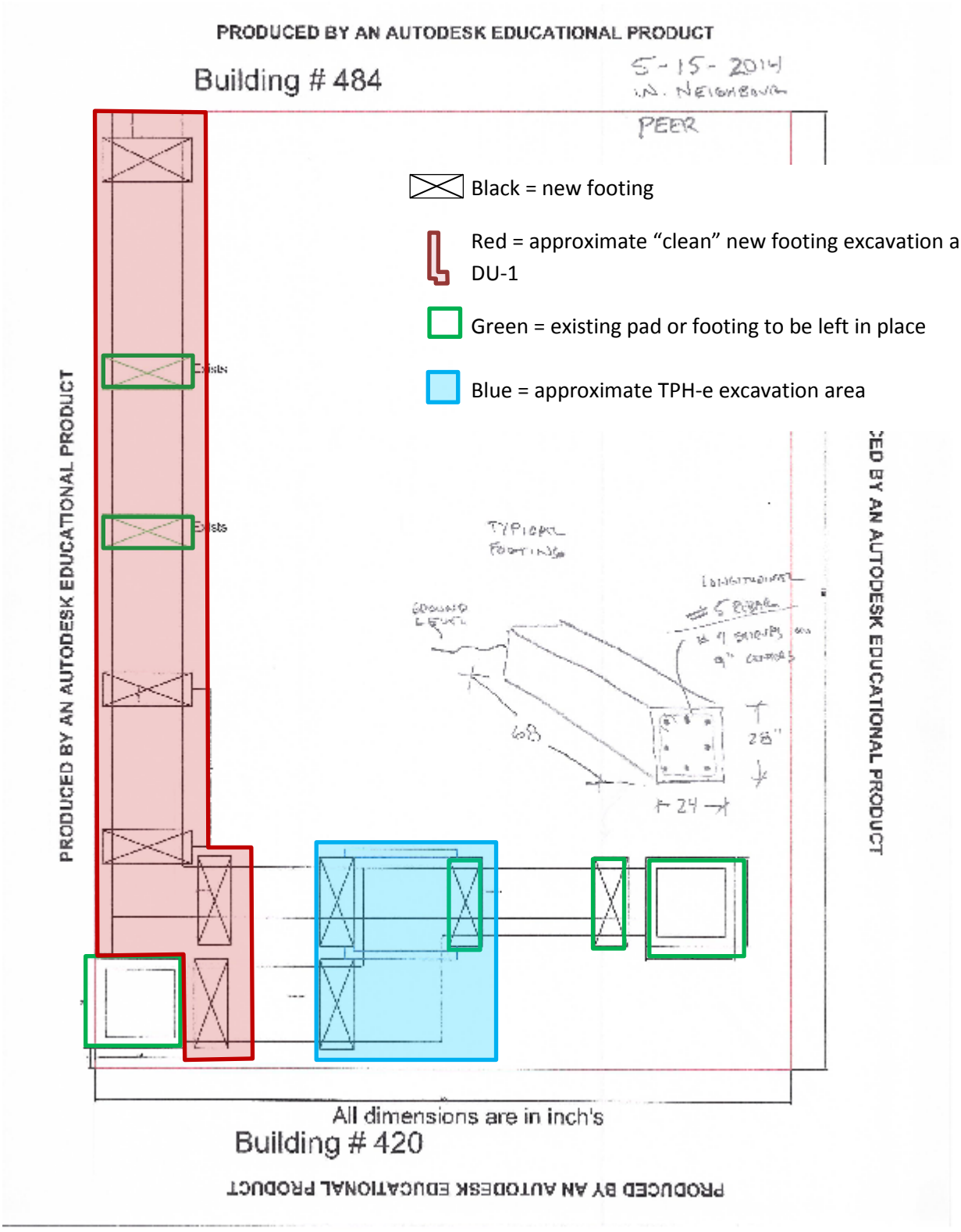
SMP FORM A: PROJECT OVERVIEW

1. Tracking No, Revision No. and Date:	**SMP Project 20141103-PEERfootings** *If after 6 months the project has not proceeded to the next step, the information on this form must be reviewed and updated as necessary*		
2. Project Name:	PEER Concrete Footers and Drip Pad Installation		
3. Description:	Installation of eight new concrete footers as support for the hydraulic fluid lines and a concrete drip pad (valve containment) in the PEER courtyard north of Building 420. Soil will be excavated to approximately 2 feet bgs to install the footers; footer dimensions are approximately 5.5 x 2 x 2.3 feet. *Attach figure identifying project location*		
4. Points of Contact:	Name: Karl Hans	Position: Senior Env Scientist, EH&S	
	Email: khans@berkeley.edu	Phone: (510) 643-9574	
5. Estimated Schedule:	Excavation proposed for the week of November 3, 2014		
6. DTSC Work Notice Requirements	Yes ☐	No ☒	If Yes, notify DTSC 14 days prior to activity
7. Impacts to Piezometer Network	Yes ☐	No ☒	Piezometer ID: If Yes, notify DTSC
8. Affected Area Overlaps with NOS?	Yes ☐	No ☒	If Yes, implement mitigation measures per RBC Environmental Impact Report
9. Radiological Status Have radioactive materials been used within the project area?	Yes ☐	No ☒	
If yes, have buildings within the project area been properly decontaminated, decommissioned, and cleared by CDPH?	Yes ☐	No ☐	If No, contact CDPH; do not investigate project area until it is cleared by CDPH
10. Total Volume of Soil Excavation Planned and New Hardscape	~5 cubic yards; no new hardscape Calculations/Assumptions: 5 footers with the following dimensions: 5.5 x 2 x 2.3 feet = 25.3 cubic feet = 0.94 cubic yards Total of 4.7 cubic yards		
11. *De Minimis* Status	Project exempt from SMP prescriptive requirements based on volume (< 10 CY or 500 square feet of hardscape)? Yes ☒ No ☐		
12. Notes:	UC EH&S collected one ISM sample to represent possible exposure to soil during excavation activities to evaluate worker protection measures. Analytical results indicate that no contaminants are above Category I screening criteria; therefore no adverse environmental conditions exist for worker protection and soil may be reused on site. See the Sampling Letter Report for more information.		
13. SMP Form A Approval a. Greg Haet, Project Coordinator EH&S	11/03/2014 (Signature, Date)		
b. Scott Shackleton, Facilities Management, UCB, College of Engineering	11/3/2014 (Signature, Date)		
c. Professional Civil Engineer or Geologist	(Name, Signature, Date, Stamp)		

REGISTERED GEOLOGIST
JASON D. BRODERSEN
No. 6262
STATE OF CALIFORNIA

Jason Brodersen, P.G., No 6262

Figure 1. PEER Footings Excavation Area



TETRA TECH, INC.

July 18, 2014

Greg Haet
EH&S Associate Director, Environmental Protection
Office of Environment, Health & Safety
University of California, Berkeley
University Hall, 3rd Floor #1150
Berkeley, CA 94720

Subject: Pacific Earthquake and Engineering Research Concrete Footings Soil Sampling Former Richmond Field Station, Richmond, California

Dear Mr. Haet:

Tetra Tech, Inc. was contracted by the University of California, Berkeley to conduct sampling activities at the Former Richmond Field Station, in Richmond, California. The objective of the sampling effort was to characterize near-surface soil in the area where five concrete footings will be installed to upgrade the aboveground pipe supports in the Pacific Earthquake and Engineering Research (PEER) courtyard north of Building 420, between Buildings 420, 421, and 484. The soil sample evaluated soil conditions that workers could be exposed to while performing the work. This letter provides the rationale for the selected sampling locations, a summary of field sampling protocols, and sample results. A figure presenting the sampling locations is enclosed at the end of this letter. Complete analytical results are presented in Attachment 1.

Sample Locations

Incremental sampling methodology was selected for this project to provide a comprehensive and thorough evaluation of chemical concentrations in a specific area of potential exposure, or decision unit. The incremental sampling strategy for this project was based on selecting one decision units to best represent potential exposure in this small area.

UC Berkeley provided Tetra Tech with site-specific plans for the areas to be upgraded, which consisted of one area located beneath the hydraulic fluid lines. Concrete footing installation activities may include disturbance of surface soils down to approximately 2 feet below ground surface.

One decision unit (PEER-CF-DU1) was selected to best represent possible worker exposure conditions. Based on the assumption of soil disturbance, soil from depths of 0 to 2 feet below ground surface (bgs) were collected throughout the decision unit at 15 locations.

Field Sampling Protocols

Soil samples were collected on July 7, 2014. The decision unit boundary was identified in the field based on the plans provided by UC Berkeley as well as discussions with Karl Hans. One incremental soil sample was collected from the decision unit, composed of subsamples from various depths within the target depth interval of 0 to 2 feet bgs at 15 increment locations.

Incremental sampling methodology was used to maximize the goal of obtaining sufficient material over the decision unit to account for both compositional and distributional heterogeneity of any possible contamination. The sampling protocol followed these steps for the decision units:

1. The field sampler began at a corner of the surface decision unit and sampled in random pattern, beginning in one corner to collect subsamples from 15 locations within the decision unit. The location of the subsamples was not critical as long as they were distributed throughout the decision unit. Samples were collected from the surface using a disposable trowel, and from the subsurface using a hand auger. The soil was placed into a Ziploc plastic bag.

2. The subsamples were thoroughly mixed in the bag to form one composited, multi-increment sample.

3. Following collection from decision unit PEER-CF-DU1, the plastic bag was labeled and packed into an insulated cooler. These samples were taken directly from the field to Curtis and Tompkins Laboratory in Berkeley, CA on July 7, 2014.

4. The soil was sent to Curtis and Tompkins Laboratory with instructions to sieve the soil sample with a #10 sieve (<2 millimeter particle size), and then to collect representative 30 subsamples from the sample for analyses.

A copy of the chain-of-custody forms are presented within the laboratory report in Attachment 1.

Analyses Summary, Screening Criteria, and Sample Results

The pipes that the footings will support are adjacent to the hydraulic fluid valve drip spill that was sampled in Field Sampling Workplan Phase II Investigation in 2011 which resulted in with elevated total petroleum hydrocarbons extractables (TPH-e) (motor oil and diesel). Other chemicals of concern (polycyclic aromatic hydrocarbons [PAH], semi-volatile organic compounds [SVOC], and total petroleum hyudrocarbons purgeables [TPH-p]) were non-detect. Therefore, the soil sample for decision unit PEER-CF-DU1 was analyzed for metals; TPH-e; and polychlorinated biphenyls (PCB) using the methods listed below.

- Metals by EPA 6020; Mercury by EPA 7471A
- TPH-Extractables by EPA 8015B Modified
- PCB analysis by EPA 8082

Sample results are presented below along with screening criteria for all potential receptors, consistent with the final Remedial Action Workplan for the Research and Education Support (RES) portions of RFS. The laboratory report is presented as Attachment 1.

All analytes were detected in the PEER concrete footings decision unit at concentrations below the Category I criteria, with the exception of manganese which was detected at a concentration of 780 mg/kg, exceeding the Category I criteria of 212 mg/kg. The 780 mg/kg concentration of manganese is consistent with concentrations detected in other samples from upland meadow areas without suspected contaminant sources. In addition, the concentration is below the maintenance worker risk-based concentration of 5,300 mg/kg.

Conclusions

Based on the screen against the Category I criteria and other screening levels, the results support it is safe to conduct maintenance work within the project area with industry-standard safe-work practices, and without requiring specific environmental protections. The results also support that any excess soils generated during the construction project may be used as fill material within the project area, or within the RFS site with DTSC concurrence.

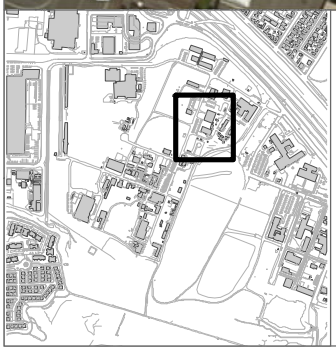
If you have any questions or comments regarding this submittal, please call me at (510) 302-6242.

Sincerely,

Dayna Aragon
Task Manager

Enclosure: Figure 1, Tables 1 and 2
Attachment 1: Analytical Results for PEER-CF-DU1

1999 Harrison Street, Suite 500, Oakland, CA 94612
Tel 510.302.6300 Fax 510.433.0830
www.tetratech.com



TETRA TECH

Richmond Field Station Site
University of California, Berkeley

PEER
SAMPLING LOCATIONS

7/17/2014 V:\Misc_GIS\Richmond_Field_Station\Projects\Field_Sampling_Workplan\Phase_III\PEER Sampling.mxd TtEMI-OAK yashekia.evans

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

Screening Criteria	Metals																						
	Aluminum	**Antimony**	**Arsenic (1)**	**Barium**	**Beryllium**	**Cadmium**	**Calcium**	**Chromium**	**Cobalt**	**Copper**	**Iron**	**Lead**	**Magnesium**	**Manganese**	**Mercury**	**Molybdenum**	**Nickel**	**Potassium**	**Selenium**	**Silver**	**Sodium**	**Thallium**	**Vanadium**	**Zinc**
Commercial worker	*100,000*	*367*	*0.224*	*100,000*	*1,760*	*1000*	*NA*	*100,000*	*273*	*36,700*	*100,000*	*320*		*2,050 0*	*275*	*4,590*	*14,900*		*4,590*	*4,590*		*9.17*	*4,590*	*100,000*
Construction worker	*20,300*	*109*	*1.58*	*2,110*	*29.0*	*68.1*		*100,000*	*19.9*	*10,900*	*100,000*	*320*		*212*	*77.0*	*1,360*	*60.6*		*1,340*	*1,360*		*2.72*	*1,360*	*81,600*
Maintenance worker	*100,000*	*2,720*	*1.58*	*52,600*	*128*	*73.0*		*100,000*	*34.1*	*100,000*	*100,000*	*320*		*5,300*	*1,920*	*34,00 0*	*1,180*		*33,500*	*34,000*		*68.0*	*34,000*	*100,000*
Off-Site Receptors	*6,860,00 0*	--	*745*	*686,000*	*1,330*	*762*		--	*356*	--	--	--		*68,600*	*41,2000*	--	*12,300*		*2,740,0 000*	--		--	--	--
Other			*16(1)*																					
Category I Criteria	*20,300*	*109*	*16*	*2,110*	*29.0*	*68.1*	*NA*	*100,000*	*19.9*	*10,900*	*100,000*	*320*	*NA*	*212*	*77.0*	*1,360*	*60.6*	*NA*	*1,340*	*1,360*	*NA*	*2.72*	*1,360*	*81,600*
Category II Criteria	*100,000*	*1,090*	*16*	*100,000*	*290*	*681*	*NA*	*100,000*	*199*	*100,000*	*100,000*	*800*	*NA*	*212*	*275*	*13,600*	*606*	*NA*	*13,400*	*13,600*	*NA*	*27.2*	*13,600*	*100,000*
Sample Location																								
PEER-CF-DU1	8,700	1.3	5.3	230	0.67	0.36	3,700	30	15	30	16,000	20	2,900	**780**	0.56	0.51	35	1,100	0.21 J	0.12 J	ND	0.082 J	28	120

Notes:
Bold values indicate that the result exceeded the Category I criterion.
Screening criteria based on remedial goals presented in Table 3-1, Final Removal Action Workplan, dated July 18, 2014.

1 Background concentration

-- Not applicable
NA Not available
J Estimated value

TABLE 2.
DETECTED PCB AND TPH SOIL SAMPLING RESULTS
REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

	PCBs							TPH	
Screening Criteria	**Aroclor-1016**	**Aroclor-1221**	**Aroclor-1232**	**Aroclor-1242**	**Aroclor-1248**	**Aroclor-1254**	**Aroclor-1260**	**Diesel C10-C24**	**Motor Oil C24-C36**
Commercial worker	*NA*	*NA*	*NA*	*0.528*	*0.528*	*0.528*	*0.528*	*NA*	*NA*
Construction worker	*NA*	*NA*	*NA*	*3.50*	*3.50*	*2.02*	*3.50*	*NA*	*NA*
Maintenance worker	*NA*	*NA*	*NA*	*3.50*	*3.50*	*3.50*	*3.50*	*NA*	*NA*
Off-Site Receptor	*NA*	*NA*	*NA*	*5,620*	*5,620*	*5,620*	*5,620*	*NA*	*NA*
Other	*1 (1)*	*1 (1)*	*1 (1)*	*1 (1)*	*1 (1)*	*1 (1)*	*1 (1)*	*500 (2)*	*2,500 (2)*
Category I Criteria	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*500*	*2,500*
Category II Criteria	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*500*	*2,500*
Sample Location									
PEER-CF-DU1	0.0099 U	0.002 U	0.0099 U	0.009-9 U	0.0099 U	0.0099 U	0.016	74 Y	350

Notes:
Screening criteria based on remedial goals presented in Table 3-1, Final Removal Action Workplan, dated July 18, 2014.

1 Other criteria for PCBs are based on Toxic Substances Control Act (TSCA) criteria for high occupancy areas with no cap.
2 Other criteria for TPH are based on the Regional Water Quality Control Board Environmental Screening Levels (ESL).

NA Not available
U Not detected
Y Sample exhibits chromatographic pattern which does not resemble strata


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

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

Laboratory Job Number 258758
ANALYTICAL REPORT
TPH-Extractables by GC

Tetra Tech EMI	Project : 103S225322.01
1999 Harrison Street	Location : PEER Concrete Footings
Oakland, CA 94612	Level : IV

Sample ID	Lab ID
PEER-CF-DUI	258758-001

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: _____ Date: 07/14/2014

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

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
TPH-EXTRACTABLES BY GC (EPA 8015B)

Laboratory number:	**258758**
Client:	**Tetra Tech EMI**
Project:	**103S225322.01**
Location:	**PEER Concrete Footings**
Request Date:	**07/07/14**
Samples Received:	**07/07/14**

This data package contains sample and QC results for one soil sample, requested for the above referenced project on 07/07/14. See attached cooler receipt form for any sample receipt problems or discrepancies.

TPH-Extractables by GC (EPA 8015B):

No analytical problems were encountered.

Chain of Custody

258758

Tetra Tech EM Inc.
Oakland Office

1999 Harrison Street, Suite 500
Oakland, CA 94612
510.302.6300 Phone
510.433.0830 Fax

Chain of Custody Record No. 9975

Project name: PEER Concrete Footings	**Lab PO#:** [illegible]	**Lab:** C&T
Project (CTO) number: 10352253 22.01	**TtEMI technical contact:** [illegible]	**Field samplers:** Dayna Aragon / Isabelle Chow
	TtEMI project manager: [illegible]	**Field samplers' signatures:**

Sample ID	Point ID/Depth	Date	Time	Matrix	MS / MSD	No./Container Types: 40 ml VOA	1 liter Amber	500 ml Poly	Sleeve	Glass Jar	250 ml Poly	Encore	plastic bag	Preservative Added:			Analysis Required: VOA	SVOA	Pest	Metals	TPH Purgeables	TPH Extractables	PCB
														None		None							
PEER-CF-DU1		7/7/14	1615	soil									1							X		X	X

	Name (print)	Company Name	Date	Time
Relinquished by:	Dayna Aragon	Tetra Tech	7/7/14	5:00
Received by:	Isabelle Chow	C&T	7/7/14	1700
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

Turnaround time/remarks: 1 week TAT
please dry, sieve using #10 sieve, and collect 30 subsamples from plastic bag.

Fed Ex #:

WHITE-Laboratory Copy YELLOW-Sample Tracker PINK-File Copy

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 258758 Date Received 7/2/14 Number of coolers 1
Client Tetra Tech EMI Project 103522532201

Date Opened 7/2/14 By (print) MC (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓

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 ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☒ Styrofoam ☐ 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

_____
_____
_____
_____
_____
_____

Rev 10, 10/11

Results & QC Summary

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.01	Analysis:	EPA 8015B
Field ID:	PEER-CF-DUI	Batch#:	213196
Matrix:	Soil	Sampled:	07/07/14
Units:	mg/Kg	Received:	07/07/14
Basis:	dry	Prepared:	07/11/14
Diln Fac:	1.000	Analyzed:	07/13/14

Type: SAMPLE Moisture: 3%
Lab ID: 258758-001

Analyte	Result	RL	MDL
Diesel C10-C24	74 Y	1.0	0.32
Motor Oil C24-C36	350	5.2	1.6

Surrogate	%REC	Limits
o-Terphenyl	82	64-136

Type: BLANK Lab ID: QC748808

Analyte	Result	RL	MDL
Diesel C10-C24	ND	1.0	0.31
Motor Oil C24-C36	ND	5.0	1.5

Surrogate	%REC	Limits
o-Terphenyl	88	64-136

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.01	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC748809	Batch#:	213196
Matrix:	Soil	Prepared:	07/11/14
Units:	mg/Kg	Analyzed:	07/13/14

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.99	50.23	100	61-132

Surrogate	%REC	Limits
o-Terphenyl	90	64-136

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.01	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	213196
MSS Lab ID:	258798-002	Sampled:	07/08/14
Matrix:	Soil	Received:	07/08/14
Units:	mg/Kg	Prepared:	07/11/14
Basis:	dry	Analyzed:	07/13/14
Diln Fac:	1.000		

Type: MS Moisture: 2%
Lab ID: QC748810

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	0.5598	50.94	36.52	71	40-146

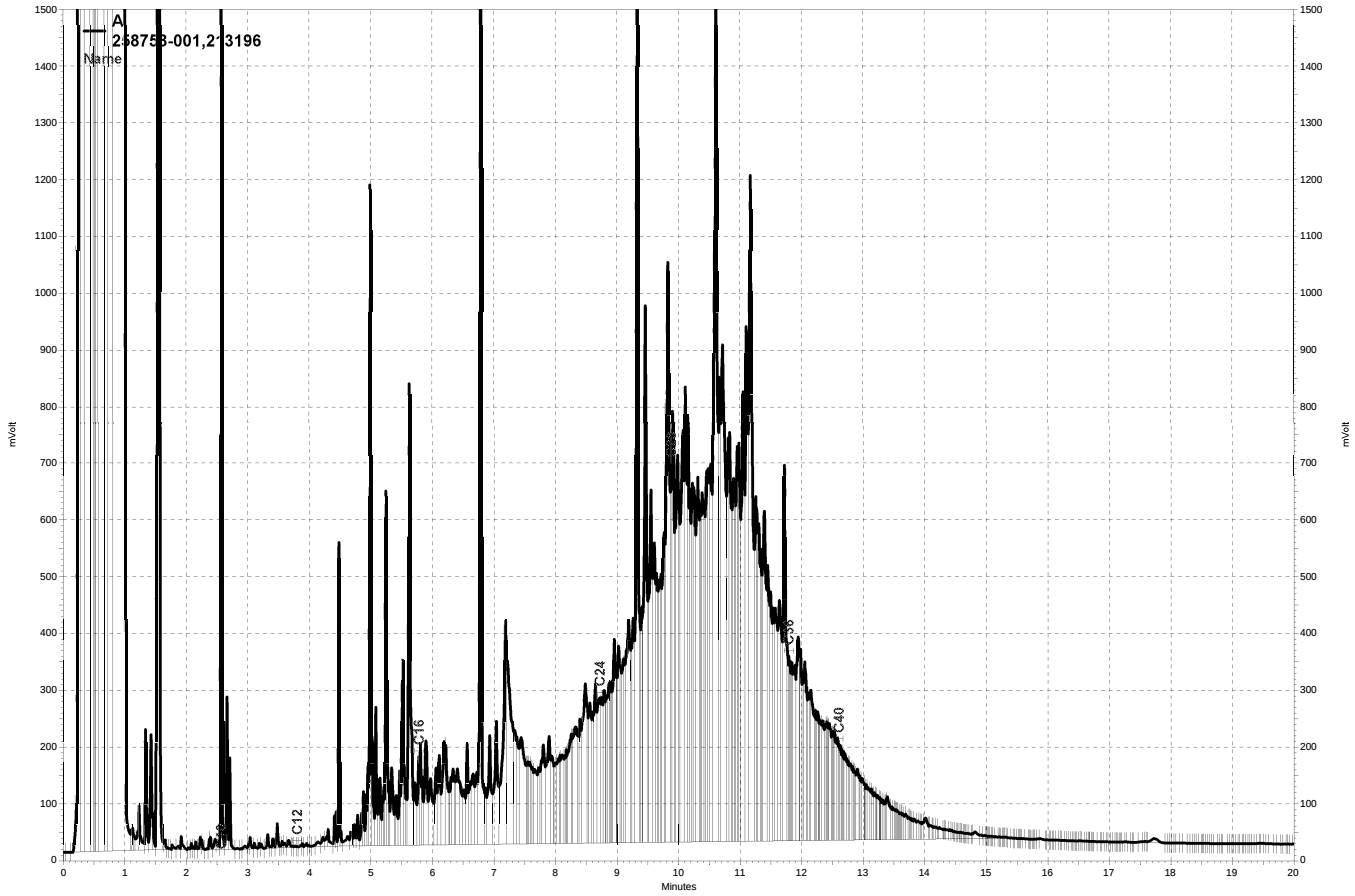
Surrogate	%REC	Limits
o-Terphenyl	74	64-136

Type: MSD Moisture: 2%
Lab ID: QC748811

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.98	39.11	76	40-146	7	56

Surrogate	%REC	Limits
o-Terphenyl	80	64-136

RPD= Relative Percent Difference



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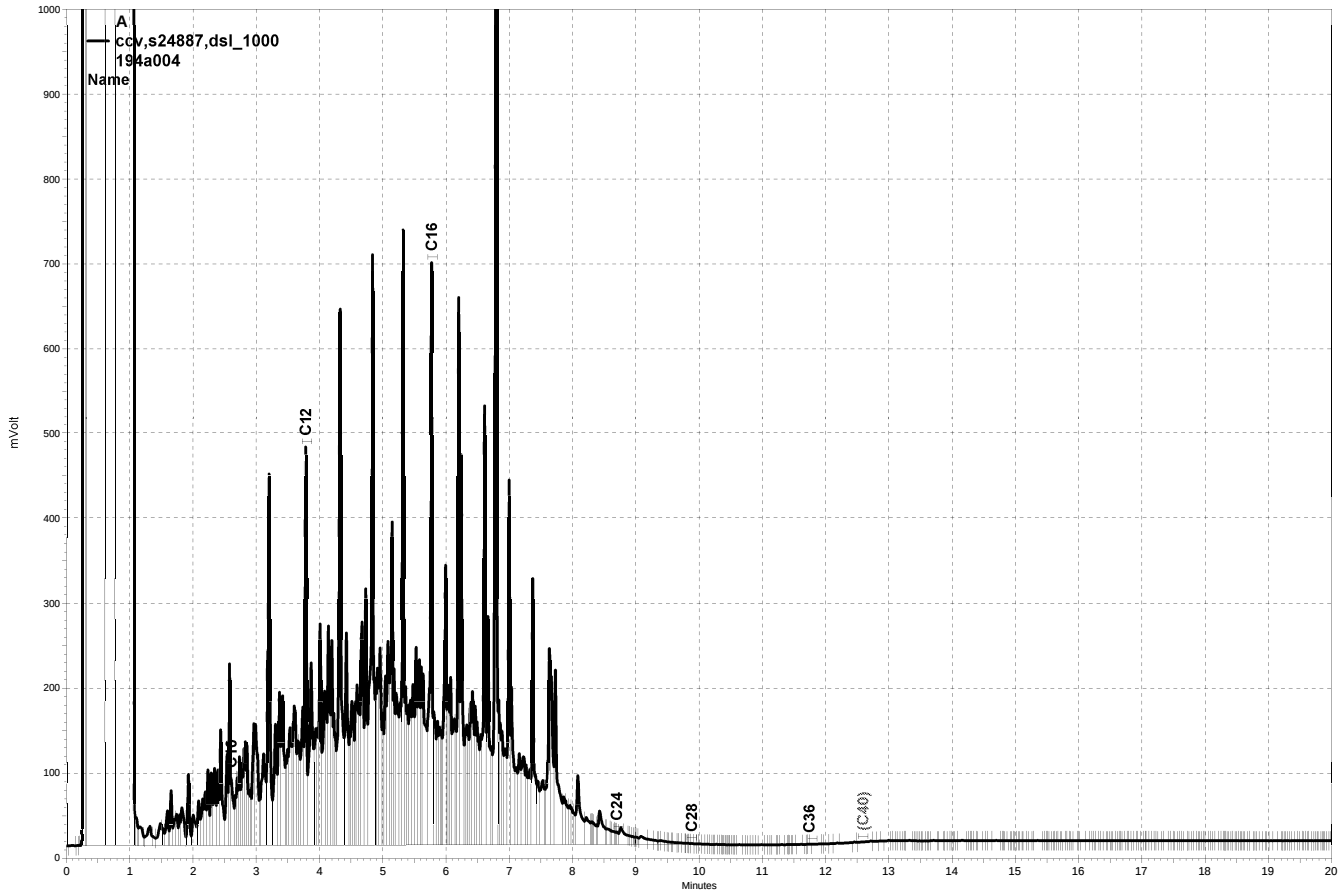

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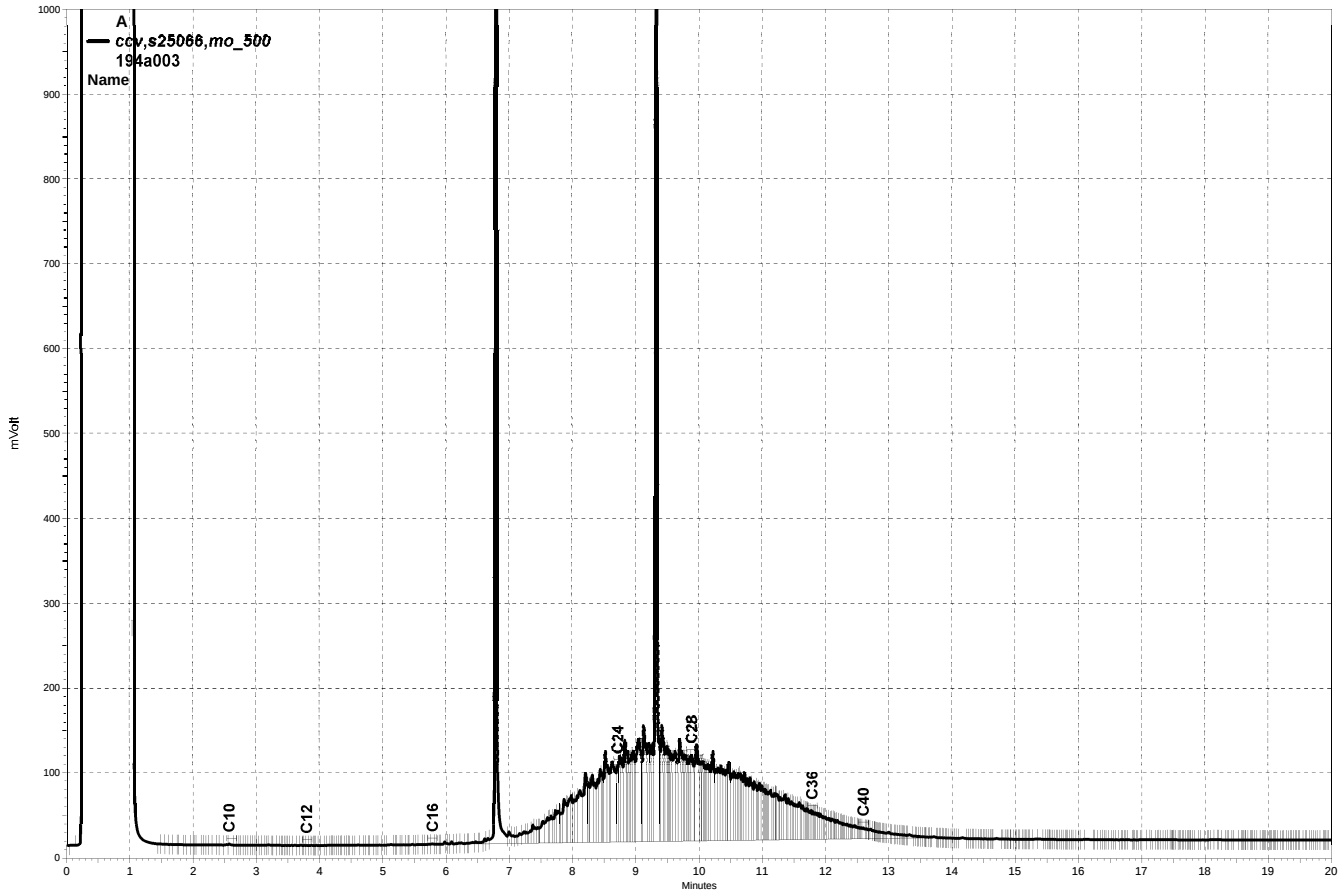

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Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 258758
ANALYTICAL REPORT
PCBs

Tetra Tech EMI	Project : 103S225322.01
1999 Harrison Street	Location : PEER Concrete Footings
Oakland, CA 94612	Level : IV

Sample ID	Lab ID
PEER-CF-DUI	258758-001

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: _____ Date: 07/14/2014

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

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
PCBS (EPA 8082)

Laboratory number:	**258758**
Client:	**Tetra Tech EMI**
Project:	**103S225322.01**
Location:	**PEER Concrete Footings**
Request Date:	**07/07/14**
Samples Received:	**07/07/14**

This data package contains sample and QC results for one soil sample, requested for the above referenced project on 07/07/14. 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

258758

Tetra Tech EM Inc.
Oakland Office

1999 Harrison Street, Suite 500
Oakland, CA 94612
510.302.6300 Phone
510.433.0830 Fax

Chain of Custody Record No. 9975

Project name: PEER Concrete Footings	**Lab PO#:** [illegible]	**Lab:** C&T
Project (CTO) number: 10352253 22.01	**TtEMI technical contact:** [illegible]	**Field samplers:** Dayna Aragon / Isabelle Chow
	TtEMI project manager: [illegible]	**Field samplers' signatures:**

Sample ID	Point ID/Depth	Date	Time	Matrix	MS / MSD	No./Container Types: 40 ml VOA	1 liter Amber	500 ml Poly	Sleeve	Glass Jar	250 ml Poly	Encore	plastic bag	Preservative Added	Analysis Required: VOA	SVOA	Pest	Metals	TPH Purgeables	TPH Extractables	PCB
														None							
														None							
														None							
PEER-CF-DU1		7/7/14	1615	soil									1					X		X	X

	Name (print)	Company Name	Date	Time
Relinquished by:	Dayna Aragon	TetraTech	7/7/14	5:00
Received by:	Isabelle Chow	C&T	7/7/14	1700
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

Turnaround time/remarks: 1 week TAT
please dry, sieve using #10 sieve, and collect 30 subsamples from plastic bag.

Fed Ex #:

WHITE-Laboratory Copy YELLOW-Sample Tracker PINK-File Copy

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 258758 Date Received 7/2/14 Number of coolers 1
Client Tetra Tech EMI Project 103522532201

Date Opened 7/2/14 By (print) MC (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓

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 ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☒ Styrofoam ☐ 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

_____
_____
_____
_____
_____
_____

Rev 10, 10/11

Results & QC Summary

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.01	Analysis:	EPA 8082
Field ID:	PEER-CF-DUI	Batch#:	213132
Lab ID:	258758-001	Sampled:	07/07/14
Matrix:	Soil	Received:	07/07/14
Units:	ug/Kg	Prepared:	07/10/14
Basis:	dry	Analyzed:	07/11/14
Diln Fac:	1.000		

Moisture: 3%

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.9	2.4
Aroclor-1221	ND	20	6.6
Aroclor-1232	ND	9.9	3.2
Aroclor-1242	ND	9.9	3.0
Aroclor-1248	ND	9.9	3.1
Aroclor-1254	ND	9.9	2.5
Aroclor-1260	16	9.9	1.6

Surrogate	%REC	Limits
TCMX	93	60-140
Decachlorobiphenyl	87	36-133

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

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.01	Analysis:	EPA 8082
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC748551	Batch#:	213132
Matrix:	Soil	Prepared:	07/10/14
Units:	ug/Kg	Analyzed:	07/11/14

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.5	2.3
Aroclor-1221	ND	19	6.3
Aroclor-1232	ND	9.5	3.1
Aroclor-1242	ND	9.5	2.8
Aroclor-1248	ND	9.5	3.0
Aroclor-1254	ND	9.5	2.4
Aroclor-1260	ND	9.5	1.5

Surrogate	%REC	Limits
TCMX	87	60-140
Decachlorobiphenyl	90	36-133

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

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.01	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC748552	Batch#:	213132
Matrix:	Soil	Prepared:	07/10/14
Units:	ug/Kg	Analyzed:	07/11/14

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	165.8	135.7	82	58-144
Aroclor-1260	165.8	143.6	87	55-146

Surrogate	%REC	Limits
TCMX	83	60-140
Decachlorobiphenyl	81	36-133

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103S225322.01	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	213132
MSS Lab ID:	258830-001	Sampled:	07/09/14
Matrix:	Soil	Received:	07/09/14
Units:	ug/Kg	Prepared:	07/10/14
Basis:	as received	Analyzed:	07/12/14
Diln Fac:	1.000		

Type: MS Lab ID: QC748553

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.364	165.6	174.6	105	51-155
Aroclor-1260	<1.546	165.6	168.9	102	38-155

Surrogate	%REC	Limits
TCMX	91	60-140
Decachlorobiphenyl	83	36-133

Type: MSD Lab ID: QC748554

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	165.8	183.3	111	51-155	5	38
Aroclor-1260	165.8	177.1	107	38-155	5	55

Surrogate	%REC	Limits
TCMX	97	60-140
Decachlorobiphenyl	81	36-133

RPD= Relative Percent Difference

Confirmation Report for 258758 PCBS Soil
Curtis & Tompkins Laboratories

Units: ug/Kg

Lab ID	Client ID	Analyte	Result	Confirmation	RPD	%D
258758-001	PEER-CF-DUI	Aroclor-1260	16.48	9.923	50	-40

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 258758
ANALYTICAL REPORT
Metals

Tetra Tech EMI 1999 Harrison Street Oakland, CA 94612	Project : 103S225322.01 Location : PEER Concrete Footings Level : IV

Sample ID	Lab ID
PEER-CF-DUI	258758-001

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: _____ Date: 07/14/2014

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

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
METALS (EPA 6020 AND EPA 7471A)

Laboratory number:	**258758**
Client:	**Tetra Tech EMI**
Project:	**103S225322.01**
Location:	**PEER Concrete Footings**
Request Date:	**07/07/14**
Samples Received:	**07/07/14**

This data package contains sample and QC results for one soil sample, requested for the above referenced project on 07/07/14. See attached cooler receipt form for any sample receipt problems or discrepancies.

Metals (EPA 6020 and EPA 7471A):

Low recoveries were observed for antimony in the MS/MSD of PEER-CF-DUI (lab # 258758-001); the BS/BSD were within limits, and the associated RPD was within limits.

Responses exceeding the instrument's linear range were observed for manganese in the MS/MSD of PEER-CF-DUI (lab # 258758-001).

High % differences were observed for many analytes in the serial dilution of PEER-CF-DUI (lab # 258758-001).

Copper was detected above the RL in the method blank for batch 213226; this analyte was detected in the sample at a level at least 10 times that of the blank.

No other analytical problems were encountered.

Chain of Custody

258758

Tetra Tech EM Inc.
Oakland Office

1999 Harrison Street, Suite 500
Oakland, CA 94612
510.302.6300 Phone
510.433.0830 Fax

Chain of Custody Record No. 9975

Project name: PEER Concrete Footings	**Lab PO#:** [illegible]	**Lab:** C&T
Project (CTO) number: 10352253 22.01	**TtEMI technical contact:** [illegible]	**Field samplers:** Dayna Aragon / Isabelle Chow
	TtEMI project manager: [illegible]	**Field samplers' signatures:**

Sample ID	Point ID/Depth	Date	Time	Matrix	MS / MSD	No./Container Types: 40 ml VOA	1 liter Amber	500 ml Poly	Sleeve	Glass Jar	250 ml Poly	Encore	plastic bag	Preservative Added:			Analysis Required: VOA	SVOA	Pest	Metals	TPH Purgeables	TPH Extractables	PCB
														None		None							
PEER-CF-DU1		7/7/14	1615	soil									1							X		X	X

	Name (print)	Company Name	Date	Time
Relinquished by:	Dayna Aragon	Tetra Tech	7/7/14	5:00
Received by:	Isabelle Chow	C&T	7/7/14	1700
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

Turnaround time/remarks: 1 week TAT
please dry, sieve using #10 sieve, and collect 30 subsamples from plastic bag.

Fed Ex #:

WHITE-Laboratory Copy YELLOW-Sample Tracker PINK-File Copy

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 258758 Date Received 7/2/14 Number of coolers 1
Client Tetra Tech EMI Project 103522532201

Date Opened 7/2/14 By (print) MC (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓

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 ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☒ Styrofoam ☐ 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

_____

_____

_____

_____

_____

_____

Rev 10, 10/11

Results & QC Summary

Curtis & Tompkins, Ltd.

Target Analyte List Metals

Lab #:	258758	Project#:	103S225322.01
Client:	Tetra Tech EMI	Location:	PEER Concrete Footings
Field ID:	PEER-CF-DUI	Sampled:	07/07/14
Lab ID:	258758-001	Received:	07/07/14
Matrix:	Soil	Prepared:	07/14/14
Units:	mg/Kg	Analyzed:	07/14/14
Basis:	dry		

Moisture: 3%

Analyte	Result	RL	MDL	Diln Fac	Batch#	Prep	Analysis
Aluminum	8,700	35	12	25.00	213226	EPA 3050B	EPA 6020
Antimony	1.3	0.24	0.047	25.00	213226	EPA 3050B	EPA 6020
Arsenic	5.3	0.24	0.079	25.00	213226	EPA 3050B	EPA 6020
Barium	230	19	6.4	2,500	213226	EPA 3050B	EPA 6020
Beryllium	0.67	0.24	0.034	25.00	213226	EPA 3050B	EPA 6020
Cadmium	0.36	0.24	0.053	25.00	213226	EPA 3050B	EPA 6020
Calcium	3,700	24	2.6	25.00	213226	EPA 3050B	EPA 6020
Chromium	30	0.24	0.071	25.00	213226	EPA 3050B	EPA 6020
Cobalt	15	0.24	0.057	25.00	213226	EPA 3050B	EPA 6020
Copper	30	0.27	0.089	25.00	213226	EPA 3050B	EPA 6020
Iron	16,000	12	3.1	25.00	213226	EPA 3050B	EPA 6020
Lead	25	0.24	0.035	25.00	213226	EPA 3050B	EPA 6020
Magnesium	2,900	24	3.3	25.00	213226	EPA 3050B	EPA 6020
Manganese	780	23	7.7	2,500	213226	EPA 3050B	EPA 6020
Mercury	0.56	0.016	0.0011	1.000	213236	METHOD	EPA 7471A
Molybdenum	0.51	0.39	0.13	25.00	213226	EPA 3050B	EPA 6020
Nickel	35	0.37	0.12	25.00	213226	EPA 3050B	EPA 6020
Potassium	1,100	24	6.4	25.00	213226	EPA 3050B	EPA 6020
Selenium	0.21 J	0.24	0.078	25.00	213226	EPA 3050B	EPA 6020
Silver	0.12 J	0.24	0.024	25.00	213226	EPA 3050B	EPA 6020
Sodium	ND	26	8.7	25.00	213226	EPA 3050B	EPA 6020
Thallium	0.082 J	0.24	0.019	25.00	213226	EPA 3050B	EPA 6020
Vanadium	28	0.43	0.14	25.00	213226	EPA 3050B	EPA 6020
Zinc	120	0.96	0.13	25.00	213226	EPA 3050B	EPA 6020

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

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.01	Analysis:	EPA 6020
Type:	BLANK	Diln Fac:	25.00
Lab ID:	QC748920	Batch#:	213226
Matrix:	Soil	Prepared:	07/14/14
Units:	mg/Kg	Analyzed:	07/14/14

Analyte	Result	RL	MDL
Aluminum	ND	13	3.7
Antimony	ND	0.25	0.075
Arsenic	ND	0.25	0.069
Barium	ND	0.25	0.051
Beryllium	ND	0.25	0.047
Cadmium	ND	0.25	0.028
Calcium	ND	26	8.5
Chromium	ND	0.25	0.073
Cobalt	ND	0.25	0.046
Copper	0.63 b	0.28	0.092
Iron	ND	13	3.2
Lead	ND	0.25	0.067
Magnesium	ND	25	2.9
Manganese	ND	0.25	0.062
Molybdenum	ND	0.41	0.14
Nickel	ND	0.25	0.071
Potassium	ND	25	6.2
Selenium	ND	0.25	0.070
Silver	ND	0.25	0.028
Sodium	ND	26	8.6
Thallium	ND	0.25	0.012
Vanadium	ND	0.44	0.15
Zinc	ND	1.0	0.24

b= See narrative
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.01	Analysis:	EPA 6020
Matrix:	Soil	Batch#:	213226
Units:	mg/Kg	Prepared:	07/14/14
Diln Fac:	25.00	Analyzed:	07/14/14

Type: BS Lab ID: QC748921

Analyte	Spiked	Result	%REC	Limits
Aluminum	25.00	28.58	114	57-164
Antimony	25.00	22.95	92	79-120
Arsenic	25.00	24.54	98	80-120
Barium	25.00	24.73	99	80-120
Beryllium	25.00	24.65	99	64-120
Cadmium	25.00	25.51	102	80-120
Calcium	2,500	2,864	115	72-120
Chromium	25.00	26.59	106	80-120
Cobalt	25.00	26.30	105	80-120
Copper	25.00	30.06	120	80-125
Iron	2,500	2,679	107	80-124
Lead	25.00	26.70	107	80-120
Magnesium	2,500	2,779	111	69-132
Manganese	25.00	26.89	108	80-120
Molybdenum	25.00	25.24	101	80-120
Nickel	25.00	27.25	109	80-122
Potassium	2,500	2,750	110	77-132
Selenium	25.00	25.35	101	80-122
Silver	25.00	25.46	102	80-127
Sodium	2,500	2,716	109	71-138
Thallium	25.00	23.50	94	77-120
Vanadium	25.00	25.31	101	80-120
Zinc	25.00	26.76	107	80-133

Type: BSD Lab ID: QC748922

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aluminum	25.00	28.55	114	57-164	0	42
Antimony	25.00	23.03	92	79-120	0	20
Arsenic	25.00	24.95	100	80-120	2	20
Barium	25.00	25.00	100	80-120	1	22
Beryllium	25.00	25.08	100	64-120	2	30
Cadmium	25.00	25.61	102	80-120	0	23
Calcium	2,500	2,886	115	72-120	1	22
Chromium	25.00	27.49	110	80-120	3	20
Cobalt	25.00	27.18	109	80-120	3	20
Copper	25.00	29.59	118	80-125	2	20
Iron	2,500	2,791	112	80-124	4	32
Lead	25.00	26.70	107	80-120	0	20
Magnesium	2,500	2,781	111	69-132	0	23
Manganese	25.00	27.54	110	80-120	2	20
Molybdenum	25.00	25.31	101	80-120	0	20
Nickel	25.00	28.00	112	80-122	3	20
Potassium	2,500	2,763	111	77-132	0	22
Selenium	25.00	25.94	104	80-122	2	23
Silver	25.00	25.49	102	80-127	0	20
Sodium	2,500	2,815	113	71-138	4	21
Thallium	25.00	23.74	95	77-120	1	21
Vanadium	25.00	26.24	105	80-120	4	20
Zinc	25.00	27.73	111	80-133	4	33

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.01	Analysis:	EPA 6020
Field ID:	PEER-CF-DUI	Batch#:	213226
MSS Lab ID:	258758-001	Sampled:	07/07/14
Matrix:	Soil	Received:	07/07/14
Units:	mg/Kg	Prepared:	07/14/14
Basis:	dry	Analyzed:	07/14/14
Diln Fac:	25.00		

Type: MS Moisture: 3%
Lab ID: QC748923

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aluminum	8,670	25.14	10,180	6015 NM	50-151
Antimony	1.345	25.14	6.399	20 *	25-120
Arsenic	5.350	25.14	29.12	95	75-120
Barium	208.5	25.14	242.0	133 NM	47-145
Beryllium	0.6687	25.14	26.21	102	68-120
Cadmium	0.3580	25.14	26.55	104	76-120
Calcium	3,650	2,514	6,668	120	55-132
Chromium	29.74	25.14	55.61	103	60-133
Cobalt	14.85	25.14	39.58	98	71-122
Copper	30.12	25.14	58.64	113	64-131
Iron	15,710	2,514	18,800	123 NM	49-139
Lead	25.13	25.14	54.32	116	68-127
Magnesium	2,900	2,514	5,729	113	48-146
Manganese	778.7	25.14	634.0 >LR	-576 NM	52-134
Molybdenum	0.5150	25.14	20.58	80	70-120
Nickel	34.55	25.14	58.46	95	58-138
Potassium	1,111	2,514	3,280	86	62-129
Selenium	0.2081	25.14	24.15	95	68-121
Silver	0.1208	25.14	25.14	100	80-125
Sodium	<8.717	2,514	2,340	93	58-126
Thallium	0.08221	25.14	25.11	100	76-120
Vanadium	27.65	25.14	53.28	102	58-132
Zinc	116.3	25.14	150.6	136 NM	41-147

*= Value outside of QC limits; see narrative
NC= Not Calculated
NM= Not Meaningful: Sample concentration > 4X spike concentration
>LR= Response exceeds instrument's linear range
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.01	Analysis:	EPA 6020
Field ID:	PEER-CF-DUI	Batch#:	213226
MSS Lab ID:	258758-001	Sampled:	07/07/14
Matrix:	Soil	Received:	07/07/14
Units:	mg/Kg	Prepared:	07/14/14
Basis:	dry	Analyzed:	07/14/14
Diln Fac:	25.00		

Type: MSD Moisture: 3%
Lab ID: QC748924

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aluminum	25.75	9,557	3447 NM	50-151	6	56
Antimony	25.75	6.591	20 *	25-120	1	24
Arsenic	25.75	28.90	91	75-120	3	27
Barium	25.75	235.7	106 NM	47-145	3	20
Beryllium	25.75	26.35	100	68-120	2	34
Cadmium	25.75	26.33	101	76-120	3	31
Calcium	2,575	6,448	109	55-132	4	20
Chromium	25.75	55.43	100	60-133	1	20
Cobalt	25.75	39.99	98	71-122	0	23
Copper	25.75	58.61	111	64-131	1	52
Iron	2,575	19,270	138 NM	49-139	2	31
Lead	25.75	53.04	108	68-127	4	29
Magnesium	2,575	5,652	107	48-146	2	39
Manganese	25.75	684.8 >LR	-365 NM	52-134	NC	38
Molybdenum	25.75	20.82	79	70-120	1	22
Nickel	25.75	60.71	102	58-138	3	32
Potassium	2,575	3,265	84	62-129	2	47
Selenium	25.75	24.09	93	68-121	3	31
Silver	25.75	25.34	98	80-125	2	27
Sodium	2,575	2,356	92	58-126	2	20
Thallium	25.75	25.17	97	76-120	2	29
Vanadium	25.75	52.77	98	58-132	2	20
Zinc	25.75	147.5	121 NM	41-147	2	40

*= Value outside of QC limits; see narrative
NC= Not Calculated
NM= Not Meaningful: Sample concentration > 4X spike concentration
>LR= Response exceeds instrument's linear range
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.01	Analysis:	EPA 6020
Field ID:	PEER-CF-DUI	Basis:	dry
Type:	Serial Dilution	Batch#:	213226
MSS Lab ID:	258758-001	Sampled:	07/07/14
Lab ID:	QC748925	Received:	07/07/14
Matrix:	Soil	Analyzed:	07/14/14
Units:	mg/Kg		

Moisture: 3%

Analyte	MSS Result	MSS RL	Result	RL	% Diff	Lim	Diln Fac
Aluminum	8,670	34.66	9,770	173.3	13 *	10	125.0
Antimony	1.345	0.2411	0.5967 J	1.078	NC	10	125.0
Arsenic	5.350	0.2411	5.801	1.190	8	10	125.0
Barium	208.5	0.2411	225.1	0.9665	8	10	125.0
Beryllium	0.6687	0.2411	0.6895	0.6027	NC	10	125.0
Cadmium	0.3580	0.2411	0.2833 J	0.7884	NC	10	125.0
Calcium	3,650	24.11	4,044	60.27	11 *	10	125.0
Chromium	29.74	0.2411	31.61	1.064	6	10	125.0
Cobalt	14.85	0.2411	16.70	0.9644	12 *	10	125.0
Copper	30.12	0.2665	33.10	1.332	10	10	125.0
Iron	15,710	12.05	17,560	60.27	12 *	10	125.0
Lead	25.13	0.2411	27.36	0.6027	9	10	125.0
Magnesium	2,900	24.11	3,273	60.27	13 *	10	125.0
Manganese	778.7	23.12	784.2	115.6	1	10	12,500
Molybdenum	0.5150	0.3911	ND	1.955	NC	10	125.0
Nickel	34.55	0.3749	38.77	1.874	12 *	10	125.0
Potassium	1,111	24.11	635.9	96.44	43 *	10	125.0
Selenium	0.2081	0.2411	ND	1.166	NC	10	125.0
Silver	0.1208	0.2411	0.1224 J	0.6027	NC	10	125.0
Sodium	ND	26.15	ND	130.7	NC	10	125.0
Thallium	0.08221	0.2411	0.1248 J	0.3014	NC	10	125.0
Vanadium	27.65	0.4251	31.36	2.125	13 *	10	125.0
Zinc	116.3	0.9644	128.9	3.014	11 *	10	125.0

*= Value outside of QC limits; see narrative
J= Estimated value
NC= Not Calculated
ND= Not Detected at or above MDL
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103S225322.01	Analysis:	EPA 6020
Field ID:	PEER-CF-DUI	Basis:	dry
Type:	Post Digest Spike	Batch#:	213226
MSS Lab ID:	258758-001	Sampled:	07/07/14
Lab ID:	QC748926	Received:	07/07/14
Matrix:	Soil	Analyzed:	07/14/14
Units:	mg/Kg		

Moisture: 3%

Analyte	MSS Result	Spiked	Result	%REC	Limits	Diln Fac
Aluminum	8,670	6,027	14,910	104	75-125	25.00
Antimony	1.345	60.27	58.10	94	75-125	25.00
Arsenic	5.350	60.27	65.34	100	75-125	25.00
Barium	227.7	6,027	6,270	100	75-125	2,500
Beryllium	0.6687	60.27	61.13	100	75-125	25.00
Cadmium	0.3580	60.27	61.18	101	75-125	25.00
Calcium	3,650	6,027	10,070	107	75-125	25.00
Chromium	29.74	60.27	90.21	100	75-125	25.00
Cobalt	14.85	60.27	75.44	101	75-125	25.00
Copper	30.12	60.27	93.83	106	75-125	25.00
Iron	15,710	6,027	21,830	102	75-125	25.00
Lead	25.13	60.27	89.68	107	75-125	25.00
Magnesium	2,900	6,027	9,021	102	75-125	25.00
Manganese	778.7	6,027	7,012	103	75-125	2,500
Molybdenum	0.5150	60.27	57.14	94	75-125	25.00
Nickel	34.55	60.27	96.28	102	75-125	25.00
Potassium	1,111	6,027	7,186	101	75-125	25.00
Selenium	0.2081	60.27	61.38	101	75-125	25.00
Silver	0.1208	60.27	53.93	89	75-125	25.00
Sodium	<8.717	6,027	6,138	102	75-125	25.00
Thallium	0.08221	30.14	30.93	102	75-125	25.00
Vanadium	27.65	60.27	84.97	95	75-125	25.00
Zinc	116.3	60.27	179.7	105	75-125	25.00

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S225322.01	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	213236
Lab ID:	QC748956	Prepared:	07/14/14
Matrix:	Soil	Analyzed:	07/14/14
Units:	mg/Kg		

Result	RL	MDL
ND	0.017	0.0011

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

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S225322.01	Analysis:	EPA 7471A
Analyte:	Mercury	Batch#:	213236
Matrix:	Soil	Prepared:	07/14/14
Units:	mg/Kg	Analyzed:	07/14/14
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC748957	0.2083	0.2144	103	80-120		
BSD	QC748958	0.2083	0.2136	103	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S225322.01	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	213236
MSS Lab ID:	258681-001	Sampled:	07/02/14
Matrix:	Soil	Received:	07/02/14
Units:	mg/Kg	Prepared:	07/14/14
Basis:	dry	Analyzed:	07/14/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	Moisture	RPD	Lim
MS	QC748959	0.01086	0.3016	0.3197	102	69-136	26%		
MSD	QC748960		0.3016	0.3674	118	69-136	26%	14	35

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Target Analyte List Metals

Lab #:	258758	Location:	PEER Concrete Footings
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103S225322.01	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	dry
Field ID:	ZZZZZZZZZZ	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	213236
MSS Lab ID:	258681-001	Sampled:	07/02/14
Lab ID:	QC749046	Received:	07/02/14
Matrix:	Soil	Analyzed:	07/14/14
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	Moisture %	Diff	Lim
0.01086	0.02413	ND	0.1207	26%	NC	10

NC= Not Calculated
ND= Not Detected at or above MDL
RL= Reporting Limit

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 258758
ANALYTICAL REPORT
Wet Chemistry

Tetra Tech EMI	Project : 103S225322.01
1999 Harrison Street	Location : PEER Concrete Footings
Oakland, CA 94612	Level : IV

Sample ID	Lab ID
PEER-CF-DUI	258758-001

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: _____ Date: 07/14/2014

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

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
WET CHEMISTRY (ASTM D2216/CLP)

Laboratory number:	**258758**
Client:	**Tetra Tech EMI**
Project:	**103S225322.01**
Location:	**PEER Concrete Footings**
Request Date:	**07/07/14**
Samples Received:	**07/07/14**

This data package contains sample and QC results for one soil sample, requested for the above referenced project on 07/07/14. See attached cooler receipt form for any sample receipt problems or discrepancies.

Moisture (ASTM D2216/CLP):
No analytical problems were encountered.

Chain of Custody

258758

Tetra Tech EM Inc.
Oakland Office

1999 Harrison Street, Suite 500
Oakland, CA 94612
510.302.6300 Phone
510.433.0830 Fax

Chain of Custody Record No. 9975

Project name: PEER Concrete Footings	**Lab PO#:** [illegible]	**Lab:** C&T
Project (CTO) number: 10532253 22.01	**TtEMI technical contact:** [illegible]	**Field samplers:** Dayna Aragon / Isabelle Chow
	TtEMI project manager: [illegible]	**Field samplers' signatures:**

Sample ID	Point ID/Depth	Date	Time	Matrix	MS / MSD	No./Container Types: 40 ml VOA	1 liter Amber	500 ml Poly	Sleeve	Glass Jar	250 ml Poly	Encore	plastic bag	Preservative Added:			Analysis Required: VOA	SVOA	Pest	Metals	TPH Purgeables	TPH Extractables	PCB
														None		None							
PEER-CF-DU1		7/7/14	1615	soil									1							X		X	X

	Name (print)	Company Name	Date	Time
Relinquished by:	Dayna Aragon	Tetra Tech	7/7/14	5:00
Received by:	Isabelle Chow	C&T	7/7/14	1700
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

Turnaround time/remarks: 1 week TAT
please dry, sieve using #10 sieve, and collect 30 subsamples from plastic bag.

Fed Ex #:

WHITE-Laboratory Copy YELLOW-Sample Tracker PINK-File Copy

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 258758 Date Received 7/2/14 Number of coolers 1
Client Tetra Tech EMI Project 103S225322.01

Date Opened 7/2/14 By (print) MC (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓

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 ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☒ Styrofoam ☐ 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

_____

_____

_____

_____

_____

_____

Rev 10, 10/11

Results & QC Summary

Percent Moisture Summary Report

Batch: 213149
Date: 07/11/14
Method: CLP SOW 390
Analyst: MFV

Sample	Tare (g)	Wet (g)	Dry (g)	Percent Solids	Percent Moisture
258662-021	11.3890	16.4171	16.1886	95	5
258662-022	11.0061	16.0664	15.8597	96	4
258662-023	11.3390	16.5404	16.3499	96	4
258662-024	11.0828	16.0948	15.8876	96	4
258662-025	11.4039	16.6642	16.5196	97	3
258675-021	11.4201	16.4772	16.3220	97	3
258675-022	10.9096	16.0865	16.0402	99	1
258675-023	11.1617	16.1647	16.0889	98	2
258675-024	11.3339	16.5404	16.3881	97	3
258675-025	11.2742	16.3319	15.8924	91	9
258758-001	11.4051	16.5405	16.3802	97	3
QC748616	11.0966	16.2009	16.0554	97	3
of 258758-001			RPD:	0.3%	9.1%

Moisture LOG **Curtis & Tompkins, Ltd.**

LIMS Batch #: 213149
Date: 7-11-14

Page: **36**
Benchbook#: **BK 3576**
Scale Used
☑ Leachates Analytical
☐ _____

Sample # / Letter	Dish #	Dish Weight (g)	Sample + Dish Wt (g)	Final Weight (g)	*Comments
BLK	K07	11.3533	Ø	11.3533	
258662-021 A	C23	11.3890	16.4171	16.1886	Post MLS
-022	B120	11.0061	16.0664	15.8597	
-023	B14	11.3390	16.5404	16.3499	
-024	B191	11.0828	16.0948	15.8876	
-025	C53	11.4039	16.6642	16.5196	
258675-021	A09	11.4201	16.4772	16.3220	
-022	H11	10.9096	16.0865	16.0402	
-023	1X	11.1617	16.1647	16.0889	
-024	CT25	11.3339	16.5404	16.3881	
-025	B15B	11.2742	16.3319	15.8924	
258758-001	MW4	11.4051	16.5405	16.3802	
DUP -001	JP8	11.0966	16.2009	16.0554	

MW 7-11-14

Date/ Time IN: 7-11-14 0220
Temp (C) IN: 105
Date/ Time OUT: 7-11-14 1745
Temp (C) OUT: 105

7-11-14
Extraction Chemist **Date**

Reviewed Online / See LIMS

PROJECT AE163 METTLER

Continued From Page

DATE	ANALYST	0.2000	0.5000	1.0000	2.0000	5.0000	10.0000	20.0000	50.0000	100.0000	SET
6-9-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0002	20.0004	50.0007	100.0013	A306
6-10-14	VV	0.2000	0.5001	1.0000	2.0000	4.9999	10.0008	20.0003	50.0005	100.0008	A306
6-11-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0001	20.0004	50.0004	100.0006	A306
6-12-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0002	20.0004	50.0006	100.0008	A306
6-13-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0002	20.0004	50.0006	100.0008	A306
6-16-14	MN	0.2000	0.5000	1.0000	2.0000	5.0000	10.0000	20.0002	50.0003	100.0006	A306
6-17-14	MN	0.2000	0.5000	1.0000	2.0000	5.0000	10.0000	20.0002	50.0003	100.0006	A306
6-18-14	MN	0.2000	0.5000	1.0000	2.0000	5.0000	10.0000	20.0003	50.0004	100.0006	A306
6-19-14	MN	0.2000	0.5000	0.9999	2.0000	5.0000	10.0001	20.0002	50.0005	100.0007	A306
6-20-14	MN	0.2000	0.5000	1.0000	2.0000	5.0000	10.0001	20.0002	50.0004	100.0007	A306
6-21-14	VV	0.1998	0.5002	1.0001	2.0000	5.0000	10.0001	20.0002	50.0007	100.0012	A306
6-24-14	MN	0.2000	0.5002	1.0001	2.0001	5.0001	10.0002	20.0001	50.0005	100.0011	A306
6-25-14	MN	0.2000	0.5000	1.0000	2.0000	5.0000	10.0001	20.0003	50.0002	100.0005	A306
6-26-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0001	20.0003	50.0003	100.0005	A306
6-27-14	MN	0.2000	0.5000	1.0000	2.0000	5.0000	10.0001	20.0003	50.0002	100.0004	A306
6-30-14	MN	0.2000	0.5000	1.0001	2.0001	5.0002	10.0003	20.0005	50.0009	100.0017	A306
7-1-14	MN	0.2000	0.5000	1.0000	2.0001	5.0001	10.0003	20.0005	50.0008	100.0016	A306
7-2-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0003	20.0004	50.0007	100.0016	A306
7-3-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0003	20.0005	50.0008	100.0017	A306
7-7-14	MN	0.2000	0.5001	1.0000	2.0001	5.0001	10.0001	20.0003	50.0006	100.0010	A306
7-8-14	MN	0.2000	0.5000	1.0000	2.0000	5.0000	10.0000	20.0002	50.0004	100.0007	A306
7-9-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0001	20.0003	50.0005	100.0008	A306
7-10-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0002	20.0003	50.0006	100.0010	10827
7-11-14	MN	0.2000	0.5000	1.0000	2.0000	5.0001	10.0001	20.0003	50.0006	100.0010	10827

Continued on Page

Read and Understood By

Signed Date Signed Date