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SECOUND SEMIANNUAL 2013 GROUNDWATER MONITORING AND PRODUCT EXTRACTION REPORT

EMERYBAY CONDO PHASE I PARKING GARAGE
6400 CHRISTIE AVENUE
EMERYVILLE, CALIFORNIA

Prepared for:

EMERYBAY COMMERCIAL ASSOCIATION
EMERYVILLE, CA 94608

December 2013

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Prepared for:

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6475 CHRISTIE AVENUE, SUITE 550
EMERYVILLE, CA 94608

Prepared by:

STELLAR ENVIRONMENTAL SOLUTIONS, INC.
2198 SIXTH STREET
BERKELEY, CALIFORNIA 94710

December 6, 2013

Project No. 2007-65

STELLAR
ENVIRONMENTAL SOLUTIONS, INC.
2198 SIXTH STREET, SUITE 201·BERKELEY, CA 94710
TEL: (510)644-3123 · FAX: (510)644-3859
GEOSCIENCE & ENGINEERING CONSULTING

December 6, 2013

Mr. Mark Detterman
Hazardous Materials Specialist
Alameda County Department of Environmental Health
Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: Second Semiannual 2013 Groundwater Monitoring & Product Extraction Report
EmeryBay Commercial Association Phase I Condo Parking Garage
6400 Christie Avenue, Emeryville, California

Dear Mr. Detterman:

Enclosed is the Stellar Environmental Solutions, Inc. report summarizing the site activities conducted in September 2013 at the referenced site. This report is being submitted on behalf of the owner and Responsible Party, Emerybay Commercial Association. The subject site activities included a surfactant injection into selected wells, a product extraction event and the second semiannual 2013 groundwater monitoring event.

This report summarizes the 20th sampling event conducted at the site since 1988. The plume underlying the open parking garage appears stable except to the south where it is influenced by the dewatering at the construction site across 64th Street at 6340 Christie Avenue (ACHCSA Case # RO0000057) which has resulted in a significant increase at well MW-3 that is of concern. The TPHd at MW-3 on the southern property line increased from15,000 µg/L TPHd in April 2013 to 250,000 µg/L TPHd in this event. This pulling of the plume southward by outside pumping has been raised as a concern in the November 2012 and March 2013 semi-annual monitoring reports prepared by Stellar Environmental. In accordance with regulatory requirements, an electronic copy of this report has been uploaded to ACEH and to the State Water Resources Control Board's GeoTracker system.

We declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report are true and correct to the best of our knowledge. If you have any questions regarding this report, please contact us at (510) 644-3123.

Sincerely,

Richard S. Makdisi, P.G., R.E.A.
Principal Geochemist & President

Ms. Katherine Collins
Emerybay Commercial Assoc.

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS (continued)

Section **Page**

Appendices

TABLES AND FIGURES

Tables **Page**

Figures **Page**

1.0 INTRODUCTION

PROJECT BACKGROUND

The subject property, located at 6400 Christie Avenue in Emeryville, California, is owned by the Emerybay Commercial Association, for which Stellar Environmental Solutions, Inc. (Stellar Environmental) provides environmental consulting services. The site has undergone fuel tank-related investigations and remediation since 1988 (by Stellar Environmental since 2007). All known environmental documents for the subject property are listed in the References and Bibliography section (Section 7.0) of this report. Previous remediation and investigation activities are outlined in the final subsection of this chapter.

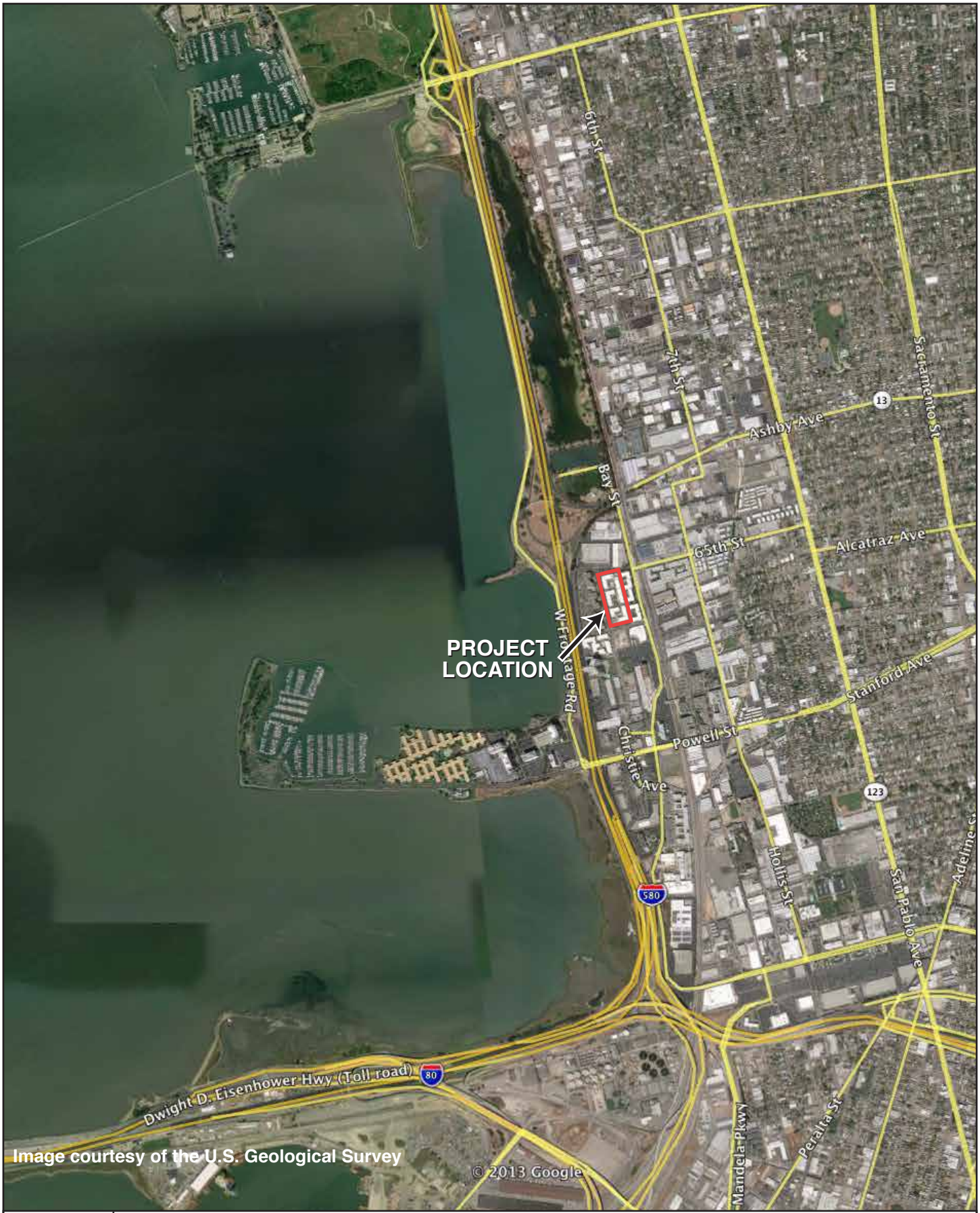
SITE AND VICINITY DESCRIPTION

The project site is located at 6400 Christie Avenue in Emeryville, California (see Figure 1). The project site, which slopes to the south, is wholly developed with an open ground-floor parking area and apartment complex known as the Emery Bay Phase I Condos and parking garage. The area of monitoring and product extraction is primarily located in the northeastern portion of the parking garage. Figure 2 is a site plan. The site is bordered to the east by the Emery Bay Phase II Condos and parking garage, to the north by 65th Street, beyond Christie Avenue and to the west by the Bay Center Offices, and to the south by 64th Street. The surrounding area is developed with apartment complexes, offices, and commercial stores.

PREVIOUS INVESTIGATIONS

Historical groundwater well analytical results are presented in Appendix A, and are discussed in detail in Section 5.0 of this report.

The subject property parcel was developed as early as 1958 with the Garrett Motor Freight Station, associated with Delta Lines, Inc. The Delta Lines complex contained an “Oil and Gas” building, located at the site of the present-day Emery Bay Phase I Condo complex and parking garage. The building remained on the property until 1986, when it was demolished to build the present-day structures. Twelve underground fuel storage tanks (UFSTs) containing diesel and gasoline were removed from the Emery Bay Phase I and Phase II Condo complex parcels in 1987, at which time soil and groundwater contamination was discovered.



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SITE LOCATION ON AERIAL PHOTO

6400 Christie Ave.
Emeryville, CA

By: MJC | NOVEMBER 2013

Figure 1

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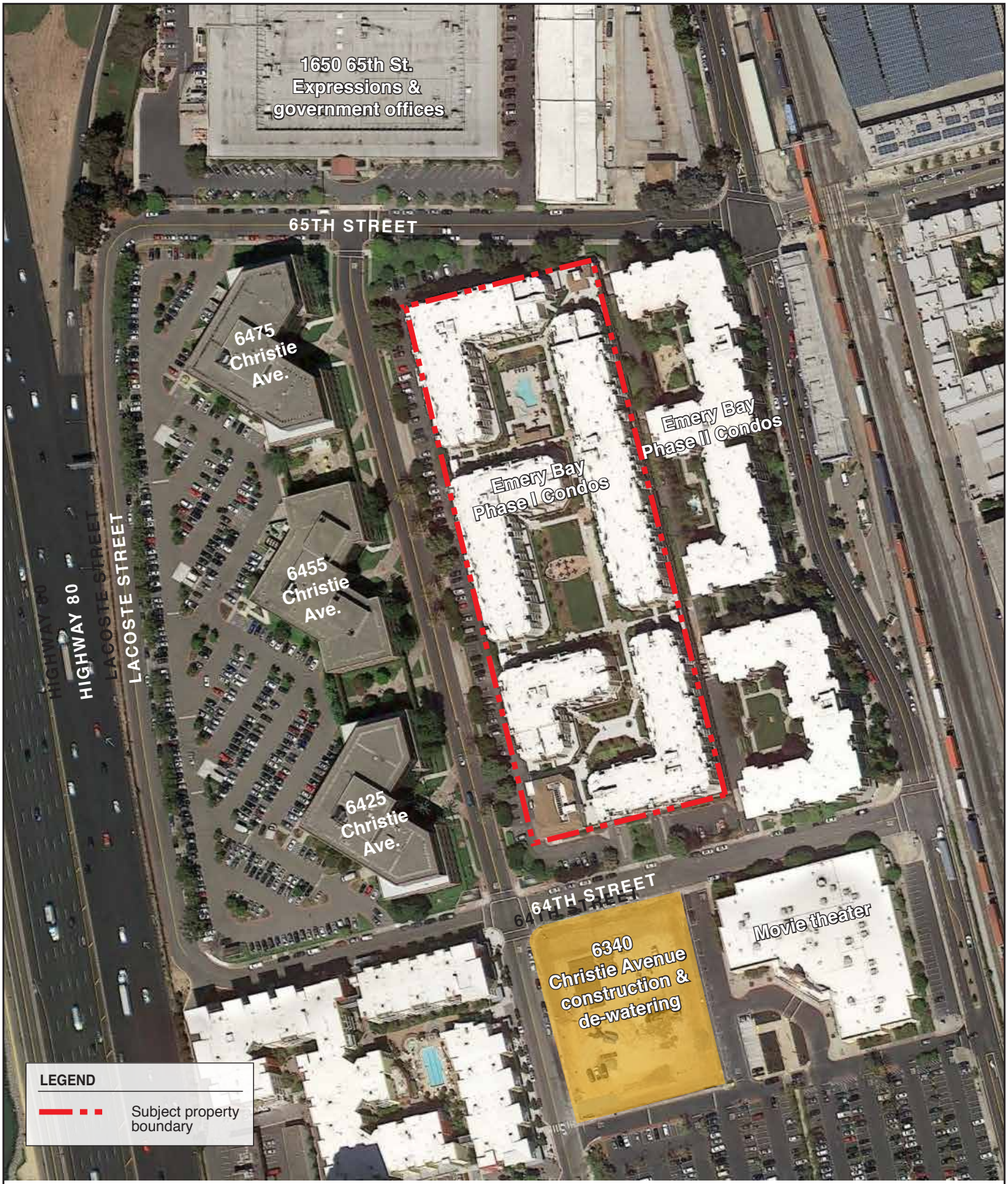

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SITE PLAN AND ADJACENT LAND USE

6400 Christie Ave. Emeryville, CA	By: MJC	DECEMBER 2013
	Figure 2	

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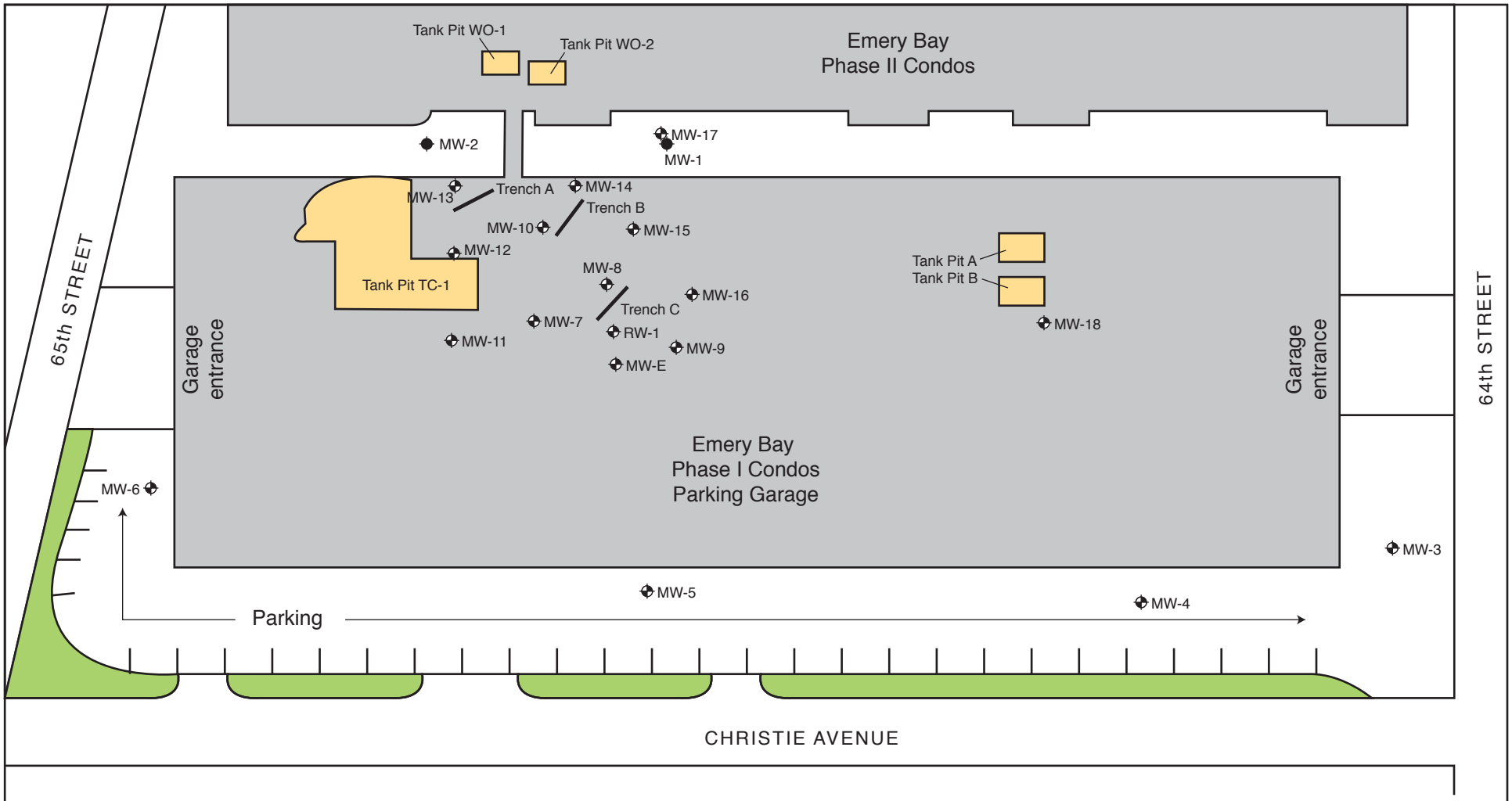
2007-65-07

The subsurface contamination originated from the trucking terminal that was operated by the Garrett Freight Line and Delta Lines, and existed at the site of the Bay Center Apartments before its development in the late 1980s. Site investigations identified a total of 12 UFSTs in three areas of the trucking terminal. These UFST areas were referred to as: 1) Tank Pits A and B (each containing one 10,000-gallon diesel tank); 2) Tank Pit TC-1 (four 12,000-gallon diesel tanks, two 10,000-gallon diesel tanks, and one 6,000-gallon gasoline tank); and 3) Tank Pit WO-1 and WO-2 (one 6,000-gallon tank, one 4,000-gallon tank, and one 1,000-gallon tank). Nine UFSTs were located beneath the current footprint of the Emery Bay Phase I Condo complex, while three were beneath the Emery Bay Phase II Condo complex. Figure 2 shows the historical locations where the tanks were removed.

To remediate the hydrocarbon contamination beneath the garage area of the Emery Bay Phase I Condo complex, a light non-aqueous phase liquid (LNAPL) groundwater pump-and-treat system was installed by Groundwater Technology, Inc. (GTI) in 1989. The system extracted approximately one million gallons of groundwater, yielding approximately 100 gallons of LNAPL from recovery well RW-1 from July 1990 to March 1991. Three monitoring wells had previously been installed in 1985. GTI installed (and repaired) several more monitoring wells between 1987 and 1990, for a total of seven monitoring wells and one extraction well by 1990. The system and groundwater monitoring wells were designed and monitored as a condition of discharge permits granted by the East Bay Municipal Utility District (EBMUD) and the Bay Area Air Quality Management District (BAAQMD). The first groundwater monitoring event for MW-1 through MW-6 occurred in December 1988. The second monitoring event, which also included MW-E and RW-1, was conducted in March 1989. Subsequently, the groundwater extraction system operated by GTI was closed in late 1990 when corrosion and other mechanical problems caused the system to fail. Recovery of LNAPL continued manually on RW-1 until 1991, and a third groundwater sampling event occurred in February 1991. In 1994, the GTI system was abandoned. Appendix A contains the historical analytical results. Figure 3 shows the locations of the monitoring wells and trenches.

No groundwater monitoring events had occurred at the site between 1991 and 2004, when PES Environmental, Inc. (PES) was retained to evaluate and implement remediation of the residual contamination at the TC-1 (former location of seven UFSTs) Emery Bay Phase I Condo complex area. (Note: Harding Lawson Associates conducted soil and groundwater sampling on the Phase II Apartment complex area during this time, but not for the purpose of product extraction or remediation.) In 2004, PES installed an additional 10 groundwater monitoring wells (monitoring wells MW-1 and MW-2 were either abandoned or paved over with asphalt during construction), bringing the current total to 17 monitoring wells and one extraction well in the Phase I parking garage area. The first groundwater monitoring event for the current wells was conducted in March 2004 and the second event conducted in December 2006. A previous Stellar Environmental report



LEGEND

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- Historical tank pit area
- Landscaping

0 60

SCALE: 1/2" = 60 FEET

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MONITORING WELL AND TRENCH LOCATIONS

6400 Christie Ave., Emeryville, CA

Figure 3

by: MJC | NOVEMBER 2013

2007-65-02

(Stellar Environmental, 2007) discusses previous site remediation and investigations, site geology and hydrogeology, and residual site contamination. Tabular summaries of historical groundwater well water elevations and analytical results are included in Appendices D and A, respectively.

OBJECTIVES AND SCOPE OF WORK

This report discusses the following activities conducted/coordinated by Stellar Environmental in the current annual monitoring period:

- Introduction of a hydrocarbon dissolving surfactant in wells MW-8, MW-12, MW-13 and MW-14 with the goal of capturing the viscous hydrocarbon layer around some key wells and cleaning the wells screens in these wells to reduce the accumulated heavy product fraction.
- LNAPL passive product extraction from Trenches A and C, and active product extraction on select groundwater monitoring wells, trench sump wells, and recovery well RW-1
- Collection of water levels in site wells to determine groundwater flow direction
- Sampling of site wells for contaminant analysis
- Evaluation of hydrochemical and groundwater elevation trends in the context of plume stability and case closure assessment

REGULATORY OVERSIGHT

Alameda Department of Environmental Health (ACEH) is the lead regulatory agency for the case, acting as a Local Oversight Program for the Regional Water Quality Control Board (Water Board). There are currently no ACEH or Water Board cleanup orders for the site; however, all site work has been conducted under the oversight of ACEH. ACEH assigned the site to its fuel leak case system (RO #2799), currently overseen by Mr. Mark Detterman. In a November 2008 meeting with the Responsible Party (represented by Ms. Sarah Irving), Stellar Environmental (represented by Ms. Teal Glass and Mr. Richard Makdisi), and ACEH (represented by Ms. Jakub and Ms. Donna Drogas), it was agreed that quarterly sampling could be reduced to a semiannual schedule with the stipulation that an indoor air and preferential pathway study be completed. Stellar Environmental submitted a letter on November 24, 2008 to ACEH documenting the change in sampling frequency. The Indoor Air Survey and Preferential Pathway Report (Stellar Environmental, 2009b) was submitted to ACEH on April 6, 2009. Stellar Environmental conducted an additional indoor air survey in the ground floor office area on March 22, 2010. The results were presented in a separate report, submitted to ACEH on April 6, 2010 (Stellar Environmental, 2010). The case has been assigned No. SLT2O05561 in the Water Board's GeoTracker system. Electronic uploads of required data/reports are submitted to both agencies. The November 2012 and March 2013 monitoring reports warned ACEH of impacts from the adjacent site dewatering at 6340 Christie Avenue.

2.0 PHYSICAL SETTING

The following evaluation of the physical setting of the site—including topography, drainage, and geologic and hydrogeologic conditions—is based on previous (1986 through 2006) site investigations conducted by others, and site inspections and subsurface data collection by Stellar Environmental in 2007 and 2008.

TOPOGRAPHY AND DRAINAGE

The mean elevation of the property is about 13 feet above mean sea level, and the general topographic gradient in the vicinity of the property is to the southwest, although the regional gradient is to the west-southwest.

The nearest receiving water body is San Francisco Bay, located approximately 700 feet to the west of the subject property. East of the site lies the Oakland Hills, which rise to an elevation of approximately 1,000 feet and are situated 2.5 miles east of the subject property. The subject property is not listed within a 100- or 500-year flood zone.

Storm drains from the roof collect storm runoff for discharge onto the asphalt-paved parking lots. Drainage collected in storm sewers from the parking lot and from Christie, 64th, and 65th Streets discharges into San Francisco Bay. Stellar Environmental noted several storm drains, in the parking lot area and on the surrounding streets.

GEOLOGY

The subject property area is underlain with material mapped "Qhbm," designated early pleistocene alluvium, that is moderately consolidated, deeply weathered, poorly sorted, irregularly interbedded clay, silt, sand, and gravel. A geotechnical survey conducted in 1985 revealed that the upper 15 to 20 feet of soil consists of a combination of fill and soft bay sediment. The upper 1 to 2 feet of soil is generally pavement and imported fill. This is underlain by approximately 20 feet of firm soil consisting of primarily dense, silty sand with intermittent layers of silty and sandy clay. Stiff to very stiff clay lies a depth of approximately 40 feet and extends to the depth of the borings, approximately 101.5 feet (Geomatrix, 1988).

The closest major fault, the Hayward Fault, is located about 3 miles east of the property. While the site is located in a seismically active area, it is not within an Alquist-Priolo Special Studies active

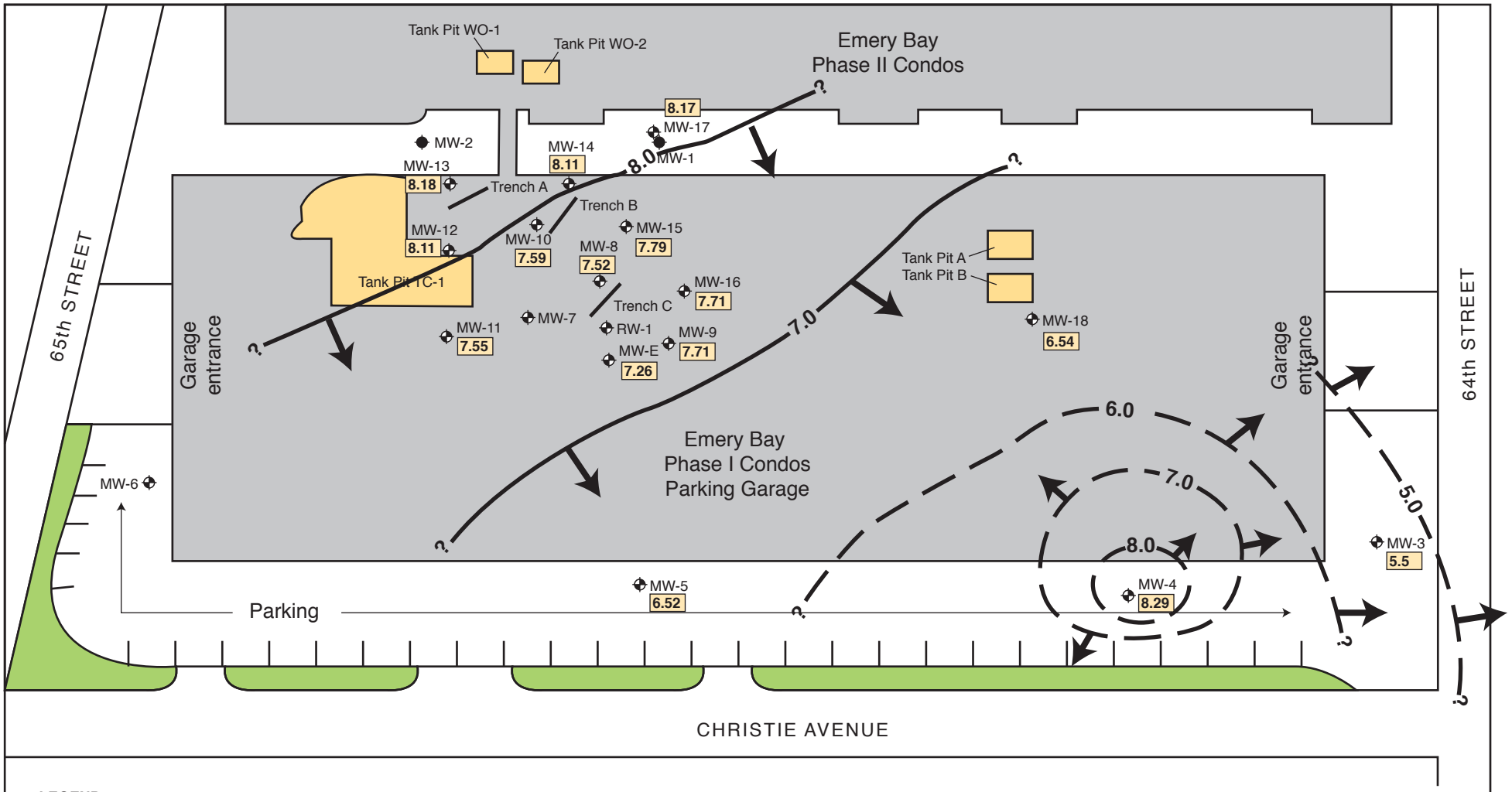
fault zone, the legislatively defined zone of restricted land use 200 feet around an active fault due to the high probability of ground rupture.

GROUNDWATER HYDROLOGY

Regulatory agency records indicate that the direction of shallow groundwater flow in the site vicinity is to the west-northwest, toward San Francisco Bay. However, water levels and flow direction in this area are influenced by tidal patterns, natural topography modifications and the historical LNAPL, resulting in a relatively slow moving and stable plume pattern.

The groundwater gradient measured during the September 2013 monitoring event is to the southwest beneath the north end of the site near 65th Street. A localized, approximately southerly to southeasterly direction to groundwater flow in the area between MW-18 and MW-3 may be the result of construction dewatering that has been occurring over the past 12 months at the re-development site across 64th Street. In addition, some degree of groundwater mounding is apparent in the area of MW-4, possibly from irrigation in that area that may be affecting the local gradient. According to current and historical water level data obtained from onsite monitoring wells, depth to groundwater beneath the site ranges from approximately 7 to 10 feet below ground surface (bgs). Groundwater elevations recorded during the September 2013 sampling event ranged from 5.88 (MW-3) to 10.40 (MW-17) feet above mean sea level. The average groundwater gradient was 0.01 foot/foot.

Figure 4 is a groundwater elevation map from the recent groundwater-monitoring event (activities discussed in Section 4.0).



LEGEND

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- Historical tank pit area
- Landscaping
- 8.0 — Groundwater elevation contour in feet amsl
- Extrapolated roundwater elevation contour
- Groundwater flow direction

0 60

SCALE: 1/2" = 60 FEET

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GROUNDWATER ELEVATION MAP — SEPTEMBER 26, 2013

6400 Christie Ave., Emeryville, CA

Figure 4

by: MJC | NOVEMBER 2013

2007-65-69

3.0 SEPTEMBER 2013 GROUNDWATER MONITORING AND SAMPLING ACTIVITIES

This section presents the groundwater sampling and analytical methods for the most recent event. Table 1 summarizes monitoring well construction and groundwater monitoring data. Groundwater analytical results are summarized in Section 4.0.

SAMPLING METHODS AND ACTIVITIES

Activities for this event include:

- Measuring static water levels in all 18 wells
- Collecting post-purge groundwater samples from the 18 wells for laboratory analysis of the following contaminants:
  - benzene, toluene, ethyl benzene, and xylenes (BTEX)
  - methyl tertiary-butyl ether (MTBE)
  - total petroleum hydrocarbons as gasoline (TPHg)
  - total petroleum hydrocarbons as diesel (TPHd)

The site monitoring well sampling locations are shown on Figure 3. Well construction information and water level data are summarized in Table 1. Appendix B contains the groundwater monitoring field records.

CURRENT MONITORING EVENT

Blaine Tech Services conducted groundwater monitoring well level measurements, purging, sampling, and field analyses on September 26, 2013 under the supervision of Stellar Environmental personnel. Groundwater sampling was conducted in accordance with State of California guidelines for sampling dissolved analytes in groundwater associated with leaking UFSTs. As the first task of the monitoring event, static water levels and free product levels were measured in the 18 wells using an electric water level indicator. The depth of free product was recorded, and the water level was adjusted to reflect the groundwater elevation.

Table 1

September 26, 2013
Groundwater Monitoring Well Construction and Groundwater Elevation Data
6400 Christie Avenue, Emeryville, California

Well	Well Depth (feet bgs)	Screened Interval	Top of Well Casing Elevation [(a)]	Depth to Free Product (TOC)	Thickness of Free Product (feet)	Groundwater Elevation (September 26, 2013)
MW-3	25	5 to 20	16.65	NM	NM	5.15
MW-4	25	5 to 20	16.29	NP	NP	8.29
MW-5	25	5 to 20	16.72	NP	NP	6.52
MW-6	25	5 to 20	16.82	NP	NP	11.17
MW-7	20	5 to 20	17.73	NP	NP	12.23
MW-8	16	5 to 16	17.84	10.28	0.04	7.52
MW-9	20	5 to 20	17.84	NP	NP	7.71
MW-10	20	5 to 20	17.83	9.65	0.33	7.81
MW-11	20	5 to 20	17.76	NP	NP	7.55
MW-12	20	5 to 20	17.83	NP	NP	8.11
MW-13	20	5 to 20	17.66	9.45	0.03	8.18
MW-14	20	5 to 20	17.60	9.17	0.02	8.11
MW-15	20	5 to 20	17.80	NP	NP	7.79
MW-16	20	5 to 20	17.74	NP	NP	7.71
MW-17	20	5 to 20	18.17	NP	NP	8.17
MW-18	20	5 to 20	16.35	NP	NP	6.54
MW-E	47	7 to 40	17.47	NP	NP	7.26
RW-1	30	unknown	16.70	NM	NM	5.10
TA-E	11-13	6-8 to 11-13	17.20	NM	NM	NM
TA-M	11-13	6-8 to 11-13	17.21	NM	NM	NM
TA-W	11-13	6-8 to 11-13	17.28	NM	NM	NM
TB-E	11-13	6-8 to 11-13	17.24	NM	NM	NM
TB-M	11-13	6-8 to 11-13	17.30	NM	NM	NM
TB-W	11-13	6-8 to 11-13	17.33	NM	NM	NM
TC-E	11-13	6-8 to 11-13	17.07	NM	NM	NM
TC-M	11-13	6-8 to 11-13	17.37	NM	NM	NM
TC-W	11-13	6-8 to 11-13	17.32	NM	NM	NM

Notes:

(a) Relative to mean sea level.

(b) Depth to groundwater and/or of free product could not be determined because free product density would not allow a clear delineation.

bgs = below ground surface
TOC = below top of casing
NP = no free product in well)
NM = depth to groundwater and/or free product could not be determined due to the presence of product

MW-3 through MW-6 and MW-E are 2-inch PVC. MW-7 through MW-18 are ¾-inch PVC. RW-1 is 10-inch steel.

Approximately 50 gallons of purge water and equipment decontamination rinse water from the current groundwater sampling event was placed in a dedicated 55-gallon drum located in a locked fenced area on the northeast corner of the property. In addition, approximately 1,100 gallons of water and 0.32 gallons of product were removed/purged from wells during the active product removal; no measureable product volume was removed by passive product skimmers in the trench wells. The water generated during the active product and water removal was stored in an 1,100 gallon, plastic above ground storage tank locate in the fenced compound.

On October 15, 2013, Evergreen Environmental Services, Inc. vacuumed and transported the 1,150 gallons of water to its recycling facility under manifest number 010835891JJK (EPA ID No. CAL000374146). Appendix F contains copies of the manifest and recycling certificate.

4.0 REGULATORY CONSIDERATIONS, ANALYTICAL RESULTS, AND DISCUSSION OF FINDINGS

This section presents the analytical results of the most recent monitoring event and summarizes the relevant regulatory considerations. Appendix C contains the certified analytical laboratory report and chain-of-custody record.

REGULATORY CONSIDERATIONS

As specified in the East Bay Plain Groundwater beneficial Use Evaluation Report by the San Francisco Bay Region Water Board (Water Board, 1999), all groundwater is considered a potential source of drinking water unless otherwise indicated by the Water Board, and is assumed to ultimately discharge to a surface water body and potentially impact aquatic organisms. The subject property is listed as occurring within Zone B, designated as groundwater that is unlikely to be used as a drinking water resource. The basin is shallow in this area, with depths of less than 300 feet. Groundwater in this area is used for backyard irrigation, industrial supply, and commercial irrigation. There is a low likelihood that this water will be used as a public water supply in the near future.

The Water Board publishes Environmental Screening Levels (ESLs) for residential and commercial/industrial properties where groundwater is/is not a likely drinking water resource. As stipulated in the ESL document (Water Board, 2013), ESLs are not cleanup criteria; rather, they are conservative screening-level criteria designed to be protective of both drinking water resources and aquatic environments. The groundwater ESLs are composed of one or more components—including ceiling value, human toxicity, indoor air impacts, and aquatic life protection. Exceedance of ESLs suggests that additional remediation and/or investigation (e.g., monitoring plume stability to demonstrate no risk to sensitive receptors where drinking water is not threatened) may be warranted. Because the subject property is a residential property where groundwater is not a likely drinking water resource, the contaminant levels at the site will be compared to the ESLs for these criteria.

Contaminants detected above the ESLs during this sampling event include gasoline, diesel, benzene, toluene, ethylbenzene, and total xylenes. In general, concentrations of gasoline and diesel have decreased as compared to both the previous quarter and the same quarter last year.

GROUNDWATER SAMPLE RESULTS

Table 2 and Figure 5 summarize the contaminant analytical results of the current monitoring event samples.

Table 2
Groundwater Sample Analytical Results – September 26, 2013
6400 Christie Avenue, Emeryville, California

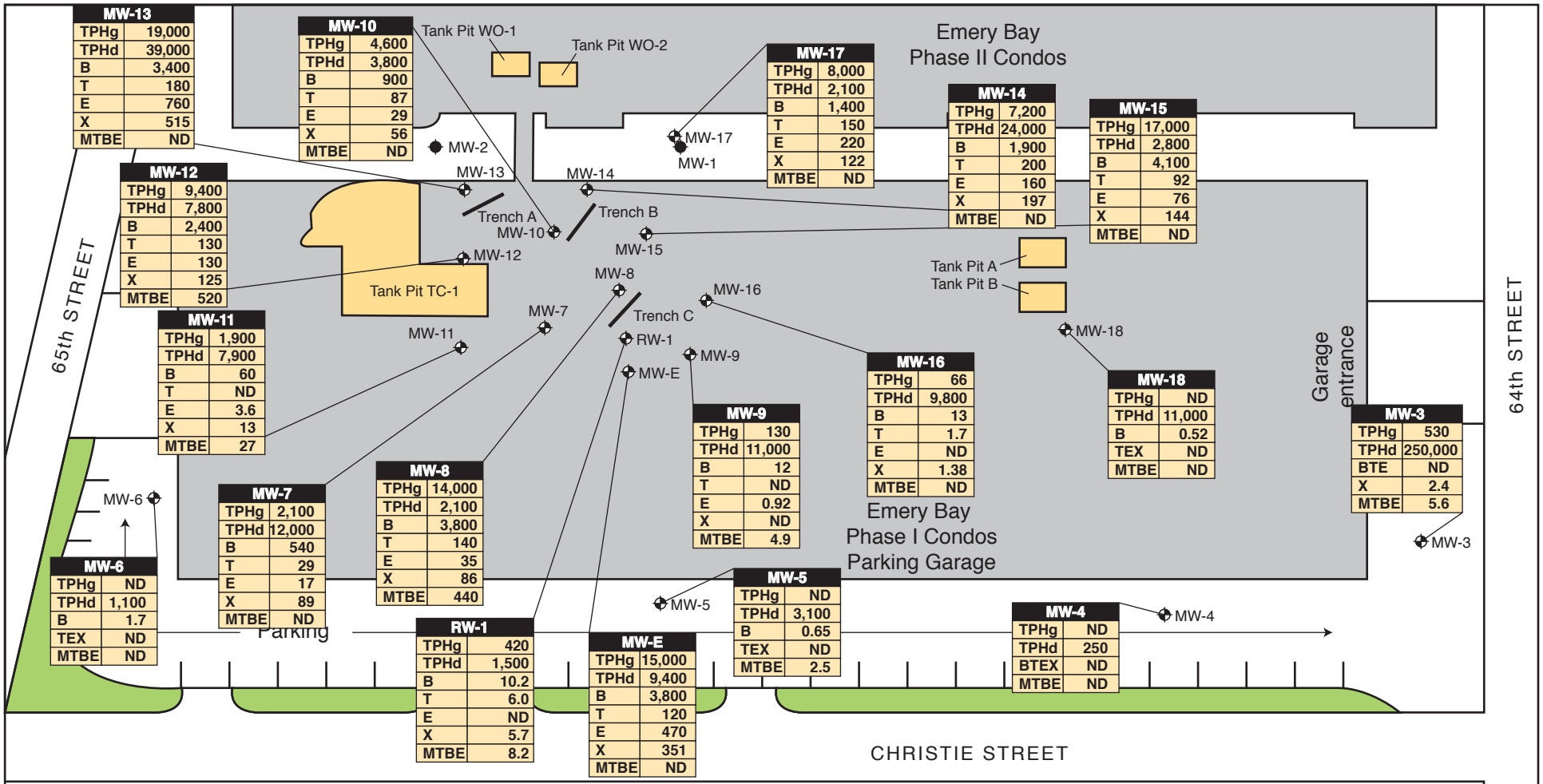
Well ID	Analytical Results						
	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-3	**530**	**250,000**	<0.5	<0.5	<0.5	2.4	5.6
MW-4	*<50*	**250**	<0.5	<0.5	<0.5	<0.5	< 0.5
MW-5	*<50*	**3,100**	0.65	<0.5	<0.5	<0.5	2.5
MW-6	*<50*	**1,100**	1.7	<0.5	<0.5	<0.5	< 0.5
MW-7	**2,100**	**12,000**	**540**	29	17	89	<29
MW-8	**14,000**	**2,100**	**3,800**	**140**	35	86	440
MW-9	130	**11,000**	12	<0.5	0.92	<0.5	4.9
MW-10	**4,600**	**3,800**	**900**	87	29	56	<42
MW-11	**1,900**	**7,900**	**60**	<0.5	3.6	13	27
MW-12	**9,400**	**7,800**	**2,400**	**130**	**130**	**125**	520
MW-13	**19,000**	**39,000**	**3,400**	**180**	**760**	**515**	<200
MW-14	**7,200**	**24,000**	**1,900**	**200**	**160**	**197**	<83
MW-15	**17,000**	**2,800**	**4,100**	92	**76**	**144**	<200
MW-16	66	**9,800**	13	1.7	*<0.5*	1.38	<2.0
MW-17	**8,000**	**2,100**	**1,400**	**150**	**220**	**122**	<67
MW-18	<50	**11,000**	0.52	<0.5	<0.5	<0.5	<2.0
MW-E	**15,000**	**9,400**	**3,800**	120	**470**	**351**	<200
RW-1	**420**	**1,500**	10	6.0	<0.50	5.7	8.2
ESLs [(a)]	**100 / 210**	**100 / 210**	**1.0 / 46**	**40 / 130**	**30 / 43**	**20 / 100**	**5.0 / 1,800**

Notes:

[(a)] Water Board Environmental Screening Levels for residential sites where groundwater *is*/*is not* a drinking water resource (Water Board, 2013).

MTBE = methyl tertiary-butyl ether
TPHd = total petroleum hydrocarbons – diesel range (equivalent to total extractable hydrocarbons – diesel range)
TPHg = total petroleum hydrocarbons – gasoline range (equivalent to total volatile hydrocarbons – gasoline range)

All concentrations are expressed in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
Results listed in **bold-face type** are at or above the ESLs where groundwater *is not* a drinking water resource.



LEGEND

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- Historical tank pit area
- Landscaping

TPHg = Total petroleum hydrocarbons as gasoline
TPHd = Total petroleum hydrocarbons as diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total xylenes
ND = Below the laboratory detection limit
MTBE = Methyl Tertiary Butyl Ether

All concentrations in micrograms per liter (µg/L)

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GROUNDWATER MONITORING WELL ANALYTICAL RESULTS

6400 Christie Ave., Emeryville, CA

Figure 5

by: MJC | NOVEMBER 2013

2007-65-70

Distribution of Hydrocarbon Contaminants

During the September 2013 sampling event, several wells have hydrocarbon concentrations greatly in excess of the Water Board ESLs. However, hydrocarbon concentrations in wells can be significantly affected by the purging of accumulated hydrocarbons product, so large swings in concentration (both reductions and increases) are possible due to this occurrence. In addition, the introduction of surfactant (see Section 5) into wells MW-8, MW-12, MW-13 and MW-14 with the aim of reducing accumulated LNAPL in those wells is likely to affect dissolved concentrations.

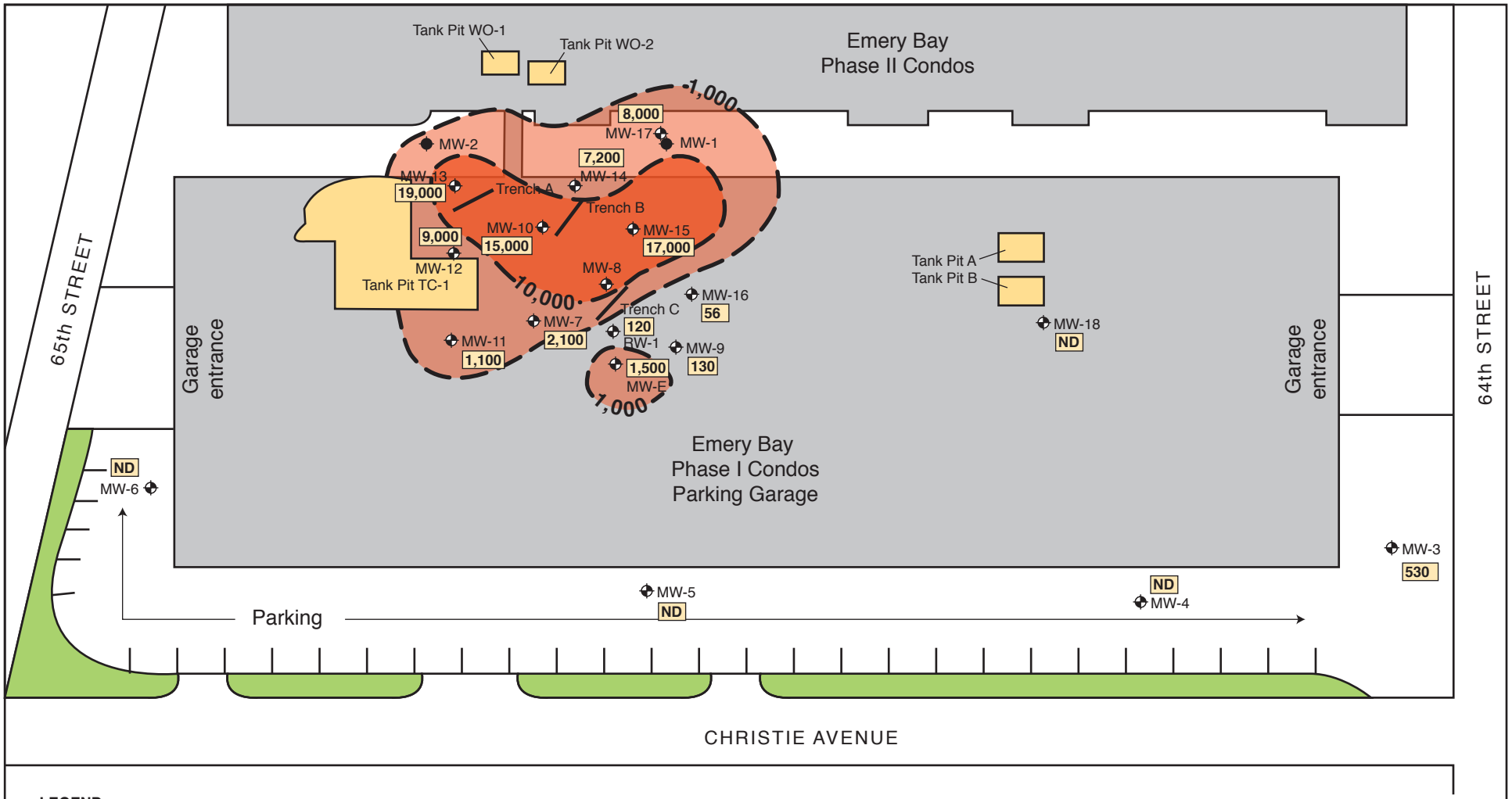
Increases in September 2013 TVHg concentrations compared to the September 2012 monitoring event were observed in wells MW-3, MW-7, MW-17 and MW-E. This represents four wells exhibiting an increase in TVHg as compared to seven wells for the September 2012 sampling event. The remaining wells either remained below laboratory detection limits (in wells MW-4, MW-5, MW-6 and MW-18) or exhibited a decrease in TVHg concentrations.

Gasoline was detected in MW-3, MW-7, MW-8, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-17, MW-E and RW-1 above the ESL where groundwater is not a likely drinking water resource (210 micrograms per liter [µg/L]). Gasoline was also detected in MW-9 and MW-16 but at concentrations below the ESL. This result is the same as for the September 2012 sampling event.

Diesel was detected in all site wells above the ESL of 210 µg/L (where groundwater is not a likely drinking water resource), but showed a decrease in concentration in 7 of the 18 wells sampled as compared to 5 of 18 wells in the March 2012 sampling event.

The highest concentrations of TVHg (19,000 µg/L in MW-13) and TEHd (250,000 µg/L in MW-3) for the current event can be compared to concentrations of 73,000 µg/L TVHg in MW-8 and 7,200,000 µg/L TEHd observed in well MW-13 in September 2012. The concentration of hydrocarbons in well MW-13 has decreased significantly below the September 2012 concentrations as have concentrations in wells MW-8 (TVHg from 73,000 µg/L to 14,000 µg/L) and TEHd from 24,000 µg/L to 2,100 µg/L), and MW-10 (TVHg from 6,600 µg/L to 4,600 µg/L) and TEHd from 13,000 µg/L to 3,800 µg/L). Since the introduction of the surfactant in wells MW-8, MW-12, MW-13 and MW-14 in March and September 2013, hydrocarbon concentrations in surrounding wells MW-11, MW-15 have decreased overall while wells MW-16 and MW-17 have shown increases in overall hydrocarbon concentration. Fluctuating concentrations of TVHg and TEHd in these wells may be attributed to LNAPL recovery and introduction of surfactant since March 2013.

The average concentration of TEHd and TVHg has deceased for the current event as compared to March 2013 concentrations, which is primarily attributable to reduction of persistent LNAPL in wells MW-8 and MW-13. Figures 6 and 7 are isoconcentration maps of TPHg and TEHd concentrations in groundwater based on the September 2013 analytical results.



LEGEND

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- Historical tank pit area
- Landscaping
- 1,000 — Gasoline concentration contour
- 1,500 — Total petroleum hydrocarbons as gasoline in micrograms/liter

0 60

SCALE: 1/2" = 60 FEET

N

STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

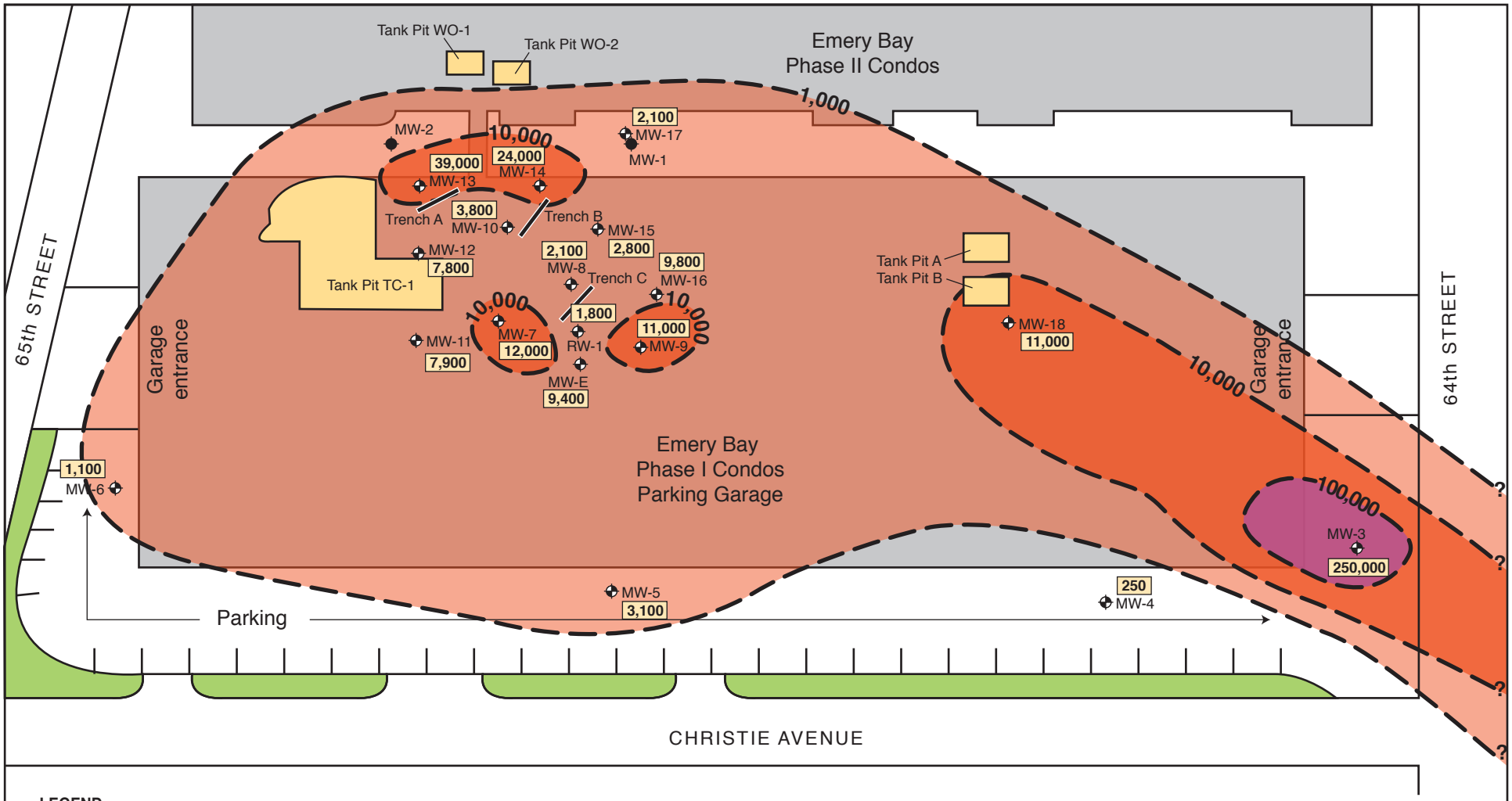
TOTAL PETROLEUM HYDROCARBON PLUME AS GASOLINE

6400 Christie Ave., Emeryville, CA

Figure 6

by: MJC | NOVEMBER 2013

2007-65-71



LEGEND

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- Historical tank pit area
- Landscaping
- 1,000 — Diesel concentration contour
- 1,500 — Total petroleum hydrocarbons as diesel concentration in micrograms/Liter — µ/L

0 60

SCALE: 1/2" = 60 FEET

N

STELLAR ENVIRONMENTAL SOLUTIONS, INC
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TOTAL PETROLEUM HYDROCARBON AS DIESEL

6400 Christie Ave., Emeryville, CA

Figure 7

by: MJC | NOVEMBER 2013

2007-65-72

Figure 8 depicts historical groundwater analytical trends for TPHd in downgradient wells MW-5 and MW-6. Figure 9 depicts historical groundwater analytical trends for TPHd in source wells MW-11 and MW-12. Figure 10 depicts historical groundwater analytical trends for TPHd in crossgradient wells MW-3 and MW-18.

In monitoring wells MW-7, MW-8, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-17, and MW-E concentrations of benzene exceeded the ESL of 46 µg/L where groundwater is not a drinking water resource. Comparing September 2012 results to September 2013 results showed a decrease in benzene in 13 of the 18 site wells sampled. An increase in benzene was detected in wells MW-9 and MW-17. Benzene was detected in wells MW-5, MW-6, MW-9, MW-16, MW-18 and RW-1, but at concentrations below the ESL. The biggest changes in benzene concentrations were in wells MW-13 (decrease from 22,000 µg/L to 3,400 µg/L), and in well MW-15 with benzene dropping from 12,000 µg/L to 4,100 µg/L. Perimeter well MW-5, which in September 2012 did not contain a detectable concentration of benzene, contained 0.65 µg/L benzene for the current event.

Toluene was detected at or above the ESL of 130 µg/L in monitoring wells MW-8, MW-12, MW-13, MW-14 and MW-17. Toluene was also detected in wells MW-7, MW-10, MW-15, MW-16, MW-E and RW-1 but at levels below the ESL.

Ethylbenzene was detected above the 43 µg/L ESL (where groundwater is not a likely drinking water resource) in monitoring wells MW-12, MW-13, MW-14, MW-15, MW-17 and MW-E. Ethylbenzene was also detected in MW-7, MW-8, MW-9, MW-10, and MW-11 but at levels below the ESL.

Total xylene concentrations in wells MW-12, MW-13, MW-14, MW-15, MW-17 and MW-E were above the 100-µg/L ESL where groundwater is not a likely drinking water resource. Total xylenes were detected in MW-3, MW-7, MW-8, MW-10, MW-11, MW-16, and RW-1 but below the ESL.

MTBE was not detected above the ESL of 1,800 µg/L in any of the monitoring wells. MTBE was detected in MW-3, MW-5, MW-8, MW-9, MW-11, MW-12 and RW-1 but below the ESL. This represents six additional wells containing MTBE compared to the September 2013 monitoring event.

Quality Control Sample Analytical Results

Laboratory quality control (QC) samples (e.g., method blanks, matrix spikes, surrogate spikes, etc.) were analyzed by the laboratory in accordance with the requirements of each analytical method. All laboratory QC sample results and sample holding times were within the acceptance limits of the methods (Appendix C).

IMPACT ON HYDROCARBON PLUME FROM ADJACENT SITE CONSTRUCTION DEWATERING

The 6340 Christie Avenue (ACHCSA Case # RO0000057) property immediately south of the garage area across 64th Street has been under conduction since 2012. As part of the construction process, there has been what appears to be continuous dewatering to depress the groundwater table and allow for the project subgrade forms and foundations to be placed. The apparent impact of this on the subject site has been described in terms of both the changes to the site hydrology—with the change in the groundwater flow regime form west/northwest to having a southern component—as well as a hydrochemical impact. The hydochemical impact, as documented in well data described above, has been to draw the hydrocarbon plume southward, increasing the concentrations of THPd by orders of magnitude at well MW-3 near the subject properties north border, compared to the last 5 years of monitoring that showed stable results (see figure 10). The impact to the previous equilibrium of the plume raised a concern both of mobilizing the existing areas of hydrocarbons and likely mobilizing sources of hydrocarbon in area previously indicated to be immobile. The suspect area being mobilized is between the area of wells MW-18 and MW-3, where the historical Tank pits A and B are shown (see Figure 7).

Additional characterization work is being proposed (in recommendation section) to gain a better insight to the impacts the dewatering is having on the hydrologic and hydrochemical model and evaluate the best manner to keep the plume from migrating offsite.

Figure 8
Historical Groundwater Analytical Results
Total Petroleum Hydrocarbons as Diesel (TPHd)
Downgradient Wells MW-5 and MW-6
February 1991 - September 2013

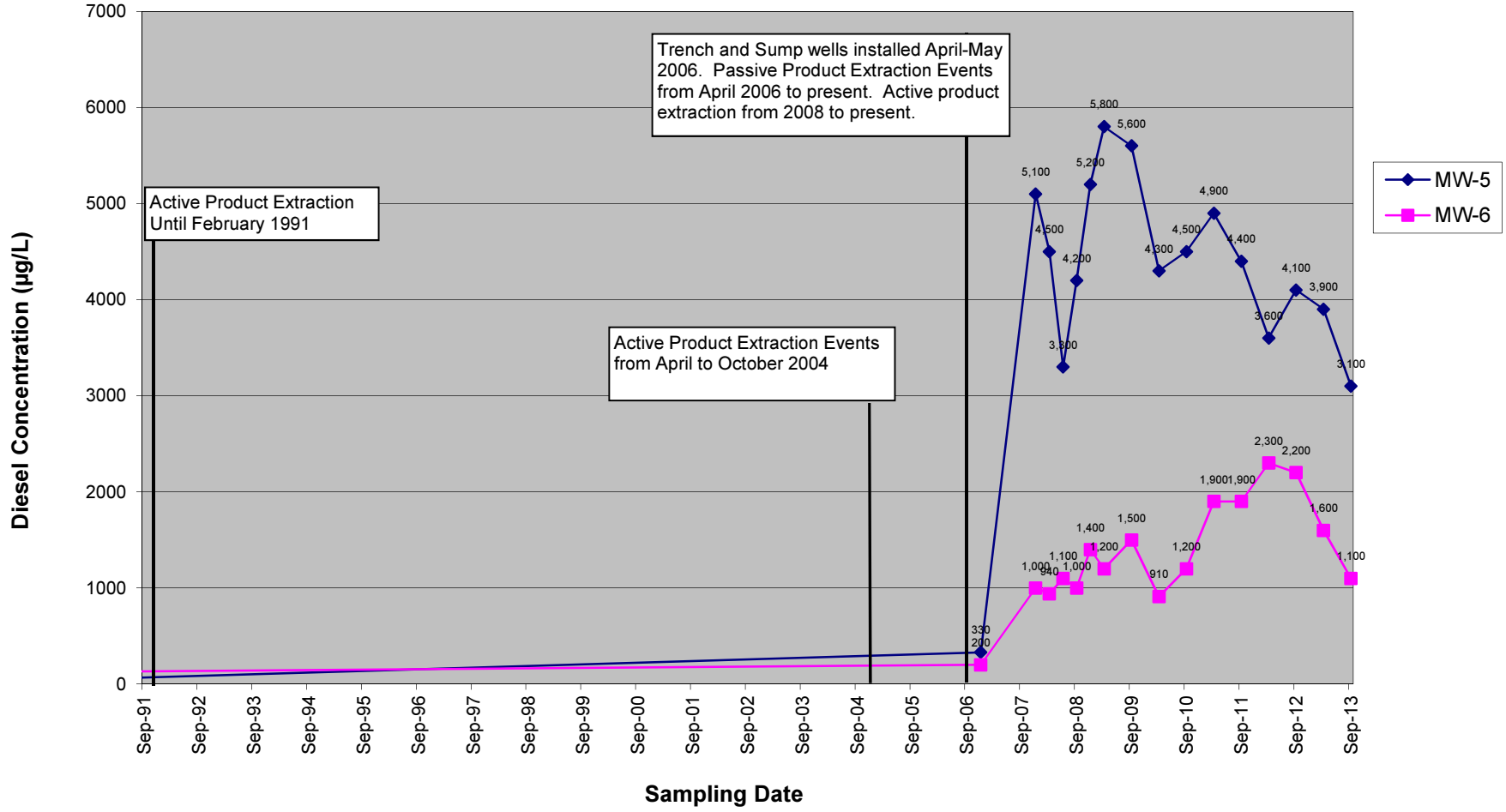


Figure 9
Historical Groundwater Analytical Results
Total Petroleum Hydrocarbons as Diesel (TPHd)
Source Wells MW-11 and MW-12
December 2006 - September 2013

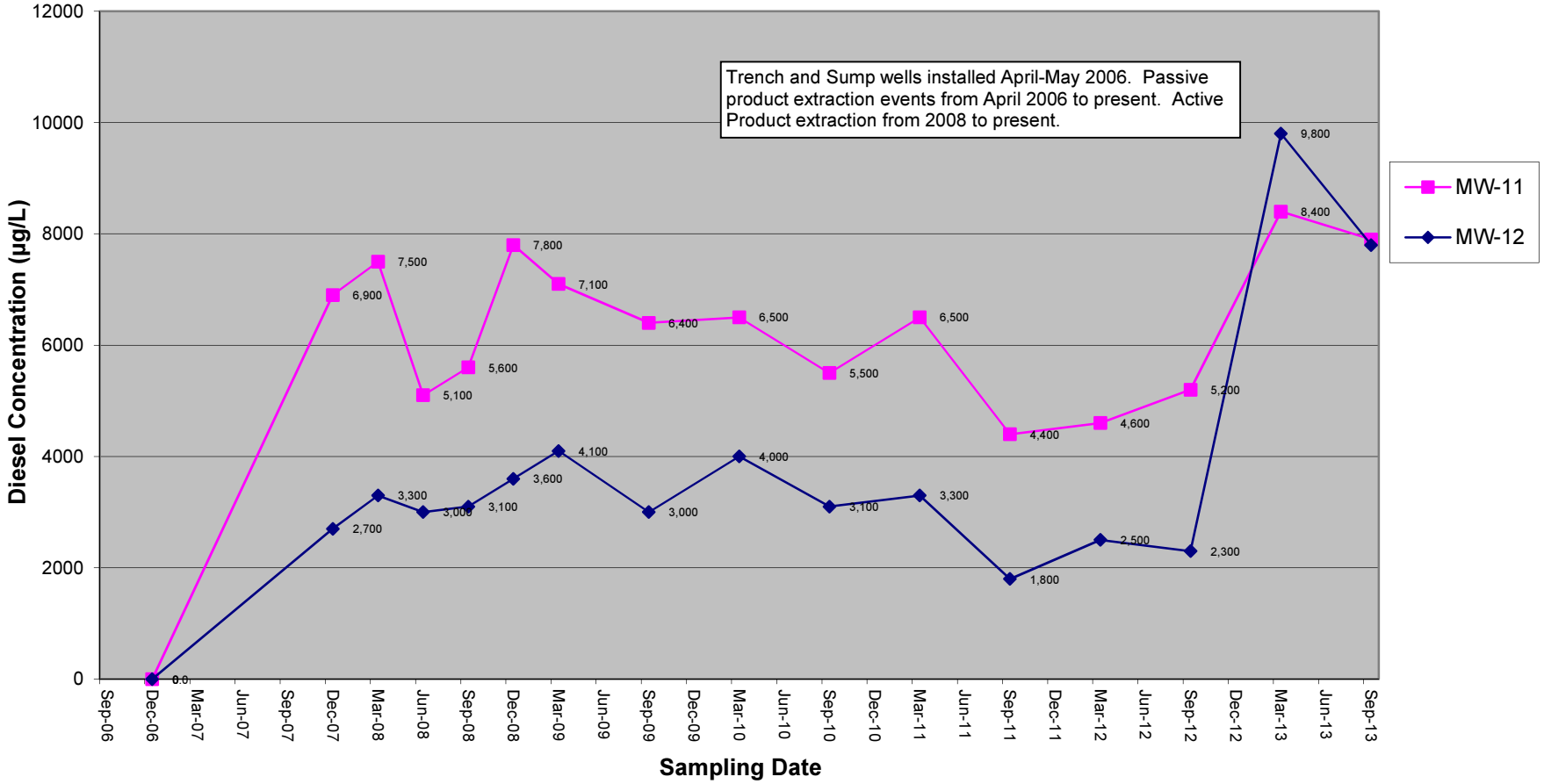
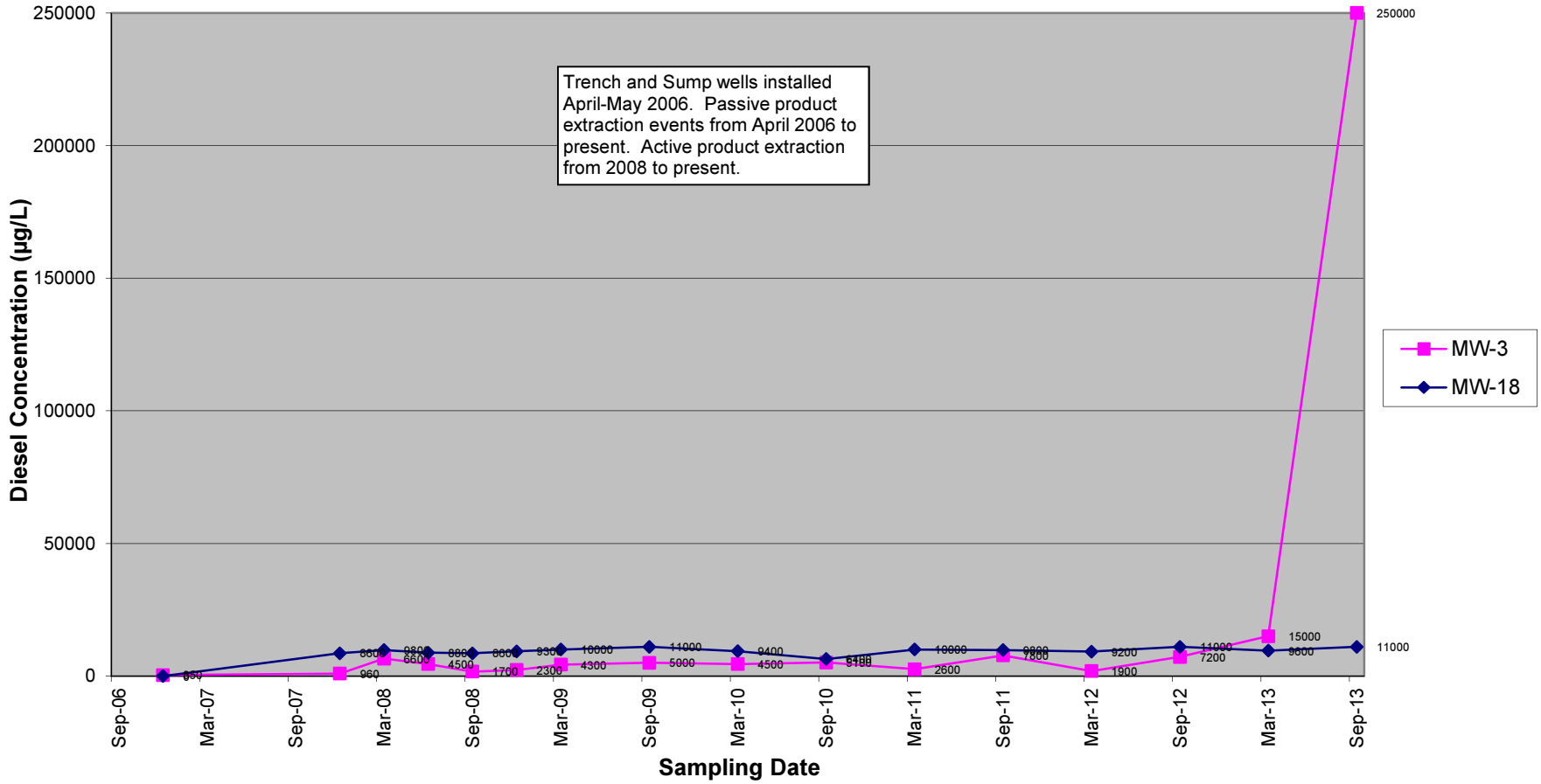


Figure 10
Historical Groundwater Analytical Results
Total Petroleum Hydrocarbons as Diesel (TPHd)
Crossgradient Wells MW-3 and MW-18
December 2006 - September 2013



5.0 FREE-PHASE HYDROCARBON PRODUCT REMEDIATION SYSTEM

This section describes the historical extraction of the free product from the Emery Bay Phase I Condo parking garage, the construction details of the current LNAPL remediation system located on the northeastern portion of the garage, and the most recent product removal activities conducted on September 24 and 25, 2013 (immediately prior to the sampling event on September 26). Appendix E summarizes historical product removal.

LNAPL REMEDIATION SYSTEM CONSTRUCTION

In an attempt to maximize free product removal, PES constructed three trenches, each containing three sump wells, in the northeastern area of the Emery Bay Phase I Condo parking garage. Historically, this area has had the highest concentrations of contamination and accumulation of free product. The trenches (TA, TB, and TC) extend to depths of approximately 12.5 to 13 feet bgs, while the collection sumps (TA-W, TA-M, TA-E, TB-W, TB-M, TB-E, TC-W, TC-M, and TC-E) extend to approximately 11 to 13 feet bgs. The sumps were constructed using 10-inch-diameter schedule 40 polyvinyl chloride (PVC) casing. Blank casing was used from approximately 0.5 feet bgs to between 6 and 8 feet bgs. Slotted 0.06-inch PVC was used from between 6 and 8 feet bgs to 6 inches from the total depth of the trench. The trenches were then backfilled with high-porosity, high-permeability gravel designed to promote LNAPL migration (PES, 2007). Passive skimmers, manufactured by QED Environmental Systems (of Oakland, California) were then placed in each of the sumps in Trench A and in one of the sumps (TC-E) in Trench C.

The skimmers operate in principal by floating on the surface of the water. Water and free product collect in a filtration reservoir, which allows water to pass through. A tube connected to the reservoir then filters the free product into a collection reservoir located below the water surface. The reservoir can be emptied by opening a valve located on the bottom of the cylindrical shaped reservoir. Each of these skimmers is attached to the sump lid by a rope, and can be removed and transferred to another sump as needed. However, the skimmers have never been effective at a capturing the petroleum product as designed.

HISTORICAL FREE PRODUCT EXTRACTION

As mentioned under the "Previous Investigations" subsection in Section 1.0, in approximately 1986, contaminated soil and groundwater were discovered during the removal of 12 UFSTs from the Emery Bay Phase I and Phase II parcels. To dewater the excavation during the Phase I and Phase II Condo construction, a groundwater extraction and remediation system was installed by GTI in 1988. Approximately 1 million gallons of water yielding 100 gallons of hydrocarbon product was removed from RW-1 during its operation (PES, 2007). However, corrosion and other mechanical problems caused the system to fail in 1991, and it was decommissioned in 1994. In February 2008, Stellar Environmental removed all of the old parts of the system from the well vault.

In 2004, PES began manual extraction on RW-1, and was reported to have removed approximately 48 gallons of LNAPL (PES, 2004a)—although it is unclear whether the removed material was pure product or product mixed with water. To accelerate free product removal, PES constructed a new LNAPL hydrocarbon remediation system (described previously) between April and May 2004 (PES, 2007). Several extraction events were conducted by PES from May 2004 through March 2007; the extraction events yielded a total of approximately 51 gallons of LNAPL. No extraction events were conducted by PES in 2005; approximately 50 gallons of hydrocarbons was removed in 2006; and approximately 0.6 gallon of hydrocarbons was removed by PES between January and November 2007. In November and December 2007, after Stellar Environmental was retained for the project, the skimmer system yielded 2.82 gallons. Figure 11 graphs the comparison of free product extraction on a yearly basis.

No historical product extraction reports were provided to Stellar Environmental by the previous owner or by PES. Therefore, there is little to no information on how active product extraction occurred during 2004 and 2006. Based on better defined recovery in 2008 through 2011 the volume of free product indicated to have been recovered during 2004 and 2006 appears unrealistically high, suggesting that free-phase project mixed with water was reported as free-phase product recovery.

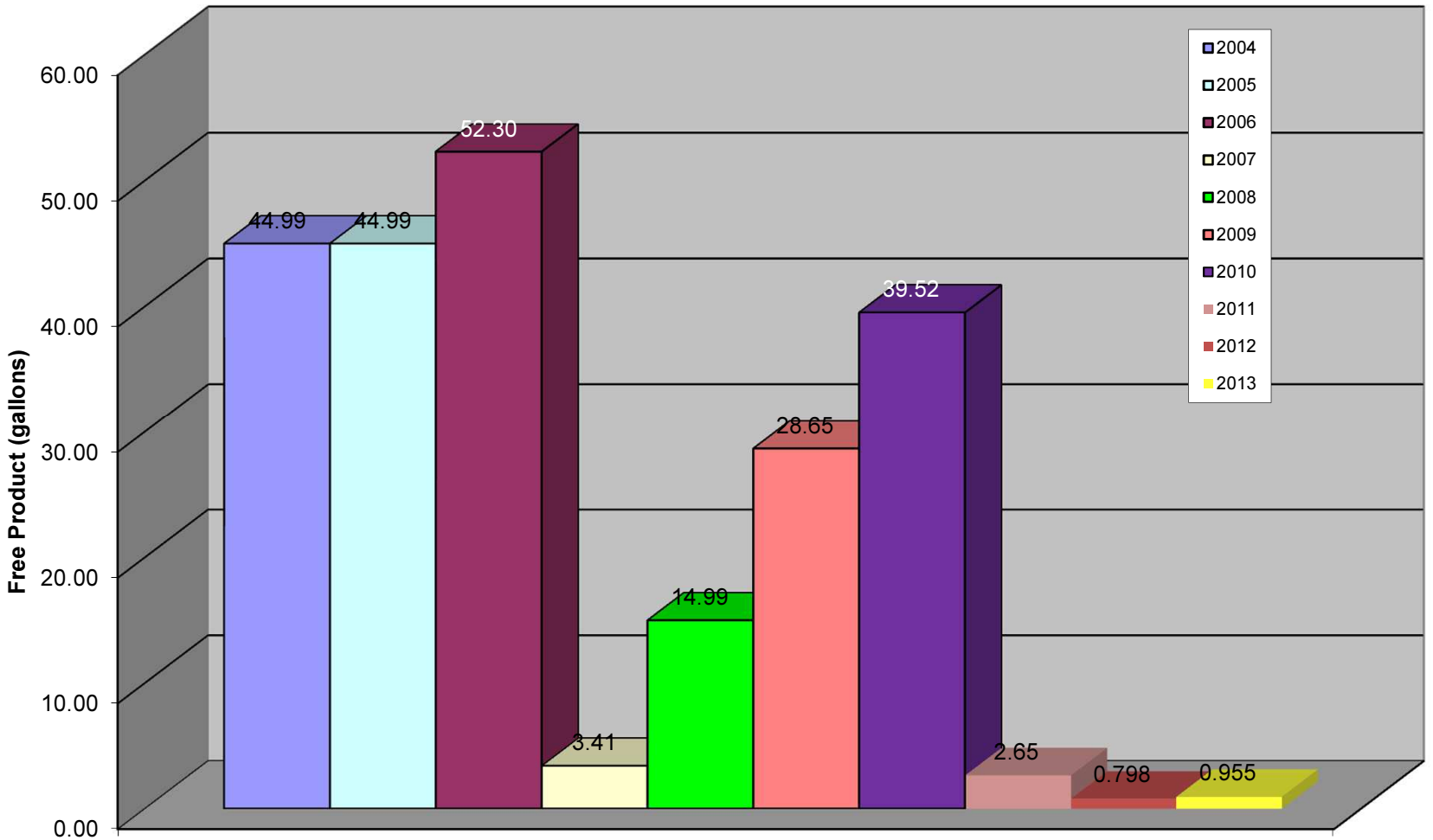
SEPTEMBER 2013 SURFACTANT INJECTION

For the second time in this semi-annual monitoring program, the injection of a (non-hazardous) surfactant into wells MW-8, MW-12, MW-13 and MW-14 was used to test the ability of the surfactant to re-dissolve the viscous hydrocarbon buildup in those wells. This was also being done to see if the surfactant would result if significant decreases in the dissolved concentrations in surrounding wells and if better recovery could be achieved at the injected wells and key downgradient wells.

Many of the centrally located wells on the site contain a molasses like, degraded product that has made well purging and sampling increasingly difficult. Equipment lowered down into the well casings come back out coated with a tar like substance that is difficult or impossible to clean, and may account for low water yield in some wells due to sand pack and well screen fouling. Four of the worst wells in this regard are MW-8, MW-12, MW-13 and MW-14. All these wells are constructed with ¾-inch diameter PVC casing, and are screened to total depth across the same interval of 5 to 20 feet bgs, except for MW-8 which is screened from 5 to 16 feet bgs. In order to attempt to clean the well casings and emulsify the tar thought to exist in the well pack, a surfactant was chosen as a solution. Surfactants are designed to change the interfacial tension between the water and NAPL and desorb the residual LNAPLs entrained in the soil matrix by micro-emulsifying the organic particles, and forming a micelle. In the case of weathered LNAPLs, surfactants have been used to decrease the viscosity of the material, resulting in increased and more efficient recovery. Surfactants can also be considered bioremediation enhancing and vapor suppression agents. The use of mobile multi-phase extraction that has been occurring at the site twice-yearly since 2008, allows a focused remediation effort at a targeted area of the site, and increases the effective radius of influence of the pumping. This combined approach involves the in-situ application of a surfactant mixture, under pressure, into the site subsurface. The injection is followed by high-vacuum induced multi-phase recovery from the injected wells as well as surrounding wells via a mobile vacuum truck.

On September 10, 2013 Stellar Environmental mobilized to the site in order to inject EnviroClean® supplied by Enviro Clean Services LLC, into wells MW-8, MW-12, MW-13 and MW-14. EnviroClean® is described the manufacturer as a non-flammable, non-toxic, water-based, proprietary blend of non-toxic, non-ionic ethoxylated octylphenolic surfactants that has been specifically engineered as a cleanup/mitigation agent for a wide range of hydrocarbon products. EnviroClean® product information is included in Appendix F. A working solution of 4% EnviroClean® was mixed per manufacturer recommendations using clean water. Approximately 5 gallons of the solution was introduced each well using a funnel. The well casing and screen in each well were then scrubbed using a stiff bristle brush attached to an extension. After the scrubbing, approximately 15 gallons of the working EnviroClean® solution was injected under pressure into each well using a dual-diaphragm pump. The wells were then undisturbed until the product removal phase of the current monitoring event took place on September 24 and 25, 2013. This injection event is the second time the procedure has been performed, the first being March 13, 2013.

Figure 11
Total Free Product Extracted Per Year
6400 Christie Avenue, Emeryville, CA



SEPTEMBER 2013 PRODUCT REMOVAL EVENT

Historical product yield from the trench recovery system has been unproductive and inconsistent, with the 1-liter passive skimmer collection reservoirs not filling up completely, or filling up with water rather than product. The highest hydrocarbon product yield has likely occurred from active pumping on recovery well RW-1 or at various other wells. Table 3 shows the allocation of free product removed from the collection skimmers in Trenches A and C.

Table 3
Passive Skimmer Product Extraction in Trenches– September 24 and 25, 2013
6400 Christie Avenue, Emeryville, California

Trench ID	Number of Skimmers in Well	Total Product Removed (gallons)
TA-E	2	0.0
TA-M	2	0.0
TA-W	2	0.0
TB-E	0	NM
TB-M	0	NM
TB-W	0	NM
TC-E	1	0.0
TC-M	0	NM
TC-W	0	NM
Total Product Removed		**0.0**

Note:
NM = Not measured. No skimmer installed in the well.

Stellar Environmental conducted both passive and active product removal events during the 2 days prior (September 24 and 25) to the groundwater sampling event (September 26) to determine the recharge rate of free product in wells. A total of approximately 1,100 gallons of groundwater yielding approximately 0.32 gallons (Table 4) of free product were removed during the September 2013 active product removal event.

Table 4
Active Product Extraction – September 24 and 25, 2013
6400 Christie Avenue, Emeryville, California

Well	Total Gallons of Product Removed	Well	Total Gallons of Product Removed
MW-3	0.06	MW-17	0
MW-4	0	MW-18	0
MW-5	0	MW-E	0.02
MW-6	0	RW-1	0.06
MW-7	0	TA-E	0.02
MW-8	0.02	TA-M	0.02
MW-9	0	TA-W	0.02
MW-10	0.05	TB-E	0
MW-11	0	TB-M	0
MW-12	0	TB-W	0
MW-13	0	TC-E	0.01
MW-14	0	TC-M	0.02
MW-15	0	TC-W	0.02
MW-16	0		
		Total	**0.32**

Notes:

NP = not purged

Product removal estimates are based on the total amount of free product measured in the purge drum after pumping each well (0.635 gallons total)

The removal activities can be summarized as follows:

- On September 24-25, 2013 Stellar Environmental removed a total 300 gallons of groundwater from TA-W, TA-E and TA-M along with about 0.047 gallons of product. The skimmers were filled with water with little or no free product. Stellar Environmental removed a total of 115 gallons of water from trench wells TB-E, TB-M and TB-W with a trace of free product. Stellar Environmental removed a total of 245 gallons of water from trench wells TC-E, TC-M and TC-W along with about 0.04 gallons of product. 190 gallons of water with 0.0625 gallons of free product were removed actively from recovery well RW-1.

- On September 24-25, 2013, a total of approximately 0.15 to 0.20 gallons of petroleum product was removed along with the 365 gallons of liquid that was pumped from all of the monitoring wells. The product volume was estimated based on free-product accumulation in the extraction drum after pumping each well. Higher product removal was realized from the individual product purging of the site wells and trench wells through pumping from the water surface prior to the sampling event than was recovered from the "skimmers" designed for the product removal. Product removal from monitoring and recovery wells was most pronounced at MW-3, MW-10, and RW-1.
- All of the purge water and free product extracted during these events was contained onsite in the 1,100-gallon AST located in the northeastern gated area of the garage. On October 15, 2013, Evergreen Environmental Services, Inc. vacuumed and transported the water to its recycling facility in Newark, California. The waste manifest and recycling certificate are included in Appendix F.

DISCUSSION OF FREE PRODUCT REMOVAL AND LIMITATIONS

As mentioned under the "Historical Free Product Extraction" subsection of this chapter, no product extraction was conducted by PES in 2005. "Product" removal in 2006 was reported at a significant 52 gallons by PES; however, it was not achieved through collection from the trench hydrocarbon skimmers, but rather through active pumping; in addition, the "product" referred to by PES appears to actually have been a mixture of petroleum product and water. The PES report provides no documentation (e.g., manifests) of the removal of actual recovered petroleum product. The recovery by PES from the start of 2007 through October 2007 (when Stellar Environmental assumed environmental consulting activities) was limited to 0.6 gallon collected from the skimmers. In addition, there had been no removal of free product from well RW-1 since 2004, at which time approximately 50 gallons of free-floating product was reportedly (PES, 2004c) removed by active pumping although antidotal evince suggests that much was purge water versus pure free product. The majority of petroleum product appears in fact to have been removed by active pumping and removal activities rather than from the trench well skimmers. Much of this may also have been a mixture of water and hydrocarbons. Thus, we conclude that the trench recovery system on its own has never been particularly effective. In 2007, passive extraction of free product through trench well skimmers removed only 3.41 gallons. Stellar Environmental removed approximately 5.65 gallons of free product from these passive skimmers during the 2008 removal events. Since 2011, the skimmers have contained only water and a trace of oil when checked. Approximately 14.99 gallons of product were removed by active pumping on wells during 2008, 28.65 gallons in 2009, 39.52 gallons in 2010, 2.65 gallons in 2011, 0.798 gallons in 2012 and 0.955 gallons in 2013 indicating that the active pumping of site wells to be an effective means of product removal as compared to the

passive skimmer system. Differences in recovery can be attributed to fluctuations in groundwater levels and to an overall reduction of free product as active pumping continues year to year.

As demonstrated by the analytical data, active pumping on the wells has generally reduced gasoline concentrations. 10 of 15 wells in which TVHg is detected, contained less of that compound as compared to September 2012. Diesel concentrations seem to be less affected by active pumping with 7 wells of 18 wells showing a decrease in TEHd concentrations compared to September 2012. The very high hydrocarbon concentrations detected in well MW-13 in former monitoring events compared to the March and September 2103 sampling events is likely due to that well containing LNAPL which was likely at least partially emulsified with the surfactant injection, reducing the possibility that the sample would contain LNAPL. Inconsistent trends in the hydrocarbon/BTEX concentrations in wells MW-13 and MW-7 showing a marked decrease in MW-13 and an increase in MW-7 after the surfactant injection in and/or near those wells, may show more consistent trend lines after subsequent sampling events.

In addition to the above factors, the increase of diesel concentrations observed in well MW-3 for the past three monitoring events is very likely due to the de-watering activities that have been on-going at the construction site across 64th Street, which has affected the groundwater flow direction and magnitude. Well MW-18, which is the closest upgradient well to MW-3, has shown a relatively stable TEHd concentration over the past three monitoring events, suggesting that an undiscovered area of residual hydrocarbon contamination may exist between MW-3 and MW-18. In general, residual hydrocarbons left in the soil after the USTs were removed from the site in the 1980's, is likely to continue to be a source of contamination to groundwater at the site. More active remediation, including introduction of bio-remedial enhancing products into selected wells may be useful to reduce the concentrations to levels acceptable to the regulatory community and to achieve eventual regulatory closure.

The outward effect of the surfactant injection to the four monitoring wells, (MW-8, MW-12, MW-13 and MW-14), based on observations made during product removal for the current monitoring event, has been a marked reduction in the viscous hydrocarbon substance in those wells. A significant increase in water yield from those wells was not observed. The measured recovery volume of product (in gallons) from the four wells for the September 2012 monitoring event, compared to the current monitoring event was 0.031/0.015 (MW-8), 0.0/0.0 (MW-12), 0.015/0.00 (MW-13 and 0.0/0.0 (MW-14) representing a slight decrease in LNAPL recovery from two wells. The total measured recovery volume of product (in gallons) from the 18 wells for the September 2012 monitoring event, compared to the current monitoring event, decreased from 0.423 gallons to 0.320 gallons which is likely attributable to the emulsification of LNAPL in the wells receiving the surfactant.

6.0 SUMMARY, CONCLUSIONS, AND PROPOSED ACTIONS

FINDINGS AND CONCLUSIONS.

- The subject property parcel was developed as early as 1958 with the Motor Freight Station, associated with Delta Lines, Inc. The Delta Lines complex contained an "Oil and Gas" building, located at the site of the present-day Emery Bay Phase I Condo complex and parking garage. In 1986, the building was demolished, and 12 UFSTs containing diesel and gasoline were removed from the Emery Bay Phase I and Phase II Condo complex parcels. Soil and groundwater contamination was discovered.
- In response to the contamination, a LNAPL groundwater pump-and-treat system was installed in 1989, but failed in 1991. Active pumping of free product began again in 2004, and a product extraction system consisting of passive product removal was installed in 2006. Groundwater monitoring events have been sporadically conducted since 1988; quarterly groundwater monitoring events were conducted for the first time in 2008. The quarterly sampling was reduced to a semiannual frequency in 2009.
- The site currently contains 17 monitoring wells, 1 recovery well, and 9 product extraction trench wells. This is the 20th sampling event conducted since 1988.
- Site geological conditions consist of a combination of fill and soft bay sediment to between 15 and 20 feet bgs, covered by approximately 1 to 2 feet of pavement and imported fill. This is underlain by approximately 20 feet of firm soil consisting of primarily dense silty sand with intermittent layers of silty and sandy clay. Stiff to very stiff clay extends from a depth of approximately 40 feet to approximately 102 feet.
- The groundwater flow direction calculated during this monitoring event was found to range from southwest in the northern portion of the site with a component towards the south to southeast in the southern portion of the site due to influence by the construction dewatering that has occurred since 2012 at the construction site across 64th Street.
- Groundwater elevations during the September 2013 event ranged from 5.88 (MW-3) to 10.40 (MW-17) feet above mean sea level. The average groundwater gradient was 0.001 foot/foot.
- The injection of a (non-hazardous) surfactant into wells MW-8, MW-12, MW-13 and MW-14 was used to test the surfactant ability to re-dissolve the viscous hydrocarbon buildup in the injected wells and nearby wells, representing the second application of the surfactant in

the on-going semi-annual monitoring at the site. This was also being done to see if the surfactant would result in significant decreases in the dissolved concentrations in surrounding wells and if better recovery could be achieved from downgradient wells that showed elevated concentrations as a result of adjacent (to the south) 2012 construction dewatering. A significant decrease in TVHg and TEHd concentrations in well MW-13 has been observed with a slight increase of TVHg and TEHg in well MW-7 occurring. Benzene has decreased overall, with 12 of 16 wells with historically detected benzene showing marked decreases in concentration for the current monitoring event compared to the September 2102 event. Upcoming monitoring events may establish a trend and will enable decisions regarding adding additional surfactant in wells that contain heavy, degraded product, particularly well MW-3.

- Current contaminants of concern include TPHg, TPHd, and BTEX. Current groundwater concentrations exceeded the ESLs for these contaminants.
- MTBE was detected only in MW-3 during the September 2012 monitoring event compared to six wells with detected MTBE concentrations for the September 2013 sampling. The concentrations of MTBE in the six wells were below the applicable ESL.
- The highest concentrations of TVHg (19,000 µg/L in MW-13) and TEHd (250,000 µg/L in MW-3) for the current event can be compared to concentrations of 73,000 µg/L TVHg in MW-8 and 7,200,000 µg/L TEHd observed in well MW-13 in September 2012. The concentration of hydrocarbons in well MW-13 has decreased significantly below the September 2012 concentrations, as have concentrations in wells MW-8 (TVHg from 73,000 µg/L to 14,000 µg/L) and TEHd from 24,000 µg/L to 2,100 µg/L), and similarly in MW-10 (TVHg from 6,600 µg/L to 4,600 µg/L) and TEHd from 13,000 µg/L to 3,800 µg/L). Since the introduction of the surfactant in wells MW-8, MW-12, MW-13 and MW-14 in March and September 2013, hydrocarbon concentrations in surrounding wells MW-11, MW-15 have decreased overall while wells MW-16 and MW-17 have shown increases in overall hydrocarbon concentration. Fluctuating concentrations of TVHg and TEHd in these wells may be attributed to LNAPL recovery and introduction of surfactant since March 2013
- The concentration of hydrocarbons in well MW-13 has decreased significantly from 60,000 µg/L TVHg and 7,200,000 µg/L TEHd observed in this well in September 2012, to the current concentrations of 19,000 µg/L TVHg and 39,000 µg/L TEHd. The decrease is attributed to the effect of the surfactant injection in this well reducing LNAPL.

- Increases in September 2013 TVHg concentrations compared to the September 2012 monitoring event were observed in wells MW-3, MW-7, MW-17 and MW-E. This represents four wells exhibiting an increase in TVHg as compared to seven wells for the September 2012 sampling event. The remaining wells either remained below laboratory detection limits (in wells MW-4, MW-5, MW-6 and MW-18) or exhibited a decrease in TVHg concentrations.
- Gasoline was detected in MW-3, MW-7, MW-8, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-17, MW-E and RW-1 above the ESL where groundwater is not a likely drinking water resource (210 micrograms per liter [µg/L]). Gasoline was also detected in MW-9 and MW-16 but at concentrations below the ESL. This result is the same as for the September 2012 sampling event.
- Diesel was detected in all site wells above the ESL of 210 µg/L (where groundwater is not a likely drinking water resource), but showed a decrease in concentration in 7 of the 18 wells sampled as compared to 5 of 18 wells in the March 2012 sampling event. The marked increase of TEHd concentration detected in MW-3 for the September 2013 monitoring event (250,000 µg/L) compared to 7,200 µg/L TEHd in September 2012 and 15,000 µg/L TEHd in March 2013 represents a trend of increasing concentration that is likely the result of the influence of construction dewatering occurring across 64th Street since 2012.
- In monitoring wells MW-7, MW-8, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-17, and MW-E concentrations of benzene exceeded the ESL of 46 µg/L where groundwater is not a drinking water resource. Comparing September 2012 results to September 2013 results showed a decrease in benzene in 13 of the 18 site wells sampled. An increase in benzene was detected in wells MW-9 and MW-17. Benzene was detected in wells MW-5, MW-6, MW-9, MW-16, MW-18 and RW-1, but at concentrations below the ESL. The biggest changes in benzene concentrations were in wells MW-13 (decrease from 22,000 µg/L to 3,400 µg/L), and in well MW-15 with benzene dropping from 12,000 µg/L to 4,100 µg/L. Perimeter well MW-5, which in September 2012 did not contain a detectable concentration of benzene, contained 0.65 µg/L benzene for the current event.
- Toluene was detected at or above the ESL of 130 µg/L in monitoring wells MW-8, MW-12, MW-13, MW-14 and MW-17. Toluene was also detected in wells MW-7, MW-10, MW-15, MW-16, MW-E and RW-1 but at levels below the ESL.
- Ethylbenzene was detected above the 43 µg/L ESL (where groundwater is not a likely drinking water resource) in monitoring wells MW-12, MW-13, MW-14, MW-15, MW-17 and MW-E. Ethylbenzene was also detected in MW-7, MW-8, MW-9, MW-10, and MW-11 but at levels below the ESL.

- Total xylene concentrations in wells MW-12, MW-13, MW-14, MW-15, MW-17 and MW-E were above the 100-µg/L ESL where groundwater is not a likely drinking water resource. Total xylenes were detected in MW-3, MW-7, MW-8, MW-10, MW-11, MW-16, and RW-1 but below the ESL.
- Stellar Environmental conducted passive skimmer product removal on the trench wells during the September 2013 removal event. The skimmers in all trench wells so equipped were filled with water and traces of product.
- Stellar Environmental also conducted active product removal on the trench wells, source area wells, recovery well, and select monitoring wells during the March 2013 event. A total of approximately 1,100 gallons of groundwater that includes approximately 0.32 gallons of free-floating petroleum product from all the wells was removed with the estimate based on free-product accumulation in the extraction drum after pumping each well.
- The trench recovery system, where free product is designed to collect in 1-liter skimmers, is ineffective in removing free product. Active pumping at various wells appears to have some effect in lowering gasoline and benzene concentrations, and appears to be affecting the concentrations of diesel.

RECOMMENDATIONS

- Continue the use of limited surfactant at select interior wells and in well MW-3 where free-floating product is apparent to dissolve the product and allow better recovery of remnant hydrocarbons and a result of construction related dewatering at the adjacent 6340 Christie Avenue property;
- Conduct a limited subsurface investigation in areas surrounding well MW-3 and areas towards MW-18 determine whether an undiscovered hydrocarbon source exists that may be becoming mobilized by the pumping influence associated with construction dewatering activities occurring across 64th Street since 2012.
- Based on the new characterization data consider the introduction of limited oxygen releasing bioremediation compound either into temporary injection bores between MW-18 and MW3 and/or into the downgradient well MW-3 to mitigate against the effects of having the plume pulled to the southeast by the prolonged construction dewatering across 64th Street site that began in 2012.
- Contact the developer and/or contractor involved with the redevelopment project at 6340 Christie Avenue to determine whether the dewatering process there is permanent or temporary so that the parties involved with the redevelopment are aware of the potential adverse impacts that can be associated with pulling hydrocarbon contaminated groundwater towards that site.

- Groundwater monitoring should be continued on a semiannual basis to document contaminant concentrations over time.
- Both active and passive free product removal events should be continued to ascertain their effectiveness in reducing the plume size over time. Active product removal is being conducted on a semiannual basis immediately prior to the sampling event. Passive product removal from the skimmers is also being conducted on a semiannual basis.
- Continue to evaluate emergent best available technologies to cost-effectively remediate the site to move it toward full regulatory site closure.
- Electronic uploads to ACEH's ftp system and the State Water Board's GeoTracker system should be continued as required.

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8.0 LIMITATIONS

This report has been prepared for the exclusive use of Emerybay Commercial Association, their authorized representatives and assigns, and the regulatory agencies. No reliance on this report shall be made by anyone other than those for whom it was prepared.

The findings and conclusions presented in this report are based on a review of previous investigators' findings at the site, as well as site investigations conducted by SES in 2007, 2008, and 2009. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The SES personnel who performed this limited remedial investigation are qualified to perform such investigations and have accurately reported the information available, but cannot attest to the validity of that information. No warranty, expressed or implied, is made as to the findings, conclusions, and recommendations included in the report.

The findings of this report are valid as of the date of this report. Site conditions may change with the passage of time, natural processes, or human intervention, which can invalidate the findings and conclusions presented in this report. As such, this report should be considered a reflection of the current site conditions as based on the activities completed.

APPENDIX A

Historical Groundwater Well Analytical Results

TABLE A
Historical Groundwater Monitoring Well Groundwater Analytical Results
Petroleum and Aromatic Hydrocarbons (µg/L)
6400 Christie Avenue, Emeryville, California

MW-1									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
1	Dec-88	380	17,000	NA	8,600	940	250	570	NA
2	May-89	130	24,000	NA	16,000	2,100	300	1,200	NA
3	Feb-91	<10	22,000	NA	6,800	3,500	410	2,000	NA
Monitoring well abandoned - date unclear									

MW-2									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
1	Dec-88	72	22	NA	<0.5	<0.5	<0.5	<0.5	NA
2	May-89	40	18	NA	<0.5	<0.5	<0.5	<0.5	NA
3	Feb-91	83	<10	NA	<0.3	<0.3	<0.3	<0.6	NA
Monitoring well abandoned - date unclear									

MW-3									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
1	Dec-88	<10	4,200	NA	77	1,400	140	560	NA
2	May-89	110	1,800	NA	64	250	61	110	NA
3	Feb-91	NS	NS	NS	NS	NS	NS	NS	NS
4	Mar-04	3,400	440	3,900	<0.5	<0.5	1.5	<1.0	9.7
5	Dec-06	350	280	230	<0.5	<0.5	<0.5	<0.5	2.0
6	Dec-07	960	150	NA	0.54	0.54	<0.5	<0.5	<2.0
7	Mar-08	6,600	450	NA	<0.5	<0.5	1.8	2.0	4.3
8	Jun-08	4,500	440	NA	<0.5	<0.5	4.0	2.0	9.5
9	Sep-08	1,700	280	NA	<0.5	<0.5	1.0	<0.5	<2.0
10	Dec-08	2,300	240	NA	<0.5	<0.5	1.1	<0.5	<2.0
11	Mar-09	4,300	260	NA	1.3	<0.5	1.8	0.5	2.9
12	Sep-09	5,000	300	NA	2.5	<0.5	<0.5	<0.5	<2.0
13	Mar-10	4,500	230	670	1.7	<0.5	1.0	<0.5	2.7
14	Sep-10	5,100	470	NA	<0.5	0.64	<0.5	1.6	2.9
15	Mar-11	2,600	540	NA	47	28	7.6	11.8	17
16	Sep-11	7,800	290	NA	13	1.5	<0.50	2.0	9.5
17	Mar-12	1,900	430	NA	3.3	<0.5	<0.5	2.5	2.7
18	Sep-12	7,200	380	NA	18	14	6.0	25.3	<2.0
19	Mar-13	15,000	470	NA	1.3	0.68	2.1	2.1	8.6
20	Sep-13	250,000	530	NA	<0.5	<0.5	<0.5	2.4	5.6

MW-4									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
1	Dec-88	<10	100	NA	2.0	1.0	<0.5	2.0	NA
2	May-89	60	18	NA	1.0	<0.5	<0.5	<0.5	NA
3	Feb-91	<10	<10	NA	<0.3	<0.3	<0.3	<0.6	NA
4	Mar-04	NS	NS	NS	NS	NS	NS	NS	NS
5	Dec-06	<50	50	<200	<0.5	<0.5	<0.5	<0.5	<1.0
6	Dec-07	710	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
7	Mar-08	680	57	NA	<0.5	<0.5	<0.5	<0.5	<2.0
8	Jun-08	620	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
9	Sep-08	440	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
10	Dec-08	730	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
11	Mar-09	940	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
12	Sep-09	660	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
13	Mar-10	680	<50	380	<0.5	<0.5	<0.5	<0.5	<2.0
14	Sep-10	770	71	NA	<0.5	<0.5	<0.5	<0.5	<2.0
15	Mar-11	590	<50	NA	<0.5	<0.5	<0.5	<0.5	2.4
16	Sep-11	380	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
17	Mar-12	340	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
18	Sep-12	350	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
19	Mar-13	390	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
20	Sep-13	250	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0

MW-5									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
1	Dec-88	530	890	NA	<1.0	<1.0	1.0	3.0	NA
2	May-89	90	5.0	NA	1.0	<0.5	<0.5	<0.5	NA
3	Feb-91	58	<10	NA	0.6	<0.3	<0.3	<0.6	NA
4	Mar-04	NS	NS	NS	NS	NS	NS	NS	NS
5	Dec-06	330	<25	<200	0.6	<0.5	<0.5	<0.5	<1.0
6	Dec-07	5,100	1.3	NA	1.3	<0.5	<0.5	1 23	<2.0
7	Mar-08	4,500	<50	NA	0.53	<0.5	<0.5	<0.5	<2.0
8	Jun-08	3,300	<50	NA	0.64	<0.5	<0.5	<0.5	<2.0
9	Sep-08	4,200	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
10	Dec-08	5,200	<50	NA	0.61	<0.5	<0.5	<0.5	<2.0
11	Mar-09	5,800	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
12	Sep-09	5,600	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
13	Mar-10	4,300	<50	5,400	4.9	<0.5	<0.5	<0.5	<2.0
14	Sep-10	4,500	<50	NA	0.58	<0.5	<0.5	<0.5	2.0
15	Mar-11	4,900	<50	NA	1.3	<0.5	<0.5	<0.5	5.9
16	Sep-11	4,400	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
17	Mar-12	3,600	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
18	Sep-12	4,100	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
19	Mar-13	3,900	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
20	Sep-13	3,100	<50	NA	0.65	<0.5	<0.5	<0.5	<2.0

MW-6									
Sampling Event No.	Date Sampled	TEH-d	TVH-g	TEH-mo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Dec-88	<10	52	NA	1.0	<0.5	<0.5	<0.5	NA
2	May-89	140	31	NA	1.0	<0.5	<0.5	<0.5	NA
3	Feb-91	130	40	NA	0.8	<0.3	<0.3	<0.6	NA
4	Mar-04	NS	NS	NS	NS	NS	NS	NS	NS
5	Dec-06	200	43	<200	1.1	<0.5	<0.5	<0.5	<1.0
6	Dec-07	1,000	<50	NA	0.98	0.81	<0.5	0.5	<2.0
7	Mar-08	940	<50	NA	0.87	1.0	<0.5	<0.5	<2.0
8	Jun-08	1,100	56	NA	0.92	<0.5	<0.5	<0.5	2.9
9	Sep-08	1,000	<50	NA	0.91	<0.5	<0.5	<0.5	<2.0
10	Dec-08	1,400	<50	NA	1	<0.5	<0.5	<0.5	<2.0
11	Mar-09	1,200	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
12	Sep-09	1,500	<50	NA	0.79	<0.5	<0.5	<0.5	<2.0
13	Mar-10	910	<50	1,500	1.9	<0.5	<0.5	<0.5	<2.0
14	Sep-10	1,200	72	NA	1.0	<0.5	<0.5	<0.5	<2.0
15	Mar-11	1,900	<50	NA	1.3	<0.5	<0.5	<0.5	3.9
16	Sep-11	1,900	<50	NA	1.8	<0.5	<0.5	<0.5	<2.0
17	Mar-12	2,300	<50	NA	0.82	<0.5	<0.5	<0.5	<2.0
18	Sep-12	2,200	<50	NA	0.85	<0.5	<0.5	<0.5	<2.0
19	Mar-13	1,600	<50	NA	0.83	<0.5	<0.5	<0.5	<2.0
20	Sep-13	1,100	<50	NA	1.70	<0.5	<0.5	<0.5	<2.0

MW-7									
Sampling Event No.	Date Sampled	TEH-d	TVH-g	TEH-mo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
Installed in March 2004									
1	Mar-04	1,600	490	1,900	240	100	14	56	<2.5
2	Dec-06	420	<25	470	<0.5	<0.5	<0.5	<0.5	<1.0
3	Dec-07	6,300	3,100	NA	640	28	48	231	<10
4	Mar-08	7,000	360	NA	140	5.8	11	58	<2.0
5	Jun-08	5,400	1,700	NA	480	15	28	139	<2.0
6	Sep-08	9,400	1,200	NA	330	12	21	88	<2.0
7	Dec-08	8,700	2,200	NA	640	100	43	185	<4.0
8	Mar-09	8,700	1,700	NA	510	33	47	220	<10
9	Sep-09	6,800	620	NA	310	9.5	27	117	<10
10	Mar-10	8,700	330	6,800	68	2.2	10	31.6	<2.0
11	Sep-10	10,000	1,300	NA	580	54	35	163	<20
12	Mar-11	8,100	630	NA	160	5.3	14	65	<2.0
13	Sep-11	8,000	2,900	NA	900	46	51	284	<2.0
14	Mar-12	7,900	740	NA	220	150	14	140	<2.0
15	Sep-12	10,000	1,700	NA	660	35	32	137	<2.0
16	Mar-13	8,600	3,000	NA	950	39	30	149	<33
17	Sep-13	12,000	2,100	NA	540	29	17	89	<29

MW-8									
Sampling Event No.	Date Sampled	TEH-d	TVH-g	TEH-mo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
Installed in March 2004									
1	Mar-04	140,000	51,000	56,000	19,000	720	2,400	3,300	<50
2	Dec-06	2,400	29,000	<380	13,000	<100	640	500	<200
3	Dec-07	5,900	30,000	NA	11,000	180	650	561	<100
4	Mar-08	21,000	47,000	NA	10,000	260	1,200	458	<2.0
5	Jun-08	7,300	27,000	NA	9,300	140	790	290	<2.0
6	Sep-08	13,000	35,000	NA	11,000	190	900	402	<100
7	Dec-08	7,600	19,000	NA	6,800	110	380	236	<50
8	Mar-09	10,000	22,000	NA	9,400	200	640	358	<50
9	Sep-09	9,200	26,000	NA	8,600	100	630	230	170
10	Mar-10	11,000	19,000	1,900	6,200	120	830	149	<2.0
11	Sep-10	7,600	7,800	NA	8,800	110	620	212	<100
12	Mar-11	8,800	19,000	NA	8,100	130	890	149	<2.0
13	Sep-11	18,000	13,000	NA	8,000	140	860	178	<2.0
14	Mar-12	9,800	380	NA	100	3	5.9	20	<2.0
15	Sep-12	24,000	73,000	NA	18,000	520	2,300	670	<2.0
16	Mar-13	38,000	39,000	NA	9,400	160	1,600	255	<50
17	Sep-13	2,100	14,000	NA	3,800	140	35	86	440

MW-9									
Sampling Event No.	Date Sampled	TEH-d	TVH-g	TEH-mo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
Installed in March 2004									
1	Mar-04	1,300	95	1,500	4.7	0.68	<0.5	<1.0	<0.5
2	Dec-06	<50	92	<200	2.8	<0.5	<0.5	<0.5	<1.0
3	Dec-07	8,400	84	NA	4.7	1.1	<0.5	1.9	<2.0
4	Mar-08	8,600	100	NA	4.1	1.1	<0.5	<0.5	2.0
5	Jun-08	5,900	98	NA	4.9	<0.5	<0.5	<0.5	2.3
6	Sep-08	9,300	130	NA	4.6	<0.5	<0.5	<0.5	<50
7	Dec-08	7,800	95	NA	4.0	0.54	<0.5	<0.5	<2.0
8	Mar-09	9,400	130	NA	4.6	<0.5	<0.5	<0.5	<2.0
9	Sep-09	8,200	98	NA	4.0	<0.5	<0.5	<0.5	<2.0
10	Mar-10	6,500	140	4,000	5.2	<0.5	<0.5	<0.5	<2.0
11	Sep-10	6,400	170	NA	4.8	0.77	<0.5	<0.5	<2.0
12	Mar-11	11,000	150	NA	5.9	0.61	<0.5	0.5	<2.0
13	Sep-11	9,400	62	NA	4.2	<0.5	<0.5	<0.5	<2.0
14	Mar-12	9,400	140	NA	6.2	0.61	<0.5	0.51	<2.0
15	Sep-12	10,000	130	NA	7.2	<0.5	0.53	0.92	<2.0
16	Mar-13	8,500	170	NA	14.0	0.73	0.7	0.63	<2.0
17	Sep-13	11,000	130	NA	12.0	<0.5	0.92	<0.5	4.9

MW-10									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
Installed in March 2004									
1	Mar-04	840,000	14,000	<100,000	4,000	77	200	120	<50
2	Dec-06	19,000	12,000	<4,000	4,600	42	90	52	<50
3	Dec-07	4,700	13,000	NA	5,300	96	42	86	<50
4	Mar-08	280,000	10,000	NA	2,600	50	37	58.7	22
5	Jun-08	4,800	10,000	NA	3,800	62	24	61	<2.0
6	Sep-08	4,700	1,200	NA	350	11	3.4	11	<2.0
7	Dec-08	3,200	2,900	NA	550	45	15	56	<20
8	Mar-09	6,200	8,200	NA	890	46	78	130	<20
9	Sep-09	6,100	1,400	NA	1,200	35	19	31	<20
10	Mar-10	3,900	7,800	960	1,200	46	34	56	54
11	Sep-10	3,500	3,400	NA	1,500	47	18	44	<40
12	Mar-11	4,500	3,700	NA	1,200	81	25	46.4	<2.0
13	Sep-11	3,800	4,600	NA	720	49	26	52.4	<2.0
14	Mar-12	3,500	2,400	NA	240	27	10	33.6	<2.0
15	Sep-12	13,000	6,600	NA	1,800	89	130	46	<2.0
16	Mar-13	24,000	15,000	NA	1,300	66	130	94	<50
17	Sep-13	3,800	4,600	NA	900	87	29	56	<42

MW-11									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
Installed in May 2004									
1	Dec-06	<50	920	<200	26	4.5	1.8	5.4	<1.0
2	Dec-07	6,900	1,500	NA	320	44	53	140	<2.0
3	Mar-08	7,500	1,200	NA	120	7.6	10	24.9	3.0
4	Jun-08	5,100	2,000	NA	190	11	7.7	16.3	<2.0
5	Sep-08	5,600	2,200	NA	260	20	34	60	<2.0
6	Dec-08	7,800	2,100	NA	270	14	7.6	15.6	<2.0
7	Mar-09	7,100	1,400	NA	200	6.4	7.3	10.4	<2.0
8	Sep-09	6,400	1,900	NA	320	13	9.8	15.2	2.0
9	Mar-10	6,500	1,600	6,900	150	<0.5	3.9	12.8	2.9
10	Sep-10	5,500	1,300	NA	330	15	9.2	17.3	<2.0
11	Mar-11	6,500	3,400	NA	1300	22	9.6	19.9	<2.0
12	Sep-11	4,400	3,600	NA	1200	36	16	39.1	<2.0
13	Mar-12	4,600	5,700	NA	2100	27	12	16.7	<2.0
14	Sep-12	5,200	4,100	NA	1,500	33	<0.5	18	<2.0
15	Mar-13	8,400	1,800	NA	97	18	19	30	<2.0
16	Sep-13	7,900	1,900	NA	60	<0.5	3.6	13	27.0

MW-12									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
Installed in May 2004									
1	Dec-06	<50	19,000	<200	9,100	51	<50	110	<100
2	Dec-07	2,700	17,000	NA	8,000	110	25	115	<40
3	Mar-08	3,300	33,000	NA	9,200	140	85	116	<2.0
4	Jun-08	3,000	17,000	NA	6,600	95	50	110	<2.0
5	Sep-08	3,100	14,000	NA	6,200	79	18	83	<10
6	Dec-08	3,600	19,000	NA	7,900	140	72	124	<50
7	Mar-09	4,100	14,000	NA	6,100	150	130	111	<40
8	Sep-09	3,000	1,900	NA	4,500	80	14	51	<40
9	Mar-10	4,000	15,000	1,900	6,200	110	73	101	<2.0
10	Sep-10	3,100	4,900	NA	5,900	97	47	73	<100
11	Mar-11	3,300	15,000	NA	7,900	180	200	127	<2.0
12	Sep-11	1,800	8,600	NA	2,700	85	31	63	<2.0
13	Mar-12	2,500	17,000	NA	6,300	160	180	124	<2.0
14	Sep-12	2,300	10,000	NA	4,600	160	210	85	<2.0
15	Mar-13	9,800	9,100	NA	2,600	110	170	111	<2.0
16	Sep-13	7,800	9,400	NA	2,400	130	130	125	520

MW-13									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
Installed in April 2004									
1	Dec-06	12,000	87,000	2,100	18,000	470	2,400	3,500	<400
2	Dec-07	NA	68,000	NA	19,000	650	1,700	2,440	<100
3	Mar-08	1,100,000	98,000	NA	19,000	820	2,300	3,190	<100
4	Jun-08	71,000	44,000	NA	12,000	510	1,600	1,950	<2.0
5	Sep-08	440,000	52,000	NA	<100	500	1,600	1,500	<100
6	Dec-08	1,100,000	2,700,000	NA	23,000	<250	40,000	45,000	<1,000
7	Mar-09	2,000,000	330,000	NA	25,000	1,300	6,400	8,500	<1,000
8	Sep-09	38,000	1,400,000	NA	19,000	2,500	19,000	21,300	<1,000
9	Mar-10	15,000	43,000	670	12,000	310	1,600	1,140	<2,500
10	Sep-10	3,100,000	1,700,000	NA	21,000	2,300	30,000	17,200	7,000
11	Mar-11	13,000	86,000	NA	7,900	180	200	127	<2.0
12	Sep-11	15,000	49,000	NA	16,000	380	1900	850	<2.0
13	Mar-12	1,100,000	260,000	NA	23,000	1500	5700	4100	<2.0
14	Sep-12	7,200,000	60,000	NA	22,000	580	2,100	1,700	<2.0
15	Mar-13	23,000	27,000	NA	5,600	260	1,300	1,080	<200
16	Sep-13	39,000	19,000	NA	3,400	180	760	515	<200

MW-14									
Sampling Event No.	Date Sampled	TEH-d	TVH-g	TEH-mo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
Installed in April 2004									
1	Dec-06	<50	8,300	<200	3,700	240	230	260	<50
2	Dec-07	2,600	6,800	NA	3,100	150	220	168	<20
3	Mar-08	4,400	18,000	NA	4,400	330	340	245	<2.0
4	Jun-08	2,600	7,700	NA	2,600	180	200	141	<2.0
5	Sep-08	2,500	4,100	NA	1,300	50	80	61	<10
6	Dec-08	2,800	2,300	NA	830	27	45	30.7	<10
7	Mar-09	3,200	13,000	NA	4,300	870	260	283	<50
8	Sep-09	2,100	550	NA	630	14	28	17	<20
9	Mar-10	3,900	6,700	3,100	2,400	400	140	185	<20
10	Sep-10	2,500	2,000	NA	1,700	44	98	89	<40
11	Mar-11	2,800	16,000	NA	6,600	1600	450	600	<2.0
12	Sep-11	5,900	20,000	NA	6,600	690	550	740	<2.0
13	Mar-12	4,400	13,000	NA	3,000	1400	340	870	<2.0
14	Sep-12	9,900	31,000	NA	4,800	2400	740	2,450	<2.0
15	Mar-13	21,000	11,000	NA	2,300	340	280	371	<50
16	Sep-13	24,000	7,200	NA	1,900	200	160	197	<83

MW-15									
Sampling Event No.	Date Sampled	TEH-d	TVH-g	TEH-mo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
Installed in April 2004									
1	Dec-06	<50	9,200	<200	3,700	<25	60	57	<50
2	Dec-07	3,300	8,100	NA	3,000	48	28	44.5	<20
3	Mar-08	3,000	13,000	NA	3,600	66	210	59.5	<64
4	Jun-08	2,900	15,000	NA	5,800	61	230	56.4	<2.0
5	Sep-08	3,400	18,000	NA	7,800	73	270	59.9	<10
6	Dec-08	3,000	20,000	NA	7,600	95	300	84.2	<50
7	Mar-09	3,400	17,000	NA	7,200	91	170	60	<50
8	Sep-09	2,700	2,300	NA	6,200	71	68	42	<50
9	Mar-10	3,700	14,000	910	5,900	74	170	69	<2.0
10	Sep-10	3,500	5,800	NA	8,100	95	170	71	<100
11	Mar-11	3,200	11,000	NA	5,600	88	110	66.1	<2.0
12	Sep-11	2,200	15,000	NA	6,400	100	71	77.7	<2.0
13	Mar-12	3,500	16,000	NA	7,200	110	160	177	<2.0
14	Sep-12	3,500	28,000	NA	12,000	300	380	297	<2.0
15	Mar-13	3,100	15,000	NA	6,100	170	360	266	<67
16	Sep-13	2,800	17,000	NA	4,100	92	76	144	<200

MW-16									
Sampling Event No.	Date Sampled	TEH-d	TVH-g	TEH-mo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
Installed in April 2004									
1	Dec-06	<50	190	<200	11.0	1.4	<0.5	<0.5	<1.0
2	Dec-07	8,500	71	NA	13	2.6	<0.5	1.46	<2.0
3	Mar-08	12,000	60	NA	11	0.73	<0.5	<0.5	<2.0
4	Jun-08	10,000	120	NA	13	2.2	<0.5	<0.5	2
5	Sep-08	8,200	64	NA	9.9	1.9	<0.5	<0.5	<2.0
6	Dec-08	8,800	60	NA	11	2.8	<0.5	0.53	<2.0
7	Mar-09	14,000	78	NA	12	2.3	<0.5	<0.5	<2.0
8	Sep-09	10,000	51	NA	9.3	1.6	<0.5	<0.5	2.2
9	Mar-10	12,000	70	4,700	12	2.1	0.56	1.35	<2.0
10	Sep-10	9,800	77	NA	12	1.9	<0.5	0.55	2
11	Mar-11	9,900	64	NA	13	1.6	<0.5	2.3	16
12	Sep-11	10,000	74	NA	17	2.3	<0.5	1.33	<2.0
13	Mar-12	8,400	66	NA	12	1.8	<0.5	1.07	<2.0
14	Sep-12	7,700	84	NA	17	1.5	0.57	0.69	<2.0
15	Mar-13	8,100	80	NA	15	1.4	<0.5	0.75	<2.0
16	Sep-13	9,800	66	NA	13	1.7	<0.5	1.38	<2.0

MW-17									
Sampling Event No.	Date Sampled	TEH-d	TVH-g	TEH-mo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
Installed in April 2004									
1	Dec-06	<50	14,000	<200	3,400	1,100	480	<0.5	<1.0
2	Dec-07	2,900	5,000	NA	1,100	260	110	206	<10
3	Mar-08	3,100	6,800	NA	1,200	110	91	94	21
4	Jun-08	2,900	7,200	NA	1,100	45	75	66	<2.0
5	Sep-08	3,300	5,500	NA	900	63	69	69	<10
6	Dec-08	3,200	7,100	NA	1,100	530	190	390	<10
7	Mar-09	3,000	5,400	NA	770	150	87	161	<2.0
8	Sep-09	3,000	2,200	NA	120	3.1	11	1.6	<2.0
9	Mar-10	3,400	5,000	1,900	910	66	73	93	<2.0
10	Sep-10	2,800	3,500	NA	1,400	62	46	76	<40
11	Mar-11	3,900	6,100	NA	1,100	44	55	70	<2.0
12	Sep-11	2,400	4,600	NA	850	49	51	64	<2.0
13	Mar-12	2,200	5,800	NA	1,500	57	58	67	<2.0
14	Sep-12	1,400	4,800	NA	1,300	45	100	41	<2.0
15	Mar-13	2,900	7,200	NA	1,200	89	220	110	<25
16	Sep-13	2,100	8,000	NA	1,400	150	220	122	<67

MW-18									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
Installed in May 2004									
1	Dec-06	<50	120	<200	22	6.2	3.2	6.2	<2.0
2	Dec-07	8,600	<50	NA	0.98	<0.5	<0.5	<0.5	<2.0
3	Mar-08	9,800	<50	NA	0.52	<0.5	<0.5	<0.5	2.0
4	Jun-08	8,800	<50	NA	<0.5	<0.5	<0.5	<0.5	3.1
5	Sep-08	8,600	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
6	Dec-08	9,300	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
7	Mar-09	10,000	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
8	Sep-09	11,000	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
9	Mar-10	9,400	<50	2,700	<0.5	<0.5	<0.5	<0.5	<2.0
10	Sep-10	6,400	1,800	NA	2200	45	64.0	78.0	<50
11	Mar-11	10,000	68	NA	5.5	1.1	<0.5	1.3	17
12	Sep-11	9,800	<50	NA	0.58	<0.5	<0.5	<0.5	<2.0
13	Mar-12	9,200	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
14	Sep-12	11,000	160	NA	5.1	<0.5	5.7	0.6	<2.0
15	Mar-13	9,600	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.0
16	Sep-13	11,000	<50	NA	0.52	<0.5	<0.5	<0.5	<2.0

MW-E									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
1	Dec-88	100	5,400	NA	3,200	690	97	330	NA
2	May-89	NS	NS	NS	NS	NS	NS	NS	NS
3	Feb-91	NS	NS	NS	NS	NS	NS	NS	NS
4	Mar-04	470	810	<500	340	6.1	2.2	7.7	<1.0
5	Dec-06	280	1,900	<200	910	<10	10	<10	<20
6	Dec-07	6,900	7,000	NA	3,300	50	51	80	<20
7	Mar-08	6,300	2,700	NA	780	17	20	20.9	12
8	Jun-08	5,200	7,400	NA	2,900	43	85	50	<2.0
9	Sep-08	7,800	11,000	NA	3,800	170	130	257	<50
10	Dec-08	9,400	9,100	NA	3,400	110	180	182	<50
11	Mar-09	5,600	850	NA	270	7.5	13	17.5	<2.0
12	Sep-09	6,200	540	NA	1,200	22	37	37.2	<2.0
13	Mar-10	3,800	2,400	5,100	1,000	20	37	26.9	4.9
14	Sep-10	6,600	1,800	NA	2,200	45	64	78	<50
15	Mar-11	5,900	4,400	NA	2,600	46	64	90	<50
16	Sep-11	7,600	3,600	NA	4,500	150	340	402	<2.0
17	Mar-12	5,800	6,500	NA	2,600	50	52	84	<2.0
18	Sep-12	8,300	7,800	NA	5,500	190	430	431	<2.0
19	Mar-13	7,700	21,000	NA	5,900	210	850	970	<50
20	Sep-13	9,400	15,000	NA	3,800	120	470	351	200

RW-1									
Sampling Event No.	**Date Sampled**	**TEH-d**	**TVH-g**	**TEH-mo**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**MTBE**
1	Dec-88	NS	NS	NS	NS	NS	NS	NS	NS
2	May-89	NS	NS	NS	NS	NS	NS	NS	NS
3	Feb-91	NS	NS	NS	NS	NS	NS	NS	NS
4	Mar-04	NS	NS	NS	NS	NS	NS	NS	NS
5	Dec-06	<50	640	<200	100	1.3	2	1.6	<1.0
6	Dec-07	2,100	770	NA	110	<0.5	3.8	1.96	<2.0
7	Mar-08	11,000	890	NA	100	4.2	4.4	2.0	<2.0
8	Jun-08	1,500	1,200	NA	290	4.8	10	4.8	<2.0
9	Sep-08	1,900	1,400	NA	280	9.8	10	6.7	<2.0
10	Dec-08	54,000	1,100,000	NA	500	<250	3,200	530	<1,000
11	Mar-09	2,800	950	NA	180	3.6	13	3	<2.0
12	Sep-09	770	350	NA	120	3.1	11	2	<2.0
13	Mar-10	810	200	<300	<0.5	<0.5	<0.5	<0.5	<2.0
14	Sep-10	980	860	NA	170	4.0	5.6	2.8	8.0
15	Mar-11	810	310	NA	15	4.4	2.5	3.9	8.8
16	Sep-11	440	230	NA	28	2.7	1.7	1.5	<2.0
17	Mar-12	1,900	502	NA	70	2.0	2.2	2.1	<2.0
18	Sep-12	890	790	NA	150	9.6	5.5	12.0	<2.0
19	Mar-13	2,800	280	NA	2.7	1.7	2.5	1.9	<2.0
20	Sep-13	1,500	420	NA	10.2	6.0	<0.5	5.7	8.2

Notes:

The 1988, 1989, and 1991 sampling events were conducted by Groundwater Technology, Inc.

The 2004 and 2006 sampling events were conducted by PES Environmental.

NS = Not sampled

NA = Not analyzed for this constituent

All concentrations shown in µg/L

APPENDIX B

Groundwater Monitoring
Field Data Sheets

WELL GAUGING DATA

Project # 130926-CK1 Date 9/26/13 Client STELLAR

Site 65 7th & BAY ST, EMERYVILLE

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-3	0956	2	ODOR	11.50			*11.50@	—		*THICK BLACK SPH
MW-4	0920	2					8.00	24.90		
MW-5	0923	2					10.20	24.84		
MW-6	0926	2					5.65	23.30		
MW-7	~~0920~~ 0910	>1/4					5.50	19.83		
MW-8	0946	3/4	ODOR	10.28			10.32	—		
MW-9	0929	3/4					10.13	19.73		
MW-10	0949	3/4	ODOR	9.65			10.02	—		
MW-11	0930	3/4					10.21	19.75		
MW-12	0950	3/4					9.72	19.00		
MW-13	0953	3/4	ODOR	9.45			9.48	—		
MW-14	0956	3/4	ODOR	9.47			9.49	—		
MW-15	0959	3/4					10.01	18.90		
MW-16	0935	3/4					10.03	19.21		
MW-17	0932	3/4					10.00	19.50		
MW-18	0939	3/4					9.81	19.68		
MW-E	0942	2					10.21	45.60		

WELL GAUGING DATA

Project # 130926-CK1 Date 9/26/13 Client STELLAR

Site 65TH & BAY ST, EMERYVILLE

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
RW-1	0903	10					11.60	—	↓	

WELLHEAD INSPECTION CHECKLIST

Client STELLAR Date 9/26/13

Site Address 65th & Bay St, EMERYVILLE

Job Number 130926-CK1 Technician CK / PC

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-3	X							
MW-4	X							
MW-5	X							
MW-6	X							
MW-7						X		
MW-8						X		
MW-9						X		
MW-10	X							
MW-11	X							
MW-12	X							
MW-13	X							
MW-14	X							
MW-15	X							
MW-16						X		
MW-17						X		
MW-18	X							

NOTES: MW-7 - 1/2 BOLTS MW-17 - 2/2 BOLTS MW-8 - 2/2 BOLTS
MW-9 - 1/2 BOLTS MW-16 - 1/2 BOLTS

WELLHEAD INSPECTION CHECKLIST

Client STELLAR Date 9/26/13

Site Address 65th & BAY ST, EMERYVILLE

Job Number 130926-CK1 Technician CK / PC

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-E						1		
RW-1						4		

NOTES: MW-E -2½ BOLTS. RW-1 1½ BOLTS STRIPPED

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME Bayscenter Apts.				PROJECT NUMBER 130926-CK1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP. °C	INITIALS
Myron L	0223841	9/26/13	4/7/10 pH	4.0/7.0/10.0	Y	22.1	PC
			3900 µS	3898	Y	22.0	↓

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME	STELLAR @ BAY CENTER APARTMENTS			PROJECT NUMBER	130926-CK1		
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
AMREL ULTRAMETER	6223842	9/26/13 0630	3900 µs CONDUCT.	3898	YES		CH
↓	↓		7.00 10.00 4.00 pH	7.01 10.03 4.04	YES		CC
↓	↓	9/27/13 0630	3900 µs CONDUCT.	3905	YES		CH
↓	↓		7.00 10.00 4.00 pH	7.05 10.05 4.06	YES		CC

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: (CK) / PC	Date: 9/27/13
Well I.D.: MW- 3	Well Diameter: (2) 3 4 6 8
Total Well Depth (TD): —	Depth to Water (DTW): —
Depth to Free Product: 11.50	Thickness of Free Product (feet): THICK BLACK SPH
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; (Peristaltic); Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; (Other) new TUBING

_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1020	START PURGE FOR			6 MINS	@ 300	ml/min
1026	STOP PURGE					
*	UNABLE TO	GAUGE.	VERY	THICK	PRODUCT.	

Did well dewater? Yes (No) Gallons actually evacuated: 1800 ml

Sampling Date: 9/27/13 Sampling Time: 1030 Depth to Water: 11.50

Sample I.D.: MW- 3 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: (CK) / PC	Date: 9/26/13
Well I.D.: MW- 4	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 24.90	Depth to Water (DTW): 8.00
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.38	

Purge Method: Bailer / (Disposable Bailer) / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / (Disposable Bailer) / Extraction Port / Dedicated Tubing / Other: _____

2.7 (Gals.) X	3	=	8.1 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0910	18.4	7.40	1245	129	2.7	
0915	18.4	7.36	1239	132	5.4	
0920	18.5	7.35	1232	146	8.1	

Did well dewater? Yes (No)		Gallons actually evacuated: 8.1	
Sampling Date: 9/26/13	Sampling Time: 0930	Depth to Water: 8.23	
Sample I.D.: MW- 4		Laboratory: Curtis & Tompkins	
Analyzed for: TPH-G BTEX MTBE TPH-D		Oxygenates (5)	Other: Diss. Chrome & Hex Chrome
EB I.D. (if applicable):	@ Time	Duplicate I.D. (if applicable):	
Analyzed for: TPH-G BTEX MTBE TPH-D		Oxygenates (5)	Other:
D.O. (if req'd): Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd): Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: (CK) / PC	Date: 9/26/13
Well I.D.: MW- 5	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 24.84	Depth to Water (DTW): 10.20
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 13.13	

Purge Method: Bailer / (Disposable Bailer) / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / (Disposable Bailer) / Extraction Port / Dedicated Tubing / Other: _____

2.3 (Gals.) X	3	=	6.9 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0945	18.2	7.44	2259	>1000	2.3	
0950	18.2	7.40	2268	>1000	4.6	
0955	18.2	7.39	2273	>1000	6.9	
					Not @	80%.

Did well dewater? Yes (No) Gallons actually evacuated: 6.9

Sampling Date: 9/26/13 Sampling Time: 1235 Depth to Water: 10.34

Sample I.D.: MW- 5 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: (CK) / PC	Date: 9/26/13
Well I.D.: MW- 6	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 23.30	Depth to Water (DTW): 5.65
Depth to Free Product: ___	Thickness of Free Product (feet): ___
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 9.19	

Purge Method: Bailer, (Disposable Bailer), Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other_____

Sampling Method: Bailer, (Disposable Bailer), Extraction Port, Dedicated Tubing, Other: _____

2.8 (Gals.) X 3 = 8.4 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1012	18.0	10.76	1384	45	2.8	
1017	17.8	10.78	1393	31	5.6	
1022	17.8	10.78	1399	35	8.4	

Did well dewater? Yes (No) Gallons actually evacuated: 8.4

Sampling Date: 9/26/13 Sampling Time: 1030 Depth to Water: 6.20

Sample I.D.: MW- 6 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: CK / PC	Date: 9/26/13
Well I.D.: MW-7	Well Diameter: 2 3 4 6 8 3/4
Total Well Depth (TD): 19.85	Depth to Water (DTW): 5.50
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 8.37	

Purge Method: Bailer / Disposable Bailer / Positive Air Displacement / Electric Submersible / Waterra / X Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / Disposable Bailer / Extraction Port / Dedicated Tubing / Other: New Tubing

0.3 (Gals.) X	3	=	.9 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0932	16.9	8.40	3596	>1000	0.3	
0936	16.5	8.39	11.97ms	>1000	0.6	
0940	16.2	8.37	11.91	>1000	0.9	

Did well dewater? Yes (No) Gallons actually evacuated: 0.9

Sampling Date: 9/26/13 Sampling Time: 0944 Depth to Water: 8.32

Sample I.D.: MW-7 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: CK / PC	Date: 9/26/13
Well I.D.: MW-8	Well Diameter: 2 3 4 6 8 (5/4)
Total Well Depth (TD): –	Depth to Water (DTW): 10.32
Depth to Free Product: 10.28	Thickness of Free Product (feet): 0.04
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; X Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: X New Tubing

6 minute purge @ 300ml/min

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1250	start Purge					
1257	sample well					

Did well dewater? Yes (No) Gallons actually evacuated: 1800ml

Sampling Date: 9/26/13 Sampling Time: 1258 Depth to Water: 10.56

Sample I.D.: MW-8 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: CK / PC	Date: 9/26/13
Well I.D.: MW-9	Well Diameter: 2 3 4 6 8 (3/4)
Total Well Depth (TD): 19.73	Depth to Water (DTW): 10.13
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.05	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; (X) Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: X New tubing

0.2 (Gals.) X 3 = 0.6 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1000	16.3	9.51	2439	227	0.2	
1003	16.3	9.64	2292	85	0.4	
1006	16.3	9.66	2254	68	0.6	

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/26/13 Sampling Time: 1010 Depth to Water: 11.90

Sample I.D.: MW-9 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: (CK) / PC	Date: 9/26/13
Well I.D.: MW- 10	Well Diameter: 2 3 4 6 8 (3/4)
Total Well Depth (TD): —	Depth to Water (DTW): 10.02
Depth to Free Product: 9.65	Thickness of Free Product (feet): 0.37
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; (Peristaltic); Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: NEW TUBING

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1200	PURGE	FOR	6 MINS	@ 300	mL/min	
1206	STOP	PURGE				
*	UNABLE	TO	GAUGE	DUE TO	SMALL	DIAMETER WELL

Did well dewater? Yes (No) Gallons actually evacuated: 1800 mL

Sampling Date: 9/26/13 Sampling Time: 1215 Depth to Water: 10.20

Sample I.D.: MW- 10 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: CK / (PC)	Date: 9/26/13
Well I.D.: MW- 11	Well Diameter: 2 3 4 6 8 (3/4")
Total Well Depth (TD): 19.75	Depth to Water (DTW): 10.21
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.12	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; X Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: X New Tubing

0.2 (Gals.) X	3	=	0.6 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1046	15.6	7.93	2291	13	0.2	fuel odor
1049	15.7	7.83	2200	10	0.4	" "
1053	15.6	7.88	2196	7	0.6	" "

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/26/13 Sampling Time: 1100 Depth to Water: 10.50

Sample I.D.: MW- 11 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: (CK) / PC	Date: 9/27/13
Well I.D.: MW- 12	Well Diameter: 2 3 4 6 8 3/4
Total Well Depth (TD): 19.00	Depth to Water (DTW): 9.72
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.59	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; (Peristaltic); Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; (Other): NEW TUBING

0.02

0.2 (Gals.) X	3	=	0.6 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0830	16.1	8.47	982	69	0.2	ODOR
0832	15.8	8.40	983	25	0.4	↓
0834	15.7	8.40	982	18	0.6	↓

Did well dewater? Yes (No)		Gallons actually evacuated: 0.6	
Sampling Date: 9/27/13	Sampling Time: 0840	Depth to Water: 10.15	
Sample I.D.: MW- 12		Laboratory: Curtis & Tompkins	
Analyzed for: TPH-G BTEX MTBE TPH-D		Oxygenates (5)	Other: Diss. Chrome & Hex Chrome
EB I.D. (if applicable):	@ Time	Duplicate I.D. (if applicable):	
Analyzed for: TPH-G BTEX MTBE TPH-D		Oxygenates (5)	Other:
D.O. (if req'd): Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd): Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: (CK) / PC	Date: 9/26/13
Well I.D.: MW- 13	Well Diameter: 2 3 4 6 8 (3/4)
Total Well Depth (TD): —	Depth to Water (DTW): 9.47
Depth to Free Product: 9.45	Thickness of Free Product (feet): 0.02
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; ~~Peristaltic~~; Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: NEW TUBING

_____/_____(Gals.) X _____/_____ = _____/_____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1300	START PURGE FOR		6 MINS	@ 300	ml/MIN	
1306	STOP	PURGE				
*	UNABLE TO GAUGE		DUE TO	SMALL DIAMETER	WELL	

Did well dewater? Yes (No) Gallons actually evacuated: 1900 ml

Sampling Date: 9/26/13 Sampling Time: 1315 Depth to Water: 9.55

Sample I.D.: MW- 13 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: CK / PC	Date: 9/27/13
Well I.D.: MW- 14	Well Diameter: 2 3 4 6 8 3/4
Total Well Depth (TD): —	Depth to Water (DTW): 9.49
Depth to Free Product: 9.47	Thickness of Free Product (feet): 0.02
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: NEW TUBING

_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0915	START	PURGE	FOR	6 MINS @	200 mL/MIN	
0921	STOP	PURGE				
*	UNABLE	TO	GAUGE	DUE TO	SMALL	DIAMETER WELL

Did well dewater? Yes No Gallons actually evacuated: 1200 mL

Sampling Date: 9/27/13 Sampling Time: 0930 Depth to Water: 9.55

Sample I.D.: MW- 14 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: CK / PC	Date: 9/27/13
Well I.D.: MW- 15	Well Diameter: 2 3 4 6 8 3/4
Total Well Depth (TD): 18.90	Depth to Water (DTW): 10.01
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.79	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, ~~Peristaltic~~, Extraction Pump, Other_____

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, ~~Other:~~ NEW TUBING

0.2 (Gals.) X 3 = 0.6 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0945	16.2	7.14	877	14	0.2	odor
0947	16.0	7.10	874	9	0.4	↓
0949	16.0	7.10	873	8	0.6	↓

Did well dewater? Yes No Gallons actually evacuated: 0.6

Sampling Date: 9/27/13 Sampling Time: 0955 Depth to Water: 10.20

Sample I.D.: MW- 15 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: CK / PC	Date: 9/26/13
Well I.D.: MW- 16	Well Diameter: 2 3 4 6 8 (5/4")
Total Well Depth (TD): 19.71	Depth to Water (DTW): 10.03
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.97	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; (Peristaltic); Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; (Other: NEW TUBING)

0.2	(Gals.) X	3	=	0.6	Gals.
1 Case Volume		Specified Volumes		Calculated Volume	

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1109	16.1	10.46	2957	119	0.2	
1112	15.9	10.26	3154	52	0.4	
1115	16.1	10.22	3285	32	0.6	

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/26/13 Sampling Time: 1118 Depth to Water: 10.19

Sample I.D.: MW- 16 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L	
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV	

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: (CK) / PC	Date: 9/26/13
Well I.D.: MW- 17	Well Diameter: 2 3 4 6 8 (3/4)
Total Well Depth (TD): 19.50	Depth to Water (DTW): 10.00
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.90	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, (Peristaltic), Extraction Pump, Other_____

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, (Other: NEW TUBING)

0.02

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

0.2 (Gals.) X 3 = 0.6 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1043	17.0	7.26	1349	769	0.2	
1045	17.1	7.17	843	721	0.4	
1047	17.1	7.16	840	203	0.6	

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/26/13 Sampling Time: 1055 Depth to Water: 10.10

Sample I.D.: MW- 17 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L	
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV	

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: CK / ~~PC~~	Date: 9 / 26 / 13
Well I.D.: MW- 18	Well Diameter: 2 3 4 6 8 (3/4)
Total Well Depth (TD): 19.68	Depth to Water (DTW): 9.81
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.78	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; X Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: X New Tubing

0.2 (Gals.) X	3	=	0.6	Gals.
1 Case Volume	Specified Volumes		Calculated Volume	

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1150	15.5	7.44	6007	>1000	0.2	
1153	15.6	7.19	7128	721	0.4	
1156	15.6	7.17	799	817	0.6	

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9 / 26 / 13 Sampling Time: 1200 Depth to Water: 10.06

Sample I.D.: MW- 18 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: (CK) / PC	Date: 9/27/13
Well I.D.: MW- E	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 45.60	Depth to Water (DTW): 10.21
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 17.29	

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, (Waterra), Peristaltic, Extraction Pump, Other_____

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, (Other): NEW TUBING

5.7 (Gals.) X 3 = 17.1 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0958	16.4	7.49	2262	71000	5.7	
	DEWATERED @ 10.9gal				10.0	
1120	16.4	7.66	2252	115	—	

Did well dewater? (Yes) No Gallons actually evacuated: 10.0

Sampling Date: 9/27/13 Sampling Time: 1120 Depth to Water: 11.35

Sample I.D.: MW- E Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L	
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV	

WELL MONITORING DATA SHEET

Project #: 130926-CK1	Client: Stellar Environmental Solutions
Sampler: CK / PC	Date: 9/27/13
Well I.D.: MW-1	Well Diameter: 2 3 4 6 8 (10)
Total Well Depth (TD): —	Depth to Water (DTW): —
Depth to Free Product: 11.60	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; (Other:) NEW TUBING

_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1132	PURGE	FOR	6 MINS	@	200 ml/min	
1138	STOP	PURGE				
~~1~~	PRODUCT	TOO	THICK TO	GET	ACCURATE	DEPTH

Did well dewater? Yes (No) Gallons actually evacuated: 1200 ml

Sampling Date: 9/27/13 Sampling Time: 1145 Depth to Water: —

Sample I.D.: MW-1 Laboratory: Curtis & Tompkins

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: Diss. Chrome & Hex Chrome

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

APPENDIX C

Analytical Laboratory Report and Chain-of-Custody Record


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

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

Laboratory Job Number 249432
ANALYTICAL REPORT

Stellar Environmental Solutions	Project : 2007-65
2198 6th Street	Location : Bay Center Apts
Berkeley, CA 94710	Level : II

Sample ID	Lab ID
MW-3	249432-001
MW-12	249432-002
MW-14	249432-003
MW-15	249432-004
MW-E	249432-005
RW-1	249432-006

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

Signature: _____ Date: 10/10/2013

Will S Rice
Project Manager
will.rice@ctberk.com

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**249432**
Client:	**Stellar Environmental Solutions**
Project:	**2007-65**
Location:	**Bay Center Apts**
Request Date:	**09/27/13**
Samples Received:	**09/27/13**

This data package contains sample and QC results for six water samples, requested for the above referenced project on 09/27/13. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B and EPA 8021B):
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
MW-3 (lab # 249432-001) was diluted due to the dark and viscous nature of the sample extract. No other analytical problems were encountered.

249432

Chain of Custody Record

Lab job no. _____
Date 9/27/13
Page 1 of 1

Laboratory CURTIS & TOMPKINS
Address 2323 FIFTH ST. BERKELEY, CA
Project Owner _____
Site Address 6400 CHRISTIE AVE. BERKELEY, CA
Project Name BAY CENTER APARTMENT
Project Number 2007-65

Method of Shipment HAND DELIVERY or LAB COURIER
Shipment No. _____
Airbill No. _____
Cooler No. _____
Project Manager R. MAKDISI
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature) CAS

	Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	TEH-D (8015M)	TPH-G (8015M)	BTEX & MTBE	Remarks
1	MW-3		9/27/13	1030	W	1L AMB / 4 x VOAs		NONE / HCl	N	5	X	X	X	
2	MW-12			0940	W				N	5	X	X	X	
3	MW-14			0930	W				N	5	X	X	X	
4	MW-15			0955	W				N	5	X	X	X	
5	MW-E			1120	W				N	5	X	X	X	
6	RW-1			1145	W				N	5	X	X	X	

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature	9/27/13	Signature		Signature		Signature	
Printed	Time 1241	Printed	Time	Printed	Time	Printed	Time
Company BTC		Company		Company		Company	

Turnaround Time: STANDARD
Comments: EDF REQUIRED
GLOBAL ID # SLT2005561

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

Cold & iced

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 249432 Date Received 9/27/13 Number of coolers 1
Client STELLAR Project BAY CENTER APARTMENT

Date Opened 9/27/13 By (print) TR (sign) Tina Reiter
Date Logged in ↓ By (print) ↓ (sign) ↓

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

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many _____ Name _____ Date _____
2B. Were custody seals intact upon arrival? _____ YES NO (N/A)
3. Were custody papers dry and intact when received? _____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? _____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) ___ (YES) NO
6. Indicate the packing in cooler: (if other, describe) _____

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

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

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) _____

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

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

8. Were Method 5035 sampling containers present? _____ YES (NO)
   If YES, what time were they transferred to freezer? _____
9. Did all bottles arrive unbroken/unopened? _____ (YES) NO
10. Are there any missing / extra samples? _____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
12. Are sample labels present, in good condition and complete? _____ (YES) NO
13. Do the sample labels agree with custody papers? _____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? _____ (YES) NO
15. Are the samples appropriately preserved? _____ YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? _____ YES NO (N/A)
17. Did you document your preservative check? _____ YES NO (N/A)
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? _____ (YES) NO N/A
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
   If YES, Who was called? _____ By _____ Date: _____

COMMENTS

_____
_____
_____
_____
_____
_____

Rev 10, 11/11

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65		
Matrix:	Water	Sampled:	09/27/13
Units:	ug/L	Received:	09/27/13

Field ID:	MW-3	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	203535
Lab ID:	249432-001	Analyzed:	10/01/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	530 Y	50	EPA 8015B
MTBE	5.6	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	2.4 C	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	100	76-128	EPA 8015B
Bromofluorobenzene (PID)	96	70-136	EPA 8021B

Field ID:	MW-12	Diln Fac:	50.00
Type:	SAMPLE	Batch#:	203590
Lab ID:	249432-002	Analyzed:	10/01/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	9,400	2,500	EPA 8015B
MTBE	520 C	100	EPA 8021B
Benzene	2,400	25	EPA 8021B
Toluene	130 C	25	EPA 8021B
Ethylbenzene	130 C	25	EPA 8021B
m,p-Xylenes	83	25	EPA 8021B
o-Xylene	42 C	25	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	107	76-128	EPA 8015B
Bromofluorobenzene (PID)	111	70-136	EPA 8021B

Field ID:	MW-14	Diln Fac:	41.67
Type:	SAMPLE	Batch#:	203590
Lab ID:	249432-003	Analyzed:	10/01/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	7,200	2,100	EPA 8015B
MTBE	ND	83	EPA 8021B
Benzene	1,900	21	EPA 8021B
Toluene	200	21	EPA 8021B
Ethylbenzene	160	21	EPA 8021B
m,p-Xylenes	150	21	EPA 8021B
o-Xylene	47	21	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	99	76-128	EPA 8015B
Bromofluorobenzene (PID)	100	70-136	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65		
Matrix:	Water	Sampled:	09/27/13
Units:	ug/L	Received:	09/27/13

Field ID:	MW-15	Diln Fac:	100.0
Type:	SAMPLE	Batch#:	203590
Lab ID:	249432-004	Analyzed:	10/01/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	17,000	5,000	EPA 8015B
MTBE	ND	200	EPA 8021B
Benzene	4,100	50	EPA 8021B
Toluene	92	50	EPA 8021B
Ethylbenzene	76 C	50	EPA 8021B
m,p-Xylenes	89	50	EPA 8021B
o-Xylene	55 C	50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	102	76-128	EPA 8015B
Bromofluorobenzene (PID)	105	70-136	EPA 8021B

Field ID:	MW-E	Diln Fac:	100.0
Type:	SAMPLE	Batch#:	203590
Lab ID:	249432-005	Analyzed:	10/01/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	15,000	5,000	EPA 8015B
MTBE	ND	200	EPA 8021B
Benzene	3,800	50	EPA 8021B
Toluene	120	50	EPA 8021B
Ethylbenzene	470	50	EPA 8021B
m,p-Xylenes	290	50	EPA 8021B
o-Xylene	61	50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	107	76-128	EPA 8015B
Bromofluorobenzene (PID)	110	70-136	EPA 8021B

Field ID:	RW-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	203590
Lab ID:	249432-006	Analyzed:	10/01/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	420	50	EPA 8015B
MTBE	8.2 C	2.0	EPA 8021B
Benzene	10	0.50	EPA 8021B
Toluene	6.0 C	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	2.4 C	0.50	EPA 8021B
o-Xylene	3.3 C	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	107	76-128	EPA 8015B
Bromofluorobenzene (PID)	106	70-136	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65		
Matrix:	Water	Sampled:	09/27/13
Units:	ug/L	Received:	09/27/13

Type:	BLANK	Batch#:	203535
Lab ID:	QC709709	Analyzed:	09/30/13
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	110	76-128	EPA 8015B
Bromofluorobenzene (PID)	113	70-136	EPA 8021B

Type:	BLANK	Batch#:	203590
Lab ID:	QC709942	Analyzed:	10/01/13
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	99	76-128	EPA 8015B
Bromofluorobenzene (PID)	101	70-136	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	203535
Units:	ug/L	Analyzed:	09/30/13
Diln Fac:	1.000		

Type: BS Lab ID: QC709706

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	10.52	105	71-134
Benzene	10.00	10.45	104	80-120
Toluene	10.00	9.791	98	80-120
Ethylbenzene	10.00	10.59	106	80-120
m,p-Xylenes	10.00	10.35	104	80-120
o-Xylene	10.00	9.973	100	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	110	70-136

Type: BSD Lab ID: QC709707

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	24.84	124	71-134	17	50
Benzene	20.00	19.88	99	80-120	5	20
Toluene	20.00	19.46	97	80-120	1	20
Ethylbenzene	20.00	19.95	100	80-120	6	20
m,p-Xylenes	20.00	18.85	94	80-120	9	20
o-Xylene	20.00	18.40	92	80-120	8	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	110	70-136

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC709708	Batch#:	203535
Matrix:	Water	Analyzed:	09/30/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	970.9	97	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	89	76-128

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	203535
MSS Lab ID:	249448-001	Sampled:	09/27/13
Matrix:	Water	Received:	09/27/13
Units:	ug/L	Analyzed:	10/01/13
Diln Fac:	1.000		

Type: MS Lab ID: QC709710

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	38.36	2,000	1,721	84	76-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	76-128

Type: MSD Lab ID: QC709711

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,699	83	76-120	1	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	76-128

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	203590
Units:	ug/L	Analyzed:	10/01/13
Diln Fac:	1.000		

Type: BS Lab ID: QC709939

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	10.77	108	71-134
Benzene	10.00	10.27	103	80-120
Toluene	10.00	10.18	102	80-120
Ethylbenzene	10.00	9.986	100	80-120
m,p-Xylenes	10.00	10.38	104	80-120
o-Xylene	10.00	9.682	97	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	95	70-136

Type: BSD Lab ID: QC709940

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	9.956	100	71-134	8	50
Benzene	10.00	10.97	110	80-120	7	20
Toluene	10.00	9.973	100	80-120	2	20
Ethylbenzene	10.00	10.57	106	80-120	6	20
m,p-Xylenes	10.00	10.07	101	80-120	3	20
o-Xylene	10.00	9.633	96	80-120	1	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	106	70-136

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC709941	Batch#:	203590
Matrix:	Water	Analyzed:	10/01/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	918.9	92	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	99	76-128

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	203590
MSS Lab ID:	249498-001	Sampled:	09/30/13
Matrix:	Water	Received:	09/30/13
Units:	ug/L	Analyzed:	10/02/13
Diln Fac:	1.000		

Type: MS Lab ID: QC709943

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	20.72	2,000	1,765	87	76-120

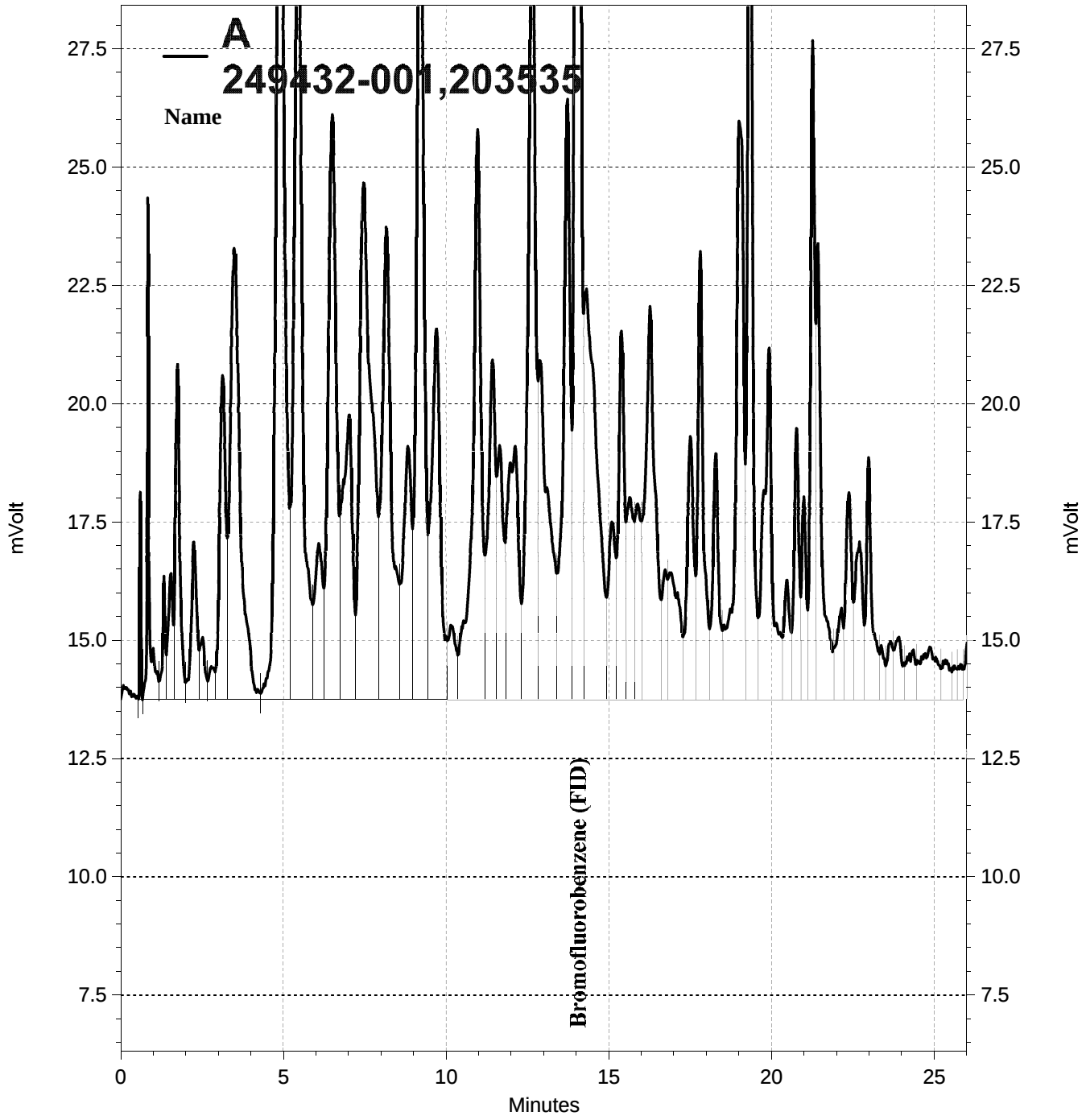
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	87	76-128

Type: MSD Lab ID: QC709944

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,809	89	76-120	2	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	76-128

RPD= Relative Percent Difference



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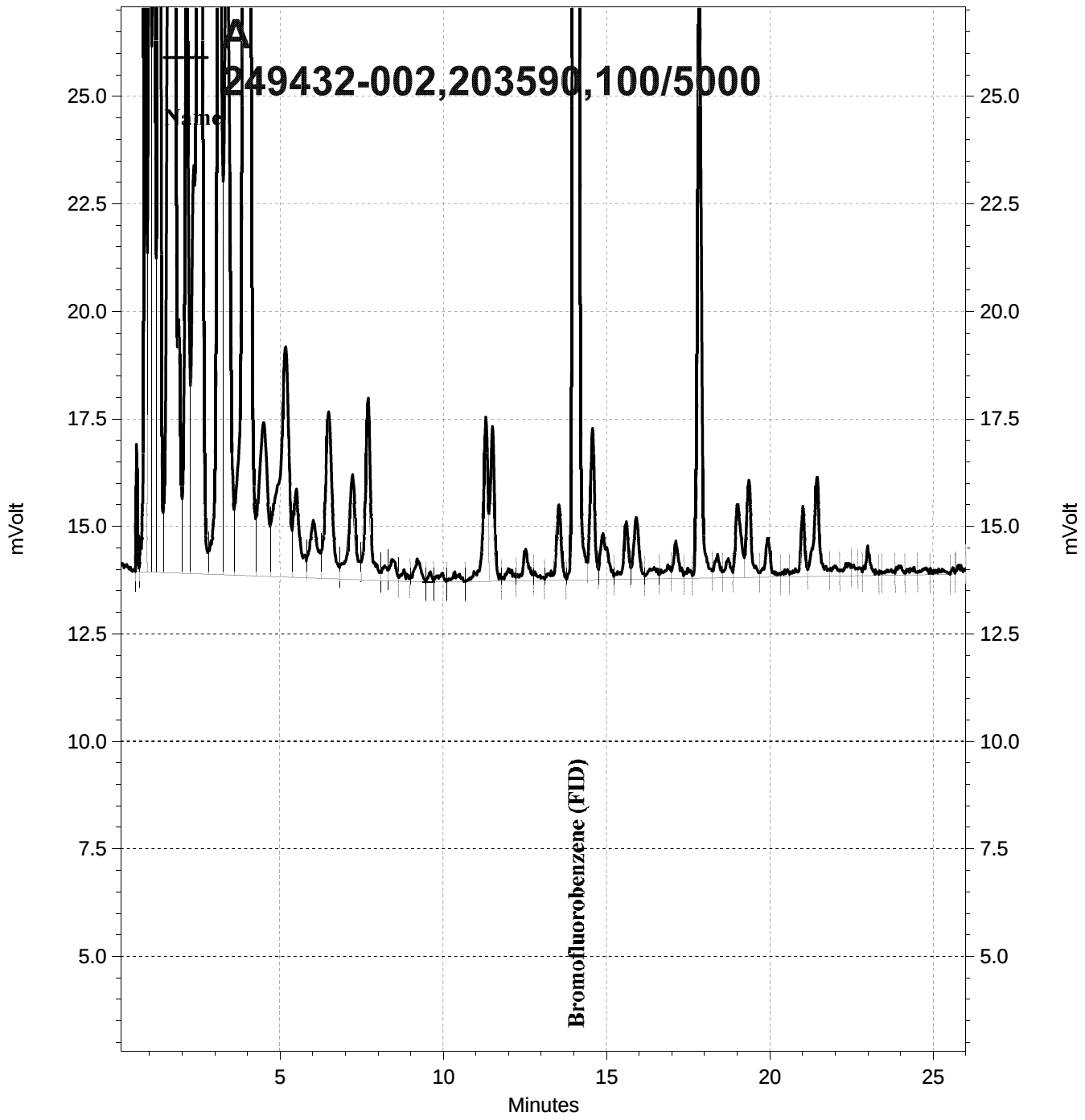

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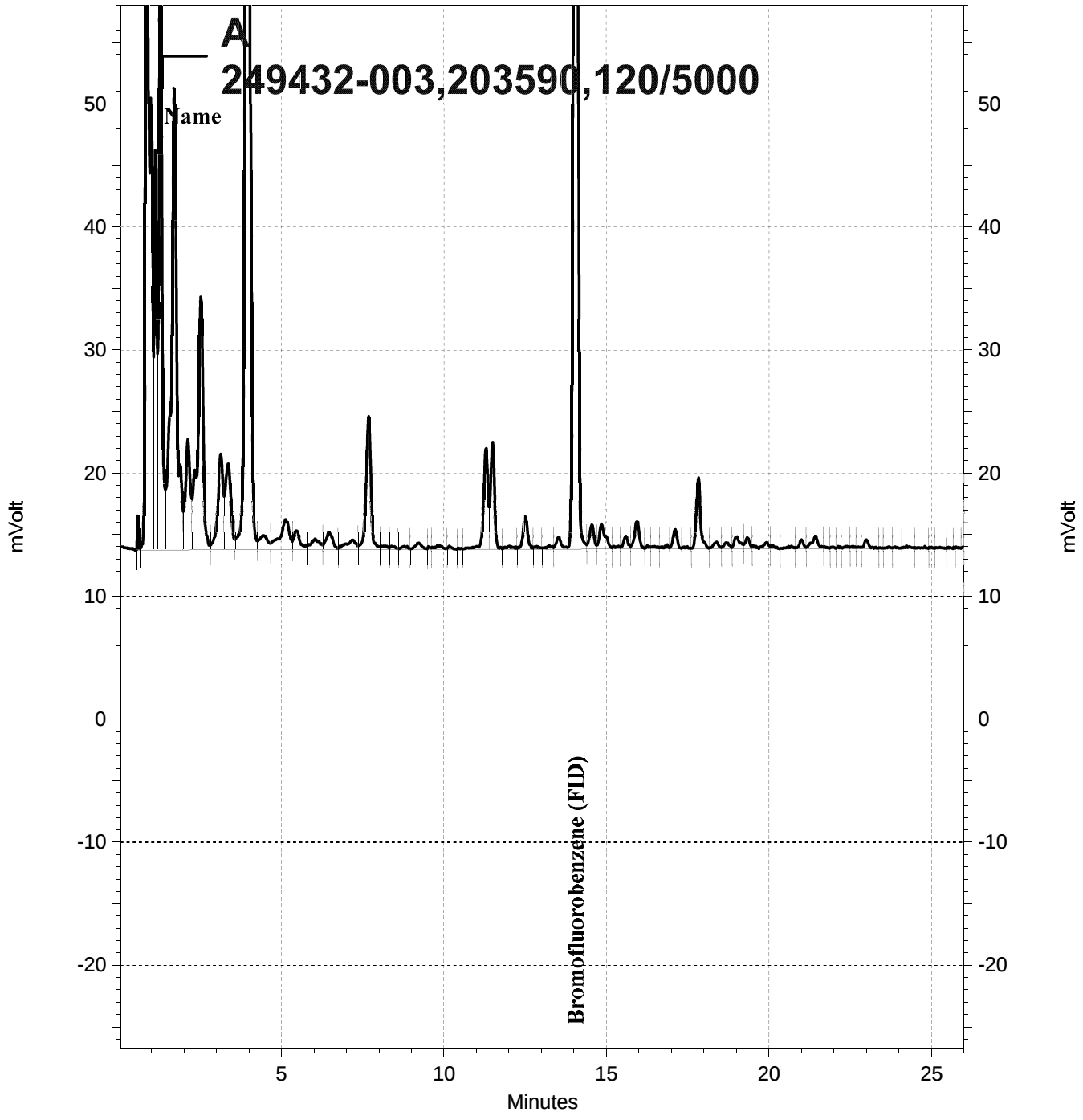

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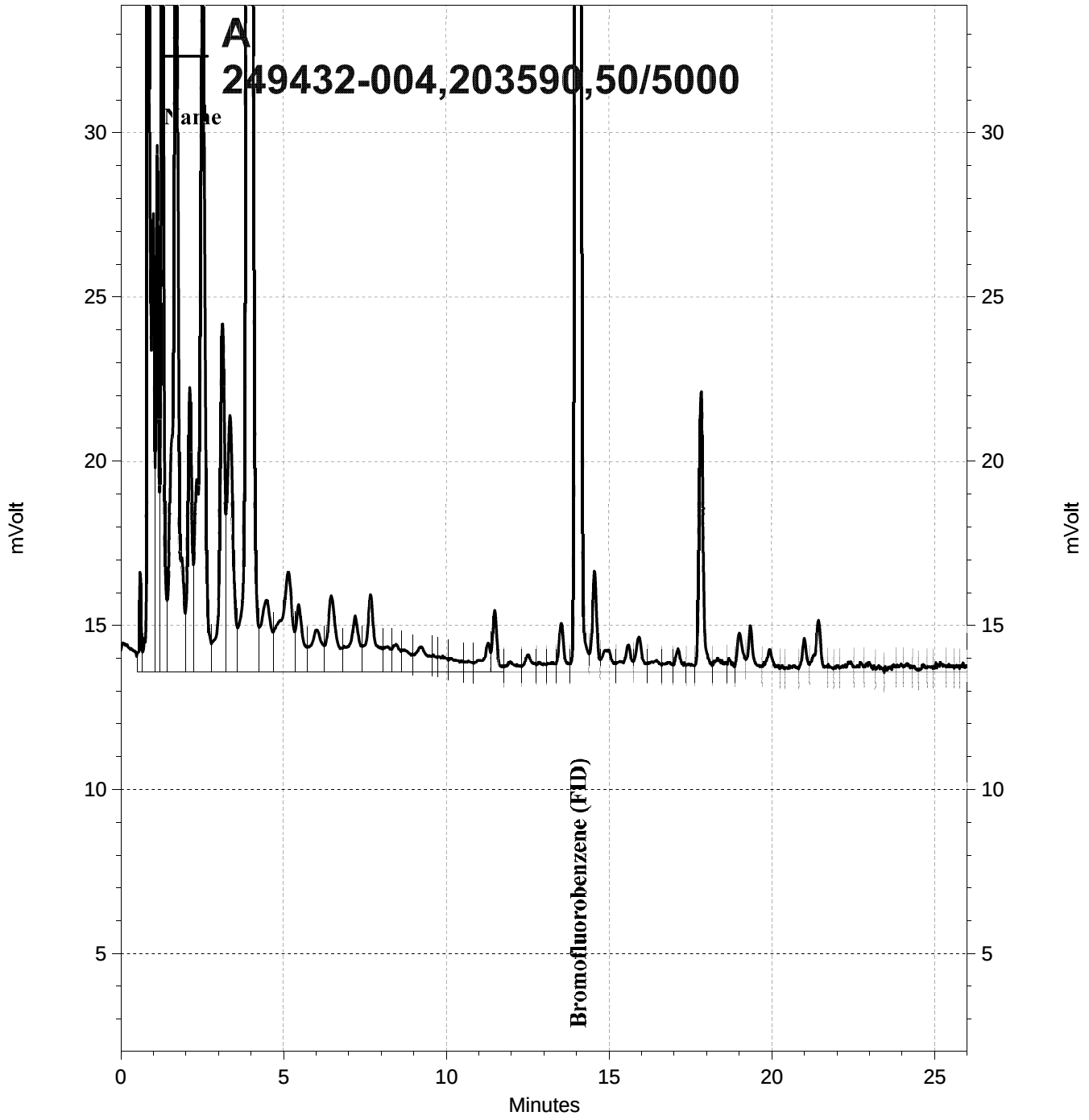

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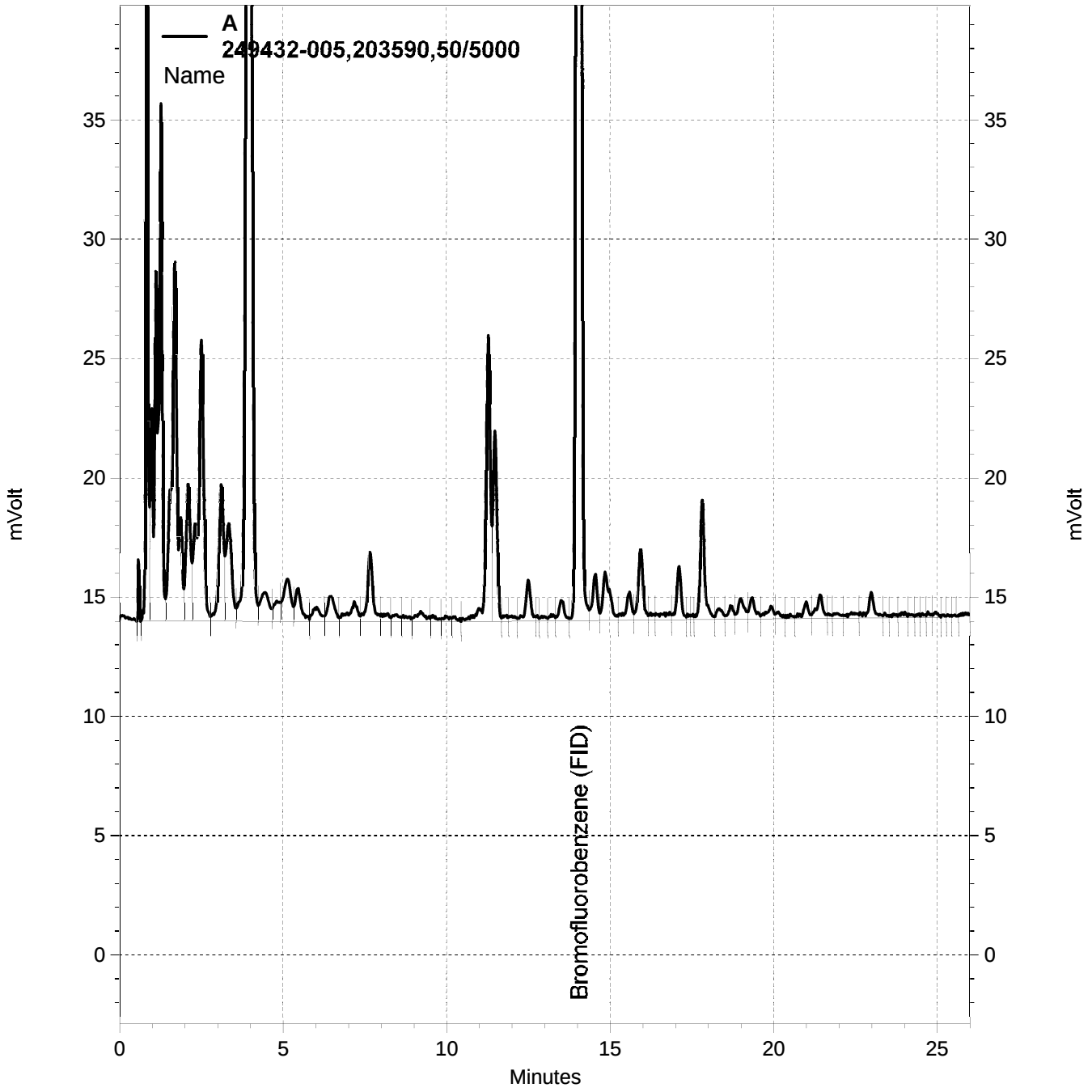

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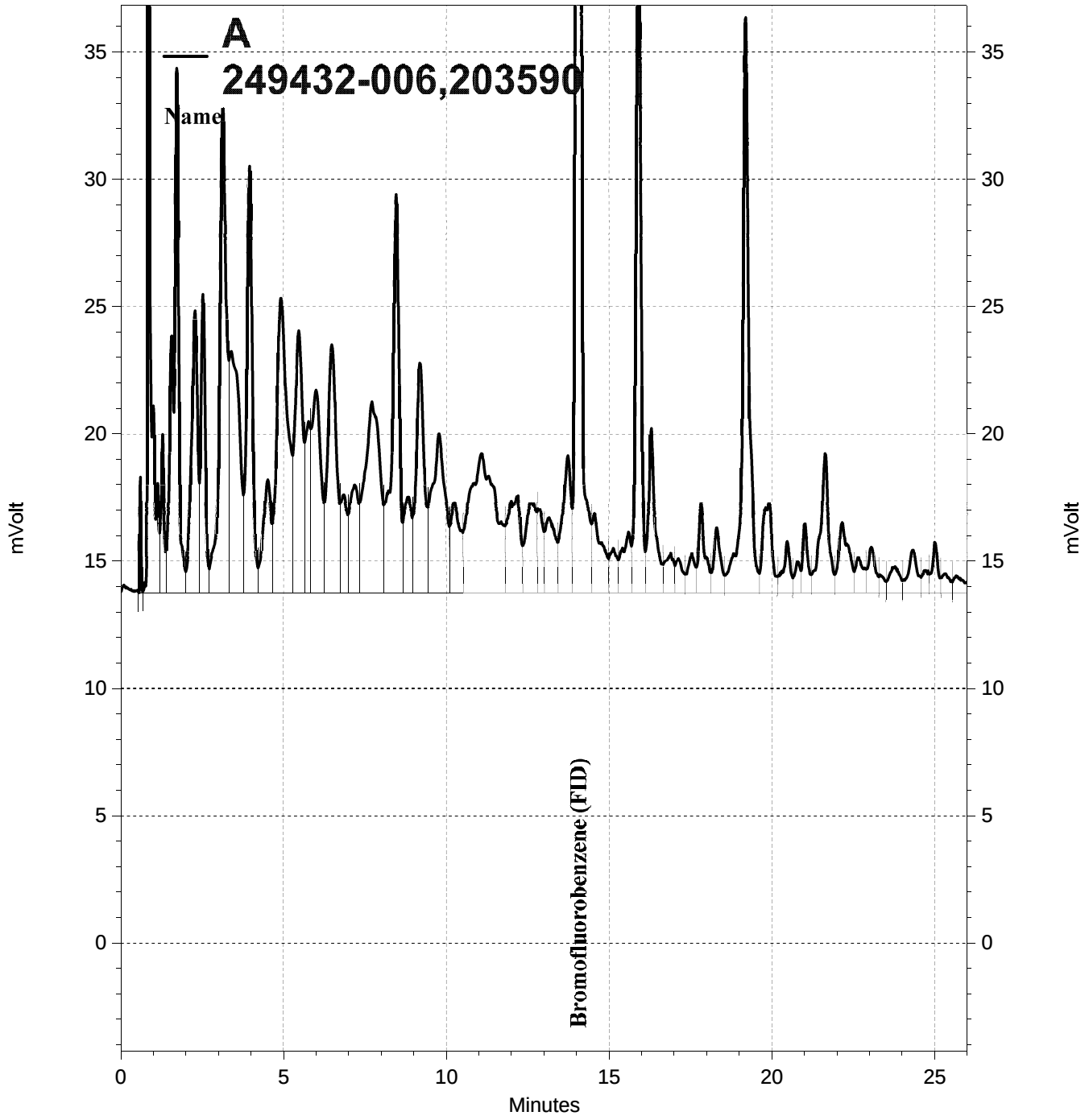

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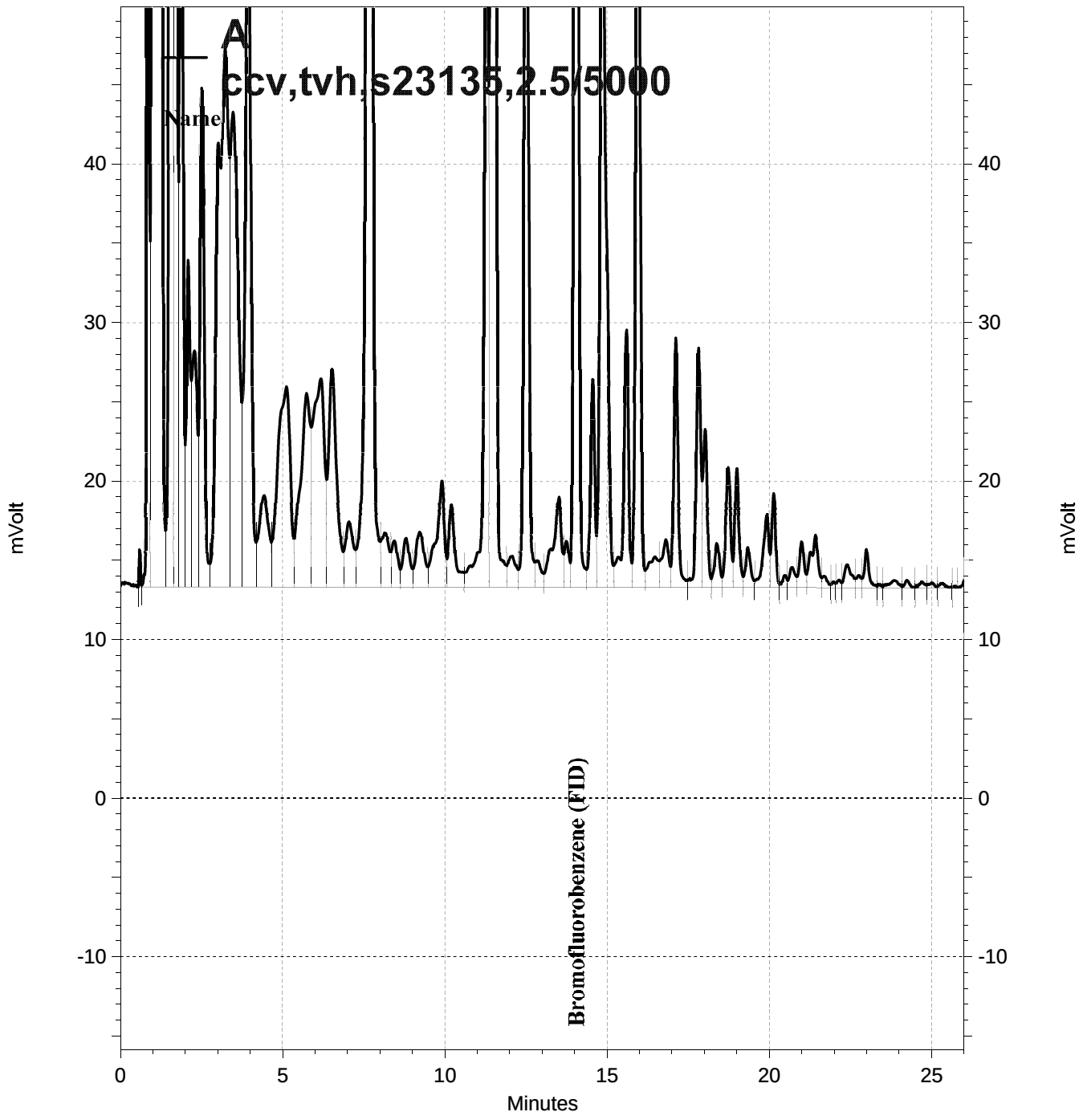

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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	09/27/13
Units:	ug/L	Received:	09/27/13
Batch#:	203583	Prepared:	10/01/13

Field ID: MW-3 Diln Fac: 100.0
Type: SAMPLE Analyzed: 10/03/13
Lab ID: 249432-001

Analyte	Result	RL
Diesel C10-C24	250,000	5,000

Surrogate	%REC	Limits
o-Terphenyl	DO	62-133

Field ID: MW-12 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/03/13
Lab ID: 249432-002

Analyte	Result	RL
Diesel C10-C24	7,800	50

Surrogate	%REC	Limits
o-Terphenyl	94	62-133

Field ID: MW-14 Diln Fac: 5.000
Type: SAMPLE Analyzed: 10/04/13
Lab ID: 249432-003

Analyte	Result	RL
Diesel C10-C24	24,000	250

Surrogate	%REC	Limits
o-Terphenyl	130	62-133

Field ID: MW-15 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/03/13
Lab ID: 249432-004

Analyte	Result	RL
Diesel C10-C24	2,800	50

Surrogate	%REC	Limits
o-Terphenyl	106	62-133

DO= Diluted Out
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	09/27/13
Units:	ug/L	Received:	09/27/13
Batch#:	203583	Prepared:	10/01/13

Field ID: MW-E
Type: SAMPLE
Lab ID: 249432-005
Diln Fac: 1.000
Analyzed: 10/03/13

Analyte	Result	RL
Diesel C10-C24	9,400	50

Surrogate	%REC	Limits
o-Terphenyl	97	62-133

Field ID: RW-1
Type: SAMPLE
Lab ID: 249432-006
Diln Fac: 1.000
Analyzed: 10/03/13

Analyte	Result	RL
Diesel C10-C24	1,500	50

Surrogate	%REC	Limits
o-Terphenyl	103	62-133

Type: BLANK
Lab ID: QC709905
Diln Fac: 1.000
Analyzed: 10/08/13

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	113	62-133

DO= Diluted Out
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	249432	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	203583
Units:	ug/L	Prepared:	10/01/13
Diln Fac:	1.000	Analyzed:	10/03/13

Type: BS Lab ID: QC709906

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,297	92	59-120

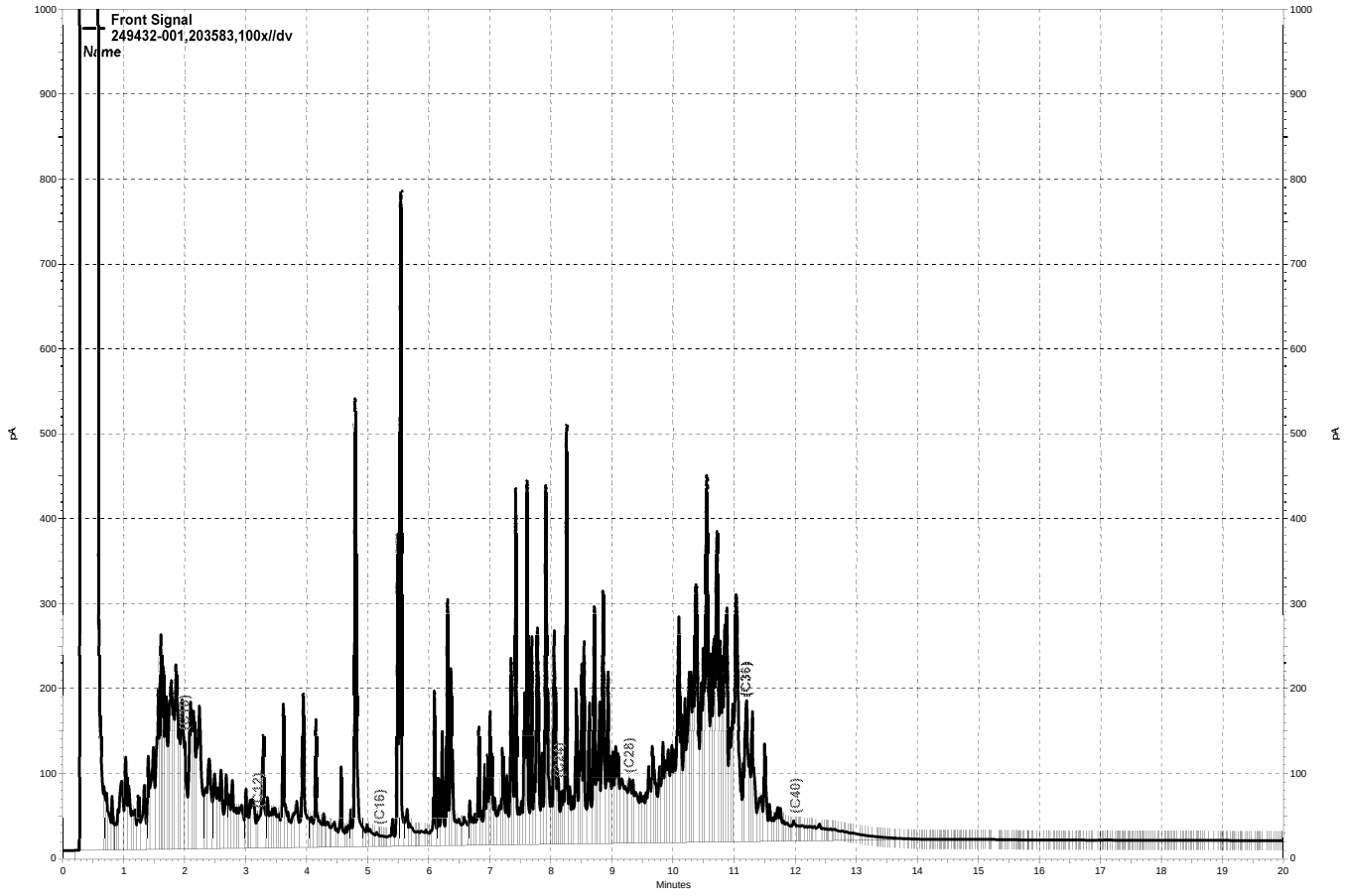
Surrogate	%REC	Limits
o-Terphenyl	101	62-133

Type: BSD Lab ID: QC709907

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,256	90	59-120	2	46

Surrogate	%REC	Limits
o-Terphenyl	100	62-133

RPD= Relative Percent Difference



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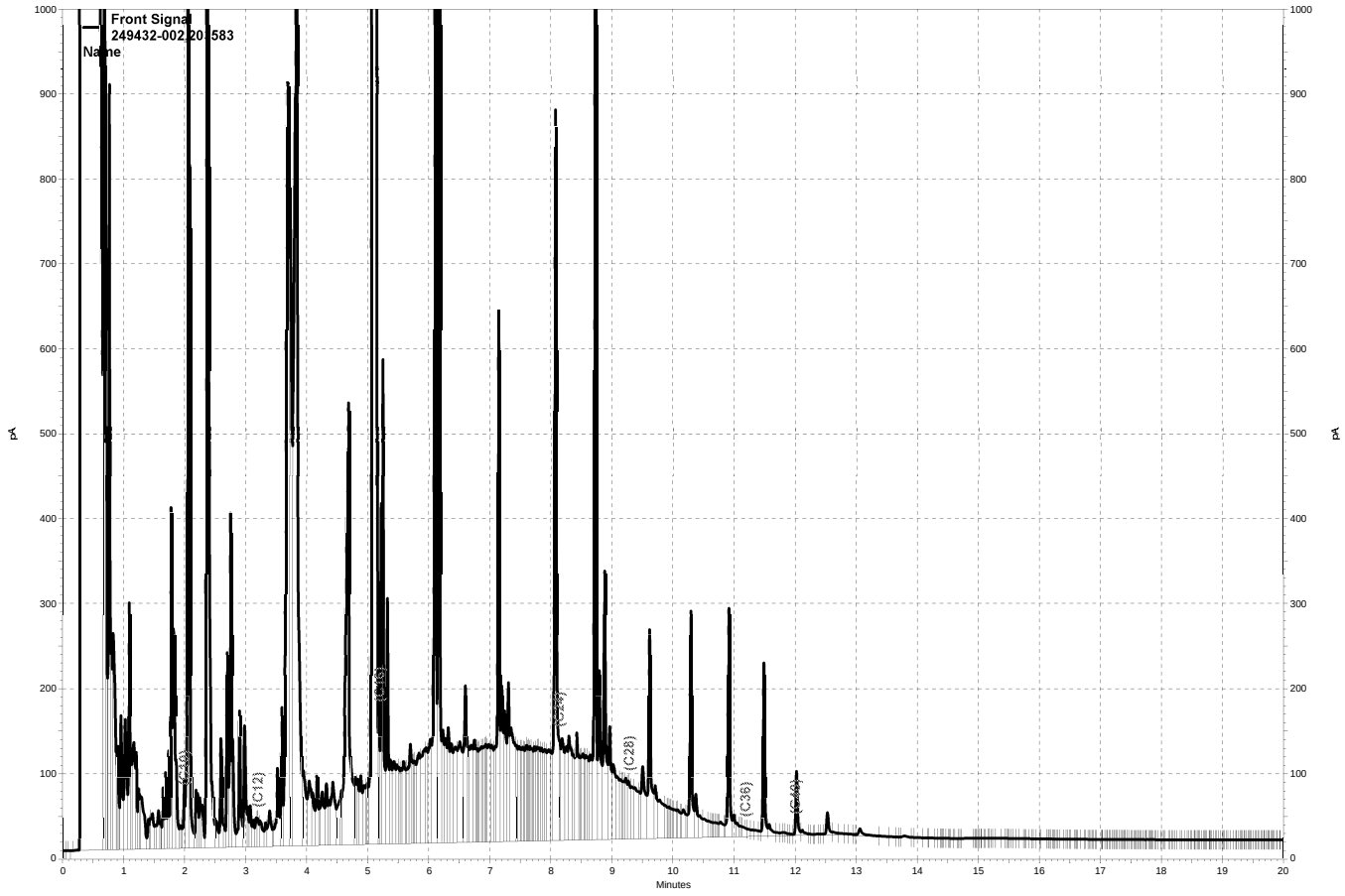

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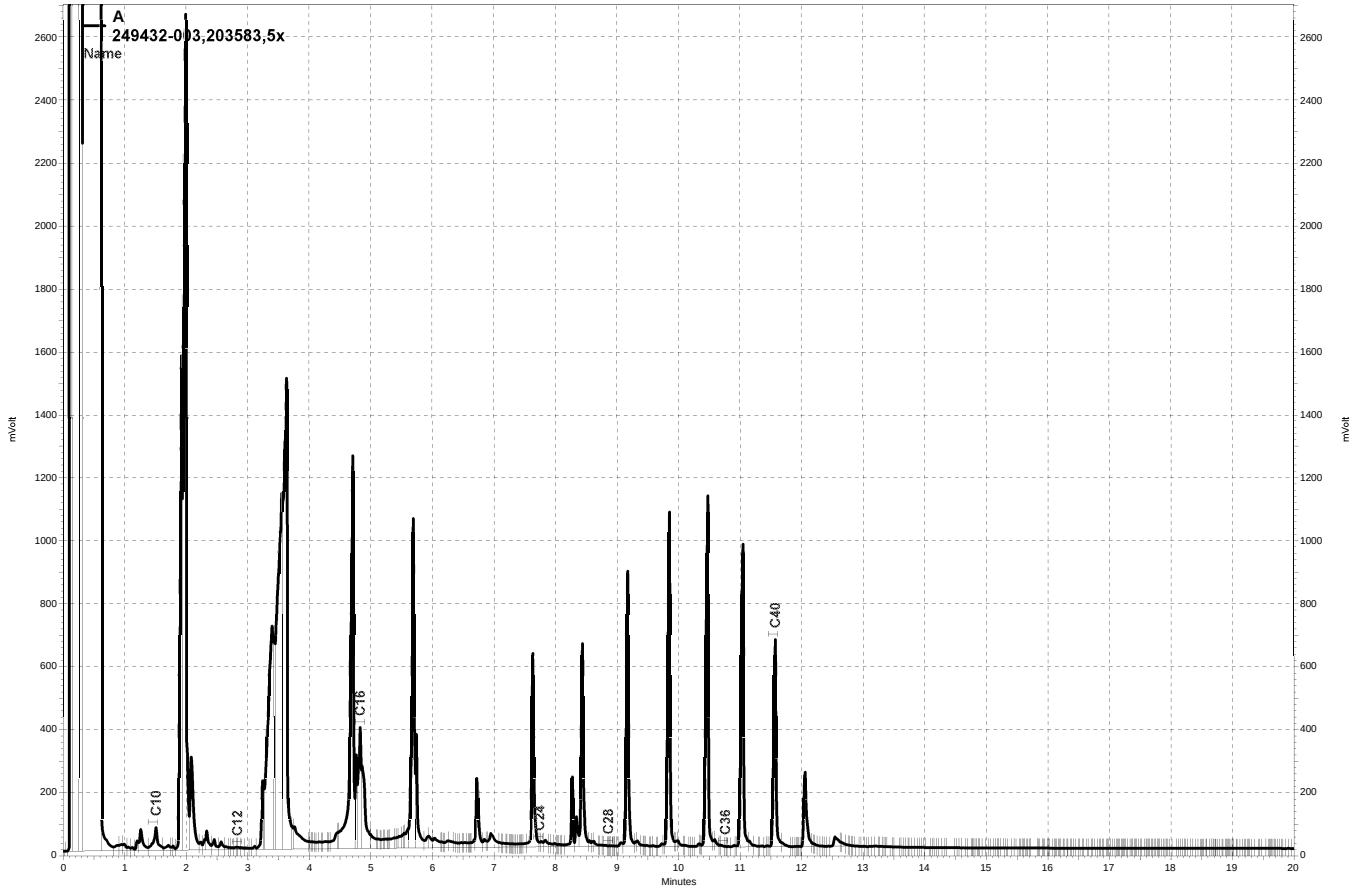

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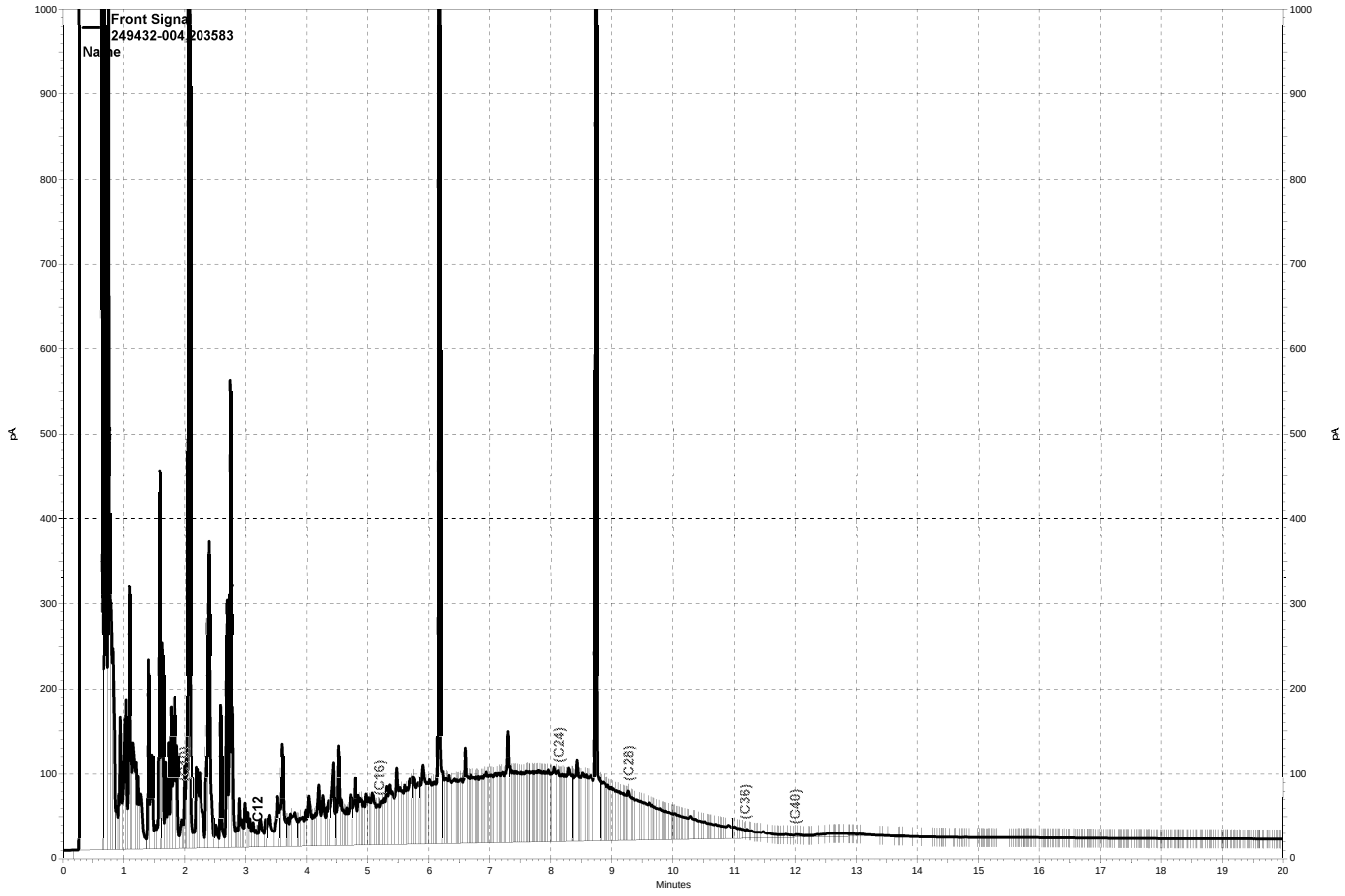

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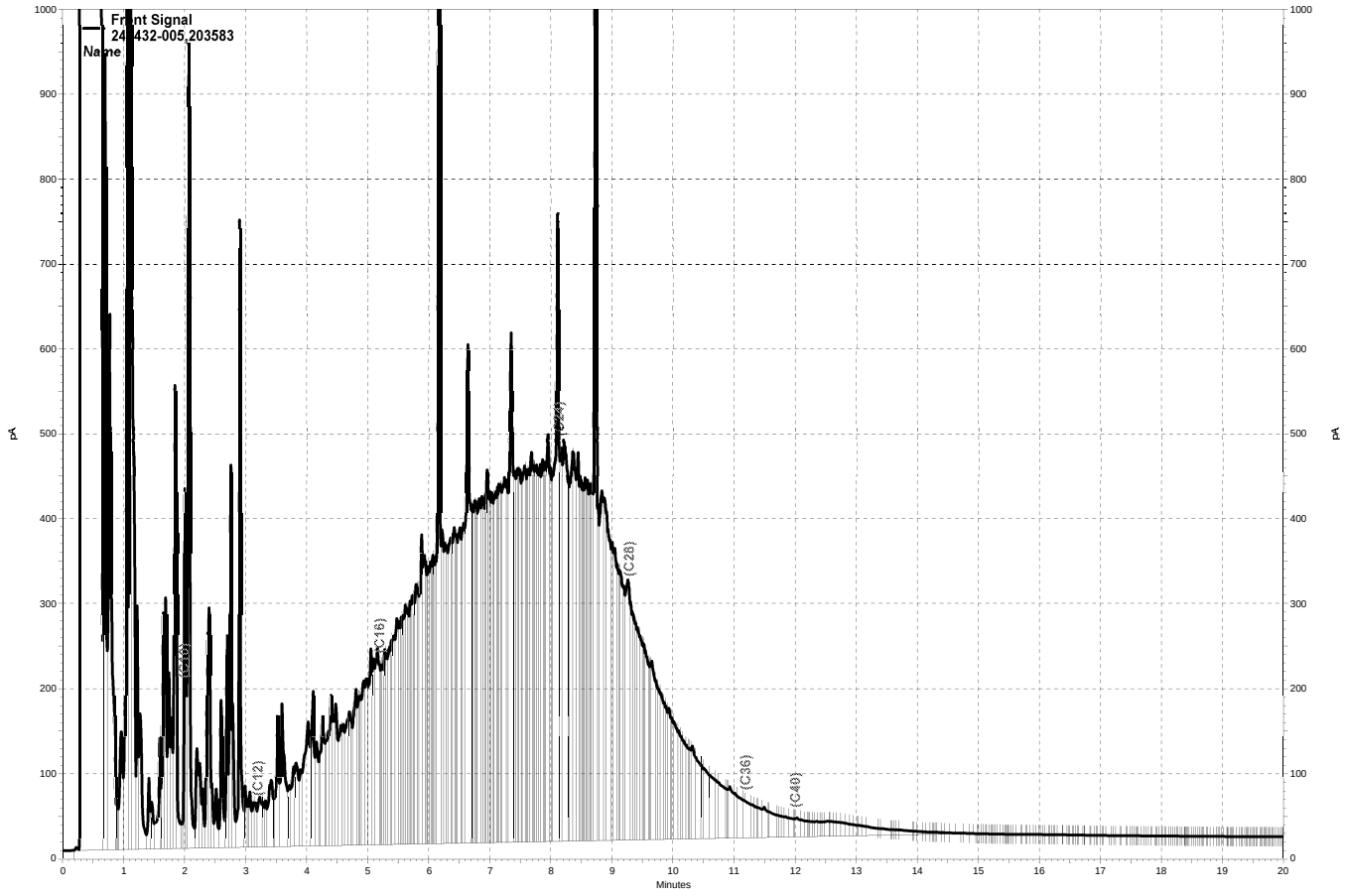

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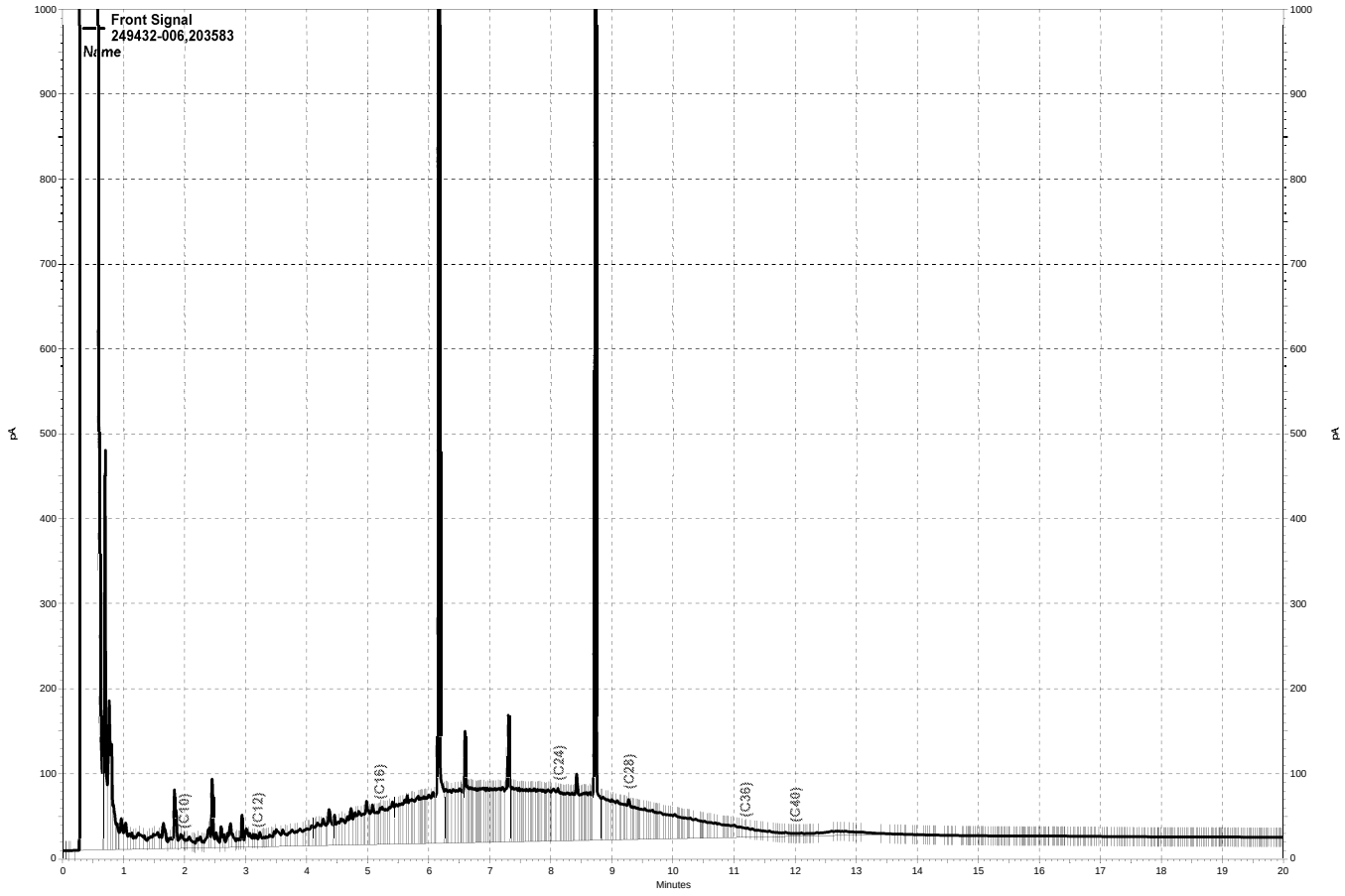

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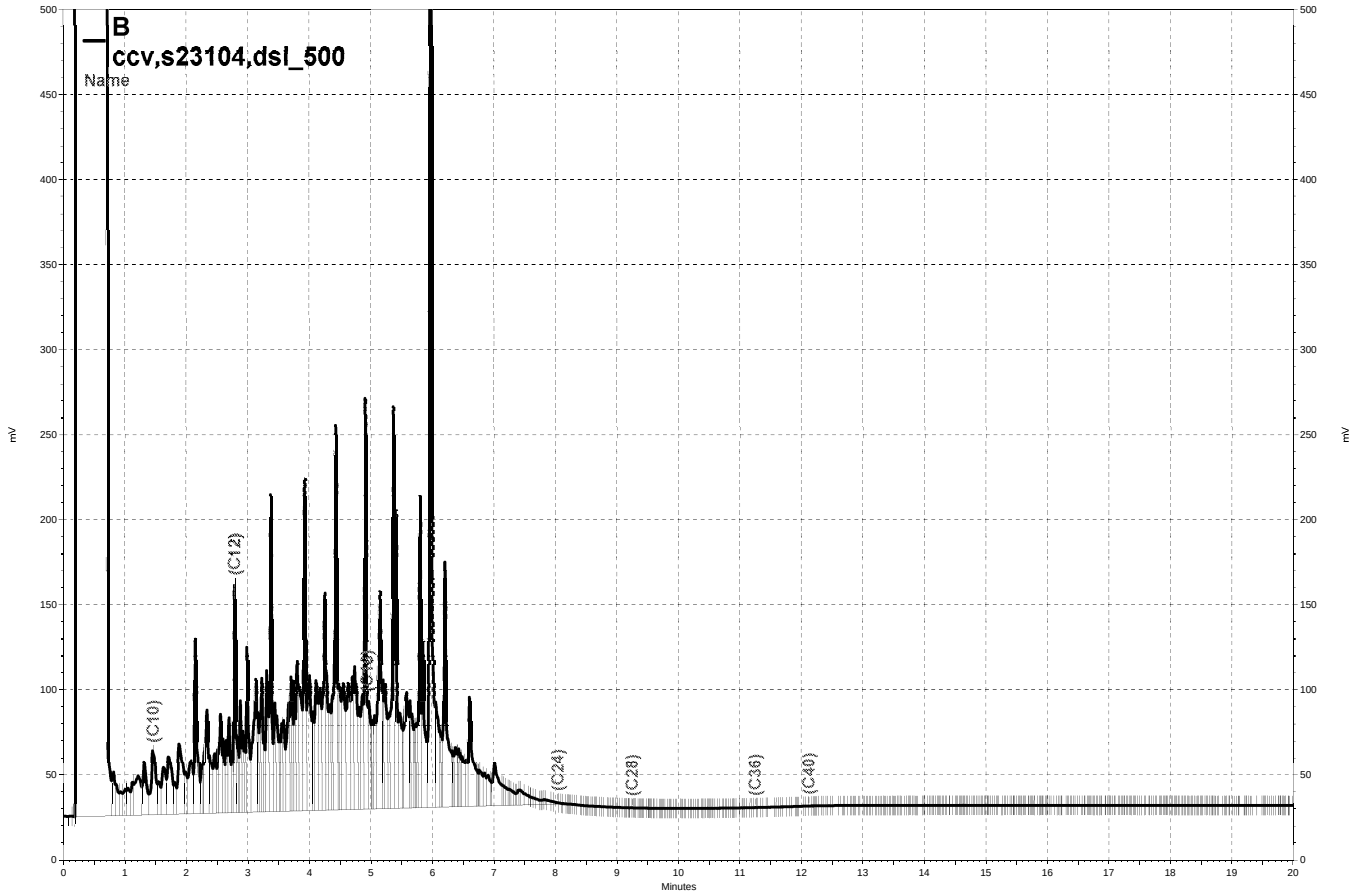

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Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

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

Laboratory Job Number 249392
ANALYTICAL REPORT

Stellar Environmental Solutions	Project : 2007-65
2198 6th Street	Location : Bay Center Apts
Berkeley, CA 94710	Level : II

Sample ID	Lab ID
MW-7	249392-001
MW-8	249392-002
MW-9	249392-003
MW-11	249392-004
MW-16	249392-005
MW-18	249392-006
MW-13	249392-007
MW-10	249392-008
MW-17	249392-009
MW-6	249392-010
MW-5	249392-011
MW-4	249392-012

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

Signature: _____ Date: 10/10/2013

Will S Rice
Project Manager
will.rice@ctberk.com

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**249392**
Client:	**Stellar Environmental Solutions**
Project:	**2007-65**
Location:	**Bay Center Apts**
Request Date:	**09/26/13**
Samples Received:	**09/26/13**

This data package contains sample and QC results for twelve water samples, requested for the above referenced project on 09/26/13. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B and EPA 8021B):
MW-7 (lab # 249392-001), MW-18 (lab # 249392-006), and MW-13 (lab # 249392-007) had pH greater than 2. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Chain of Custody Record

Lab job no. 249392
Date 9/26/13
Page 1 of 1

Laboratory CURTIS & TOMPKINS
Address 2323 FIFTH ST.
BERKELEY, CA

Project Owner
Site Address 6400 CHRISTIE AVE.
BERKELEY, CA
Project Name BAY CENTER APARTMENT
Project Number 2007-65

Method of Shipment HAND DELIVERY or LAB COURIER
Shipment No.
Airbill No.
Cooler No.
Project Manager R. MAKDISI
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature)

	Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	TEH-D (8015M)	TPH-G (8015M)	BTEX & MTBE	Remarks
1	MW-7		9/26/13	0944	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
2	MW-8		9/26/13	1058	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
3	MW-9		9/26/13	1010	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
4	MW-11		9/26/13	1100	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
5	MW-16		9/26/13	1118	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
6	MW-18		9/26/13	1200	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
7	MW-13		9/26/13	1315	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
8	MW-10		9/26/13	1215	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
9	MW-17		9/26/13	1055	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
10	MW-6		9/26/13	1030	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
11	MW-5		9/26/13	1235	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	
12	MW-4		9/26/13	0930	W	1L AGB / 4 VOAs		HCl	N	5	X	X	X	

Relinquished by:	Date	Received by:	Date
Signature	9/26/13	Signature Tracy Bab	9/26
Printed Pete Lorwish	Time 1420	Printed Tracy Babb	Time 1425
Company BTS		Company CET	

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	

Turnaround Time: STANDARD
Comments: EDF REQUIRED
GLOBAL ID # SLT2005561

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

cold direct

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 249392 Date Received 9/26/13 Number of coolers 2
Client STELLAR Project BAY CENTER APARTMENT (2007-65)

Date Opened 9/26/13 By (print) TR (sign) Tina Ranka
Date Logged in ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES (NO)
   Shipping info _____
2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many _____ Name _____ Date _____
2B. Were custody seals intact upon arrival? _____ YES NO (N/A)
3. Were custody papers dry and intact when received? _____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? _____ (YES) (NO) TR
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe) _____

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

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

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) _____

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

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

8. Were Method 5035 sampling containers present? _____ YES (NO)
   If YES, what time were they transferred to freezer? _____
9. Did all bottles arrive unbroken/unopened? _____ (YES) NO
10. Are there any missing / extra samples? _____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
12. Are sample labels present, in good condition and complete? _____ (YES) NO
13. Do the sample labels agree with custody papers? _____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? _____ (YES) NO
15. Are the samples appropriately preserved? _____ YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? _____ YES NO (N/A)
17. Did you document your preservative check? _____ YES NO (N/A)
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? _____ (YES) NO N/A
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
   If YES, Who was called? _____ By _____ Date: _____

COMMENTS
#4) Received 4 containers each for samp # -001, -002, -003, -004, -005, -006 instead of 5.

Rev 10, 11/11

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65		
Matrix:	Water	Sampled:	09/26/13
Units:	ug/L	Received:	09/26/13

Field ID:	MW-7	Diln Fac:	14.29
Type:	SAMPLE	Batch#:	203535
Lab ID:	249392-001	Analyzed:	09/30/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	2,100	710	EPA 8015B
MTBE	ND	29	EPA 8021B
Benzene	540	7.1	EPA 8021B
Toluene	29	7.1	EPA 8021B
Ethylbenzene	17	7.1	EPA 8021B
m,p-Xylenes	74	7.1	EPA 8021B
o-Xylene	15	7.1	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	103	76-128	EPA 8015B
Bromofluorobenzene (PID)	103	70-136	EPA 8021B

Field ID:	MW-8	Lab ID:	249392-002
Type:	SAMPLE		

Analyte	Result	RL	Diln Fac	Batch#	Analyzed	Analysis
Gasoline C7-C12	14,000	5,000	100.0	203535	09/30/13	EPA 8015B
MTBE	440 C	2.0	1.000	203460	09/27/13	EPA 8021B
Benzene	3,800	50	100.0	203535	09/30/13	EPA 8021B
Toluene	140 C	50	100.0	203535	09/30/13	EPA 8021B
Ethylbenzene	35	0.50	1.000	203460	09/27/13	EPA 8021B
m,p-Xylenes	70 C	50	100.0	203535	09/30/13	EPA 8021B
o-Xylene	16	0.50	1.000	203460	09/27/13	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	100	76-128	100.0	203535	09/30/13	EPA 8015B
Bromofluorobenzene (PID)	103	70-136	100.0	203535	09/30/13	EPA 8021B

Field ID:	MW-9	Lab ID:	249392-003
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	130	50	203535	09/30/13	EPA 8015B
MTBE	4.9 C	2.0	203460	09/27/13	EPA 8021B
Benzene	12	0.50	203535	09/30/13	EPA 8021B
Toluene	ND	0.50	203460	09/27/13	EPA 8021B
Ethylbenzene	0.92 C	0.50	203460	09/27/13	EPA 8021B
m,p-Xylenes	ND	0.50	203460	09/27/13	EPA 8021B
o-Xylene	ND	0.50	203460	09/27/13	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	100	76-128	203535	09/30/13	EPA 8015B
Bromofluorobenzene (PID)	101	70-136	203535	09/30/13	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65		
Matrix:	Water	Sampled:	09/26/13
Units:	ug/L	Received:	09/26/13

Field ID:	MW-11	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	203460
Lab ID:	249392-004	Analyzed:	09/27/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	1,900 Y	50	EPA 8015B
MTBE	27	2.0	EPA 8021B
Benzene	60	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	3.6 C	0.50	EPA 8021B
m,p-Xylenes	8.1	0.50	EPA 8021B
o-Xylene	4.9	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	98	76-128	EPA 8015B
Bromofluorobenzene (PID)	106	70-136	EPA 8021B

Field ID:	MW-16	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	203460
Lab ID:	249392-005	Analyzed:	09/27/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	66 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	13	0.50	EPA 8021B
Toluene	1.7	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	0.76	0.50	EPA 8021B
o-Xylene	0.62	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	100	76-128	EPA 8015B
Bromofluorobenzene (PID)	106	70-136	EPA 8021B

Field ID:	MW-18	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	203460
Lab ID:	249392-006	Analyzed:	09/27/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	0.52 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	97	76-128	EPA 8015B
Bromofluorobenzene (PID)	105	70-136	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65		
Matrix:	Water	Sampled:	09/26/13
Units:	ug/L	Received:	09/26/13

Field ID:	MW-13	Diln Fac:	100.0
Type:	SAMPLE	Batch#:	203535
Lab ID:	249392-007	Analyzed:	09/30/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	19,000	5,000	EPA 8015B
MTBE	ND	200	EPA 8021B
Benzene	3,400	50	EPA 8021B
Toluene	180	50	EPA 8021B
Ethylbenzene	760	50	EPA 8021B
m,p-Xylenes	440	50	EPA 8021B
o-Xylene	75	50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	102	76-128	EPA 8015B
Bromofluorobenzene (PID)	105	70-136	EPA 8021B

Field ID:	MW-10	Diln Fac:	20.83
Type:	SAMPLE	Batch#:	203535
Lab ID:	249392-008	Analyzed:	09/30/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	4,600	1,000	EPA 8015B
MTBE	ND	42	EPA 8021B
Benzene	900	10	EPA 8021B
Toluene	87 C	10	EPA 8021B
Ethylbenzene	29	10	EPA 8021B
m,p-Xylenes	45	10	EPA 8021B
o-Xylene	11	10	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	98	76-128	EPA 8015B
Bromofluorobenzene (PID)	101	70-136	EPA 8021B

Field ID:	MW-17	Diln Fac:	33.33
Type:	SAMPLE	Batch#:	203535
Lab ID:	249392-009	Analyzed:	09/30/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	8,000	1,700	EPA 8015B
MTBE	ND	67	EPA 8021B
Benzene	1,400	17	EPA 8021B
Toluene	150	17	EPA 8021B
Ethylbenzene	220	17	EPA 8021B
m,p-Xylenes	83	17	EPA 8021B
o-Xylene	39 C	17	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	102	76-128	EPA 8015B
Bromofluorobenzene (PID)	104	70-136	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65		
Matrix:	Water	Sampled:	09/26/13
Units:	ug/L	Received:	09/26/13

Field ID:	MW-6	Lab ID:	249392-010
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	ND	50	203460	09/27/13	EPA 8015B
MTBE	ND	2.0	203460	09/27/13	EPA 8021B
Benzene	1.7 C	0.50	203535	09/30/13	EPA 8021B
Toluene	ND	0.50	203460	09/27/13	EPA 8021B
Ethylbenzene	ND	0.50	203460	09/27/13	EPA 8021B
m,p-Xylenes	ND	0.50	203460	09/27/13	EPA 8021B
o-Xylene	ND	0.50	203460	09/27/13	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	109	76-128	203460	09/27/13	EPA 8015B
Bromofluorobenzene (PID)	107	70-136	203535	09/30/13	EPA 8021B

Field ID:	MW-5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	203460
Lab ID:	249392-011	Analyzed:	09/28/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	2.5 C	2.0	EPA 8021B
Benzene	0.65	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	96	76-128	EPA 8015B
Bromofluorobenzene (PID)	102	70-136	EPA 8021B

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	203460
Lab ID:	249392-012	Analyzed:	09/28/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	100	76-128	EPA 8015B
Bromofluorobenzene (PID)	104	70-136	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65		
Matrix:	Water	Sampled:	09/26/13
Units:	ug/L	Received:	09/26/13

Type: BLANK
Lab ID: QC709407
Diln Fac: 1.000

Batch#: 203460
Analyzed: 09/27/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	92	76-128	EPA 8015B
Bromofluorobenzene (PID)	99	70-136	EPA 8021B

Type: BLANK
Lab ID: QC709709
Diln Fac: 1.000

Batch#: 203535
Analyzed: 09/30/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	110	76-128	EPA 8015B
Bromofluorobenzene (PID)	113	70-136	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC709406	Batch#:	203460
Matrix:	Water	Analyzed:	09/27/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	853.4	85	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	83	76-128

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	203460
MSS Lab ID:	249380-005	Sampled:	09/25/13
Matrix:	Water	Received:	09/26/13
Units:	ug/L	Analyzed:	09/28/13
Diln Fac:	1.000		

Type: MS Lab ID: QC709408

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	217.3	2,000	1,924	85	76-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	111	76-128

Type: MSD Lab ID: QC709409

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,921	85	76-120	0	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	76-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	203460
Units:	ug/L	Analyzed:	09/27/13
Diln Fac:	1.000		

Type: BS Lab ID: QC709410

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	10.43	104	71-134
Benzene	10.00	9.746	97	80-120
Toluene	10.00	9.273	93	80-120
Ethylbenzene	10.00	10.05	101	80-120
m,p-Xylenes	10.00	9.638	96	80-120
o-Xylene	10.00	9.153	92	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	92	70-136

Type: BSD Lab ID: QC709411

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	11.03	110	71-134	6	50
Benzene	10.00	10.22	102	80-120	5	20
Toluene	10.00	9.635	96	80-120	4	20
Ethylbenzene	10.00	9.955	100	80-120	1	20
m,p-Xylenes	10.00	10.27	103	80-120	6	20
o-Xylene	10.00	9.410	94	80-120	3	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	105	70-136

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	203535
Units:	ug/L	Analyzed:	09/30/13
Diln Fac:	1.000		

Type: BS Lab ID: QC709706

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	10.52	105	71-134
Benzene	10.00	10.45	104	80-120
Toluene	10.00	9.791	98	80-120
Ethylbenzene	10.00	10.59	106	80-120
m,p-Xylenes	10.00	10.35	104	80-120
o-Xylene	10.00	9.973	100	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	110	70-136

Type: BSD Lab ID: QC709707

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	24.84	124	71-134	17	50
Benzene	20.00	19.88	99	80-120	5	20
Toluene	20.00	19.46	97	80-120	1	20
Ethylbenzene	20.00	19.95	100	80-120	6	20
m,p-Xylenes	20.00	18.85	94	80-120	9	20
o-Xylene	20.00	18.40	92	80-120	8	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	110	70-136

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC709708	Batch#:	203535
Matrix:	Water	Analyzed:	09/30/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	970.9	97	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	89	76-128

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2007-65	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	203535
MSS Lab ID:	249448-001	Sampled:	09/27/13
Matrix:	Water	Received:	09/27/13
Units:	ug/L	Analyzed:	10/01/13
Diln Fac:	1.000		

Type: MS Lab ID: QC709710

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	38.36	2,000	1,721	84	76-120

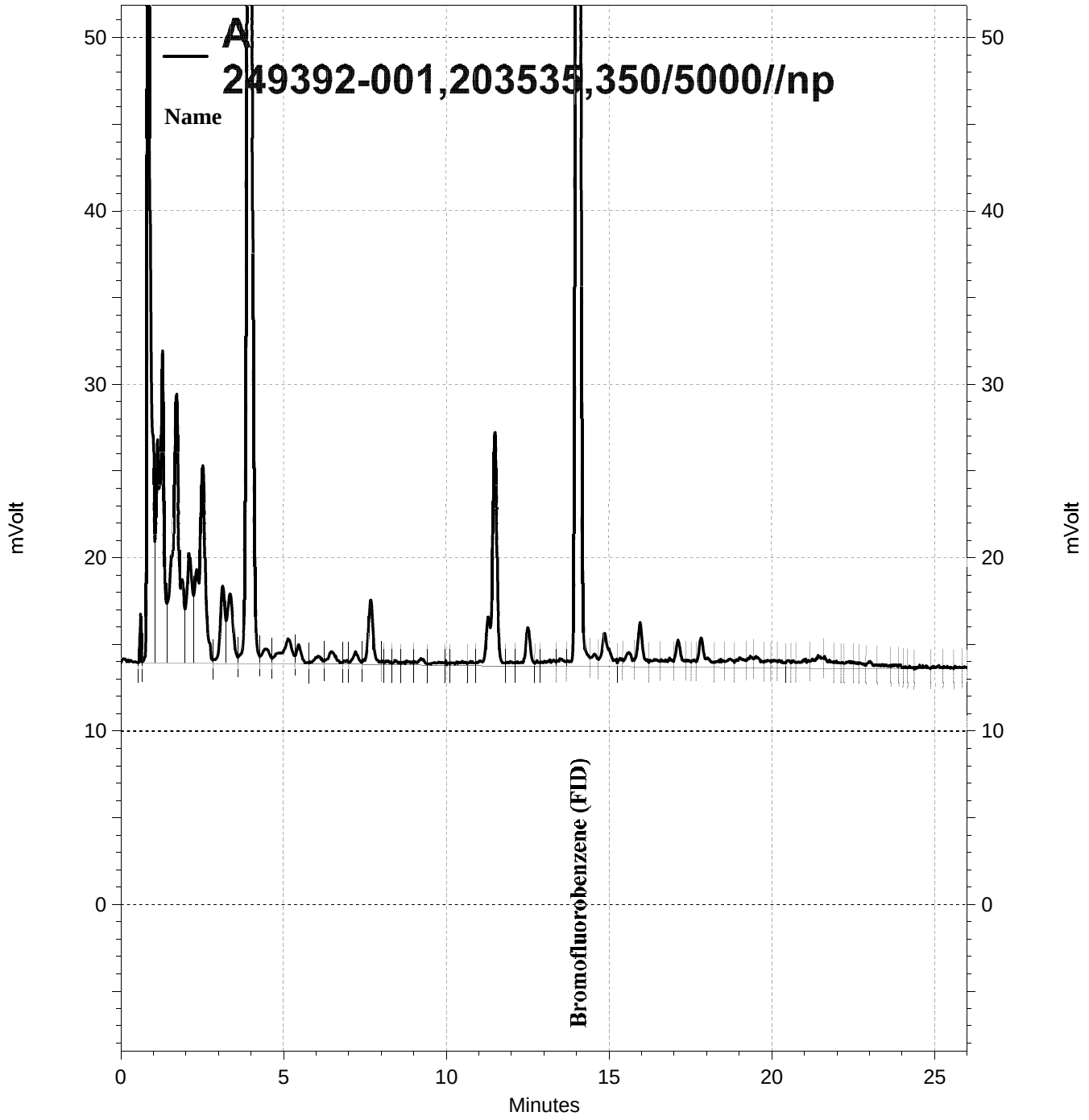
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	76-128

Type: MSD Lab ID: QC709711

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,699	83	76-120	1	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	76-128

RPD= Relative Percent Difference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mVolt
mVolt
Minutes
Bromofluorobenzene (FID)
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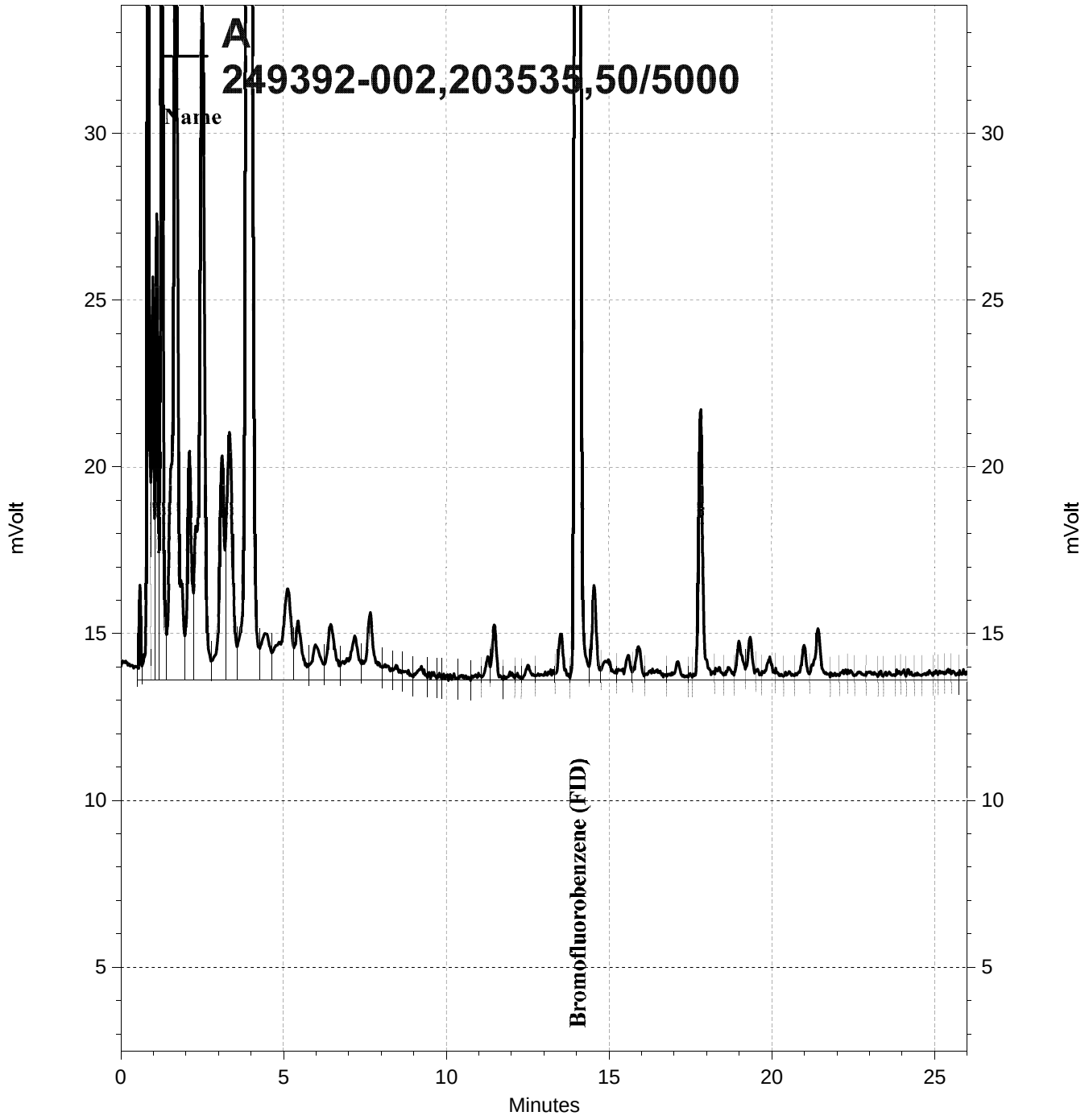
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mVolt
mVolt
Bromofluorobenzene (FID)
Minutes
0
5
10
15
20
25
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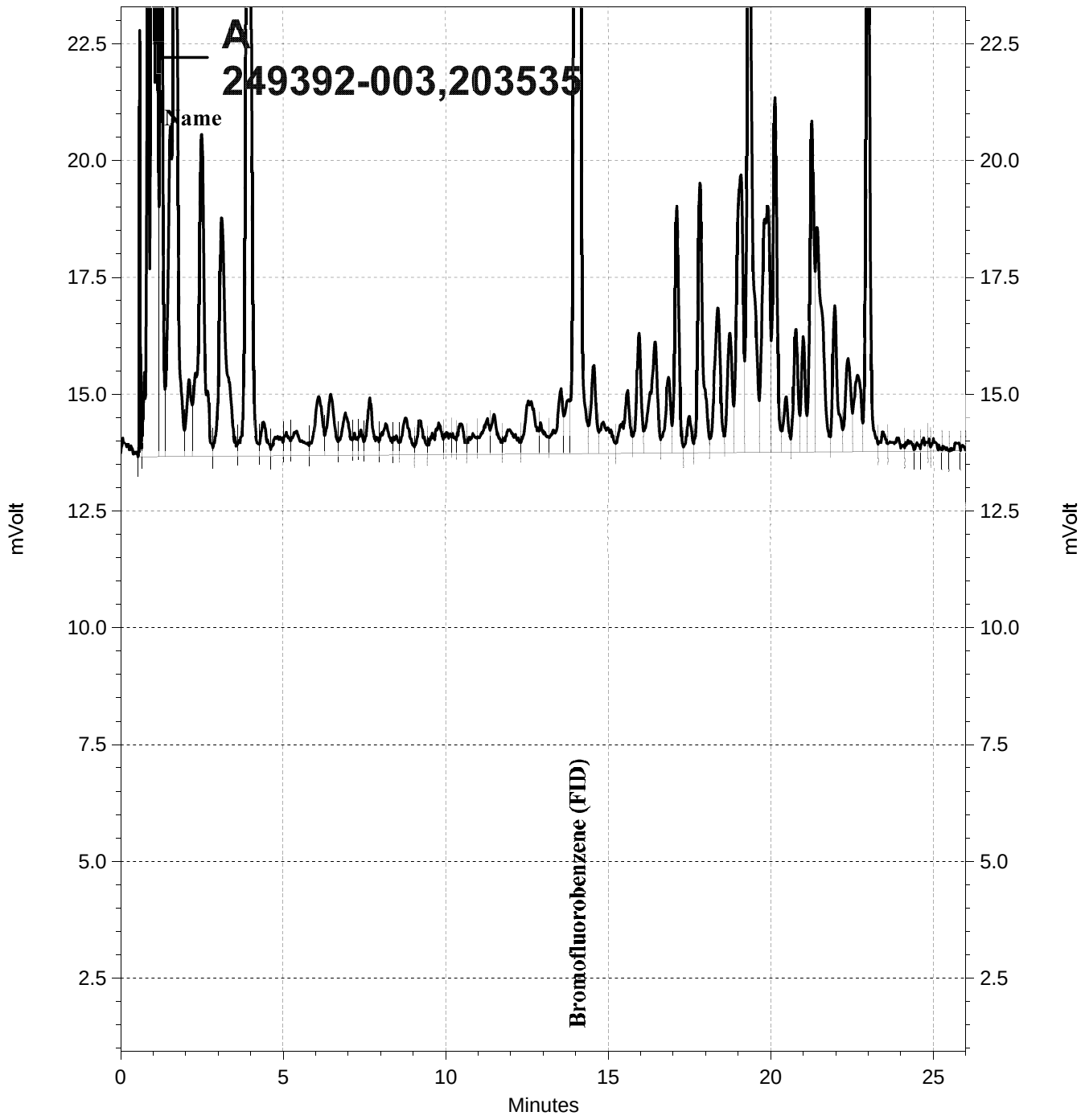
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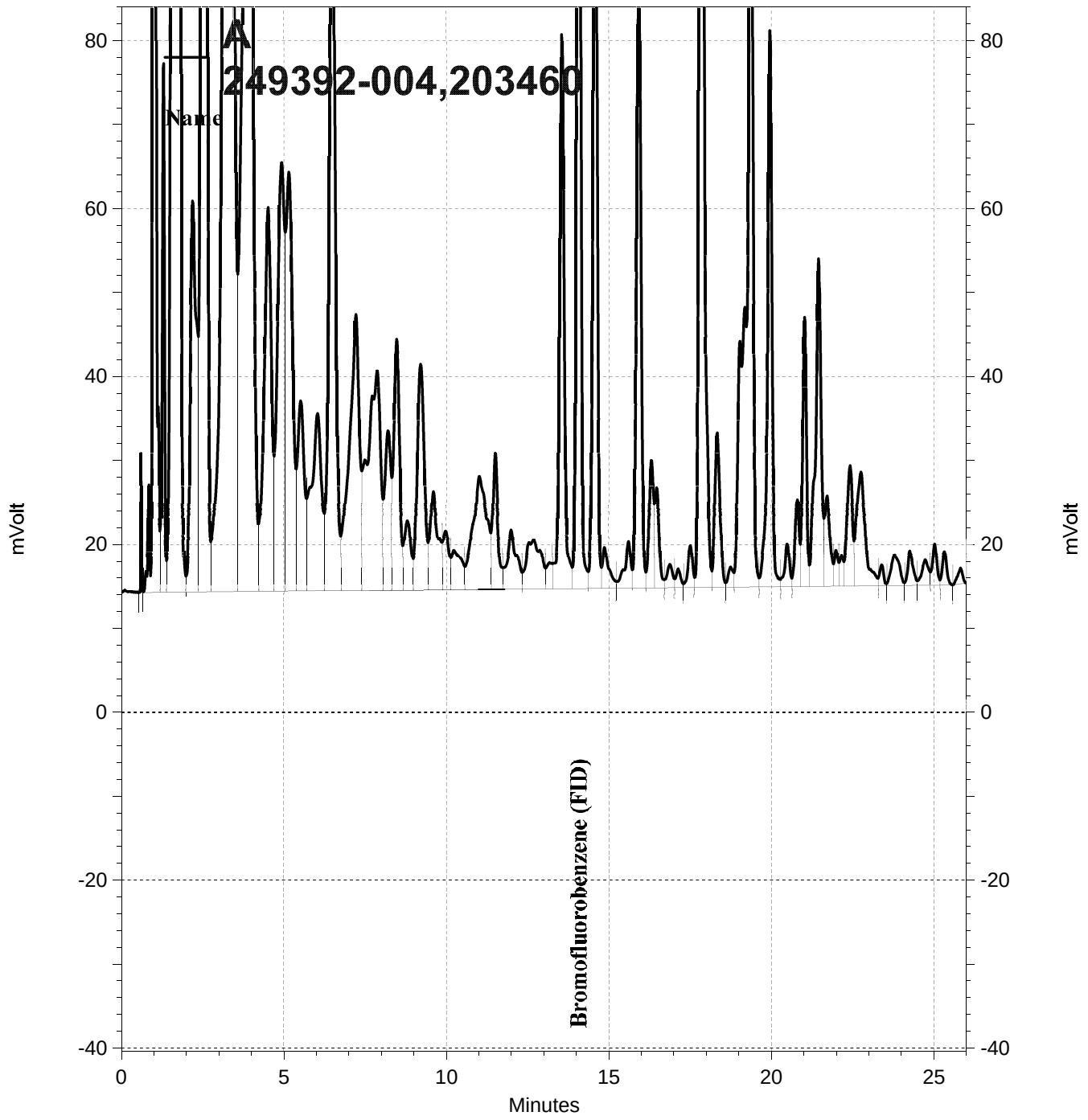
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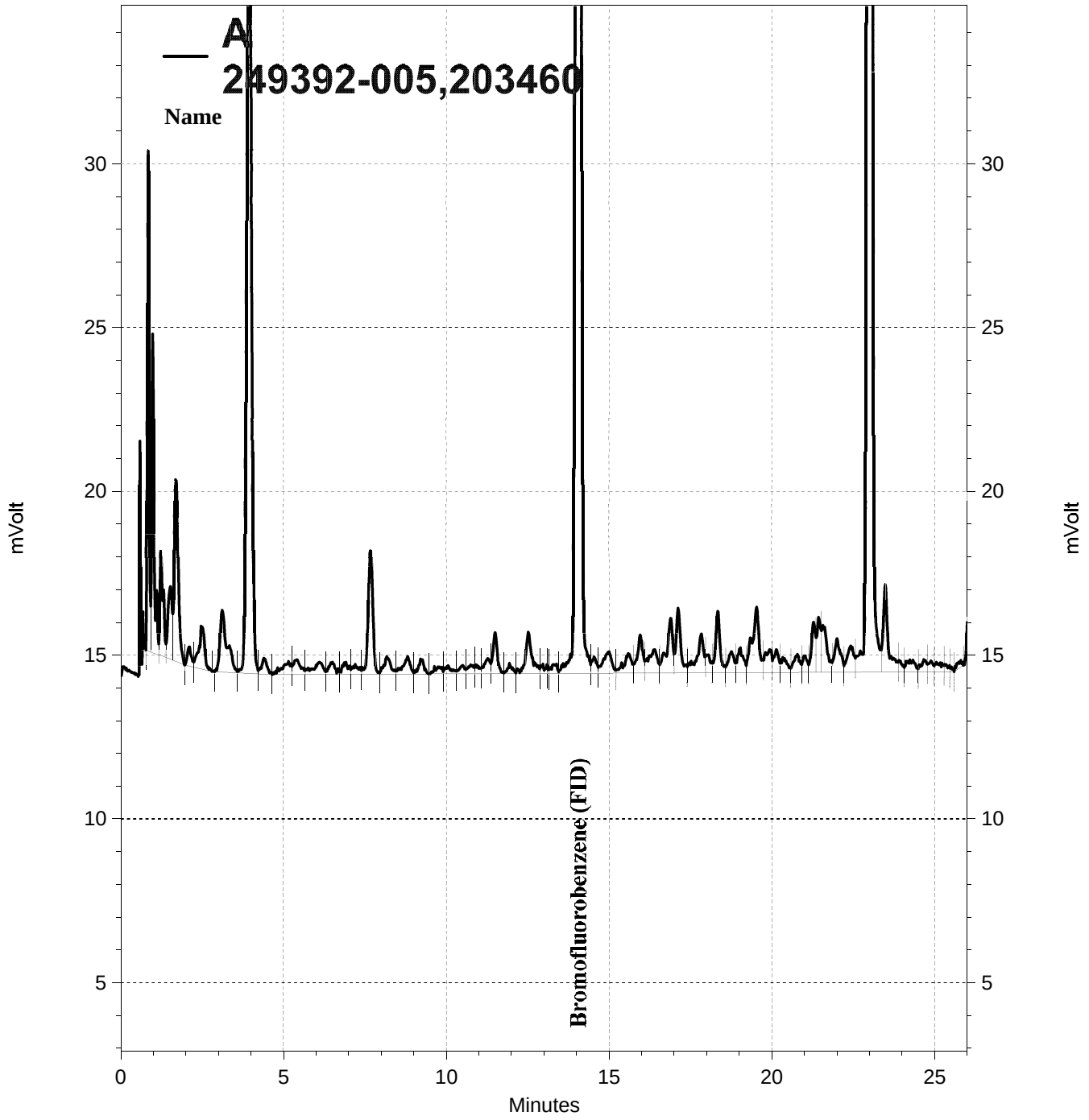

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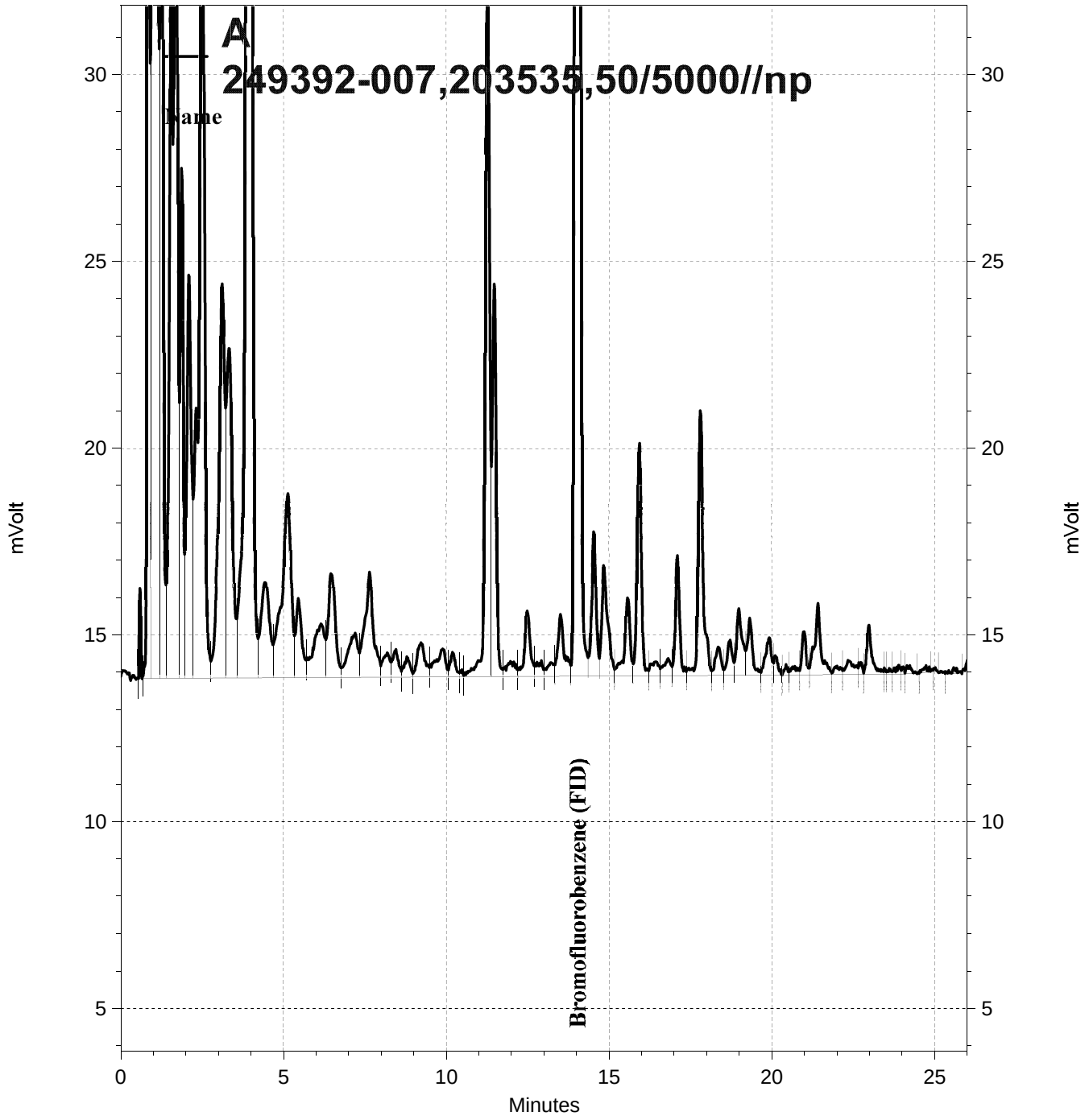
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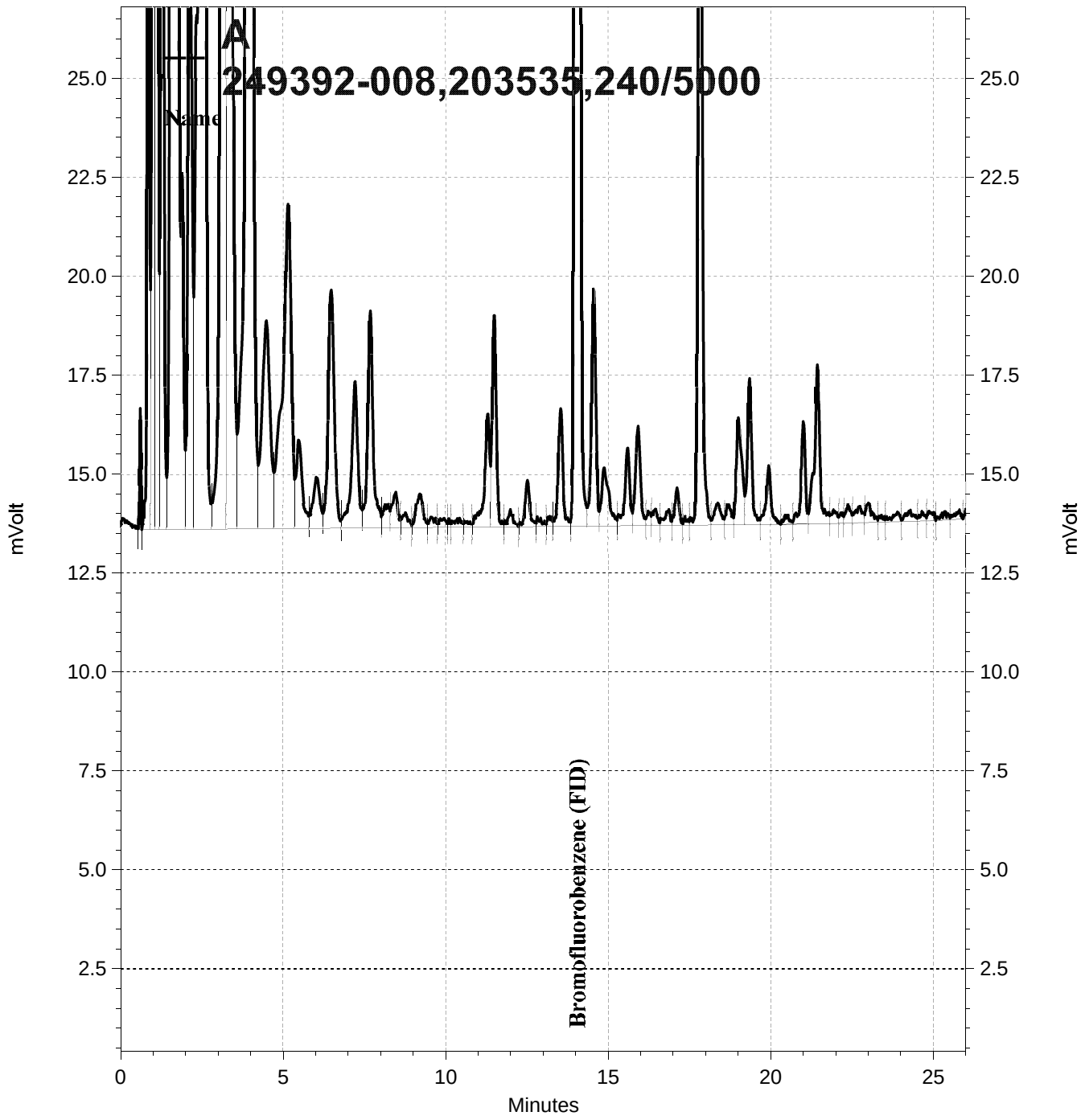
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Minutes
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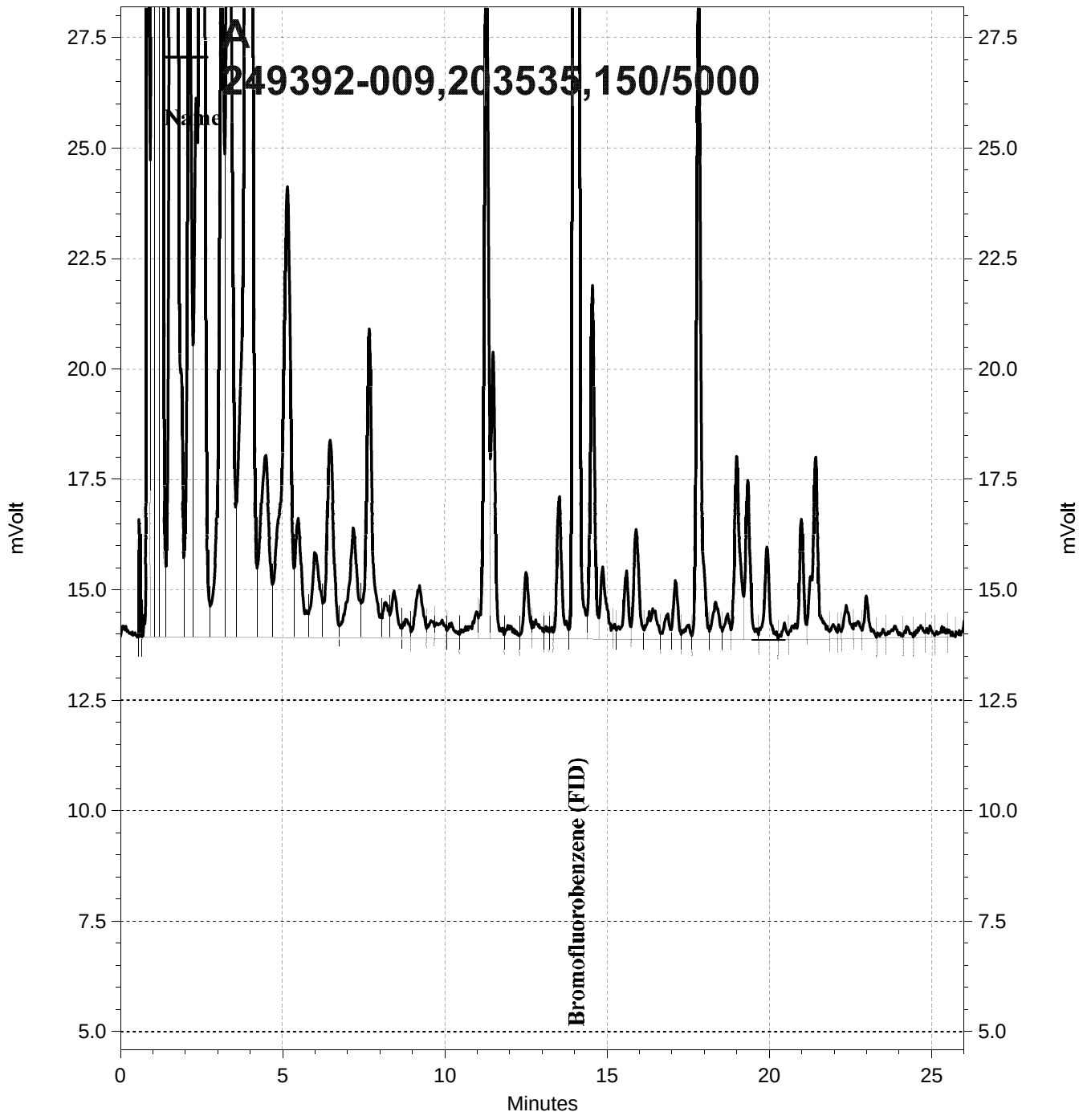

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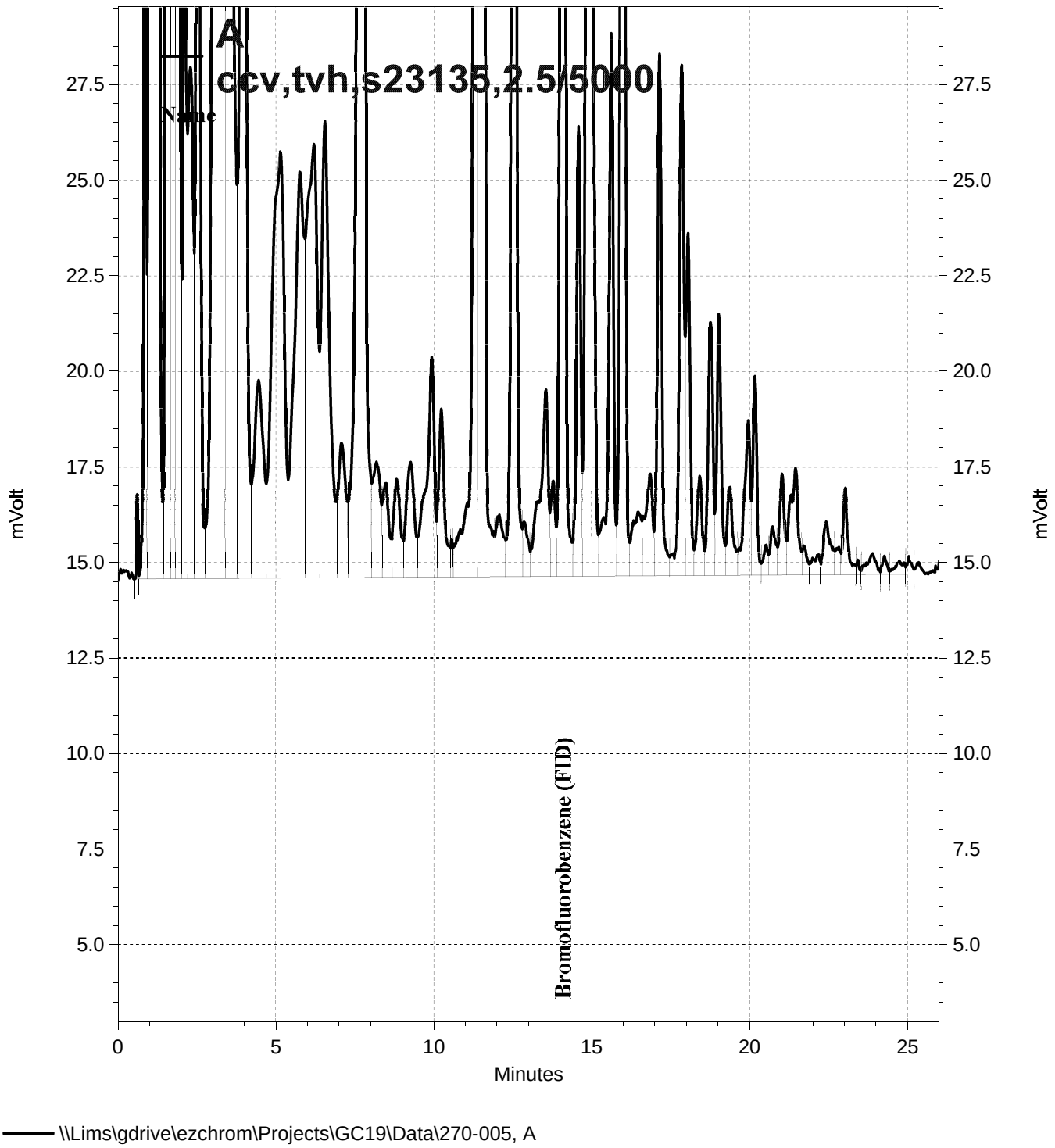
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mVolt
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20.0
17.5
15.0
12.5
10.0
7.5
5.0
0
5
10
15
20
25
Minutes
Bromofluorobenzene (FID)
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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	09/26/13
Units:	ug/L	Received:	09/26/13

Field ID:	MW-7	Batch#:	203711
Type:	SAMPLE	Prepared:	10/03/13
Lab ID:	249392-001	Analyzed:	10/08/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	12,000	50

Surrogate	%REC	Limits
o-Terphenyl	64	62-133

Field ID:	MW-8	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-002	Analyzed:	10/01/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	2,100	50

Surrogate	%REC	Limits
o-Terphenyl	83	62-133

Field ID:	MW-9	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-003	Analyzed:	10/01/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	11,000	50

Surrogate	%REC	Limits
o-Terphenyl	84	62-133

Field ID:	MW-11	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-004	Analyzed:	10/01/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	7,900	50

Surrogate	%REC	Limits
o-Terphenyl	81	62-133

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	09/26/13
Units:	ug/L	Received:	09/26/13

Field ID:	MW-16	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-005	Analyzed:	10/01/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	9,800	50

Surrogate	%REC	Limits
o-Terphenyl	62	62-133

Field ID:	MW-18	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-006	Analyzed:	10/01/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	11,000	50

Surrogate	%REC	Limits
o-Terphenyl	80	62-133

Field ID:	MW-13	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-007	Analyzed:	10/02/13
Diln Fac:	5.000		

Analyte	Result	RL
Diesel C10-C24	39,000 Y	250

Surrogate	%REC	Limits
o-Terphenyl	66	62-133

Field ID:	MW-10	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-008	Analyzed:	10/01/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	3,800	50

Surrogate	%REC	Limits
o-Terphenyl	81	62-133

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	09/26/13
Units:	ug/L	Received:	09/26/13

Field ID:	MW-17	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-009	Analyzed:	10/02/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	2,100	50

Surrogate	%REC	Limits
o-Terphenyl	88	62-133

Field ID:	MW-6	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-010	Analyzed:	10/02/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	1,100 Y	50

Surrogate	%REC	Limits
o-Terphenyl	93	62-133

Field ID:	MW-5	Batch#:	203522
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-011	Analyzed:	10/02/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	3,100 Y	50

Surrogate	%REC	Limits
o-Terphenyl	85	62-133

Field ID:	MW-4	Batch#:	203524
Type:	SAMPLE	Prepared:	09/30/13
Lab ID:	249392-012	Analyzed:	10/02/13
Diln Fac:	1.000		

Analyte	Result	RL
Diesel C10-C24	250	50

Surrogate	%REC	Limits
o-Terphenyl	106	62-133

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	09/26/13
Units:	ug/L	Received:	09/26/13

Type:	BLANK	Batch#:	203522
Lab ID:	QC709652	Prepared:	09/30/13
Diln Fac:	1.000	Analyzed:	10/01/13

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	107	62-133

Type:	BLANK	Batch#:	203524
Lab ID:	QC709659	Prepared:	09/30/13
Diln Fac:	1.000	Analyzed:	10/02/13

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	107	62-133

Type:	BLANK	Batch#:	203711
Lab ID:	QC710431	Prepared:	10/03/13
Diln Fac:	1.000	Analyzed:	10/09/13

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	123	62-133

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	203522
Units:	ug/L	Prepared:	09/30/13
Diln Fac:	1.000	Analyzed:	10/01/13

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC709653

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,060	82	59-120

Surrogate	%REC	Limits
o-Terphenyl	101	62-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC709654

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,059	82	59-120	0	46

Surrogate	%REC	Limits
o-Terphenyl	95	62-133

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	203524
Units:	ug/L	Prepared:	09/30/13
Diln Fac:	1.000	Analyzed:	10/02/13

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC709660

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,015	81	59-120

Surrogate	%REC	Limits
o-Terphenyl	94	62-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC709661

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,181	87	59-120	8	46

Surrogate	%REC	Limits
o-Terphenyl	102	62-133

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	249392	Location:	Bay Center Apts
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2007-65	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	203711
Units:	ug/L	Prepared:	10/03/13
Diln Fac:	1.000	Analyzed:	10/07/13

Type: BS Lab ID: QC710432

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,304	92	59-120

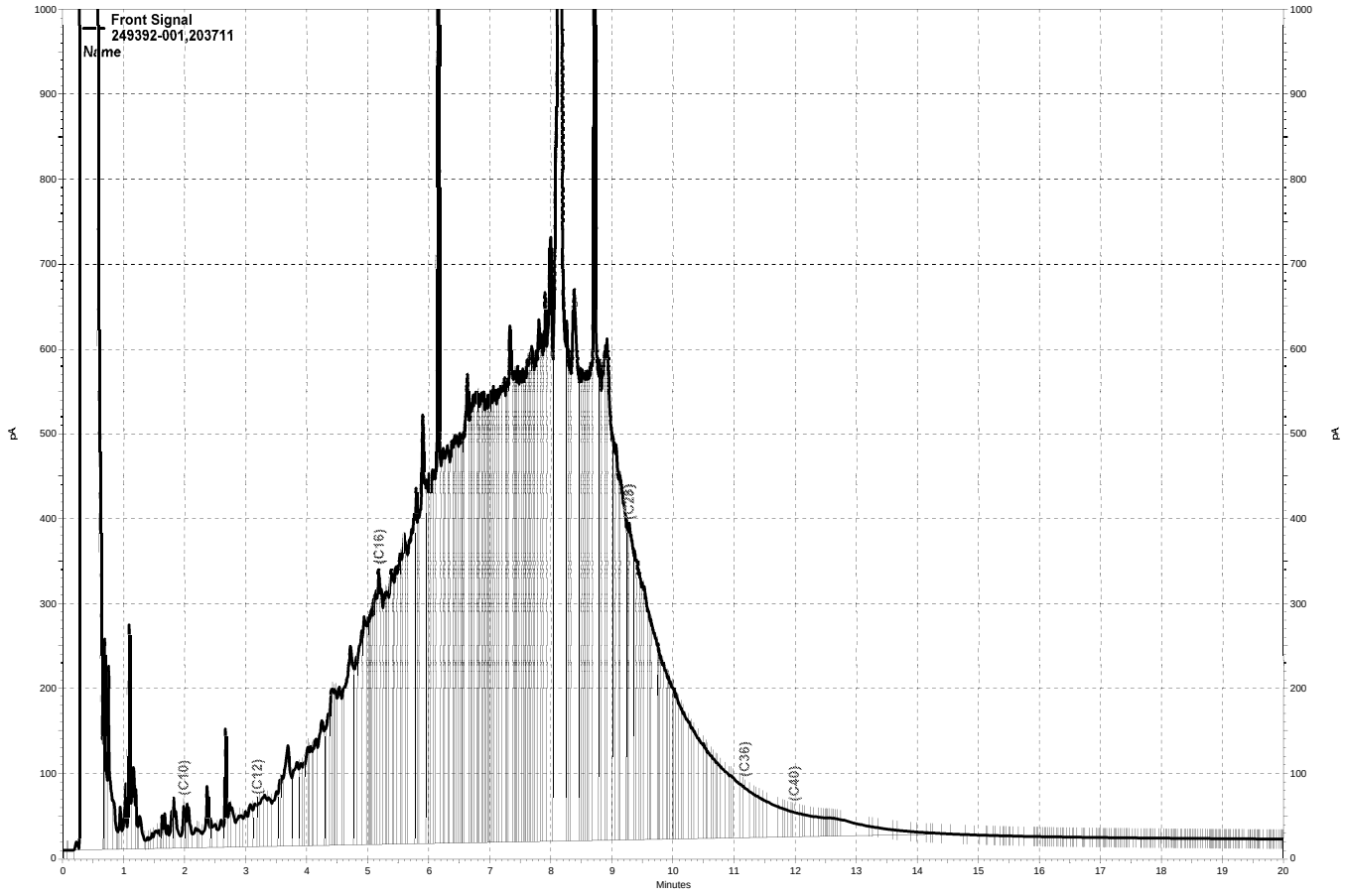
Surrogate	%REC	Limits
o-Terphenyl	110	62-133

Type: BSD Lab ID: QC710433

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,350	94	59-120	2	46

Surrogate	%REC	Limits
o-Terphenyl	108	62-133

RPD= Relative Percent Difference



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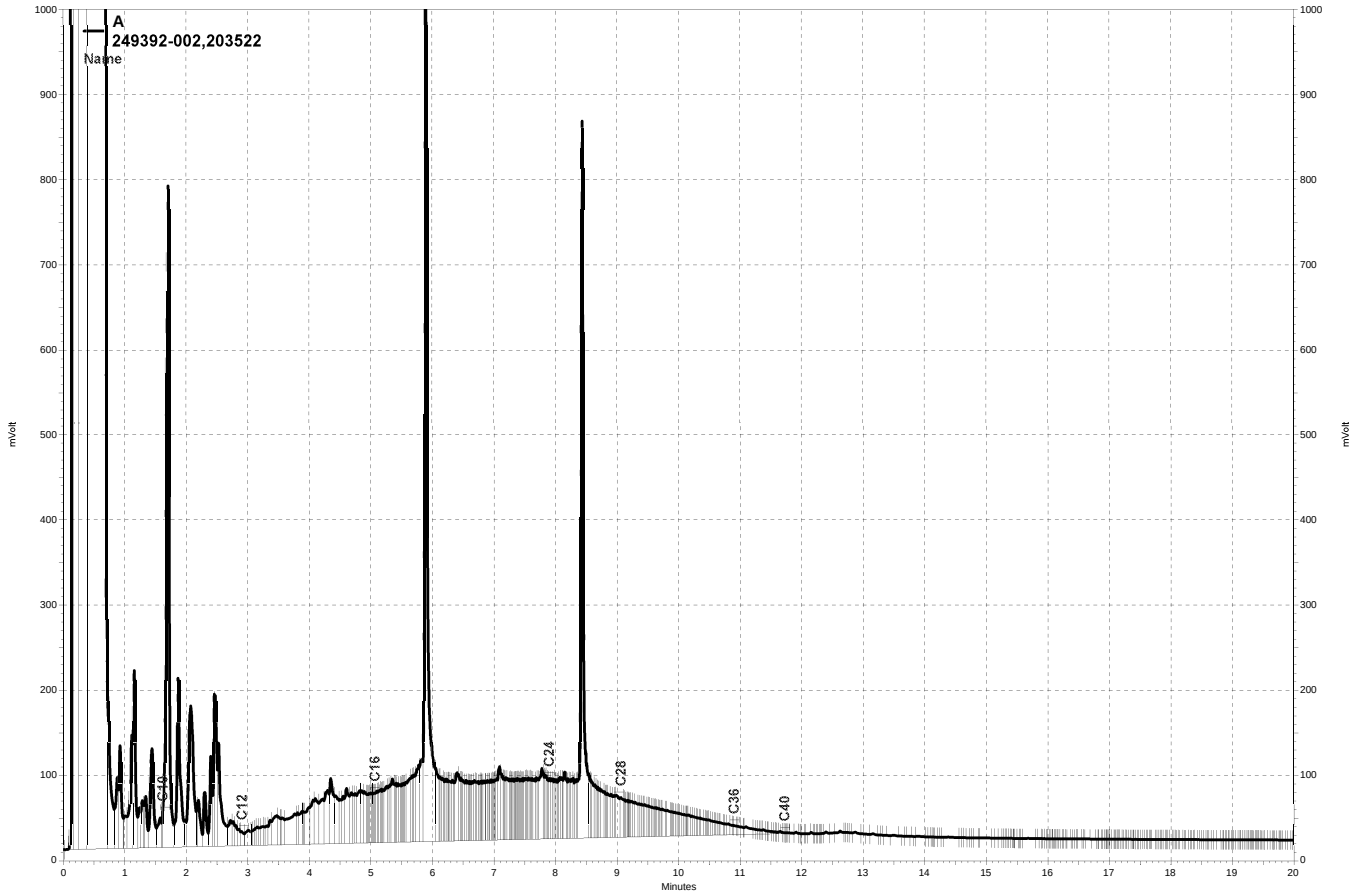

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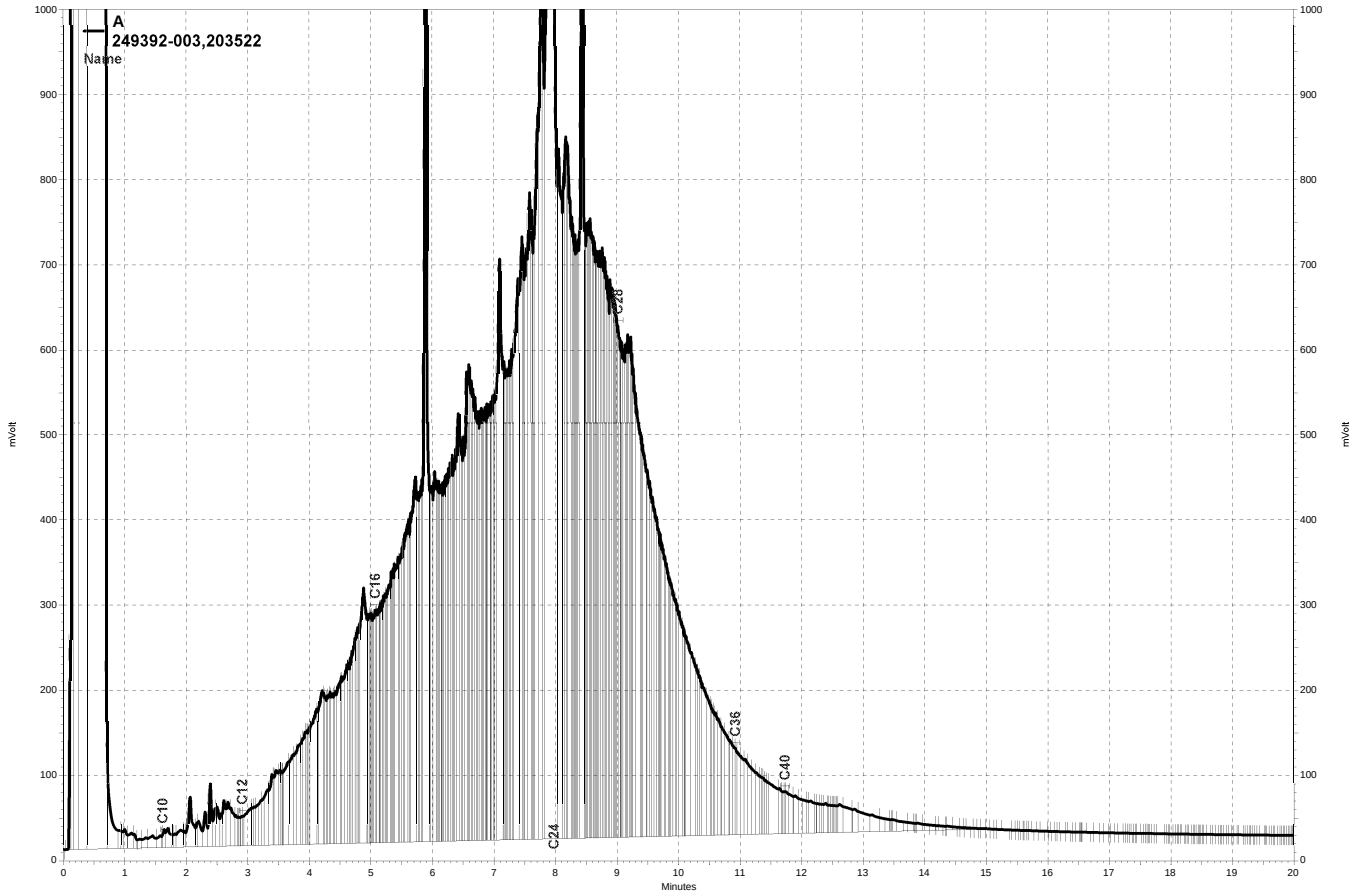

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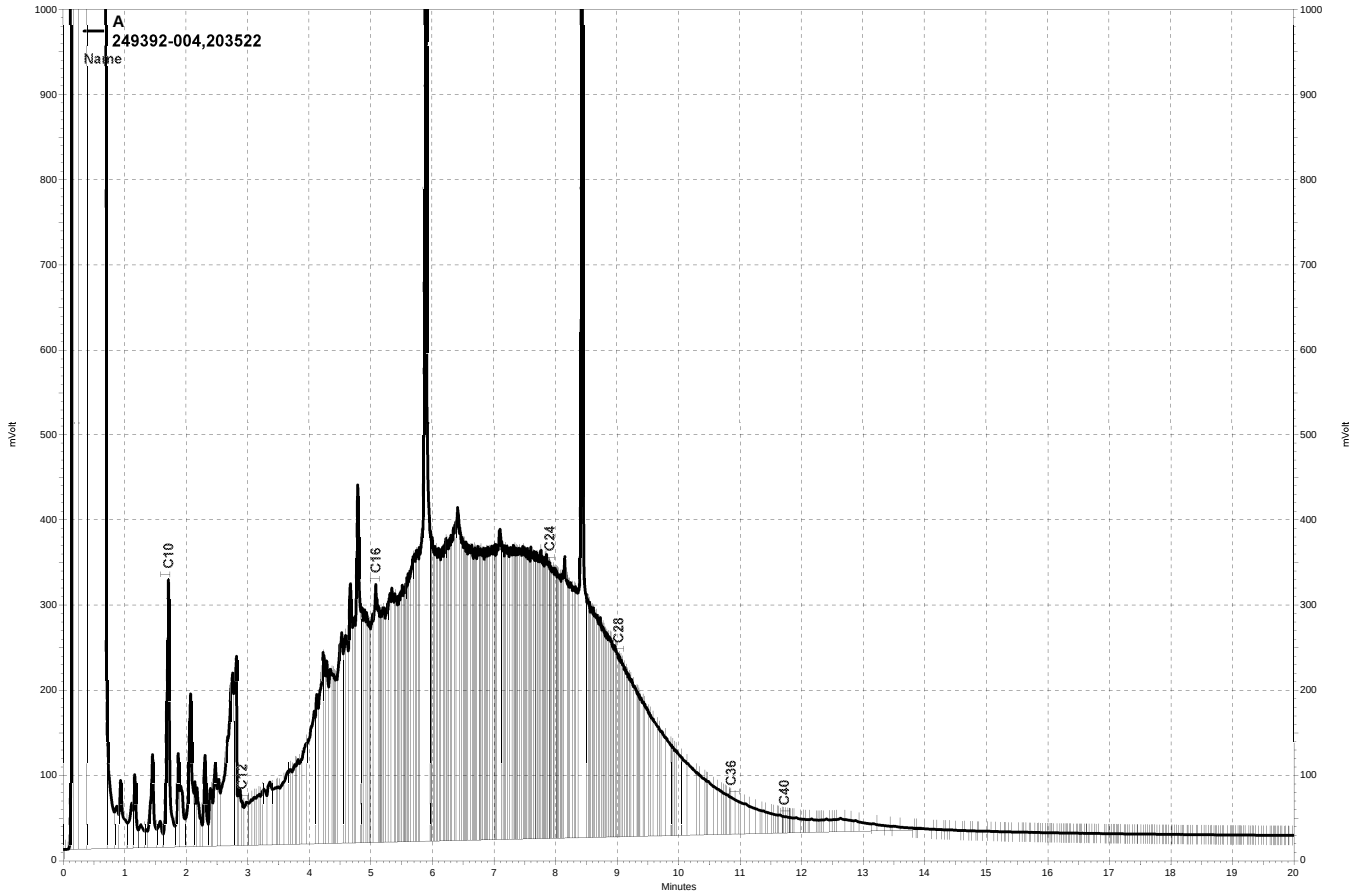

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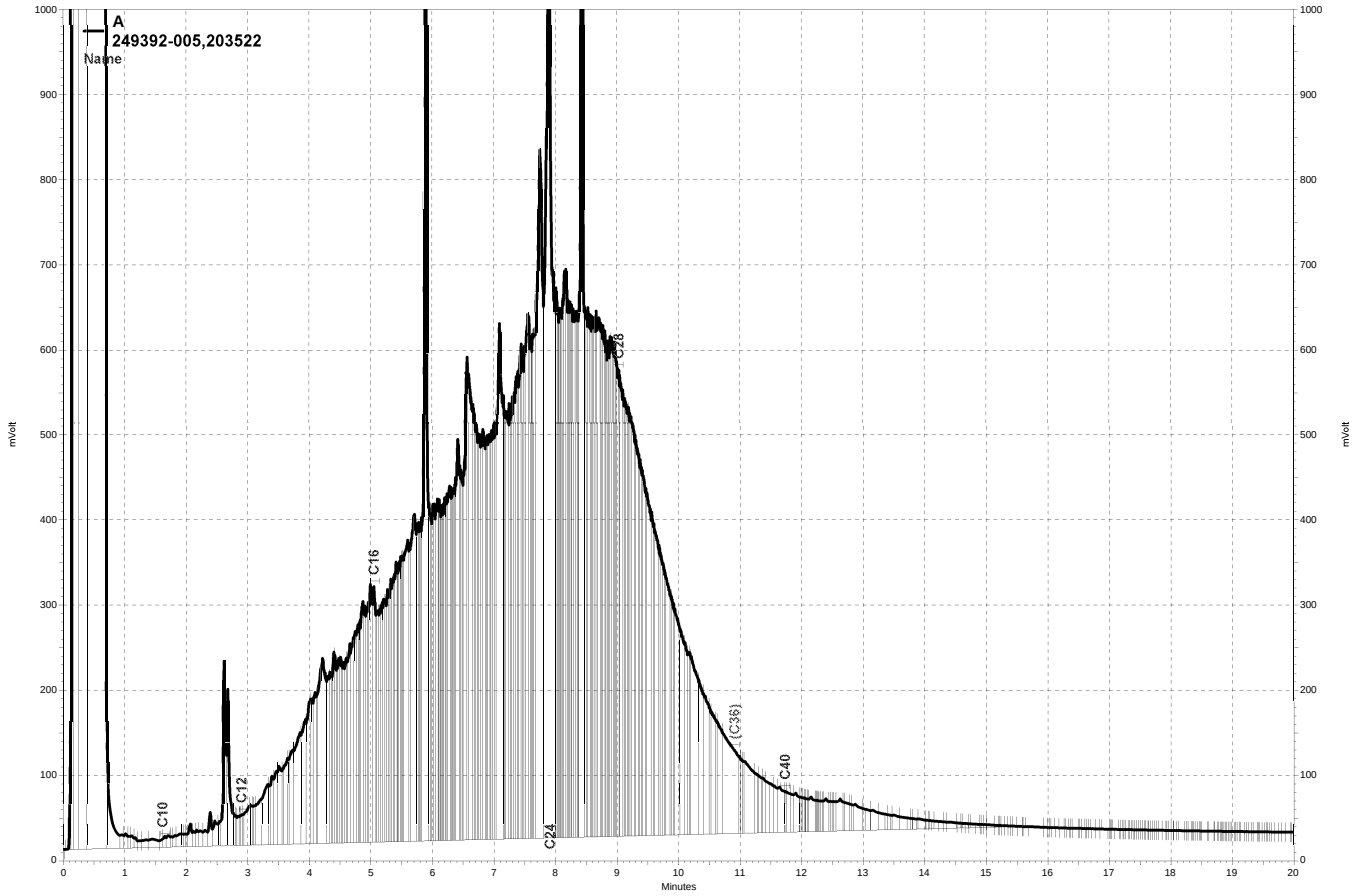

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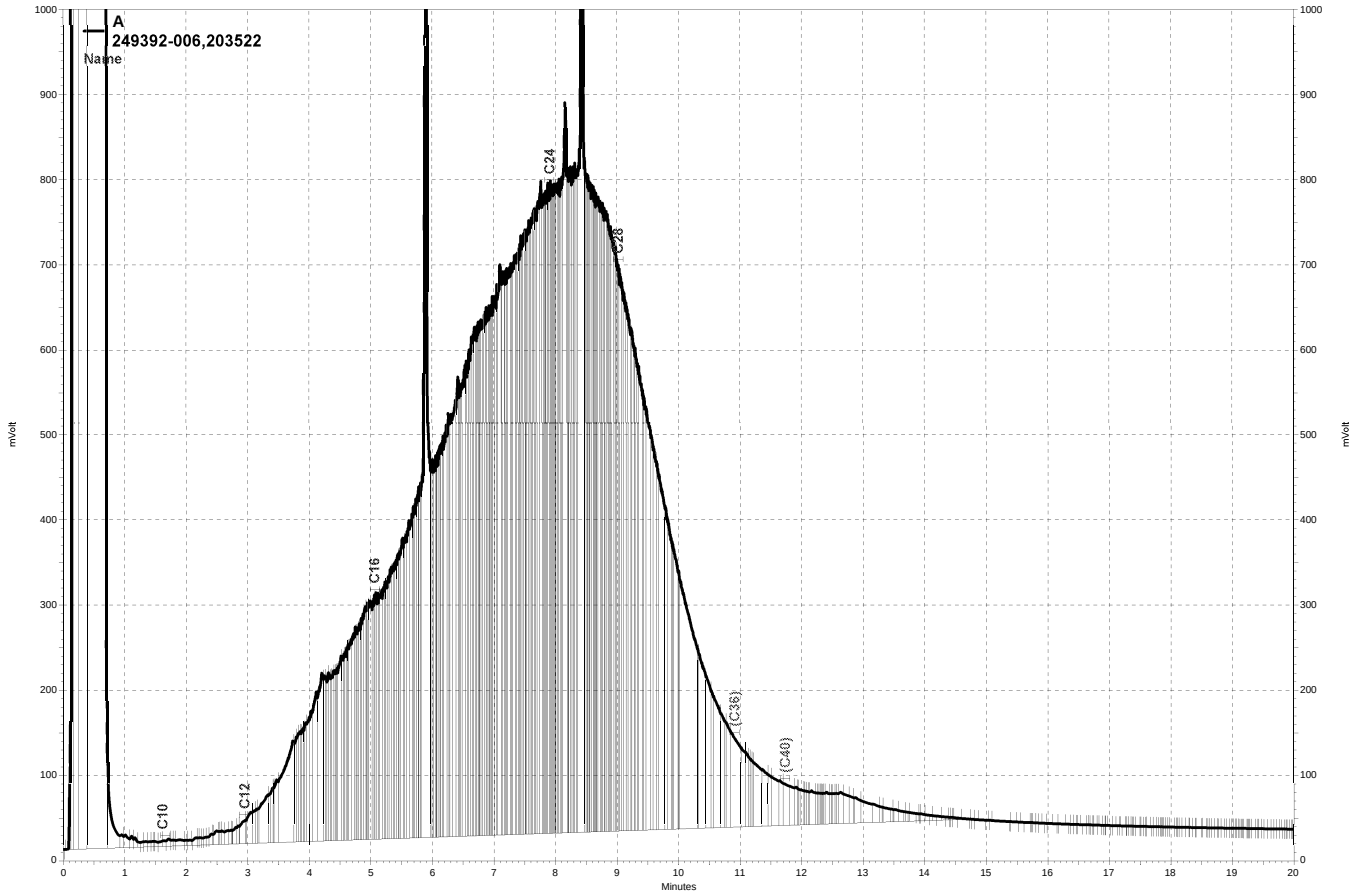

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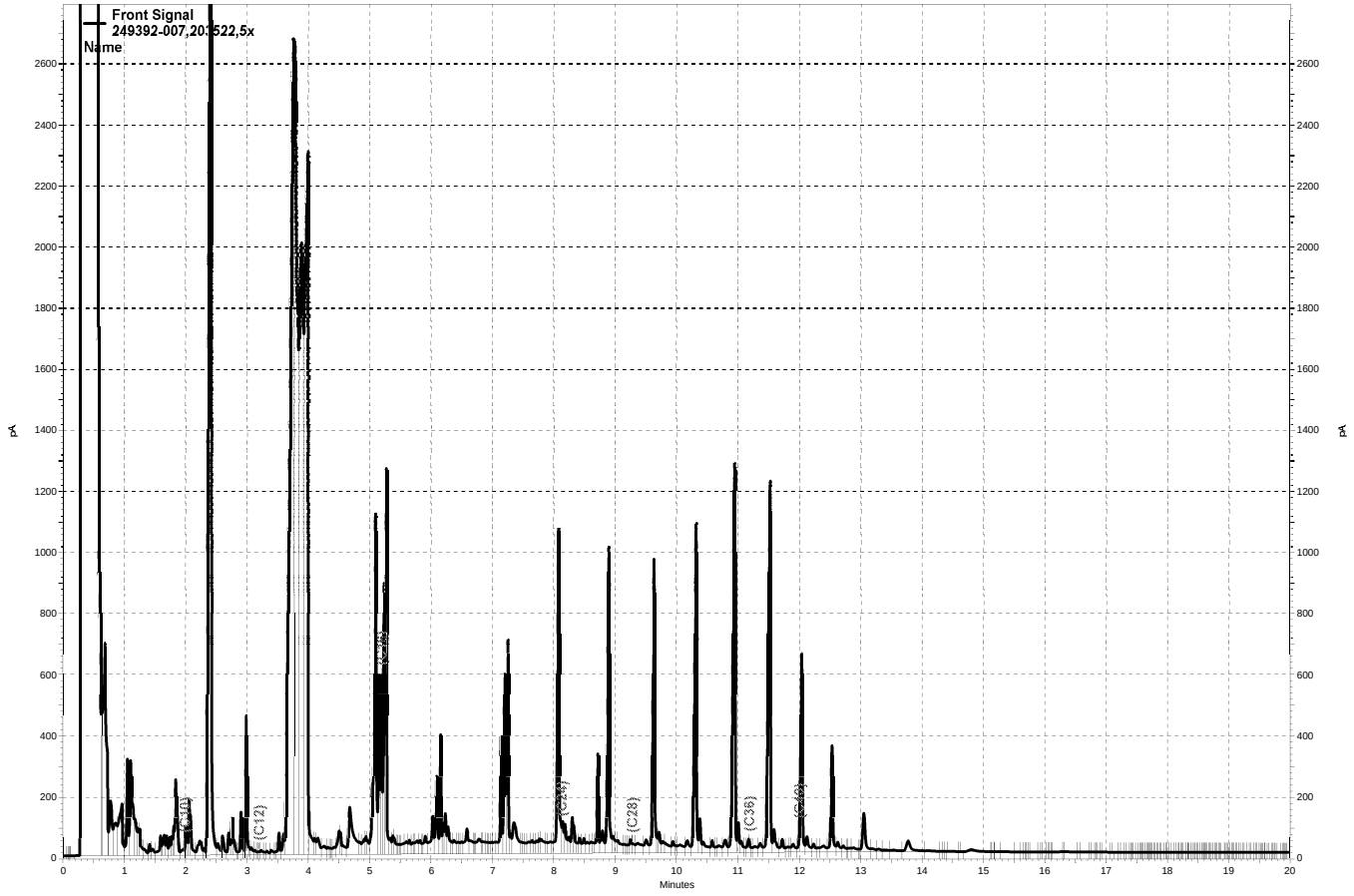

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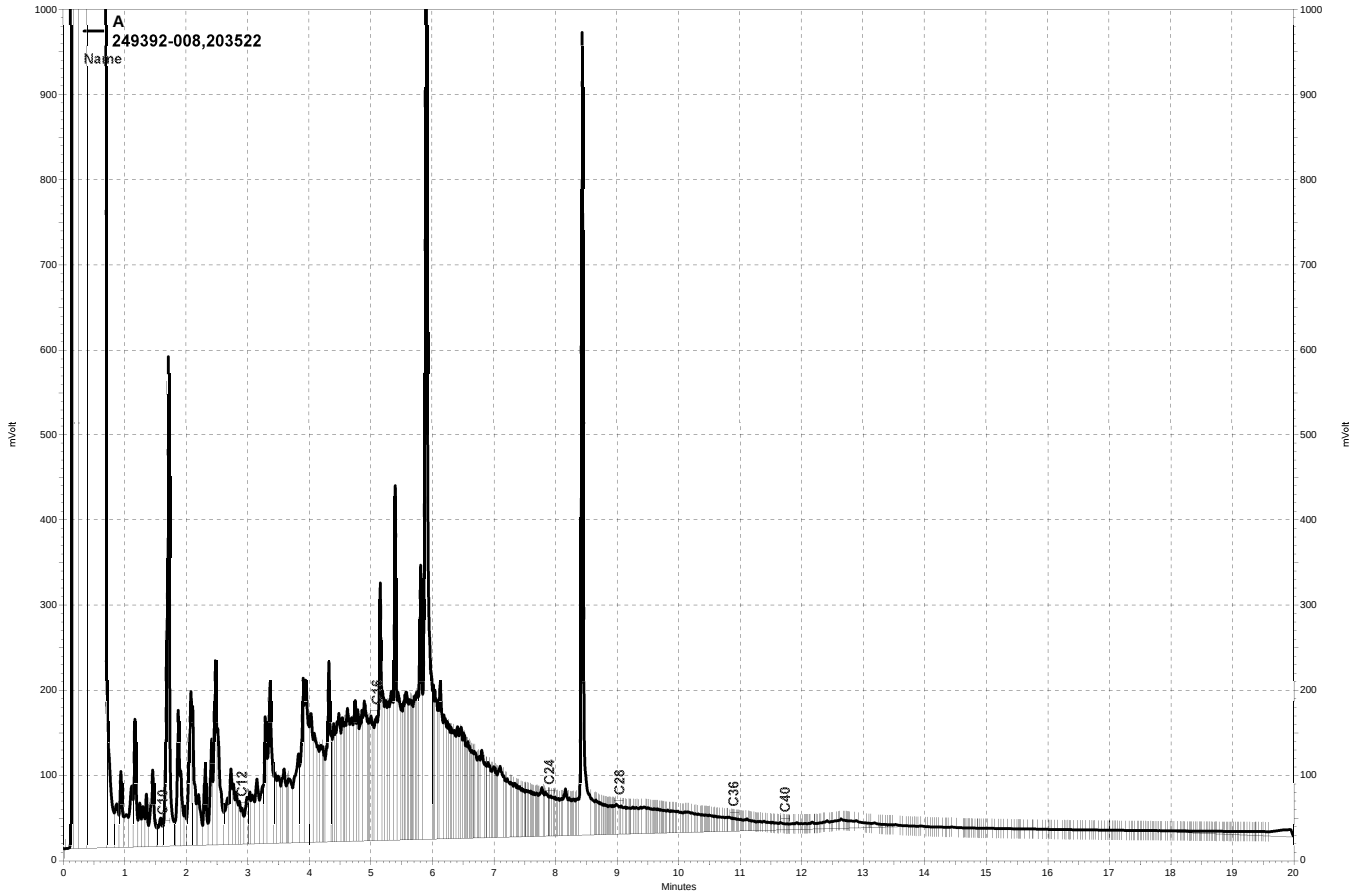

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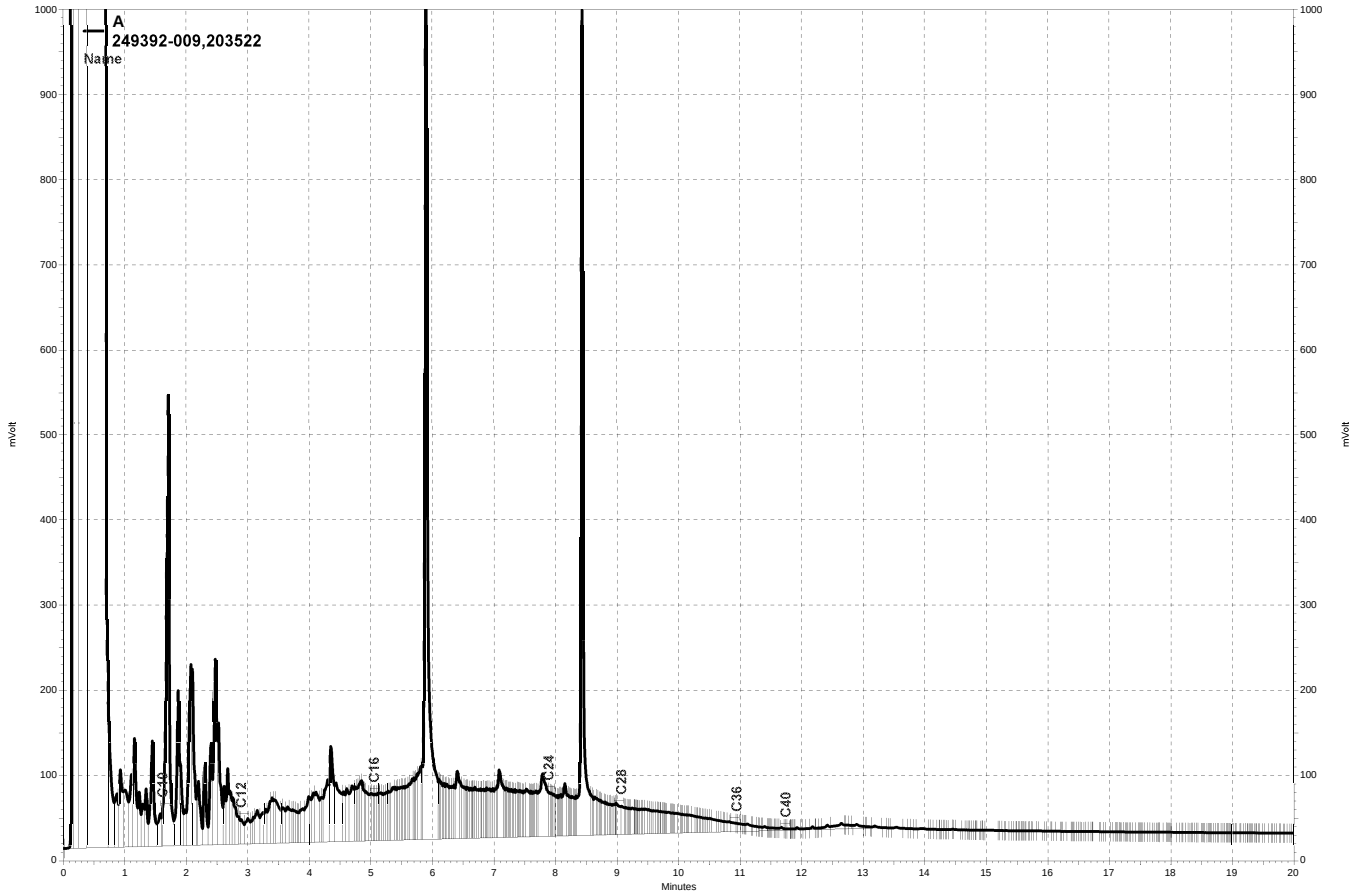

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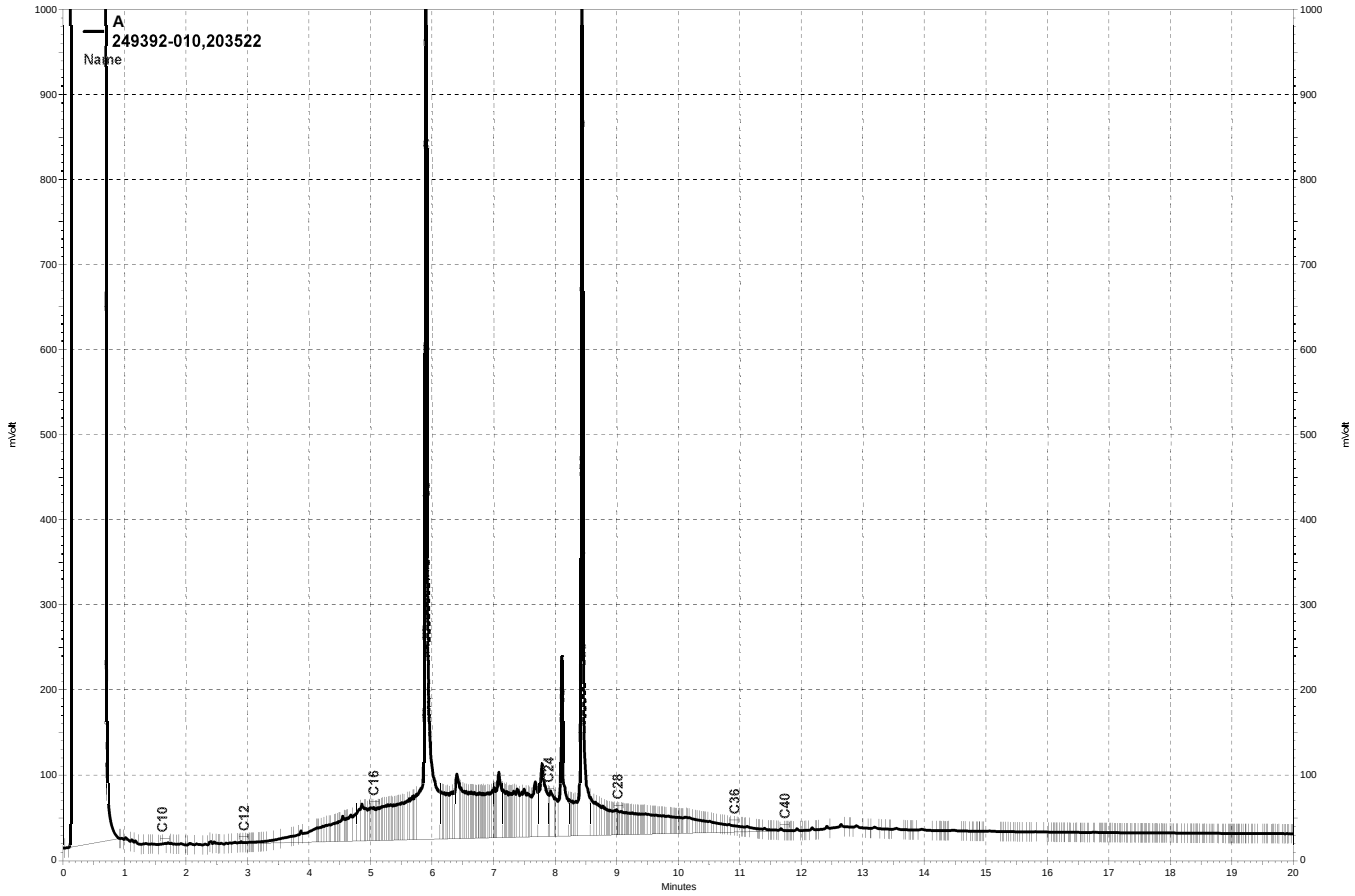

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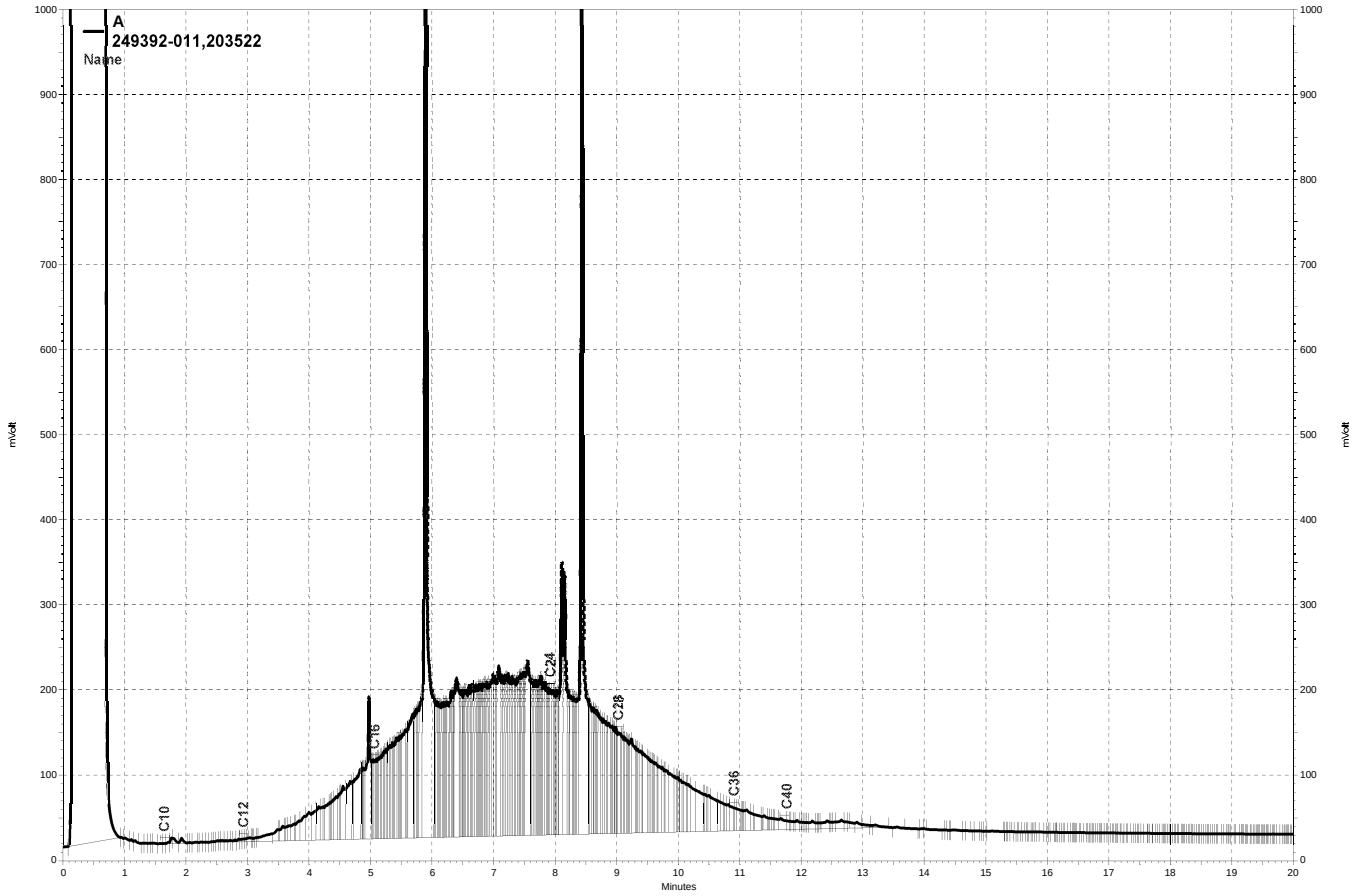

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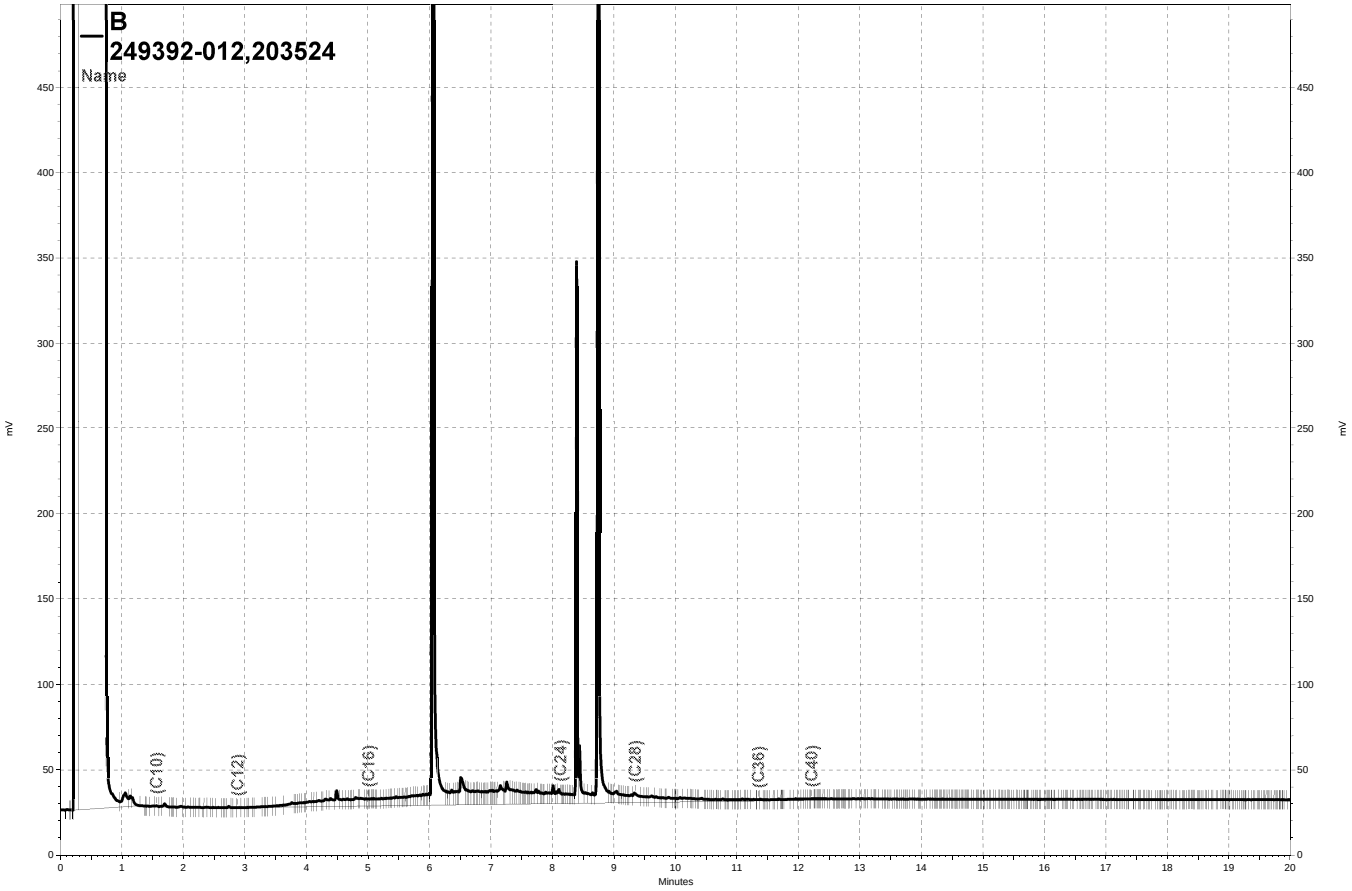
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(C12)
(C16)
(C24)
(C28)
(C36)
(C40)
Minutes
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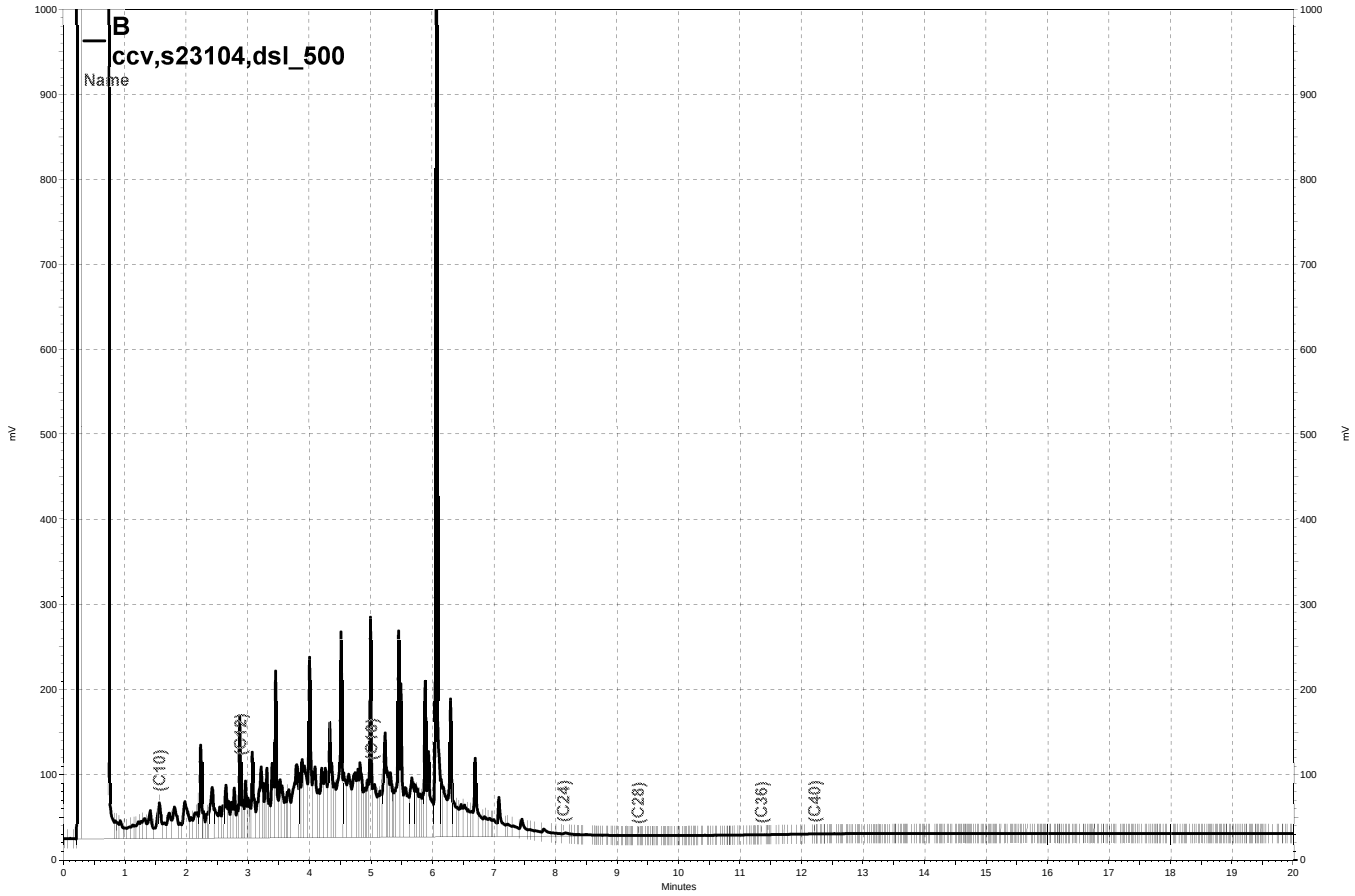

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APPENDIX D

Historical Groundwater Elevation Data

TABLE B
Historical Monitoring, Extraction, and Trench Well Elevations
6400 Christie Avenue, Emeryville, California

MW-1					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
1	Dec-88	14.39	9.60	NP	4.79
2	May-89	14.31[a]	8.73	NP	5.58
3	Feb-91	14.31	9.18	NP	5.13
Monitoring well abandoned - date unclear					

MW-2					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
1	Dec-88	14.36	9.64	NP	4.72
2	May-89	14.28[a]	8.78	NP	5.50
3	Feb-91	14.28	9.61	NP	4.67
Monitoring well abandoned - date unclear					

MW-3					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
1	Dec-88	14.53	8.93	trace	5.60
2	May-89	14.43[a]	8.69	NP	5.74
3	Feb-91	14.43	8.31	NP	6.12
4	Mar-04	16.96[b]	9.47	NP	7.49
5	Dec-06	NA	NA	NA	NA
6	Dec-07	16.65[c]	7.76 [e]	7.76	8.89
7	Mar-08	16.65	8.72	8.70	7.93
8	Jun-08	16.65	8.56	NP	8.09
9	Sep-08	16.65	9.27	7.95	7.38
10	Dec-08	16.65	8.36	7.49	8.29
11	Mar-09	16.65	7.94	NP	8.71
12	Sep-09	16.65	8.58	NP	8.07
13	Mar-10	16.65	8.08 [e]	8.08	8.57
14	Sep-10	16.65	8.68 [e]	8.68	7.97
15	Mar-11	16.65	10.40	NM	6.25
16	Sep-11	16.65	10.84	10.83	6.17
17	Mar-12	16.65	8.21	NM	8.44
18	Sep-12	16.65	10.77	NM	5.88
19	Mar-13	16.65	11.27	NM	5.38
20	Sep-13	16.65	11.50	NM	5.15

MW-4					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
1	Dec-88	14.21	8.29	NP	5.92
2	May-89	14.12[a]	7.75	NP	6.37
3	Feb-91	14.12	8.04	NP	6.08
4	Mar-04	16.74[b]	6.90	NP	7.49
5	Dec-06	NA	NA	NA	NA
6	Dec-07	16.29[c]	6.61	NP	9.68
7	Mar-08	16.29	7.24	NP	9.05
8	Jun-08	16.29	6.94	NP	9.35
9	Sep-08	16.29	6.85	NP	6.85
10	Dec-08	16.29	7.42	NP	8.87
11	Mar-09	16.29	6.90	NP	9.39
12	Sep-09	16.29	7.40	NP	8.89
13	Mar-10	16.29	7.08	NP	9.21
14	Sep-10	16.29	7.08	NP	9.21
15	Mar-11	16.29	7.02	NP	9.27
16	Sep-11	16.29	7.83	NP	8.46
17	Mar-12	16.29	7.01	NP	9.28
18	Sep-12	16.29	7.82	NP	8.45
19	Mar-13	16.29	9.15	NP	7.14
20	Sep-13	16.29	8.00	NP	8.29

MW-5					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
1	Dec-88	14.65	10.23	NP	4.42
2	May-89	14.56[a]	9.29	NP	5.27
3	Feb-91	14.56	10.04	NP	4.52
4	Mar-04	17.11[b]	9.10	NP	8.01
5	Dec-06	NA	NA	NA	NA
6	Dec-07	16.72[c]	9.66	NA	7.06
7	Mar-08	16.72	9.72	NP	7.00
8	Jun-08	16.72	9.72	NP	7.00
9	Sep-08	16.72	8.56	NP	8.16
10	Dec-08	16.72	9.75	NP	6.97
11	Mar-09	16.72	9.31	NP	7.41
12	Sep-09	16.72	9.79	NP	6.93
13	Mar-10	16.72	9.48	NP	7.24
14	Sep-10	16.72	9.90	NP	6.82
15	Mar-11	16.72	9.29	NP	7.43
16	Sep-11	16.72	9.77	NP	6.95
17	Mar-12	16.72	9.19	NP	7.53
18	Sep-12	16.72	9.70	NP	7.02
19	Mar-13	16.72	10.63	NP	6.09
19	Sep-13	16.72	10.20	NP	6.52

MW-6					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
1	Dec-88	14.75	8.10	NP	6.65
2	May-89	14.67[a]	7.58	NP	7.09
3	Feb-91	14.67	7.05	NP	7.62
4	Mar-04	17.22[b]	6.51	NP	10.71
5	Dec-06	NA	NA	NA	NA
6	Dec-07	16.82[c]	6.61	NP	10.21
7	Mar-08	16.82	7.02	NP	9.80
8	Jun-08	16.82	7.55	NP	9.27
9	Sep-08	16.82	6.06	NP	10.76
10	Dec-08	16.82	6.91	NP	9.91
11	Mar-09	16.82	6.45	NP	10.37
12	Sep-09	16.82	8.05	NP	8.77
13	Mar-10	16.82	6.66	NP	10.16
14	Sep-10	16.82	7.98	NP	8.84
15	Mar-11	16.82	5.91	NP	10.91
16	Sep-11	16.82	7.66	NP	9.16
17	Mar-12	16.82	5.65	NP	11.17
18	Sep-12	16.82	7.51	NP	9.31
19	Mar-13	16.82	7.60	NP	9.22
20	Sep-13	16.82	5.65	NP	11.17

MW-7					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed March 2004					
1	Mar-04	18.09	9.93	NP	8.16
2	Dec-06	NA	NA	NA	NA
3	Dec-07	17.73[c]	10.30	NP	7.43
4	Mar-08	17.73	10.51	NP	7.22
5	Jun-08	17.73	10.50	NP	7.23
6	Sep-08	17.73	10.37	NP	7.36
7	Dec-08	17.73	10.60	NP	7.13
8	Mar-09	17.73	10.13	NP	7.60
9	Sep-09	17.73	10.61	NP	7.12
10	Mar-10	17.73	10.02	NP	7.71
11	Sep-10	17.73	10.59	NP	7.14
12	Mar-11	17.73	10.14	NP	7.59
13	Sep-11	17.73	10.58	NP	7.15
14	Mar-12	17.73	10.12	NP	7.61
15	Sep-12	17.73	10.50	NP	7.23
16	Mar-13	17.73	11.30	NP	6.43
17	Sep-13	17.73	5.50	NP	12.23

MW-8					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed March 2004					
1	Mar-04	18.25	9.32	8.15	8.93
2	Nov-06[d]	16.96	10.59	NP	6.37
3	Dec-07	17.84[c]	9.42	NP	8.42
4	Mar-08	17.84	10.50	9.18	7.34
5	Jun-08	17.84	9.68	9.10	8.16
6	Sep-08	17.84	9.63	8.89	8.21
7	Dec-08	17.84	9.58	8.89	8.26
8	Mar-09	17.84	9.62	8.89	8.22
9	Sep-09	17.84	8.55 [e]	8.55	9.29
10	Mar-10	17.84	9.02 [e]	9.02	8.82
11	Sep-10	17.84	9.75	9.89	7.95
12	Mar-11	17.84	8.89	8.99	8.85
13	Sep-11	17.84	9.87	9.55	7.97
14	Mar-12	17.84	9.29	9.01	8.55
15	Sep-12	17.84	9.25	8.46	8.59
16	Mar-13	17.84	9.95	9.59	7.89
17	Sep-13	17.84	10.32	10.28	7.52

MW-9					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed March 2004					
1	Mar-04	18.27	9.38	NP	8.89
2	Dec-06	NA	NA	NA	NA
3	Dec-07	17.84[c]	9.54	NP	8.30
4	Mar-08	17.84	9.77	NP	8.07
5	Jun-08	17.84	9.68	NP	9.27
6	Sep-08	17.84	9.30	NP	8.54
7	Dec-08	17.84	9.83	NP	8.01
8	Mar-09	17.84	9.37	NP	8.47
9	Sep-09	17.84	9.70	NP	8.14
10	Mar-10	17.84	9.46	NP	8.38
11	Sep-10	17.84	9.75	NP	8.09
12	Mar-11	17.84	9.52	NP	8.32
13	Sep-11	17.84	9.80	NP	8.04
14	Mar-12	17.84	9.54	NP	8.30
15	Sep-12	17.84	9.54	NP	8.30
16	Mar-13	17.84	10.08	NP	7.76
17	Sep-13	17.84	10.13	NP	7.71

MW-10					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed March 2004					
1	Mar-04	18.21	9.87	8.24	8.34
2	Dec-06	18.21	9.30	8.86	8.91
3	Dec-07	17.83[c]	8.98 [e]	8.98	8.85
4	Mar-08	17.83	9.28	8.98	8.55
5	Jun-08	17.83	8.86	8.78	7.23
6	Sep-08	17.83	8.95	8.84	8.88
7	Dec-08	17.83	8.97	8.74	8.86
8	Mar-09	17.83	9.25	8.54	9.25
9	Sep-09	17.83	8.63	8.52	9.20
10	Mar-10	17.83	10.30	8.58	7.53
11	Sep-10	17.83	8.76	8.82	9.01
12	Mar-11	17.83	8.15	8.14	9.68
13	Sep-11	17.83	8.83	8.78	9.00
14	Mar-12	17.83	7.89	7.75	9.94
15	Sep-12	17.83	7.48	7.40	10.35
16	Mar-13	17.83	10.30	9.33	7.53
17	Sep-13	17.83	10.02	9.65	7.81

MW-11					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed May 2004					
1	Nov-06[d]	17.76[c]	10.33	NP	7.43
2	Dec-07	17.76	10.27	NP	7.49
3	Mar-08	17.76	10.34	NP	7.42
4	Jun-08	17.76	10.20	NP	8.16
5	Sep-08	17.76	10.03	NP	7.73
6	Dec-08	17.76	10.34	NP	7.42
7	Mar-09	17.76	10.20	NP	7.56
8	Sep-10	17.76	10.25	NP	7.51
9	Mar-10	17.76	10.23	NP	7.53
10	Sep-10	17.76	10.24	NP	7.52
11	Mar-11	17.76	10.10	NP	7.66
12	Sep-11	17.76	10.30	NP	7.46
13	Mar-12	17.76	10.18	NP	7.58
14	Sep-12	17.76	10.24	NP	7.52
15	Mar-13	17.76	10.62	NP	7.14
16	Sep-13	17.76	10.21	NP	7.55

MW-12					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed between 2004-2006					
1	Nov-06[d]	17.83[c]	9.37	NP	8.46
2	Dec-07	17.83	9.15	NP	8.68
3	Mar-08	17.83	9.11	NP	8.72
4	Jun-08	17.83	8.86	NP	8.97
5	Sep-08	17.83	8.76	NP	9.07
6	Dec-08	17.83	8.98	NP	8.85
7	Mar-09	17.83	8.50	NP	9.33
8	Sep-09	17.83	8.95	NP	8.88
9	Mar-10	17.83	8.66	NP	9.17
10	Sep-10	17.83	8.89	NP	8.94
11	Mar-11	17.83	8.18	NP	9.65
12	Sep-11	17.83	8.80	NP	9.03
13	Mar-12	17.83	7.79	NP	10.04
14	Sep-12	17.83	7.44	NP	10.39
15	Mar-13	17.83	9.39	NP	8.44
16	Sep-13	17.83	9.72	NP	8.11

MW-13					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed between 2004-2006					
1	Dec-06	17.66[c]	9.81	9.44	7.85
2	Dec-07	17.66	9.95	9.39	7.71
3	Mar-08	17.66	10.02	9.54	7.64
4	Jun-08	17.66	9.86	9.45	7.80
5	Sep-08	17.66	10.34	9.54	7.32
6	Dec-08	17.66	10.54	9.65	7.12
7	Mar-09	17.66	9.26	9.14	8.40
8	Sep-09	17.66	9.91[e]	9.72	7.75
9	Mar-10	17.66	9.22[e]	9.22	8.44
10	Sep-10	17.66	9.40	10.18	7.48
11	Mar-11	17.66	9.90	NM	NM
12	Sep-11	17.66	10.41	9.64	7.25
13	Mar-12	17.66	10.09	9.02	7.57
14	Sep-12	17.66	9.54	9.23	8.12
15	Mar-13	17.66	9.36	9.35	8.30
16	Sep-13	17.66	9.48	9.45	8.18

MW-14					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed between 2004-2006					
1	Nov-06[d]	17.60[c]	9.11	9.11(sheen)	8.49
2	Dec-07	17.60	8.86	8.84	8.74
3	Mar-08	17.60	8.91	8.88	8.69
4	Jun-08	17.60	8.66	8.62	8.94
5	Sep-08	17.60	8.64	NP	8.96
6	Dec-08	17.60	8.70	NP	8.90
7	Mar-09	17.60	9.25	NP	9.25
8	Sep-09	17.60	8.80	NP	8.80
9	Mar-10	17.60	8.42	NP	9.18
10	Sep-10	17.60	8.56	8.62	8.98
11	Mar-11	17.60	7.93	7.92	9.67
12	Sep-11	17.60	8.60	8.55	9.00
13	Mar-12	17.60	7.71	7.61	9.89
14	Sep-12	17.60	7.22	7.20	10.38
15	Mar-13	17.60	9.18	9.17	8.42
16	Sep-13	17.60	9.49	9.47	8.11

MW-15					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed between 2004-2006					
1	Dec-06	17.80[c]	9.15	NP	8.65
2	Dec-07	17.80	9.30	NP	8.50
3	Mar-08	17.80	9.20	9.18	8.60
4	Jun-08	17.80	9.60	9.63	8.20
5	Sep-08	17.80	8.84	8.84[f]	8.96
6	Dec-08	17.80	9.19	8.36	8.61
7	Mar-09	17.80	8.70	NP	9.10
8	Sep-09	17.80	9.40 [e]	9.22	8.08
9	Mar-10	17.80	8.81 [e]	8.81	8.99
10	Sep-10	17.80	9.42	9.45	8.35
11	Mar-11	17.80	8.50	NM	9.30
12	Sep-11	17.80	9.32	NP	8.48
13	Mar-12	17.80	8.55	NP	9.25
14	Sep-12	17.80	8.03	NP	9.77
15	Mar-13	17.80	9.45	NP	8.35
16	Sep-13	17.80	10.01	NP	7.79

MW-16					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed between 2004-2006					
1	Dec-06	NA	NA	NA	NA
2	Dec-07	17.74[c]	9.36	NP	8.38
3	Mar-08	17.74	9.88	NP	7.86
4	Jun-08	17.74	9.25	NP	7.80
5	Sep-08	17.74	9.07	NP	8.67
6	Dec-08	17.74	9.45	NP	8.29
7	Mar-09	17.74	8.88	NP	8.86
8	Sep-09	17.74	9.51	NP	8.23
9	Mar-10	17.74	8.92	NP	8.82
10	Sep-10	17.74	9.40	NP	8.34
11	Mar-11	17.74	9.16	NP	8.57
12	Sep-11	17.74	9.56	NP	8.18
13	Mar-12	17.74	9.38	NP	8.36
14	Sep-12	17.74	9.15	NP	8.59
15	Mar-13	17.74	9.60	NP	8.14
16	Sep-13	17.74	10.03	NP	7.71

MW-17					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed between 2004-2006					
1	Dec-06	NA	NA	NA	NA
2	Dec-07	18.17[c]	9.40	9.32	8.77
3	Mar-08	18.17	9.34	9.18	8.83
4	Jun-08	18.17	8.98	8.97	9.19
5	Sep-08	18.17	9.21	7.92	8.96
6	Dec-08	18.17	9.25	9.11	8.92
7	Mar-09	18.17	8.89	NP	9.28
8	Sep-09	18.17	9.31	NP	8.86
9	Mar-10	18.17	8.93	NP	9.24
10	Sep-10	18.17	9.15	NP	9.02
11	Mar-11	18.17	8.52	8.50	9.65
12	Sep-11	18.17	9.15	NP	9.02
13	Mar-12	18.17	8.17	NP	10.00
14	Sep-12	18.17	7.77	NP	10.40
15	Mar-13	18.17	9.17	NP	9.00
16	Sep-13	18.17	10.00	NP	8.17

MW-18					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
Installed between 2004-2006					
1	Dec-06	NA	NA	NA	NA
2	Dec-07	16.35[c]	8.30	NP	8.05
3	Mar-04	16.35	8.34	NP	8.01
4	Jun-08	16.35	8.34	NP	8.20
5	Sep-08	16.35	8.48	NP	7.87
6	Dec-08	16.35	8.61	NP	7.74
7	Mar-09	16.35	7.75	NP	8.60
8	Sep-09	16.35	8.50	NP	7.85
9	Mar-10	16.35	7.97	NP	8.38
10	Sep-10	16.35	8.28	NP	8.07
11	Mar-11	16.35	8.63	NP	7.72
12	Sep-11	16.35	8.90	NP	7.45
13	Mar-12	16.35	8.56	NP	7.79
14	Sep-12	16.35	8.59	NP	7.76
15	Mar-13	16.35	9.92	NP	6.43
16	Sep-13	16.35	9.81	NP	6.54

MW-E					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
1	Dec-88	NM	NM	NM	NM
2	May-89	15.32	10.39	NP	4.93
3	Feb-91	NM	NM	NM	NM
4	Mar-04	17.80	9.92	NP	7.88
5	Nov-06[d]	17.80	10.22	NP	7.58
6	Dec-07	17.47[c]	10.03	NP	7.44
7	Mar-08	17.47	10.21	NP	7.26
8	Jun-08	17.47	10.20	NP	7.27
9	Sep-08	17.47	9.55	NP	7.92
10	Dec-08	17.47	10.32	NP	7.15
11	Mar-09	17.47	9.79	NP	7.68
12	Sep-09	17.47	10.22	NP	7.25
13	Mar-10	17.47	9.82	NP	7.65
14	Sep-10	17.47	10.11	NP	7.36
15	Mar-11	17.47	9.10	NP	8.37
16	Sep-11	17.47	8.41	NP	9.06
17	Mar-12	17.47	9.86	NP	7.61
18	Sep-12	17.47	9.95	NP	7.52
19	Mar-13	17.47	10.41	NP	7.06
20	Sep-13	17.47	10.21	NP	7.26

RW-1					
Sampling Event No.	**Date**	**TOC Elevation**	**DTW**	**DTP**	**GW Elevation**
1	Dec-88	NM	NM	NM	NM
2	May-89	14.54	10.17	10.14	4.37
3	Feb-91	14.54	11.46	10.85	3.57
4	Mar-04	18.32	7.20	5.62	11.12
5	Nov-06[d]	18.32	9.15	9.11	9.17
6	Dec-07	16.70[c]	9.53 [e]	9.53	7.17
7	Mar-08	16.70	8.99	8.92	7.71
8	Jun-08	16.70	8.95	8.87	7.75
9	Sep-08	16.70	NM[c]	NM[c]	NM[c]
10	Dec-08	16.70	NM	NM	NM
11	Mar-09	16.70	9.06 [e]	9.06	7.64
12	Sep-09	16.70	9.45 [e]	9.45	7.25
13	Mar-10	16.70	8.93 [e]	8.93	7.77
14	Sep-10	16.70	9.50	9.65	7.05
15	Mar-11	16.70	9.05	9.04	7.65
16	Sep-11	16.70	9.75	9.74	6.95
17	Mar-12	16.70	9.33	NP	7.35
18	Sep-12	16.70	NM	9.69	NM
19	Mar-13	16.70	NM	9.99	NM
20	Sep-13	16.70	11.60	9.99	5.10

Notes:

The 1988, 1989, and 1991 water elevations were measured by Groundwater Technology, Inc.

The 2004 and 2006 water elevations were measured by PES Environmental.

NS = Not sampled

NP = No product

NM - Not measured

NA = data not available from the previous consultant for this event

TOC Elevation = Top of Casing Elevation

DTW = Depth to water from the top of the casing

DTP - Depth to product from the top of the casing

GW Elevation - Groundwater elevation as compared to mean sea level

[a] Wells resurveyed in May 1989

[b] New elevation recorded by PES. Date of survey unclear.

[c] Wells resurveyed by PES in April 2007

[d] no water level data available for the December 2006 sampling event

[e] Thickness of product interfered with determining oil/water interface.

[f] Depth to groundwater = depth to free product as difference could not be determined

APPENDIX E

Historical Product Extraction Data Table

Table D
Historical Trench and Monitoring Well Product Recovery
6400 Christie Avenue, Emeryville, CA

	Well or Trench Location																											
Extraction Date	**MW-3**	**MW-4**	**MW-5**	**MW-6**	**MW-7**	**MW-8**	**MW-9**	**MW-10**	**MW-11**	**MW-12**	**MW-13**	**MW-14**	**MW-15**	**MW-16**	**MW-17**	**MW-18**	**MW-E**	**RW-1**	**TA-E**	**TA-M**	**TA-W**	**TB-E**	**TB-M**	**TB-W**	**TC-E**	**TC-M**	**TC-W**	**Total Extracted**
Apr-04	---	---	---	---	---	1.00	---	1.00	---	---	---	---	---	---	---	---	---	19.75	---	---	---	---	---	---	---	---	---	21.75
May-04	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	22.5	---	---	---	---	---	---	---	---	---	22.50
Sep-04	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.74	---	---	---	---	---	---	---	---	---	0.74
Oct-04	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.22	---	---	---	---	---	---	---	---	---	0.00
2004 Total																												**44.99**
Jan-05	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.00
Apr-06	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3.3	---	---	---	---	---	---	3.30
Jun-06	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	8.9	9.2	10.3	---	---	---	---	---	---	28.40
Jul-06	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3.6	5	5.3	---	---	---	---	---	---	13.90
Aug-06	---	---	---	---	---	0.8	---	0.8	---	---	1	0.2	0.2	---	---	---	---	---	0.2	0.2	0.4	---	---	---	---	---	---	3.80
Sep-06	---	---	---	---	---	---	---	0.8	---	---	0.2	0.3	---	---	---	---	---	---	0.6	---	0.6	---	---	---	---	---	---	2.50
Nov-06	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.2	---	---	---	---	---	---	---	---	0.20
Dec-06	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.2	---	---	---	---	---	---	---	---	0.20
2006 Total																												**52.30**
Jan-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.2	---	---	---	---	---	---	---	---	0.20
Feb-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.2	---	---	---	---	---	---	---	---	0.20
Mar-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.2	---	---	---	---	---	---	---	---	0.20
Nov-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.81	0.68	---	---	---	0.63	---	---	2.12
Dec-07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.01	0.61	0.07	---	---	---	0.002	---	---	0.69
2007 Total																												**3.41**
Feb-08	0.03	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.45	0.08	0.06	0.18	0.04	0.06	0.06	0.08	0.05	0.05	1.14
Feb-08	---	---	0.05	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.45	0.15	0.15	0.30	---	---	---	---	---	---	1.10
Mar-08	---	---	---	0.02	0.002	0.02	0.001	0.04	0.02	0.03	0.004	0.01	0.02	0.01	0.01	0.003	0.012	0.3	0.09	0.06	0.09	---	---	---	0.06	---	---	0.80
Mar-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.002	0.008	---	---	---	---	---	---	0.01
May-08	0.09	---	---	---	---	---	---	0.075	---	0.075	0.019	0.009	---	---	0.13	---	---	1.397	0.866	1.466	1.431	---	---	---	---	---	---	5.56
Jun-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.15	0.11	0.57	---	---	---	---	---	---	0.83
Aug-08	0.12	---	---	---	---	---	---	0.048	---	0.024	0.009	---	---	---	---	---	---	0.75	0.9	1.6	0.7	0.3	0.3	---	0.15	---	---	4.90
Sep-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.03	0.09	0.048	---	---	---	---	---	---	0.17
Nov-08	0.078	---	---	---	---	0.009	---	---	---	0.06	0.009	---	---	0.003	0.06	---	---	0.6	0.1	0.03	---	0.06	0.06	0.06	0.06	0.09	0.09	1.37
Dec-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0003	0.08	---	---	---	---	0.03	---	---	0.11
2008 Total																												**14.99**
Mar-09	0.279	---	---	---	---	0.378	---	0.369	---	0.261	0.007	0.023	0.117	---	0.342	---	0.023	1.800	0.750	0.950	1.010	0.153	0.153	0.153	0.653	0.153	0.153	7.73
Jun-09	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.5	---	---	---	---	---	---	---	---	0.50
Sep-09	0.286	---	---	---	0.022	0.418	---	0.176	0.308	0.176	0.088	0.007	0.176	0.088	0.176	0.022	0.066	7.15	1.4	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.1	19.46
Dec-09	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0	0.9	0.06	---	---	---	0	---	---	0.96
2009 Total																												**28.65**
Mar-10	0.14	---	---	---	0.01	0.18	0.02	0.60	---	0.60	0.03	0.10	0.69	0.04	0.30	0.02	---	8.00	1.30	1.00	1.00	0.50	1.00	0.50	1.00	1.00	1.00	19.03
Jun-10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.75	---	---	---	---	---	---	---	0.75
Sep-10	0.3	0.2	0.4	0.5	0.01	0.5	0.01	0.5	---	1.6	0.02	0.01	1.5	0.02	1.0	0.02	0.1	6.9	1.00	1.00	1.00	0.3	0.3	0.4	1.00	0.5	0.5	19.59
Dec-10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.10	0.00	0.05	---	---	---	0.00	---	---	0.15
2010 Total																												**39.52**
Mar-11	---	---	---	---	---	0.002	---	0.002	---	---	---	0.002	---	---	0.003	---	---	0.002	0.06	0.06	0.02	---	---	---	0	---	---	0.15
Sep-11	0.2	--	--	--	--	0.3	--	--	--	--	0.2	--	--	0.1	--	--	--	0.5	--	0.45	0.25	0.1	0.1	0.1	--	0.1	0.1	2.50
2011 Total																												**2.65**
Mar-12	0.015	--	--	--	--	0.015	--	--	--	--	0.06	--	--	--	0.01	--	--	0.06	0.13	0.03	0.015	--	0.01	--	--	0.015	0.015	0.375
Sep-12	--	--	--	--	--	0.03	--	0.023	--	--	0.08	--	--	--	--	--	0.015	0.06	0.045	0.08	0.09	--	--	--	--	--	--	0.423
2012 Total																												**0.798**
Mar-13	0.06	--	--	--	--	0.08	--	0.015	--	--	0.08	--	--	--	--	--	0.01	0.06	0.05	0.12	0.07	--	--	--	0.03	0.03	0.03	0.635
Sep-13	0.06	--	--	--	--	0.02	--	0.05	--	--	--	--	--	--	--	--	0.02	0.06	0.02	0.02	0.02	--	--	--	0.01	0.02	0.02	0.320
2013 Total																												**0.955**
Total Extracted	**1.66**	**0.20**	**0.45**	**0.52**	**0.04**	**3.75**	**0.03**	**4.56**	**0.33**	**2.83**	**1.81**	**0.66**	**2.70**	**0.26**	**2.03**	**0.07**	**0.25**	**76.75**	**22.00**	**25.93**	**28.78**	**2.55**	**3.08**	**2.37**	**4.81**	**3.06**	**3.06**	**194.54**

Note:

All free product quantities presented in gallons

APPENDIX F

Groundwater Disposal Documentation

EnviroClean MSDS

Evergreen Environmental Services

dedicated to the protection of the environment

To schedule a pickup, call
800-972-5284
or 510-795-4400

6880 Smith Ave., Newark, CA EPA# CAD982413262
16540 S. San Pedro St., Carson, CA EPA# CAD981696420

Send Payment to:
Evergreen Oil Inc
Dept. of LA 23234
Pasadena, CA 91185-3234

Work Order Bill of Lading WOC140235

Customer SES007

Pickup Location:
BAY CENTER APARTMENTS
6400 CHRISTIE ST

EMERYVILLE CA 94608

Bill To:
STELLAR ENVIRONMENTAL SOLUTIONS
DNU2198 SIXTH ST STE 201

BERKELEY CA 94710

Contact: HENRY PIETROPAOLI (510) 594-2050 Ext. 0000
NOTE

CUST NO.	EPA NO.	TERMS	PURCHASE ORDER NUMBER	TERRITORY
SES007	CAL000374146	Net 30		130

REQ. DATE	BOE NO.	Billgroup	OIL ROUTE	PROFILE	PROFILE	PRINTED BY
10/1/2013			5			gbreedlove

Quantity Req.	Quantity Pickup	Item Description	Manifest No.	Unit Price	Amount
200.00	1155	NON-RCRA HAZARDOUS WASTE, LIQUID	010835894 JK	$0.00 Contract	
4.00	4	HOURLY LABOR/TRANSPORTATION		$0.00 Contract	

1/2 ha.
612 8751

VAC JOB 1200 GAL WATER CALL 1 HOUR BEFORE TO MEE
T 510-812-8751 OR 510- 844-3123. PER STEVE DP

TSDF

- [X] Evergreen Oil, Inc. 6880 Smith Ave. Newark, CA 94560 CAD980887418
- [ ] Evergreen Oil, Inc. - Davis Road 30B Davis, CA 95616 CAD982446874
- [ ] Evergreen Oil, Inc. - Fresno 4139 N. Valentine Fresno, CA 93722 CAD982446882
- [ ] Evergreen Env. Svc. 16604 San Pedro Carson, CA 90746 CAD981696420
- [ ] Evergreen Oil, Inc -Santa Maria 745 A West Betteravia Santa Maria, CA 93454 CAD982446858
- [ ] SA Recycling 33210 Western Union City, CA 94587 CAL000344530
- [ ] Consolidated Manifest
- [ ] Test Results _____ PPM

DRIVER CHECKLIST
- Time In 1030 Time Out _____
- Tank/Drum Properly Labeled
- Accumulation Start Date Marked
- House Keeping - Tank/Drum Clean
- Other Services Checked Oil, Filters/Drums, Antifreeze
- Called in other services needed Oil, Filters/Drums, Antifreeze

C

Source: [ ] Collection Station [ ] Government [ ] Marine [ ] Agricultural [ ] Industrial

Retain Sample # (2) pH 7

Generator certifies that it has established a program to reduce the volume or quantity & toxicity of the hazardous waste to the degree determined by generator to be economically practicable.

I hereby certify that I have read and have the authority to bind the above listed generator to the terms on the reverse side of this form.

IMPORTANT NOTICE REGARDING THE DISPOSITION OF YOUR OIL.

Per California Health and Safety Code Section 25250.9, Evergreen hereby advises customer that customer's shipment of used oil may be transported to a facility that is required to comply with federal regulations applicable to management of used oil, but that is not required to comply with the more stringent requirements applicable to hazardous waste management facilities. California facilities that handle or process used oil are required to meet those more stringent requirements, and some out-of-state facilities that process used oil also meet those requirements. These include more stringent leak detection and prevention requirements, engineering certifications of tank integrity, and financial assurances for closure and accidental releases. It is lawful to send used oil to out-of-state facilities that comply only with federal used oil management standards and not these more stringent requirements. This notification is for information purposes only.

Driver Signature	Print Name	Route #	Date	Generator's Signature	Print Name	Date
Marlon Shelton	Marlon Shelton	53205	10-15-13	Steve Bettum for Bay Center Bridgecenter		10/15/13

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	1		010335891 JJK

GENERATOR

5. Generator's Name and Mailing Address

Generator's Phone:

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

U.S. EPA ID Number

Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
	1. NON RCRA HAZARDOUS LIQUID (SOLVENT WATER)	001	TT	1155	G	223		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information

PROFILE # [illegible]
DOT REGULATED WEAR PROTECTIVE CLOTHING
INVOICE # [illegible] 225
SALES ORDER #

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) | Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a

Printed/Typed Name | Signature | Month | Day | Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

MATERIAL SAFETY DATA SHEET

Product Name: ENVIROCLEAN

SECTION 1 MATERIAL IDENTIFICATION

PRODUCT NAME/DESCRIPTION: ENVIROCLEAN

DISTRIBUTED / MANUFACTURED BY:
ENVIRO CLEAN SERVICES, L.L.C.
PO BOX 721090
OKLAHOMA CITY, OK 73172

DATE: 5/27/2008
PHONE: 405-373-4545
EMERGENCY PHONE: 405-373-4548

SECTION 2 HAZARDOUS COMPONENTS

			OSHA (ACGIH) EXPOSURE LIMIT				
			TLVs(ACGIH)				
			TWA		STEEL		
CHEMICAL NAME	%W/W	CAS NUMBER	ppm	mg/m3	ppm	mg/m3	Other1
Proprietary Blend Of Ethoxylated Octylphenolic Surfactants							
Non-ionic water based liquid blend, concentrate							

This product does not contain any hazardous ingredients
as defined by CERCLA, and California's Prop. 65.

SECTION 3 HEALTH HAZARDS

IRRITATION
- ☑ SKIN ☐ SEVERE ☑ MODERATE
- ☑ EYE ☐ SEVERE ☑ MODERATE ☐ MILD (TRANSIENT)

CORROSIVITY
- ☐ SKIN ☐ 4HRS. (DOT) ☐ 24 HRS. (CPSC
- ☐ EYE ☐ MAY CAUSE BLINDNESS

SENSITIZATION ☐ SKIN ☐ RESPIRATORY ☐ ALLERGEN OTHER: None Known

INHALATION EFFECTS ☐ NARCOTIC EFFECT ☐ CYANOSIS ☐ ASPHYXIANT OTHER: None Known

LUNG EFFECTS (SPECIFY):

None Known

OTHER (SPECIFY):

☐ REPEATED CONTACT SKIN DEFATTER

OTHER (SPECIFY): Pre-existing skin and eye disorders may be aggravated by contact with this product.

SECTION 4 FIRST AID

INGESTION

☐ INDUCE VOMITING ☐ DON'T INDUCE VOMITING ☐ GIVE PLENTY OF WATER ☑ GET MEDICAL ATTENTION

☑ NEVER GIVE ANYTHING TO AN UNCONSCIOUS PERSON

DERMAL

☑ FLUSH WITH SOAP AND WATER ☑ GET MEDICAL ATTENTION ☑ CONTAMINATED CLOTHING - REMOVED AND LAUNDER ☐ CONTAMINATED SHOE - DESTROY

OTHER (SPECIFY):

None Known

EYE CONTACT

☑ FLUSH WITH WATER FOR 15 MINUTES ☑ GET MEDICAL ATTENTION

OTHER (SPECIFY):

Life and separate eyelids to aid in rinsing

INHALATION

☐ REMOVE TO FRESH AIR ☐ IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION ☐ GIVE OXYGEN ☑ GET MEDICAL ATTENTION

OTHER (SPECIFY):

None considered necessary.

SECTION 5 FIRE AND EXPLOSION DATA

CHARACTERISTICS:

FLASH POINT	>200 deg F
FLASH POINT METHOD(S)	NA
UPPER EXPLOSION LIMIT (UEL)	NA
LOWER EXPLOSION LIMIT (UEL)	NA
AUTOIGNITION TEMPERATURE	NA
FIRE HAZARD CLASSIFICATION (OSHA/NFPA)	0

EXTINGUISHING MEDIA

☐ WATER SPRAY ☐ WATER FOG ☐ WATER STREAM ☐ CO2 ☐ DRY CHEMICAL ☐ ALCOHOL FOAM

☐ FOAM ☐ EARTH OR SAND ☑ AS REQUIRED FOR FIRE BEING FOUGHT

SPECIAL FIRE FIGHTING PROCEDURES

☐ DON'T ENTER BUILDING ☐ ALLOW FIRE TO BURN ☑ WATER MAY CAUSE FROTHING ☐ DON'T USE WATER ☑ USE SELF-CONTAINED BREATHING APPRATUS

OTHER (SPECIFY): None Known

SPECIAL FIRE FIGHTING PROCEDURES

☐ DUST EXPLOSION HAZARD ☐ SENSITIVE TO SHOCK ☐ CONTAMINATION ☐ TEMPERATURE

OTHER (SPECIFY): None Known

SECTION 6 ACCIDENTAL RELEASE MEASURES

STEP TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

☑ FLUSH WITH WATER ☑ ABSORB WITH SAND OF INERT MATERIAL ☐ NEUTRALIZE ☐ SWEEP OR SCOOP UP AND REMOVE

☐ KEEP UPWIND ☑ PREVENT SPILLS ☑ DISPOSE OF PROMTLY

OTHER (SPECIFY): Remove with vacuum truck or pump to storage/salvage vessel.

SECTION 7 HANDLING AND STORAGE

PRECAUTIONARY LABELING

- [x] WASH AFTER HANDLING
- [x] DON'T GET IN EYES, SKIN, CLOTHING
- [x] DON'T BREATHE DUST, VAPOR, GAS
- [x] KEEP CONTAINTER CLOSED
- [ ] KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAMES
- [x] STORE IN TIGHTLY CLOSED CONTAINERS
- [ ] DON'T STORE NEAR COMBUSTIBLES
- [x] KEEP FROM CONTACT WITH CLOTHING
- [ ] EMPTY CONTAINER MAY CONTAIN HAZARDOUS RESIDUE
- [ ] USE EXPLOSION PROOF EQUIPMENT

OTHER (SPECIFY):

Keep this and all chemicals out of reach of children.

OTHER HANDLING AND STORAGE CONDITIONS

Storage: 35 - 120 deg F Shelf Life: Unlimited unopened

SECTION 8 PERSONAL PROTECTION/EXPOSURE CONTROLS

VENTILATION REQUIREMENTS - ALWAYS KEEP EXPOSURE BELOW PERMISSIBLE EXPOSURE LIMITS

- [ ] CONSULT AN INDUSTRIAL HYGIENIST
- [x] LOCAL EXHAUST
- [ ] USE ADEQUATE VENTILATION
- [ ] CHECK FOR AIR CONTAMINANT

OTHER (SPECIFY): Not Known

EYE

- [ ] FACE SHIELD AND GOGGLES
- [x] SAFTEY GLASSES
- [ ] GOGGLES

HAND

- [ ] BUTYL RUBBER
- [x] POLYVINYL ALCHOHOL
- [x] POLYVINYL CHLORIDE
- [ ] POLY-ETHYLENE
- [x] NATURAL RUBBER
- [ ] NEOPRENE

OTHER (SPECIFY): None Known

RESPIRATORY

- [ ] SELF-CONTAINED
- [ ] SUPPLIED AIR
- [ ] CAN OR CARTRIDGE GAS OR VAPOR
- [ ] FILTER-DUST, FUME, MIST

OTHER (SPECIFY): Not required for normal use

OTHER PROTECTIVE EQUIPMENT

- [ ] RUBBER BOOTS
- [ ] APRON

OTHER (SPECIFY): Eye wash

SECTION 9 PERSONAL PROTECTION/EXPOSURE CONTROLS

PHYSICAL FORM	Clear Liquid
COLOR	Colorless unless dyed
ODOR	Nil (unless fragranced)
PH	8.5 +/- .25
VAPOR PRESSURE (mm Hg)	NA
VAPOR DENSITY (AIR = 1)	NA
BOILING POINT	NE
FREEZING/MELTING POINT	NE
SOLUBILITY IN WATER	100%
SPECIFIC GRAVITY (WATER = 1)	1.028 +/- .01
EVAPORATION RATE (BUTYLACETATE = 1)	>1 as compared to water
VISCOSITY (CPS)	9 CP
MOLECULAR WEIGHT	NE

NA = NOT APPLICABLE NE = NOT ESTABLISHED

SECTION 10 STABILITY AND REACTIVITY

STABILITY ☑ STABLE ☐ UNSTABLE

CONDITIONS CONTRIBUTING TO INSTABILITY

☐ THERMAL DECOMPOSITION ☐ PHOTO DEGRADATION ☐ POLYMERIZATION ☐ CONTAMINATION

OTHER (SPECIFY): None known

INCOMPATIBILITY - AVOID CONTACT WITH

☐ STRONG ACIDS ☐ STRONG ALKALIS ☐ STRONG OXIDIZERS

OTHER (SPECIFY): None Known

HAZARDOUS DECOMPOSITION PRODUCTS - THERMAL AND OTHER (LIST)

None Known

CONDITIONS TO AVOID

☐ HEAT ☐ OPEN FLAMES ☐ SPARKS ☐ IGNITION SOURCES

OTHER (SPECIFY): None Known

SECTION 11 TOXICOLOGICAL PROPERTIES

ACUTE TOXICITY EFFECTS DATA

Eyes: Moderate irritation

Skin: May aggravate pre-existing skin and/or eye disorders or conditions.

Ingestion: Moderate Irritation

Inhalation: None known

IRRITATION EFFECTS DATA

None Known

OTHER ACUTE EFFECTS

None Known

CHRONIC/SUBCHRONIC DATA

None Known

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

None Known

ENVIRONMENTAL FATE

Not Known

ADDITION INFORMATION

None Known

SECTION 13 DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

SECTION 14 TRANSPORT INFORMATION

NON-HAZARDOUS

SECTION 15 REGULATORY INFORMATION

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

SARA 302 EXTREMELY HAZARDOUS SUBSTANCES LIST:

NA

SARA 312 HAZARD CATEGORY:

NA

SARA 313 TOXIC CHEMICALS LIST:

NA

CERCLA (COMPREHENSIVE ENVIROMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT:

NA

RCRA (RESOURCE CONSERVATION AND RECOVERY ACT) LISTED HAZARDOUS WASTES:

NA

CWA (CLEAN WATER ACT) LISTED SUBSTANCES:

NA

FDA (FOOD AND DRUG ADMINISTRATION):

NA

TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are listed

NFPA HAZARD INFORMATION SIGN

0 HEALTH HAZARD (BLUE DIAMOND)

4 - DEADLY
3 - EXTREME DANGER
2 - HAZARDOUS
1 - SLIGHTLY HAZARDOUS
0 - NORMAL MATERIAL

0 REACTIVITY HAZARD (YELLOW DIAMOND)

4 - MAY DETONATE
3 - SHOCK AND HEAT MY DETONATE
2 - VIOLENT CHEMICAL CHANGE
1 - UNSTABLE IF HEATED
0 - STABLE

0 FIRE HAZARD (RED DIAMOND)

FLASH POINTS:
4 - BELOW 73 F
3 - BELOW 100 F
2 - BELOW 200 F
1 - ABOVE 200 F
0 - WILL NOT BURN

SPECIFIC HAZARD (WHITE DIAMOND)

OXY	OXIDIZER
ACID	ACID
ALK	ALKALI
COR	CORROSIVE
W	USE NO WATER

EnviroClean
Degassing/Hydrocarbon Removal/Remediation Chemistry

Contents

PHYSICAL PROPERTIES

Product Name	EnviroClean
Physical Form	Clear Liquid
Color	Colorless unless dyed
Specific Gravity (Water = 1)	1.028 +/- .01
Solubility in Water	100%
Freezing/Melting Point	NE
Flash Point (^{0}F)	>200^0 F
pH	8.5 +/- .25
Reportable Quantity (RQ)	None

Complete information on health hazards, protective equipment, handling precautions, environmental hazards and disposal is listed in the current EnviroClean Material Safety Data Sheet (MSDS) for this product.

SUMMARY

EnviroClean is a non-flammable, non-toxic, water-based, proprietary blend of non-ionic ethoxylated octylphenolic surfactants that has been specifically engineered as a cleanup/mitigation agent for a wide range of hydrocarbon products. EnviroClean has been shown to be effective for quickly and effectively suppressing or completely eliminating VOCs, LEL's, benzene and low levels of H_2S and mercaptans in open or confined spaces.

EnviroClean has been used for cleanup of hydrocarbon spills and soil remediation. In these applications, EnviroClean effectively conditions (physically) the hydrocarbon such that the microbes that naturally occur can more readily consume it. It turns hydrocarbons into a nutrient source for the microbes. When sufficiently mixed with hydrocarbon and water, the EnviroClean forms a homogeneous solution of hydrocarbon, EnviroClean and water, which is very stable.

EnviroClean is a concentrated product that readily biodegrades.

EnviroClean is commercially available in 5-gallon units, 55-gallon drums, 275 and 330-gallon totes and bulk from Oklahoma City, Oklahoma, Wappingers Falls, New York, and Houston, Texas.

FLUID DESIGN

EnviroClean is a proprietary blend of surfactants that needs to be diluted to be effective and it is very safe to workers and the environment. EnviroClean does **not** contain caustic, therefore does not have the common harmful side effects associated with caustic based products. The product is designed for use as a degassing agent and a cleaner/degreaser for remediation. The product does not contain any enzymes or biomass itself. It works by conditioning the hydrocarbon so that the naturally occurring microbes (bacteria) are able to readily consume it. Through the application of the appropriate dilution and mixing, the EnviroClean will capture the hydrocarbon and tie it up in a solution that is very stable. The formation of this solution results in extremely small particles that will not recoalesce. It is important to note that if EnviroClean reaches its saturation point the oversaturated hydrocarbon will breakout of solution very quickly. This will allow for easy removal or reclamation of any hydrocarbon that is not preconditioned for remediation.

In addition to tying up the hydrocarbon in solution, the product is very effective when contacted with hydrocarbon vapors at suppressing volatile organic vapors, gases, and odors. Once combustible and flammable hydrocarbon vapors are tied up in the resultant solution, the solution will be very difficult to ignite. It also accelerates the biodegradation process of the hydrocarbon, thereby enhancing recycling or reclamation of water.

EnviroClean has been demonstrated to be effective on gas, oil, lube oil, hydraulic oil, most petroleum-based products, animal and vegetable oils, fats, and tallow oils. EnviroClean cleans the heavy tar build-up, asphaltenes or oily residue from inside of tanks and vessels. Furthermore, once a surface has been cleaned with EnviroClean, the cleaned surface will resist the deposition of oily materials.

EnviroClean can be used to cleanup oil spills whether in/on soil or hard surfaces. The first step in this process is to remove as much of the free oil as possible. This step is followed by contacting the contaminated surface appropriately with the proper dilution of EnviroClean and water. The treatment solution will contact the hydrocarbon molecules and change their behavior such that they are now essentially water soluble. The large increase in interfacial surface area creates conditions that are favorable to degradation and consumption by bacteria and microbes. The product converts hydrocarbons into a very good nutrient source for bacteria and microbes.

EnviroClean is typically fed at concentrations between 1% and 6%, depending on the nature of the hydrocarbon contamination problem. It can be diluted with most types of water – hard, soft or brackish water. The product has an unlimited shelf life when unopened. EnviroClean is effective at ambient temperatures. However, the **effectiveness will increase as the temperature of the application is increased**. EnviroClean does not require the use of steam, but has been shown to be very effective when injected into the steam (vapor) phase.

FIELD MIXING PROCEDURES

Mixing Concentrates

EnviroClean is usually delivered as a concentrate and **must** be diluted with water to work properly. Cleaning solutions can be formulated by premixing or eduction. It is not necessary to provide high shear agitation when preparing a batch of cleaning solution since EnviroClean is 100% soluble in water. It is recommended that when preparing the cleaning solution you first add the water into the mix container and then follow by the addition of EnviroClean. This will minimize foaming as the EnviroClean and water form a homogeneous solution.

For premixing, the following procedure may be used:

1. Add the correct amount of water to the container.
2. Depending on the desired strength, add the correct amount of EnviroClean to the container.
3. If the final solution is not a consistent pink color, mild agitation may be required until a consistent pink color is achieved.

Quality Control Testing

There is no easy field testing procedure to monitor the concentration of active ingredients in the EnviroClean formulation. Visually the color changes from rose color to lighter pink as the product is further diluted. Effectiveness can also be predicted by quantifying the amount of hydrocarbon that is to be picked up. By observing the effluent from the use of EnviroClean, an adjustment in the cleaning solution concentration can be made. If it is observed that free oil is floating on the effluent solution, then the concentration should be increased.

MATERIAL REQUIREMENTS

For specific protocols and application rates, please refer to the available **Product Usage Guide**, product label, or consult with the manufacturer or authorized distributor for additional guidance.

Equipment Cleaning & Parts Washing

EnviroClean is very effective for equipment cleaning applications. EnviroClean is used at light dilutions and has a significant “life of batch” as well as low foaming tendencies. The surfactants in EnviroClean desorb and micro-emulsify grease and oil contamination and separate it from solids (metal shavings, grit, etc.) allowing them to settle without accumulating oily sludges. These factors make EnviroClean ideal for spray wash systems as well as dip/agitating equipment. Some agitation or circulation of the fluid is required for thorough cleaning. For

equipment cleaning applications, EnviroClean is normally diluted to a 3% - 6% solution with water.

Soil Remediation

Calculate the volume of hydrocarbon contained in the contaminated area. It is important to determine accurately the depth of oil penetration into the soil. It will be important to agitate the soil to just below the depth of penetration. Once the estimate of hydrocarbon is known, the amount of the normal dilution of EnviroClean for soil remediation is 32 parts water to 1 part EnviroClean (3% solution). The EnviroClean solution will use the naturally occurring bacteria in the soil and begin to consume the hydrocarbon, which has been put into a form that can be quickly consumed. The remediation process normally occurs over 4 to 12 weeks.

The following step-by-step procedure can be used for soil remediation using EnviroClean:

1. If contaminated soil is deeper than 12", excavate the soil and spread at the surface to a depth of 10" – 12" and then proceed with this protocol. If contaminated soil is 12" in depth or less, thoroughly mix and aerate the soil in place utilizing a roto-tiller or similar equipment. If soil is extremely oily or gummy, mix clean soil with oily soil to expedite clean up and to make it easier to work with.

2. Utilizing local soil or rock, build a small berm surrounding the treatment area to prevent rain water run off from the site.

3. To determine treatment volumes of EnviroClean, measure the square footage area of the treatment cell and divide that number by 27 to find cubic yards per foot of depth (i.e. treatment area is 100' x 50': 100 x 50 ÷ 27 = 185). Multiply that number x .06 to determine the amount of EnviroClean to utilize in the treatment (i.e. 185 x .06 = 11 gallons EnviroClean). Dilute the EnviroClean to approximately a 3% solution (32 to 1 or 352 gallons water to 11 gallons EnviroClean). Spray the 3% EnviroClean solution over the entire treatment cell.

4. If, after a week, little to no rainfall has fallen, water the site thoroughly.

5. Wait another week and repeat steps 1 and 3, if needed.

6. Monitor and continue the treatment protocol until desired clean up levels are reached.

Samples can be taken and analyzed for Total Petroleum Hydrocarbons (TPH) to track the progress of the remediation. If the TPH were to appear to stabilize and not continue to decline, a second application of EnviroClean may be required.

***Note*:** It can be helpful, but not required, to add a highly soluble, high nitrogen fertilizer such as Miracle Grow or Sam's Choice to the first 3% EnviroClean solution.

The addition of bacteria is not typically required. The EnviroClean solution will stimulate the activity level of the naturally occurring bacteria.

In the fall and winter, it helps to expedite the job if the treatment cell is covered with plastic between treatments. This tends to hold in heat and generate additional moisture.

Keeping the soil moist is an integral part of the clean up.

Emergency Response & Spill Cleanup

Small Spill Cleanup: Dilute EnviroClean to a 10% solution. On small spills apply with 2 ½ gallon pressure sprayer or similar device. Cover the entire spill working in a circular motion from outside perimeter toward the center of the spill. After application of EnviroClean has been completed, agitate spill area with forcible stream of water or broom and rinse thoroughly. EnviroClean helps to reduce or eliminate any VOC concerns associated with the cleanup by micro-emulsifying the hydrocarbon on contact drastically reducing the LEL levels in a very short time frame. EnviroClean also eliminates sheens.

On Roadways & Pavement: EnviroClean can be applied with a pressure sprayer or applied through a foam eductor at a 6% setting. EnviroClean will instantly stop the deterioration of asphalt by diesel or gas and eliminate slippery conditions. Dispose in accordance with local rules and regulations.

***Note*:** For use with absorbents, EnviroClean will increase effectiveness by allowing the contaminate to more easily penetrate into the absorbent.

Degassing & Cleaning of Tanks & Equipment

EnviroClean is effective for the degassing and cleaning of all types of petroleum storage tanks. For small tanks of less than 50,000 gallons,

SECTION 16 INTERNATIONAL REGULATIONS

CANADA

DSL:

NA

WHMIS HAZARD CLASSIFICATIONS:

NA

WHMIS TRADE SECRET REGISTRY NUMBER(S):

NA

WHMIS HAZARDOUS INGREDIENTS:

NA

WHMIS SYMBOLS:

NA

EUROPEAN ECONOMIC COMMUNITY (EEC)

EINECS MASTER INVENTORY:

NA

EEC PRIMARY RISK SYMBOL:

NA

EEC RISK AND SAFETY PHRASES:

NA

THIS INFORMATION IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. NO WARRANTY, EXPRESSED OR IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND SAFE HOLDING PROCEDURES ARE BELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD REVIEW THESE RECOMMENDATIONS IN THE SPECIFIC CONTEXT OF THE INTENDED USE AND DETERMINE WHETHER THEY ARE APPROPRIATE.

PREPARED BY: Jeff Schulhoff

EnviroClean should be utilized through a power washer at dilutions between 2% and 6% depending on the type of product within the vessel and the degree of contamination. Typically for flammables, a 6% solution is utilized to completely agitate the tank residue and to scour the wall of the vessel prior to and during pump out. Lower dilutions may be utilized for products not representing a vapor hazard. EnviroClean is also effective for reducing H2S, Benzene and other VOC's.

Tank Bed Remediation

A common and effective means of mitigating the vapor hazard and remediating the tank bedding is to utilize a "flushing and recovery" technique with a diluted solution of EnviroClean. Typically a 3% to 6% solution of EnviroClean and water is utilized in a batch process to treat the impacted portions of the tank floor area. Simply perforating the affected area with a "buster" or hole saw and allowing the EnviroClean solution to flood the affected bedding will eliminate immediate, and future, recurrences of vapor generation. The process also serves to remediate the contamination by flushing entrained hydrocarbon out of the bedding for recovery and disposal, or re-processing. If necessary, the entire sub-floor area may be treated by saturating the zone of contamination and flushing the fluid to the sump, or other collection point, and recovering the rinsate for disposal. Depending upon the severity of the leak, and the resultant degree of subfloor contamination, the EnviroClean solution can be applied so as to simply saturate the bedding material, or it can be injected so as to flush and recover gross quantities of hydrocarbon.

Chemical Pipeline Pigging

As a general guideline, pump a slug of 3% to 6% solution and chase with water.

VOC Vapor Mitigation & Odor Control

EnviroClean is typically applied at a concentration of 3 – 6% for vapor and/or odor control. Circulate the solution through a manway cannon or other device in order to provide sufficient saturation of the vapor space of the vessel that is being degassed. Check the vapor level of the tank before circulation begins. Circulate for about 2 hours and let the tank settle for about 2 hours. Check the vapor level in the tank. More than one circulation may be required for complete vapor suppression. The holding capacity of EnviroClean may require sweetening or circulation with a fresh batch of product, depending on the amount of hydrocarbon vapors originally contained in the vessel.

Dilute EnviroClean to a 3% to 6% solution. Coverage is normally at 3 to 4 square yards of surface area per gallon. Heavy contamination or mercaptan type odors may require a stronger solution of EnviroClean.

Typically, 1 gallon of EnviroClean concentrate diluted to a 3% to 6% solution will render up to 6 gallons of petroleum product nonflammable when properly applied.

Hard Surface Cleaning & Decontamination

For heavy soiled oil and grease on hard surfaces: Mix a 6% solution of concentrate with clean water in quantity sufficient to cover contaminated area. Apply generous amounts with spray applicator, or equivalent and allow reasonable time for the surfactants in EnviroClean to penetrate and break down the hydrocarbon and grime. Once applied, solution may be scrubbed or brushed in for stubborn soiling. Next, apply EnviroClean at a 1% - 2% solution through a power washer (heated power wash system will expedite the process). Flush residue to containment and dispose of as local rules apply.

For lightly soiled or freshly oiled surfaces:
EnviroClean may be used through any power washer or steam jenny currently available. Operating temperatures of 140 degrees F. will maximize effectiveness. Solution strengths of 1 – 2% may be used for lighter decontamination duties. For small applications, a 5% solution (16 oz. EnviroClean concentrate to 2.5 gallons water) may be applied with a small pump sprayer and scrubbed or brushed into surface.

Insitu Free Product Recovery Enhancement

EnviroClean is effective for the insitu solubilization and recovery enhancement of entrained Free Product Hydrocarbon in the subsurface to facilitate recovery or biodegradation. Dilutions of 2% v/v are typical for light ends (i.e. gasoline) while concentrations of 3% to 6% are effective for Diesel Range Organic (DRO's) and heavier oils. Applications vary, however the EnviroClean solution is injected into the contaminated zone followed typically by a recovery event.

Soil Flushing and Recovery

EnviroClean is effective for the insitu solubilization and recovery enhancement of entrained Free Product Hydrocarbon in surface and sub-surface soil to facilitate recovery or biodegradation. Dilutions of 2% v/v are typical for light ends (i.e. gasoline) while concentrations of 3% to 6% are effective for Diesel Range Organic (DRO's) and heavier oils. Applications vary, however the EnviroClean solution is injected into or flushed through the contaminated zone.

Surface Washing & Shoreline Cleanup

Dilute EnviroClean to a 2% solution. On small spills apply with 2.5 gallon pressure sprayer or similar device. Cover entire spill, working in a circular motion, from outside perimeter toward the center of the spill. After application of EnviroClean has been completed, agitate spill area with forcible stream of water or broom and rinse thoroughly.

On larger spills, specific applications and protocols should be developed taking into account local risks and considerations.

***Note*:** EnviroClean is listed on the U.S. E.P.A. NCP Product Schedule as a Surface Washing Agent (listed SW #31). This listing does *not* mean that U.S. E.P.A. approves, licenses, certifies, or authorizes the use of EnviroClean on an oil discharge. This listing means only that data have been submitted to EPA as required by subpart J of the National Contingency Plan § 300.915.

Fire Fighting for Class A & B Fires

Proportioning Rate:	6%
GPM Flow Rate:	95 – 110
PSI at Eductor:	200 or MFG's recommendations
Hose Length:	As per MFG's suggestion
Nozzle Type:	Standard adjustable or automatic
Coverage:	0.2 gpm per square foot
Nozzle Pattern:	Hard cone to coarse stream
Application:	Starting from the outside perimeter, using a stirring, mixing action.

Contaminated Soil Excavation

In most cases a 3% solution of EnviroClean will be adequate to keep vapor emissions within acceptable limits. Dilute EnviroClean concentrate with water at a ratio of 1 part EnviroClean to 32 parts water to make a 3% solution. The EnviroClean solution should be applied evenly to the soil surface in sufficient quantity to dampen the surface well. As a general rule, 1 gallon of solution will cover approximately 4 sq. yd. of soil surface area.