



City of Emeryville

INCORPORATED 1896

1333 Park Avenue, Emeryville, CA 94608-3517
t (510) 596-4300 | f (510) 596-4389

February 27, 2018

Mr. Mark Detterman, PG, CEG
Senior Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: Phase II Data Gap Investigation Report
City of Emeryville Fire Station #35 (formerly #2) UST Site

Reference: Alameda County Fuel Leak Case No. R00000061
GeoTracker Global ID T0600101925

Dear Mr. Detterman:

The City of Emeryville is pleased to submit the attached *Phase II Data Gap Investigation Report* for the City owned Fire Station #35 (formerly #2) UST site, which is located at 6303 Hollis Street, Emeryville, CA. The report was prepared by OTG EnviroEngineering Solutions, Inc. (OTG) under a consultant service contract with the City of Emeryville.

ACKNOWLEDGEMENT

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's Geotracker Website.

Please contact Mr. Xinggang Tong at (510) 465-8982 or myself at (510) 596-3728 if you have questions or comments.

Sincerely,
City of Emeryville

Nancy Humphrey
Environmental Programs Analyst

February 27, 2018

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Senior Hazardous Materials Specialist
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Dear Mr. Detterman:

OTG EnviroEngineering Solutions, Inc. (OTG) is pleased to present this *Phase II Data Gap Investigation Report* for the City of Emeryville Fire Station #35 (formerly #2) UST site. The scope of investigation followed *Phase II Data Gap Investigation Work Plan* (OTG, March 24, 2017) and the approval letter from Alameda County Department of Environmental Health (ACDEH, May 17, 2017).

Certification

I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please call Xinggang Tong at (510) 465-8982 or Nancy Humphrey at (510) 596-3728 if you have questions or comments.

Sincerely,
OTG EnviroEngineering Solutions, Inc.



Xinggang Tong, PhD, PE
Project Manager



Attachments

**PHASE II
DATA GAP INVESTIGATION REPORT**

**CITY OF EMERYVILLE
FIRE STATION #35 UST SITE**

**6303 HOLLIS STREET
EMERYVILLE, CALIFORNIA**

**Alameda County Fuel Leak Case No. RO0000061
Geotracker Global ID T0600101925**

Prepared for

**City of Emeryville
Public Works Department
1333 Park Avenue
Emeryville, CA94608**

February 2018

Prepared by

OTG
**EnviroEngineering
Solutions, Inc.**

7700 Edgewater Drive, Suite 260
Oakland, CA 94621

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1 INTRODUCTION

This report presents the results of field investigation conducted at the City of Emeryville Fire Station #35 (formerly #2) located at 6303 Hollis Street, Emeryville, California (the Site or the Fire Station, Figure 1) in the Fourth Quarter of 2017. The scope of the investigation is presented in *Phase II Data Gap Investigation Work Plan* (OTG, March 24, 2017) and incorporates comments in the approval letter from Alameda County Department of Environmental Health (ACDEH, May 17, 2017). The purpose of the investigation is to delineate the extent of potential chemicals of concern (PCOCs) through the collection of additional soil, soil gas, and groundwater samples. Specific activities performed include 1) destruction of an existing and compromised groundwater monitoring well (MW-1); 2) installation of four (4) new groundwater monitoring wells, through which soil and groundwater samples were collected and analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline (TPH-g) and as diesel (TPH-d), and for Benzene, Toluene, Ethylbenzene, & Xylenes (BTEX), Methyl Tert Butyl Ether (MTBE), and Naphthalene; and 3) installation of two (2) permanent vapor monitoring probes, through which attempts were made to collect soil gas samples.

2. BACKGROUND

The Fire Station is located at the northwest corner of Hollis and 63rd Streets in Emeryville, as shown on Figure 1, in a mixed use area with light commercial and residential structures in the area. The Site is located at an approximate elevation of 25 feet above mean seal level and about one half mile east of the edge of San Francisco Bay.

Two underground storage tanks (UST), one 1,000-gallon gasoline UST and one 1,000-gallon diesel UST, were removed from the site in October 1995. A 2"-diameter groundwater monitoring well (MW-1) was installed in the downgradient direction within 15 feet of the former gasoline UST in March 1997. The well was monitored quarterly from the third Quarter 1997 through the second Quarter 1998 and again in the second Quarter 2010. Soil and groundwater investigations conducted prior to, during, and after the UST removal indicated the impact of TPH-g and BTEX in shallow groundwater and soil. Historic investigation results are summarized in tables in Appendix A. Sampling locations are shown on Figure 2. MW-1 is located in the area where fire engines drive through. Its seal has been compromised and the well was destroyed in this Phase II field work.

Under the direction of ACDEH, three direct-push boreholes (SB-17, SB-18, and SB-19 on Figure 2) were installed to up to 25 feet below ground surface (bgs) on January 29, 2016. SB-17 and SB-18 were designed to verify the detection of TPH-g at 29 mg/L in a grab groundwater sample from SB-16 collected in March 1997, while SB-19 was designed to verify the detection of TPH-g at 480 mg/kg from a soil sample collected from SB-7 in June 1995. Soil samples were collected from the depths of 3.5-4.5 ft bgs, 6.0-9.0 ft bgs, 14.5-15 ft bgs, and 24.5-25 ft bgs for the analyses of TPH-g, TPH-d, BTEX, MTBE, and Naphthalene. Results are summarized in Table 1. TPH-g was detected up to 490 mg/kg, TPH-d up to 94 mg/kg (with silica gel cleanup), benzene up to 0.016 mg/kg, toluene up to 0.48 mg/kg, ethylbenzene up to

2.7 mg/kg, total xylenes up to 12.6 mg/kg, and naphthalene up to 2.8 mg/kg. MTBE was not detected at or above its reporting limit. These results were comparable with historical soil data. The three boreholes were dry at the time of drilling and thus no groundwater sample was collected. Results were presented in Data Gap Investigation Report (OTG, March 31, 2016).

The approved scope of Phase II data gap investigation includes the following tasks:

- Destruction of the existing groundwater monitoring well MW-1.
- Installation of four (4) new groundwater monitoring wells in locations where the highest petroleum hydrocarbon concentrations were detected (EW-1 and EW-2 on Figure 2) and downgradient area (EW-3 and EW-4), and collection of additional soil samples and groundwater samples for analysis.
- Installation of two (2) permanent soil vapor monitoring probes next to the firehouse building in locations where the highest petroleum hydrocarbon concentrations were detected (SV-1 and SV-2 on Figure 2) and collection of soil vapor samples for analysis.

3. FIELD ACTIVITIES

The four new groundwater monitoring wells were installed on October 9, 2017, and MW-1 was also destroyed on the same day. The two vapor monitoring probes were installed on October 11. EW-1 was installed on the same location of SB-19 and EW-2 on the same location of SB-17, thus no additional soil samples were collected for chemical analysis from these two wells.

Pre-drilling activities included:

- Marking drilling locations with white paint on September 22, 2017;
- Notifying Underground Service Alert for the proposed drilling activities on September 25, 2017
- Obtaining drilling permit from Alameda County Public Works Agency, a copy of the permit is included in Appendix B;
- Arranging OHJ Utility Locating of Oakland CA, a private utility surveyor, to survey underground utilities in the proposed drilling area on October 3, 2017.

3.1 Groundwater Monitoring Well Installation and Sampling

PeneCore Drilling, Inc. of Woodland, California performed the drilling with a Geoprobe™ 6712DT combo rig under the supervision of an OTG professional civil engineer. Continuous soil core samples were first obtained from EW-3 and EW-4 using the rig's direct-push method with DT22 dual-core samplers, which have a 2 ¼" outside diameter (O.D.). Continuous soil core samples were retrieved within 5'-long, 1 3/8"-O.D (1-1/8"-ID) clear PVC liners for inspection, lithologic logging, and analysis. The retrieved liners with core sample were first opened for visual inspection and screening for levels of volatile organic compounds (VOCs) with a miniRae 3000 photoionization detector (PID) equipped with a 10.6 eV lamp. Soil samples selected based on visual inspection and PID readings were transferred into glass jars, which were then sealed with Teflon sheet lined caps, labeled, wrapped in individual Ziploc®

plastic bags, and placed on ice in a cooler. The remaining core soil samples were further examined for lithologic logging. Boring logs are included in Appendix C. Soil samples were collected from 4.0-4.5 ft bgs, 8.5-9.0 ft bgs, and 18.5-19.0 ft bgs for analysis.

The four wells were installed using the rig's rotary function with 8-inch diameter hollow stem augers to the total depth of 19 ft bgs. Well construction followed local and state well regulations. The wells were constructed with flush threaded 2-inch diameter Schedule 40 PVC casing and factory slotted 0.01-inch screen from 4 to 19 ft bgs, #2/16 filter sand pack from 3 to 19 ft bgs, one foot of hydrated bentonite pellets on top of the sand pack, and neat cement grout to 3-inch bgs. The wells were completed to grade with lockable wellheads in flush mounted, traffic rated and bolted well boxes. Well construction diagrams are included in Appendix C.

The soil samples selected for analysis were transported under chain-of-custody procedures to Enthalpy Analytical (formerly Curtis & Tompkins Labs) in Berkeley, California. Analyses included EPA Method 8015B for TPH-g and TPH-d and EPA Method 8260B for BTEX, MTBE, and Naphthalene.

Well survey was conducted by PLS Surveys, Inc. of Oakland, CA on October 19, 2017. In accordance with State Water Resources Control Board GeoTracker requirement, latitude and longitude were surveyed to NAD 1983 datum, and elevation above mean sea level (top of PVC well casing and flush mounted traffic box) was surveyed to NAVD 1988 datum. Survey data is included in Appendix D.

The four wells were developed on October 29, 2017. Development procedures included repeatedly surging (with a surge block) and purging (with disposal bailers). At least 21 gallons of groundwater was removed from each well. Well development field logs are included in Appendix E. No sheen or LNAPL (light non-aqueous phase liquid) was observed throughout the development process from each well.

Initial well sampling was performed on November 30, 2017. Prior to purging, static groundwater levels were measured to the nearest 0.01 foot in each well, using a Solinst™ water level sounder. Sampling procedures followed USEPA guideline for low-stress, minimal drawdown groundwater sample collection (EPA 542-S-02-001, May 2002). A peristaltic pump was used for purging and a Horiba U-52 multi-parameter instrument with flow-through cell was employed for monitoring pH, temperature, specific conductivity, turbidity, dissolved oxygen (D.O.), and oxidation-reduction potential (ORP) of purged water. All readings were recorded in field sampling logs, which are included in Appendix E. Each well is equipped with dedicated ¼"-diameter HDPE tubing for purging and sampling purposes. At the end of sample collection, a disposable bailer was used to retrieve approximately six inches of water in the bailer from each well for visual check. No sheen or LNAPL was observed from any of the four wells.

Sample containers were provided by Enthalpy Analytical of Berkeley, CA. Filled sample bottles were labeled, packaged, and stored in an iced cooler, and were delivered to the laboratory under chain-of-custody protocols. Laboratory analyses included EPA Method 8015B

for TPH-g and TPH-d and EPA Method 8260B for BTEX, MTBE, and Naphthalene. Laboratory analytical reports are included in Appendix F.

Drill cuttings and decontamination and purged water were contained in separate 55-gallon drums approved by Department of Transportation (DOT) for transportation. The drums were labeled and left on site for temporary storage pending analytical results for final disposition.

3.2 Destruction of Monitoring Well MW-1

Monitoring well MW-1 was destroyed on October 9, 2017 in the following sequence and in the presence of a County well inspector:

- Tremie-grouted the entire length of the well from bottom up with neat cement grout;
- Pressurized the well casing at 25 psi for 5 minutes;
- Added additional neat cement grout to fill the casing to full;
- Removed surface well box;
- Paved the surface with material matching surrounding.

3.3 Vapor Monitoring Probe Installation and Sampling

The two vapor monitoring probes (SV-1 and SV-2) were drilled using 3.25"-diameter hand auger on October 11, 2017. Both vapor probes are located within approximately 2 feet of the building's concrete slab (Figure 2) and were initially drilled to 6 feet bgs. Borehole SV-1 was dry at the time of drilling and the vapor probe was installed to 6 ft bgs. However, SV-2 had approximately two (2) inches of water at the completion of its drilling. It was then decided to place six (6) inches of dry bentonite chips at the bottom to absorb the water. SV-2 was thus installed to 5.5 ft bgs. The sequential procedure for the vapor probe installation is as follows:

- Place six (6) inches of #3 filter sand at bottom of the borehole;
- Lower a 0.5-inch diameter, 1-inch long stainless steel vapor sampling tip (50-micron pore) to the top of the filter sand. The tip is attached to ¼" OD Teflon tubing (Plate 1);
- Add another six inches of #3 filter sand to the top of the vapor sampling tip;
- Add six inches of dry bentonite chips;
- Place another one foot of hydrated bentonite chips;
- Place neat cement to 3 inches bgs;
- Install a six-inch diameter traffic rated and bolted well box flush to surface.

The soil cuttings were logged and screened with a miniRae 3000 PID equipped with a 10.6 eV lamp. Due to high PID readings between 5.5-6.0 ft bgs, a soil sample was collected from that depth from each of the two boreholes for chemical analysis. Boring logs are included in Appendix C.

Attempts were made to collect soil vapor samples from the two installed vapor probes on November 28, 2017. A 20-ml syringe was first used to test vapor withdrawal. However, rather than drew soil vapor into the syringe, groundwater was drawn into the syringe. After over 500

ml of groundwater was removed from each vapor probe, the syringe was still continuing drawing groundwater from the vapor probes. It was clear that the vapor probes were submerged below groundwater table and the attempt to collect vapor samples was abandoned. Photos of groundwater drawn into syringes were shown in Plate 2.

The groundwater monitoring well EW-1 is located approximately 12 feet away from SV-1. The water level in EW-1 was at 4.09 ft bgs, and the vapor collection tip for SV-1 is located between 5.4 and 5.5 ft bgs. The groundwater monitoring well EW-2 is located approximately 10 feet away from SV-2. The water level in EW-2 was at 3.53 ft bgs, and the vapor collection tip for SV-2 is located between 4.9 and 5.0 ft bgs. It is apparent that the vapor sampling tips are located below the groundwater level. The vapor sampling probes would have to be installed to no more than 3 ft bgs to avoid groundwater interference.

4. RESULTS

4.1 Soil

Table 1 presents a summary of laboratory analytical results. Laboratory reports are included in Appendix F.

Historical data and the January 2016 investigation results (SB-17 through SB-19) suggested the existence of a thin layer of subsurface soil between 4 feet and 7 feet bgs that has been impacted by TPH-g (gasoline), BTEX, and naphthalene. The additional results from this round of investigation (MW-3 and MW-4) indicate that the impacted area is limited. Soil samples collected from both MW-3 and MW-4 showed no impact from petroleum hydrocarbons.

4.2 Groundwater

Groundwater elevation data is summarized in Table 2, and laboratory analytical data is presented in Table 3. Field well development and sampling logs are included in Appendix E. Laboratory analytical reports are included in Appendix F.

The shallow groundwater zone beneath the site measured around 4 to 5 feet bgs on November 30, 2017. After calibrated to NAVD 88 standard, the shallow zone elevation varied between 21 and 22 feet above mean sea level across the site. As plotted on Figure 3, the shallow groundwater flows in the direction of S14°W with a gradient of approximately 0.015 ft/ft. EW-3 and EW-4 are located in downgradient area.

No sheen or LNAPL was observed during well installation, development, and sampling from any of the four wells. EW-2 reported the highest concentrations among the four wells with TPH-g at 2,900 ug/L, TPH-d at 680 ug/L, benzene at 62 ug/L, toluene at 16 ug/L, ethylbenzene at 110 ug/L, total xylenes at 440 ug/L, and naphthalene at 35 ug/L. The two downgradient wells had very limited impact, with 66 ug/L TPH-g detection in EW-3, 62 ug/L TPH-d detection in EW-4, and all other constituents below reporting limits. Estimated concentration

contours for 1 ug/L benzene and 100 ug/L TPH-g are presented on Figure 4. The length of the plume is estimated to be approximately 120 feet.

4.3 Soil Vapor

No soil vapor samples were collected due to the fact that the vapor probes were below groundwater table at the time of sampling.

5. DISCUSSIONS

MTBE is again not detected in any of the soil samples collected from EW-3 and EW-4 and in any of the groundwater samples from the four monitoring wells. MTBE is thus not a chemical of concern for the site.

A grab groundwater sample collected from SB-16 in March 1997 reported 29 mg/L TPH-g, while EW-2, which is located within five feet of SB-16, reported 2.9 mg/L TPH-g for the November 2017 sample. This means that either natural attenuation has reduced 90% of the TPH-g concentration from 1997 to 2017 and/or the grab groundwater sample obtained in 1997 contained significant amount of suspended solids, which artificially increased the groundwater concentration. This latest concentration of 2.9 mg/L is significantly lower than the 20 mg/L TPH-g commonly cited as a criterion for indirect evidence of the existence of LNAPL.

The downgradient edge of the plume has been defined by EW-3 and EW-4. The length of the plume is estimated to be approximately 120 feet. Given the fact that the two USTs were removed over 20 years ago and the length of the plume is only about 120 feet as of today, the plume appears either stable or has shrunk over time.

EW-2 reported the highest concentrations among the four wells. This is inconsistent with the current southwesterly groundwater flow direction as EW-2 is located in cross-gradient area. It is possible that the groundwater could have flowed in a southeasterly direction sometime in the past such that EW-2 was in the downgradient area. It is more likely that preferential pathways, such as underground utility lines, exist along the sidewalk of San Pablo Avenue, which facilitated the movement of petroleum hydrocarbons from the source area (former USTs) to the EW-2 location.

6. RECOMMENDATIONS

It is recommended to conduct four quarterly groundwater monitoring events to obtain sufficient water quality data for evaluation. At the completion of the four quarterly monitoring events, the Site Conceptual Model (SCM) should be updated to incorporate all relevant information generated from this additional data gap investigation. The updated SCM may be used for evaluation of case closure under the State Water Resources Control Board's Low Threat Underground Storage Tank Case Closure Policy (LTCP).

6. REFERENCES

Alameda County Environmental Health, *Request for a Focused SCM and Data Gap Work Plan; Fuel Leak Case No. RO0000061 and Geotracker Global ID T0600101925, City of Emeryville Fire Station #2, 6303 Hollis Street, Emeryville, CA, December 31, 2013.*

Alameda County Environmental Health, *Modified Work Plan Approval; Fuel Leak Case No. RO0000061 and Geotracker Global ID T0600101925, City of Emeryville Fire Station #2, 6303 Hollis Street, Emeryville, CA, July 7, 2015*

Alameda County Environmental Health, *Request for Work Plan; Fuel Leak Case No. RO0000061 and Geotracker Global ID T0600101925, City of Emeryville Fire Station #2, 6303 Hollis Street, Emeryville, CA, May 24, 2016.*

Alameda County Environmental Health, *Conditional Approval of Work Plan; Fuel Leak Case No. RO0000061 and Geotracker Global ID T0600101925, City of Emeryville Fire Station #2, 6303 Hollis Street, Emeryville, CA, May 17, 2017*

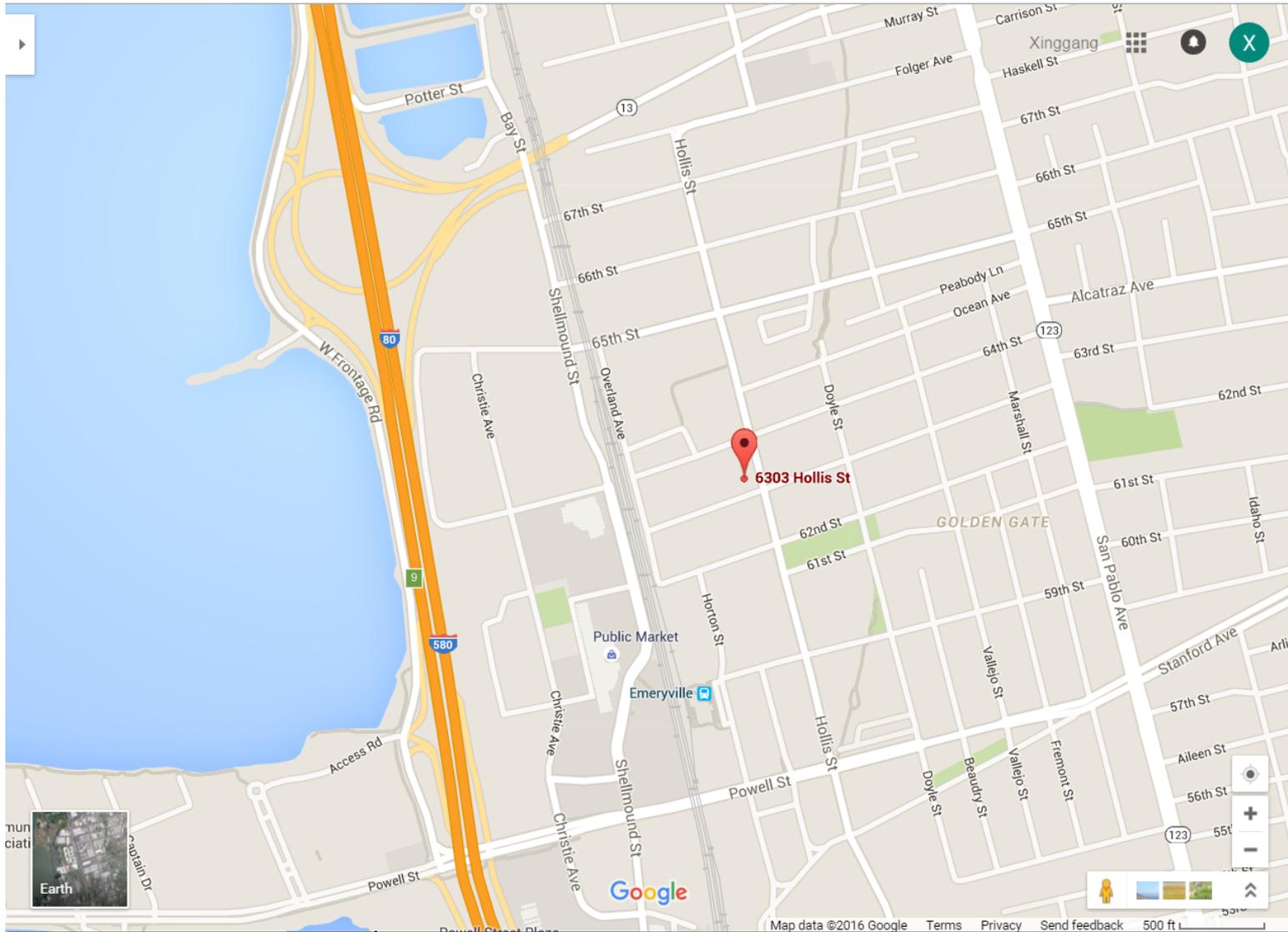
OTG EnviroEngineering Solutions, Inc., *Data Gap Investigation Work Plan for City of Emeryville Fire Station #2 UST Site, May 15, 2015.*

OTG EnviroEngineering Solutions, Inc., *Data Gap Investigation report for City of Emeryville Fire Station #2 UST Site, March 31, 2016.*

OTG EnviroEngineering Solutions, Inc., *Phase II Data Gap Investigation Work Plan for City of Emeryville Fire Station #2 UST Site, March 24, 2017.*

San Francisco Bay Regional Water Quality Control Board, *Environmental Screening Levels, Rev. 3, February 2016.*

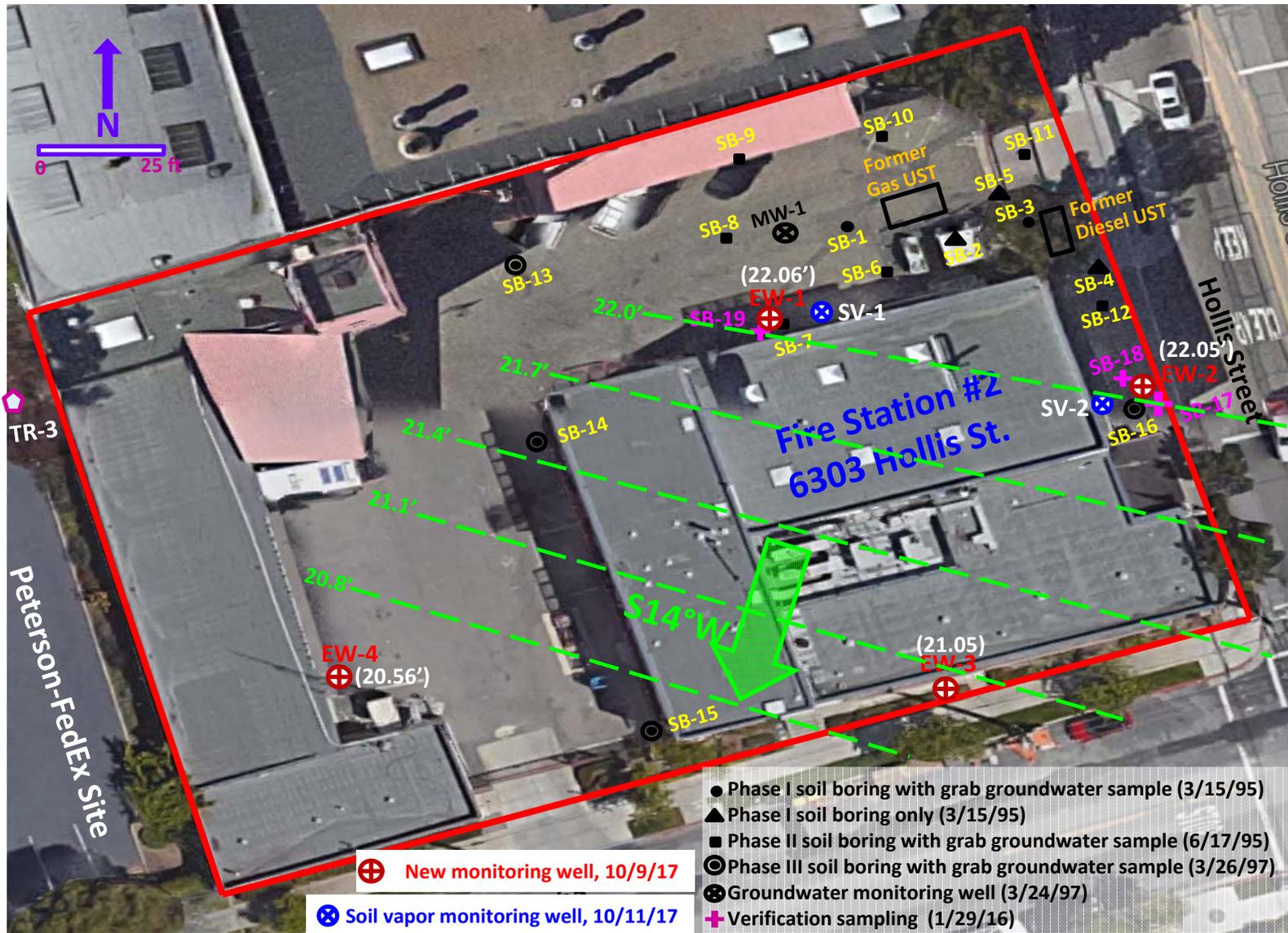
State Water Resources Control Board, *Low-Threat Underground Storage Tank Case Closure Policy, 2012.*



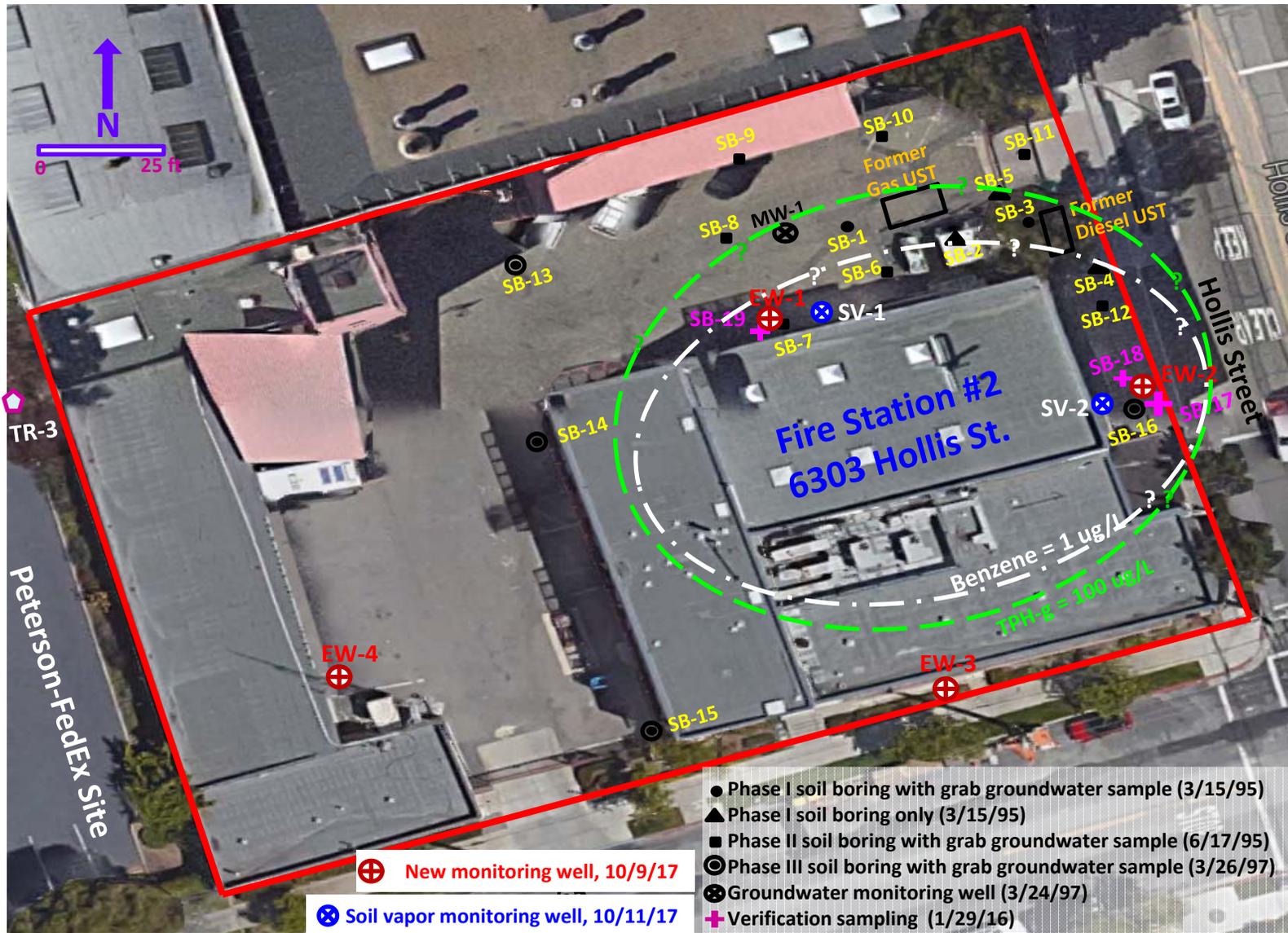
	<p>14EMV03.2000</p>	<p>Figure 1. Site Location Map</p>
	<p>January 2016</p>	<p>Fire Station #2, 6303 Hollis Street, Emeryville California, 94608</p>



	17EMV05.1000	Figure 2. Site Plan and Installed Groundwater & Soil Gas Monitoring wells
	November 2017	Fire Station #2, 6303 Hollis Street, Emeryville, California, 94608



	17EMV05.1300	Figure 3. Shallow Zone Groundwater Elevation Map As Measured on November 30, 2017
	January 2018	Fire Station #2, 6303 Hollis Street, Emeryville, California, 94608



	17EMV05.1300	Figure 4. 1 ug/L Benzene & 100 ug/L TPH-g Concentration Contours Based on 11/30/2017 Data
	January 2018	Fire Station #2, 6303 Hollis Street, Emeryville, California, 94608



Plate 1. Construction Materials for Vapor Monitoring Probes



A – Vapor Monitoring Probe SV-1



B – Vapor Monitoring Probe SV-2

Plate 2

Photos Showing Groundwater Was Drawn From Vapor Monitoring Probes on 11/28/2017

TABLE 1 - Summary of Soil Analytical Results
 City of Emeryville Fire Station No. 35 (formerly #2)

Sample ID	Date Sampled	Sampling Depth (ft, bgs)	TPH-gas		TPH-diesel				Benzene		Toluene		Ethyl-benzene		Total Xylenes		MTBE		Naphthalene	
			(mg/kg)	note	w/out silica gel (mg/kg)	note	with silica gel (mg/kg)	note	(ug/kg)	note	(ug/kg)	note	(ug/kg)	note	(ug/kg)	note	(ug/kg)	note	(ug/kg)	note
SB-17-4	1/29/16	4.0 - 4.5	490	(a)	ND (1.0)		ND (1.0)		16	(J)	140	(J)	2,700		12,600		ND (52)		2,100	
SB-17-9	1/29/16	8.5 - 9.0	ND (1.0)		2.6	(Y)	NA		ND (0.9)		ND (0.7)		ND (0.7)		1.5	(J)	ND (1.0)		ND (1.0)	
SB-17-15	1/29/16	14.5 - 15.0	ND (1.0)		94	(b)	65	(b)	ND (0.4)		ND (0.4)		ND (0.3)		ND (0.6)		ND (0.4)		ND (0.9)	
SB-18-4	1/29/16	4.0 - 4.5	330	(a)	110	(b)	94	(b)	ND (27)		480	(J)	1,700		11,300		ND (100)		2,800	
SB-18-8	1/29/16	7.5 - 8.0	ND (1.0)		ND (1.0)		NA		1.7	(J)	ND (0.5)		ND (0.3)		ND (0.7)		ND (0.4)		ND (1.0)	
SB-18-15	1/29/16	14.5 - 15.0	ND (1.0)		1.1	(Y)	NA		ND (0.4)		ND (0.5)		ND (0.3)		ND (0.7)		ND (0.4)		ND (1.0)	
SB-18-25	1/29/16	24.5 - 25.0	ND (0.9)		ND (1.0)		NA		ND (0.4)		ND (0.5)		ND (0.3)		ND (0.7)		ND (0.4)		ND (1.0)	
SB-19-4	1/29/16	3.5 - 4.0	1.8	(a)	6.3	(Y)	2.0	(Y)	ND (0.4)		ND (0.5)		0.74	(J)	1.0	(J)	ND (0.4)		5.5	
SB-19-6	1/29/16	6.0 - 6.5	460	(a)	ND (1.0)		NA		ND (13)		ND (7.0)		720		312		ND (52)		1,800	
SB-19-15	1/29/16	14.5 - 15.0	ND (1.0)		120	(b)	94	(b)	ND (0.9)		ND (0.7)		ND (0.7)		ND (1.2)		ND (1.0)		ND (1.0)	
EW-3-4	10/9/17	4.0 - 4.5	ND (0.9)		1.2	(Y)	NA		ND (5)		ND (5)		ND (5)		ND (5)		ND (5)		ND (5)	
EW-3-9	10/9/17	8.5 - 9.0	ND (1.0)		ND (1.0)		NA		ND (5)		ND (5)		ND (5)		ND (5)		ND (5)		ND (5)	
EW-3-18.5	10/9/17	18.5 - 19.0	ND (1.0)		1.3	(Y)	NA		ND (5)		ND (5)		ND (5)		ND (5)		ND (5)		ND (5)	
EW-4-4	10/9/17	4.0 - 4.5	ND (1.0)		ND (1.0)		NA		ND (5)		ND (5)		ND (5)		ND (5)		ND (5)		ND (5)	
EW-4-9	10/9/17	8.5 - 9.0	ND (1.0)		ND (1.0)		NA		ND (4.4)		ND (4.4)		ND (4.4)		ND (4.4)		ND (4.4)		ND (4.4)	
EW-4-18.5	10/9/17	18.5 - 19.0	ND (0.9)		ND (1.0)		NA		ND (4.3)		ND (4.3)		ND (4.3)		ND (4.3)		ND (4.3)		ND (4.3)	
SV-1-6	10/11/17	5.5 - 6.0	120	(Y)	120	(Y)	NA		ND (250)		ND (250)		730		ND (250)		ND (250)		1,200	
SV-2-6	10/11/17	5.5 - 6.0	660		210	(Y)	NA		ND (250)		ND (250)		810		ND (250)		ND (250)		1,300	
LTCP-com/ind (0 to 5 ft bgs)									8,200				89,000						45,000	
LTCP-com/ind (5 to 10 ft bgs)									12,000				134,000						45,000	
ESL (direct exposure)			2,800		880				1,000		4,100,000		22,000		2,400,000		180,000		350,000	
ESL (gross contamination)			1,000		2,300				870,000		650,000		400,000		420,000		21,000,000		220,000	
ESL (odor nuisance)			500		1,000				1,000,000		1,000,000		1,000,000		1,000,000		500,000		1,000,000	

TABLE 1 - Summary of Soil Analytical Results
City of Emeryville Fire Station No. 35 (formerly #2)

Notes:
(a): Weathered gasoline chromatographic pattern exhibiting a higher percentage of longer carbon-chain petroleum hydrocarbons (C10-C12).
(b): Sample exhibits chromatographic pattern which does not resemble diesel standard, with higher percentage in C10-C13 range.
(Y): Sample exhibits chromatographic pattern which does not resemble diesel standard.
(J): Estimated value which is below reporting limit (RL), but above method detection limit (MDL). RL was raised due to dilution factors.
ESLs are from San Francisco Bay Regional Water Quality Control Board February 2016 Edition
ESL (direct exposure) is the lowest of Com/Ind shallow soil exposure and Any Land Use/Any Depth soil construction exposure.
ESL (gross contamination) is the residual saturation, above which LNAPL in soil may be mobile or migrating (i.e., free product).
ESL (odor nuisance) is the lowest of Com/Ind shallow soil exposure and Any Land Use deep soil exposure.

TABLE 3
Summary of Groundwater Analytical Results
City of Emeryville Fire Station No.35 (formerly #2)

Sample ID	Date Sampled	LNAPL observation	TPH-gas		TPH-diesel				Benzene		Toluene		Ethyl-benzene		Total Xylenes		MTBE		Naphthalene		DO (mg/L)
			(ug/L)	note	w/out silica gel (ug/L)	note	with silica gel (ug/L)	note	(ug/L)	note	(ug/L)	note	(ug/L)	note	(ug/L)	note	(ug/L)	note	(ug/L)	note	
EW-1	11/30/17	none	380	(b')	160	(Y)	NA		1.3		0.7		14		14.8		ND (0.5)		12		0.02
EW-2	11/30/17	none	2,900	(b')	680	(Y)	NA		62		16		110		440		ND (1.7)		35		0.05
EW-3	11/30/17	none	66	(b')	ND (49)		NA		ND (0.5)		ND (0.5)		ND (0.5)		ND (0.5)		ND (0.5)		ND (2.0)		5.9
EW-4	11/30/17	none	ND (50)		62	(Y)	NA		ND (0.5)		ND (0.5)		ND (0.5)		ND (0.5)		ND (0.5)		ND (2.0)		3.1
Tier I ESL	Feb 2016		100				100		1		40		13		20		5		0.17		
LTCP-groundwater criteria									1,000								1,000				
Notes:																					
(b'): Low response was observed for gasoline C7-C12.																					
(Y): Sample exhibits chromatographic pattern which does not resemble standard.																					
ESLs are from San Francisco Bay Regional Water Quality Control Board February 2016 Edition																					

APPENDIX A

Historical Soil and Groundwater Investigation Data

TABLE 1
HISTORIC GROUNDWATER DATA
CITY OF EMERYVILLE FIRE STATION NO. 2

Sample No.	Date Sampled	Water level		TPH ^a Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (ug/L)	Total Lead (ug/L)	Notes
		TOC (ft)	MSL (ft)								
MW-1	6/2/1998	3.06	13.96	0.078	34	ND (5)	ND (5)	ND (5)	1100	NA	2nd quarter 98
Trip Blank	6/2/1998			ND (0.05)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2)	NA	2nd quarter 98
MW-1	3/13/1998	3.02	14.00	0.76	66	5.7	6.1	17	720	NA	1st quarter 98
Trip Blank	3/13/1998			ND (0.05)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (5)	NA	1st quarter 98
MW-1	12/5/1997	3.02	14.00	0.06	0.7	ND (0.5)	ND (0.5)	ND (2)	120	ND (40)	4th quarter 97
Trip Blank	12/5/1997			ND (0.05)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2)	ND (5)	NA	4th quarter 97
MW-1	9/26/1997	4.36	12.66	ND (0.05)	1.0	ND (0.5)	0.6	ND (2)	18	ND (40)	3rd quarter 97
Trip Blank	9/26/1997			ND (0.05)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2)	ND (5)	NA	3rd quarter 97
MW-1	4/7/2010			2.3	98	25	80	90	69	NA	TPH-d = 0.38
SB-3	3/15/1995	NA	NA	NA	220	3,800	2,500	14,000	NA	NA	Phase I
SB-1	3/15/1995	NA	NA	0.99	6.1	40	33	160	NA	NA	investigation
Trip Blank	3/15/1995	NA	NA	NA	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	NA	NA	
SB-6-W	6/17/1995	NA	NA	0.41	24	27	27	110	NA	NA	Phase II
SB-7-W	6/17/1995	NA	NA	5.50	36	30	180	510	NA	NA	investigation
SB-8-W	6/17/1995	NA	NA	0.46	18	36	27	100	NA	NA	
SB-9-W	6/17/1995	NA	NA	ND (0.05)	ND (0.5)	ND (0.5)	0.7	3.7	NA	NA	Phase II
SB-10-W	6/17/1995	NA	NA	ND (0.05)	ND (0.5)	ND (0.5)	0.6	3.3	NA	NA	investigation
SB-11-W	6/17/1995	NA	NA	0.23	12	8.6	12	44	NA	NA	
SB-12-W	6/17/1995	NA	NA	0.97	40	130	38	170	NA	NA	Phase II
Trip Blank	6/17/1995	NA	NA	ND (0.05)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	NA	NA	investigation
SB-13-W	3/26/1997	NA	NA	ND (0.05)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (5)	NA	additional
SB-14-W	3/26/1997	NA	NA	ND (0.05)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (5)	NA	investigation
SB-15-W	3/26/1997	NA	NA	ND (0.05)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (5)	NA	
SB-16-W	3/26/1997	NA	NA	29	430	1,200	1,000	4,700	ND (500)	NA	additional
Trip Blank	3/26/1997	NA	NA	ND (0.05)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (5)	NA	investigation

Notes: ^a Total petroleum hydrocarbons by EPA Method 8015 (Mod.), quantified as gasoline.
Benzene, toluene, ethylbenzene and xylenes by EPA Method 8020.

TABLE 2
HISTORIC SOIL ANALYTICAL DATA
CITY OF EMERYVILLE
FIRE STATION No. 2

Sample No.	Date Sampled	Sampling Depth	TPH ^a Gasoline (mg/kg)	TPH ^b Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (ug/kg)	Total Lead (mg/kg)	Notes
SB-1-2'	3/15/95	2'-2.5'	2.4	NA	280	12	200	370	NA	NA	Phase I investigation
SB-1-5'	3/15/95	5'-5.5'	540	NA	ND (1,000)	7,000	10,000	51,000	NA	NA	
SB-1-10'	3/15/95	10'-10.5'	ND (1.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	
SB-2-6'	3/15/95	6'-6.5'	3.0	NA	630	5.7	ND (5.0)	15	NA	NA	Phase I investigation
SB-2-10'	3/15/95	10'-10.5'	ND (1.0)	NA	110	ND (5.0)	9.7	6.1	NA	NA	
SB-3-6'	3/15/95	6'-6.5'	NA	ND (1.0)	420	11,000	5,500	27,000	NA	NA	Phase I investigation
SB-3-10'	3/15/95	10'-10.5'	NA	ND (1.0)	47	81	60	80	NA	NA	
SB-4-6'	3/15/95	6'-6.5'	NA	ND (1.0)	ND (50)	54	1,100	3,300	NA	NA	Phase I investigation
SB-4-11'	3/15/95	11'-11.5'	NA	ND (1.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	
SB-5-5.5'	3/15/95	5.5'-6'	NA	ND (1.0)	240	170	2,300	8,200	NA	NA	Phase I investigation
SB-5-10'	3/15/95	10'-10.5'	NA	ND (1.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	
SB-6-5.5	6/17/95	5.5'-6'	440	NA	1,200	4,900	8,600	47,000	NA	NA	Phase II investigation
SB-6-11	6/17/95	11'-11.5'	ND (1.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	
SB-7-5.5	6/17/95	5.5'-6'	480	NA	690	760	7,500	28,000	NA	NA	Phase II investigation
SB-7-11	6/17/95	11'-11.5'	ND (1.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	
SB-8-5.5	6/17/95	5.5'-6'	120	NA	190	230	1,500	3,500	NA	NA	Phase II investigation
SB-8-11	6/17/95	11'-11.5'	ND (1.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	

TABLE 2
HISTORIC SOIL ANALYTICAL DATA
CITY OF EMERYVILLE
FIRE STATION No. 2

Sample No.	Date Sampled	Sampling Depth	TPH ^a Gasoline (mg/kg)	TPH ^b Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (ug/kg)	Total Lead (mg/kg)	Notes
SB-9-5.5	6/17/95	5.5'-6'	ND (1.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	Phase II investigation
SB-9-13	6/17/95	13'-13.5'	ND (1.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	
SB-10-11.5	6/17/95	11.5'-12'	ND (1.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	Phase II investigation
SB-11-5.5	6/17/95	5.5'-6'	170	NA	1,200	5,300	3,300	17,000	NA	NA	Phase II investigation
SB-11-11	6/17/95	11'-11.5'	ND (1.0)	NA	ND (5.0)	ND (5.0)	5.7	26	NA	NA	
SB-12-5.5	6/17/95	5.5'-6'	ND (1.0)	NA	8.3	15	ND (5.0)	24	NA	NA	Phase II investigation
SB-12-11.5	6/17/95	11.5'-12'	ND (1.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	NA	
GE-1-7	10/12/95	7'-7.5'	380	NA	340	4	8,700	42,000	ND (3900)	NA	Tank removal
GW-1-7	10/12/95	7'-7.5'	ND (1.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	280	NA	
Stock-Gas-1	10/12/95		140	NA	ND (100)	220	1,600	6,600	ND (370)	NA	Tank removal
Stock-Gas-2	10/12/95		560	NA	580	1,800	12,000	56,000	ND (1300)	NA	
Stock-Diesel-1	10/12/95		NA	ND (1.0)	NA	NA	NA	NA	NA	NA	
DN-1-7.5	10/12/95	7.5'-8'	NA	ND (1.0)	NA	NA	NA	NA	NA	NA	Tank removal
DS-1-7.5	10/12/95	7.5'-8'	NA	ND (1.0)	NA	NA	NA	NA	NA	NA	
SB-13-5	3/25/97	5'-5.5'	ND (0.5)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	Mar-97 investigation
SB-13-10	3/25/97	10'-10.5'	ND (0.5)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	21	2	

TABLE 2
HISTORIC SOIL ANALYTICAL DATA
CITY OF EMERYVILLE
FIRE STATION No. 2

Sample No.	Date Sampled	Sampling Depth	TPH ^a Gasoline (mg/kg)	TPH ^b Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (ug/kg)	Total Lead (mg/kg)	Notes
SB-14-5	3/25/97	5'-5.5'	ND (0.5)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	Mar-97 investigation
SB-14-10	3/25/97	10'-10.5'	ND (0.5)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	4	
SB-15-5	3/25/97	5'-5.5'	ND (0.5)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	NA	Mar-97 investigation
SB-15-10	3/25/97	10'-10.5'	ND (0.5)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	7	
SB-16-5	3/25/97	5'-5.5'	45	NA	ND (50)	60	260	1,200	ND (50)	NA	Mar-97 investigation
SB-16-12	3/25/97	12'-12.5'	ND (0.5)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	7	
MW-1-6	3/24/97	6'-6.5'	270	NA	ND (500)	1,300	4,200	21,000	ND (500)	8.2	Mar-97 investigation
MW-1-11	3/24/97	11'-11.5'	ND (0.5)	NA	ND (5.0)	7	9	38	ND (5.0)	3.5	
MW-1-16	3/24/97	16'-16.5'	ND (0.5)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	5.4	

Notes: ^a Total petroleum hydrocarbons by EPA Method 8015 (Mod.), quantified as gasoline.
^b Total petroleum hydrocarbons by EPA Method 8015 (Mod.), quantified as diesel.
Benzene, toluene, ethylbenzene and xylenes by EPA Method 8020.
NA - Not analyzed; ND - Not detected at or above the detection limit given in parentheses.

APPENDIX B

Copy of Drilling Permit

Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 09/27/2017 By jamesy

Permit Numbers: W2017-0744 to W2017-0749
Permits Valid from 10/09/2017 to 10/20/2017

Application Id: 1506031545852
Site Location: 6303 Hollis St, Emeryville, CA 94608, USA
Project Start Date: 10/09/2017
Assigned Inspector: Contact Eneyew Amberber at (510) 670-5759 or eneyew@acpwa.org

City of Project Site:Emeryville

Completion Date:10/20/2017

Applicant: OTG EnviroEngineering Solutions, Inc. - **Phone:** 510-465-8982

Xinggang Tong
7700 Edgewater Dr., Suite 260, Oakland, CA 94621

Property Owner: Nancy Humphrey **Phone:** 510-596-3728

City of Emeryville, 1333 Park Avenue, Emeryville, CA 94608

Client: Xinggang Tong **Phone:** 510-465-8982

7700 Edgewater Dr., Suite 260, Oakland, CA 94621

Contact: Xinggang Tong **Phone:** 510-465-8982

Cell: 510-612-0857

Receipt Number: WR2017-0448	Total Due:	\$2250.00
Payer Name : Xinggang Tong	Total Amount Paid:	\$2250.00
	Paid By: MC	PAID IN FULL

Works Requesting Permits:

Well Construction-Monitoring-Monitoring - 4 Wells
Driller: PeneCore Drilling Inc - Lic #: 906899 - Method: hstem

Work Total: \$1588.00

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2017-0744	09/27/2017	01/07/2018	EW-1	8.00 in.	2.00 in.	3.00 ft	19.00 ft
W2017-0745	09/27/2017	01/07/2018	EW-2	8.00 in.	2.00 in.	3.00 ft	19.00 ft
W2017-0746	09/27/2017	01/07/2018	EW-3	8.00 in.	2.00 in.	3.00 ft	19.00 ft
W2017-0747	09/27/2017	01/07/2018	EW-4	8.00 in.	2.00 in.	3.00 ft	19.00 ft

Specific Work Permit Conditions

1. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

2. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

3. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits

Alameda County Public Works Agency - Water Resources Well Permit

and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

4. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 30 days. Include permit number and site map.
5. Applicant shall submit the copies of the approved encroachment permit to this office within 10 days.
6. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
7. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.
8. Minimum surface seal thickness is two inches of cement grout placed by tremie.
9. Minimum seal (Neat Cement seal) depth for monitoring wells is 5 feet below ground surface(BGS) or the maximum depth practicable or 20 feet.
10. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
11. Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 & Division 3 of Title 27, CCR) require electronic submission of any report or data required by a regulatory agency from a cleanup site. Submission dates are set by a Regional Water Board or by a regulatory agency. Once a report/data is successfully uploaded, as required, you have met the reporting requirement (i.e. the compliance measure for electronic submittals is the actual upload itself). The upload date should be on or prior to the regulatory due date.

Well Destruction-Monitoring - 1 Wells

Driller: PeneCore Drilling Inc - Lic #: 906899 - Method: press

Work Total: \$397.00

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2017-0748	09/27/2017	01/07/2018	MW-1	8.00 in.	2.00 in.	5.00 ft	21.00 ft			

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required

Alameda County Public Works Agency - Water Resources Well Permit

for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 30 days. Include permit number and site map.
4. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost and liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.
5. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
6. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.
7. Remove the Christy box or similar structure.

Destroy well by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil.

After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

8. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
 9. Remove well by excavation. After the seal has set, backfill the remaining hole with concrete or compacted material to match existing.
 10. Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 & Division 3 of Title 27, CCR) require electronic submission of any report or data required by a regulatory agency from a cleanup site. Submission dates are set by a Regional Water Board or by a regulatory agency. Once a report/data is successfully uploaded, as required, you have met the reporting requirement (i.e. the compliance measure for electronic submittals is the actual upload itself). The upload date should be on or prior to the regulatory due date.
 11. Remove the Christy box or similar structure. Tremie Grout with Cement (More than 30 ft in depth). After the seal has set, backfill the remaining hole with concrete or compacted material to match existing.
-

Alameda County Public Works Agency - Water Resources Well Permit

Well Construction-Vapor monitoring well-Vapor monitoring well - 2 Wells

Driller: PeneCore Drilling Inc - Lic #: 906899 - Method: Hand

Work Total: \$265.00

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2017-0749	09/27/2017	01/07/2018	SV-1	2.00 in.	0.25 in.	5.00 ft	6.50 ft
W2017-0749	09/27/2017	01/07/2018	SV-2	2.00 in.	0.25 in.	5.00 ft	6.50 ft

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.
2. Compliance with the above well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate state reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 30 days, including permit number and site map.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.
5. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.
6. No changes in construction procedures or well type shall change, as described on this permit application. This permit may be voided if it contains incorrect information.
7. Applicant shall submit the copies of the approved encroachment permit to this office within 10 days.
8. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
9. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.

Alameda County Public Works Agency - Water Resources Well Permit

10. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.

11. Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 & Division 3 of Title 27, CCR) require electronic submission of any report or data required by a regulatory agency from a cleanup site. Submission dates are set by a Regional Water Board or by a regulatory agency. Once a report/data is successfully uploaded, as required, you have met the reporting requirement (i.e. the compliance measure for electronic submittals is the actual upload itself). The upload date should be on or prior to the regulatory due date.

12. Vapor monitoring wells above water level constructed with tubing maybe be backfilled with pancake-batter consistency bentonite. Minimum surface seal thickness is two inches of cement grout around well box.

Vapor monitoring wells above water level constructed with pvc pipe shall have a minimum seal depth (Neat Cement Seal) of 2 feet below ground surface (BGS). Minimum surface seal thickness is two inches of cement grout around well box. All other conditions for monitoring well construction shall apply.

APPENDIX C

Boring Logs & Well Construction diagrams

BORING LOG

Site Location: 6303 Hollis St, Emeryville, CA 94608

Boring No. **SB-19**

Well No. **EW-1**

Sheet 1 of 1

Project # 17EMV05.1000

Client: **City of Emeryville**
 Date(s) Drilled: **10/9/2017**
 Date(s) Installed: **10/9/2017**
 Drilling Co./Driller: **PeneCore Drilling**
 Drilling Method: **Hollow-stem Auger**
 Drilling Equipment: **Geoprobe 6712 DT Combo**

Well Borehole Diameter: **8 inches**
 Well Diameter: **2 inches**
 Well Casing Material: **Schedule 40 PVC**
 Well Total Depth: **19 feet**
 Well Screen: **0.01-inch slotted 4 to 19 ft bgs**
 Sand pack: **#2/16 Lonestar sand 3 to 19 ft bgs**

Ground Elevation: **26.57 ft**
 TOC Elevation: **26.15 ft**
 Coordinates (Lati): **37.84422822**
 Coordinates (Long)-**122.29104350**
 Initial boring (direct push) total depth: 20 ft
 Initial boring (direct push) diameter: 2.5 inches

Drilling Summary: Advance well borehole to 19 ft below ground surface (bgs) using 8-inch hollow-stem augers. Install 2-inch diameter groundwater monitoring well with Schedule 40 PVC casing and 0.01-inch slot screen (4 to 19 ft bgs). #2/16 filter sand from bottom to 3 ft bgs. bentonite pellets to 2 ft bgs. neat cement grout to 6 inch bgs. 8-inch diameter well box to surface contained in concrete collar.

Well Construction Details	Sample No.	Sample Interval	PID Reading, ppm	Recovery	Blow Counts	Odor	Depth (ft)	Graphic Log	LITHOLOGY/REMARKS
Well Construction Details: bentonite 2-inch dia. Sch 40 PVC blank neat cement #2/16 filter sand cap							0	ASPHALT	0- 0.5' asphalt
							1		0.5 - 1.5' base rock with fines (GM), reddish brown hand auger to 1.5' FILL
			1.5				2		1.5 - 3' clay with some gravels (CL), dark brown, moist, medium stiff
		SB-19-4		2	80		3		
				2			4		3 - 7' sand-silt-clay mixture with some gravels (SC), greenish gray, moist, medium stiff, petroleum odor around 6'
				15			5		▼ water level, 5 hours after completion of well construction
		SB-19-6		50	100		6	yes	
				25			7		
				1.7			8		7 - 20' silty/sandy clay (CL), occasionally with minor gravels grayish brown, stiff
					100		9		
				0.5			10		
					100		11		
				0.5			12		brown and yellow mottled, medium stiff, moist
					100		13		
		SB-19-15		0.2			14		
					100		15		yellowish brown, stiff
				0.2			16		softer around 17', moist
					100		17		
				0.1			18		
					100		19		
						20		relatively dry and stiff at 20' Bottom of boring at 20 feet	
						21			
						22			
						23			
						24			
						25			

BORING LOG

Site Location: 6303 Hollis St, Emeryville, CA 94608

Boring No. **SB-17**

Well No. **EW-2**

Sheet 1 of 1

Project # 17EMV05.1000

Client: **City of Emeryville**
 Date(s) Drilled: **10/9/2017**
 Date(s) Installed: **10/9/2017**
 Drilling Co./Driller: **PeneCore Drilling**
 Drilling Method: **Hollow-stem Auger**
 Drilling Equipment: **Geoprobe 6712 DT Combo**

Well Borehole Diameter: **8 inches**
 Well Diameter: **2 inches**
 Well Casing Material: **Schedule 40 PVC**
 Well Total Depth: **19 feet**
 Well Screen: **0.01-inch slotted 4 to 19 ft bgs**
 Sand pack: **#2/16 Lonestar sand 3 to 19 ft bgs**

Ground Elevation: **25.86 ft**
 TOC Elevation: **25.58 ft**
 Coordinates (Lati): **37.84416319**
 Coordinates (Long)-**122.29077270**
 Initial boring (direct push) total depth: 20 ft
 Initial boring (direct push) diameter: 2.5 inches

Drilling Summary: Advance well borehole to 19 ft below ground surface (bgs) using 8-inch hollow-stem augers. Install 2-inch diameter groundwater monitoring well with Schedule 40 PVC casing and 0.01-inch slot screen (4 to 19 ft bgs). #2/16 filter sand from bottom to 3 ft bgs. bentonite pellets to 2 ft bgs. neat cement grout to 6 inch bgs. 8-inch diameter well box to surface contained in concrete collar.

Well Construction Details	Sample No.	Sample Interval	PID Reading, ppm	Recovery	Blow Counts	Odor	Depth (ft)	Graphic Log	LITHOLOGY/REMARKS
Well Construction Details: 2-inch dia. Sch 40 PVC blank casing bentonite pellets to 2 ft bgs neat cement grout to 6 inch bgs #2/16 filter sand from bottom to 3 ft bgs cap			0.2	100			1	CONCRETE	0- 0.5' concrete
							2		0.5 - 2' base rock with fines (GM), reddish brown, limited free water seeping out of base rock hand auger to 2'
			1	100				3	2 - 4' clay with some gravels (CL), greenish gray, moist, medium stiff
	SB-17-4		95			yes	4		4 - 5.5' sand-silt-clay mixture with some gravels (SC), gray, moist, medium stiff, petroleum odor
			50			yes	5		
			1	100				6	5.5 - 13' silty/sandy clay (CL), gray to brown, moist, & stiff
			0.6					7	
								8	
	SB-17-9			100				9	
			0.9					10	appears wet around 10.5', but no free water
				100				11	
			0.9					12	
				100				13	
								14	13 - 16' clayey sand to sand-clay mixture (SC), light brown to brown, moist, & stiff
	SB-17-15		0.4					15	
				100				16	
			0.1					17	▽ water level at completion of well construction.
								18	16 - 20' silty/sandy clay (CL), light brown to brown, moist, & stiff
				100				19	appears wet around 19', but no free water
			0.4					20	Bottom of boring at 20 feet
							21		
							22		
							23		
							24		
							25		

BORING LOG

Site Location: 6303 Hollis St, Emeryville, CA 94608

Boring No.

Well No. **EW-3**

Sheet 1 of 1

Project # 17EMV05.1000

Client: **City of Emeryville**
 Date(s) Drilled: **10/9/2017**
 Date(s) Installed: **10/9/2017**
 Drilling Co./Driller: **PeneCore Drilling**
 Drilling Method: **Hollow-stem Auger**
 Drilling Equipment: **Geoprobe 6712 DT Combo**

Well Borehole Diameter: **8 inches**
 Well Diameter: **2 inches**
 Well Casing Material: **Schedule 40 PVC**
 Well Total Depth: **19 feet**
 Well Screen: **0.01-inch slotted 4 to 19 ft bgs**
 Sand pack: **#2/16 Lonestar sand 3 to 19 ft bgs**

Ground Elevation: **25.13 ft**
 TOC Elevation: **24.84 ft**
 Coordinates (Lati): **37.84397533**
 Coordinates (Long)-**122.29089940**
 Initial boring (direct push) total depth: 19 ft
 Initial boring (direct push) diameter: 2.5 inches

Drilling Summary: Advance well borehole to 19 ft below ground surface (bgs) using 8-inch hollow-stem augers. Install 2-inch diameter groundwater monitoring well with Schedule 40 PVC casing and 0.01-inch slot screen (4 to 19 ft bgs). #2/16 filter sand from bottom to 3 ft bgs. bentonite pellets to 2 ft bgs. neat cement grout to 6 inch bgs. 8-inch diameter well box to surface contained in concrete collar.

Well Construction Details	Sample No.	Sample Interval	PID Reading, ppm	Recovery	Blow Counts	Odor	Depth (ft)	Graphic Log	LITHOLOGY/REMARKS	
Well Construction Details: bentonite 2-inch dia. Sch 40 PVC blank neat cement #2/16 filter sand cap			0				1		0 - 5' fill, gravel-sand-silt mixture (GM), yellowish-light brown, dry, containing pieces of red bricks hand auger to 3'	
			0				2			
			0				3			
				0	100			4		5 - 19' silty/sandy clay (CL), light brown, medium plasticity 5 to 10' stiff
		EW-3-4		0				5		
				0				6		
				0				7		
				0				8		
				0	100			9		10 - 13' soft & moist, but no free water, contain trace gravels
		EW-3-9		0				10		
				0				11		
				0				12		
				0				13		
				0				14		
				0				15		
				0	100			16		16 - 17' medium soft & moist, but no free water
				0				17		
				0				18		
				0				19		17 - 19' stiff, light brown mottled with grey Bottom of boring at 19 feet
	EW-3-18.5		0				19			
							20			
							21			
							22			
							23			
							24			
							25			

BORING LOG

Site Location: 6303 Hollis St, Emeryville, CA 94608

Boring No.

Well No. **EW-4**

Sheet 1 of 1

Project # 17EMV05.1000

Client: **City of Emeryville**
 Date(s) Drilled: **10/9/2017**
 Date(s) Installed: **10/9/2017**
 Drilling Co./Driller: **PeneCore Drilling**
 Drilling Method: **Hollow-stem Auger**
 Drilling Equipment: **Geoprobe 6712 DT Combo**

Well Borehole Diameter: **8 inches**
 Well Diameter: **2 inches**
 Well Casing Material: **Schedule 40 PVC**
 Well Total Depth: **19 feet**
 Well Screen: **0.01-inch slotted 4 to 19 ft bgs**
 Sand pack: **#2/16 Lonestar sand 3 to 19 ft bgs**

Ground Elevation: **26.30 ft**
 TOC Elevation: **25.91 ft**
 Coordinates (Lati): **37.84399520**
 Coordinates (Long)-**122.29128920**
 Initial boring (direct push) total depth: 19 ft
 Initial boring (direct push) diameter: 2.5 inches

Drilling Summary: Advance well borehole to 19 ft below ground surface (bgs) using 8-inch hollow-stem augers. Install 2-inch diameter groundwater monitoring well with Schedule 40 PVC casing and 0.01-inch slot screen (4 to 19 ft bgs). #2/16 filter sand from bottom to 3 ft bgs, bentonite pellets to 2 ft bgs, neat cement grout to 6 inch bgs. 8-inch diameter well box to surface contained in concrete collar.

Well Construction Details	Sample No.	Sample Interval	PID Reading, ppm	Recovery	Blow Counts	Odor	Depth (ft)	Graphic Log	LITHOLOGY/REMARKS
Well Construction Details: 2-inch dia. Sch 40 PVC blank casing bentonite neat cement #2/16 filter sand cap			0				0	ASPHALT	0- 4" asphalt
			0				1		4" - 1.5' base rock with fines (GM), containing pieces of red bricks at 18" hand auger to 3'
			0				2		1.5' - 4' silty clay (CL), dark brown to black, medium plasticity, medium soft
			0				3		
		EW-4-4		0	100		4		4' - 13' silty/sandy clay (CL) with trace coarse sand & gravels variable with depth, gray to 6' and then transition to brown color, low to medium plasticity, & stiff
				0			5		
				0			6		▽ water level, 2 hours after completion of well construction
				0			7		
				0.1			8		
		EW-4-9		0			9		
				0.1			10		
				0			11		
				0			12		
				0	100		13		
				0			14		13' - 19' silty clay (CL) with trace gravels at 19', brown to yellowish brown, low to medium plasticity, medium soft & moist, wet at 19'
				0			15		
				0			16		
				0			17		▽ water level at completion of well construction
				0	100		18		
	EW-4-18.5		0			19		Bottom of boring at 19 feet	
						20			
						21			
						22			
						23			
						24			
						25			

BORING LOG

Site Location: 6303 Hollis St, Emeryville, CA 94608

Boring No. _____
Well No. **SV-1**
Sheet 1 of 1
Project # 17EMV05.1000

Client: **City of Emeryville**
Date(s) Drilled: **10/11/2017**
Date(s) Installed: **10/11/2017**
Drilling Co./Driller: **PeneCore Drilling**
Drilling Method: **Hand auger**
Drilling Equipment: _____

Well Borehole Diameter: **2 inches**
Well Diameter: **0.25 inches**
Well Casing Material: **Teflon Tubing**
Well Total Depth: **6 feet**
Well Screen: **0.5-in dia. 1-in long 50-micron pore ss filter**
Sand pack: **one foot #3 Lonestar sand**

Ground Elevation: _____
TOC Elevation: _____
Coordinates (Lati): **37.844221**
Coordinates (Long)-**122.291032**

Drilling Summary: Advance borehole to 6 ft below ground surface (bgs) using 3.25-inch diameter hand auger. Install a vapor sampling tip (0.5-inch diameter 1-inch long 50-micron pore stainless steel filter) attached to 0.25-inch diameter Teflon tubing, #3 filter sand from bottom to 5 ft bgs, dry bentonite pallets to 4.5 ft bgs, hydrated bentonite pallets to 3.5 ft bgs, neat cement grout to 3 inch bgs. 6-inch diameter well box to surface contained in concrete collar.

Vapor Well Construction Details	Sample No.	Sample Interval	PID Reading, ppm	Recovery	Blow Counts	Odor	Depth (ft)	Graphic Log	LITHOLOGY/REMARKS
			0				1	ASPHALT	0- 0.5' asphalt
			5				2		0.5 - 1.5' gravel-sand-silt mix (GM), dark brown
			5				3		1.5' - 4.5' clayey silt with minor gravels (ML), gray, low plasticity, stiff
			5.5	100			4		
			35			yes	5		4.5' - 6' fill, silty sand with some gravels (SM), gray, moist, but no free water
	SV-1-6		750			yes	6		bottom of boring at 6 ft
							7		
							8		
							9		
							10		
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		
							25		

BORING LOG

Site Location: 6303 Hollis St, Emeryville, CA 94608

Boring No. _____
Well No. **SV-2**
Sheet 1 of 1
Project # 17EMV05.1000

Client: **City of Emeryville**
Date(s) Drilled: **10/11/2017**
Date(s) Installed: **10/11/2017**
Drilling Co./Driller: **PeneCore Drilling**
Drilling Method: **Hand auger**
Drilling Equipment: _____

Well Borehole Diameter: **2 inches**
Well Diameter: **0.25 inches**
Well Casing Material: **Teflon Tubing**
Well Total Depth: **6 feet**
Well Screen: **0.5-in dia. 1-in long 50-micron pore ss filter**
Sand pack: **one foot #3 Lonestar sand**

Ground Elevation: _____
TOC Elevation: _____
Coordinates (Lati): **37.844165**
Coordinates (Long)-**122.290816**

Drilling Summary: Advance borehole to 6 ft below ground surface (bgs) using 3.25-inch diameter hand auger. Add 6" dry bentonite pallets to bottom due to 2" water presence. Install a vapor sampling tip (0.5-inch diameter 1-inch long 50-micron pore stainless steel filter) attached to 0.25-inch diameter Teflon tubing, #3 filter sand to 4.5 ft bgs, dry bentonite pallets to 4 ft bgs, hydrated bentonite pallets to 3 ft bgs, neat cement grout to 3 inch bgs. 6-inch diameter well box to surface contained in concrete collar.

Vapor Well Construction Details	Sample No.	Sample Interval	PID Reading, ppm	Recovery	Blow Counts	Odor	Depth (ft)	Graphic Log	LITHOLOGY/REMARKS
			0				1	concrete	6" concrete
			0				2		0.5 - 1.5' fill, gravel-sand mixture (GP), reddish color
			1				3		1.5' - 2.5' silty clay (CL), brown, dry & stiff
			45	100			4		
			670			yes	5		2.5' - 6' silty sand with some gravels (SM), gray, moist
	SV-2-6		1200			yes	6		2-inch water at bottom at completion of borehole bottom of boring at 3 ft
							7		
							8		
							9		
							10		
							11		
							12		
							13		
							14		
							15		
							16		
							17		
							18		
							19		
							20		
							21		
							22		
							23		
							24		
							25		

APPENDIX D

Well XYZ Survey Results

PLS Surveys Inc.

6303 HOLLIS STREET
EMERYVILLE, CA

10-19-2017

GLOBAL_ID	FIELD_PT_NAME	FIELD_PT_CLASS	XY_SURVEY_DATE	LATITUDE	LONGITUDE	XY_METHOD	XY_DATUM	XY_ACC_VAL	XY_SURVEY_ORG	GPS_EQUIP_TYPE	XY_SURVEY_DESC
T0600101925	EW-4	MW	10/19/2017	37.84399520	-122.29128920	CGPS	NAD83	1	PLS Surveys Inc.	LGS15	#24
T0600101925	EW-1	MW	10/19/2017	37.84422822	-122.29104350	CGPS	NAD83	1	PLS Surveys Inc.	LGS15	#26
T0600101925	EW-3	MW	10/19/2017	37.84397533	-122.29089940	CGPS	NAD83	1	PLS Surveys Inc.	LGS15	#29
T0600101925	EW-2	MW	10/19/2017	37.84416319	-122.29077270	CGPS	NAD83	1	PLS Surveys Inc.	LGS15	#31

PLS Surveys Inc.

6303 HOLLIS STREET
EMERYVILLE, CA

10-19-2017

GLOBAL_ID	FIELD_PT_NAME	ELEV_SURVEY_DATE	ELEVATION	ELEV_METHOD	ELEV_DATUM	ELEV_ACC_VAL	ELEV_SURVEY_ORG	RISER_HT	ELEV_DESC	EFF_DATE
T0600101925	EW-4	10/19/2017	25.91	TRIG	88	3	PLS Surveys Inc.		#24	
T0600101925	EW-1	10/19/2017	26.15	TRIG	88	3	PLS Surveys Inc.		#26	
T0600101925	EW-3	10/19/2017	24.84	TRIG	88	3	PLS Surveys Inc.		#29	
T0600101925	EW-2	10/19/2017	25.58	TRIG	88	3	PLS Surveys Inc.		#31	

APPENDIX E

Well Development & Sampling Logs

FIELD SAMPLING LOG SHEET <i>Well Development</i>								
WELL ID <i>EW-1</i>			Date of Sampling <i>10/29/2017</i>					
Site Location <i>6303 Hollis St., Emeryville, CA</i>								
Project # <i>ITEMV05</i>		Task # <i>1000</i>		Title <i>PS#35</i>				
OTG Project Manager <i>Xinggang Tong</i>				Phone # <i>510-465-8982</i>				
Client: <i>City of Emeryville</i>								
Client Contact:				Phone #				
Laboratory:								
Well Diameter: <i>2"</i> 3" 4" 6" other				Well Material: <i>Sch 40 PVC</i> Sch 80 PVC, other				
Is well secured? <i>Yes</i> no Bolt size:				Type of lock/Lock #				
Comments:								
Purge Method: <i>PE/PVC disp bailer</i> Teflon bailer, Centrifugal pump, Peristaltic pump, Grundfos pump, Other								
Pump lines: <i>NA</i> New, Dedicated, Cleaned				Bailer line: <i>NA</i> New, Dedicated, Cleaned				
Method of cleaning pump: NA, Alconox, Liqui-nox, Tap water DI rinse, other								
Method of cleaning Bailer: NA, Alconox, Liqui-nox, Tap water DI rinse, other								
Sampling method: <i>PE/PVC disp bailer</i> Teflon bailer, Peristaltic pump, other								
pH meter serial #			Spec cond meter serial #			Calibrated at:		
Water level meter: <i>Selinst 101</i>				P.I.D. reading: ppm at well head				
<i>Total Depth = 18.71 to TOC, Horiba U-52 multi-parameter rented from Pine-Env</i>								
Water level before purging (TOC, ft) <i>4.71' at 10:59</i>				Water level prior to sampling				
<i>18.71(TD) - 4.71(TOC) = 14 (ft of water) x k (0.163) = 2.28 gallons/CV x 3 (# of CV) = gallons</i>								
<i>k = 0.163 (2" well), k = 0.653 (4" well), k = 1.02 (5" well), k = 1.46 (6" well), k = 2.61 (8" well)</i>								
FIELD WATER QUALITY PARAMETERS								
Time	Discharge (gallons)	pH	Temp (°C)	Specific conductivity (mS or µS)	Turbidity (NTU)	D.O. (mg/L)	ORP Color mV	Comments
<i>13:55</i>	<i>0.5</i>	<i>8.17</i>	<i>18.30</i>	<i>2.97</i>	<i>52.4</i>	<i>2.80</i>	<i>262</i>	<i>clear</i>
<i>14:03</i>	<i>5.0</i>	<i>7.74</i>	<i>18.78</i>	<i>3.08</i>	<i>955</i>	<i>3.01</i>	<i>259</i>	<i>light brown, no petro odor</i>
<i>14:15</i>	<i>10.0</i>	<i>7.56</i>	<i>19.04</i>	<i>3.15</i>	<i>>1000</i>	<i>4.52</i>	<i>242</i>	<i>" "</i>
<i>14:22</i>	<i>12.5</i>	<i>7.38</i>	<i>18.78</i>	<i>2.86</i>	<i>>1000</i>	<i>5.98</i>	<i>236</i>	<i>" "</i>
<i>14:30</i>	<i>15.0</i>	<i>7.37</i>	<i>18.62</i>	<i>2.66</i>	<i>>1000</i>	<i>5.41</i>	<i>238</i>	<i>" faint petro odor</i>
<i>14:40</i>	<i>18.0</i>	<i>7.32</i>	<i>18.55</i>	<i>2.32</i>	<i>>1000</i>	<i>6.10</i>	<i>237</i>	<i>water level at 16.3 toC</i>
<i>14:55</i>	<i>21.0</i>	<i>7.32</i>	<i>18.53</i>	<i>1.90</i>	<i>>1000</i>	<i>7.62</i>	<i>228</i>	
<i>16:48</i>								<i>water level at 5.85' TOC</i>
<i>16:55</i>	<i>22.0</i>	<i>7.20</i>	<i>18.63</i>	<i>1.41</i>	<i>284</i>	<i>9.75</i>	<i>234</i>	<i>faint petro odor</i>
<i>No free product</i>								
Total discharge: <i>22</i> gallons				Casing volumes removed: <i>9.6</i>				
Handling of purge & rinsate water: stored in labeled 55-gallon DOT drum & left on site								
Date/time sampled:				QA: duplicate, Eq. blank, trip blank, other				
Sample containers filled:								
Recorded by: <i>Xinggang Tong</i> Signature: <i>[Signature]</i> Date: <i>10/29/17</i>								

FIELD SAMPLING LOG SHEET <i>Well Development</i>								
WELL ID <i>EW-2</i>				Date of Sampling <i>10/29/2017</i>				
Site Location <i>6303 Hollis St, Emeryville, CA</i>								
Project # <i>17EMV05</i>			Task # <i>1000</i>		Title <i>FS #35</i>			
OTG Project Manager <i>Xinggong Tong</i>					Phone # <i>510-465-8982</i>			
Client: <i>City of Emeryville</i>								
Client Contact:					Phone #			
Laboratory:								
Well Diameter: <i>2</i> " 3" 4" 6" other				Well Material: <i>sch 40 PVC</i> , sch 80 PVC, other				
Is well secured? <i>Yes</i> no			Bolt size:		Type of lock/Lock # <i>Master Lock</i>			
Comments: <i>Horiba U-52 multi-parameter rented from Pine Environmental</i>								
Purge Method: <i>PE/PVC disp bailer</i> Teflon bailer, Centrifugal pump, Peristaltic pump, Grundfos pump, Other								
Pump lines: <i>NA</i> New, Dedicated, Cleaned				Bailer line: <i>NA</i> , <i>New</i> Dedicated, Cleaned				
Method of cleaning pump: <i>NA</i> Alconox, Liqui-nox, Tap water DI rinse, other								
Method of cleaning Bailer: <i>NA</i> Alconox, Liqui-nox, Tap water DI rinse, other								
Sampling method: PE/PVC disp bailer, Teflon bailer, Peristaltic pump, other								
pH meter serial #			Spec cond meter serial #			Calibrated at:		
Water level meter: <i>Solint 101</i>				P.I.D. reading: ppm at well head				
<i>Total Depth = 18.89 to TOC</i>								
Water level before purging (TOC, ft) <i>4.40' at 10:32</i>				Water level prior to sampling				
<i>18.89(TD) - 4.40(TOC) = 14.49(ft of water) x k (0.163) = 2.36 gallons/CV x 5(# of CV) = 11.8 gallons</i>								
<i>k = 0.163 (2" well), k = 0.653 (4" well), k = 1.02 (5" well), k = 1.46 (6" well), k = 2.61 (8" well)</i>								
FIELD WATER QUALITY PARAMETERS								
Time	Discharge (gallons)	pH	Temp (°C)	Specific conductivity (mS or µS)	Turbidity (NTU)	D.O. (mg/L)	ORP Color mV	Comments
<i>15:35</i>	<i>0.5</i>	<i>7.81</i>	<i>17.79</i>	<i>3.69</i>	<i>82</i>	<i>4.20</i>	<i>387</i>	<i>clear</i>
<i>15:45</i>	<i>5.0</i>	<i>7.67</i>	<i>18.00</i>	<i>4.24</i>	<i>806</i>	<i>5.42</i>	<i>387</i>	<i>light brown, faint petro odor</i>
<i>15:55</i>	<i>10.0</i>	<i>7.62</i>	<i>18.00</i>	<i>4.58</i>	<i>71000</i>	<i>6.80</i>	<i>388</i>	<i>" "</i>
<i>16:05</i>	<i>13.0</i>	<i>7.60</i>	<i>17.78</i>	<i>4.79</i>	<i>>1000</i>	<i>6.80</i>	<i>332</i>	<i>" , No petro odor</i>
<i>16:13</i>	<i>15.0</i>	<i>7.57</i>	<i>17.57</i>	<i>4.56</i>	<i>>1000</i>	<i>6.31</i>	<i>120</i>	<i>water level at 17.62 TOC</i>
<i>16:40</i>	<i>20.0</i>	<i>7.49</i>	<i>17.73</i>	<i>3.38</i>	<i>>1000</i>	<i>8.50</i>	<i>21.5</i>	<i>light brown</i>
<i>17:02</i>								<i>water level at 15.80' TOC</i>
<i>17:12</i>	<i>21.0</i>	<i>7.48</i>	<i>17.65</i>	<i>2.84</i>	<i>674</i>	<i>6.70</i>	<i>165</i>	<i>faint petro odor</i>
								<i>No free product</i>
Total discharge: <i>21</i> gallons				Casing volumes removed: <i>8.9</i>				
Handling of purge & rinsate water: <i>stored in labeled 55-gallon DOT drum & left on site</i>								
Date/time sampled: <i>10/29/17</i>				QA: duplicate, Eq. blank, trip blank, other				
Sample containers filled:								
Recorded by: <i>Xinggong Tong</i>			Signature: <i>[Signature]</i>			Date: <i>10/29/17</i>		

FIELD SAMPLING LOG SHEET <u>Well Development</u>								
WELL ID <u>EW-3</u>	Date of Sampling <u>10/29/2017</u>							
Site Location <u>6303 Hollis St, Emeryville, CA</u>								
Project # <u>17EMV05</u>	Task # <u>1000</u>							
Title <u>FS#35</u>								
OTG Project Manager <u>Xinggang Tong</u>	Phone # <u>510-465-8982</u>							
Client: <u>City of Emeryville</u>								
Client Contact:	Phone #							
Laboratory:								
Well Diameter: <u>2"</u> 3" 4" 6" other	Well Material: sch <u>40 PVC</u> sch 80 PVC, other							
Is well secured? <u>Yes</u> no Bolt size:	Type of lock/Lock # <u>Master lock</u>							
Comments: <u>Horiba U-52 multi-Parameter rented from Pine-ENV</u>								
Purge Method: PE/ <u>PVC disp bailer</u> , Teflon bailer, Centrifugal pump, Peristaltic pump, Grundfos pump, Other								
Pump lines: <u>NA</u> , New, Dedicated, Cleaned	Bailer line: NA, <u>New</u> , Dedicated, Cleaned							
Method of cleaning pump: <u>NA</u> , Alconox, Liqui-nox, Tap water DI rinse, other								
Method of cleaning Bailer: <u>NA</u> , Alconox, Liqui-nox, Tap water DI rinse, other								
Sampling method: PE/ <u>PVC disp bailer</u> , Teflon bailer, Peristaltic pump, other								
pH meter serial #	Spec cond meter serial #							
Water level meter: <u>Solinst 101</u>	P.I.D. reading: ppm at well head							
<u>Total Depth = 18.88' to TOC</u>								
Water level before purging (TOC, ft) <u>4.24 at 10:28</u>	Water level prior to sampling							
<u>18.88 (TD) - 4.24 (TOC) = 14.64 (ft of water) x k (0.163) = 2.39 gallons/CV x 3 (# of CV) = gallons</u>								
k = 0.163 (2" well), k = 0.653 (4" well), k = 1.02 (5" well), k = 1.46 (6" well), k = 2.61 (8" well)								
FIELD WATER QUALITY PARAMETERS								
Time	Discharge (gallons)	pH	Temp (°C)	Specific conductivity (mS or us)	Turbidity (NTU)	D.O. (mg/L)	ORP Color mV	Comments
12:42	0.5	8.23	19.38	2.10	110	7.45	375	clear
12:50	5.0	8.06	19.34	3.05	755	7.30	384	light brown
13:00	10.0	7.91	19.26	3.58	>1000	7.75	310	n, NO petro odor
13:10	13.0	7.72	18.74	4.07	>1000	6.45	368	" "
13:20	15.0	7.63	18.51	4.76	>1000	7.10	342	water level at 18.1' TOC
13:40	17.0	7.54	18.18	3.75	>1000	8.15	320	light brown, no petro odor
15:05								water level at 15.8' TOC
15:20	20.0	7.59	18.39	2.38	>1000	8.38	222	No petro odor
16:22	21.0	7.64	18.39	1.97	265	8.02	395	water level at 16.08' TOC
								No free product
Total discharge: <u>21</u> gallons				Casing volumes removed: <u>8.8</u>				
Handling of purge & rinsate water: stored in labeled 55-gallon DOT drum & left on site								
Date/time sampled: <u>10/29/17</u>				QA: duplicate, Eq. blank, trip blank, other				
Sample containers filled:								
Recorded by: <u>Xinggang Tong</u> Signature:  Date: <u>10/29/17</u>								

FIELD SAMPLING LOG SHEET / Well Development								
WELL ID EW-4			Date of Sampling 10/29/2017					
Site Location 6303 Hollis St, Emeryville, CA								
Project # 17EMV05			Task # 1000		Title FS # 35			
OTG Project Manager Xingqiang Tong					Phone # 510-465-8982			
Client: City of Emeryville								
Client Contact:					Phone #			
Laboratory:								
Well Diameter 2" 3" 4" 6" other					Well Material: sch 40 PVC, sch 80 PVC, other			
Is well secured? Yes <input checked="" type="checkbox"/> no			Bolt size:		Type of lock/Lock #			
Comments:								
Purge Method: PE/PVC disp bailer, Teflon bailer, Centrifugal pump, Peristaltic pump, Grundfos pump, Other								
Pump lines: NA, New, Dedicated, Cleaned					Bailer line: NA, New, Dedicated, Cleaned			
Method of cleaning pump: NA, Alconox, Liqui-nox, Tap water DI rinse, other								
Method of cleaning Bailer: NA, Alconox, Liqui-nox, Tap water DI rinse, other								
Sampling method: PE/PVC disp bailer, Teflon bailer, Peristaltic pump, other								
pH meter serial #			Spec cond meter serial #			Calibrated at:		
Water level meter: Solinst 101					P.I.D. reading: ppm at well head			
Total Depth = 18.46' to TOC, Horiba U-52 multi-Parameter rented from Pine-Env								
Water level before purging (TOC, ft) 5.87' at 10:56					Water level prior to sampling			
18.46(TD) - 5.87(TOC) = 12.59(ft of water) x k (0.163) = 2.1 gallons/CV x 2 (# of CV) = 4.2 gallons								
k = 0.163 (2" well), k = 0.653 (4" well), k = 1.02 (5" well), k = 1.46 (6" well), k = 2.61 (8" well)								
FIELD WATER QUALITY PARAMETERS								
Time	Discharge (gallons)	pH	Temp (°C)	Specific conductivity (mS or μ S)	Turbidity (NTU)	D.O. (mg/L)	ORP Gator mV	Comments
11:25	1.0	8.09	18.63	4.09	>1000	4.9	200	light Brown
11:27	5.0	7.92	18.91	3.97	>1000	6.65	195	" No petro odor
11:35	10.0	7.85	18.70	4.39	>1000	5.71	178	" "
11:45	12.5	7.74	18.19	4.29	>1000	7.15	159	" "
12:10	19.0	7.64	18.01	4.01	>1000	7.40	159	Water level at 17.3' TOC
12:20	22.0	7.57	17.85	2.82	>1000	9.10	355	light Brown "
12:35	25.0	7.50	17.83	2.15	>1000	8.45	389	Near dry, water level at 17.9' TOC
13:30	26.0	7.28	17.90	1.50	23.5	2.85	401	Water level at 10.61' TOC
16:19								Water level at 6.66' TOC
Total discharge: 26 gallons					Casing volumes removed: 12.7			
Handling of purge & rinsate water: stored in labeled 55-gallon DOT drum & left on site								
Date/time sampled:					QA: duplicate, Eq. blank, trip blank, other			
Sample containers filled:								
Recorded by: Xingqiang Tong			Signature: 			Date: 10/29/17		

FIELD SAMPLING LOG SHEET								
WELL ID <u>EW-1</u>				Date of Sampling <u>11/30/17</u>				
Site Location <u>6303 Hollis st, Emeryville</u>								
Project # <u>17ENV05</u>			Task # <u>1300</u>		Title <u>FS #35</u>			
OTG Project Manager <u>Xinyang Tong</u>				Phone # <u>510-465-8982</u>				
Client: <u>City of Emeryville</u>								
Client Contact:				Phone #				
Laboratory: <u>Enthalpy Analytical</u>								
Well Diameter: <u>(2") 3" 4" 6" other</u>				Well Material: <u>sch 40 PVC</u> , sch 80 PVC, other				
Is well secured? <u>(Yes) no</u>				Bolt size:		Type of lock/Lock #		
Comments: <u>Horiba Model U-52, HGS # RLRNTITA, Dec. 2012</u>								
Purge Method: PE/PVC disp bailer, Teflon bailer, Centrifugal pump, <u>Peristaltic pump</u> , Grundfos pump, Other								
Pump lines: NA, <u>(New) Dedicated</u> , Cleaned				Bailer line: NA, <u>(New) Dedicated</u> , Cleaned				
Method of cleaning pump: <u>(NA)</u> , Alconox, Liqui-nox, Tap water DI rinse, other								
Method of cleaning Bailer: NA, Alconox, Liqui-nox, Tap water DI rinse, other								
Sampling method: PE/PVC disp bailer, Teflon bailer, <u>Peristaltic pump</u> , other								
pH meter serial #			Spec cond meter serial #			Calibrated at:		
Water level meter:				P.I.D. reading: ppm at well head				
<u>Horiba U-52 multi parameter rented from Pine Environmental</u>								
Water level before purging (TOC, ft) <u>4.09' at 11:30</u>				Water level prior to sampling <u>6.45'</u>				
(TD) - (TOC) = (ft of water) x k () = gallons/CV x 3 (# of CV) = gallons								
k = 0.163 (2" well), k = 0.653 (4" well), k = 1.02 (5" well), k = 1.46 (6" well), k = 2.61 (8" well) <u>Low-stress Purging</u>								
FIELD WATER QUALITY PARAMETERS								
Time	Liters Discharge (gallons)	pH	Temp (°C)	Specific conductivity (mS or uS)	Turbidity (NTU)	D.O. (mg/L)	ORP Color mV	Comments
14:40	1.0	9.20	17.93	1.45	2.5	1.10	140	clear
14:45	3.0	8.13	17.82	1.36	2.7	0.30	198	"
14:47	4.0	8.27	17.79	1.34	2.8	0.24	198	"
14:50	5.0	7.98	17.76	1.36	2.8	0.15	184	"
14:55	6.5	7.88	17.74	1.37	3.1	0.11	178	"
15:00	8.0	7.72	17.73	1.41	3.1	0.09	175	"
15:03	9.0	7.65	17.73	1.41	2.5	0.05	176	"
15:06	10.0	7.59	17.73	1.41	2.2	0.03	178	"
15:09	11.0	7.56	17.73	1.41	2.2	0.02	179	"
<u>Sampling at 15:10</u>								
Total discharge: gallons <u>11 liters</u>				Casing volumes removed:				
Handling of purge & rinsate water: <u>stored in labeled 55-gallon DOT drum & left on site</u>								
Date/time sampled: <u>11/30/17 at 15:10</u>				QA: duplicate, Eq. blank, trip blank, other				
Sample containers filled: <u>6 Vials with Hcl & 2 500-ml amber glass bottles</u>								
<u>bailed water out at end of sampling, no sheen, no free product & but petro odor</u>								
Recorded by: <u>Xinyang Tong</u>				Signature: <u>[Signature]</u>			Date: <u>11/30/17</u>	

FIELD SAMPLING LOG SHEET

WELL ID <u>EW-2</u>		Date of Sampling <u>11/30/17</u>	
Site Location <u>6303 Hollis St, Emeryville</u>			
Project # <u>17EMV05</u>	Task # <u>1300</u>	Title <u>FS#35</u>	
OTG Project Manager <u>Xiruggang Tong</u>		Phone # <u>510-465-8982</u>	
Client: <u>City of Emeryville</u>			
Client Contact:		Phone #	
Laboratory: <u>Enthalpy Analytical, Berkeley</u>			
Well Diameter: <u>2"</u> 3" 4" 6" other		Well Material: <u>Sch 40 PVC</u> , sch 80 PVC, other	
Is well secured? <u>Yes</u> no Bolt size:		Type of lock/Lock #	
Comments:			
Purge Method: PE/PVC disp bailer, Teflon bailer, Centrifugal pump, <u>Peristaltic pump</u> , Grundfos pump, Other			
Pump lines: NA, <u>New</u> , Dedicated, Cleaned		Bailer line: NA, New, Dedicated, Cleaned	
Method of cleaning pump: NA, Alconox, Liqui-nox, Tap water DI rinse, other			
Method of cleaning Bailer: NA, Alconox, Liqui-nox, Tap water DI rinse, other			
Sampling method: PE/PVC disp bailer, Teflon bailer, <u>Peristaltic pump</u> , other			
pH meter serial #		Spec cond meter serial #	
Water level meter:		P.I.D. reading: ppm at well head	
<u>Horiba U-52 multi-parameter rented from Pine Environmental</u>			
Water level before purging (TOC, ft) <u>3.53' at 11:28</u>		Water level prior to sampling <u>6.95'</u>	
(TD) - (TOC) = (ft of water) x k () = gallons/CV x 3 (# of CV) = gallons			
k = 0.163 (2" well), k = 0.653 (4" well), k = 1.02 (5" well), k = 1.46 (6" well), k = 2.61 (8" well) <u>Low-stress purging</u>			

FIELD WATER QUALITY PARAMETERS

Time	liters Discharge (gallons)	pH	Temp (°C)	Specific conductivity (mS or μ S)	Turbidity (NTU)	D.O. (mg/L)	ORP Color mV	Comments
13:30	2.0	8.24	18.72	1.71	3.0	0.72	263	clear
13:33	3.0	7.75	18.74	1.71	3.3	0.44	278	"
13:36	4.5	7.51	18.68	1.68	2.5	0.26	230	"
13:40	6.0	7.38	18.59	1.66	2.2	0.17	138	"
13:43	7.5	7.33	18.55	1.64	2.2	0.12	106	"
13:48	9.0	7.30	18.49	1.63	3.1	0.07	96	"
13:52	11.0	7.29	18.47	1.63	3.3	0.06	94	"
13:55	13.0	7.29	18.46	1.64	3.4	0.05	95	"
<u>Sampling at 14:00</u>								

Total discharge: <u>gallons 13 liters</u>	Casing volumes removed:
Handling of purge & rinsate water: <u>stored in labeled 55-gallon DOT drum & left on site</u>	
Date/time sampled: <u>11/30/17 at 14:00</u>	QA: duplicate, Eq. blank, trip blank, other
Sample containers filled: <u>6 10-ml Vials with HCl, 2 50-ml amber glass bottles</u>	
<u>bailed water out at end of sampling & no sheen, no free product, but Petro odor</u>	
Recorded by: <u>Xiruggang Tong</u>	Signature: <u>[Signature]</u> Date: <u>11/30/17</u>

FIELD SAMPLING LOG SHEET								
WELL ID <u>EW-3</u>				Date of Sampling <u>11/30/17</u>				
Site Location <u>6303 Hollis St., Emeryville</u>								
Project # <u>17EMV05</u>			Task # <u>1300</u>		Title <u>FS#35</u>			
OTG Project Manager <u>Xinggang Tong</u>					Phone # <u>510-465-8982</u>			
Client: <u>City of Emeryville</u>								
Client Contact:					Phone #			
Laboratory: <u>Enthalpy analytical</u>								
Well Diameter: <u>2"</u> 3" 4" 6" other					Well Material: <u>sch 40 PVC</u> , sch 80 PVC, other			
Is well secured? <u>Yes</u> no			Bolt size:		Type of lock/Lock # <u>Master Lock</u>			
Comments:								
Purge Method: PE/PVC disp bailer, Teflon bailer, Centrifugal pump, <u>Peristaltic pump</u> , Grundfos pump, Other								
Pump lines: NA <u>New</u> , Dedicated, Cleaned					Bailer line: NA, New, Dedicated, Cleaned			
Method of cleaning pump: NA, Alconox, Liqui-nox, Tap water DI rinse, other								
Method of cleaning Bailer: NA, Alconox, Liqui-nox, Tap water DI rinse, other								
Sampling method: PE/PVC disp bailer, Teflon bailer, <u>Peristaltic pump</u> , other								
pH meter serial #			Spec cond meter serial #			Calibrated at:		
Water level meter:					P.I.D. reading: ppm at well head			
<u>Horiba U-52 multi-parameter rented from Pine Environmental</u>								
Water level before purging (TOC, ft) <u>3.79' at 11:26</u>					Water level prior to sampling <u>6.95'</u>			
(TD) - (TOC) = (ft of water) x k () = gallons/CV x 3 (# of CV) = gallons								
k = 0.163 (2" well), k = 0.653 (4" well), k = 1.02 (5" well), k = 1.46 (6" well), k = 2.61 (8" well) <u>Low-stress purging</u>								
FIELD WATER QUALITY PARAMETERS								
Time	liters Discharge (gallons)	pH	Temp (°C)	Specific conductivity (mS or µS)	Turbidity (NTU)	D.O. (mg/L)	ORP Color mV	Comments
12:30	2.0	8.60	19.00	1.22	9.2	7.34	295	clear
12:33	4.0	7.84	18.77	1.19	7.9	6.45	331	"
12:35	5.0	7.64	18.79	1.17	5.9	6.17	340	"
12:38	6.0	7.52	18.84	1.16	4.5	5.84	343	"
12:40	7.0	7.47	18.93	1.16	3.8	5.79	344	"
12:43	8.0	7.46	18.98	1.18	2.7	5.82	344	"
12:46	10.0	7.45	19.01	1.18	3.4	5.89	344	"
sampling at 12:50								
Total discharge: gallons <u>10 liters</u>					Casing volumes removed:			
Handling of purge & rinsate water: <u>stored in labeled 55-gallon DOT drum & left on site</u>								
Date/time sampled: <u>11/30/17 at 12:50</u>					QA: duplicate, Eq. blank, trip blank, other			
Sample containers filled: <u>6 40-ml vials with HCl, 2 500-ml amber glass bottles</u> <u>bailed water out at end of sampling & no sheen, no free product, no petro odor</u>								
Recorded by: <u>Xinggang Tong</u>					Signature: <u>[Signature]</u>		Date: <u>11/30/17</u>	

FIELD SAMPLING LOG SHEET								
WELL ID EW-4				Date of Sampling 11/30/17				
Site Location 6303 Hollis St, Emeryville								
Project # 17EMV05			Task # 1300		Title FS#35			
OTG Project Manager Xinyang Tang					Phone # 510-465-8982			
Client: City of Emeryville								
Client Contact:					Phone #			
Laboratory: Enthalpy Analytical								
Well Diameter 2" 3" 4" 6" other					Well Material: sch 40 PVC, sch 80 PVC, other			
Is well secured? <input checked="" type="checkbox"/> no Bolt size:					Type of lock/Lock # Master Lock			
Comments:								
Purge Method: PE/PVC disp bailer, Teflon bailer, Centrifugal pump, Peristaltic pump, Grundfos pump, Other								
Pump lines: NA, New, Dedicated, Cleaned					Bailer line: NA, New, Dedicated, Cleaned			
Method of cleaning pump: NA, Alconox, Liqui-nox, Tap water DI rinse, other								
Method of cleaning Bailer: NA, Alconox, Liqui-nox, Tap water DI rinse, other								
Sampling method: PE/PVC disp bailer, Teflon bailer, Peristaltic pump, other								
pH meter serial #			Spec cond meter serial #			Calibrated at:		
Water level meter:					P.I.D. reading: ppm at well head			
Horiba U-52 rented from Pipe Environmental								
Water level before purging (TOC, ft) 5.35' at 11:24					Water level prior to sampling 8.61'			
$(TD) - (TOC) = (ft\ of\ water) \times k () = \text{gallons/CV} \times 3 (\#\ of\ CV) = \text{gallons}$								
$k = 0.163 (2" \text{ well}), k = 0.653 (4" \text{ well}), k = 1.02 (5" \text{ well}), k = 1.46 (6" \text{ well}), k = 2.61 (8" \text{ well})$ Low stress purging								
FIELD WATER QUALITY PARAMETERS								
Time	Liters Discharge (gallons)	pH	Temp (°C)	Specific conductivity (mS or µS)	Turbidity (NTU)	D.O. (mg/L)	ORP Gator mV	Comments
11:52	1.0	8.35	17.93	1.40	3.1	3.20	405	clear
11:56	3.0	7.43	17.82	1.44	2.0	2.76	492	"
11:58	4.0	7.31	17.87	1.46	1.6	2.90	502	"
12:00	5.0	7.27	17.91	1.48	1.6	3.06	508	"
12:02	6.0	7.25	17.95	1.49	1.0	3.12	511	"
12:04	7.0	7.24	18.00	1.49	1.4	3.05	525	"
12:08	9.0	7.23	18.01	1.51	0.9	3.15	518	"
sampling at 12:10								
Total discharge: gallons 9 liters					Casing volumes removed:			
Handling of purge & rinse water: stored in labeled 55-gallon DOT drum & left on site								
Date/time sampled: 11/30/17 at 12:10					QA: duplicate, Eq. blank, trip blank, other			
Sample containers filled: 6 40-ml vials, 2 500-ml amber glass bottles								
boiled out water at end of sampling - no steam, no free product, no odor								
Recorded by: Xinyang Tang			Signature: <i>[Signature]</i>			Date: 11/30/17		

APPENDIX F
Laboratory Analytical Reports



ENTHALPY

ANALYTICAL



Enthalpy Analytical

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

Laboratory Job Number 293361
ANALYTICAL REPORT

OTG Enviroengineering Solutions, Inc
7700 Edgewater Drive
Oakland, CA 94621

Project : 17EMV05.1000
Location : Emeryville FS #35
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EW-3-4	293361-001
EW-3-18.5	293361-002
EW-3-9	293361-003
EW-4-4	293361-004
EW-4-9	293361-005
EW-4-18.5	293361-006
SV-1-6	293361-007
SV-2-6	293361-008

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 NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Patrick McCarthy
Project Manager
patrick.mccarthy@enthalpy.com
(510) 204-2236

Date: 10/17/2017

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 293361
Client: OTG Enviroengineering Solutions, Inc
Project: 17EMV05.1000
Location: Emeryville FS #35
Request Date: 10/11/17
Samples Received: 10/11/17

This data package contains sample and QC results for eight soil samples, requested for the above referenced project on 10/11/17. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):

No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):

SV-1-6 (lab # 293361-007) was diluted due to the dark and viscous nature of the sample extract. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

Curtis & Tompkins, Ltd.
 Analytical Laboratory Since 1878
 2323 Fifth Street
 Berkeley, CA 94710
 (510) 486-0900 Phone
 (510) 486-0532 Fax

CHAIN OF CUSTODY

Analysis

C & T LOGIN #: 293361

Sampler: Xinggang Tong
 Report To: Xinggang Tong
 Company: OTG EnviroEngineering Solutions
 Telephone: 510-465-8982
 Fax/Email: xtong.otg@ymail.com

Project No.: 17EMV05.1000
 Project Name: Emeryville FS #35
 Project P.O.:
 Turnaround Time: Standard

Lab No.	Sample ID	Sampling Date Time	Matrix	# of Containers	Preservative	RECEIVED BY:	DATE / TIME
	EW-3-4	10/9/17, 12:45	Soil	1	H ₂ O ₂ , HNO ₃ , HCL, ICE	X EPA 8260B for BTEX, MTBE & Naphthalene	10/11/17 11:30
	EW-3-8.5					X EPA 8015B for TPH-gas & TPH-diesel	
	EW-3-18.5	10/9/17, 13:25	Water	1		X	
	EW-3-9	10/9/17, 13:10	Waste	1		X	
	EW-4-4	10/9/17, 8:30	Soil	1		X	
	EW-4-9	10/9/17, 8:45	Water	1		X	
	EW-4-18.5	10/9/17, 9:25	Waste	1		X	
	SV-1-6	10/11/17, 9:05	Soil	1		X	
	SV-2-6	10/11/17, 9:44	Water	1		X	

Notes:
 GeoTracker Global ID:
T0600101925
 Please provide EDF file

SAMPLE RECEIPT
 Intact Cold
 On Ice Ambient
 Preservative Correct?
 Yes No N/A

RELINQUISHED BY:

 10/11/17 11:30
 DATE / TIME

RECEIVED BY:
 Pat Lam
 10/11/17 11:30
 DATE / TIME

SIGNATURE _____ DATE / TIME _____

COOLER RECEIPT CHECKLIST



ENTHALPY

Berkeley

Login # 293361 Date Received 10-11-17 Number of coolers 1
Client CTG Project Emeryville FS #35

Date Opened 10-11-17 By (print) [signature] (sign) [signature]
Date Logged in [signature] By (print) [signature] (sign) [signature]
Date Labelled [signature] 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 UNO
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) 3.6
Temperature blank(s) included? Thermometer# IR Gun# B
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? (pH strip lot#) 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

Client Sample ID : SV-2-6

Laboratory Sample ID :

293361-008

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	660		66	mg/Kg	As Recd	333.3	EPA 8015B	EPA 5030B
Diesel C10-C24	210	Y	1.0	mg/Kg	As Recd	1.000	EPA 8015B	EPA 3550C
Ethylbenzene	810		250	ug/Kg	As Recd	49.80	EPA 8260B	EPA 5030B
Naphthalene	1,300		250	ug/Kg	As Recd	49.80	EPA 8260B	EPA 5030B

Y = Sample exhibits chromatographic pattern which does not resemble standard

Total Volatile Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	252593
Units:	mg/Kg	Received:	10/11/17
Basis:	as received		

Field ID: EW-3-4 Diln Fac: 1.000
 Type: SAMPLE Sampled: 10/09/17
 Lab ID: 293361-001 Analyzed: 10/11/17

Analyte	Result	RL
Gasoline C7-C12	ND	0.92

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	65-136

Field ID: EW-3-18.5 Diln Fac: 1.000
 Type: SAMPLE Sampled: 10/09/17
 Lab ID: 293361-002 Analyzed: 10/11/17

Analyte	Result	RL
Gasoline C7-C12	ND	0.97

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	83	65-136

Field ID: EW-3-9 Diln Fac: 1.000
 Type: SAMPLE Sampled: 10/09/17
 Lab ID: 293361-003 Analyzed: 10/11/17

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	90	65-136

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Volatile Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	252593
Units:	mg/Kg	Received:	10/11/17
Basis:	as received		

Field ID: EW-4-4 Diln Fac: 1.000
 Type: SAMPLE Sampled: 10/09/17
 Lab ID: 293361-004 Analyzed: 10/11/17

Analyte	Result	RL
Gasoline C7-C12	ND	0.98

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	78	65-136

Field ID: EW-4-9 Diln Fac: 1.000
 Type: SAMPLE Sampled: 10/09/17
 Lab ID: 293361-005 Analyzed: 10/11/17

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	88	65-136

Field ID: EW-4-18.5 Diln Fac: 1.000
 Type: SAMPLE Sampled: 10/09/17
 Lab ID: 293361-006 Analyzed: 10/11/17

Analyte	Result	RL
Gasoline C7-C12	ND	0.93

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	65-136

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Volatile Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	252593
Units:	mg/Kg	Received:	10/11/17
Basis:	as received		

Field ID:	SV-1-6	Diln Fac:	50.00
Type:	SAMPLE	Sampled:	10/11/17
Lab ID:	293361-007	Analyzed:	10/12/17

Analyte	Result	RL
Gasoline C7-C12	120 Y	10

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	108	65-136

Field ID:	SV-2-6	Diln Fac:	333.3
Type:	SAMPLE	Sampled:	10/11/17
Lab ID:	293361-008	Analyzed:	10/12/17

Analyte	Result	RL
Gasoline C7-C12	660	66

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	65-136

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC904613	Analyzed:	10/11/17

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	65-136

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC904610	Batch#:	252593
Matrix:	Soil	Analyzed:	10/11/17
Units:	mg/Kg		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	0.9140	91	80-121

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	65-136

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	293362-004	Batch#:	252593
Matrix:	Soil	Sampled:	10/10/17
Units:	mg/Kg	Received:	10/11/17
Basis:	as received	Analyzed:	10/13/17

Type: MS Lab ID: QC904611

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.3650	9.091	7.014	73	52-120

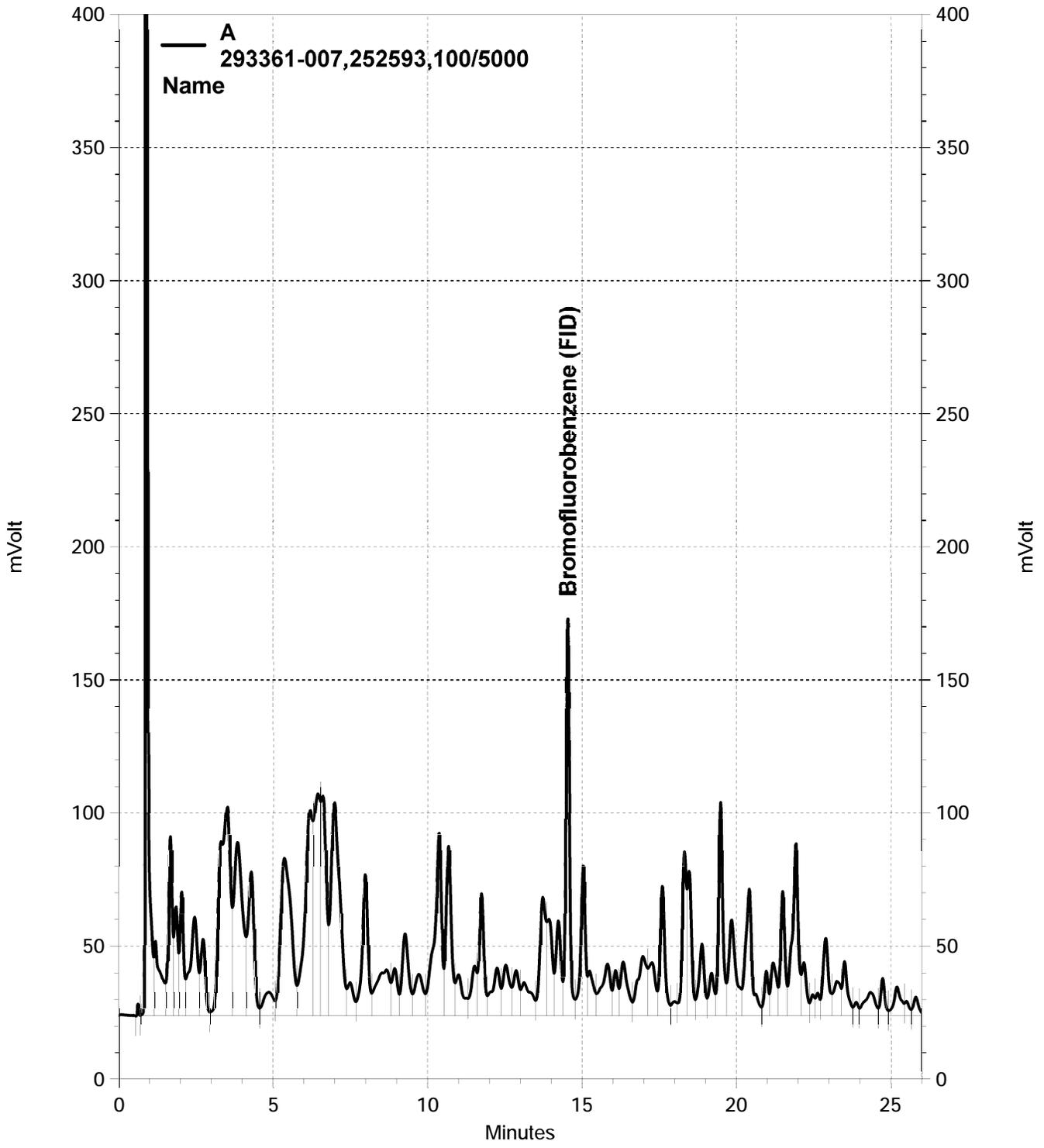
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	65-136

Type: MSD Lab ID: QC904612

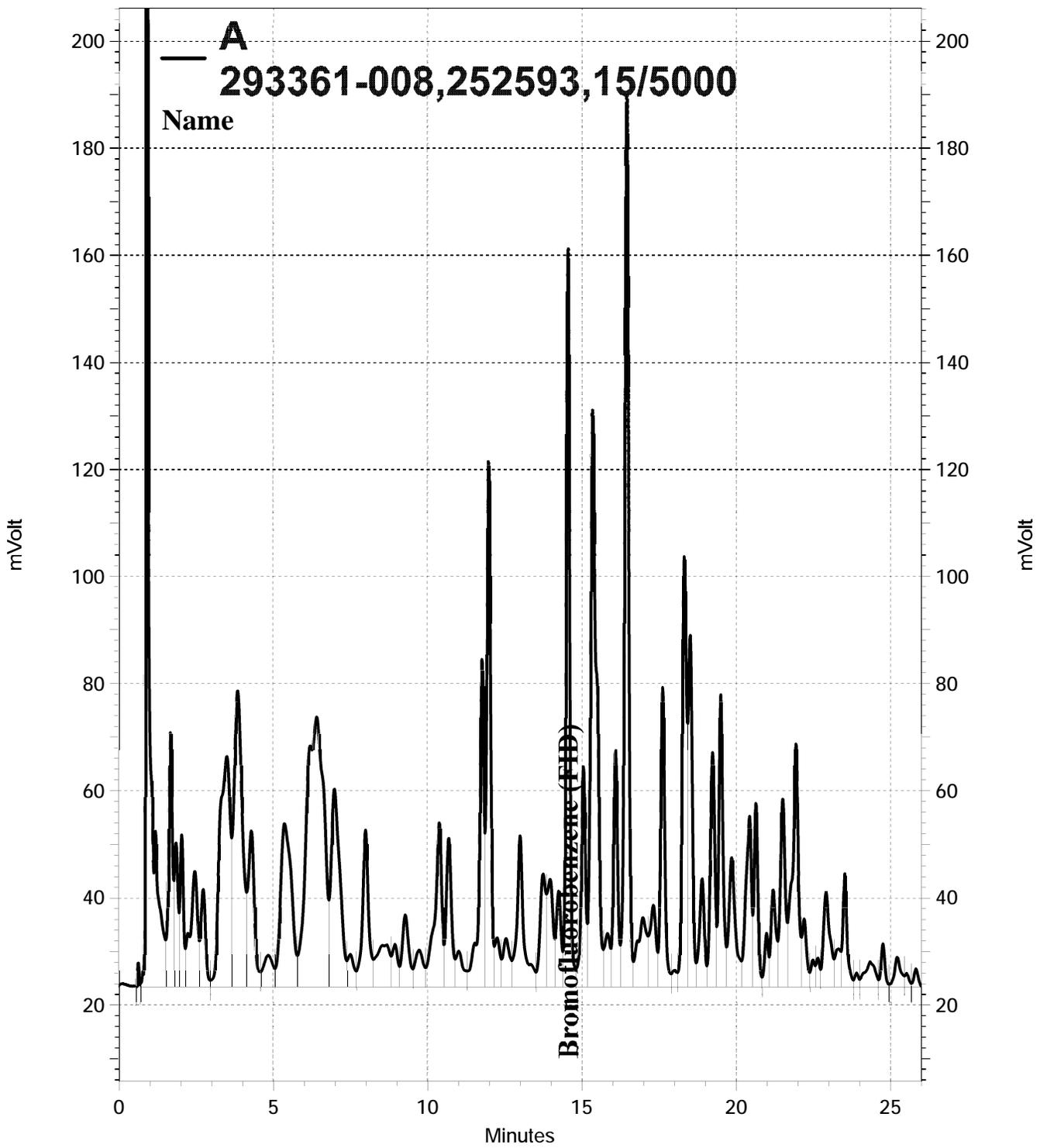
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	9.091	7.097	74	52-120	1	25

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	77	65-136

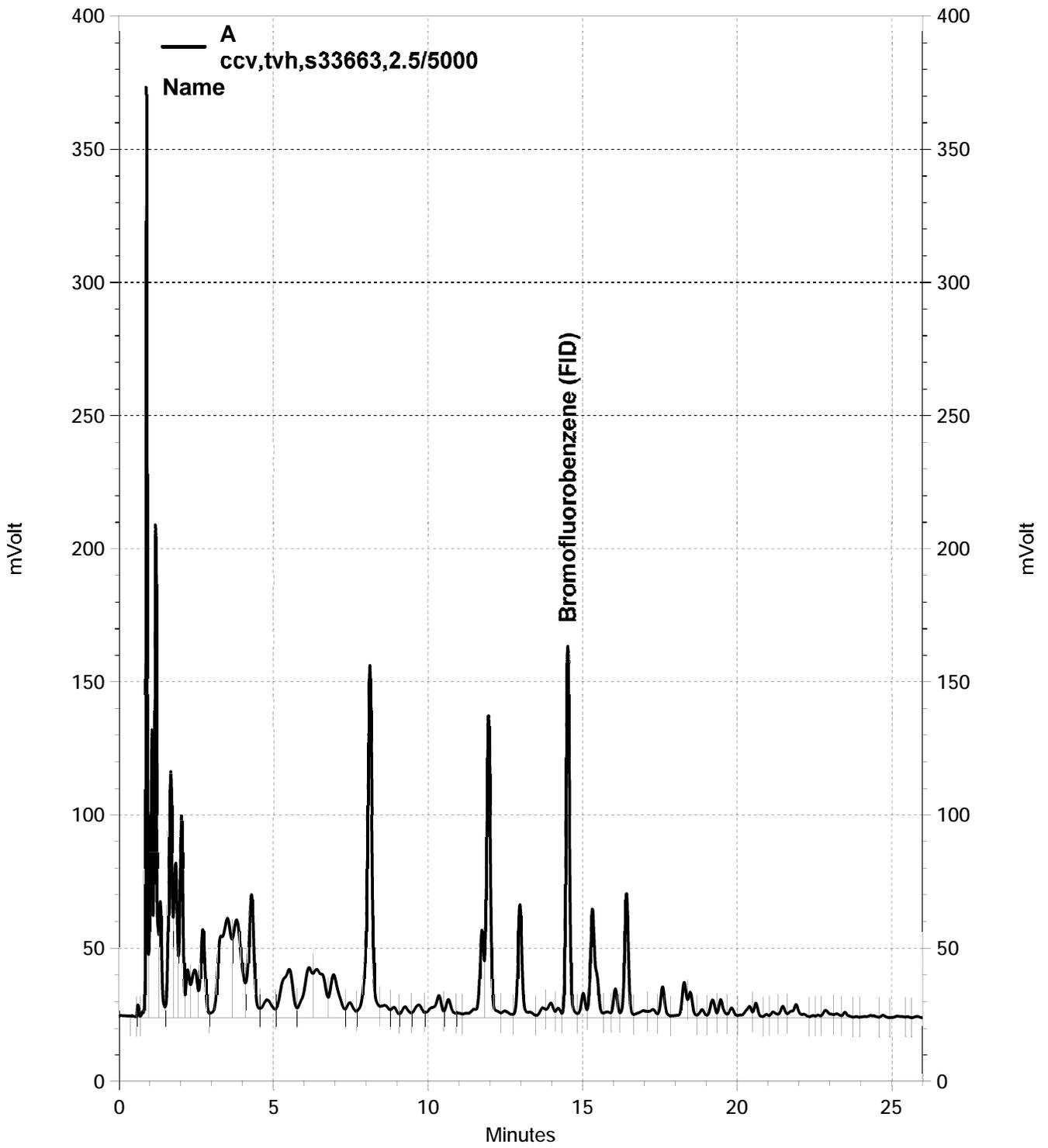
RPD= Relative Percent Difference



— \\Lims\gdrive\ezchrom\Projects\GC19\Data\284-028, A



— \\Lims\gdrive\ezchrom\Projects\GC19\Data\284-043, A



— \\Lims\gdrive\ezchrom\Projects\GC19\Data\284-003, A

Total Extractable Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 3550C
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Matrix:	Soil	Basis:	as received
Units:	mg/Kg	Received:	10/11/17

Field ID:	EW-3-4	Batch#:	252624
Type:	SAMPLE	Sampled:	10/09/17
Lab ID:	293361-001	Prepared:	10/12/17
Diln Fac:	1.000	Analyzed:	10/13/17

Analyte	Result	RL
Diesel C10-C24	1.2 Y	1.0

Surrogate	%REC	Limits
o-Terphenyl	102	55-133

Field ID:	EW-3-18.5	Batch#:	252624
Type:	SAMPLE	Sampled:	10/09/17
Lab ID:	293361-002	Prepared:	10/12/17
Diln Fac:	1.000	Analyzed:	10/13/17

Analyte	Result	RL
Diesel C10-C24	1.3 Y	0.99

Surrogate	%REC	Limits
o-Terphenyl	121	55-133

Field ID:	EW-3-9	Batch#:	252671
Type:	SAMPLE	Sampled:	10/09/17
Lab ID:	293361-003	Prepared:	10/13/17
Diln Fac:	1.000	Analyzed:	10/13/17

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	97	55-133

Field ID:	EW-4-4	Batch#:	252671
Type:	SAMPLE	Sampled:	10/09/17
Lab ID:	293361-004	Prepared:	10/13/17
Diln Fac:	1.000	Analyzed:	10/13/17

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	100	55-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Extractable Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 3550C
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Matrix:	Soil	Basis:	as received
Units:	mg/Kg	Received:	10/11/17

Field ID:	EW-4-9	Batch#:	252671
Type:	SAMPLE	Sampled:	10/09/17
Lab ID:	293361-005	Prepared:	10/13/17
Diln Fac:	1.000	Analyzed:	10/13/17

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	94	55-133

Field ID:	EW-4-18.5	Batch#:	252671
Type:	SAMPLE	Sampled:	10/09/17
Lab ID:	293361-006	Prepared:	10/13/17
Diln Fac:	1.000	Analyzed:	10/13/17

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	96	55-133

Field ID:	SV-1-6	Batch#:	252681
Type:	SAMPLE	Sampled:	10/11/17
Lab ID:	293361-007	Prepared:	10/13/17
Diln Fac:	3.000	Analyzed:	10/16/17

Analyte	Result	RL
Diesel C10-C24	120 Y	3.0

Surrogate	%REC	Limits
o-Terphenyl	103	55-133

Field ID:	SV-2-6	Batch#:	252681
Type:	SAMPLE	Sampled:	10/11/17
Lab ID:	293361-008	Prepared:	10/13/17
Diln Fac:	1.000	Analyzed:	10/16/17

Analyte	Result	RL
Diesel C10-C24	210 Y	1.0

Surrogate	%REC	Limits
o-Terphenyl	101	55-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Extractable Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 3550C
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Matrix:	Soil	Basis:	as received
Units:	mg/Kg	Received:	10/11/17

Type:	BLANK	Batch#:	252624
Lab ID:	QC904746	Prepared:	10/12/17
Diln Fac:	1.000	Analyzed:	10/12/17

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	121	55-133

Type:	BLANK	Batch#:	252671
Lab ID:	QC904958	Prepared:	10/13/17
Diln Fac:	1.000	Analyzed:	10/13/17

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	108	55-133

Type:	BLANK	Batch#:	252681
Lab ID:	QC904974	Prepared:	10/13/17
Diln Fac:	1.000	Analyzed:	10/16/17

Analyte	Result	RL
Diesel C10-C24	ND	1.0

Surrogate	%REC	Limits
o-Terphenyl	118	55-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 3550C
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC904747	Batch#:	252624
Matrix:	Soil	Prepared:	10/12/17
Units:	mg/Kg	Analyzed:	10/13/17

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	50.00	34.62	69	51-137

Surrogate	%REC	Limits
o-Terphenyl	78	55-133

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 3550C
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC904959	Batch#:	252671
Matrix:	Soil	Prepared:	10/13/17
Units:	mg/Kg	Analyzed:	10/13/17

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.72	54.37	109	51-137

Surrogate	%REC	Limits
o-Terphenyl	113	55-133

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 3550C
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	252671
MSS Lab ID:	293419-002	Sampled:	10/12/17
Matrix:	Soil	Received:	10/12/17
Units:	mg/Kg	Prepared:	10/13/17
Basis:	as received	Analyzed:	10/13/17
Diln Fac:	1.000		

Type: MS Lab ID: QC904960

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	6.102	50.06	57.62	103	36-143

Surrogate	%REC	Limits
o-Terphenyl	106	55-133

Type: MSD Lab ID: QC904961

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.01	61.89	112	36-143	7	55

Surrogate	%REC	Limits
o-Terphenyl	112	55-133

RPD= Relative Percent Difference

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 3550C
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC904975	Batch#:	252681
Matrix:	Soil	Prepared:	10/13/17
Units:	mg/Kg	Analyzed:	10/16/17

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	50.00	56.83	114	51-137

Surrogate	%REC	Limits
o-Terphenyl	121	55-133

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 3550C
Project#:	17EMV05.1000	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	252681
MSS Lab ID:	293362-002	Sampled:	10/10/17
Matrix:	Soil	Received:	10/11/17
Units:	mg/Kg	Prepared:	10/13/17
Basis:	as received	Analyzed:	10/16/17
Diln Fac:	1.000		

Type: MS Lab ID: QC904976

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	13.61	49.91	52.96	79	36-143

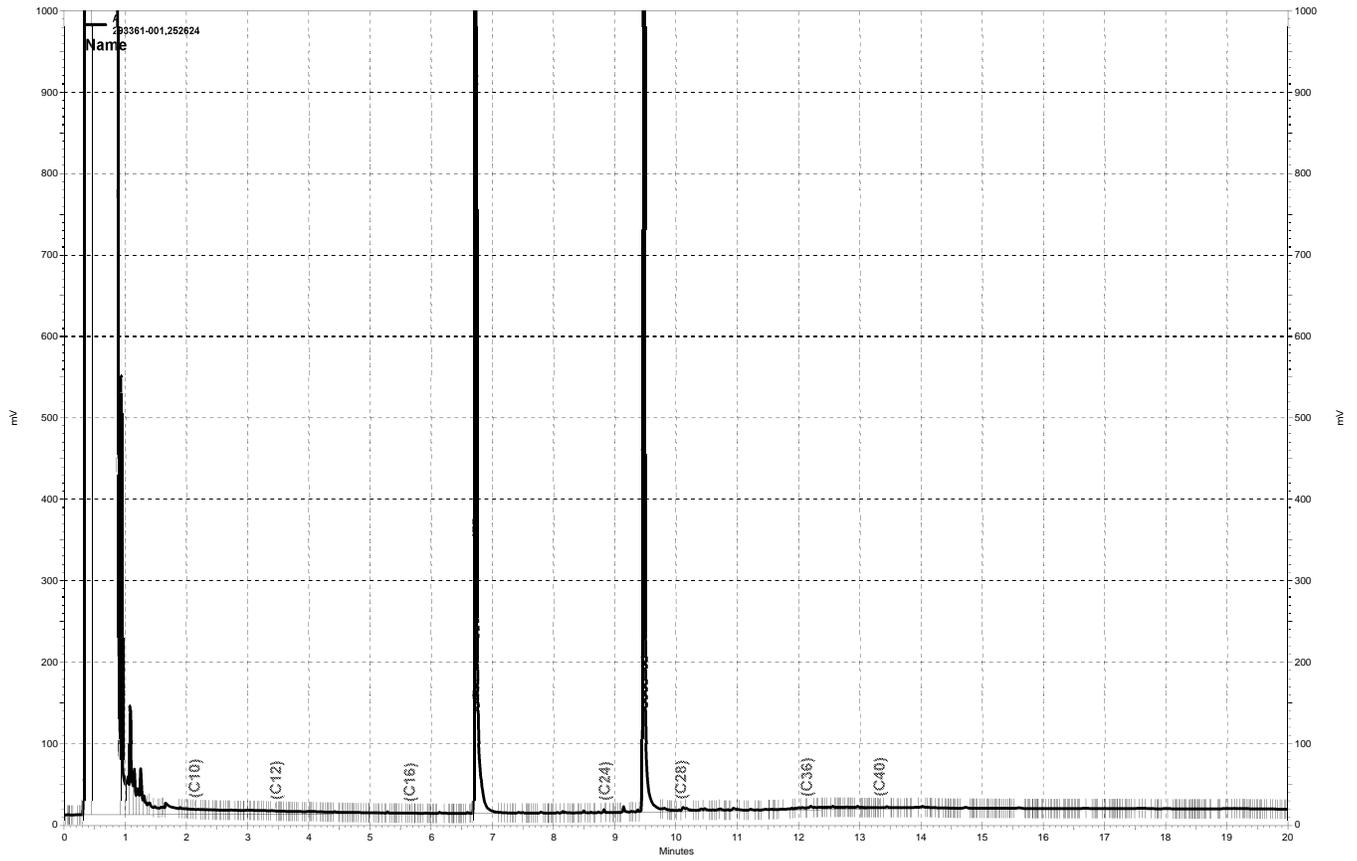
Surrogate	%REC	Limits
o-Terphenyl	104	55-133

Type: MSD Lab ID: QC904977

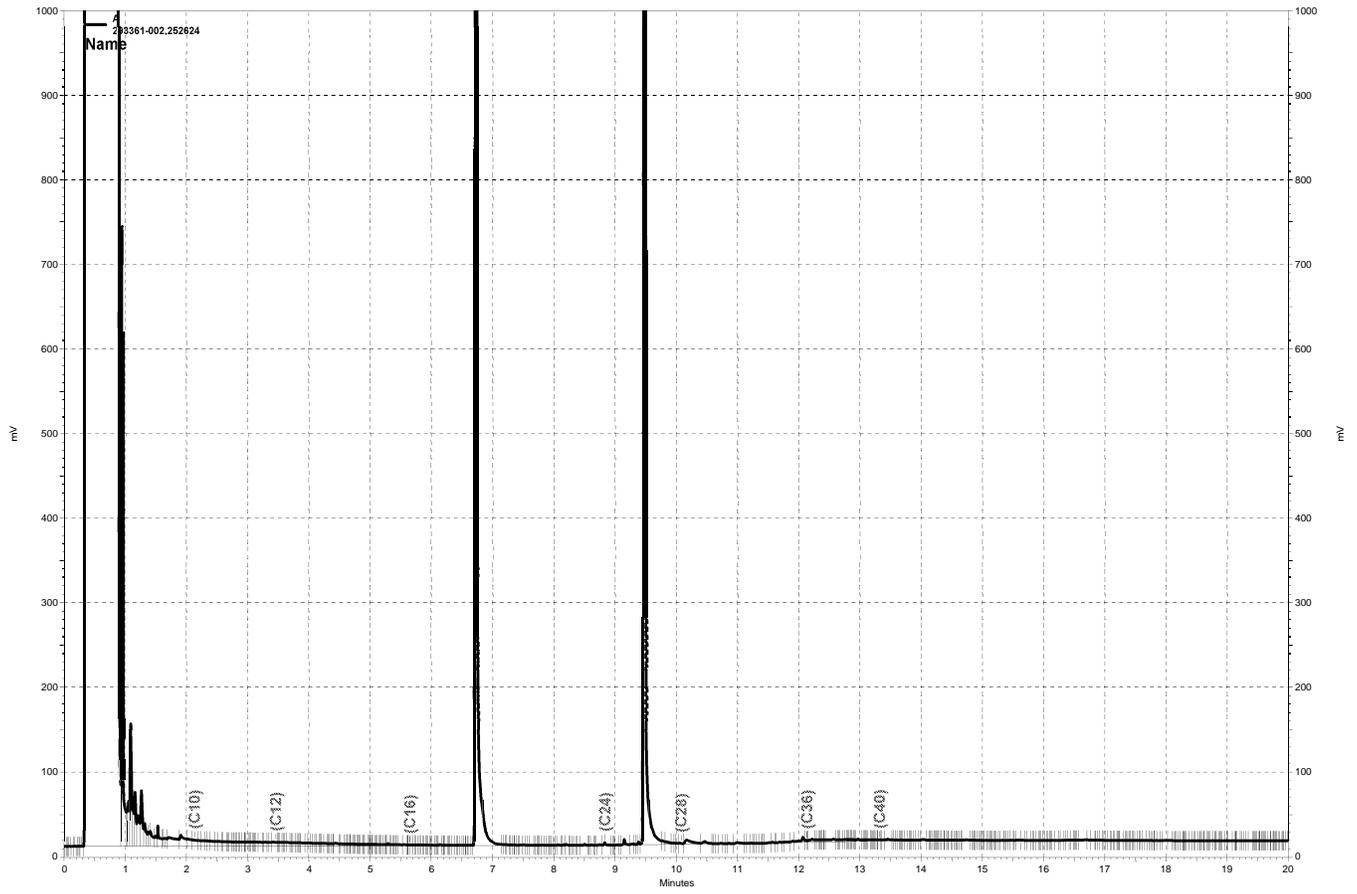
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.30	57.03	86	36-143	7	55

Surrogate	%REC	Limits
o-Terphenyl	110	55-133

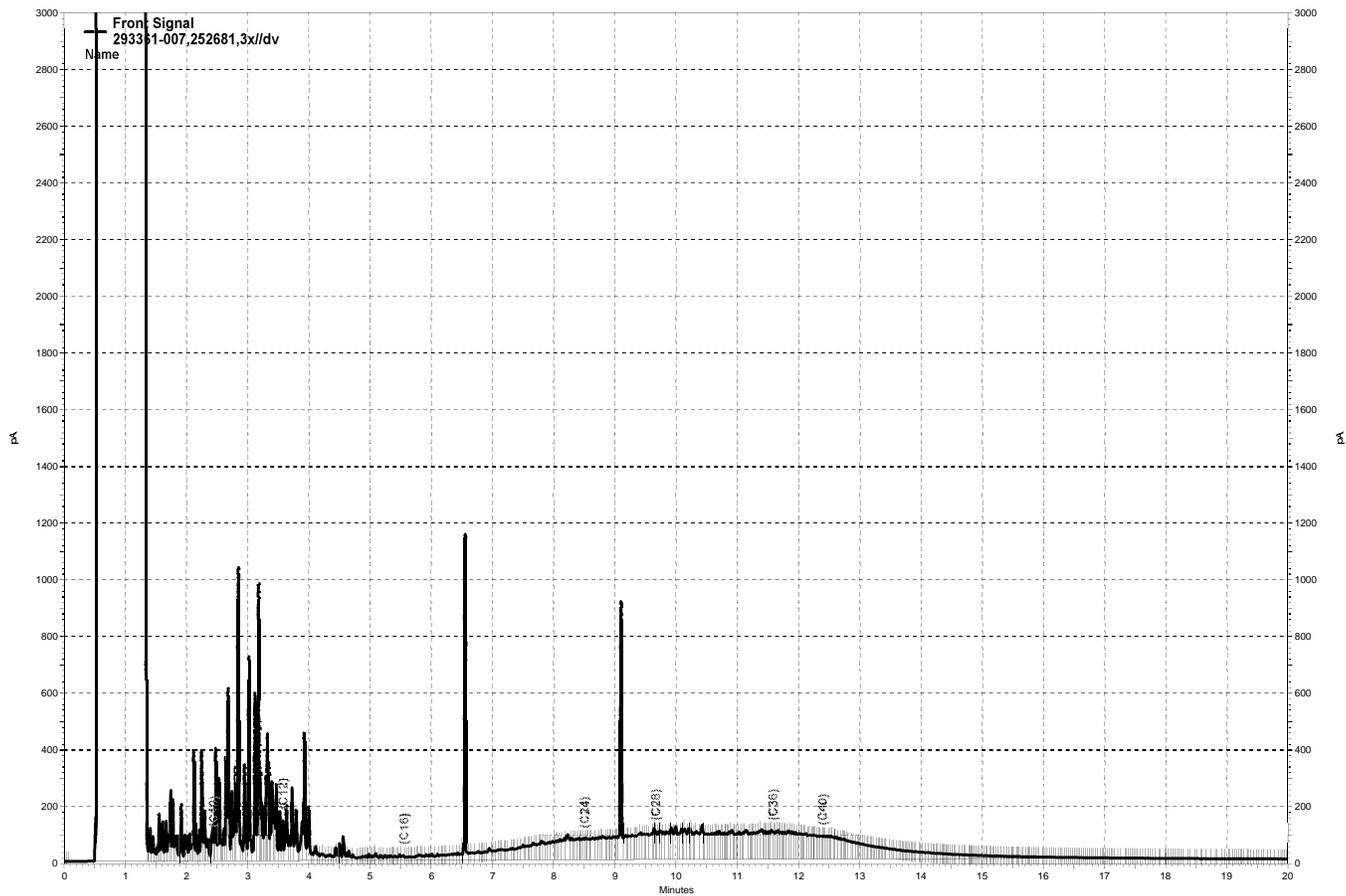
RPD= Relative Percent Difference



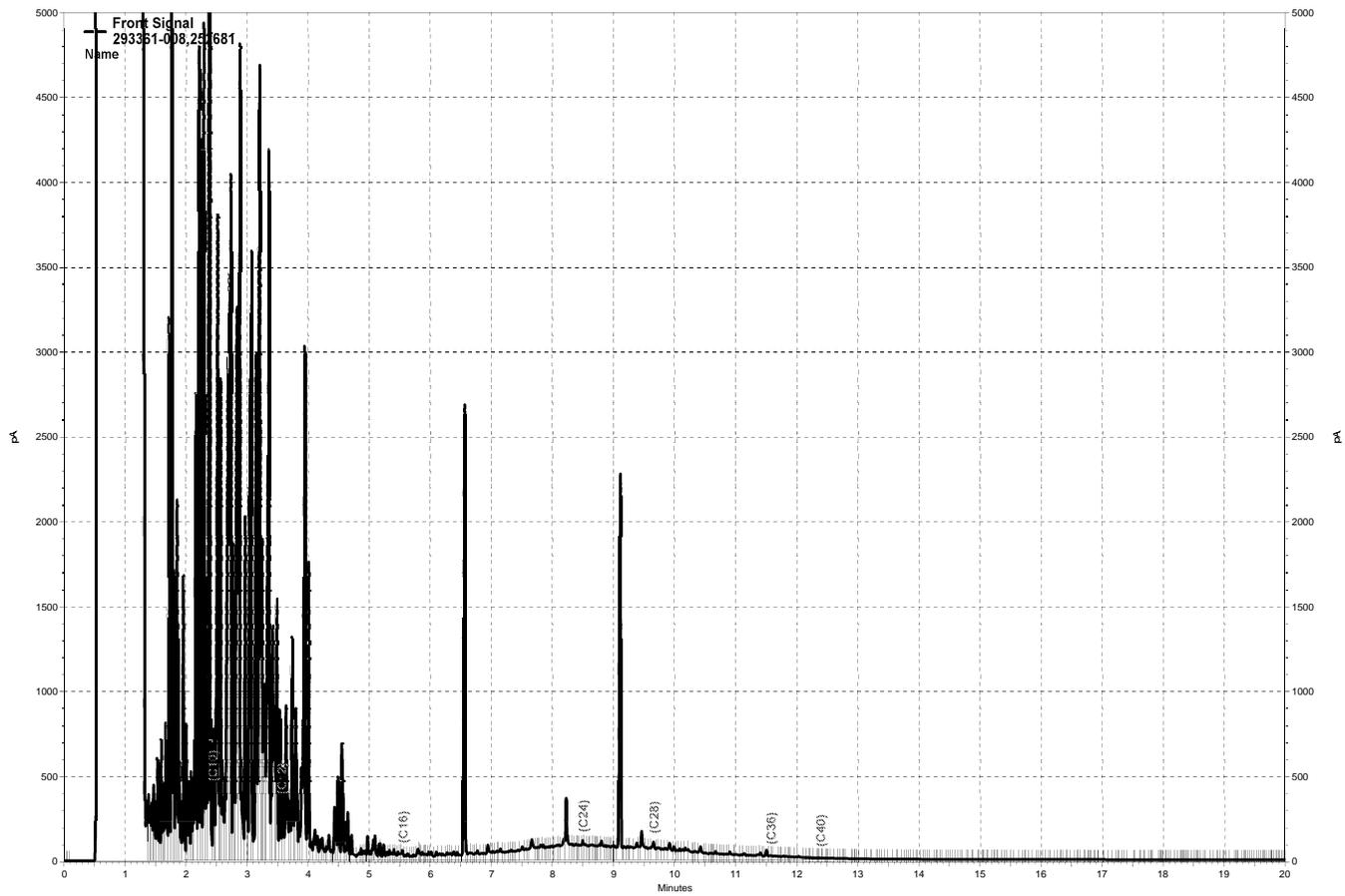
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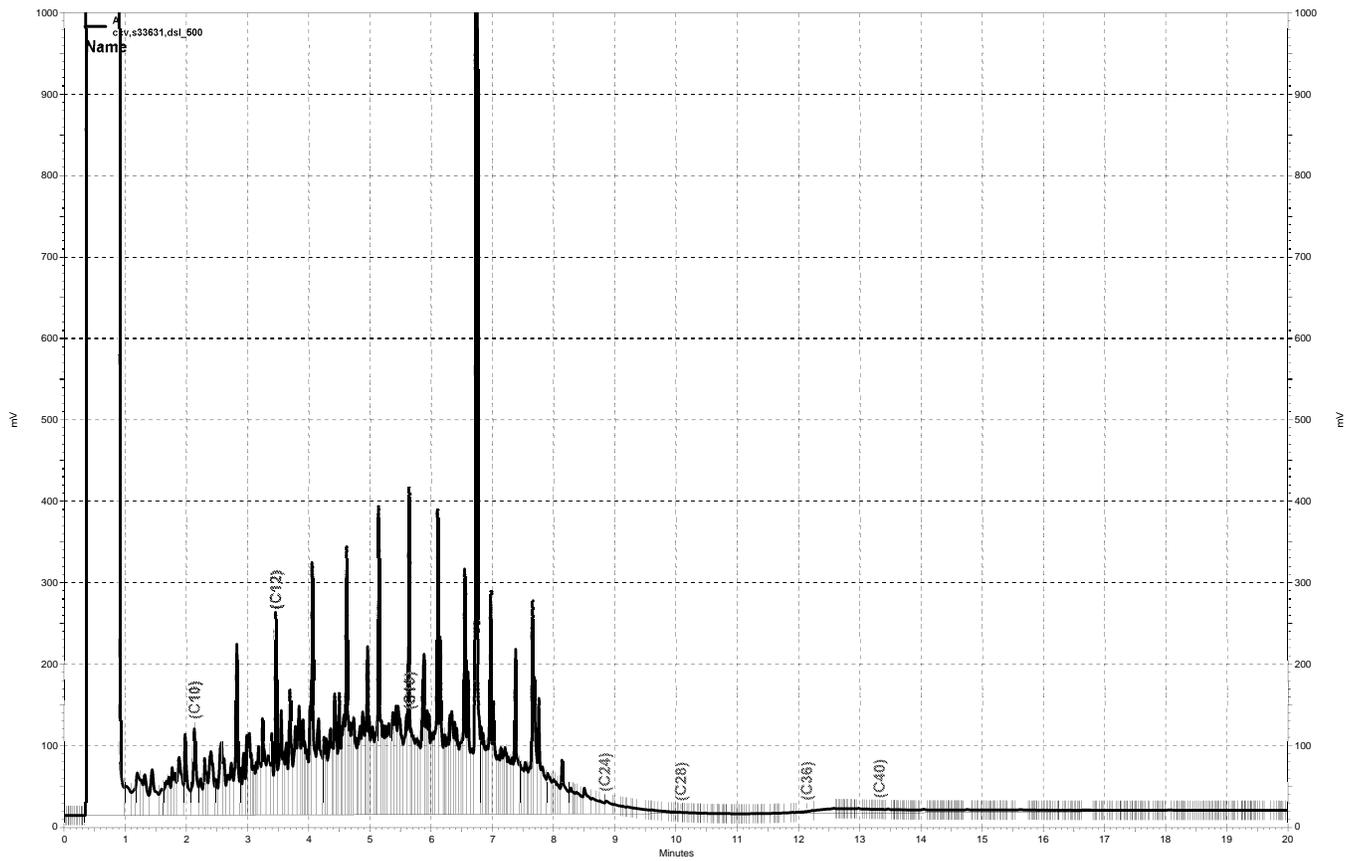
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— \\kraken\gdrive\ezchrom\Projects\GC27\Data\2017\289a021.dat, Front Signal



— \\kraken\gdrive\ezchrom\Projects\GC27\Data\2017\289a022.dat, Front Signal



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Purgeable Aromatics by GC/MS

Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-3-4	Diln Fac:	1.000
Lab ID:	293361-001	Batch#:	252583
Matrix:	Soil	Sampled:	10/09/17
Units:	ug/Kg	Received:	10/11/17
Basis:	as received	Analyzed:	10/11/17

Analyte	Result	RL
MTBE	ND	5.0
Benzene	ND	5.0
Toluene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Naphthalene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	113	76-132
1,2-Dichloroethane-d4	113	74-149
Toluene-d8	99	80-120
Bromofluorobenzene	109	78-134

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-3-18.5	Diln Fac:	0.9174
Lab ID:	293361-002	Batch#:	252583
Matrix:	Soil	Sampled:	10/09/17
Units:	ug/Kg	Received:	10/11/17
Basis:	as received	Analyzed:	10/11/17

Analyte	Result	RL
MTBE	ND	4.6
Benzene	ND	4.6
Toluene	ND	4.6
Ethylbenzene	ND	4.6
m,p-Xylenes	ND	4.6
o-Xylene	ND	4.6
Naphthalene	ND	4.6

Surrogate	%REC	Limits
Dibromofluoromethane	115	76-132
1,2-Dichloroethane-d4	115	74-149
Toluene-d8	99	80-120
Bromofluorobenzene	112	78-134

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-3-9	Diln Fac:	0.9881
Lab ID:	293361-003	Batch#:	252583
Matrix:	Soil	Sampled:	10/09/17
Units:	ug/Kg	Received:	10/11/17
Basis:	as received	Analyzed:	10/11/17

Analyte	Result	RL
MTBE	ND	4.9
Benzene	ND	4.9
Toluene	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Naphthalene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	117	76-132
1,2-Dichloroethane-d4	119	74-149
Toluene-d8	100	80-120
Bromofluorobenzene	112	78-134

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-4-4	Diln Fac:	0.9901
Lab ID:	293361-004	Batch#:	252662
Matrix:	Soil	Sampled:	10/09/17
Units:	ug/Kg	Received:	10/11/17
Basis:	as received	Analyzed:	10/13/17

Analyte	Result	RL
MTBE	ND	5.0
Benzene	ND	5.0
Toluene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Naphthalene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	102	76-132
1,2-Dichloroethane-d4	102	74-149
Toluene-d8	91	80-120
Bromofluorobenzene	96	78-134

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-4-9	Diln Fac:	0.8897
Lab ID:	293361-005	Batch#:	252662
Matrix:	Soil	Sampled:	10/09/17
Units:	ug/Kg	Received:	10/11/17
Basis:	as received	Analyzed:	10/13/17

Analyte	Result	RL
MTBE	ND	4.4
Benzene	ND	4.4
Toluene	ND	4.4
Ethylbenzene	ND	4.4
m,p-Xylenes	ND	4.4
o-Xylene	ND	4.4
Naphthalene	ND	4.4

Surrogate	%REC	Limits
Dibromofluoromethane	104	76-132
1,2-Dichloroethane-d4	105	74-149
Toluene-d8	90	80-120
Bromofluorobenzene	98	78-134

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-4-18.5	Diln Fac:	0.8696
Lab ID:	293361-006	Batch#:	252662
Matrix:	Soil	Sampled:	10/09/17
Units:	ug/Kg	Received:	10/11/17
Basis:	as received	Analyzed:	10/13/17

Analyte	Result	RL
MTBE	ND	4.3
Benzene	ND	4.3
Toluene	ND	4.3
Ethylbenzene	ND	4.3
m,p-Xylenes	ND	4.3
o-Xylene	ND	4.3
Naphthalene	ND	4.3

Surrogate	%REC	Limits
Dibromofluoromethane	106	76-132
1,2-Dichloroethane-d4	104	74-149
Toluene-d8	91	80-120
Bromofluorobenzene	98	78-134

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	SV-1-6	Diln Fac:	49.61
Lab ID:	293361-007	Batch#:	252662
Matrix:	Soil	Sampled:	10/11/17
Units:	ug/Kg	Received:	10/11/17
Basis:	as received	Analyzed:	10/13/17

Analyte	Result	RL
MTBE	ND	250
Benzene	ND	250
Toluene	ND	250
Ethylbenzene	730	250
m,p-Xylenes	ND	250
o-Xylene	ND	250
Naphthalene	1,200	250

Surrogate	%REC	Limits
Dibromofluoromethane	93	76-132
1,2-Dichloroethane-d4	93	74-149
Toluene-d8	92	80-120
Bromofluorobenzene	95	78-134
Trifluorotoluene (MeOH)	111	54-131

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	SV-2-6	Diln Fac:	49.80
Lab ID:	293361-008	Batch#:	252662
Matrix:	Soil	Sampled:	10/11/17
Units:	ug/Kg	Received:	10/11/17
Basis:	as received	Analyzed:	10/13/17

Analyte	Result	RL
MTBE	ND	250
Benzene	ND	250
Toluene	ND	250
Ethylbenzene	810	250
m,p-Xylenes	ND	250
o-Xylene	ND	250
Naphthalene	1,300	250

Surrogate	%REC	Limits
Dibromofluoromethane	90	76-132
1,2-Dichloroethane-d4	91	74-149
Toluene-d8	94	80-120
Bromofluorobenzene	95	78-134
Trifluorotoluene (MeOH)	116	54-131

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	252583
Units:	ug/Kg	Analyzed:	10/11/17
Diln Fac:	1.000		

Type: BS Lab ID: QC904575

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	23.14	93	61-131
Benzene	25.00	24.48	98	75-123
Toluene	25.00	22.65	91	76-120
Ethylbenzene	25.00	23.25	93	78-121
m,p-Xylenes	50.00	47.10	94	76-125
o-Xylene	25.00	22.74	91	75-121
Naphthalene	25.00	19.26	77	66-128

Surrogate	%REC	Limits
Dibromofluoromethane	110	76-132
1,2-Dichloroethane-d4	106	74-149
Toluene-d8	99	80-120
Bromofluorobenzene	100	78-134

Type: BSD Lab ID: QC904576

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	23.98	96	61-131	4	35
Benzene	25.00	24.33	97	75-123	1	25
Toluene	25.00	22.24	89	76-120	2	24
Ethylbenzene	25.00	22.96	92	78-121	1	23
m,p-Xylenes	50.00	46.08	92	76-125	2	27
o-Xylene	25.00	22.48	90	75-121	1	27
Naphthalene	25.00	21.52	86	66-128	11	31

Surrogate	%REC	Limits
Dibromofluoromethane	106	76-132
1,2-Dichloroethane-d4	106	74-149
Toluene-d8	98	80-120
Bromofluorobenzene	102	78-134

RPD= Relative Percent Difference

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC904577	Batch#:	252583
Matrix:	Soil	Analyzed:	10/11/17
Units:	ug/Kg		

Analyte	Result	RL
MTBE	ND	5.0
Benzene	ND	5.0
Toluene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Naphthalene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	107	76-132
1,2-Dichloroethane-d4	109	74-149
Toluene-d8	100	80-120
Bromofluorobenzene	113	78-134

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-3-18.5	Batch#:	252583
MSS Lab ID:	293361-002	Sampled:	10/09/17
Matrix:	Soil	Received:	10/11/17
Units:	ug/Kg	Analyzed:	10/11/17
Basis:	as received		

Type: MS Diln Fac: 0.9671
 Lab ID: QC904649

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.2879	48.36	47.58	98	59-131
Benzene	<0.4794	48.36	40.65	84	66-122
Toluene	<0.5153	48.36	36.77	76	61-120
Ethylbenzene	<0.4633	48.36	37.92	78	57-120
m,p-Xylenes	<0.6298	96.71	74.06	77	55-120
o-Xylene	<0.5024	48.36	36.78	76	55-120
Naphthalene	<0.9174	48.36	32.81	68	24-120

Surrogate	%REC	Limits
Dibromofluoromethane	115	76-132
1,2-Dichloroethane-d4	118	74-149
Toluene-d8	99	80-120
Bromofluorobenzene	100	78-134

Type: MSD Diln Fac: 0.9843
 Lab ID: QC904650

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	49.21	42.67	87	59-131	13	31
Benzene	49.21	42.88	87	66-122	4	32
Toluene	49.21	38.87	79	61-120	4	32
Ethylbenzene	49.21	39.46	80	57-120	2	37
m,p-Xylenes	98.43	78.45	80	55-120	4	37
o-Xylene	49.21	38.25	78	55-120	2	34
Naphthalene	49.21	34.81	71	24-120	4	44

Surrogate	%REC	Limits
Dibromofluoromethane	111	76-132
1,2-Dichloroethane-d4	113	74-149
Toluene-d8	98	80-120
Bromofluorobenzene	100	78-134

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC904890	Batch#:	252662
Matrix:	Soil	Analyzed:	10/13/17
Units:	ug/Kg		

Analyte	Result	RL
MTBE	ND	5.0
Benzene	ND	5.0
Toluene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Naphthalene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	100	76-132
1,2-Dichloroethane-d4	98	74-149
Toluene-d8	91	80-120
Bromofluorobenzene	94	78-134

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	252662
Units:	ug/Kg	Analyzed:	10/13/17
Diln Fac:	1.000		

Type: BS Lab ID: QC904891

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	25.14	101	61-131
Benzene	25.00	25.78	103	75-123
Toluene	25.00	23.98	96	76-120
Ethylbenzene	25.00	24.63	99	78-121
m,p-Xylenes	50.00	46.69	93	76-125
o-Xylene	25.00	24.57	98	75-121
Naphthalene	25.00	25.16	101	66-128

Surrogate	%REC	Limits
Dibromofluoromethane	101	76-132
1,2-Dichloroethane-d4	94	74-149
Toluene-d8	93	80-120
Bromofluorobenzene	94	78-134

Type: BSD Lab ID: QC904892

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	23.90	96	61-131	5	35
Benzene	25.00	24.51	98	75-123	5	25
Toluene	25.00	22.72	91	76-120	5	24
Ethylbenzene	25.00	23.25	93	78-121	6	23
m,p-Xylenes	50.00	43.97	88	76-125	6	27
o-Xylene	25.00	23.74	95	75-121	3	27
Naphthalene	25.00	24.64	99	66-128	2	31

Surrogate	%REC	Limits
Dibromofluoromethane	98	76-132
1,2-Dichloroethane-d4	94	74-149
Toluene-d8	93	80-120
Bromofluorobenzene	93	78-134

RPD= Relative Percent Difference

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	293361	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-4-9	Batch#:	252662
MSS Lab ID:	293361-005	Sampled:	10/09/17
Matrix:	Soil	Received:	10/11/17
Units:	ug/Kg	Analyzed:	10/13/17
Basis:	as received		

Type: MS Diln Fac: 0.9823
 Lab ID: QC904956

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.8900	98.23	68.28	70	59-131
Benzene	<0.8028	98.23	74.40	76	66-122
Toluene	<0.6328	98.23	72.06	73	61-120
Ethylbenzene	<0.6039	98.23	71.74	73	57-120
m,p-Xylenes	<1.113	196.5	129.0	66	55-120
o-Xylene	<0.5570	98.23	70.54	72	55-120
Naphthalene	<0.8897	98.23	77.47	79	24-120

Surrogate	%REC	Limits
Dibromofluoromethane	94	76-132
1,2-Dichloroethane-d4	89	74-149
Toluene-d8	95	80-120
Bromofluorobenzene	97	78-134

Type: MSD Diln Fac: 0.9766
 Lab ID: QC904957

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	97.66	74.49	76	59-131	9	31
Benzene	97.66	77.66	80	66-122	5	32
Toluene	97.66	74.10	76	61-120	3	32
Ethylbenzene	97.66	74.75	77	57-120	5	37
m,p-Xylenes	195.3	135.9	70	55-120	6	37
o-Xylene	97.66	72.98	75	55-120	4	34
Naphthalene	97.66	84.11	86	24-120	9	44

Surrogate	%REC	Limits
Dibromofluoromethane	93	76-132
1,2-Dichloroethane-d4	90	74-149
Toluene-d8	94	80-120
Bromofluorobenzene	96	78-134



ENTHALPY

ANALYTICAL



Enthalpy Analytical

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

Laboratory Job Number 294972
ANALYTICAL REPORT

OTG Enviroengineering Solutions, Inc
7700 Edgewater Drive
Oakland, CA 94621

Project : 17EMV05.1000
Location : Emeryville FS #35
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
EW-1	294972-001
EW-2	294972-002
EW-3	294972-003
EW-4	294972-004

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 NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 12/11/2017

Will Rice
Project Manager
will.rice@enthalpy.com
(510) 204-2221 Ext 13102

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 294972
Client: OTG Enviroengineering Solutions, Inc
Project: 17EMV05.1000
Location: Emeryville FS #35
Request Date: 11/30/17
Samples Received: 11/30/17

This data package contains sample and QC results for four water samples, requested for the above referenced project on 11/30/17. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):

Low response was observed for gasoline C7-C12 in the CCV analyzed 12/06/17 02:38; affected data was qualified with "b". No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):

No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

CHAIN OF CUSTODY



Formerly Curtis & Tompkins Labs

2323 Fifth Street
Berkeley, CA 94710

Project No: MEMV05.1300

Project Name: Emeryville FS#35

Project P. O. No.: _____

Report Level: I II III IV

Turnaround Time: RUSH Standard

C&T LOGIN # 294972

Sampler: Xinggang Tong

Report To: Xinggang Tong

Company: OTG EnviroEngineering Solutions

Telephone: 510-465-8982

Email: xtong.otg@gmail.com

Page _____ of _____
Chain of Custody # _____

ANALYTICAL REQUEST	
EPA8260B for BTEX, MTBE	X
X Naphthalene	
EPA805B for TPH-gas	X
EPA805B for TPH-liquid	X

Lab No.	Sample ID.	SAMPLING		# of Containers	CHEMICAL PRESERVATIVE									
		Date Collected	Time Collected		Water	Solid	HCl	H2SO4	HNO3	NaOH	None			
	EW-1	11/30/17	15:10	8	X					X				
	EW-2	11/30/17	14:00	8	X					X				
	EW-3	11/30/17	12:50	8	X					X				
	EW-4	11/30/17	12:10	8	X					X				

Notes:
Please provide eaf files for Geo Tracker upload
Global ID T0600101925

SAMPLE RECEIPT
 Ambient
 Cold
 On ice

RELINQUISHED BY: Xinggang Tong 11/30/17 3:45 pm
 DATE: 11/30/17 TIME: 3:45 pm

RECEIVED BY: [Signature]
 DATE: 11/30/17 TIME: 3:45 pm

COOLER RECEIPT CHECKLIST



Login # 294972 Date Received 11/30/17 Number of coolers 1
 Client BTG Enviro Engineering Project Emeryville FS #35

Date Opened 11/30/17 By (print) DC (sign) [Signature]
 Date Logged in By (print) DC (sign) [Signature]
 Date Labelled By (print) DC (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 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) _____

Temperature blank(s) included? Thermometer# _____ 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? (pH strip lot# _____) YES NO N/A

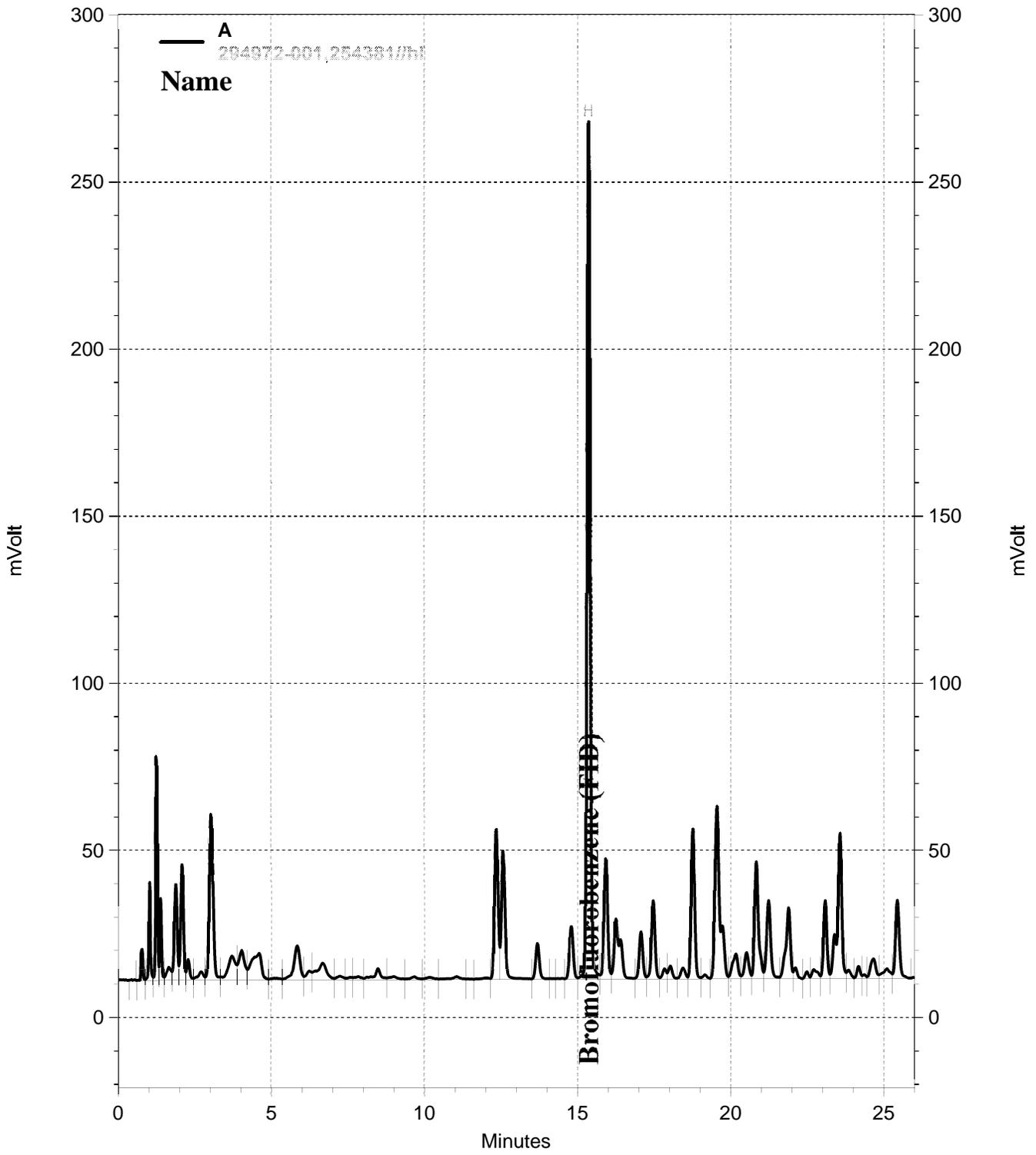
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

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

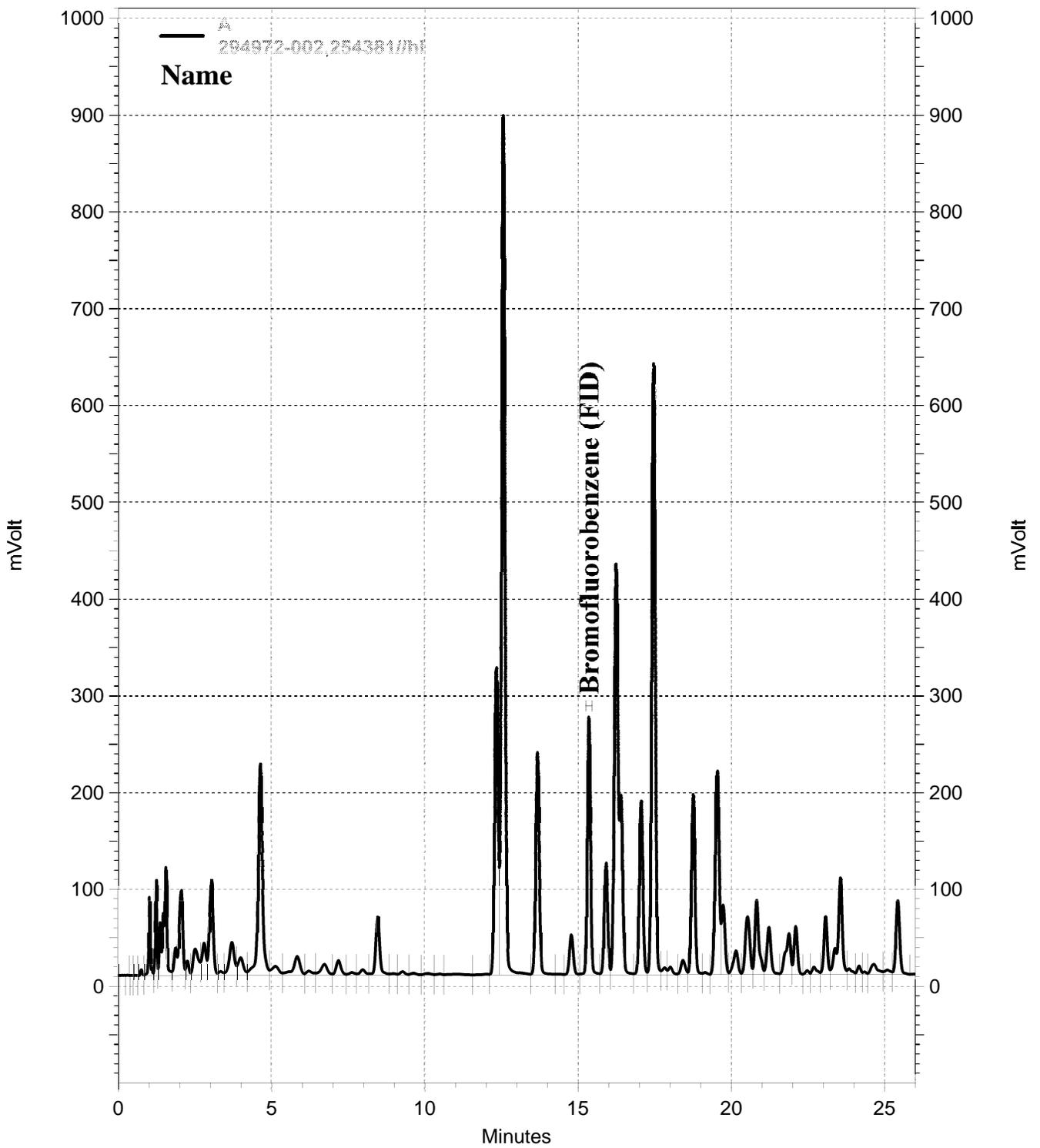
20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

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

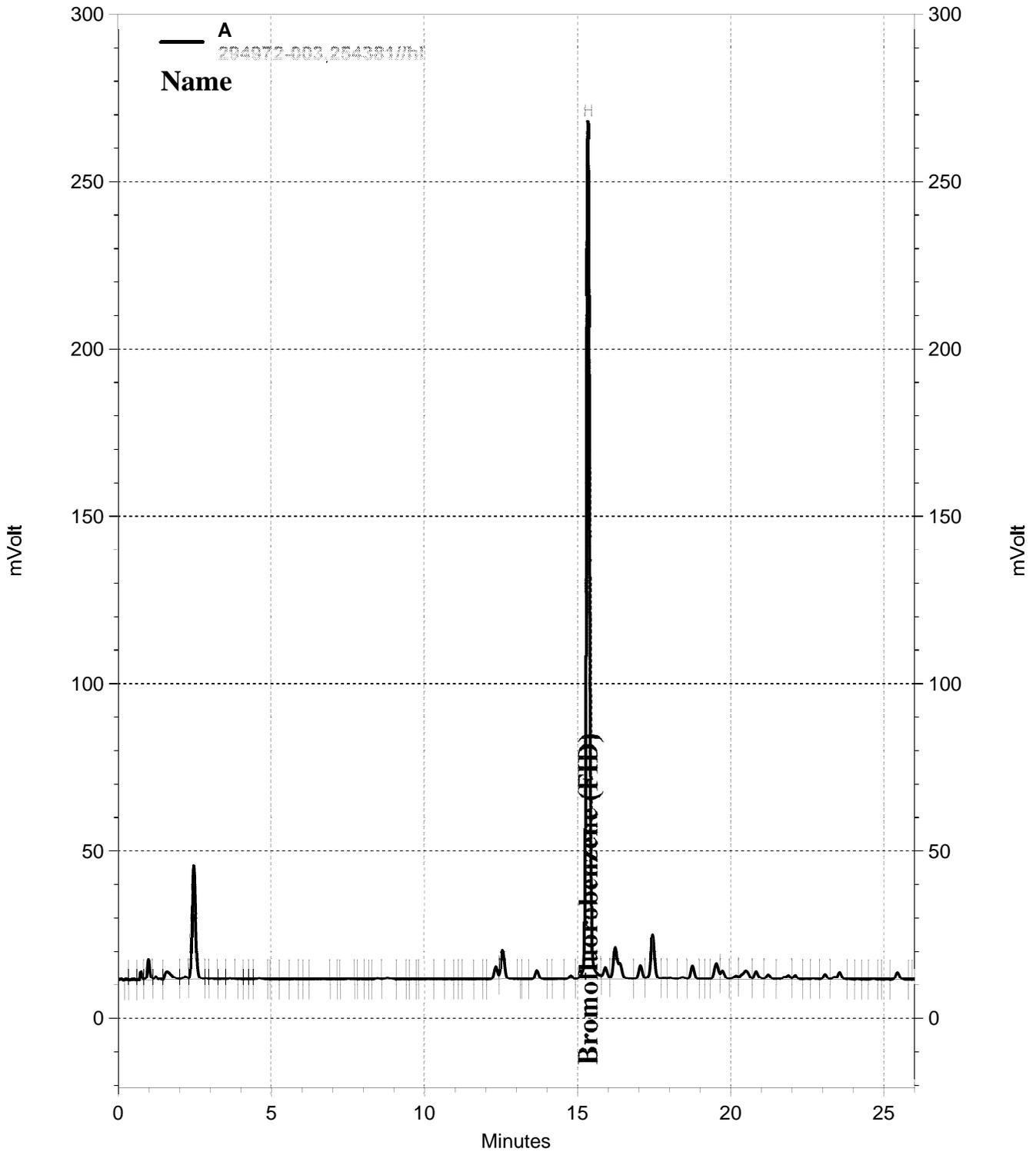
COMMENTS _____



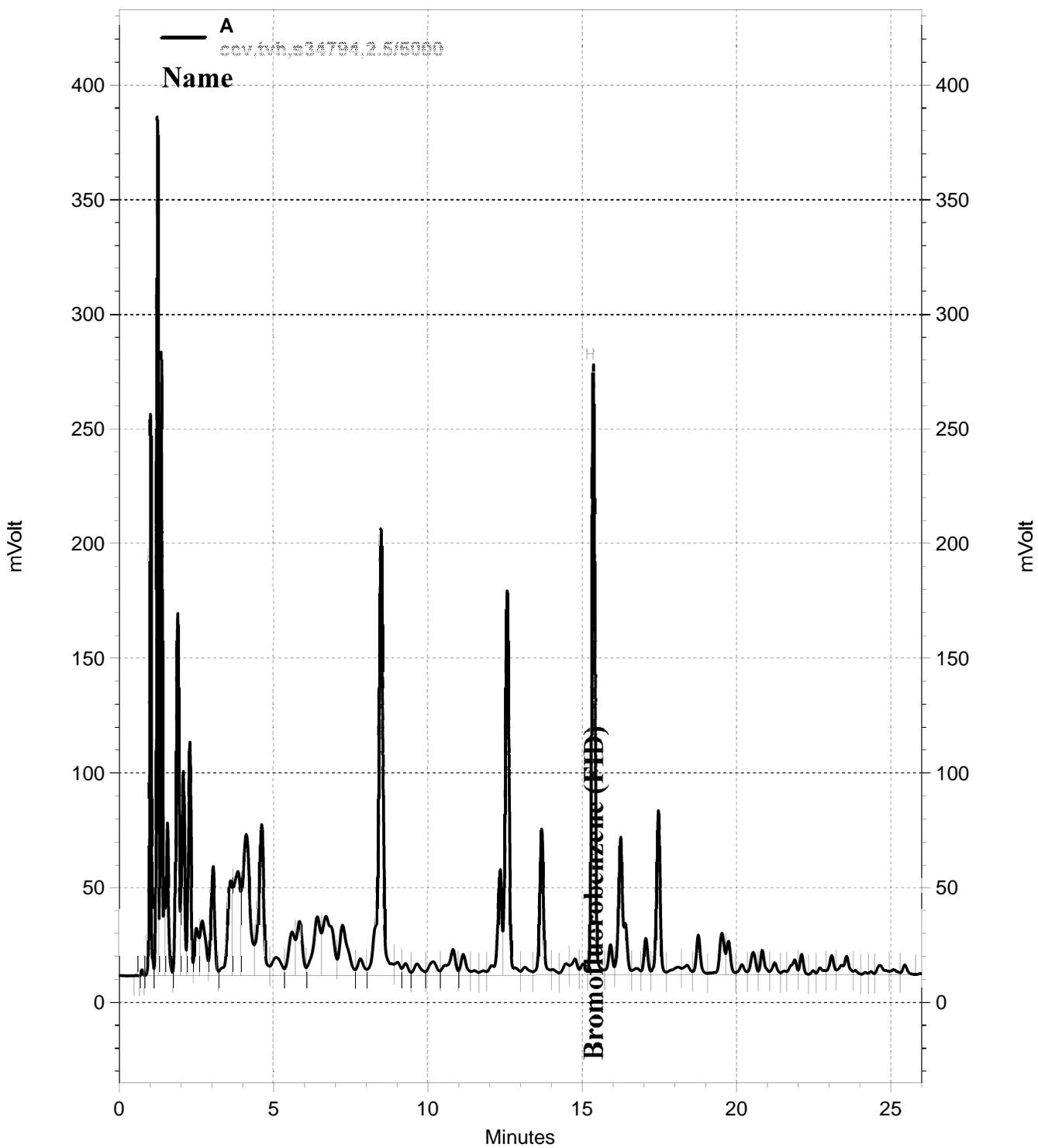
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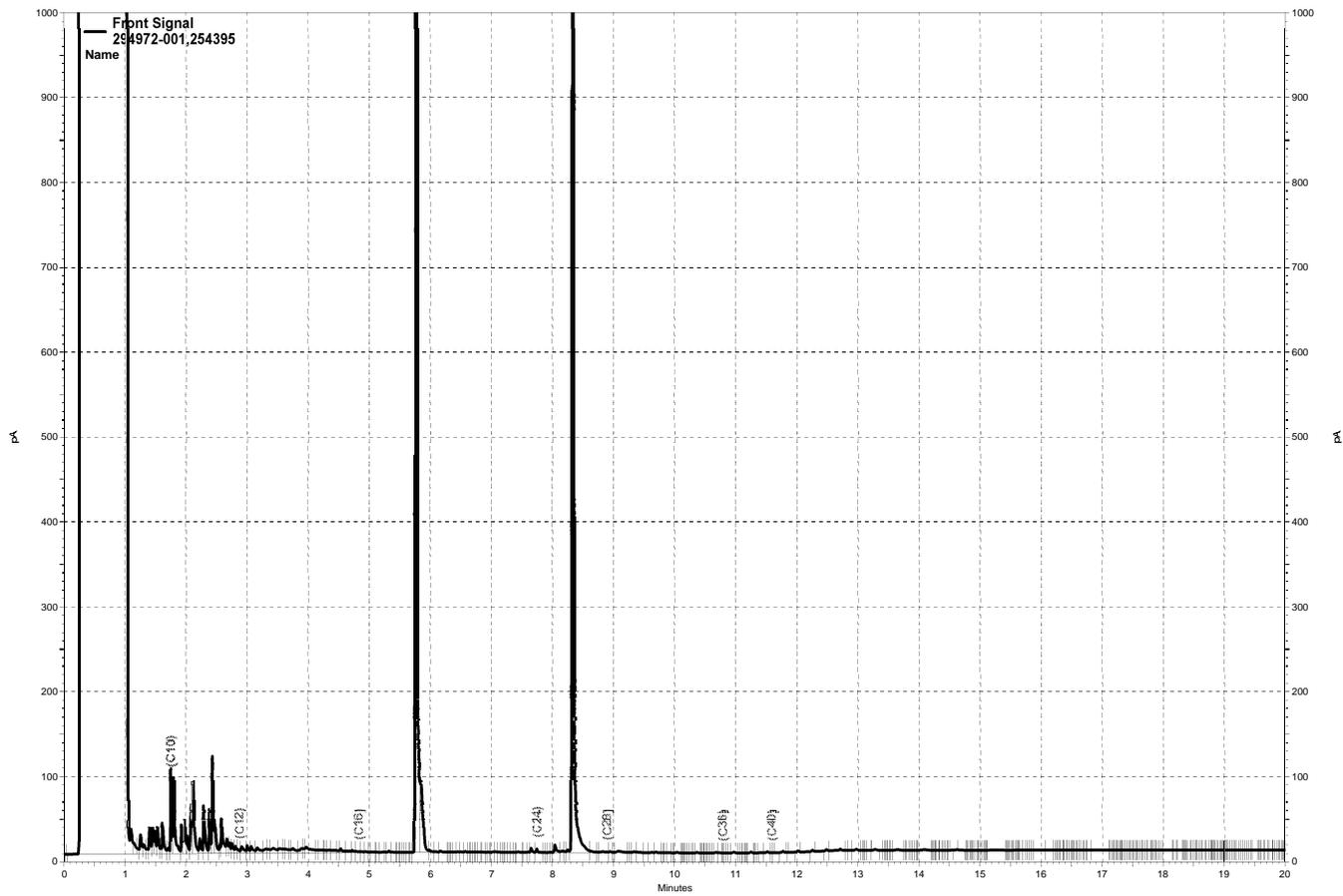
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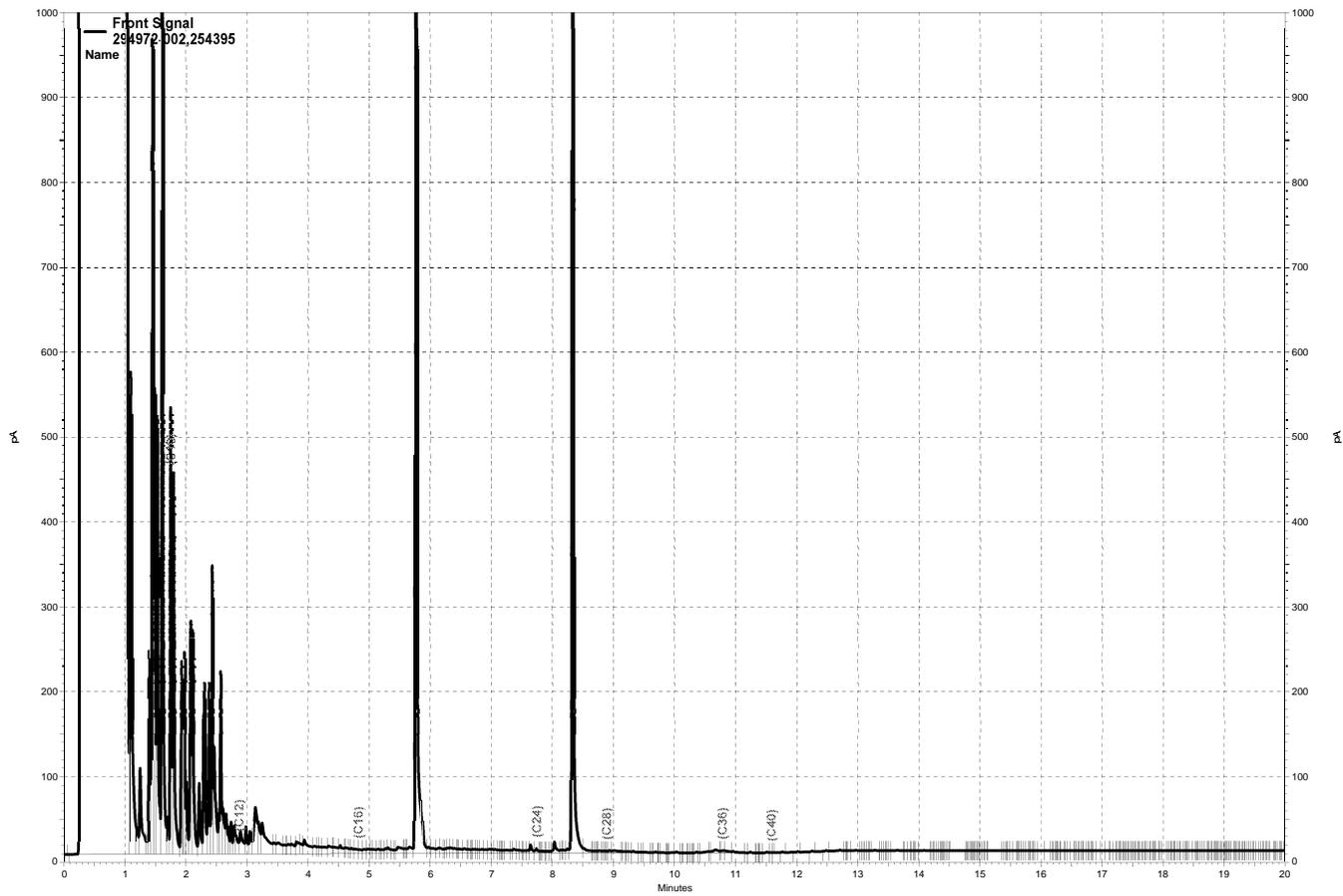
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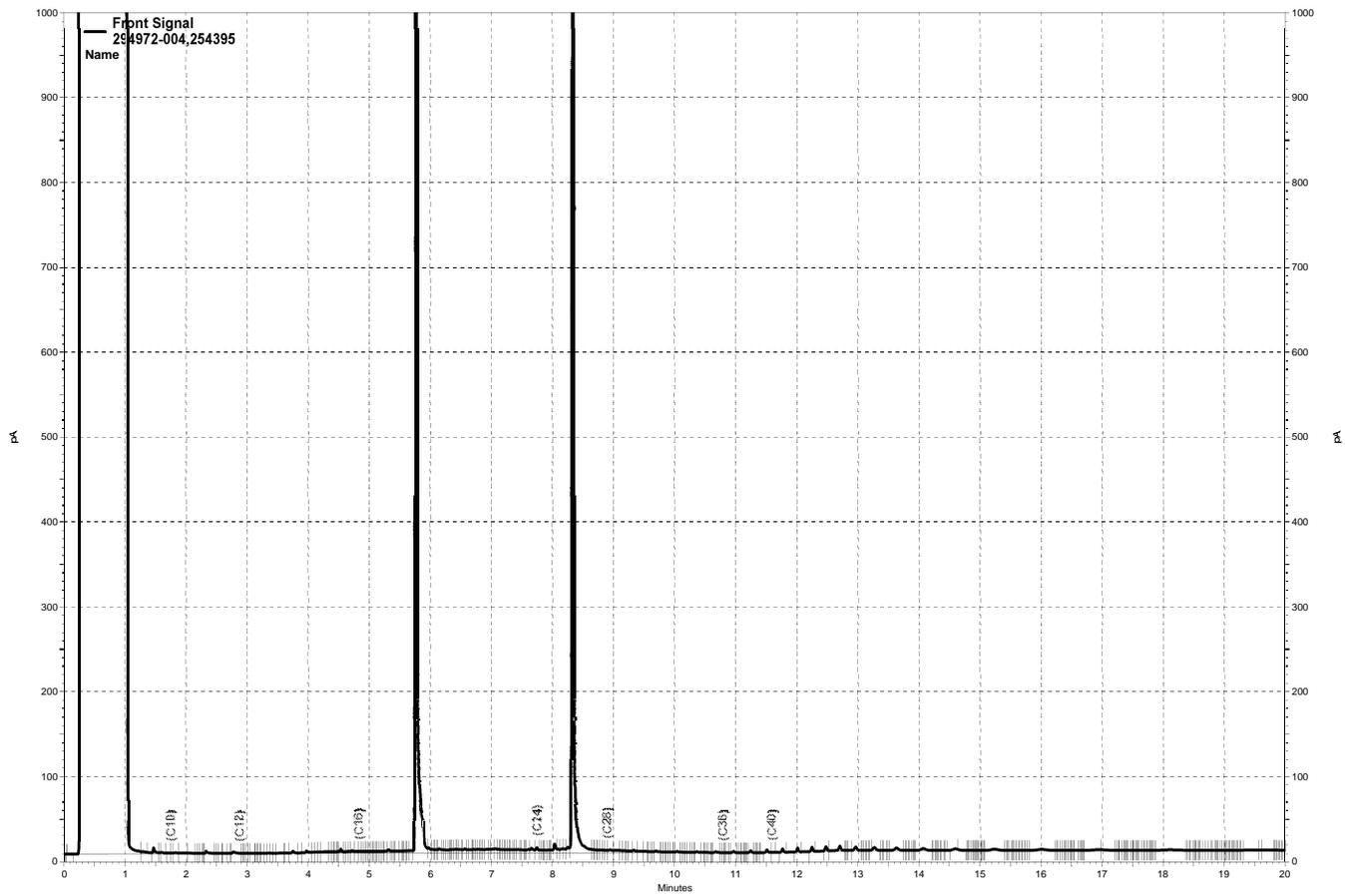
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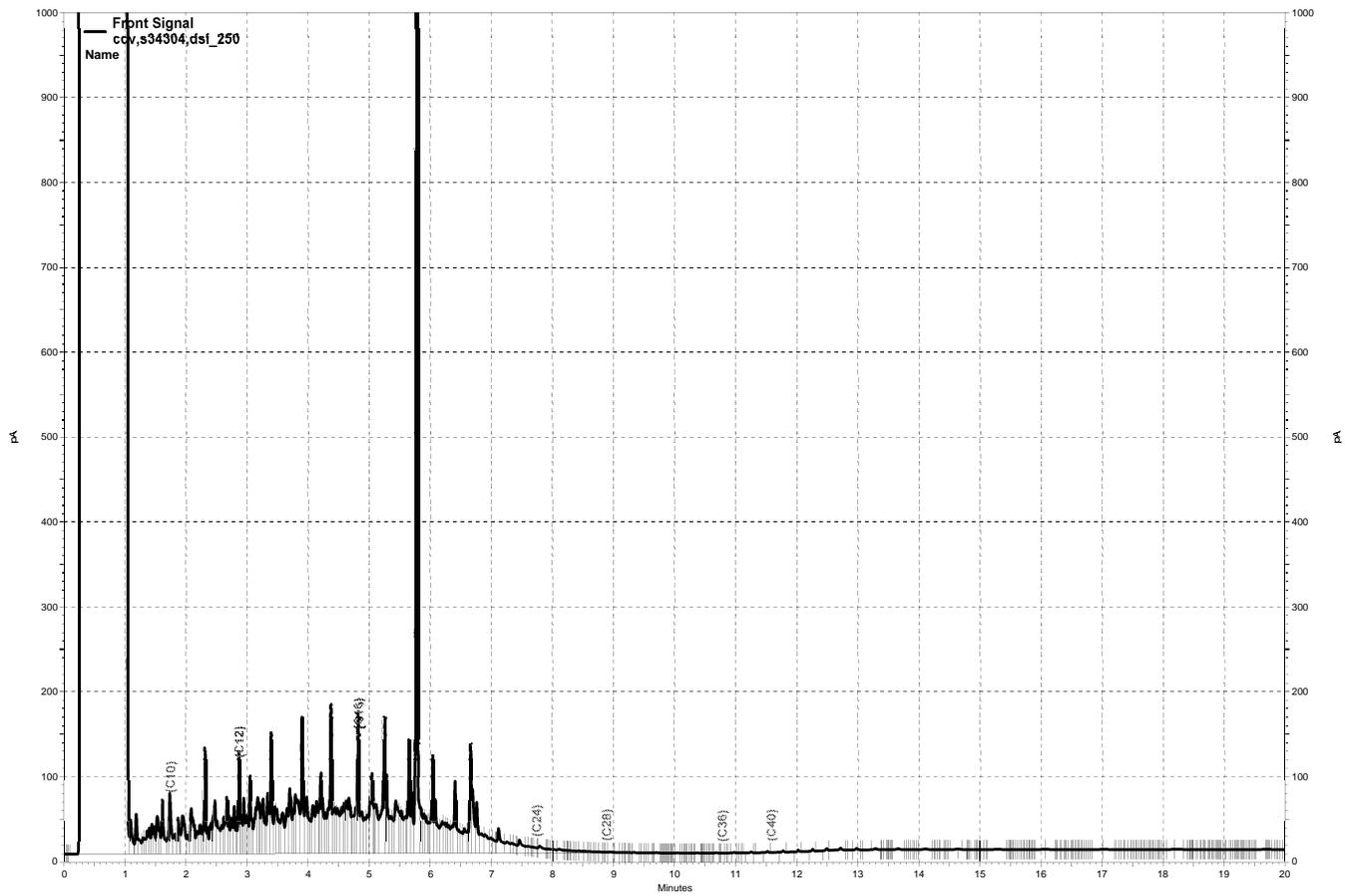
— \\kraken\gdrive\ezchrom\Projects\GC27\Data\2017\338a142.dat, Front Signal



— \\kraken\gdrive\ezchrom\Projects\GC27\Data\2017\338a143.dat, Front Signal



— \\kraken\gdrive\ezchrom\Projects\GC27\Data\2017\338a145.dat, Front Signal



— \\kraken\gdrive\ezchrom\Projects\GC27\Data\2017\338a121.dat, Front Signal

Purgeable Aromatics by GC/MS

Lab #:	294972	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-1	Batch#:	254511
Lab ID:	294972-001	Sampled:	11/30/17
Matrix:	Water	Received:	11/30/17
Units:	ug/L	Analyzed:	12/08/17
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	1.3	0.5
Toluene	0.7	0.5
Ethylbenzene	14	0.5
m,p-Xylenes	12	0.5
o-Xylene	2.8	0.5
Naphthalene	12	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-120
1,2-Dichloroethane-d4	94	72-135
Toluene-d8	91	80-120
Bromofluorobenzene	95	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	294972	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-2	Batch#:	254458
Lab ID:	294972-002	Sampled:	11/30/17
Matrix:	Water	Received:	11/30/17
Units:	ug/L	Analyzed:	12/07/17
Diln Fac:	3.333		

Analyte	Result	RL
MTBE	ND	1.7
Benzene	62	1.7
Toluene	16	1.7
Ethylbenzene	110	1.7
m,p-Xylenes	350	1.7
o-Xylene	90	1.7
Naphthalene	35	6.7

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-120
1,2-Dichloroethane-d4	90	72-135
Toluene-d8	93	80-120
Bromofluorobenzene	95	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	294972	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-3	Batch#:	254458
Lab ID:	294972-003	Sampled:	11/30/17
Matrix:	Water	Received:	11/30/17
Units:	ug/L	Analyzed:	12/07/17
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-120
1,2-Dichloroethane-d4	93	72-135
Toluene-d8	93	80-120
Bromofluorobenzene	95	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Aromatics by GC/MS

Lab #:	294972	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Field ID:	EW-4	Batch#:	254458
Lab ID:	294972-004	Sampled:	11/30/17
Matrix:	Water	Received:	11/30/17
Units:	ug/L	Analyzed:	12/07/17
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-120
1,2-Dichloroethane-d4	91	72-135
Toluene-d8	92	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	294972	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	254458
Units:	ug/L	Analyzed:	12/07/17
Diln Fac:	1.000		

Type: BS Lab ID: QC911918

Analyte	Spiked	Result	%REC	Limits
MTBE	12.50	11.21	90	65-120
Benzene	12.50	11.25	90	80-124
Toluene	12.50	11.93	95	80-120
Ethylbenzene	12.50	12.91	103	80-122
m,p-Xylenes	25.00	26.94	108	80-124
o-Xylene	12.50	13.61	109	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-120
1,2-Dichloroethane-d4	82	72-135
Toluene-d8	97	80-120
Bromofluorobenzene	91	80-120

Type: BSD Lab ID: QC911919

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	12.50	11.27	90	65-120	1	20
Benzene	12.50	11.91	95	80-124	6	20
Toluene	12.50	12.45	100	80-120	4	20
Ethylbenzene	12.50	12.93	103	80-122	0	20
m,p-Xylenes	25.00	26.72	107	80-124	1	20
o-Xylene	12.50	14.08	113	80-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-120
1,2-Dichloroethane-d4	83	72-135
Toluene-d8	96	80-120
Bromofluorobenzene	94	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	294972	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC911920	Batch#:	254458
Matrix:	Water	Analyzed:	12/07/17
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-120
1,2-Dichloroethane-d4	86	72-135
Toluene-d8	95	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	294972	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	254511
Units:	ug/L	Analyzed:	12/08/17
Diln Fac:	1.000		

Type: BS Lab ID: QC912145

Analyte	Spiked	Result	%REC	Limits
MTBE	12.50	10.06	81	65-120
Benzene	12.50	11.61	93	80-124
Toluene	12.50	11.71	94	80-120
Ethylbenzene	12.50	12.31	98	80-122
m,p-Xylenes	25.00	25.96	104	80-124
o-Xylene	12.50	13.20	106	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-120
1,2-Dichloroethane-d4	84	72-135
Toluene-d8	92	80-120
Bromofluorobenzene	98	80-120

Type: BSD Lab ID: QC912146

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	12.50	10.10	81	65-120	0	20
Benzene	12.50	10.78	86	80-124	7	20
Toluene	12.50	11.11	89	80-120	5	20
Ethylbenzene	12.50	12.41	99	80-122	1	20
m,p-Xylenes	25.00	26.33	105	80-124	1	20
o-Xylene	12.50	12.93	103	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	88	80-120
1,2-Dichloroethane-d4	81	72-135
Toluene-d8	97	80-120
Bromofluorobenzene	93	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Aromatics by GC/MS			
Lab #:	294972	Location:	Emeryville FS #35
Client:	OTG Enviroengineering Solutions, Inc	Prep:	EPA 5030B
Project#:	17EMV05.1000	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC912147	Batch#:	254511
Matrix:	Water	Analyzed:	12/08/17
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-120
1,2-Dichloroethane-d4	96	72-135
Toluene-d8	94	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected
 RL= Reporting Limit