

July 10, 2014

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By Alameda County Environmental Health at 11:05 am, Jan 28, 2015

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Alameda, CA 94502-6577

Transmittal
Data Gaps Investigation Summary Report
Apex Refrigeration, Inc., Fuel Leak Case No. RO0003069, Emeryville, California

Dear Mr. Detterman:

Apex Refrigeration, Inc. (Apex) is pleased to submit this report to document completion of a data gaps investigation in the vicinity of a former 1,500-gallon underground storage tank (UST) at the Apex Refrigeration, Inc. (Apex) facility, located at 1550 Park Avenue in Emeryville, California. This report was prepared by Engineering/Remediation Resources Group, Inc. (ERRG) on behalf of Apex in compliance with Alameda County Environmental Health directives related to Fuel Leak Case No. RO0003069.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

If you have any questions, please contact me at (510) 653-9850 or via e-mail at pelco1969@sbcglobal.com.

Sincerely,

A handwritten signature in black ink that reads "Pennie Barger". The signature is written in a cursive style.

Pennie Barger
Secretary-Treasure

enc: Data Gaps Investigation Summary Report, Apex Refrigeration, Inc., 1550 Park Avenue, Emeryville, California, July 2014

cc: Brad Hall, ERRG
Pennie Barger, Apex Refrigeration, Inc.
Michael O. Lamphere, Lamphere Law Offices
ERRG Project File

Data Gaps Investigation Summary Report
Apex Refrigeration, Inc.
1550 Park Avenue
Emeryville, California

July 2014

ERRG Project No. 2013-094

Prepared for:

Apex Refrigeration, Inc.
1550 Park Avenue
Emeryville, California 94608

Prepared by:



ERRG

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Data Gaps Investigation Summary Report
Apex Refrigeration, Inc.
1550 Park Avenue
Emeryville, California

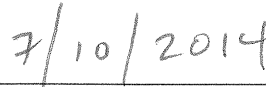
Submitted by:
Engineering/Remediation Resources Group, Inc.



Signature

Erik Oehlschlager

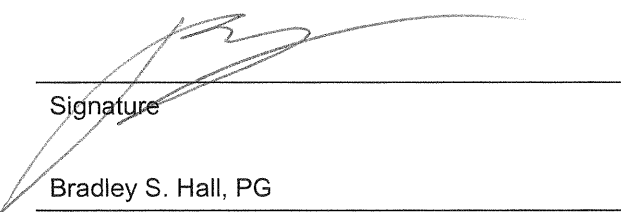
Name



Date

Project Manager

Title



Signature

Bradley S. Hall, PG

Name



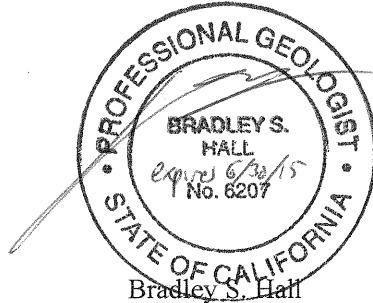
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Vice President

Title

CERTIFICATION

This document was prepared under the direction and supervision of a qualified Professional Geologist.



Bradley S. Hall

Professional Geologist No. 6207

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Abbreviations and Acronyms

ACEH	Alameda County Environmental Health Department
ACPWA	Alameda County Public Work Agency
Apex	Apex Refrigeration, Inc.
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
DWR	California Department of Water Resources
1,2-DCA	1,2-dichloroethane
EDB	ethylene dibromide
EPA	U.S. Environmental Protection Agency
ERRG	Engineering/Remediation Resources Group, Inc.
ESLs	environmental screening levels
IDW	investigation-derived waste
LNAPL	light nonaqueous-phase liquids
LUFT	leaking underground fuel tank
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MTBE	methyl tert-butyl ether
PAHs	polycyclic aromatic hydrocarbons
PG&E	Pacific Gas and Electric Company
PID	photoionization detector
Policy	Low-Threat Underground Storage Tank Case Closure
PVC	polyvinyl chloride
SCM	site conceptual model
SFRWQCB	San Francisco Bay Regional Water Quality Control Board
STLC	soluble threshold limit concentration
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TPH	total petroleum hydrocarbons
TPH-d	TPH as diesel
TPH-g	TPH as gasoline
TPH-mo	TPH as motor oil
UST	underground storage tank

Section 1. Introduction

Engineering/Remediation Resources Group, Inc. (ERRG) has prepared this summary report to document completion of a data gaps investigation in the vicinity of a former 1,500-gallon underground storage tank (UST) at the Apex Refrigeration, Inc. (Apex) facility, located at 1550 Park Avenue in Emeryville, California (Figure 1). The objective of the investigation was to further assess the nature and extent of soil and groundwater contamination related to the former UST. The work was performed in accordance with the “Draft Data Gaps Investigation Work Plan, Apex Refrigeration, Inc. 1550 Park Avenue, Emeryville, California” (ERRG, 2013a), conditionally approved by Alameda County Health Care Services (ACEH) on February 3, 2014 (Appendix A).

In addition to this introduction, which summarizes the site background information (Section 1.1) and investigation approach (Section 1.2), this report describes the field activities performed by ERRG (Section 2), summarizes the results of the investigation (Section 3), presents a site conceptual model (SCM) (Section 4), provides recommendations (Section 5), and lists the guidance and documents that were used to prepare this report (Section 6).

1.1. SITE BACKGROUND

On or about November 6, 2009, a UST was discovered during street improvements adjacent to the building located at 1550 Park Avenue in Emeryville, California (P&D Environmental, Inc., 2010). The street, curb, and gutter adjacent to the south side of the UST were excavated to a depth of approximately 4 feet below ground surface (bgs). The top of the UST was encountered at a depth of approximately 1 foot bgs and was measured to be approximately 10 feet long and 5 feet in diameter. No holes were reported in the tank; however, an opening at the top of the tank allowed access to the interior of the UST. The UST contained water and a floating layer of black viscous fluid with a strong petroleum odor.

On December 9, 2009, approximately 700 gallons of oily water was pumped from the UST and transported off site for disposal at the Clearwater Environmental disposal facility in Silver Springs, Nevada. One water sample collected from the UST was submitted to McCampbell Analytical, Inc. in Pittsburg, California, for fuel fingerprint laboratory analysis using U.S. Environmental Protection Agency (EPA) Methods 3550C and 8015B. The laboratory analyses identified fuel oil and possibly bunker oil in the sample. During January and February 2010, approximately 1,500 gallons of additional water was pumped from the UST and the adjacent excavated area and transported for disposal at the Alviso Independent Oil facility in Alviso, California (P&D Environmental, Inc., 2010).

The City of Emeryville removed the UST on February 8, 2010. Soil excavated around the UST displayed a blue-gray discoloration and exhibited a strong hydrocarbon odor. The UST was visually inspected following removal from the excavation pit. The UST appeared to be in good condition and had a calculated capacity of approximately 1,500 gallons. No evidence of holes, cracks, or pitting from significant corrosion was observed; however, a hole was observed at the west end of the UST where a rivet was missing. It is unknown whether the rivet was dislodged during removal of the UST. Following removal of the UST from the excavation pit, a layer of black oil was observed floating on the water in the pit at approximately 6 feet bgs. Water samples could not be collected for chemical analysis because an inadequate amount of water was present in the pit (P&D Environmental, Inc., 2010).

After removal of the UST, two soil samples (T1 and T2) were collected from the bottom of the excavation pit using a backhoe bucket (Figure 2). The samples were collected from the western and eastern ends of the former UST and submitted for laboratory analysis. A four-point composite sample (SP1) was also collected from the excavated soil for waste characterization purposes. The samples were analyzed for total petroleum hydrocarbons (TPH) as diesel (TPH-d) using EPA Method 3550C in conjunction with modified EPA Method 8015C; benzene, toluene, ethylbenzene, and xylenes (BTEX) and the lead scavengers ethylene dibromide (EDB) and 1,2-dichloroethane (1,2-DCA) by EPA Method 5030B in conjunction with EPA Method 8260B. In addition, sample SP1 was analyzed for Leaking Underground Fuel Tank (LUFT) 5 metals (cadmium, total chromium, lead, nickel, and zinc) using EPA Method 3050B in conjunction with EPA Method 6010B, and for the soluble threshold limit concentration (STLC) of total chromium using California 22 Waste Extraction Test extraction methods and EPA Method 6010B for disposal characterization purposes (P&D Environmental, Inc., 2010).

TPH-d was detected in samples T1, T2, and SP1 at concentrations of 15, 5.8, and 830 milligrams per kilogram (mg/kg), respectively. BTEX, EDB, and 1,2-DCA were not detected at concentrations greater than the laboratory reporting limits in these excavation samples. Cadmium was not detected at concentrations greater than laboratory reporting limits in sample SP1. Total chromium, lead, nickel, and zinc were reported in the SP1 sample at concentrations of 54, 26, 57, and 110 mg/kg, respectively. The STLC total chromium result for sample SP1 was 0.23 milligrams per liter (mg/L) (P&D Environmental, Inc., 2010).

Approximately 20.29 tons of soil was transported as nonhazardous waste for offsite disposal at the Republic Services Vasco Road Landfill in Livermore, California (P&D Environmental, Inc., 2010).

A tank closure report was prepared and submitted to ACEH for review. ACEH subsequently submitted a letter, dated June 11, 2011, requiring that a soil and groundwater investigation be performed to delineate the lateral and vertical extent of potential petroleum impacts related to the UST.

On March 1, 2013, ERRG collected soil samples and groundwater samples from four locations (S1 through S4) surrounding the former UST to evaluate the lateral and vertical extent of petroleum

hydrocarbons in soil and groundwater. The soil and groundwater samples were analyzed for TPH-purgeables and extractables by EPA Method 8015B, BTEX and methyl tertiary-butyl ether (MTBE) by EPA Method 8260B, and polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270C-SIM.

Analytical results for soil and groundwater samples were compared with the San Francisco Bay Regional Water Quality Control Board's (SFRWQCB) environmental screening levels (ESLs) under commercial/industrial land use scenarios where groundwater is not a current or potential source of drinking water ([Water Board, 2013a](#)). The following analytes were detected at concentrations exceeding the SFRWQCB ESLs in soil and groundwater samples:

- Soil: TPH as gasoline (TPH-g) and TPH-d at locations S2 and S4
- Groundwater: TPH-g and TPH-d at locations S1 through S4; TPH as motor oil (TPH-mo) at locations S1, S2, and S4; and benzo(b)fluoranthene at boring S2

BTEX, MTBE, and the remaining PAHs were either not detected at concentrations exceeding their respective laboratory limits or were detected at concentrations less than the SFRWQCB ESLs in soil and groundwater. [Figure 2](#) shows the locations where samples were collected and the TPH results for soil and groundwater (ERRG, 2013b).

At the request of ACEH, a preferential pathway survey was also performed during the investigation to locate possible utility corridors within the immediate area surrounding the former UST.

A soil and groundwater investigation summary report was submitted to ACEH, which included a recommendation to collect additional data and further investigate the nature and extent of contamination in accordance with the criteria established in the State Water Resources Control Board's (SWRCB) "Low-Threat Underground Storage Tank Case Closure Policy" (Policy) ([SWRCB, 2012](#)). After evaluating the data and recommendations, ACEH requested the preparation of a work plan to address data gaps at the site based on the Policy criteria.

1.2. DATA GAP INVESTIGATION APPROACH

ERRG prepared and submitted a Work Plan to ACEH describing the approach to this data gaps investigation ([ERRG, 2012](#)). In a letter directed to Apex, dated January 24, 2013 ([Appendix A](#)), ACEH conditionally approved the work plan and requested the following modifications to the investigation approach:

- Collect soil samples in conjunction with lithology changes, photoionization detector (PID) readings, and other signs of contamination such as odor or discoloration. Collect representative samples reflective of the extent and magnitude of contamination at the site, as well as to define the vertical extent of contamination.
- Place a hold on the collection of soil vapor samples.

- Construct the monitoring well with a slightly shallower screen interval than the proposed interval of 3 to 8 feet bgs.
- Conduct a well search using California Department of Water Resources (DWR) and Alameda County Public Work Agency (ACPWA) resources.

In follow-up e-mails to ERRG from Mark Detterman of ACEH, dated February 10, April 7 and 9, 2014 ([Appendix A](#)), proposed soil boring total depths were increased and the addition of a potential contingency soil boring was approved.

Section 2. Investigation Activities

This section describes the specific tasks performed by ERRG during this data gaps investigation. Utility locating and geophysical survey activities were performed on April 14, 2014 to clear soil boring locations and identify the depths of utilities. The drilling, sampling, and monitoring well installation activities were performed on April 16 and 17, 2014. The installed monitoring well was developed on May 2, 2014, and the thickness of light nonaqueous-phase liquids (LNAPL) in the monitoring well was measured on May 16, 2014.

2.1. PERMITTING, UTILITY CLEARANCE, AND GEOPHYSICAL SURVEY

Prior to mobilization, ERRG obtained soil boring and monitoring well permits from ACPWA. An encroachment permit was also obtained from the City of Emeryville to drill soil borings within the public right-of-way. [Appendix B](#) provides the relevant permits for this investigation.

ERRG marked the proposed boring locations in white paint and notified Underground Service Alert North on April 9, 2014. ERRG contracted with Subtronic Corporation of Martinez, California, a private utility locator, to clear the proposed boring locations, mark located underground utilities, and provide depths of located utilities within the work area. Utility locations and depths were obtained using a combination of electromagnetic induction and transmitter insertion to allow instrument readings typically accurate to ± 10 percent. [Figure 3](#) shows the utility lines within and surrounding the project site. [Figures 4 through 10](#) provide obtained utility depths.

2.2. SOIL BORINGS

ERRG subcontracted Gregg Drilling of Martinez, California, a California-licensed driller, to advance eight borings using a hand auger to depths ranging from 6 to 9 feet bgs in the vicinity of the former UST ([Figure 2](#)). Soil borings S5, S7, S8, S9, S10, and S13 were advanced to 9 feet bgs. Soil borings S6 and S12 were advanced to 6 and 7.5 feet bgs, respectively. A field geologist, under the supervision of a California-registered geologist, logged the soil borings during hand auger drilling using the Unified Soil Classification System. [Appendix C](#) provides the soil boring logs for this investigation. All borings were tremie grouted from the bottom up with neat cement upon completion and finished to match the surrounding surface.

2.3. SOIL AND GROUNDWATER SAMPLING

Eighteen soil samples and 7 grab groundwater samples were collected from borings S5 through S10 and S13 during this data gaps investigation. Shallow soil samples were collected at or near the water table from depths between 4 and 5.5 feet bgs based on the potential of LNAPL to be floating on the water. Intermediate soil samples were collected beneath the observed groundwater table from depths between 7.5 and 8 feet bgs; sampling depths were based on PID readings and visual observation of potential contamination. Deeper samples were collected from the bottom of the soil borings. The following three soil sampling intervals were missed: an intermediate sample at S7, a bottom of boring sample at S6, and a 6-foot-bgs sample with an elevated PID reading at S5.

One grab groundwater sample was collected from borings S5 through S10 and S13 using a 3/4-inch polyvinyl chloride (PVC) pipe placed within the boring. Groundwater grab samples were collected using a peristaltic pump and dedicated polyethylene tubing and transferred to laboratory-supplied containers.

Soil and groundwater samples were then placed on ice within coolers and transported under chain-of-custody procedures to Curtis & Tompkins of Berkeley, California, a California-certified laboratory, for analysis of the following analytes:

- TPH-purgeables (TPH-g) by EPA Method 8015B
- TPH-extractables (TPH-d and TPH-mo) by EPA Method 8015B with silica gel cleanup

In addition, one four-point composite soil sample and one water sample were analyzed for LUFT 5 metals (cadmium, chromium, nickel, lead, and zinc) for waste disposal characterization purposes using EPA Method 6010B.

Trip blanks were submitted with the investigation samples. The trip blanks samples were placed in the sample cooler at the beginning of the day, transported to the laboratory with the investigation samples, and then analyzed for TPH-purgeables under EPA Method 8015B.

2.4. WELL INSTALLATION, DEVELOPMENT, AND LNAPL MEASUREMENT

Monitoring well MW-1 was installed on April 16, 2014, in S12 east of the former UST near previous sample location S4, where the highest concentrations of TPH-d were reported (83,000 micrograms per liter) in the grab groundwater sample collected in March 2013 (Figure 2). After the soil boring was advanced to a total depth of 7.5 feet bgs, a 5-foot long, 1.5-inch inner diameter by 2.5-inch outer diameter, prepacked screen was inserted using flush-threaded PVC riser pipe. The prepacked screen consisted of a 0.010-inch machine slotted PVC well screen pipe surrounded by a stainless steel mesh. The upper portion of the screen interval was placed about 0.5 foot above the water table, so the well will capture any LNAPL that may be floating on groundwater. Once the well assembly was in place, #2/12 sand was gravity-installed to fill any voids between the prepacked screen and well bore, and to create a 6-

inch sand filter directly above the well screen. With the sand filter in place, 6 inches of dry granular bentonite was gravity-installed on top of the sand barrier and hydrated to form a well seal. After the bentonite hydrated for 30 minutes, the remaining well annulus was grouted with neat cement. The well was capped with an expanding well plug and surface-completed with a traffic-rated flush-mounted well box. Well construction details are provided on the soil boring log for S12 (see [Appendix C](#)).

ERRG developed well MW-1 on May 2, 2014, by mechanically surging the entire well screen and evacuating 7.5 gallons (approximately 18 well volumes) using a 1.5-inch Qwater Environmental Series well development tool. ERRG returned on May 16, 2014, to measure the LNAPL thickness using a Solinst Oil/Water Interface Meter accurate to $\pm 1/200$ feet. [Appendix D](#) provides the field logs documenting well development activities and LNAPL measurements.

2.5. LAND SURVEY

On May 2, 2014, Calvada Surveying, Inc. surveyed all boring locations and monitoring well MW-1 installed at soil boring location S12. [Appendix E](#) presents the results of the environmental land survey.

2.6. DECONTAMINATION PROCEDURES

Nondedicated equipment used during the UST investigation was decontaminated on site using a triple-rinse method with three new 5-gallon buckets. The first bucket contained tap water and Alconox (soap), and the second and third buckets contained laboratory-provided deionized water for rinsing. The equipment was scrubbed and cleaned of sediments within the first bucket and then rinsed in the two subsequent buckets. Decontamination water was then transferred to the U.S. Department of Transportation-approved 55-gallon drum used for secured containment following the sampling event.

2.7. INVESTIGATION-DERIVED WASTE DISPOSAL

Investigation-derived waste (IDW) consisted of soil cuttings, decontamination water, and groundwater. IDW was stored in two U.S. Department of Transportation-approved 55-gallon drums, pending analysis and waste characterization. ERRG obtained permission to temporarily store the drums in a secure location at the site. Any personal protective equipment was disposed of as nonhazardous waste in the municipal trash.

Section 3. Investigation Results

Soil and groundwater samples were analyzed following the methods discussed in [Section 2.3](#). [Appendix E](#) presents the laboratory analytical reports for this data gaps investigation. [Figure 2](#) shows the sample locations and corresponding TPH concentrations in soil and groundwater. Analytical results were compared with the SFRWQCB's ESLs in shallow soil less than or equal to 3 meters bgs for commercial/industrial land use where groundwater is a current or potential source of drinking water ([Water Board, 2013b](#)).

This section discusses the soil and groundwater conditions based on inspection of soil cores; summarizes the analytical results of the soil, groundwater, and QC samples; presents the results of the survey of preferential pathways; and summarizes the results of LNAPL measurements in MW-1.

3.1. SOIL AND GROUNDWATER CONDITIONS

Based on boring logs completed during the initial investigation and this data gaps investigation, the uppermost soil is composed of various fill material, including loam, aggregate base, and gravelly matrices at depths ranging between approximately 1 and 5 feet bgs; the deepest fill material occurs in the area of the former UST. Below the fill material, the soil transitions into native dark-colored clays and extends to at least 9 feet bgs. Groundwater was encountered in each of the borings at approximately 3 to 5.5 feet bgs. The inferred groundwater flow direction is approximately west toward San Francisco Bay.

3.2. SOIL ANALYTICAL RESULTS

Soil samples from seven borings were analyzed for TPH-purgeables and TPH-extractables by EPA Method 8015B. Under Method 8015B, TPH-extractables analyses were run with silica gel cleanup. The analyses were reported as TPH-g, TPH-d, and TPH-mo. [Table 1](#) presents the soil analytical data for this investigation and compares the results with the ESLs. The sample results are summarized below.

- TPH-g was detected in 6 of 18 samples at concentrations ranging from 1.5 mg/kg to 1,200 mg/kg. One of the results exceeded the ESL of 500 mg/kg for TPH-g.
- TPH-d was detected in 12 of 18 samples at concentrations ranging from 1.8 to 4,700 mg/kg. Three of the results exceeded the ESL of 110 mg/kg for TPH-d.
- TPH-mo was detected in 7 of 18 samples at concentrations ranging from 7.1 to 380 mg/kg. None of the results exceeded the ESL of 500 mg/kg.

3.3. GROUNDWATER ANALYTICAL RESULTS

Grab groundwater samples from seven borings were analyzed for TPH-purgeables and extractables by EPA Method 8015B. Under Method 8015B, TPH-extractables analyses were run with silica gel cleanup. Because of a laboratory oversight, the groundwater sample from boring S13 was analyzed outside of the hold time. Each sample was analyzed for TPH-g, TPH-d, and TPH-mo. [Table 2](#) presents the grab groundwater data and compares the results with the ESLs. The sample results are summarized below.

- TPH-g was detected in three of seven grab groundwater samples at concentrations ranging from 180 to 4,500 µg/L. All of the detections exceeded the ESL of 100 µg/L.
- TPH-d was detected in four of seven grab groundwater samples at concentrations ranging from 94 to 15,000 µg/L. Two of the detections exceeded the ESL of 100 µg/L.
- TPH-mo was detected in one of seven grab groundwater samples at a concentration of 630 µg/L, which exceeded the ESL of 100 µg/L.

3.4. QUALITY CONTROL SAMPLE COLLECTION

Quality control sample trip blanks were submitted to the laboratory with the investigation samples. Neither of the two trip blanks had results greater than the laboratory reporting limits for the analyses requested.

3.5. PREFERENTIAL PATHWAY SURVEY

Geophysical tools were used during the data gaps investigation to refine locations of previously identified utility corridors within the immediate area surrounding the former UST and to provide depths of those utilities to evaluate whether the possibility exists for those corridors to be preferential pathways for contaminant migration. Numerous utility lines have been located within and surrounding the project site ([Figure 3](#)). The following utilities, including their depths, have been identified at the site:

- A water main line, at depths from 2.5 feet to 3 feet bgs, runs west down the north side of Park Avenue before it dead ends near the west end of Park Avenue. A branch off the main water line runs north to service the building at 1550 Park Avenue. Just east of the service branch, an additional water line is in place to provide fire fighters external access to water on the southern side of the building at 1550 Park Avenue ([Figure 4](#)).
- Cable television lines, at depths from 3.7 feet to 3.8 feet, run to the west down Park Avenue before turning south at a similar depth to service the building on the south side of Park Avenue ([Figure 5](#)).
- A gas line, at depths from 2 feet to 2.8 feet bgs, runs west down Park Avenue and dead ends just beyond where it turns north to service the building at 1550 Park Avenue ([Figure 6](#)).

- Three sets of high voltage electrical lines and two underground utility vaults belonging to Pacific Gas and Electric Company (PG&E) were located (Figure 7). The electrical lines run east to west beneath the sidewalk north of the former UST at depths from 3 feet to 4.9 feet bgs. A set of electrical lines was located running from a manhole-type vault west of the former UST that run out into the street then bends back into the newly installed PG&E vault adjacent to the former UST at depths from 2.8 feet to 5.9 feet bgs. An additional electric line serving the building at 1550 Park Avenue runs northwest to southeast into Park Avenue at a depth of 4.8 feet bgs before turning in an eastward direction.
- A main storm drain line, at a depth of 3.3 feet bgs, drains to the east along the southern side of Park Avenue. This main line is fed by a surface drain that captures roof runoff from the building on the south side of Park Avenue and then discharges to the main line at a depth of 3.3 feet bgs. Roof runoff from the building at 1550 Park Avenue is captured by two surface drains that feed into a near-surface trench drain that also captures surface runoff on the north side of Park Avenue. The trench drain feeds into an additional storm drain at 2.2 feet bgs and drains to the south, where it discharges into the main line at a depth 2.4 feet (Figure 8).
- Low voltage electrical lines servicing street lights and irrigation controls run between the northern, western, and southern perimeter planter boxes along Park Avenue at depths from 2.4 feet to 3 feet bgs (Figure 9).
- Empty utility line conduits zigzag beneath the west end of Park Avenue at depths from 3.6 feet to 4.7 feet bgs, presumably to allow future service to be expanded from the cable television lines serving the building on the south side of Park Avenue to the building at 1550 Park Avenue to the north (Figure 10).

3.6. LNAPL MEASUREMENT RESULTS

On May 16, 2014, 14 days after well MW-1 was developed, ERRG gauged the well using an oil/water interface probe to identify whether a measureable thickness of LNAPL was present. Depth-to-water was detected at 2.94 feet below top of casing, and LNAPL was not detected with the interface probe. Based on measurements collected on May 16, 2014, no measureable LNAPL is currently floating on the water in well MW-1.

3.7. AGENCY WELL SEARCH

At the request of ERRG, one mile radius well searches were conducted by DWR and ACPWA for wells surrounding Apex to identify potential sensitive receptor pathways. Well search results are summarized in the following subsections.

3.7.1. DWR Well Search

The DWR well search produced a total 1,014 well records. The well records did not list any domestic or public water supply use wells. One well record was listed as industrial water use and two well records were listed as the irrigation use. The industrial use well location is near the intersection of Adeline Street & Arlington Avenue, approximately 1.2 miles (upgradient) from Apex. The two irrigation wells are

located near the intersections of 52nd Street & Dover Street and 21st Street & Harrison Street, approximately 1.4 (upgradient) and 2.1 (upgradient) miles from Apex, respectively.

3.7.2. ACPWA Well Search

ERRG received a total of 593 well records from the ACPWA well search. No municipal wells were reported in the search. One domestic well was identified near Ocean Avenue & Hollis Street, approximately one mile (sidegradient) from Apex, and an irrigation well was located approximately 1.1 miles (sidegradient) from Apex near the intersection of 65th Street & Shellmound Street. Two industrial well locations were found near 35th Street & Adeline Street and Market Street & San Pablo Avenue approximately 0.65 miles (upgradient) and 1 mile (upgradient) from Apex, respectively.

Section 4. Site Conceptual Model

To develop a conceptual understanding of the site, information on potential chemical sources, chemical release and transport mechanisms, locations of potentially exposed human and ecological receptors, and potential exposure routes were assessed. The SCM associates the source of chemicals with potentially exposed receptors and complete exposure pathways. In this way, the SCM assists in quantifying potential impacts to human and ecological health.

All of the following four components are necessary for a chemical exposure pathway to be considered complete and for chemical exposure to occur (EPA, 1989):

- A chemical source and a mechanism of chemical release to the environment
- An environmental transport medium (e.g., soil) for the released chemical
- A point of contact between the contaminated medium and the receptor (i.e., the exposure point)
- An exposure route (e.g., dermal contact with chemically impacted soil) at the exposure point

Because site data are limited, the SCM is generally limited to the area of concern surrounding the immediate vicinity of the former UST. Table 3 describes the following SCM elements to identify data gaps and proposed actions to address each data gap:

- Regional and site-specific geology and hydrogeology
- Surface water bodies
- Nearby wells
- Unauthorized releases
- Free product
- Secondary sources
- Vapor intrusion to indoor air
- Preferential pathways

As indicated in Table 3, the source of contamination is the unauthorized release from the former UST and potential contact with detected chemicals at the site could occur via exposure to soil, groundwater, and soil gas.

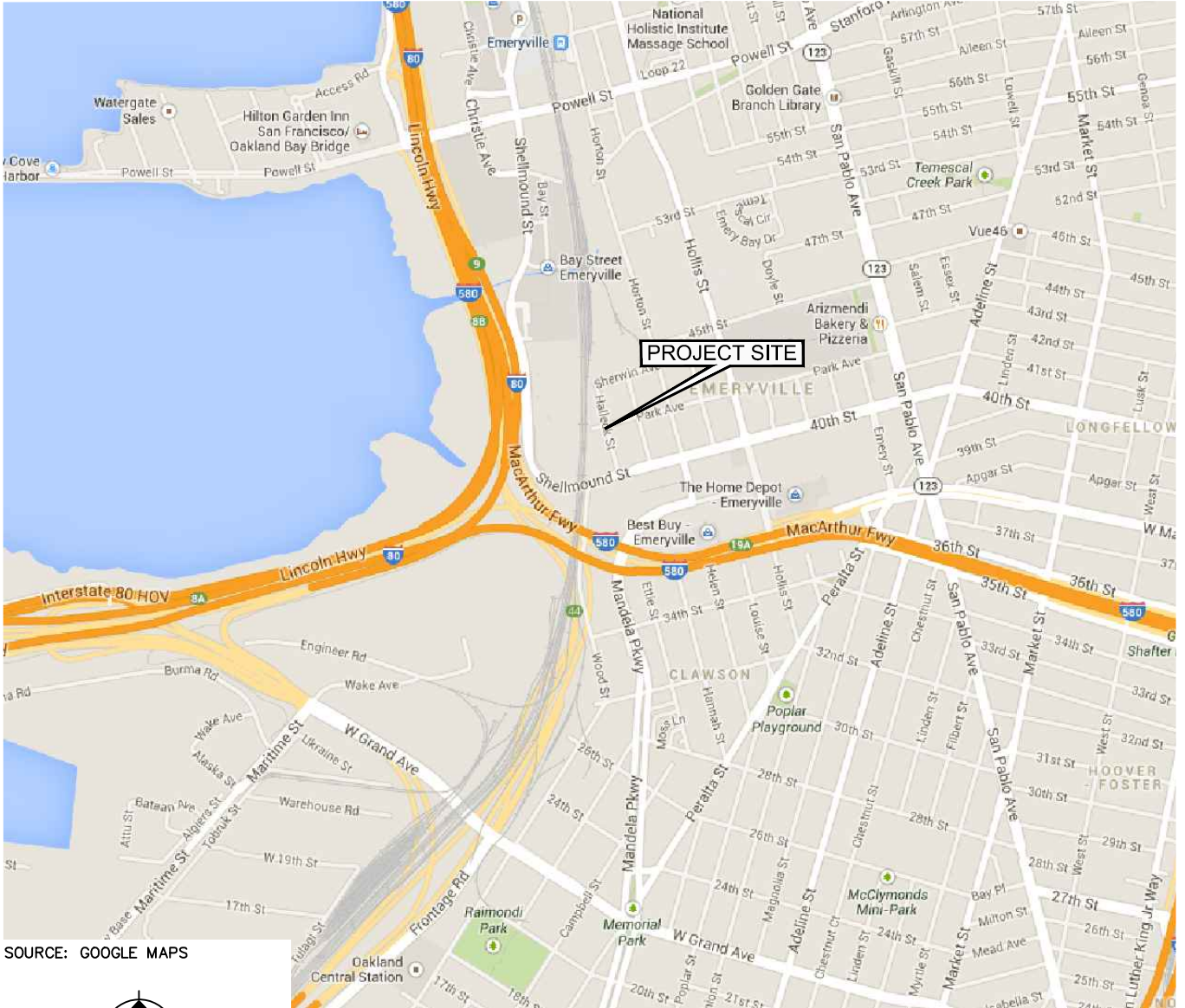
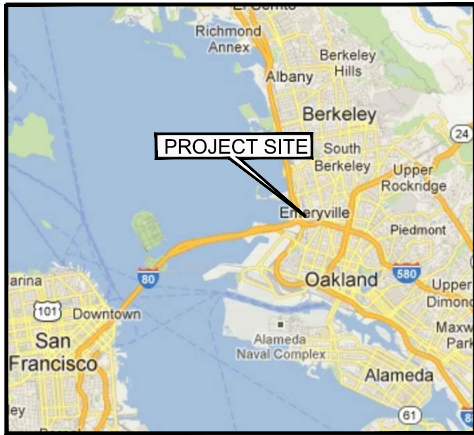
Section 5. Recommendations

ERRG recommends that two rounds of groundwater sampling be conducted at well MW-1 in 2014, as directed by ACEH ([Appendix A](#)). ERRG proposes that groundwater samples from MW-1 be analyzed for TPH-purgeables (TPH-g) by EPA Method 8015B and TPH-extractables (TPH-d and TPH-mo) by EPA Method 8015B (with silica gel cleanup) to verify elevated TPH concentrations from grab groundwater sample S4, which has the highest total TPH concentrations at the site and is collocated with MW-1. ERRG also proposes to analyze groundwater samples from well MW-1 for total dissolved solids (TDS) by Standard Method 2540C to compare with SFRWQCB's water quality objective for TDS of 500 mg/L for municipal water supply to identify the appropriate classification of groundwater beneath the site (i.e., not suitable for municipal or domestic water supply). Following the submittal of the second round of groundwater data to ACEH, ERRG requests that ACEH reviews the data gaps and groundwater monitoring well results to identify whether the site meets Policy criteria and determine if case closure can be granted.

Section 6. References

- Engineering/Remediation Resources Group, Inc., 2013a. “Draft Data Gaps Investigation Work Plan, Apex Refrigeration, Inc., 1550 Park Avenue, Emeryville, California.” December.
- Engineering/Remediation Resources Group, Inc., 2013b. “Soil and Groundwater Investigation Summary Report, Apex Refrigeration, Inc., 1550 Park Avenue, Emeryville, California.” May.
- Engineering/Remediation Resources Group, Inc., 2012. “Work Plan for Soil and Groundwater Investigation, Apex Refrigeration, Inc., 1550 Park Avenue, Emeryville, California.” October.
- Engineering-Science, 1988. “Site Characterization Report for Soil and Groundwater Contamination at 1600-63rd Street Site, Emeryville, California.” February 1.
- P&D Environmental, Inc. (P&D) 2010. “Underground Storage Tank Removal Report, 1550 Park Avenue, Emeryville, CA.” March 12.
- San Francisco Regional Water Quality Control Board (Water Board), 2013a. “Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater.” Interim Final. February. Available Online at:
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- San Francisco Regional Water Quality Control Board (Water Board), 2013b. “Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater.” Interim Final. December. Available Online at:
<http://www.waterboards.ca.gov/rwqcb2/water_issues/programs/esl.shtml>.
- State Water Resources Control Board (SWRCB), 2012. “Low-Threat Underground Storage Tank Case Closure Policy.” August 17. Available Online at:
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- State Water Resources Control Board (SWRCB), 2010. “Preliminary USTCF 5-Year Review Summary, Pfizer Pigments, Case No: RO0000208.” August 30. Available Online at:
<http://geotracker.waterboards.ca.gov/regulators/deliverable_documents/9269337296/Claim%20956%205-Year%20Review.pdf>.
- U.S. Environmental Protection Agency (EPA), 1989. “Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part), Interim Final.” Office of Emergency and Remedial Response. EPA/540/1-89/002. December.

Figures



SOURCE: GOOGLE MAPS



APPROXIMATE SCALE: 1"=1200'

FILE NAME: N:\Graphics\2013\094 APEX Emeryville\Site Location Map 2.dwg LAYOUT NAME: 1 PLOTTED: Monday, October 28, 2013 - 3:01pm



Engineering/Remediation Resources Group, Inc.
4585 Pacheco Blvd., Suite 200
Martinez, California 94553
(925) 969-0750

CLIENT: APEX REFRIGERATION, INC.
EMERYVILLE, CALIFORNIA

LOCATION: 1550 PARK AVENUE
EMERYVILLE, CALIFORNIA

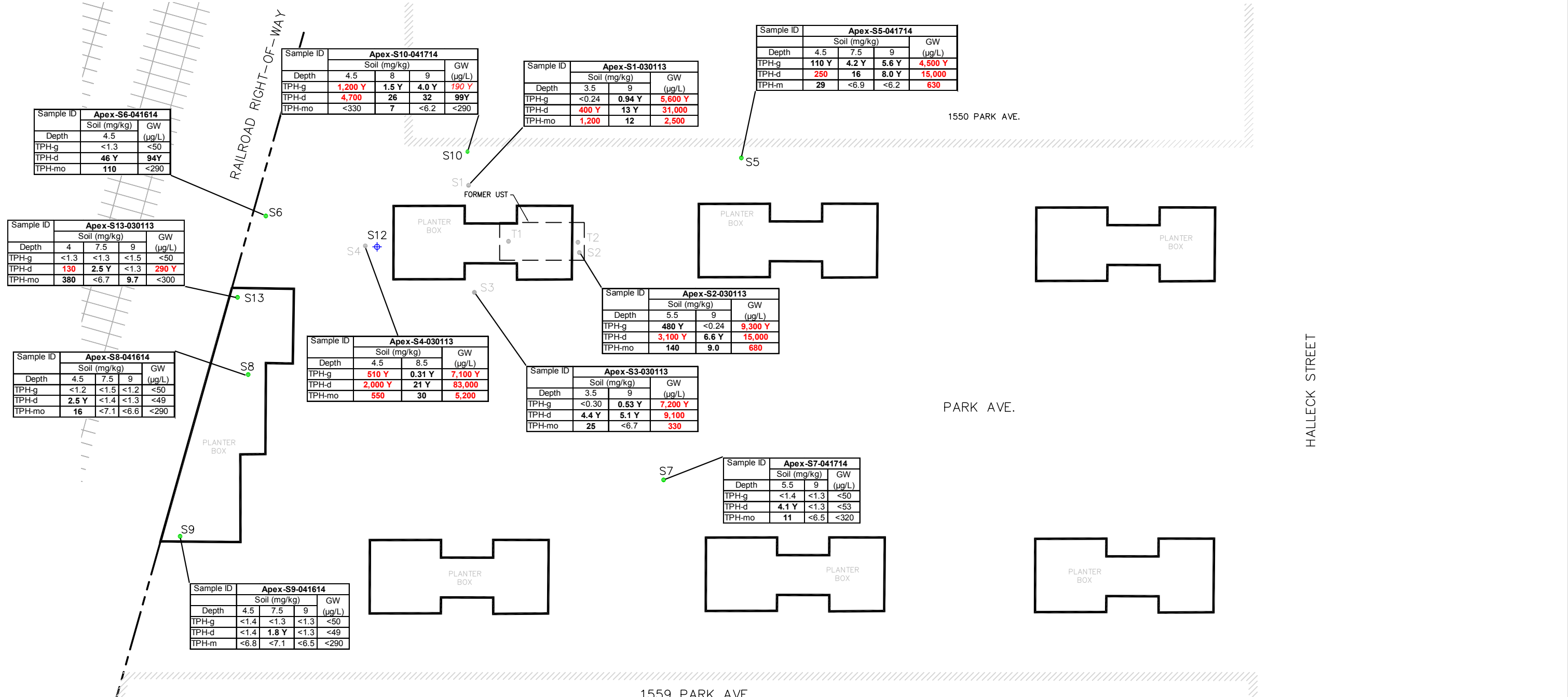
SITE LOCATION MAP

DRAWN BY: RDB 10/28/13

CHECKED BY: EKO 10/28/13

PROJECT NO. 2013-094

FIG NO. 1



Sample ID	Apex-S6-041614		
	Soil (mg/kg)		GW (µg/L)
Depth	4.5	9	<50
TPH-g	<1.3	<1.3	<50
TPH-d	46 Y	94 Y	
TPH-mo	110	<290	

Sample ID	Apex-S10-041714			
	Soil (mg/kg)			GW (µg/L)
Depth	4.5	8	9	<290
TPH-g	1,200 Y	1.5 Y	4.0 Y	190 Y
TPH-d	4,700	26	32	99 Y
TPH-mo	<330	7	<6.2	<290

Sample ID	Apex-S1-030113		
	Soil (mg/kg)		GW (µg/L)
Depth	3.5	9	<50
TPH-g	<0.24	0.94 Y	5,600 Y
TPH-d	400 Y	13 Y	31,000
TPH-mo	1,200	12	2,500

Sample ID	Apex-S5-041714			
	Soil (mg/kg)			GW (µg/L)
Depth	4.5	7.5	9	<50
TPH-g	110 Y	4.2 Y	5.6 Y	4,500 Y
TPH-d	250	16	8.0 Y	15,000
TPH-m	29	<6.9	<6.2	630

Sample ID	Apex-S13-030113			
	Soil (mg/kg)			GW (µg/L)
Depth	4	7.5	9	<50
TPH-g	<1.3	<1.3	<1.5	<50
TPH-d	130	2.5 Y	<1.3	290 Y
TPH-mo	380	<6.7	9.7	<300

Sample ID	Apex-S4-030113			
	Soil (mg/kg)			GW (µg/L)
Depth	4.5	8.5	9	<50
TPH-g	510 Y	0.31 Y	7,100 Y	
TPH-d	2,000 Y	21 Y	83,000	
TPH-mo	550	30	5,200	

Sample ID	Apex-S2-030113			
	Soil (mg/kg)			GW (µg/L)
Depth	5.5	9	9	<50
TPH-g	480 Y	<0.24	9,300 Y	
TPH-d	3,100 Y	6.6 Y	15,000	
TPH-mo	140	9.0	680	

Sample ID	Apex-S3-030113		
	Soil (mg/kg)		GW (µg/L)
Depth	3.5	9	<50
TPH-g	<0.30	0.53 Y	7,200 Y
TPH-d	4.4 Y	5.1 Y	9,100
TPH-mo	25	<6.7	330

Sample ID	Apex-S8-041614			
	Soil (mg/kg)			GW (µg/L)
Depth	4.5	7.5	9	<50
TPH-g	<1.2	<1.5	<1.2	<50
TPH-d	2.5 Y	<1.4	<1.3	<49
TPH-mo	16	<7.1	<6.6	<290

Sample ID	Apex-S9-041614			
	Soil (mg/kg)			GW (µg/L)
Depth	4.5	7.5	9	<50
TPH-g	<1.4	<1.3	<1.3	<50
TPH-d	<1.4	1.8 Y	<1.3	<49
TPH-m	<6.8	<7.1	<6.5	<290

NOTES:

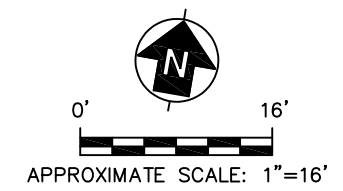
- 1 = SFRWQCB ESLs, Table B-2, Shallow Soil Screening Levels (≤3m bgs), Commercial/Industrial Land Use (groundwater is not a current or potential drinking water resource), December, 2013.
- 2 = SFRWQCB ESLs, Table A-2, Shallow Soil Screening Levels (≤3m bgs), Commercial/Industrial Land Use (groundwater is a current or potential drinking water resource), December, 2013.
- d = diesel
- Depth = feet below ground surface
- ESLs = environmental screening levels
- GW = groundwater
- ID = identification
- mg/kg = milligrams per kilogram
- µg/L = micrograms per liter

- SFRWQCB = San Francisco Bay Regional Water Quality Control Board
- TPH = total petroleum hydrocarbons
- TPH-g = total petroleum hydrocarbons as gasoline
- TPH-d = total petroleum hydrocarbons as diesel
- TPH-mo = total petroleum hydrocarbons as motor oil
- Y = sample resembles chromatographic pattern, which does not resemble standard
- 25 = sample result exceeds the laboratory reporting limit
- 130 = sample result exceeds ESLs where groundwater is a current or potential drinking water resource

LEGEND:

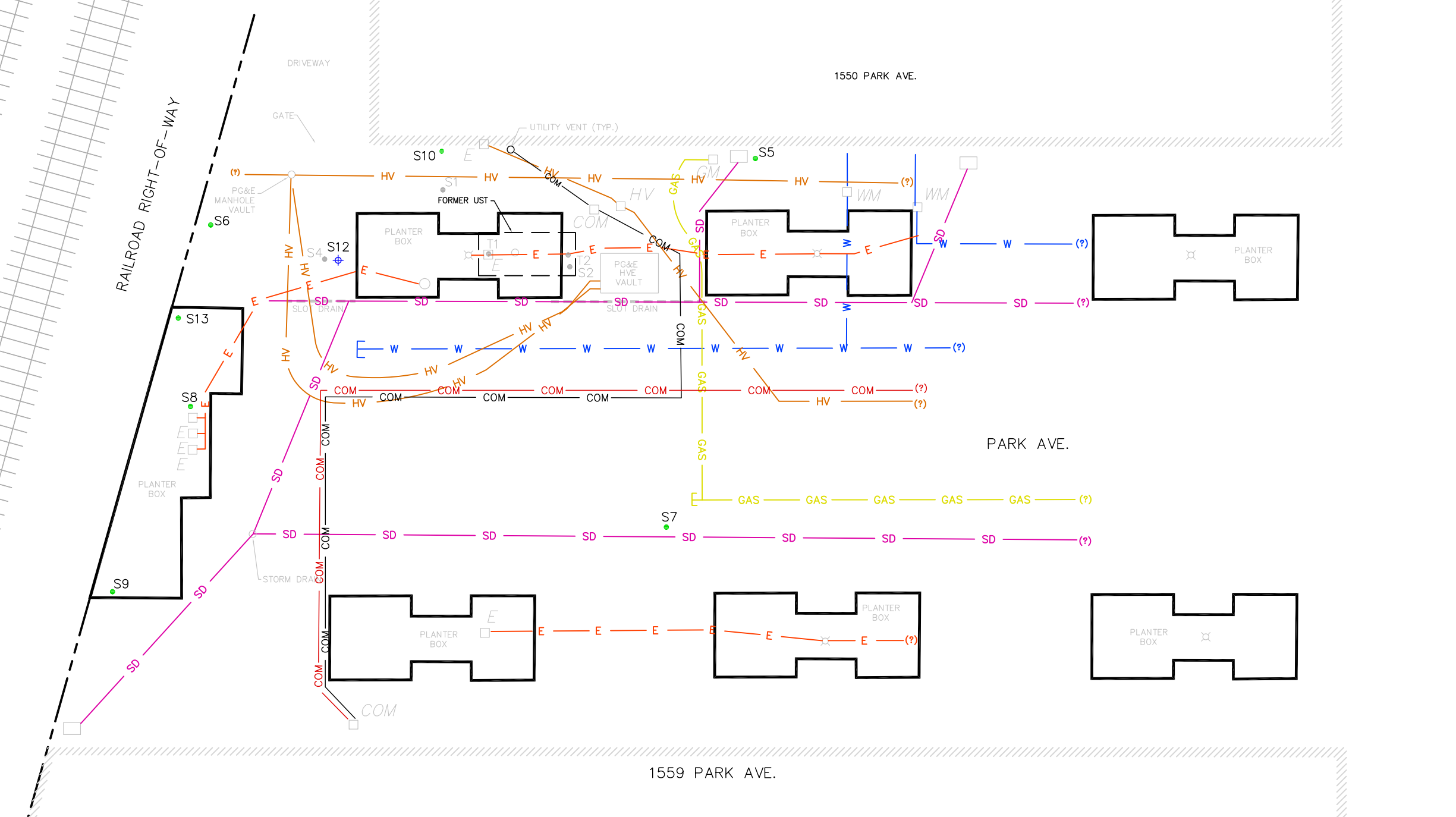
- S3 ● PREVIOUS SOIL SAMPLE LOCATION
- S5 ● SOIL AND GROUNDWATER SAMPLE LOCATION
- S12 ⊕ GROUNDWATER MONITORING WELL

	Environmental Screening Levels			
	Soil (mg/kg)		Groundwater (µg/L)	
TPH-g	500 ¹	500 ²	500 ¹	100 ²
TPH-d	110 ¹	110 ²	640 ¹	100 ²
TPH-mo	500 ¹	500 ²	640 ¹	100 ²

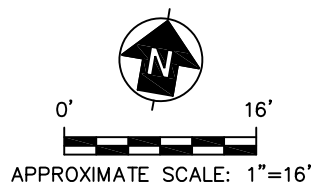



Engineering/Remediation Resources Group, Inc. 4585 Pacheco Blvd, Suite 200 Martinez, California 94553 (925) 969-0750	CLIENT: APEX REFRIGERATION, INC. EMERYVILLE, CALIFORNIA	TPH CONCENTRATIONS IN SOIL AND GROUNDWATER MARCH 2013 AND APRIL 2014			
	LOCATION: 1550 PARK AVENUE EMERYVILLE, CALIFORNIA	DRAWN BY: SC 07/02/14	CHECKED BY: EKO 07/02/14	PROJECT NO.: 2013-094	FIG NO.: 2

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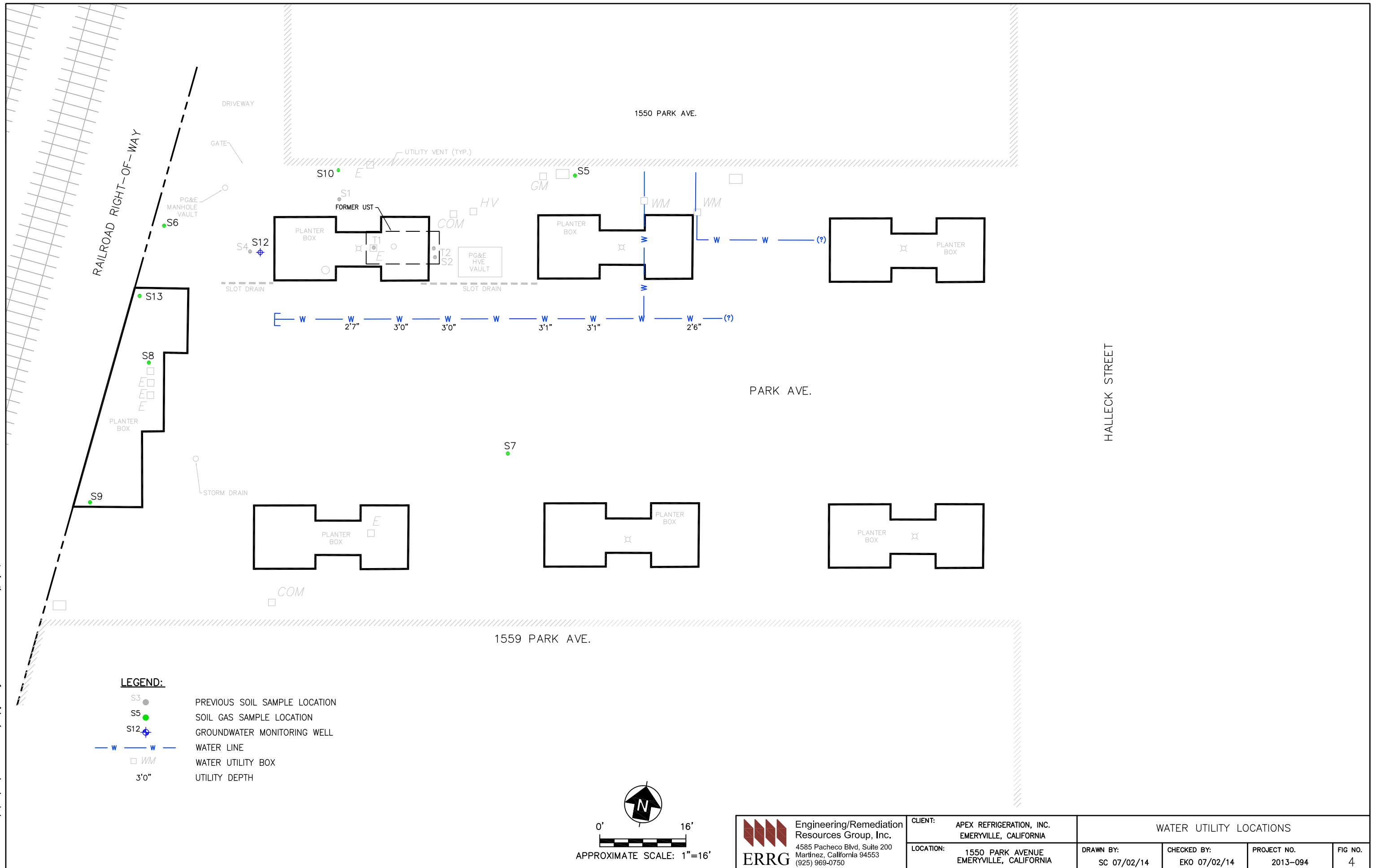


- LEGEND:**
- S3 ● PREVIOUS SOIL SAMPLE LOCATION
 - S5 ● SOIL AND GROUNDWATER SAMPLE LOCATION
 - S12 ⊕ GROUNDWATER MONITORING WELL
 - E — E — STREET LIGHT/ IRRIGATION ELECTRICAL LINE
 - COM — CABLE TELEVISION LINE
 - COM — EMPTY COMMUNICATION LINE
 - GAS — GAS LINE
 - HV — HIGH VOLTAGE ELECTRICAL LINE
 - SD — STORM DRAIN LINE
 - W — W — WATER LINE



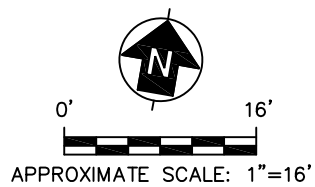
 Engineering/Remediation Resources Group, Inc. 4585 Pacheco Blvd, Suite 200 Martinez, California 94553 (925) 969-0750	CLIENT: APEX REFRIGERATION, INC. EMERYVILLE, CALIFORNIA	UTILITY LOCATIONS		
	LOCATION: 1550 PARK AVENUE EMERYVILLE, CALIFORNIA	DRAWN BY: SC 07/02/14	CHECKED BY: EKO 07/02/14	PROJECT NO. 2013-094


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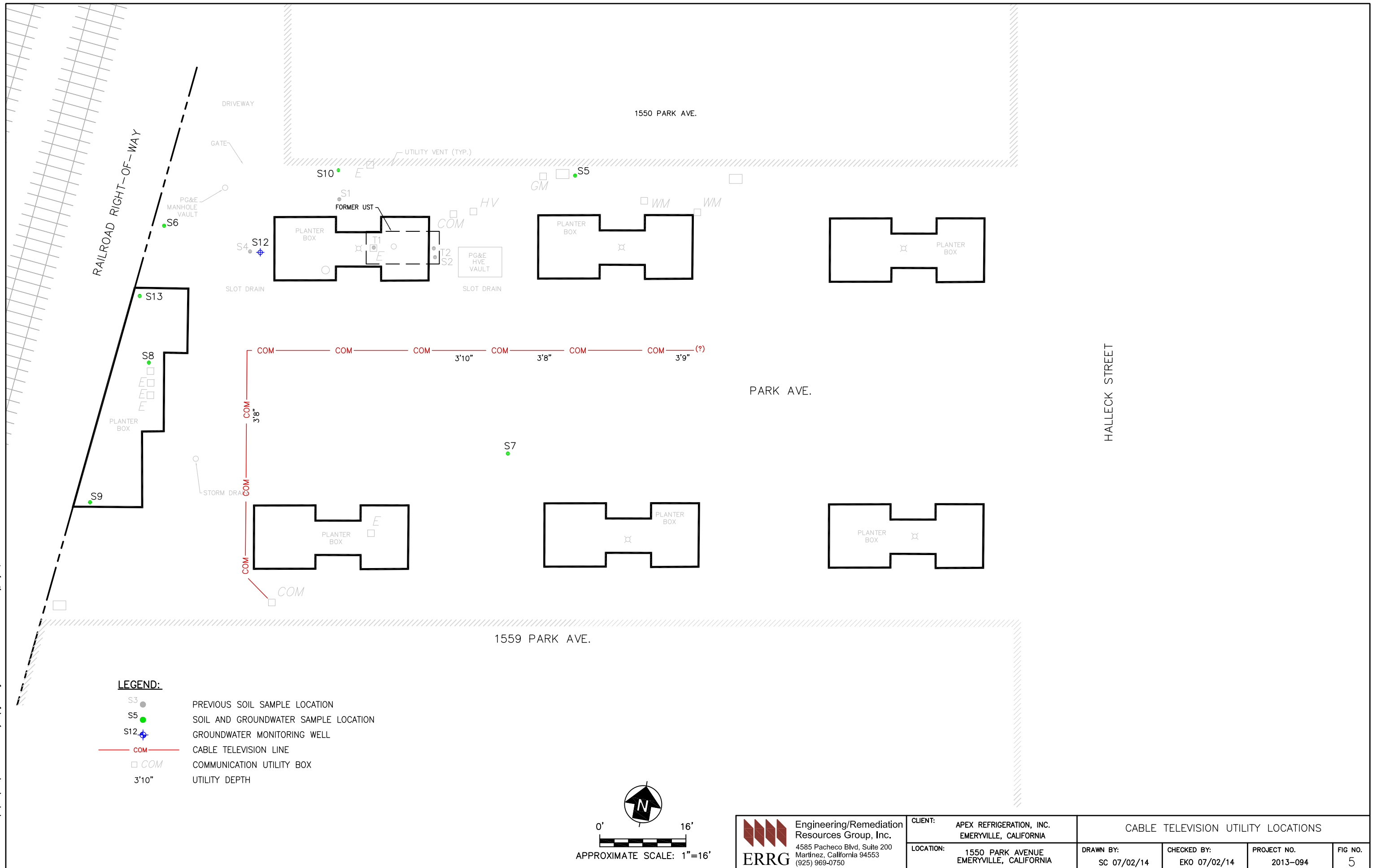
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- S5 ● SOIL GAS SAMPLE LOCATION
- S12 ⊕ GROUNDWATER MONITORING WELL
- W — W — WATER LINE
- WM WATER UTILITY BOX
- 3'0" UTILITY DEPTH



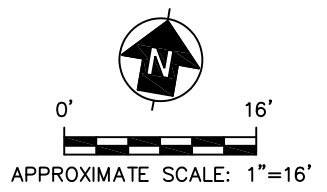
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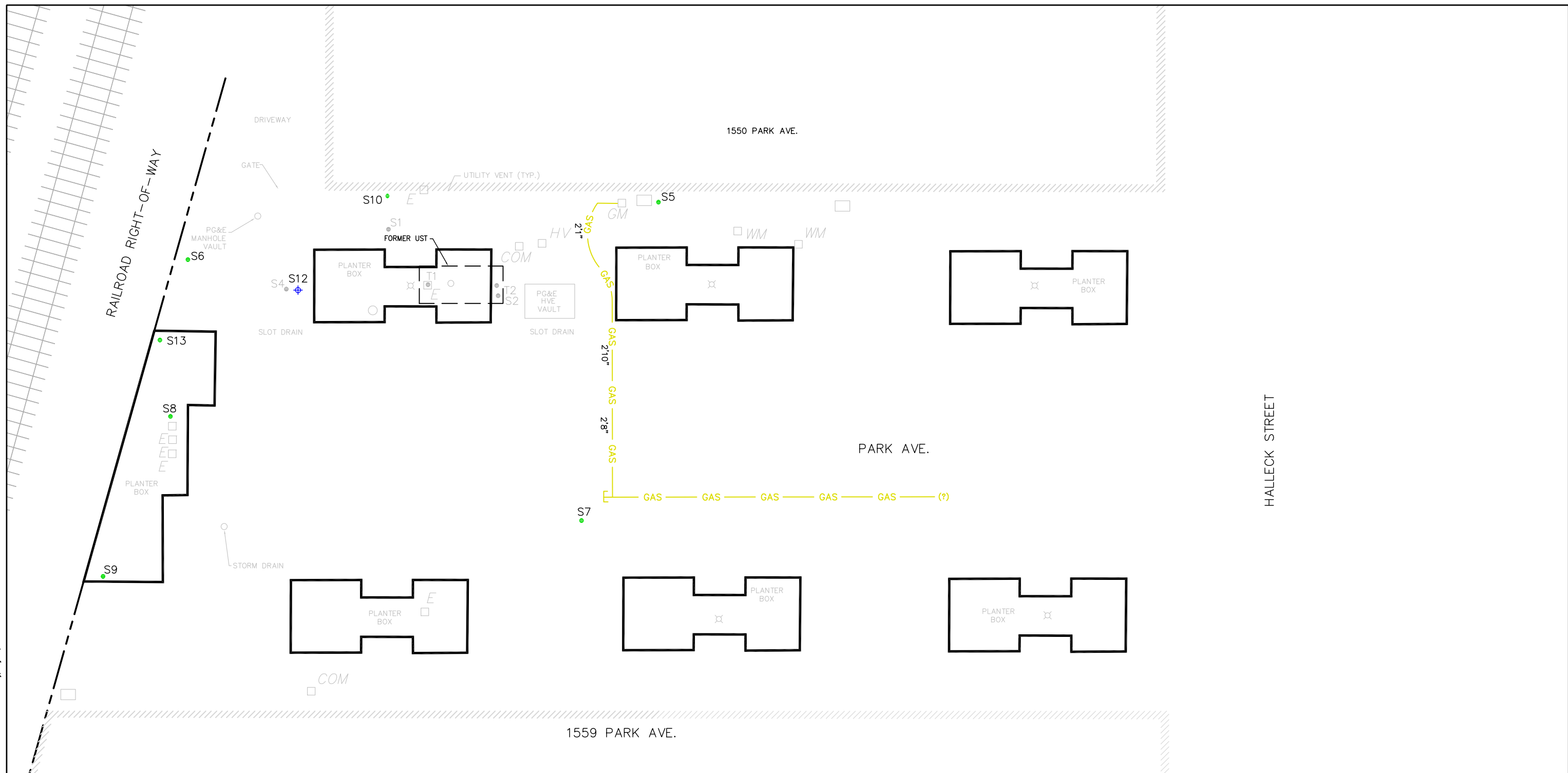
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- S5 ● SOIL AND GROUNDWATER SAMPLE LOCATION
- S12 ⊕ GROUNDWATER MONITORING WELL
- COM — CABLE TELEVISION LINE
- COM COMMUNICATION UTILITY BOX
- 3'10" UTILITY DEPTH



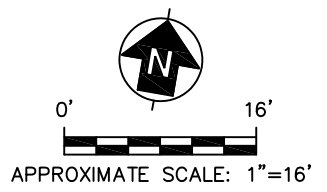
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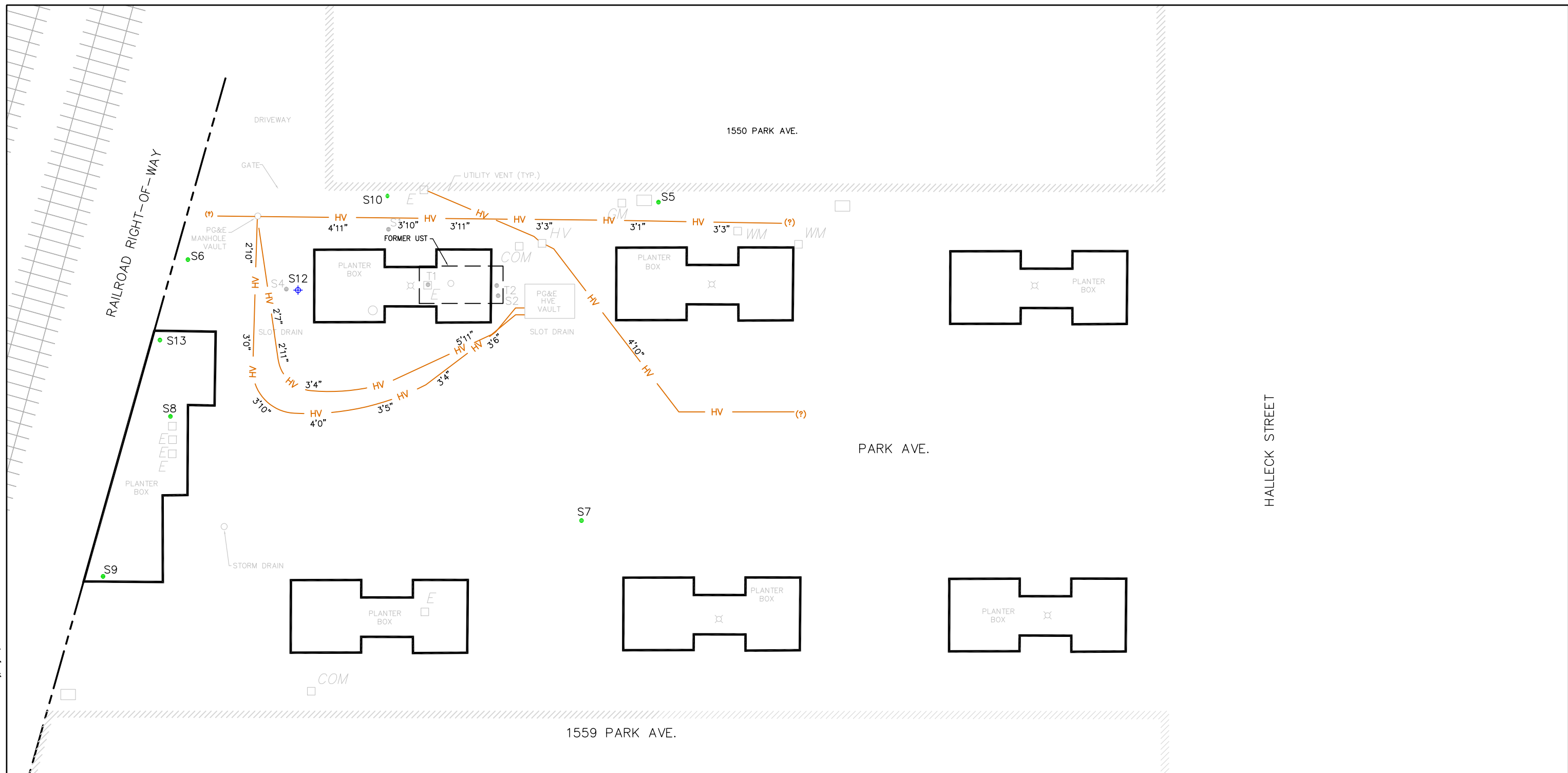
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- S5 ● SOIL AND GROUNDWATER SAMPLE LOCATION
- S12 ⊕ GROUNDWATER MONITORING WELL
- GAS — GAS LINE
- GM □ GAS METER UTILITY BOX
- 2'1" UTILITY DEPTH



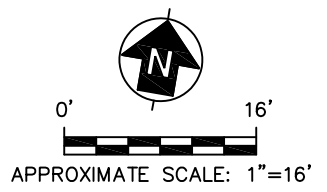
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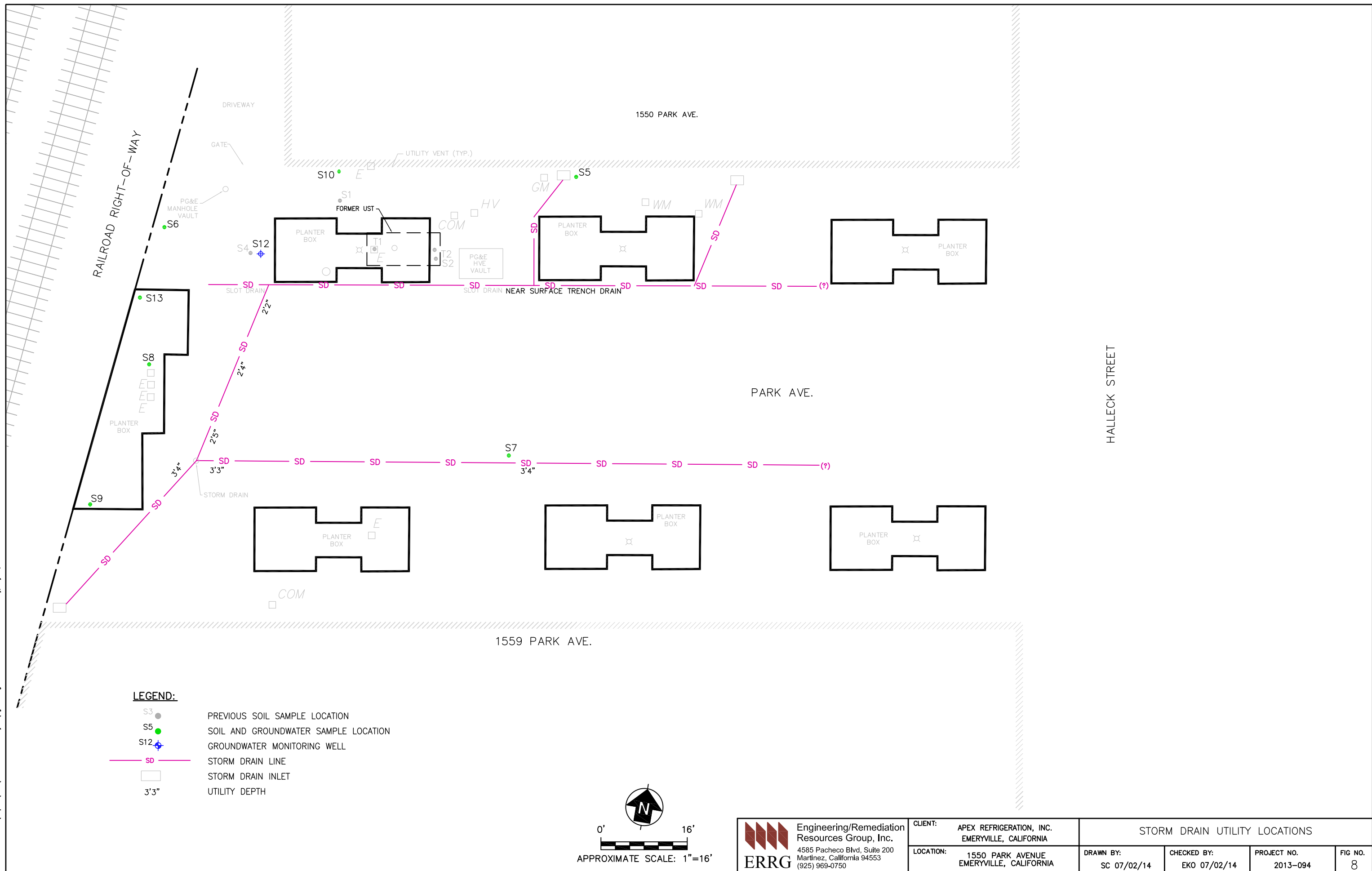
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- S3 ● PREVIOUS SOIL SAMPLE LOCATION
- S5 ● SOIL AND GROUNDWATER SAMPLE LOCATION
- S12 ⊕ GROUNDWATER MONITORING WELL
- HV — HIGH VOLTAGE ELECTRICAL LINE
- E □ ELECTRICAL UTILITY BOX
- 3'0" — UTILITY DEPTH



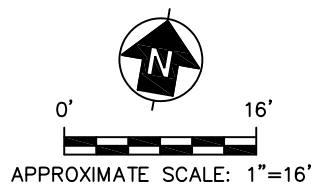
 Engineering/Remediation Resources Group, Inc. 4585 Pacheco Blvd, Suite 200 Martinez, California 94553 (925) 969-0750	CLIENT: APEX REFRIGERATION, INC. EMERYVILLE, CALIFORNIA	HIGH VOLTAGE ELECTRICAL UTILITY LOCATIONS		
	LOCATION: 1550 PARK AVENUE EMERYVILLE, CALIFORNIA	DRAWN BY: SC 07/02/14	CHECKED BY: EKO 07/02/14	PROJECT NO. 2013-094


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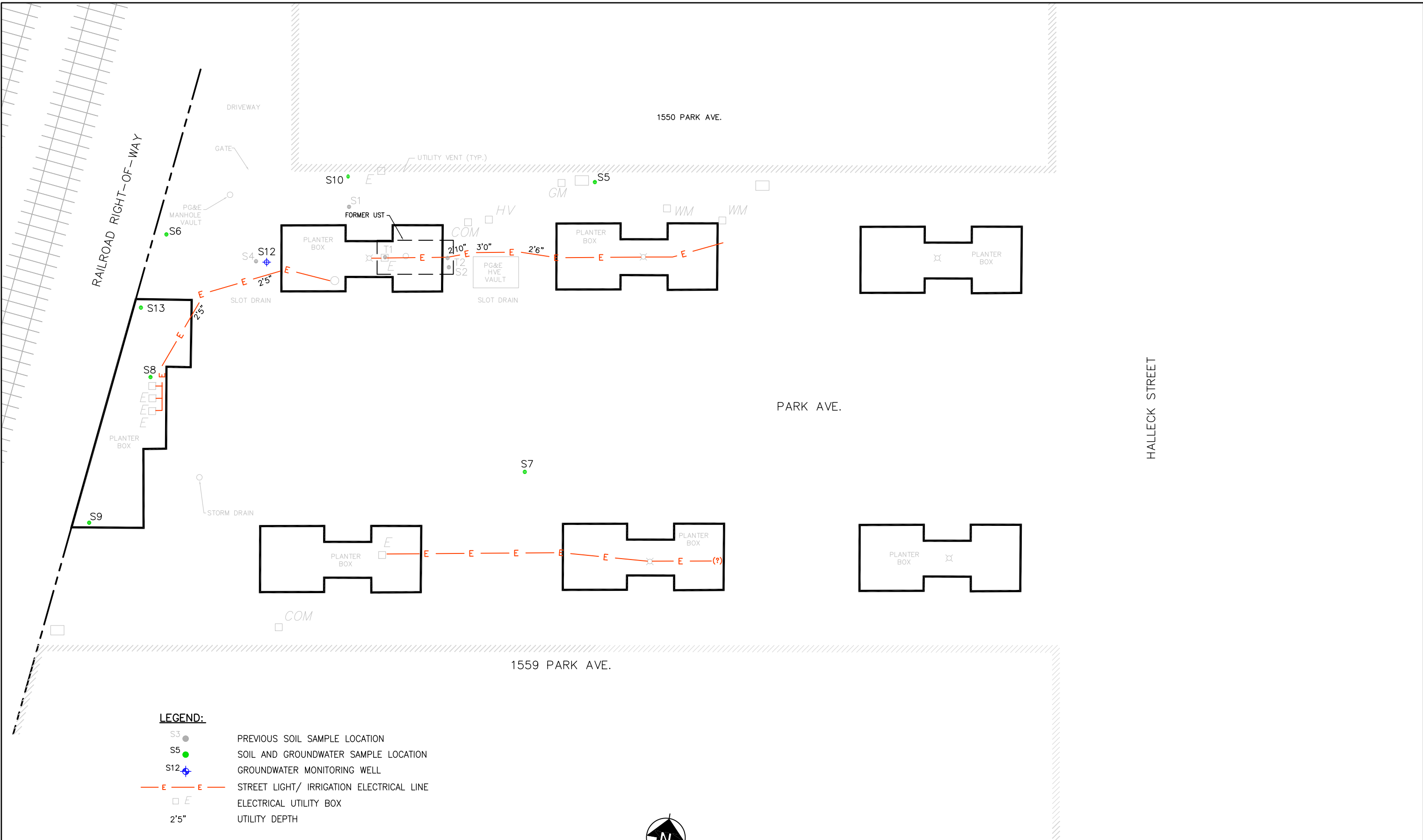
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- S3 ● PREVIOUS SOIL SAMPLE LOCATION
- S5 ● SOIL AND GROUNDWATER SAMPLE LOCATION
- S12 ⊕ GROUNDWATER MONITORING WELL
- SD — STORM DRAIN LINE
- STORM DRAIN INLET
- 3'3" UTILITY DEPTH



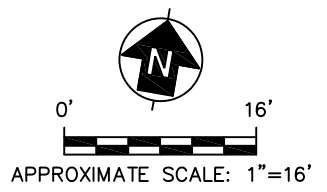
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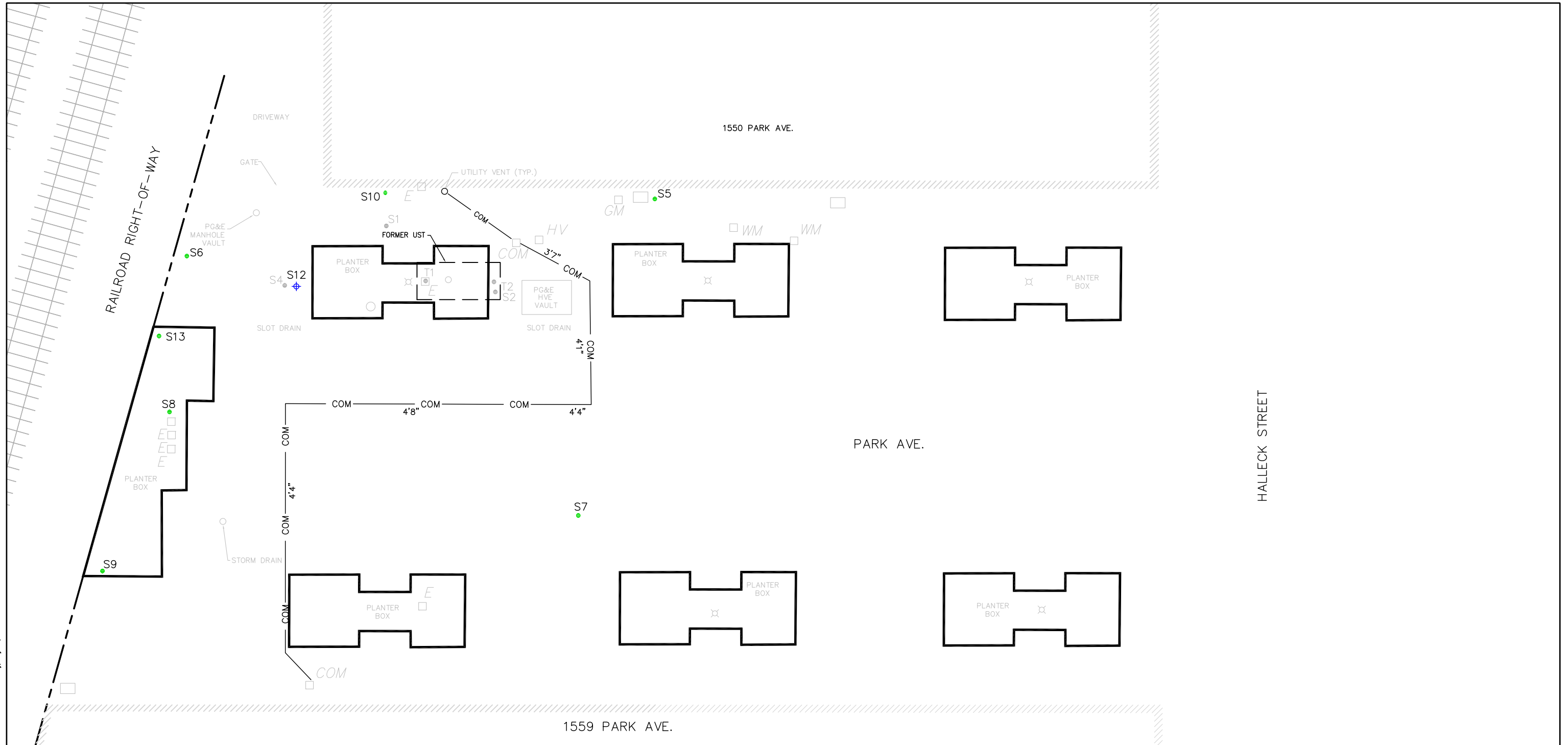
LEGEND:

- S3 ● PREVIOUS SOIL SAMPLE LOCATION
- S5 ● SOIL AND GROUNDWATER SAMPLE LOCATION
- S12 ⊕ GROUNDWATER MONITORING WELL
- E — E — STREET LIGHT/ IRRIGATION ELECTRICAL LINE
- E ELECTRICAL UTILITY BOX
- 2'5" UTILITY DEPTH



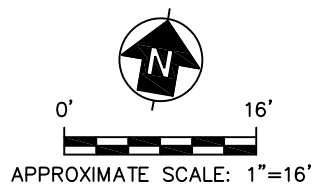
 Engineering/Remediation Resources Group, Inc. 4585 Pacheco Blvd, Suite 200 Martinez, California 94553 (925) 969-0750	CLIENT: APEX REFRIGERATION, INC. EMERYVILLE, CALIFORNIA	STREET LIGHT/ IRRIGATION ELECTRICAL UTILITY LOCATIONS		
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LEGEND:

- S3 ● PREVIOUS SOIL SAMPLE LOCATION
- S5 ● SOIL AND GROUNDWATER SAMPLE LOCATION
- S12 ● GROUNDWATER MONITORING WELL
- COM ——— EMPTY COMMUNICATION LINE
- COM COMMUNICATION UTILITY BOX
- 4'4" UTILITY DEPTH



 Engineering/Remediation Resources Group, Inc. 4585 Pacheco Blvd, Suite 200 Martinez, California 94553 (925) 969-0750	CLIENT: APEX REFRIGERATION, INC. EMERYVILLE, CALIFORNIA	EMPTY COMMUNICATION UTILITY LOCATIONS		
	LOCATION: 1550 PARK AVENUE EMERYVILLE, CALIFORNIA	DRAWN BY: SC 07/02/14	CHECKED BY: EKO 07/02/14	PROJECT NO. 2013-094

Tables

Table 1. Soil Boring Analytical Results

Location	Sample Date	Sample Name	Depth (feet bgs)	Total Petroleum Hydrocarbons (by EPA Method 8015B) (mg/kg)			Purgeable Aromatics (Select VOCs by EPA Method 8260B) (µg/kg)					Priority Pollutant Polycyclic Aromatic Hydrocarbons (EPA Method 8270 SIM) (µg/kg)																
				TPH-gasoline	TPH-diesel ¹	TPH-motor oil ¹	MTBE	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes	Napthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
<i>SFRWQCB ESLs²</i>				500	110	500	0.023	0.044	2.9	3.3	2.3	2.3	1.2	13	16	8.9	11	2.8	40	85	1.3	13	1.3	1.3	0.13	1.3	0.38	27
S1	3/1/2013	Apex-S1-3.5-030113	3.5	<0.24	400 Y	1,200	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<29	<29	<29	<29	240	42	490	570	180	310	270	81	170	57	<29	67
S1	3/1/2013	Apex-S1-9.0-030113	9	0.94 Y	13 Y	12	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.4	<6.4	<6.4	<6.4	18	<6.4	9.2	9.8	<6.4	<6.4	<6.4	<6.4	<6.4	<6.4	<6.4	<6.4
S2	3/1/2013	Apex-S2-5.5-030113	5.5	480 Y	3,100 Y	140	<680	<680	<680	<680	<680	<680	<34	<34	46	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34
S2	3/1/2013	Apex-S2-9.0-030113	9	<0.24	6.6 Y	9.0	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5
S3	3/1/2013	Apex-S3-3.5-030113	3.5	<0.30	4.4 Y	25	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<7.0	<7.0	<7.0	<7.0	7.2	<7.0	11	15	<7.0	7	8.7	<7.0	8.1	7.2	<7.0	10
S3	3/1/2013	Apex-S3-9.0-030113	9	0.53 Y	5.1 Y	<6.7	<6.2	<6.2	<6.2	<6.2	<6.2	<6.2	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7	<6.7
S4	3/1/2013	Apex-S4-4.5-030113	4.5	510 Y	2,000 Y	550	<330	<330	<330	<330	<330	<330	<26	<26	<26	<26	<26	44	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26
S4	3/1/2013	Apex-S4-8.5-030113	9	0.31 Y	21 Y	30	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5
S5	4/17/2014	APEX-S5-4.5-041714	4.5	110 Y	250	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S5	4/17/2014	APEX-S5-7.5-041714	7.5	4.2 Y	16	<6.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S5	4/17/2014	APEX-S5-9.0-041714	9	5.6 Y	8.0 Y	<6.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S6	4/16/2014	APEX-S6-4.5-041614	4.5	<1.3	46 Y	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S7	4/17/2014	APEX-S7-5.5-041714	5.5	<1.4	4.1 Y	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S7	4/17/2014	APEX-S7-9.0-041714	9	<1.3	<1.3	<6.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S8	4/16/2014	APEX-S8-4.5-041614	4.5	<1.2	2.5 Y	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S8	4/16/2014	APEX-S8-7.5-041614	7.5	<1.5	<1.4	<7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S8	4/16/2014	APEX-S8-9.0-041614	9	<1.2	<1.3	<6.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S9	4/16/2014	APEX-S9-4.5-041614	4.5	<1.4	<1.4	<6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S9	4/16/2014	APEX-S9-7.5-041614	7.5	<1.3	1.8Y	<7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S9	4/16/2014	APEX-S9-9.0-041614	9	<1.3	<1.3	<6.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S10	4/17/2014	APEX-S10-4.5-041714	4.5	1,200 Y	4,700	<330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S10	4/17/2014	APEX-S10-8.0-041714	8	1.5 Y	26	7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S10	4/17/2014	APEX-S10-9.0-041714	9	4.0 Y	32	<6.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S13	4/17/2014	APEX-S13-4.0-041714	4	<1.3	130	380	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S13	4/17/2014	APEX-S13-7.5-041714	7.5	<1.3	2.5 Y	<6.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S13	4/17/2014	APEX-S13-9.0-041714	9	<1.5	<1.3	9.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1 = Analysis run with silica gel cleanup

2 = SFRWQCB ESLs, Table A-2, "Shallow Soil Screening Levels (≤3 m bgs), Commercial/Industrial Land Use (groundwater is a current or potential drinking water resource)," December 2013

Bold = Sample result exceeds the laboratory reporting limit for the given analyte

Bold Red = Sample result exceeds the SFRWQCB ESL

bgs = below ground surface

EPA = U.S. Environmental Protection Agency

ESLs = environmental screening levels

mg/kg = milligrams per kilogram

MTBE = methyl tert-butyl ether

NA = not analyzed

SFRWQCB = San Francisco Bay Regional Water Quality Control Board

TPH = total petroleum hydrocarbons

VOCs = volatile organic compounds

Y = sample resembles chromatographic pattern, which does not resemble standard

<0.30 = sample result is less than the laboratory reporting limit for the given analyte

µg/kg = micrograms per kilogram

Table 2. Grab Groundwater Analytical Results

Location	Sample Date	Sample Name	Depth (feet bgs)	Total Petroleum Hydrocarbons (by EPA Method 8015B) (µg/kg)			Purgeable Aromatics (Select VOCs by EPA Method 8260B) (µg/kg)						Priority Pollutant Polycyclic Aromatic Hydrocarbons (EPA Method 8270 SIM) (µg/kg)															
				TPH-gasoline	TPH-diesel ¹	TPH-motor oil ¹	MTBE	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes	Napthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo (a) anthracene	Chrysene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1,2,3-cd) pyrene	Dibenz (a,h) anthracene	Benzo (g,h,i) perylene
SFRWQCB ESLs ²				100	100	100	5.0	1.0	40	30	20	20	6.1	30	20	3.9	4.6	0.73	8.0	2.0	0.027	0.35	0.056	0.056	0.014	0.056	0.016	0.10
S1	3/1/2013	Apex-S1-GW-030113	3.5-9.0	5,600 Y	31,000	2,500	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.7	0.8	1.9	5.8	2.2	1.2	1.3	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
S2	3/1/2013	Apex-S2-GW-030113	3.5-9.0	9,300 Y	15,000	680	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.7	<0.7	0.9	<0.7	2.4	1.3	1.6	1.7	<0.7	1.0	0.9	<0.7	<0.7	<0.7	<0.7	<0.7
S3	3/1/2013	Apex-S3-GW-030113	4.0-9.0	7,200 Y	9,100	330	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
S4	3/1/2013	Apex-S4-GW-030113	4.0-9.0	7,100 Y	83,000	5,200	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
S8	4/16/2014	APEX-S8-GW-041614	4.5-6.0	<50	<49	<290	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S9	4/16/2014	APEX-S9-GW-041614	4.75-6.0	<50	<49	<290	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S6	4/16/2014	APEX-S6-GW-041614	4.5-6.0	<50	94 Y	<290	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S10	4/17/2014	APEX-S10-GW-041714	4.0-6.0	190 Y	<52	<310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S10	4/17/2014	APEX-S14-GW-041714	4.0-6.0	180 Y	99 Y	<290	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S5	4/17/2014	APEX-S5-GW-041714	4.5-7.0	4,500 Y	15,000	630	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S7	4/17/2014	APEX-S7-GW-041714	5.5-7.0	<50	<53	<320	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S13	4/17/2014	APEX-S13-GW-041714	4.25-6.0	<50 b	290 Y³	<300 ³	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes:

1 = Analysis run with silica gel cleanup

2 = SFRWQCB ESL, Table F-1a, "Groundwater Screening Levels (groundwater is a current or potential drinking water resource)," December 2013.

3 = analyzed outside of hold time

Bold = Sample result is above the laboratory reporting limits for the given analyte

Bold Red = Sample result exceeds the SFRWQCB ESL

bgs = below ground surface

EPA = U.S. Environmental Protection Agency

ESLs = environmental screening levels

MTBE = methyl tert-butyl ether

NA = not analyzed

SFRWQCB = San Francisco Bay Regional Water Quality Control Board

TPH = total petroleum hydrocarbons

VOCs = volatile organic compounds

Y = sample resembles chromatographic pattern, which does not resemble standard

<0.30 = sample result is less than the laboratory reporting limit for the given analyte

Table 3. Site Conceptual Model

SCM Element	SCM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	<p>Geology: The hills along Emeryville and along the San Francisco Peninsula, as well as the down-warped bay plain in between, are part of the central California Coast Range Province. The rock exposed in the hills and underlying the sedimentary deposits of the Bay plain consists of Tertiary-aged sediments and volcanic rock. The uplift of the hills resulted in erosion and deposition of thick alluvial fan deposits on the Bay plain, known as Alameda formation.</p> <p>Approximately 540 feet of tertiary to early quaternary sediments overlies bedrock beneath Emeryville. The unconsolidated sedimentary deposits include artificial fill, estuarine deposits known as Bay Mud, the Merritt sand, Yerba Buena Mud, and the Alameda Formation (Engineering-Science, 1988).</p> <p>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.</p> <p>Hydrogeology: Freshwater aquifer beneath Emeryville includes most of the porous sands and gravels of the Alameda and Temescal alluvial deposits and the Merritt Sand. The aquifers are recharged by rainfall on exposed areas of the porous formations, primarily between the SP right-of-way and the Oakland Hills to the east. The water flows downgradient toward the bay. The fresh water contacts higher-density saltwater in the vicinity of the bay margin. The regional groundwater flow direction is westward toward the bay, although local variations may occur due to variations in topography and subsurface lithology. The depth to groundwater varies seasonally and has been measured historically in the site vicinity between 3 to 8 feet bgs (Engineering-Science, 1988).</p>	None	N/A
	Site	<p>Geology: Based on boring logs completed during the initial investigation and this data gaps investigation, the uppermost soil is composed of various fill material, including loam, aggregate base, and gravelly matrices at depths ranging to approximately 1 and 5 feet bgs, with the deepest fill material occurring in the area of the former UST. Below fill material, the soil transitions into native dark-colored clays and extends to at least 9 feet bgs.</p> <p>Hydrogeology: Shallow groundwater has been encountered at depths of approximately 3 to 5.5 feet bgs. The hydraulic gradient and groundwater flow direction have not been specifically evaluated at the site but is presumed to be to the west in the direction of the bay. The groundwater gradient approximately 1,800 feet north of the site is reported to be 0.033 feet per foot in a westerly direction at the Pfizer Pigments site located at 4650 Shellmound in Emeryville, California (SWRCB, 2010).</p>	None	N/A
Surface Water Bodies	Regional	The closest surface water body is San Francisco Bay, located approximately 1,500 feet to the west of the site.	None	NA
Nearby Wells	Regional	DWR and ACPWA well searches identified one well within a one mile radius of 1550 Park Avenue, Emeryville, California. The well is listed as an industrial use well and is located approximately 0.65 miles to the southeast (upgradient). One domestic well was identified approximately one mile north (sidegradient) of 1550 Park Avenue. Five wells, categorized as either industrial or irrigation use, were found to be one mile or greater in distance from 1550 Park Avenue, Emeryville, California. No municipal wells were identified in the search.	None	NA
Unauthorized Release	Site	A unauthorized petroleum release was discovered adjacent to the building located at 1550 Park Avenue in Emeryville, California, when a UST was discovered in November 2009 during a street improvement project. The tank was measured to be approximately 10 feet long and 5 feet in diameter, with a calculated volume capacity of 1,500 gallons. The release was stopped when the UST was removed and approximately 20 tons of surrounding soil was excavated and 2,200 gallons of oily water was pumped from the tank and excavation. Results of subsequent soil and groundwater samples revealed the following chemicals of concern associated with the release: TPH-diesel, TPH-gasoline, TPH-motor oil, and benzo(b)fluoranthene.	None	NA
Free Product	Site	Previous data appear to suggest the presence of LNAPL. One shallow monitoring well was installed using hand auger drilling methods. The well is located where the highest total TPH concentrations were reported in groundwater (83,000 µg/L). The well is screened across the water table to allow any LNAPL that is present to infiltrate the well. LNAPL was not present in the well based on measurements with an oil/water interface probe.	None	N/A
Secondary Source	Site	Soil and grab groundwater samples have been collected from 11 boring locations surrounding the former UST. Seven boring locations form an outer perimeter surrounding the former UST. Comparison of soil and groundwater results with ESLs indicate only three of the seven perimeter locations (S5 to the east, S10 to the north, and S13 to the west) have TPH concentrations exceeding the ESLs. TPH concentrations in soil are highly elevated at S10 and slightly exceed ESLs at S5 and S13. TPH concentrations in groundwater are highly elevated at S5 and slightly exceed ESLs at S10 and S13. No ESL exceedances are found in intermediate and deep soil samples from 7.5 to 9 feet bgs. Based on the soil data, the vertical contamination appears to be confined between approximately 3 to 7 feet bgs, primarily near the water table. TPH concentrations in Soil and groundwater slightly exceeded ESLs at S13, but TPH concentrations in soil and groundwater approximately 15 feet to the south and north of S13 and other locations southwest and southeast did not exceed ESLs.	Areal extent of soil and groundwater contamination is not fully defined east and north of the former UST	Grab groundwater samples collected in the immediate vicinity of MW-1 indicated concentrations of TPH-g, TPH-d, and TPH-mo were 7,100 µg/L, 83,000 µg/L, and 5,200 µg/L, respectively. MW-1 will be monitored semiannually in 2014 for TPH-g, TPH-d, and TPH-mo and TDS. Laboratory analytical results will be compared with grab groundwater results to assess whether grab groundwater results skew high. Additionally, TDS results will be compared WITH the Basin Plan's water quality objectives for municipal supply to evaluate whether groundwater at the site is suitable for municipal use and to identify appropriate ESLs for the site.
Vapor Intrusion to Indoor Air	Site	The lack of volatile compounds in soil and groundwater beneath the site, in the vicinity of the release, at concentrations exceeding the vapor intrusion levels of concern suggest vapor intrusion is not a risk at the site.	None	N/A
Preferential Pathways	Site	Numerous utility lines were located in the vicinity of the former UST, generally at depths from 2 to 4.5 feet bgs. One soil boring (S7) was located along the main storm drain line, which drains in an upgradient direction of the former UST, to evaluate potential preferential pathways for contaminant migration. TPH concentrations in groundwater were non-detect, and concentrations in soil were either non-detect or less than ESLs.	None	N/A

Notes:

ACPWA = Alameda County Public Works Agency
 bgs = ESLs
 DWR = California Department of Water Resources
 ESLs = environmental screening levels
 LNAPL = light non-aqueous phase liquid
 N/A = not applicable
 SCM = site conceptual model

TPH-d = total petroleum hydrocarbons as diesel
 TPH-g = total petroleum hydrocarbons as gasoline
 TPH-total petroleum hydrocarbons as motor oil
 TDS = total dissolved solids
 UST = underground storage tank
 µg/L = micrograms per liter

Appendix A. Project Correspondence



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

February 3, 2014

Ms. Pennie Barger
Apex Refrigeration Corp. and
Pellegrini Refrigeration & Restaurant Equipment Co.
1550 Park Avenue
Emeryville, CA 94608
(sent via electronic mail to: pelco1969@sbcglobal.net)

Subject: Modified Data Gap Work Plan Approval; Fuel Leak Case No. RO0003069 and GeoTracker Global ID T1000002519, Pellegrini Refrigeration & Restaurant Equipment Company, 1550 Park Avenue, Emeryville, CA 94608

Dear Ms. Barger:

Alameda County Environmental Health (ACEH) has reviewed the case file, including the December 19, 2013 *Data Gaps Investigation Work Plan*, generated by Engineering / Remediation Resources Group, Inc (ERRG). The report was submitted in response to an ACEH letter dated July 7, 2013. Thank you for submitting the report.

The work plan was submitted in response to a directive letter dated July 25, 2013, and proposed the installation of six hand-augered soil bores, and two hand-augered vapor points due to the presence of multiple utilities in the general vicinity, and the installation of one groundwater monitoring well at a location downgradient of the former underground storage tank (UST) location.

ACEH has evaluated the data and recommendations presented in the above-mentioned reports, in conjunction with the case files, and the State Water Resources Control Board's (SWRCBs) Low Threat Underground Storage Tank Case Closure Policy (LTCP). As previously communicated, ACEH staff has determined that the site fails to meet the LTCP General Criteria d (Free Product), e (Site Conceptual Model [SCM]), f (Secondary Source Removal), the Media-Specific Criteria for Groundwater, and potentially the Media-Specific Criteria for Vapor Intrusion to Indoor Air.

Based on ACEH staff review of the work plan, the proposed scope of work is conditionally approved for implementation provided that the technical comments below are incorporated during the proposed work. Submittal of a revised work plan or a work plan addendum is not required unless an alternate scope of work outside that described in the work plan or these technical comments is proposed. We request that you address the following technical comments, perform the proposed work, and send us the report described below. Please provide 72-hour advance written notification to this office (e-mail preferred to: mark.detterman@acgov.org) prior to the start of field activities.

TECHNICAL COMMENTS

1. **Work Plan Modifications** – The referenced work plan proposes a series of actions with which ACEH is in general agreement of undertaking; however, ACEH requests several modifications to the approach. Please submit a report by the date specified below.
 - a. **Soil Sample Selection Protocols** – The work plan proposes to collect and retain for laboratory analysis soil samples at a static 3.5 depth interval in the proposed soil bores. Given the shallow nature of groundwater at the site (as shallow as 3.5 feet below grade surface [bgs]), ACEH is not opposed to this depth interval; however, additionally requests that soil samples be collected in conjunction with lithology changes, photoionization detector (PID) readings, and other signs of contamination such as odor or discoloration. Because higher concentrations of total petroleum hydrocarbons have been generally detected at a depth of 4.5 to 5.5 below groundwater at the

site, it is important to collect representative samples reflective of the extent and magnitude of contamination at the site, as well as to define the vertical extent of contamination.

ACEH additionally requests that PID readings be included on bore logs proposed as a result of this work; this has not occurred previously.

- b. Soil Vapor Sampling** – Two temporary vapor points have been proposed in the referenced work plan following two different construction protocols. ACEH may provide comments in the future; however, it appears appropriate to place a hold the collection of vapor intrusion data. ACEH observes that at present, there is a limited data set for the site; however, the lack of volatile compounds, and the detection of low naphthalene concentrations in soil and groundwater beneath the site in the vicinity of the release at concentrations considerably less than vapor intrusion levels of concern suggest vapor intrusion may not be a risk. ACEH notes that the lateral and downgradient extent of soil and groundwater contamination has not been fully defined and the collection of additional data as proposed may change this assessment of vapor intrusion risks at the site.
 - c. Well Construction** – The referenced work plan proposes the installation of one 1.5-inch pre-pack well between the depths of 3 and 8 feet below grade surface (bgs). Because groundwater was depicted to be as shallow as 3.5 feet bgs, a slightly shallower screen interval may be appropriate in order to collect representative groundwater samples, and, based on groundwater grab sample concentrations, to determine if LNAPL is present on the groundwater.
 - d. Sensitive Receptor Survey** – The referenced work plan proposes to determine the depth of utilities in the vicinity of the site and former UST in order to determine if they represent potential preferential pathways. The work plan also indicates that Geotracker was used to determine the existence of water supply wells in the vicinity. ACEH has found an insufficient level of detail associated with this function of Geotracker, and consequently requests that a well search be conducted using Department of Water Resources (DWR) and Alameda County Public Works Agency (ACPWA) resources. The two agencies maintain slightly different data sets; use of both agencies is appropriate.
- 2. Appropriate Groundwater Classification** - The proposed “Zone B Berkeley / Albany Groundwater Management Zone” contained in the June 1999 *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report* was ultimately not adopted in the 2007 Basin Plan. Consequently, please aware that at present all groundwater in Emeryville is currently classified as ‘MUN’ (potentially suitable for municipal or domestic water supply). According to the RWQCB *Water Quality Control Plan (Basin Plan)*, dated January 18, 2007, for the San Francisco Bay Basin, “the term ‘groundwater’ includes all subsurface waters, whether or not these waters meet the classic definition of an aquifer or occur within identified groundwater basins.’ It is also stated in the Basin Plan that ‘all groundwaters are considered suitable, or potentially suitable, for municipal or domestic water supply (MUN).” Therefore, the groundwater beneath the subject site must be considered beneficial for these uses unless shown to be non-beneficial using criteria presented in the Basin Plan. Please adjust your evaluation to reflect this in future reports. However, please also be aware that case closure does not necessarily require cleanup to MUN cleanup goals, only that (if necessary) those goals can be met within a reasonable timeframe, or that alternative goals defined by the recently enacted LTCP be demonstrated.
- Please note that the collection and submittal of additional groundwater samples for laboratory analysis may be useful in determining the appropriate classification of groundwater beneath the subject site, and for determining site cleanup goals.
- 3. Groundwater Monitoring** – Upon installation and development of the proposed groundwater monitoring well MW-1, please initiate quarterly groundwater monitoring and sampling for contaminants of concern at the site. Please submit groundwater monitoring reports in accordance with the following schedule.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the specified file naming convention below, according to the following schedule:

- **April 11, 2014** – Site Investigation, Updated Focused SCM
File to be named: RO3069_SWI_R_yyyy-mm-dd
- **July 11, 2014** – Groundwater Monitoring Report
File to be named: RO3069_GWM_R_yyyy-mm-dd
- **October 10, 2014** – Groundwater Monitoring Report
File to be named: RO3069_GWM_R_yyyy-mm-dd

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

Thank you for your cooperation. Should you have any questions, please contact me at (510) 567--6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Mark Detterman, PG, CEG
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

Attachment A – Site Conceptual Model Requisite Elements

cc: Michael Lamphere, Lamphere Law Offices, 900 Larkspur Landing Circle, Suite 179; Larkspur, CA 94939, (sent via electronic mail to MLamphere@lampherelaw.com)

Erik Oehlschlager, Engineering / Remediation Resources Group, Inc, 4585 Pacheco Blvd, Suite 200, Martinez, CA 94553; (sent via electronic mail to erik.oehlschlager@errg.com)

Dilan Roe, ACEH, (sent via electronic mail to: dilan.roe@acgov.org)

Mark Detterman (sent via electronic mail to mark.detterman@acgov.org)
Electronic File, GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements/Obligations

REPORT/DATA REQUESTS

These reports/data are being requested pursuant to Division 7 of the California Water Code (Water Quality), Chapter 6.7 of Division 20 of the California Health and Safety Code (Underground Storage of Hazardous Substances), and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations (Underground Storage Tank Regulations).

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (Local Oversight Program [LOP] for unauthorized releases from petroleum Underground Storage Tanks [USTs], and Site Cleanup Program [SCP] for unauthorized releases of non-petroleum hazardous substances) require submission of reports in electronic format pursuant to Chapter 3 of Division 7, Sections 13195 and 13197.5 of the California Water Code, and Chapter 30, Articles 1 and 2, Sections 3890 to 3895 of Division 3 of Title 23 of the California Code of Regulations (23 CCR). Instructions for submission of electronic documents to the ACEH FTP site are provided on the attached "Electronic Report Upload Instructions."

Submission of reports to the ACEH FTP site is in addition to requirements for electronic submittal of information (ESI) to the State Water Resources Control Board's (SWRCB) Geotracker website. In April 2001, the SWRCB adopted 23 CCR, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1 (Electronic Submission of Laboratory Data for UST Reports). Article 12 required electronic submittal of analytical laboratory data submitted in a report to a regulatory agency (effective September 1, 2001), and surveyed locations (latitude, longitude and elevation) of groundwater monitoring wells (effective January 1, 2002) in Electronic Deliverable Format (EDF) to Geotracker. Article 12 was subsequently repealed in 2004 and replaced with Article 30 (Electronic Submittal of Information) which expanded the ESI requirements to include electronic submittal of any report or data required by a regulatory agency from a cleanup site. The expanded ESI submittal requirements for petroleum UST sites subject to the requirements of 23 CCR, Division, 3, Chapter 16, Article 11, became effective December 16, 2004. All other electronic submittals required pursuant to Chapter 30 became effective January 1, 2005. Please visit the SWRCB website for more information on these requirements: (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 7835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, late reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to \$10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)	REVISION DATE: July 25, 2012
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	SUBJECT: Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (petroleum UST and SCP) require submission of all reports in electronic form to the county's FTP site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as a **single Portable Document Format (PDF) with no password protection.**
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document.** Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

- 1) Obtain User Name and Password
 - a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
 - i) Send an e-mail to deh.loptoxic@acgov.org
 - b) In the subject line of your request, be sure to include "**ftp PASSWORD REQUEST**" and in the body of your request, include the **Contact Information, Site Addresses, and the Case Numbers (RO# available in Geotracker) you will be posting for.**
- 2) Upload Files to the ftp Site
 - a) Using Internet Explorer (IE4+), go to <ftp://alcoftp1.acgov.org>
 - (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
 - b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
 - c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
 - d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
 - e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.
- 3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
 - a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
 - b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
 - c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
 - d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

ATTACHMENT A

Site Conceptual Model Requisite Elements

ATTACHMENT A

Site Conceptual Model

The site conceptual model (SCM) is an essential decision-making and communication tool for all interested parties during the site characterization, remediation planning and implementation, and closure process. A SCM is a set of working hypotheses pertaining to all aspects of the contaminant release, including site geology, hydrogeology, release history, residual and dissolved contamination, attenuation mechanisms, pathways to nearby receptors, and likely magnitude of potential impacts to receptors.

The SCM is initially used to characterize the site and identify data gaps. As the investigation proceeds and the data gaps are filled, the working hypotheses are modified, and the overall SCM is refined and strengthened until it is said to be "validated". At this point, the focus of the SCM shifts from site characterization towards remedial technology evaluation and selection, and later remedy optimization, and forms the foundation for developing the most cost-effective corrective action plan to protect existing and potential receptors.

For ease of review, Alameda County Environmental Health (ACEH) requests utilization of tabular formats to (1) highlight the major SCM elements and their associated data gaps which need to be addressed to progress the site to case closure (see Table 1 of attached example), and (2) highlight the identified data gaps and proposed investigation activities (see Table 2 of the attached example). ACEH requests that the tables presenting the SCM elements, data gaps, and proposed investigation activities be updated as appropriate at each stage of the project and submitted with work plans, feasibility studies, corrective action plans, and requests for closures to support proposed work, conclusions, and/or recommendations.

The SCM should incorporate, but is not limited to, the topics listed below. Please support the SCM with the use of large-scaled maps and graphics, tables, and conceptual diagrams to illustrate key points. Please include an extended site map(s) utilizing an aerial photographic base map with sufficient resolution to show the facility, delineation of streets and property boundaries within the adjacent neighborhood, downgradient irrigation wells, and proposed locations of transects, monitoring wells, and soil vapor probes.

- a. Regional and local (on-site and off-site) geology and hydrogeology. Include a discussion of the surface geology (e.g., soil types, soil parameters, outcrops, faulting), subsurface geology (e.g., stratigraphy, continuity, and connectivity), and hydrogeology (e.g., water-bearing zones, hydrologic parameters, impermeable strata). Please include a structural contour map (top of unit) and isopach map for the aquitard that is presumed to separate your release from the deeper aquifer(s), cross sections, soil boring and monitoring well logs and locations, and copies of regional geologic maps.
- b. Analysis of the hydraulic flow system in the vicinity of the site. Include rose diagrams for depicting groundwater gradients. The rose diagram shall be plotted on groundwater elevation contour maps and updated in all future reports submitted for your site. Please address changes due to seasonal precipitation and groundwater pumping, and evaluate the potential interconnection between shallow and deep aquifers. Please include an analysis of vertical hydraulic gradients, and effects of pumping rates on hydraulic head from nearby water supply wells, if appropriate. Include hydraulic head in the different water bearing zones and hydrographs of all monitoring wells.
- c. Release history, including potential source(s) of releases, potential contaminants of concern (COC) associated with each potential release, confirmed source locations, confirmed release locations, and existing delineation of release areas. Address primary leak source(s) (e.g., a tank, sump, pipeline, etc.) and secondary sources (e.g., high-

ATTACHMENT A

Site Conceptual Model (continued)

concentration contaminants in low-permeability lithologic soil units that sustain groundwater or vapor plumes). Include local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.).

- d. Plume (soil gas and groundwater) development and dynamics including aging of source(s), phase distribution (NAPL, dissolved, vapor, residual), diving plumes, attenuation mechanisms, migration routes, preferential pathways (geologic and anthropogenic), magnitude of chemicals of concern and spatial and temporal changes in concentrations, and contaminant fate and transport. Please include three-dimensional plume maps for groundwater and two-dimensional soil vapor plume plan view maps to provide an accurate depiction of the contaminant distribution of each COC.
- e. Summary tables of chemical concentrations in different media (i.e., soil, groundwater, and soil vapor). Please include applicable environmental screening levels on all tables. Include graphs of contaminant concentrations versus time.
- f. Current and historic facility structures (e.g., buildings, drain systems, sewer systems, underground utilities, etc.) and physical features including topographical features (e.g., hills, gradients, surface vegetation, or pavement) and surface water features (e.g. routes of drainage ditches, links to water bodies). Please include current and historic site maps.
- g. Current and historic site operations/processes (e.g., parts cleaning, chemical storage areas, manufacturing, etc.).
- h. Other contaminant release sites in the vicinity of the site. Hydrogeologic and contaminant data from those sites may prove helpful in testing certain hypotheses for the SCM. Include a summary of work and technical findings from nearby release sites, including the two adjacent closed LUFT sites, (i.e., Montgomery Ward site and the Quest Laboratory site).
- i. Land uses and exposure scenarios on the facility and adjacent properties. Include beneficial resources (e.g., groundwater classification, wetlands, natural resources, etc.), resource use locations (e.g., water supply wells, surface water intakes), subpopulation types and locations (e.g., schools, hospitals, day care centers, etc.), exposure scenarios (e.g. residential, industrial, recreational, farming), and exposure pathways, and potential threat to sensitive receptors. Include an analysis of the contaminant volatilization from the subsurface to indoor/outdoor air exposure route (i.e., vapor pathway). Please include copies of Sanborn maps and aerial photographs, as appropriate.
- j. Identification and listing of specific data gaps that require further investigation during subsequent phases of work. Proposed activities to investigate and fill data gaps identified.

**TABLE 1
INITIAL SITE CONCEPTUAL MODEL**

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	<p>The site is in the northwest portion of the Livermore Valley, which consists of a structural trough within the Diablo Range and contains the Livermore Valley Groundwater Basin (referred to as "the Basin") (DWR, 2006). Several faults traverse the Basin, which act as barriers to groundwater flow, as evidenced by large differences in water levels between the upgradient and downgradient sides of these faults (DWR, 2006). The Basin is divided into 12 groundwater basins, which are defined by faults and non-water-bearing geologic units (DWR, 1974).</p> <p>The hydrogeology of the Basin consists of a thick sequence of fresh-water-bearing continental deposits from alluvial fans, outwash plains, and lacustrine environments to up to approximately 5,000 feet bgs (DWR, 2006). Three defined fresh-water bearing geologic units exist within the Basin: Holocene Valley Fill (up to approximately 400 feet bgs in the central portion of the Basin), the Plio-Pleistocene Livermore Formation (generally between approximately 400 and 4,000 feet bgs in the central portion of the Basin), and the Pliocene Tassajara Formation (generally between approximately 250 and 5,000 or more feet bgs) (DWR, 1974). The Valley Fill units in the western portion of the Basin are capped by up to 40 feet of clay (DWR, 2006).</p>	None	NA
	Site	<p>Geology: Borings advanced at the site indicate that subsurface materials consist primarily of finer-grained deposits (clay, sandy clay, silt and sandy silt) with interbedded sand lenses to 20 feet below ground surface (bgs), the approximate depth to which these borings were advanced. The documented lithology for one on-site boring that was logged to approximately 45 feet bgs indicates that beyond approximately 20 feet bgs, fine-grained soils are present to approximately 45 feet bgs. A cone penetrometer technology test indicated the presence of sandier lenses from approximately 45 to 58 feet bgs and even coarser materials (interbedded with finer-grained materials) from approximately 58 feet to 75 feet bgs, the total depth drilled. The lithology documented at the site is similar to that reported at other nearby sites, specifically the Montgomery Ward site (7575 Dublin Boulevard), the Quest laboratory site (6511 Golden Gate Drive), the Shell-branded Service Station site (11989 Dublin Boulevard), and the Chevron site (7007 San Ramon Road).</p> <p>Hydrogeology: Shallow groundwater has been encountered at depths of approximately 9 to 15 feet bgs. The hydraulic gradient and groundwater flow direction have not been specifically evaluated at the site.</p>	<p>As noted, most borings at the site have been advanced to approximately 20 feet bgs, and one boring has been advanced and logged to 45 feet bgs; CPT data was collected to 75 feet bgs at one location. Lithologic data will be obtained from additional borings that will be advanced on site to further the understanding of the subsurface, especially with respect to deeper lithology.</p> <p>The on-site shallow groundwater horizontal gradient has not been confirmed. Additionally, it is not known if there may be a vertical component to the hydraulic gradient.</p>	<p>Two direct push borings and four multi-port wells will be advanced to depth (up to approximately 75 feet bgs) and soil lithology will be logged. See items 4 and 5 on Table 2.</p> <p>Shallow and deeper groundwater monitoring wells will be installed to provide information on lateral and vertical gradients. See Items 2 and 5 on Table 2.</p>
Surface Water Bodies		The closest surface water bodies are culverted creeks. Martin Canyon Creek flows from a gully west of the site, enters a culvert north of the site, and then bends to the south, passing approximately 1,000 feet east of the site before flowing into the Alamo Canal. Dublin Creek flows from a gully west of the site, enters a culvert approximately 750 feet south of the site, and then joins Martin Canyon Creek approximately 750 feet southeast of the site.	None	NA
Nearby Wells		The State Water Resources Control Board's GeoTracker GAMA website includes information regarding the approximate locations of water supply wells in California. In the vicinity of the site, the closest water supply wells presented on this website are depicted approximately 2 miles southeast of the site; the locations shown are approximate (within 1 mile of actual location for California Department of Public Health supply wells and 0.5 mile for other supply wells). No water-producing wells were identified within 1/4 mile of the site in the well survey conducted for the Quest Laboratory site (6511 Golden Gate Drive; documented in 2009); information documented in a 2005 report for the Chevron site at 7007 San Ramon Road indicates that a water-producing well may exist within 1/2 mile of the site.	A formal well survey is needed to identify water-producing, monitoring, cathodic protection, and dewatering wells.	Obtain data regarding nearby, permitted wells from the California Department of Water Resources and Zone 7 Water Agency (Item 11 on Table 2).

**TABLE 2
DATA GAPS AND PROPOSED INVESTIGATION**

Item	Data Gap	Proposed Investigation	Rationale	Analysis
5	Evaluate the possible presence of impacts to deeper groundwater. Evaluate deeper groundwater concentration trends over time. Obtain data regarding the vertical groundwater gradient. Obtain more lithological data below 20 feet bgs.	Install four continuous multichannel tubing (CMT) groundwater monitoring wells (aka multi-port wells) to approximately 65 feet bgs in the northern parking lot with ports at three depths (monitoring well locations may be adjusted pending results of shallow grab groundwater samples; we will discuss any potential changes with ACEH before proceeding). Groundwater monitoring frequency to be determined. Soil samples will be collected only if there are field indications of impacts. Soil lithology will be logged. However, information regarding the moisture content of soil may not be reliable using sonic drilling technology (two borings will be logged using direct push technology; see Item 4, above).	One well is proposed at the western (upgradient) property boundary to confirm that there are no deeper groundwater impacts from upgradient. Two wells are proposed near the center of the northern parking lot to evaluate potential impacts in an area where deeper impacts, if any, would most likely to be found. One well is proposed at the eastern (downgradient) property boundary to confirm that there are no impacts extending off-site. Port depths will be chosen based on the locations of saturated soils (as logged in direct push borings; see Item 4, above), but are expected at approximately 15, 45, and 60 feet bgs.	<i>Groundwater:</i> VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
6	Evaluate possible off-site migration of impacted soil vapor in the downgradient direction (east). Evaluate concentration trends over time.	Install 4 temporary nested soil vapor probes at approximately 4 and 8 feet bgs along the eastern property boundary. Based on the results of the sampling, two sets of nested probes will be converted to vapor monitoring wells to allow for evaluation of VOC concentration trends over time.	Available data indicate that PCE and TCE are present in soil vapor in the eastern portion of the northern parking lot. Samples are proposed on approximately 50-foot intervals along the eastern property boundary to provide a transect of concentrations through the vapor plume. The depths of 4 and 8 feet bgs are chosen to provide data closest to the source (i.e., groundwater) while avoiding saturated soil, and also provide shallower data to help evaluate potential attenuation within the soil column. Two sets of nested vapor probes will be converted into vapor monitoring wells (by installing well boxes at ground surface); the locations of the permanent wells will be chosen based on the results of samples from the temporary probes.	<i>Soil vapor:</i> VOCs by EPA Method TO-15.
7	Evaluate potential for off-site migration of impacted groundwater in the downgradient direction (east).	Advance two borings to approximately 20 feet bgs in the parking lot of the property east of the Crown site for collection of grab groundwater samples.	Two borings are proposed off-site, on the property east of the Crown site, just east of the building in the expected area of highest potential VOC concentrations.	<i>Groundwater:</i> VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
8	Evaluate VOC concentrations just north of the highest concentration area.	Advance two borings to approximately 20 feet bgs north of Building A for collection of soil and grab groundwater samples. Soil samples will be collected at two depths in the vadose zone. Soil samples will be collected based on field indications of impacts (PID readings, odor, staining) or, in the absence of field indications of impacts, at 5 and 10 feet bgs.	The highest concentrations of PCE in groundwater were detected at boring NM-B-32, just north of Building A. The nearest available data to the north are approximately 75 feet away. One of the borings will be advanced approximately 20 feet north of NM-B-32 to provide data close to the highest concentration area. A second boring will be advanced approximately halfway between the first boring and former boring NM-B-33 to provide additional spatial data for contouring purposes. These borings will be part of a transect in the highest concentration area.	<i>Groundwater:</i> VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance. <i>Soil:</i> VOCs by EPA Method 8260 (soil samples to be collected using field preservation in accordance with EPA Method 5035).
9	Evaluate VOC concentrations in soil vapor in the south parcel of the site.	Install four temporary soil vapor probes at approximately 5 feet bgs around boring SV-25, where PCE was detected in soil vapor at a low concentration.	PCE was detected in soil vapor sample SV-25 in the southern parcel, although was not detected in groundwater in that area. Three probes will be installed approximately 30 feet from of boring SV-25 to attempt to delineate the extent of impacts. A fourth probe is proposed west of the original sample, close to the property boundary and the location of mapped utility lines, which may be a potential conduit, to evaluate potential impacts from the west.	<i>Soil vapor:</i> VOCs by EPA Method TO-15.
10	Obtain additional information regarding subsurface structures and utilities to further evaluate migration pathways and sources.	Ground penetrating radar (GPR) and other utility locating methodologies will be used, as appropriate, to further evaluate the presence of unknown utilities and structures at the site.	Utilities have been identified at the site that include an on-site sewer lateral and drain line, and shallow water, electric, and gas lines. Given the current understanding of the distribution of PCE in groundwater at the site, it is possible that other subsurface utilities, and specifically sewer laterals, exist that may act as a source or migration pathway for distribution of VOCs in the subsurface.	NA

Linh Truong

From: Detterman, Mark, Env. Health <Mark.Detterman@acgov.org>
Sent: Monday, February 10, 2014 3:00 PM
To: Erik Oehlschlager
Cc: pelco1969@sbcglobal.net; Michael Lamphere (mlamphere@lampherelaw.com)
Subject: RE: 1550 Park Ave, Emeryville UST/Pellegrini

Hi Erik,

Thanks for checking. It is an error on my part, the removal of two commas or two parentheses. It should be "...generally detected at a depth of 4.5 to 5.5, below groundwater, at the site...". In order to define the vertical extent will require going below that depth. I'd be a bit cautious, as 6 ft may not define it vertically, especially heavy end petroleum in the bay margin or bay muds. I recall you are doing silica gel cleanup on the extractable TPH; that likely will be critical for site delineation.

Mark Detterman
Senior Hazardous Materials Specialist, PG, CEG
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502
Direct: 510.567.6876
Fax: 510.337.9335
Email: mark.detterman@acgov.org

PDF copies of case files can be downloaded at:

<http://www.acgov.org/aceh/lop/ust.htm>

From: Erik Oehlschlager [<mailto:erik.oehlschlager@errg.com>]
Sent: Monday, February 10, 2014 2:50 PM
To: Detterman, Mark, Env. Health
Cc: pelco1969@sbcglobal.net; Michael Lamphere (mlamphere@lampherelaw.com)
Subject: 1550 Park Ave, Emeryville UST/Pellegrini

Mark,

I just left you a voicemail regarding Technical comment 1.a. You indicate that high TPH is 4.5 to 5.5 feet below groundwater. However, the previous investigation showed high TPH at 4.5 to 5.5 feet below ground surface with relatively low TPH at 8.5 and 9 feet below ground surface. Are you asking that we soil sample down to 9 feet below ground surface at all locations, or, just extend the depths to 6 feet below ground surface instead of the proposed 1 foot below the observed water table?

Erik Oehlschlager
Geologist
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925.839.2274 **Direct**
925.577.4423 **Mobile**
erik.oehlschlager@errg.com **Email**

Linh Truong

From: Detterman, Mark, Env. Health <Mark.Detterman@acgov.org>
Sent: Monday, April 07, 2014 12:03 PM
To: Erik Oehlschlager
Cc: mkaufman@ci.emeryville.ca.us; mroberts@ci.emeryville.ca.us; mlamphere@lampherelaw.com
Subject: RE: APEX: Revision of proposed soil boring locations

Erik,
The revised locations look reasonable. I'll use this email as a work plan addendum to document the changes. You should use this email to document ACEH concurrence with the revised scope of work as also modified by the February 3, 2014 directive letter. Presuming the City will issue encroachment permits, I've also extended the submittal date for the site investigation report to June 13, 2014.
Let me know if you have questions.

Mark Detterman
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Fax: 510.337.9335
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From: Erik Oehlschlager [<mailto:erik.oehlschlager@errg.com>]
Sent: Friday, April 04, 2014 2:57 PM
To: Detterman, Mark, Env. Health
Cc: mkaufman@ci.emeryville.ca.us; mroberts@ci.emeryville.ca.us; mlamphere@lampherelaw.com
Subject: APEX: Revision of proposed soil boring locations

Mark,
Attached are a map of the storm drain layout provided by City of Emeryville and a map with new soil boring locations S7, S8, and S9. S7 has been relocated in the presumed up gradient direction of the former UST along the storm drain line to investigate preferential pathway. S8 and S9 have been moved to the west to investigate aerial and vertical extent along the railroad right-of-way.

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Linh Truong

From: Detterman, Mark, Env. Health <Mark.Detterman@acgov.org>
Sent: Wednesday, April 09, 2014 12:24 PM
To: Erik Oehlschlager
Cc: mkaufman@ci.emeryville.ca.us; mroberts@ci.emeryville.ca.us;
mlamphere@lampherelaw.com
Subject: RE: APEX: Revision of proposed soil boring locations

Erik,
For S8 and S9, I think that if you place them just inside the eastern or southern edge of the planter, it would be fine. For the S6 location, it might be acceptable; however, it might lead us to need another bore where B6 currently is in order to close off groundwater flow in that direction, so you might want to consider just an additional bore now where you are proposing to relocate S6. The bores are shallow enough, and the lab cheap enough to make it worthwhile.

Mark Detterman
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From: Erik Oehlschlager [<mailto:erik.oehlschlager@errg.com>]
Sent: Wednesday, April 09, 2014 11:53 AM
To: Detterman, Mark, Env. Health
Cc: mkaufman@ci.emeryville.ca.us; mroberts@ci.emeryville.ca.us; mlamphere@lampherelaw.com
Subject: RE: APEX: Revision of proposed soil boring locations

Mark,
I was at the site today marking for USA. If at all possible, I would like to try and put 3 borings in the planter along the right of way in order to eliminate the need for 3 concrete cores in the plaza. Locations I would like to attempt this with are S6, S8, and S9. Let me know if you agree and I will see if City of Emeryville will also agree. The work can be done without damaging any vegetation. There is one fern that is struggling at the moment.

Erik Oehlschlager
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erik.oehlschlager@errg.com **Email**

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To: Erik Oehlschlager
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Sent: Friday, April 04, 2014 2:57 PM
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Cc: mkaufman@ci.emeryville.ca.us; mroberts@ci.emeryville.ca.us; mlamphere@lampherelaw.com
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Erik Oehlschlager
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Appendix B. Permits



CITY OF EMERYVILLE • DEPARTMENT OF PUBLIC WORKS

ENCROACHMENT PERMIT

APPLICANT ERRG, Inc.
CONTACT PERSON Erik Oehlschlager
ADDRESS 4585 Pacheco Blvd., Suite 200
Martinez, CA 94553
PHONE (925) 577-4423 **EMAIL** erik.oehlschlager@errg.com

OWNER/DEVELOPER Apex Refrigeration Corporation
ADDRESS 1550 Park Avenue
Emeryville, CA 94608
PHONE (510) 653-9850 **EMAIL** pelco1969@sbcglobal.net

CONTRACTOR DOING WORK Gregg Drilling, Inc.
CONTACT PERSON Christopher Pruner
ADDRESS 950 Howe Road
Martinez, CA 94553
PHONE (925) 313-5800 **EMAIL** cpruner@greggdrilling.com
LICENSE NO. 485165 **CLASS** C-57
 Yes No **CURRENT CITY BUSINESS LICENSE ON FILE**
 Yes No **PROVIDE PROOF OF INSURANCE**

EST. START DATE 4/1/2014 **EST. COMPLETION DATE** 4/2/2014 **EST. COST IN CITY R/W** _____

LOCATION OF WORK 1550 Park Avenue, Emeryville, CA 94608

CHECK ALL CONDITIONS THAT APPLY:

- Traffic Control Survey Sidewalk Detour Dumpster Temporary No Parking Construction Sidewalk Obstruction
- Private Facilities on Public Right of Way Driveway Approach Curb & Gutter Pedestrian Ramp Water Service Fence
- Excavation Electric Service Roof Drain Utility Maintenance Access Road Monitoring Well Sewer Lateral Crane
- Storm Drain Block Party Gas Service

FULLY DESCRIBE PROPOSED WORK WITHIN CITY RIGHT-OF-WAY (additional space on reverse if needed): Attach 3 complete sets of plans 8 1/2 X 11, if applicable.

Concrete core and advance soil borings using hand auger drilling techniques at 7 locations (S5 through S10, and S12) to a depth of 10 feet below ground surface. Locations of borings will be on the sidewalks in the vicinity of 1550 Park Avenue in Emeryville, California (See attached Figures 1 and 3). One monitoring well will be installed at location S12.

I hereby agree to protect and indemnify the City of Emeryville and hold it harmless in every way from all claim or suits for injury or damage to persons or property as set forth in the Standard Provisions. I agree not to begin construction until all materials to be used are on hand; to perform all work in accordance with the plans submitted (if any), the Standard Provisions to Encroachment Permit, and all applicable Special Conditions of Approval, and to pay all inspection and engineering costs in addition to those paid at the time of issuance of this permit. I further agree to complete the work to the satisfaction of the City Engineer and if for any reason the City of Emeryville is required to complete this work, I will pay all costs for such work.

Applicant Signature Erik Oehlschlager **Date** 3/6/14
ERIK OEHLSCHLAGER, ERRG

FOR CITY USE ONLY
Permit No. 21403204 **Date** 4-14-14
 Temporary Permit # _____ days Long Term Permit
Permit Administrative Fee.....\$ 171
"No Parking" Signs..... x \$ _____ \$ _____
Permit Inspection Deposit (2 hr. min.).....\$ 202
Cost Recovery Estimate.....\$ _____
Arborist Recovery Estimate.....\$ _____
Long Term Permit Fee (____ mos. x _____) \$ _____
Tree Removal Fee.....\$ _____
Tree Protection Deposit (value x 3 + \$10,000) \$ _____
Required Security Deposit:
 \$1,000 cash.....\$ 1000
 \$10,000 Bond.....Bond # _____
 100% Performance Bond, Bond # _____
Bond Value \$ _____
Total Payment Required.....\$ _____
Receipt # _____ **Date** _____ **Amt. Received** \$ _____
 Business License Certificate of Insurance

FOR CITY USE ONLY

The following documents are attached and incorporated into this permit and have been given to the applicant:

- Standard Provisions to Encroachment Permit Special Conditions of Approval
- City Standard Details (List Details) Handout, Urban Runoff BMP's
- Other _____

Remarks Consult with inspector ~~prior~~ during layout and
prior to pavement repair.

- 48 HOUR NOTICE PRIOR TO START OF WORK
- PROVIDE CONSTRUCTION SCHEDULE 5 DAYS PRIOR TO START OF WORK
- AS-BUILT PLANS REQUIRED
- PLEASE CALL FOR INSPECTION AT 510-596-4333 Dennis 455-7286
- PLEASE NOTIFY POLICE (510-596-3700) AND FIRE (510-596-3750) 24 HOURS IN ADVANCE.

This permit is void unless the work is completed before June 1, 2014

This permit is to be strictly construed and no other work than is specifically mentioned is hereby authorized.

After final inspection is approved, please contact the Public Works Department at 510-596-4330 to determine final cost, and for final payment or reimbursement of deposit. Failure to obtain approval of a Final Inspection of the work covered by this Encroachment Permit within one (1) year of the estimated completion date shall result in the loss of the security deposit which shall be retained by the City of Emeryville.

APPROVED [Signature] TITLE Gr. Civil Engineer DATE 3/18/14

FINAL INSPECTION APPROVED _____ TITLE _____ DATE _____

Alameda County Public Works Agency - Water Resources Well Permit



Public Works Agency
— Alameda County —

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

Application Approved on: 03/19/2014 By jamesy

Permit Numbers: W2014-0260 to W2014-0261
Permits Valid from 04/01/2014 to 04/02/2014

Application Id: 1394146965404
Site Location: 1550 Park Avenue
Project Start Date: 04/01/2014
Assigned Inspector: Contact Steve Miller at (510) 670-5517 or stevem@acpwa.org

City of Project Site: Emeryville

Completion Date: 04/02/2014

Applicant: ERRG, Inc. - Erik Oehlschlager
4585 Pacheco Blvd., Suite 200, Martinez, CA 94553

Phone: 925-839-2274

Property Owner: Pennie Barger
1550 Park Avenue, Emeryville, CA 94608

Phone: 510-653-9850

Client: ** same as Property Owner **
Contact: Erik Oehlschlager

Phone: 925-839-2274
Cell: 925-577-4423

Receipt Number: WR2014-0096 Total Due: \$662.00
Payer Name : Engineering/Remediation Paid By: CHECK Total Amount Paid: \$662.00
Resources Group, Inc. PAID IN FULL

Works Requesting Permits:

Borehole(s) for Investigation-Contamination Study - 6 Boreholes
Driller: Gregg Drilling and Testing, Inc. - Lic #: 485165 - Method: Hand

Work Total: \$265.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2014-0260	03/19/2014	06/30/2014	6	3.25 in.	10.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.
2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

Alameda County Public Works Agency - Water Resources Well Permit

5. Applicant shall contact Steve Miller for an inspection time at (510) 670-5517 or email to stevem@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

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

7. NOTE:

Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.

8. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

Well Construction-Monitoring-Monitoring - 1 Wells

Driller: Gregg Drilling and Testing, Inc. - Lic #: 485165 - Method: Hand

Work Total: \$397.00

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2014-0261	03/19/2014	06/30/2014	MW-1	3.25 in.	1.50 in.	2.00 ft	7.50 ft

Specific Work Permit Conditions

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

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

3. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

4. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Include permit

Alameda County Public Works Agency - Water Resources Well Permit

number and site map.

5. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.
 6. Applicant shall contact Steve Miller for an inspection time at (510) 670-5517 or email to stevem@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
 7. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.
 8. Minimum surface seal thickness is two inches of cement grout placed by tremie.
 9. Minimum seal (Neat Cement seal) depth for monitoring wells is 5 feet below ground surface(BGS) or the maximum depth practicable or 20 feet.
 10. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
-

Appendix C. Soil Boring Logs

Project: Data Gaps Investigation

Boring: **S5**

Drilling Co: **Gregg Drilling and Testing, Inc.**

Drilling Method: **Hand Auger**

Date Started: **4/16/14**

Location: **Near building, east of former UST**

Sampler: **Hand Auger**

Date Completed: **4/16/14**

Logged by: **Brianne Foster**

Reviewed by: _____

During Drilling **4.5 ft**

DEPTH - FT.	BLOW COUNT	% RECOVERY	FIDPID (ppm)	SAMPLES	GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	ESTIMATED % OF			MOISTURE
								GR	SA	FI	
						Concrete (6.5")	CONC.				
						Aggregate Base (3")	FILL				
1			0.0			CLAY; very dark gray (10YR 3/1); slightly moist; medium plasticity; firm; brick fragments to 1.5".				100	M
2			0.2			Becomes firm to soft.					
3			0.4								
4			37.4			Color change to dark grayish black (10YR 2/1); slight fuel odor; moist.				100	M
5			54.6			Sample collected: APEX-S5-4.5-041714 (soil)	CL				
6			198			Color change to gray green (GLEYS 3/2); chalky nodules appear.					
7			114			Sample collected: APEX-S5-GW-041714 (water)					
8			9.3			CLAY; dark grayish brown (2.5Y 3/2) with olive brown staining and nodules; dry; medium plasticity; firm; slight fuel odor; no sheen.				100	D
9			1.4			Sample collected: APEX-S5-7.5-041714 (soil)					
			0.7			Sample collected: APEX-S5-9.0-041714 (soil)				100	D
						Bottom of boring at 9 feet bgs					

2013-094 APEX EMERYVILLE.GPJ 6/11/14



Engineering/Remediation Resources Group, Inc.
 4585 Pacheco Blvd. Suite 200
 Martinez, CA 94553
 Phone: 925-969-0750
 Fax: 925-969-0751

**Lithologic Log for S5
Apex Refrigeration**

Project Location:

1550 Park Avenue, Emeryville, CA 94608

Project No.

2013-094

Project: Data Gaps Investigation

Boring: **S6**

Pg. 1 of 1

Drilling Co: **Gregg Drilling and Testing, Inc.**

Drilling Method: **Hand Auger**

Date Started: **4/16/14**

Location: **Against property boundary, on concrete**

Sampler: **Hand Auger**

Date Completed: **4/16/14**

Logged by: **Brianne Foster**

Reviewed by: _____

During Drilling **4.5 ft**

DEPTH - FT.	BLOW COUNT	% RECOVERY	FIDPID (ppm)	SAMPLES	GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	ESTIMATED % OF			MOISTURE
								GR	SA	FI	
0						Concrete (10" concrete with 12" aggregate base)	CONC.				
1						Sandy GRAVEL with Silt (aggregate Base); dark gray brown; moist; very dense.	GM	60	25	15	M
2			0			CLAY; very dark gray (10YR 3/1); moist; low plasticity.				100	M
3											
4			0			Becomes slightly moist; brick fragments present from 3.5' - 4'.	CL				M
5			1.4			Becomes moist; very slight fuel odor. Sample collected: APEX-S6-4.5-041614 (soil)					M
6			26.9			Sample collected: APEX-S6-GW-041614 (water)					
6						Refusal at 6', obstruction in borehole Bottom of boring at 6 feet bgs					

2013-094 APEX EMERYVILLE.GPJ 6/11/14



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 Martinez, CA 94553
 Phone: 925-969-0750
 Fax: 925-969-0751

**Lithologic Log for S6
Apex Refrigeration**

Project Location:

1550 Park Avenue, Emeryville, CA 94608

Project No.

2013-094

Project: Data Gaps Investigation

Boring: **S7**

Pg. 1 of 1

Drilling Co: **Gregg Drilling and Testing, Inc.**

Drilling Method: **Hand Auger**

Date Started: **4/17/14**

Location: _____

Sampler: **Hand Auger**

Date Completed: **4/17/14**

Logged by: **Brianne Foster**

Reviewed by: _____

During Drilling **5.8 ft**

DEPTH - FT.	BLOW COUNT	% RECOVERY	FIDIPID (ppm)	SAMPLES	GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	ESTIMATED % OF			MOISTURE
								GR	SA	FI	
0						Concrete (9")	CONC.				
1			0.1			Silty GRAVEL with Sand (fill); grayish brown (2.5Y 5/2).	GM				
2			0			CLAY; black (2.5Y 2.5/1); very slightly moist; organic odor; soft to firm.				100	M
3			0								
4			0								
5			0			Sample collected: APEX-S7-5.5-041714 (soil)	CL				
6						Becomes wet.					W
7			0			Sample collected: APEX-S7-GW-041714 (water)					
8											
9			0			CLAY; dark gray brown (2.5Y 4/2); slightly moist; low plasticity; soft to firm; trace fibrous roots throughout. Sample collected: APEX-S7-9.0-041714 (soil)				100	
						Bottom of boring at 9 feet bgs					

2013-094 APEX EMERYVILLE.GPJ 6/11/14



Engineering/Remediation Resources Group, Inc.
 4585 Pacheco Blvd. Suite 200
 Martinez, CA 94553
 Phone: 925-969-0750
 Fax: 925-969-0751

**Lithologic Log for S7
Apex Refrigeration**

Project Location:

1550 Park Avenue, Emeryville, CA 94608

Project No.

2013-094

Project: Data Gaps Investigation

Boring: **S8**

Drilling Co: **Gregg Drilling and Testing, Inc.**

Drilling Method: **Hand Auger**

Date Started: **4/16/14**

Location: **In planter north of irrigation boxes**

Sampler: **Hand Auger**

Date Completed: **4/16/14**

Logged by: **Brianne Foster**

Reviewed by: _____

During Drilling **4.5 ft**

DEPTH - FT.	BLOW COUNT	% RECOVERY	FIDIPID (ppm)	SAMPLES	GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	ESTIMATED % OF			MOISTURE
								GR	SA	FI	
						Surface cover of mulch and landscape vegetation.		25	50	25	M
1			0			Silty SAND (SM) with trace Gravel (silty sand loam); very dark grayish brown (2.5Y 3/2); fine to coarse gravel (< 2"); very moist; medium dense; contains mulch.	SM				
2			0			Gravel content decreases.	SM	5	65	30	M
3			0			CLAY (CL); black (10YR 2/1); slightly moist; stiff; low to medium plasticity.				100	M
4			0			Becomes soft, moisture increases. Sample collected: APEX-S8-4.5-041614 (soil)					
5			0			CLAY (CL); very dark gray (10YR 3/1); wet; low plasticity; soft; trace fines in clay				100	W
6						Sample collected: APEX-S8-GW-041614 (water)	CL				
7			0			Becomes dark gray (10YR 4/1); moist; low to medium plasticity; stiff. Sample collected: APEX-S8-7.5-041614 (soil)				100	M
8			0			Mottling with trace Silt; olive brown (2.5 4/3); trace roots and fibrous organics.		5	95		M
9			0			Sample collected: APEX-S8-9.0-041614 (soil)					
						Bottom of boring at 9 feet bgs					

2013-094 APEX EMERYVILLE.GPJ 6/11/14



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 4585 Pacheco Blvd. Suite 200
 Martinez, CA 94553
 Phone: 925-969-0750
 Fax: 925-969-0751

**Lithologic Log for S8
Apex Refrigeration**

Project Location:

1550 Park Avenue, Emeryville, CA 94608

Project No.

2013-094

Project: Data Gaps Investigation

Boring: **S9**

Drilling Co: **Gregg Drilling and Testing, Inc.**

Drilling Method: **Hand Auger**

Date Started: **4/17/14**

Location: **In southwest corner of planter**

Sampler: **Hand Auger**

Date Completed: **4/17/14**

Logged by: **Brianne Foster**

Reviewed by: _____

During Drilling **5.2 ft**

DEPTH - FT.	BLOW COUNT	% RECOVERY	FID/PID (ppm)	SAMPLES	GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	ESTIMATED % OF			MOISTURE
								GR	SA	FI	
0						Silty SAND (SM) with Gravel (silty sand loam); fine to coarse gravels (< 2"); dark gray brown (2.5Y 3/2); very moist; dense.	SM	20	50	30	M
1											
2											
3						CLAY (CL); very dark gray (2.5Y 3/1); moist; medium plasticity; stiff.					100 M
4						Sample collected: APEX-S9-4.5-041614 (soil) Becomes very moist.					100 M
5						Becomes wet.					W
6						Sample collected: APEX-S9-GW-041614 (water)	CL				
7						CLAY (CL); dark gray (10YR 3/1); moist; low to medium plasticity; firm. Sample collected: APEX-S9-7.5-041614 (soil)					M
8						Olive brown Silt mottling develops; fibrous roots present.					M
9						Sample collected: APEX-S9-9.0-041614 (soil)					
						Bottom of boring at 9 feet bgs					

2013-094 APEX EMERYVILLE.GPJ 6/11/14



Engineering/Remediation Resources Group, Inc.
4585 Pacheco Blvd. Suite 200
Martinez, CA 94553
Phone: 925-969-0750
Fax: 925-969-0751

**Lithologic Log for S9
Apex Refrigeration**

Project Location:

1550 Park Avenue, Emeryville, CA 94608

Project No.

2013-094

Project: Data Gaps Investigation

Boring: **S10**

Drilling Co: **Gregg Drilling and Testing, Inc.**

Drilling Method: **Hand Auger**

Date Started: **4/17/14**

Location: **23 inches away from building, in line with S1**

Sampler: **Hand Auger**

Date Completed: **4/17/14**

Logged by: **Brianne Foster**

Reviewed by: _____

During Drilling **4.1 ft**

DEPTH - FT.	BLOW COUNT	% RECOVERY	FID/PID (ppm)	SAMPLES	GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	ESTIMATED % OF			MOISTURE
								GR	SA	FI	
						Concrete (8")	CONC.				
						Aggregate Base (3")	FILL				
1			0			Silty Sandy GRAVEL (GM); dark grayish brown (10YR 4/2); moist; very dense.	GM	50	25	25	M
2			0			CLAY (CL); very dark gray (10YR 3/1); moist; low plasticity; soft.				100	M
3			0			Very dark brown (10YR 3/2) silt stringers appear.					
4			124			CLAY (CL) black 10YR 2/1; moist; strong fuel odor from 4 to 4.5'; low plasticity; soft.					
5			156			Becomes wet. Sample collected: APEX-S10-4.5-041714 (soil)					W
6			59.4			Sample collected: APEX-S10-GW-041714 (water)	CL				
7			12.7			Becomes very dark gray (2.5Y 3/1); moist; fuel odor present					M
8			7.5			Sample collected: APEX-S10-8.0-041714 (soil) Becomes dry; firm to stiff.					D
9			3.4			Becomes grayish green (GLEYS 4/5G); chalky nodules present; roots and organic fibers present. Sample collected: APEX-S10-9.0-041714 (soil)					
						Bottom of boring at 9 feet bgs					

2013-094 APEX EMERYVILLE.GPJ 6/11/14



Engineering/Remediation Resources Group, Inc.
 4585 Pacheco Blvd. Suite 200
 Martinez, CA 94553
 Phone: 925-969-0750
 Fax: 925-969-0751

**Lithologic Log for S10
Apex Refrigeration**

Project Location:

1550 Park Avenue, Emeryville, CA 94608

Project No.

2013-094

Project: Data Gaps Investigation

Boring: **S12**

Drilling Co: **Gregg Drilling and Testing, Inc.**

Drilling Method: **Hand Auger**

Date Started: **4/16/14**

Location: **In planter box, 1.5' east of S4**

Sampler: **Hand Auger**

Date Completed: **4/16/14**

Logged by: **Brianne Foster**

Reviewed by: _____

During Drilling **3 ft**

DEPTH - FT.	BLOW COUNT	% RECOVERY	FIDAPID (ppm)	SAMPLES	GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	ESTIMATED % OF			MOISTURE
								GR	SA	FI	
0						Concrete (9")	CONC.				
1			0			Sandy SILT with gravel (ML); fine to coarse gravels (< 2"); dark gray brown (10YR 4/2); moist.	MLS	20	40	40	M
2						Bentonite chips					
2						2/12 Sand filter pack					
3			0			SAND/ GRAVEL (SW-GW) with Silt (fill). Becomes saturated.	GW-SW	40	40	20	M S
4			0.4			CLAY (CL); black (10YR 2/1); wet; strong fuel odor; sheen; soft to firm.					
5			44.7			Well screen, 1.5" diameter pre-pack well					
6			20.4			Becomes very dark grayish brown (2.5Y 3/2); moist; firm.	CL			100	W
7			0.8			Light olive brown (2.5Y 5/4) silt mottling develops.					M
7.5						Bottom of boring at 7.5 feet bgs					

2013-094 APEX EMERYVILLE.GPJ 6/11/14



Engineering/Remediation Resources Group, Inc.
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 Phone: 925-969-0750
 Fax: 925-969-0751

**Lithologic Log and Well Construction Details for S12
 Apex Refrigeration**

Project Location:

1550 Park Avenue, Emeryville, CA 94608

Project No.

2013-094

Project: Data Gaps Investigation

Boring: **S13**

Drilling Co: **Gregg Drilling and Testing, Inc.**

Drilling Method: **Hand Auger**

Date Started: **4/17/14**

Location: **Between S6 and S8, in planter**

Sampler: **Hand Auger**

Date Completed: **4/17/14**

Logged by: **Brianne Foster**

Reviewed by: _____

During Drilling **4.4 ft**

DEPTH - FT.	BLOW COUNT	% RECOVERY	FID/PPID (ppm)	SAMPLES	GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	ESTIMATED % OF			MOISTURE
								GR	SA	FI	
0						Silty SAND with Gravel (SM); fine to coarse gravels (< 2"); moist; medium density; sandy loam mulch.	SM	25	50	25	M
1											
2						CLAY (CL); very dark gray (2.5Y 3/1); slightly moist; medium plasticity; stiff.	CL			100	M
3					Becomes moist; soft.						
4				0	Becomes dark grayish brown (2.5Y 4/2). Sample collected: APEX-S13-4.0-041714 (soil)						W
5				0.2	Becomes wet.						
6				1.4	Becomes black (2.5Y 2.5/1); very moist; low plasticity.						M
7					Sample collected: APEX-S13-GW-041714 (water)						
8				1.1							
9				0.4	Becomes firm. Sample collected: APEX-S13-7.5-041714 (soil)						
10				0	Becomes dark grayish brown (10YR 4/2); slightly moist; soft to firm.						
11				0	Sample collected: APEX-S13-9.0-041714 (soil)						
12					Bottom of boring at 9 feet bgs						

2013-094 APEX EMERYVILLE.GPJ 6/11/14



Engineering/Remediation Resources Group, Inc.
 4585 Pacheco Blvd. Suite 200
 Martinez, CA 94553
 Phone: 925-969-0750
 Fax: 925-969-0751

**Lithologic Log for S13
Apex Refrigeration**

Project Location:

1550 Park Avenue, Emeryville, CA 94608

Project No.

2013-094

Appendix D. Field Logs

STANDARD OPERATING PROCEDURE

Procedure No: GEO-027
 Revision No: 1
 Date of Revision: 06/16/08
 Review Date: 00/00/00

Well Development

EXAMPLE
 WELL DEVELOPMENT RECORD

Project Name: 2013-094 APEX Emeryville Data Gaps

Location: MW-1 Well/Piez. No.: MW-1

Personnel: EKO Date Installed: 4/16/2014

Date (Start/End): 5/2/2014 Csg. Diameter (I.D.): 1.5"

Method of Development: _____ Total Depth (ft. TOC): 6.68 + 0.22

Surging Bailing Pumping Other (State Method) _____

Original Development Redevelopment Development Date: 5/2/2014

Depth to water before developing well: 2.80

0.10 gallons/foot

Height of Water Column: 2 to 7 ^{4.1 ft} feet bgs = 0.41 gal. * 10 = 4.1 gallons

(casing) Volume (V)

Purge Factor

Volume to Purge

$$V = (\pi * r_c^2 * L_c * 7.48) + (\pi * (r_w - r_c)^2 * L_s * \phi_s * 7.48) = \text{gallons}$$

Depth purging from: 2 to 7 feet bgs Time purging begins: 9:50

Weather: Sunny/warm Screened Interval (ft. BGL): 2 to 7

Equipment Nos.: pH Meter YSI 63 EC Meter YSI 63 Turbidity Meter NA

Equipment decontaminated prior to development Y X N _____

Describe Alconat and D. water

Date	Time	Water Level (feet TOC)	Volume Removed (gallons)	Temp (C)	pH	EC	Turbidity	D.O.	Comments
5/2	9:50	2.86	1	18.6	10.31	0.0			brown turbid shan *
	10:05	2.86	2.5	18.3	10.18	0.0			" *
	10:50	2.86	5	17.9	9.65	0.0			" *
	11:00	2.86	7.5	18.2	9.74	0.0			" *
			* conductivity not reading						
			purge 5 gallons per work plan. purged 7.5 gallons. did not clear up.						

- Water levels – Reported to the nearest 0.01 foot.
 - pH – Reading rounded to 0.1 pH units
 - Electrical conductivity – Reported to the nearest mhos/cm or µmho/cm @25 C or in mS/cm of instrument range
 - Water temperature – Reported to the nearest 0.1 C
 - D.O. report in 0.1 mg/L
 - Turbidity report in NTV nearest whole #
- Where:
 $\pi = 3.14$
 ϕ_s = porosity of the sand pack
 r_c = radius of the well casing and screen in feet
 L_c = length of water column inside the casing and screen in feet
 r_w = radius of the well bore in feet
 L_s = length of saturated portion of the sand pack in feet
 7.48 gallons/cubic foot = conversion from cubic feet to gallons



Depth-to-Water and Depth-to-Product Measurement

Apex Former UST Site

1550 Park Avenue

Emeryville, CA

Well I.D.	Date (MM/DD/YY)	Time (HHMM)	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Depth to Bottom (feet btoc)	Comments
S12/MW-1	5/16/14	1245	NA	NA	6.93	

2.94

Appendix E. Land Survey Results

MONITORING WELLS								
WELL	NORTH	EAST	LATITUDE (DD)	LONGITUDE (DD)	TOR	FS	TOC	RISER_HT
					(ELEVATION)	(ELEVATION)	(ELEVATION)	
MW-1/S12	2129732.67	6044509.75	37.8302769	-122.2907795	10.45	10.42	10.17	-0.25

SOIL BORING LOCATIONS					
WELL	NORTH	EAST	LATITUDE (DD)	LONGITUDE (DD)	FS/NG
					(ELEVATION)
S1	2129746.24	6044520.51	37.8303147	-122.2907431	10.50
S2	2129738.61	6044541.95	37.8302949	-122.2906684	10.31
S3	2129728.67	6044526.95	37.8302668	-122.2907197	10.44
S4	2129732.12	6044508.48	37.8302754	-122.2907838	10.39
S5	2129758.64	6044566.37	37.8303512	-122.2905852	10.62
S6	2129732.18	6044495.14	37.8302748	-122.2908300	10.58
S7	2129708.03	6044561.89	37.8302120	-122.2905973	10.83
S8	2129711.52	6044496.03	37.8302181	-122.2908256	10.93
S9	2129684.87	6044492.36	37.8301448	-122.2908365	11.49
S10	2129749.66	6044521.65	37.8303242	-122.2907394	10.53
S13	2129721.86	6044492.98	37.8302464	-122.2908368	10.73

Professional's Name:
Armando D. Dupont

Professional's License Type:
Professional Land Surveyor

Professional's License Number:
7780

NOTE:
RISER_HT - RISER HEIGHT
RISER HEIGHT: THE MEASURED DISTANCE FROM GROUND SURFACE TO TOP OF WELL CASING
DD: DECIMAL DEGREES
TOR: TOP OF RIM
TOC: TOP OF CASING
FS: FINISHED SURFACE
NG: NATURAL GROUND

BENCHMARK:
THE ELEVATIONS SHOWN HEREON ARE BASED UPON THE C.S.R.C. C.O.R.S. DATA POINT "P224"
ELEVATION = 1443.77 FEET (NAVD 88)

COORDINATES:
THE COORDINATES SHOWN HEREON ARE BASED UPON THE STATE PLANE COORDINATE SYSTEM (NAD 83), CALIFORNIA ZONE 3, BASED UPON STATIC GPS OBSERVATION, HOLDING THE C.S.R.C. C.O.R.S. DATA POINT "P224"

Appendix F. Analytical Results



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 255690
ANALYTICAL REPORT

Engineering/Remediation Resource Grp
4585 Pacheco Blvd.
Martinez, CA 94553

Project : 2013-094
Location : APEX
Level : II

Table with 2 columns: Sample ID and Lab ID. Lists various sample and lab identifiers such as APEX-S8-4.5-041614 and 255690-001.

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

Signature: Tracy Babjar
Tracy Babjar
Project Manager
tracy.babjar@ctberk.com
(510) 204-2226

Date: 04/23/2014

CASE NARRATIVE

Laboratory number: 255690
Client: Engineering/Remediation Resource Grp
Project: 2013-094
Location: APEX
Request Date: 04/16/14
Samples Received: 04/16/14

This data package contains sample and QC results for seven soil samples and four water samples, requested for the above referenced project on 04/16/14. The samples were received cold and intact.

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

APEX-S8-GW-041614 (lab # 255690-002) had pH greater than 2. No other analytical problems were encountered.

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

No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:

High surrogate recovery was observed for o-terphenyl in APEX-S8-GW-041614 (lab # 255690-002); no target analytes were detected in the sample. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:

No analytical problems were encountered.

Moisture (ASTM D2216/CLP):

No analytical problems were encountered.

CHAIN OF CUSTODY



2323 Fifth Street
 Berkeley, CA 94710

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

C&T LOGIN # 255690

Project No: 2013-094

Sampler: BRI FOSTER

Project Name: APEX REFRIGERATION

Report To: ERIK DEHLSCHLAGER

Project P. O. No: 2013-094

Company: ERRG

EDD Format: Report Level II III IV

Telephone: (925) 969-0750

Turnaround Time: RUSH Standard

Email: ERIK.DEHLSCHLAGER@ERRG.COM

Lab No.	Sample ID.	SAMPLING		MATRIX		# of Containers	CHEMICAL PRESERVATIVE				
		Date Collected	Time Collected	Water	Solid		HCl	H2SO4	HNO3	NaOH	None
1	APEX-S8-4.5-041614	4-16-14	0940	X		2					X
2	APEX-S8-GW-041614	4-16-14	1015	X		2	X				
3	APEX-S8-7.5-041614	4-16-14	1040	X		2					X
4	APEX-S8-9.0-041614	4-16-14	1050	X		2					X
5	APEX-S9-4.5-041614	4-16-14	1135	X		2					X
6	APEX-S9-GW-041614	4-16-14	1205	X		2	X				
7	APEX-S9-7.5-041614	4-16-14	1245	X		2					X
8	APEX-S9-9.0-041614	4-16-14	1300	X		2					X
9	APEX-S6-4.5-041614	4-16-14	1340	X		2					X
10	APEX-S6-GW-041614	4-16-14	1645	X		5	X				
11	TB-041614	4-16-14	0700	X		3	X				

ANALYTICAL REQUEST																			
TPH-PURGEABLES (EPA 8015.B)	4oz	X																	
TPH-EXTRACTABLES (EPA 8015.B)	8oz	X																	
L w/ SILICA GEL CLEANUP																			
TPH-PURGEABLES (EPA 8015.B)	40ML																		
TPH-EXTRACTABLES (EPA 8015.B)	500ML																		
L w/ SILICA GEL CLEANUP																			

Notes:
 * Field-filtered all WATER SAMPLES

SAMPLE RECEIPT

Intact
 Cold
 On Ice
 Ambient

RELINQUISHED BY:
B. Foster
 DATE: 4-16-14 TIME: 1755

DATE: TIME:
 DATE: TIME:

RECEIVED BY:

 DATE: 4-16-14 TIME: 1755

DATE: TIME:
 DATE: TIME:

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 255640 Date Received 04/16/14 Number of coolers 1
Client ERPG Project APEX Refrigeration

Date Opened 04/16/14 By (print) MC (sign) [Signature]
Date Logged in [Signature] By (print) MB (sign) [Signature]

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

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

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

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

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

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

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

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

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

Type of ice used: Wet Blue/Gel None Temp(°C) 11.9

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

COMMENTS

Blank lines for handwritten comments.

Detections Summary for 255690

Client : Engineering/Remediation Resource Grp
 Project : 2013-094
 Location : APEX

Client Sample ID : APEX-S8-4.5-041614 Laboratory Sample ID : 255690-001

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	2.5	Y	1.3	0.41	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Motor Oil C24-C36	16		6.6	2.0	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	25		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S8-GW-041614 Laboratory Sample ID : 255690-002

No Detections

Client Sample ID : APEX-S8-7.5-041614 Laboratory Sample ID : 255690-003

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Moisture, Percent	30		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S8-9.0-041614 Laboratory Sample ID : 255690-004

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Moisture, Percent	24		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S9-4.5-041614 Laboratory Sample ID : 255690-005

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Moisture, Percent	27		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S9-GW-041614 Laboratory Sample ID : 255690-006

No Detections

Client Sample ID : APEX-S9-7.5-041614 Laboratory Sample ID : 255690-007

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	1.8	Y	1.4	0.44	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	29		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S9-9.0-041614

Laboratory Sample ID : 255690-008

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Moisture, Percent	24		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S6-4.5-041614

Laboratory Sample ID : 255690-009

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	46	Y	1.4	0.44	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Motor Oil C24-C36	110		7.2	2.2	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	31		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S6-GW-041614

Laboratory Sample ID : 255690-010

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	94	Y	49	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C

Client Sample ID : TB-041614

Laboratory Sample ID : 255690-011

No Detections

Y = Sample exhibits chromatographic pattern which does not resemble standard

Total Volatile Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/16/14
Units:	ug/L	Received:	04/16/14
Diln Fac:	1.000	Analyzed:	04/18/14
Batch#:	210203		

Field ID: APEX-S8-GW-041614 Lab ID: 255690-002
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	77-128

Field ID: APEX-S9-GW-041614 Lab ID: 255690-006
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	77-128

Field ID: APEX-S6-GW-041614 Lab ID: 255690-010
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	77-128

Field ID: TB-041614 Lab ID: 255690-011
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	77-128

Type: BLANK Lab ID: QC736658

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	77-128

ND= Not Detected
 RL= Reporting Limit
 Page 1 of 1

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC736657	Batch#:	210203
Matrix:	Water	Analyzed:	04/18/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,078	108	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	77-128

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Field ID:	APEX-S9-GW-041614	Batch#:	210203
MSS Lab ID:	255690-006	Sampled:	04/16/14
Matrix:	Water	Received:	04/16/14
Units:	ug/L	Analyzed:	04/18/14
Diln Fac:	1.000		

Type: MS Lab ID: QC736698

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	35.79	2,000	2,071	102	74-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	108	77-128

Type: MSD Lab ID: QC736699

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,104	103	74-120	2	27

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	77-128

RPD= Relative Percent Difference

Total Volatile Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	210238
Units:	mg/Kg	Sampled:	04/16/14
Basis:	dry	Received:	04/16/14
Diln Fac:	1.000	Analyzed:	04/19/14

Field ID: APEX-S8-4.5-041614 Lab ID: 255690-001
 Type: SAMPLE Moisture: 25%

Analyte	Result	RL
Gasoline C7-C12	ND	1.2

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	67-137

Field ID: APEX-S8-7.5-041614 Lab ID: 255690-003
 Type: SAMPLE Moisture: 30%

Analyte	Result	RL
Gasoline C7-C12	ND	1.5

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	102	67-137

Field ID: APEX-S8-9.0-041614 Lab ID: 255690-004
 Type: SAMPLE Moisture: 24%

Analyte	Result	RL
Gasoline C7-C12	ND	1.2

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	102	67-137

Field ID: APEX-S9-4.5-041614 Lab ID: 255690-005
 Type: SAMPLE Moisture: 27%

Analyte	Result	RL
Gasoline C7-C12	ND	1.4

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	67-137

Field ID: APEX-S9-7.5-041614 Lab ID: 255690-007
 Type: SAMPLE Moisture: 29%

Analyte	Result	RL
Gasoline C7-C12	ND	1.3

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	99	67-137

ND= Not Detected
 RL= Reporting Limit
 Page 1 of 2

Total Volatile Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	210238
Units:	mg/Kg	Sampled:	04/16/14
Basis:	dry	Received:	04/16/14
Diln Fac:	1.000	Analyzed:	04/19/14

Field ID: APEX-S9-9.0-041614 Lab ID: 255690-008
 Type: SAMPLE Moisture: 24%

Analyte	Result	RL
Gasoline C7-C12	ND	1.3

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	102	67-137

Field ID: APEX-S6-4.5-041614 Lab ID: 255690-009
 Type: SAMPLE Moisture: 31%

Analyte	Result	RL
Gasoline C7-C12	ND	1.5

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	67-137

Type: BLANK Lab ID: QC736794

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	102	67-137

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC736793	Batch#:	210238
Matrix:	Soil	Analyzed:	04/19/14
Units:	mg/Kg		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	1.136	114	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	67-137

Total Extractable Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/16/14
Units:	ug/L	Received:	04/16/14
Diln Fac:	1.000		

Field ID: APEX-S8-GW-041614 Prepared: 04/21/14
 Type: SAMPLE Analyzed: 04/23/14
 Lab ID: 255690-002 Cleanup Method: EPA 3630C
 Batch#: 210282

Analyte	Result	RL
Diesel C10-C24	ND	56
Motor Oil C24-C36	ND	330

Surrogate	%REC	Limits
o-Terphenyl	134 *	66-129

Field ID: APEX-S9-GW-041614 Prepared: 04/17/14
 Type: SAMPLE Analyzed: 04/20/14
 Lab ID: 255690-006 Cleanup Method: EPA 3630C
 Batch#: 210176

Analyte	Result	RL
Diesel C10-C24	ND	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	116	66-129

Field ID: APEX-S6-GW-041614 Prepared: 04/17/14
 Type: SAMPLE Analyzed: 04/20/14
 Lab ID: 255690-010 Cleanup Method: EPA 3630C
 Batch#: 210176

Analyte	Result	RL
Diesel C10-C24	94 Y	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	115	66-129

Type: BLANK Prepared: 04/17/14
 Lab ID: QC736564 Analyzed: 04/19/14
 Batch#: 210176 Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	110	66-129

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Extractable Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/16/14
Units:	ug/L	Received:	04/16/14
Diln Fac:	1.000		

Type:	BLANK	Prepared:	04/21/14
Lab ID:	QC736979	Analyzed:	04/22/14
Batch#:	210282	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	110	66-129

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	210176
Units:	ug/L	Prepared:	04/17/14
Diln Fac:	1.000		

Type: BS Analyzed: 04/19/14
 Lab ID: QC736565 Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,349	94	61-120

Surrogate	%REC	Limits
o-Terphenyl	124	66-129

Type: BSD Analyzed: 04/21/14
 Lab ID: QC736566 Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,187	87	61-120	7	45

Surrogate	%REC	Limits
o-Terphenyl	116	66-129

RPD= Relative Percent Difference

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	210282
Units:	ug/L	Prepared:	04/21/14
Diln Fac:	1.000	Analyzed:	04/22/14

Type: BS Cleanup Method: EPA 3630C
 Lab ID: QC736980

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,369	95	61-120

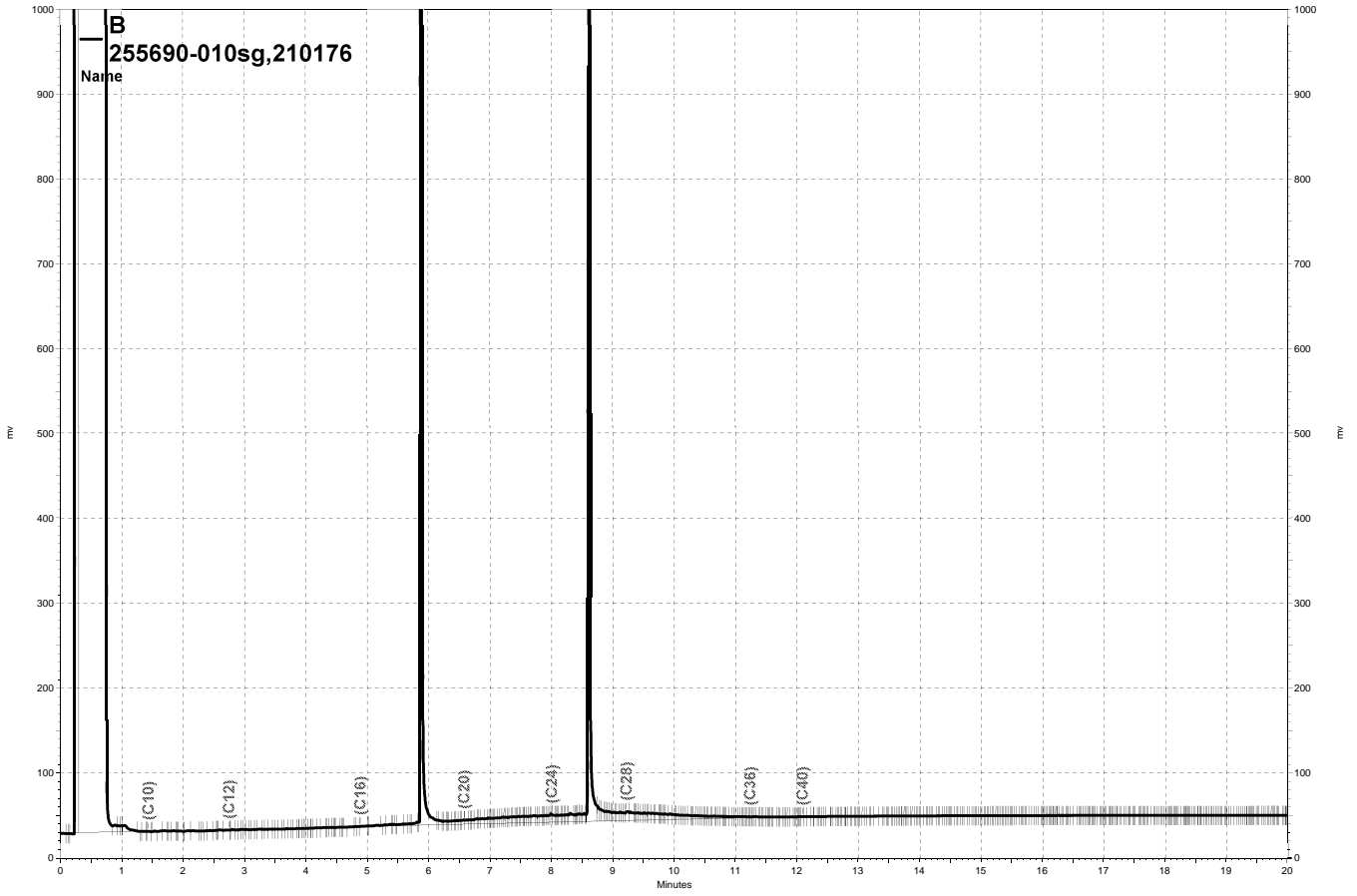
Surrogate	%REC	Limits
o-Terphenyl	119	66-129

Type: BSD Cleanup Method: EPA 3630C
 Lab ID: QC736981

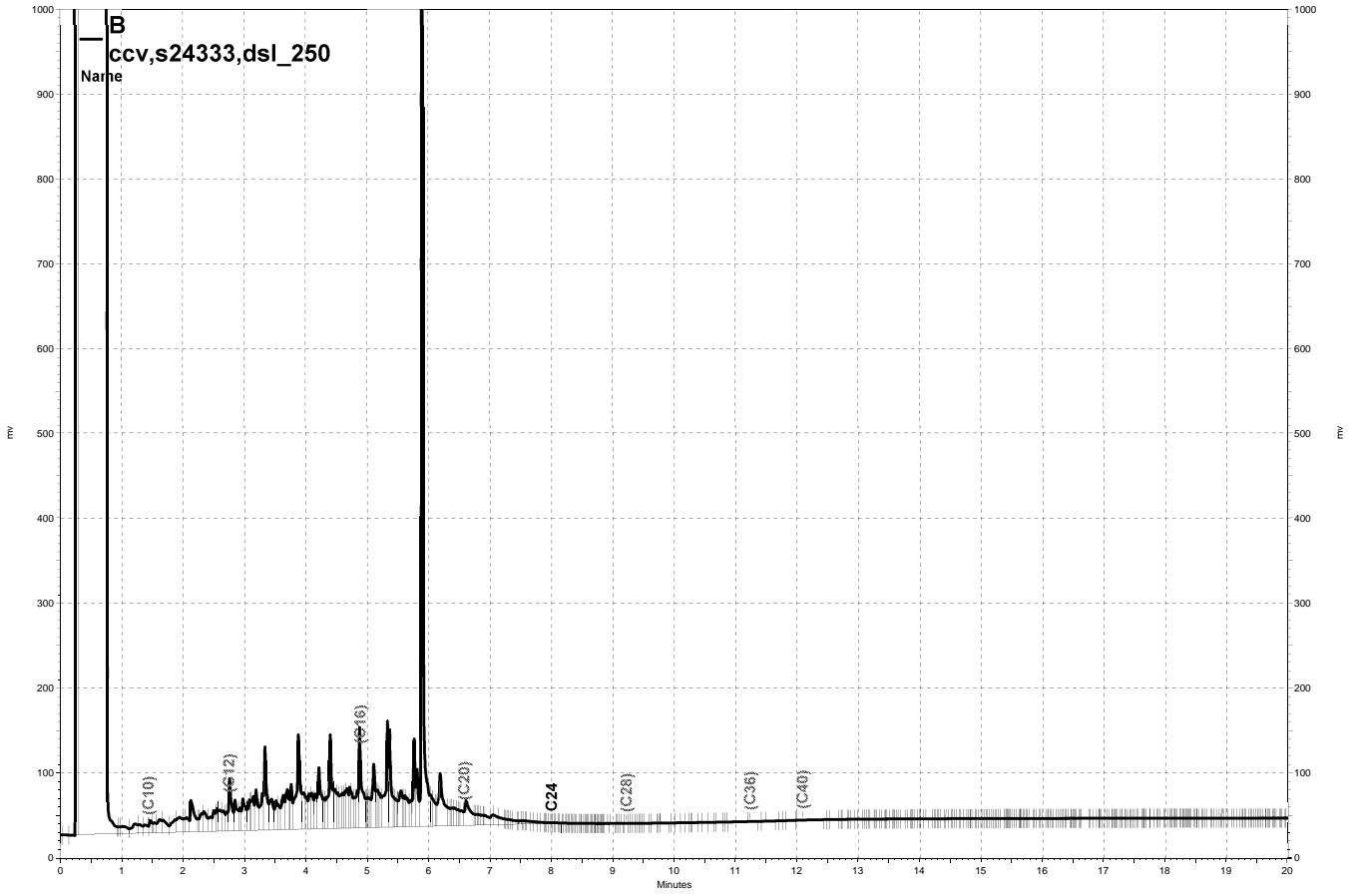
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,544	102	61-120	7	45

Surrogate	%REC	Limits
o-Terphenyl	126	66-129

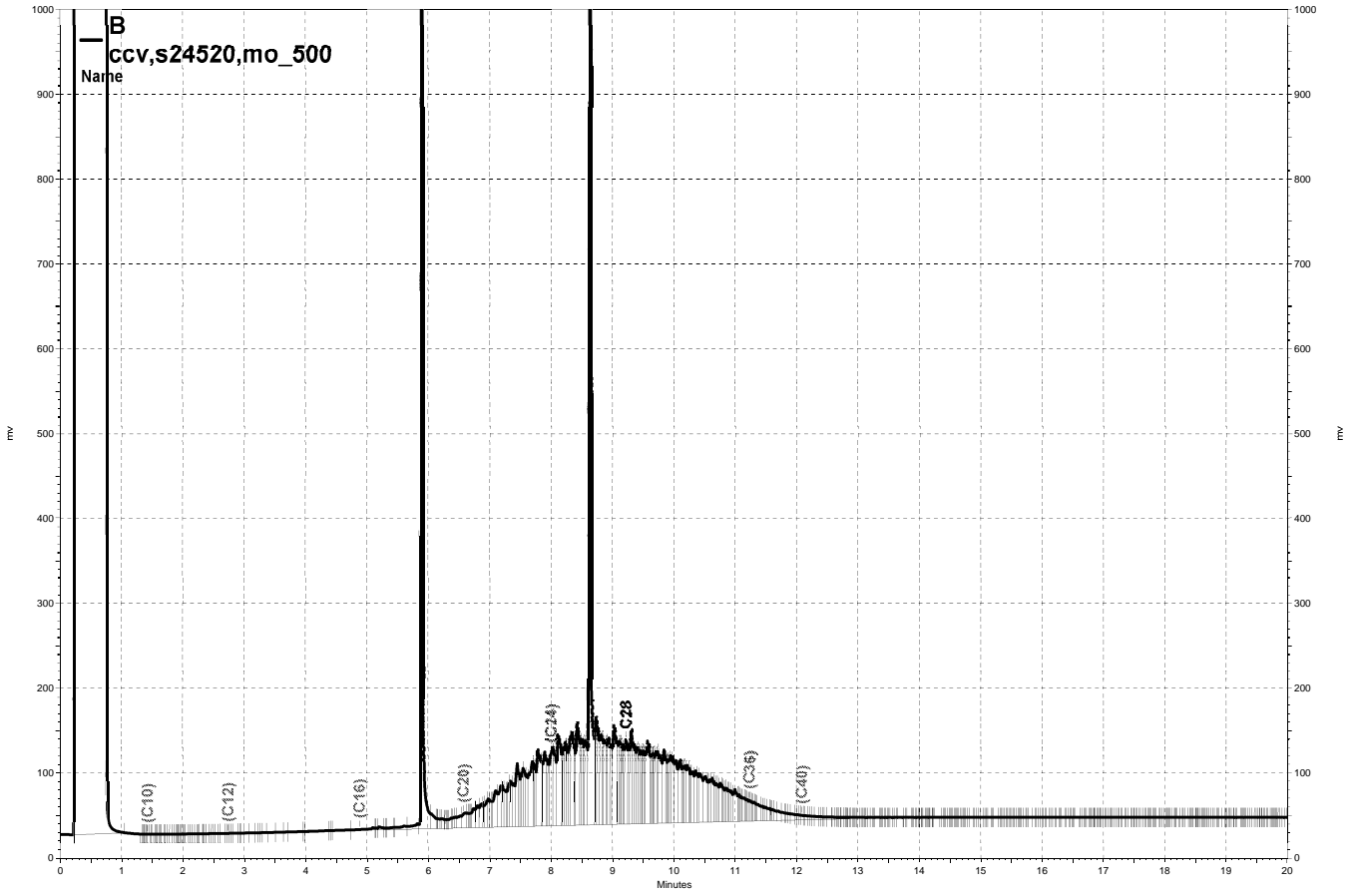
RPD= Relative Percent Difference



— \\Lims\gdrive\ezchrom\Projects\GC15B\Data\109b042, B



— \\Lims\gdrive\ezchrom\Projects\GC15B\Data\109b004, B



— \\Lims\gdrive\ezchrom\Projects\GC15B\Data\109b003, B

Total Extractable Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3550B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	04/16/14
Units:	mg/Kg	Received:	04/16/14
Basis:	dry	Prepared:	04/17/14
Diln Fac:	1.000	Analyzed:	04/19/14
Batch#:	210178		

Field ID: APEX-S8-4.5-041614 Moisture: 25%
 Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 255690-001

Analyte	Result	RL
Diesel C10-C24	2.5 Y	1.3
Motor Oil C24-C36	16	6.6

Surrogate	%REC	Limits
o-Terphenyl	96	64-136

Field ID: APEX-S8-7.5-041614 Moisture: 30%
 Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 255690-003

Analyte	Result	RL
Diesel C10-C24	ND	1.4
Motor Oil C24-C36	ND	7.1

Surrogate	%REC	Limits
o-Terphenyl	86	64-136

Field ID: APEX-S8-9.0-041614 Moisture: 24%
 Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 255690-004

Analyte	Result	RL
Diesel C10-C24	ND	1.3
Motor Oil C24-C36	ND	6.6

Surrogate	%REC	Limits
o-Terphenyl	124	64-136

Field ID: APEX-S9-4.5-041614 Moisture: 27%
 Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 255690-005

Analyte	Result	RL
Diesel C10-C24	ND	1.4
Motor Oil C24-C36	ND	6.8

Surrogate	%REC	Limits
o-Terphenyl	93	64-136

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

Total Extractable Hydrocarbons

Lab #: 255690 Client: Engineering/Remediation Resource Grp Project#: 2013-094	Location: APEX Prep: EPA 3550B Analysis: EPA 8015B
Matrix: Soil Units: mg/Kg Basis: dry Diln Fac: 1.000 Batch#: 210178	Sampled: 04/16/14 Received: 04/16/14 Prepared: 04/17/14 Analyzed: 04/19/14

Field ID: APEX-S9-7.5-041614 Type: SAMPLE Lab ID: 255690-007	Moisture: 29% Cleanup Method: EPA 3630C
--	--

Analyte	Result	RL
Diesel C10-C24	1.8 Y	1.4
Motor Oil C24-C36	ND	7.1

Surrogate	%REC	Limits
o-Terphenyl	100	64-136

Field ID: APEX-S9-9.0-041614 Type: SAMPLE Lab ID: 255690-008	Moisture: 24% Cleanup Method: EPA 3630C
--	--

Analyte	Result	RL
Diesel C10-C24	ND	1.3
Motor Oil C24-C36	ND	6.5

Surrogate	%REC	Limits
o-Terphenyl	96	64-136

Field ID: APEX-S6-4.5-041614 Type: SAMPLE Lab ID: 255690-009	Moisture: 31% Cleanup Method: EPA 3630C
--	--

Analyte	Result	RL
Diesel C10-C24	46 Y	1.4
Motor Oil C24-C36	110	7.2

Surrogate	%REC	Limits
o-Terphenyl	101	64-136

Type: BLANK Lab ID: QC736571	Cleanup Method: EPA 3630C
---------------------------------	---------------------------

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

Surrogate	%REC	Limits
o-Terphenyl	97	64-136

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

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3550B
Project#:	2013-094	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC736572	Batch#:	210178
Matrix:	Soil	Prepared:	04/17/14
Units:	mg/Kg	Analyzed:	04/19/14

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	50.01	47.58	95	61-132

Surrogate	%REC	Limits
o-Terphenyl	111	64-136

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3550B
Project#:	2013-094	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	255689-001	Batch#:	210178
Matrix:	Soil	Sampled:	04/16/14
Units:	mg/Kg	Received:	04/16/14
Basis:	as received	Prepared:	04/17/14

Type: MS Analyzed: 04/18/14
 Lab ID: QC736573

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	4.569	49.92	58.14	107	40-146

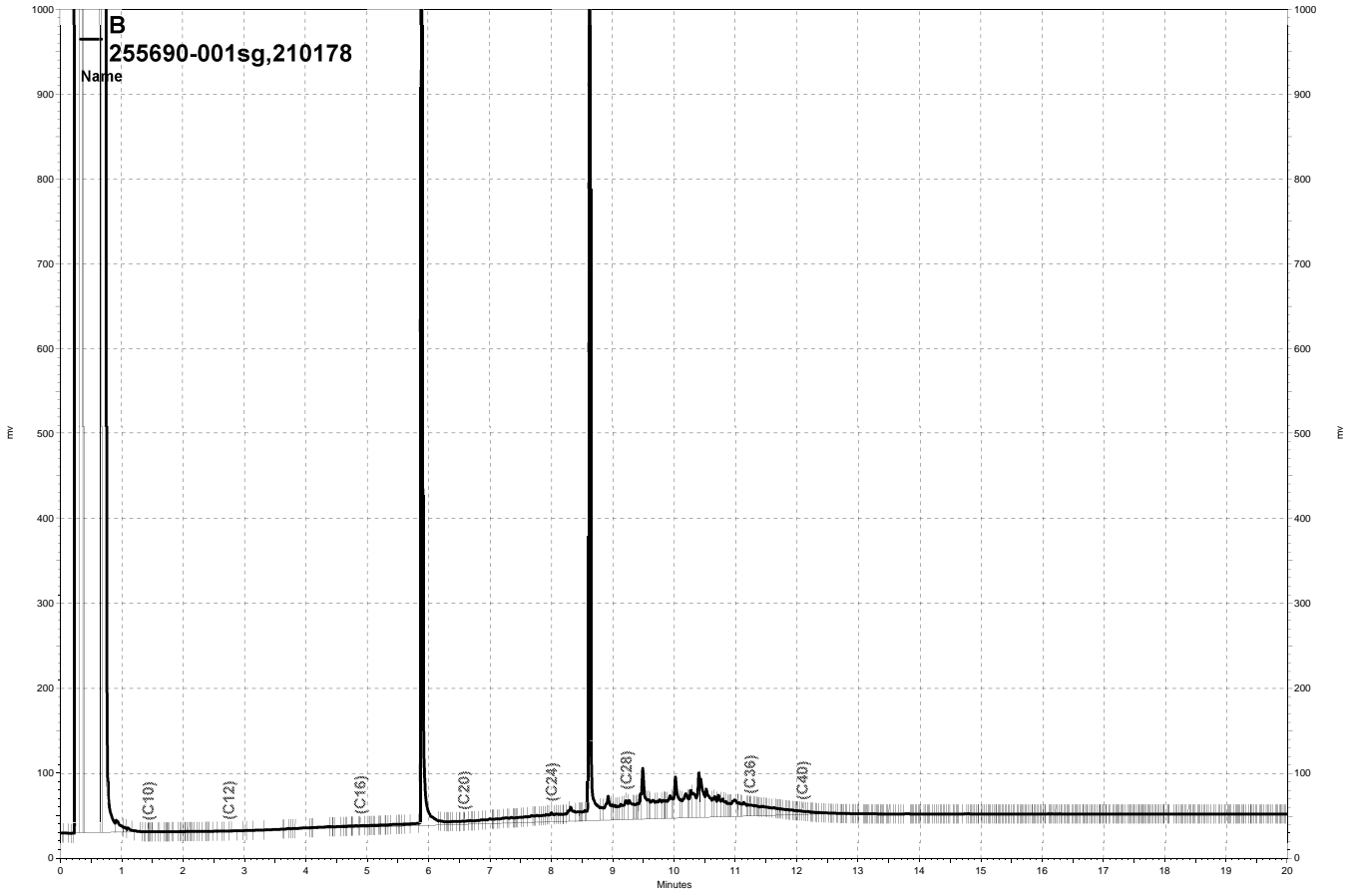
Surrogate	%REC	Limits
o-Terphenyl	136	64-136

Type: MSD Analyzed: 04/19/14
 Lab ID: QC736574

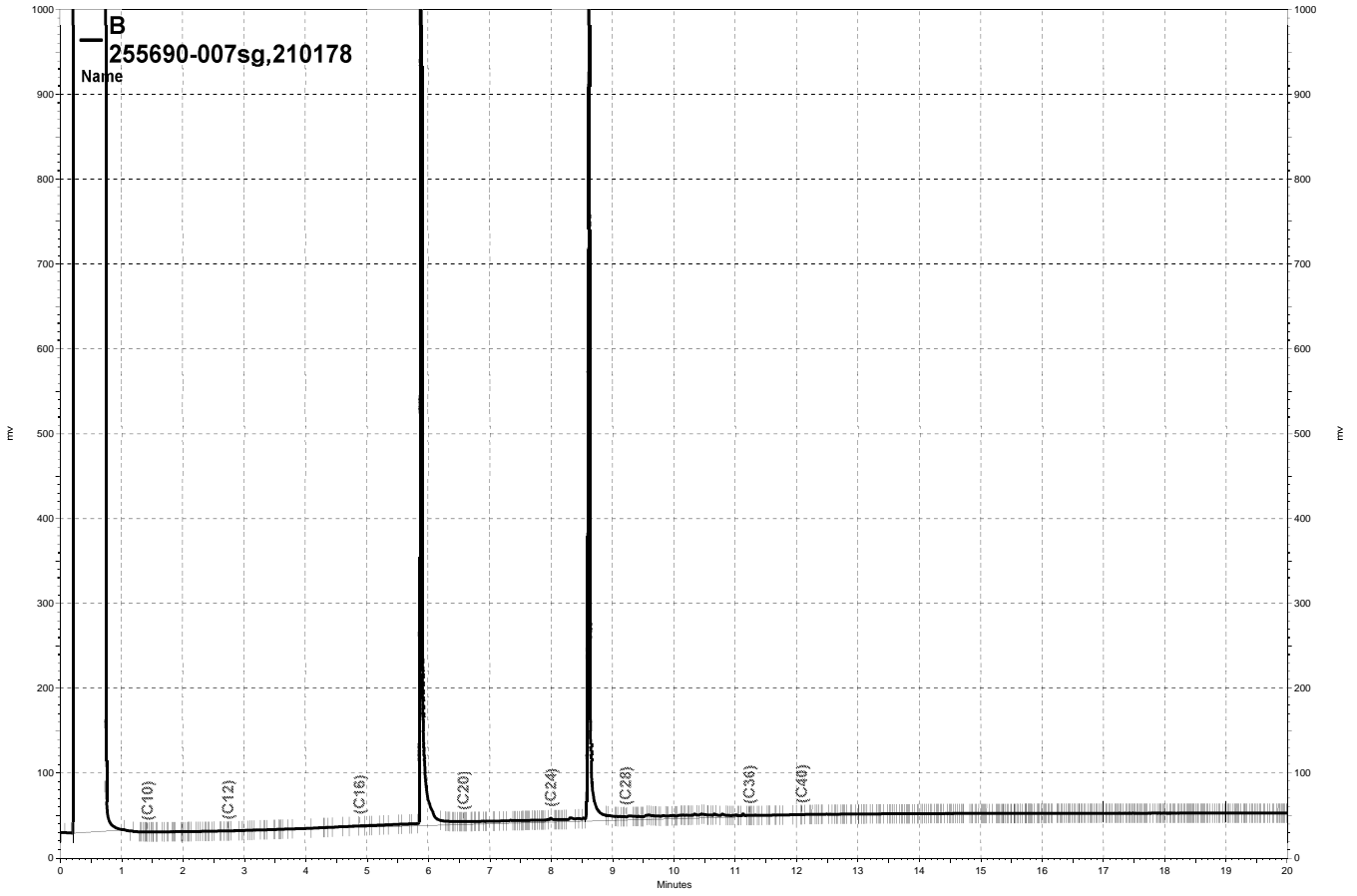
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.05	51.36	93	40-146	13	56

Surrogate	%REC	Limits
o-Terphenyl	110	64-136

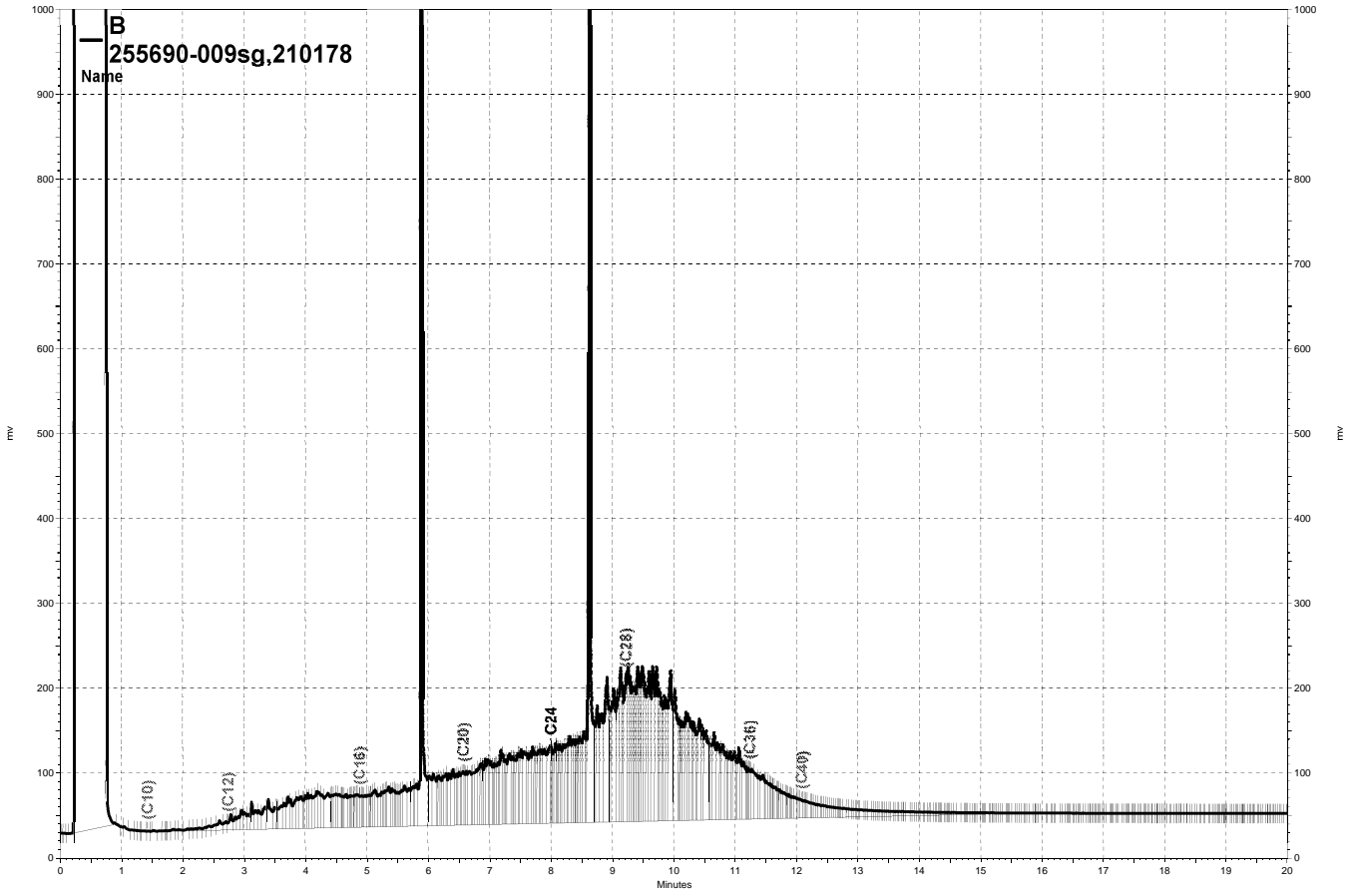
RPD= Relative Percent Difference



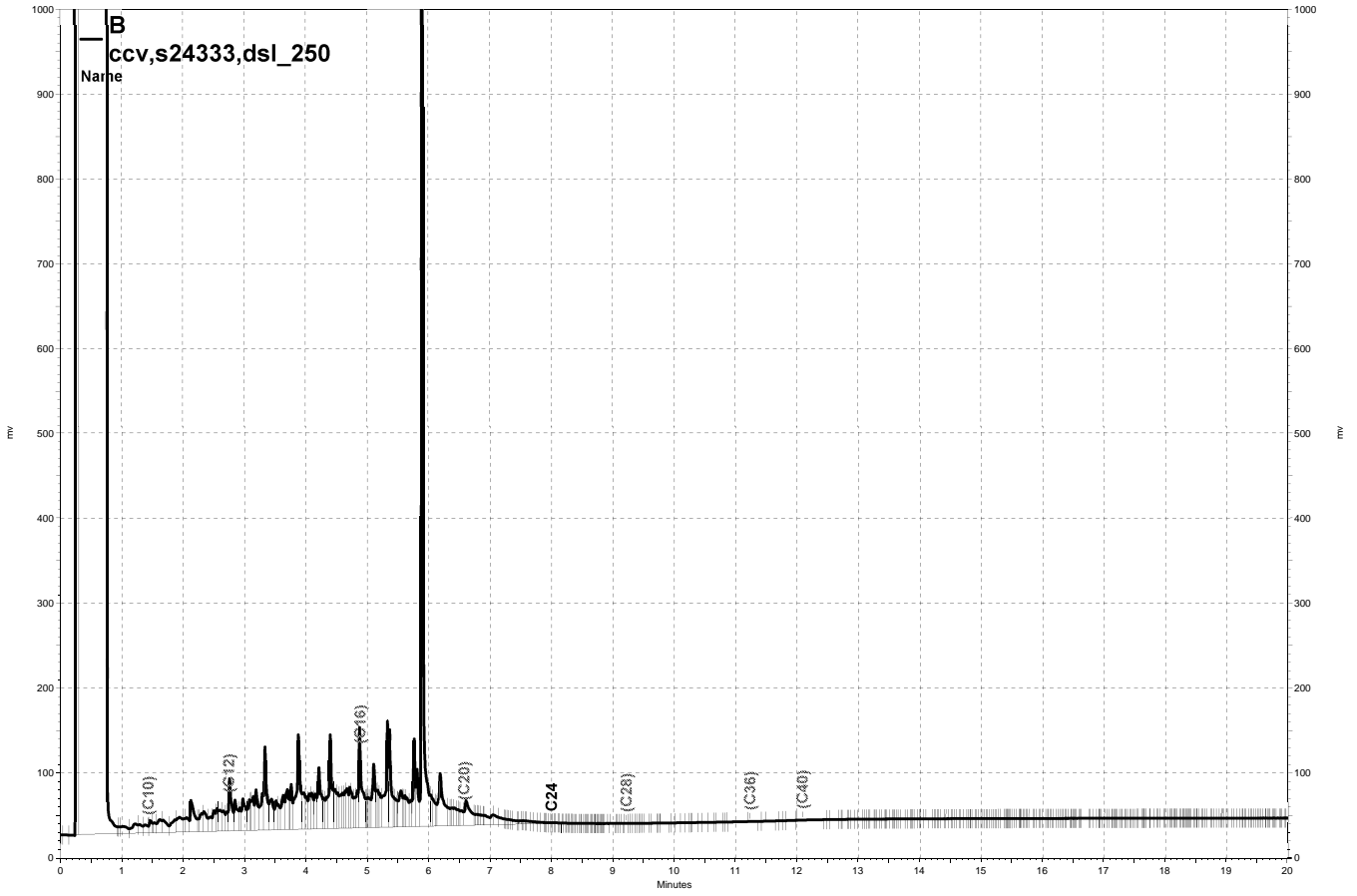
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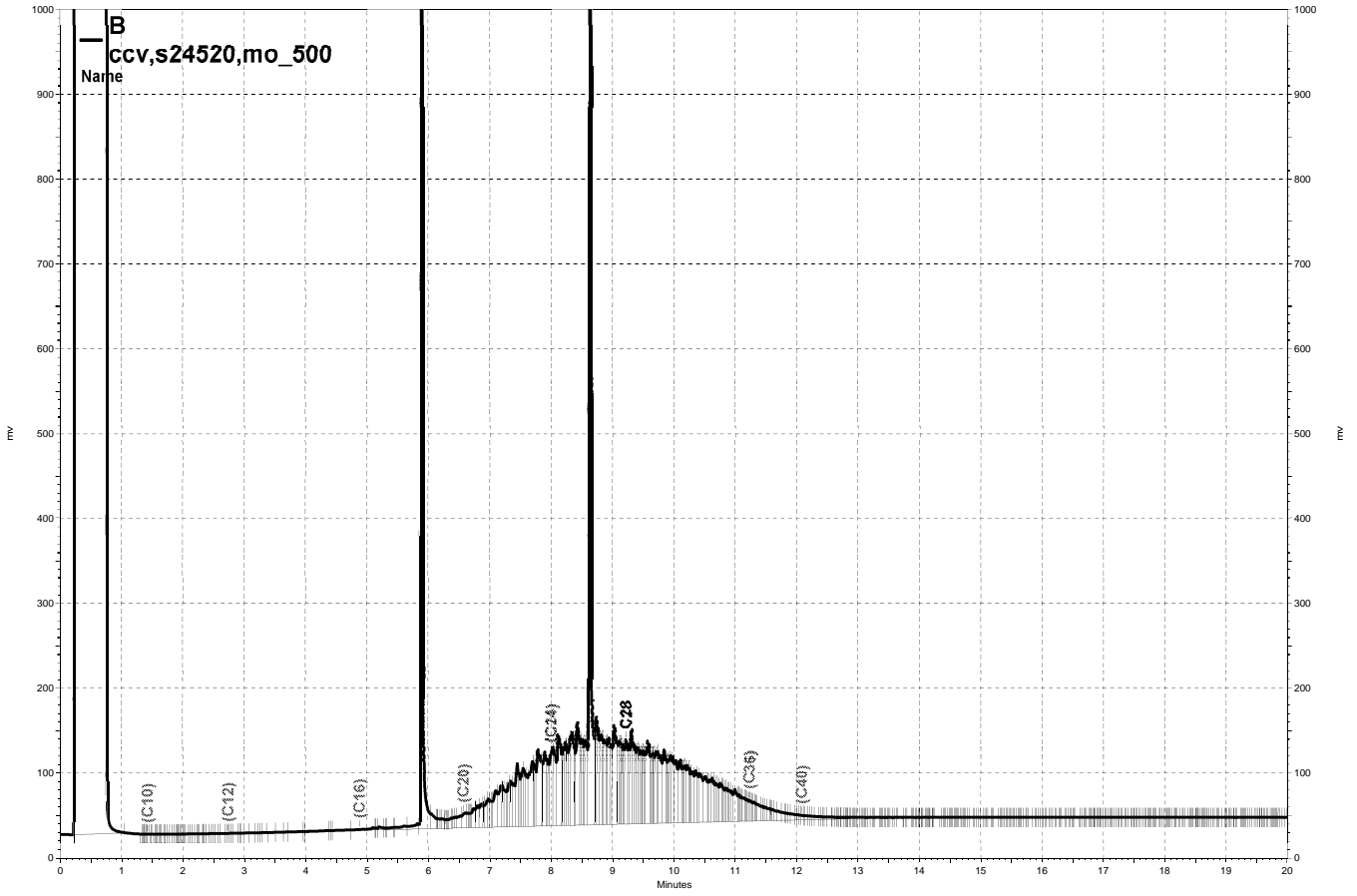
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Moisture			
Lab #:	255690	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	METHOD
Project#:	2013-094	Analysis:	ASTM D2216/CLP
Analyte:	Moisture, Percent	Batch#:	210186
Matrix:	Soil	Sampled:	04/16/14
Units:	%	Received:	04/16/14
Diln Fac:	1.000	Analyzed:	04/18/14

Field ID	Lab ID	Result	RL
APEX-S8-4.5-041614	255690-001	25	1
APEX-S8-7.5-041614	255690-003	30	1
APEX-S8-9.0-041614	255690-004	24	1
APEX-S9-4.5-041614	255690-005	27	1
APEX-S9-7.5-041614	255690-007	29	1
APEX-S9-9.0-041614	255690-008	24	1
APEX-S6-4.5-041614	255690-009	31	1

RL= Reporting Limit

Batch QC Report

Moisture				
Lab #:	255690	Location:	APEX	
Client:	Engineering/Remediation Resource Grp	Prep:	METHOD	
Project#:	2013-094	Analysis:	ASTM D2216/CLP	
Analyte:	Moisture, Percent	Units:	%	
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000	
Type:	SDUP	Batch#:	210186	
MSS Lab ID:	255635-001	Sampled:	04/15/14	
Lab ID:	QC736604	Received:	04/15/14	
Matrix:	Soil	Analyzed:	04/18/14	
MSS Result	Result	RL	RPD	Lim
9.486	12.00	1.000	23	24

RL= Reporting Limit

RPD= Relative Percent Difference



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

Laboratory Job Number 255714
ANALYTICAL REPORT

Engineering/Remediation Resource Grp
4585 Pacheco Blvd.
Martinez, CA 94553

Project : 2013-094
Location : APEX
Level : II

Table with 2 columns: Sample ID and Lab ID. Lists various sample identifiers and their corresponding lab IDs.

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: Tracy Babjar
Tracy Babjar
Project Manager
tracy.babjar@ctberk.com
(510) 204-2226

Date: 04/25/2014

CASE NARRATIVE

Laboratory number: 255714
Client: Engineering/Remediation Resource Grp
Project: 2013-094
Location: APEX
Request Date: 04/17/14
Samples Received: 04/17/14

This data package contains sample and QC results for eleven soil samples, five water samples, and one four-point soil composite, requested for the above referenced project on 04/17/14. The samples were received cold and intact.

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

High surrogate recovery was observed for bromofluorobenzene (FID) in APEX-S5-GW-041714 (lab # 255714-007). No other analytical problems were encountered.

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

Matrix spikes QC737527, QC737528 (batch 210401) were not reported because the parent sample was reanalyzed in another batch. High surrogate recovery was observed for bromofluorobenzene (FID) in APEX-S5-9.0-041714 (lab # 255714-009). No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Water:

High surrogate recoveries were observed for o-terphenyl in APEX-S10-GW-041714 (lab # 255714-002) and the method blank for batch 210224; no target analytes were detected in these samples. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B) Soil:

Matrix spikes QC736924, QC736925 (batch 210271) were not reported because the concentrations of target analytes in the parent sample were more than four times the amount spiked, rendering spike recoveries not meaningful. No other analytical problems were encountered.

Metals (EPA 6010B):

No analytical problems were encountered.

Moisture (ASTM D2216/CLP):

No analytical problems were encountered.

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Page 1 of 2

Chain of Custody # _____

2323 Fifth Street
 Berkeley, CA 94710

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

C&T LOGIN # 255714

Project No: 2013-094

Sampler: BR Foster

Project Name: APEX REFRIGERATION

Report To: ERIK OEHLSCHLAGER

Project P. O. No: 2013-094

Company: ERRG

EDD Format:

Report Level II III IV

Telephone: (925) 969-0750

Turnaround Time: RUSH

Standard

Email: ERIK.OEHLSCHLAGER@ERRG.COM

ANALYTICAL REQUEST	
TPH-PURGEABLES (EPA 8015B) 40L TPH-EXTRACTABLES (EPA 8015B) 800L L w/ Siliot Gel Cleanup	
TPH-PURGEABLES (EPA 8015B) 40ML TPH-EXTRACTABLES (EPA 8015B) 500ML	no. stored for ALL SUBS

Lab No.	Sample ID.	SAMPLING		MATRIX		# of Containers	CHEMICAL PRESERVATIVE					
		Date Collected	Time Collected	Water	Solid		HCl	H2SO4	HNO3	NaOH	None	
1	APEX-S10-4.5-041714	4-17-14	0755 0810	X		2						X
2	APEX-S10-GW-041714	4-17-14	0810	X		5	X					
3	APEX-S14-GW-041714	4-17-14	0830	X		5	X					
4	APEX-S10-8.0-041714	4-17-14	0908		X	2						X
5	APEX-S10-9.0-041714	4-17-14	0912		X	2						X
6	APEX-S5-4.5-041714	4-17-14	0935	X		2						X
7	APEX-S5-GW-041714	4-17-14	1015	X		5	X					
8	APEX-S5-7.5-041714	4-17-14	1020		X	2						X
9	APEX-S5-9.0-041714	4-17-14	1026		X	2						X
10	APEX-S7-5.5-041714	4-17-14	1112		X	2						X
11	APEX-S7-GW-041714	4-17-14	1130	X		5	X					
12	APEX-S7-9.0-041714	4-17-14	1145		X	2						X
13	APEX-S13-4.0-041714	4-17-14	1254	X		2						X

Notes: *All field filtered except
 *Lab will have to pre-filter

Sample: APEX-S13-GW-041714

SAMPLE RECEIPT
 Intact
 Cold
 On Ice
 Ambient

RELINQUISHED BY:

R Foster
 DATE: 4-17-14 TIME: 14:50

DATE: _____ TIME: _____

DATE: _____ TIME: _____

RECEIVED BY:

Troy D... / R...
 DATE: 4/17/14 TIME: 14:50

DATE: _____ TIME: _____

DATE: _____ TIME: _____

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2323 Fifth Street
 Berkeley, CA 94710

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

C&T LOGIN # 255714

Chain of Custody # _____

Project No: 2013-094 Sampler: BRI FOSTER
 Project Name: APEX REFRIGERATION Report To: ERIK OEHLISCHLAGER
 Project P. O. No: 2013-094 Company: ERLGG
 EDD Format: Report Level II III IV Telephone: (925) 969-0750
 Turnaround Time: RUSH Standard Email: ERIK.OEHLISCHLAGER@ERLGG.COM

ANALYTICAL REQUEST

	TPH-Purgeables (EPA 8015B) - 4oz	TPH-Extractables (EPA 8015B) - 8oz	TPH-Purgeables (EPA 8015B) 49 mL	TPH-Extractables (EPA 8015B) 500 mL	LUFT METALS (Cd, Cr, Ni, Pb, Zn)	HOLD AFTER ANALYZING
	↳ w/ silica gel cleanup				↳ w/ silica gel cleanup	
					↳ by EPA 8015B (x4 8oz jars)	
					L&S COMPOSITE	
					PRECISION FOR ALL S&S	

Lab No.	Sample ID.	SAMPLING		MATRIX		# of Containers	CHEMICAL PRESERVATIVE					
		Date Collected	Time Collected	Water	Solid		HCl	H2SO4	HNO3	NaOH	None	
14	TB-041714	4-17-14	12:00	X		2	X					
15	APEX-S13-GW-041714	4-17-14	13:00	X		5	X					
16	APEX-S13-7.5-041714	4-17-14	13:25		X	2						X
17	APEX-S13-9.0-041714	4-17-14	13:35		X	2						X
18	APEX-WP-SOIL-041714	4-17-14	13:45		X	4						X

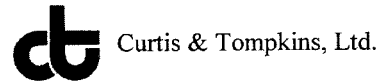
Notes:
 * Lab will need to filter sample: APEX-S13-GW-041714
 * 4-point composite that lab will have to composite: APEX-WP-SOIL-041714

SAMPLE RECEIPT
 Intact
 Cold
 On Ice
 Ambient

RELINQUISHED BY:
Bri Foster 4-17-14 TIME: 14:50
 DATE: TIME: DATE: TIME:
 DATE: TIME: DATE: TIME:

RECEIVED BY:
TODS 4/17/14 TIME: 14:50
 DATE: TIME: DATE: TIME:
 DATE: TIME: DATE: TIME:

COOLER RECEIPT CHECKLIST



Login # 255714 Date Received 04/17/14 Number of coolers 1
Client ERRG Project APEX REFRIGERATION

Date Opened 04/17/14 By (print) NY (sign) [Signature]
Date Logged in 7 By (print) MT (sign) [Signature]

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

If YES, Who was called? BRT By T. B. [Signature] Date: 4-18-14

COMMENTS

silica gel on all TEFM samples

Can not analyze TB-011719

Detections Summary for 255714

Client : Engineering/Remediation Resource Grp
 Project : 2013-094
 Location : APEX

Client Sample ID : APEX-S10-4.5-041714 Laboratory Sample ID : 255714-001

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	1,200	Y	270	17	mg/Kg	Dry	1000	EPA 8015B	EPA 5030B
Diesel C10-C24	4,700		66	20	mg/Kg	Dry	50.00	EPA 8015B	EPA 3550B
Moisture, Percent	25		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S10-GW-041714 Laboratory Sample ID : 255714-002

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	190	Y	50	11	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B

Client Sample ID : APEX-S14-GW-041714 Laboratory Sample ID : 255714-003

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	180	Y	50	11	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	99	Y	49	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C

Client Sample ID : APEX-S10-8.0-041714 Laboratory Sample ID : 255714-004

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	1.5	Y	1.4	0.072	mg/Kg	Dry	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	26		1.3	0.39	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Motor Oil C24-C36	7.1		6.4	1.9	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	22		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S10-9.0-041714 Laboratory Sample ID : 255714-005

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	4.0	Y	1.2	0.065	mg/Kg	Dry	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	32		1.2	0.38	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	20		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S5-4.5-041714 Laboratory Sample ID : 255714-006

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	110	Y	14	0.87	mg/Kg	Dry	50.00	EPA 8015B	EPA 5030B
Diesel C10-C24	250		1.3	0.41	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Motor Oil C24-C36	29		6.7	2.0	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	26		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S5-GW-041714

Laboratory Sample ID : 255714-007

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	4,500	Y	50	11	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	15,000		53	18	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Motor Oil C24-C36	630		320	100	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C

Client Sample ID : APEX-S5-7.5-041714

Laboratory Sample ID : 255714-008

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	4.2	Y	1.4	0.10	mg/Kg	Dry	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	16		1.4	0.42	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	27		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S5-9.0-041714

Laboratory Sample ID : 255714-009

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	5.6	Y	1.3	0.099	mg/Kg	Dry	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	8.0	Y	1.2	0.38	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	20		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S7-5.5-041714

Laboratory Sample ID : 255714-010

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	4.1	Y	1.4	0.43	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Motor Oil C24-C36	11		7.0	2.1	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	29		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S7-GW-041714

Laboratory Sample ID : 255714-011

No Detections

Client Sample ID : APEX-S7-9.0-041714

Laboratory Sample ID : 255714-012

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Moisture, Percent	23		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S13-4.0-041714

Laboratory Sample ID : 255714-013

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	130		1.3	0.41	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Motor Oil C24-C36	380		6.7	2.0	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	26		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : TB-041714

Laboratory Sample ID :

255714-014

No Detections

Client Sample ID : APEX-S13-7.5-041714

Laboratory Sample ID :

255714-016

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	2.5	Y	1.3	0.41	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	26		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-S13-9.0-041714

Laboratory Sample ID :

255714-017

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Motor Oil C24-C36	9.7		6.6	2.0	mg/Kg	Dry	1.000	EPA 8015B	EPA 3550B
Moisture, Percent	25		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Client Sample ID : APEX-WP-SOIL-041714

Laboratory Sample ID :

255714-018

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Cadmium	0.46		0.35	0.036	mg/Kg	Dry	1.000	EPA 6010B	EPA 3050B
Chromium	52		0.35	0.088	mg/Kg	Dry	1.000	EPA 6010B	EPA 3050B
Lead	24		0.35	0.098	mg/Kg	Dry	1.000	EPA 6010B	EPA 3050B
Nickel	59		0.35	0.092	mg/Kg	Dry	1.000	EPA 6010B	EPA 3050B
Zinc	80		1.4	0.079	mg/Kg	Dry	1.000	EPA 6010B	EPA 3050B
Moisture, Percent	30		1		%	As Recd	1.000	ASTM D2216/CLP	METHOD

Y = Sample exhibits chromatographic pattern which does not resemble standard

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/17/14
Units:	ug/L	Received:	04/17/14
Diln Fac:	1.000		

Field ID: APEX-S10-GW-041714 Batch#: 210301
 Type: SAMPLE Analyzed: 04/22/14
 Lab ID: 255714-002

Analyte	Result	RL
Gasoline C7-C12	190 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	77-128

Field ID: APEX-S14-GW-041714 Batch#: 210301
 Type: SAMPLE Analyzed: 04/22/14
 Lab ID: 255714-003

Analyte	Result	RL
Gasoline C7-C12	180 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	107	77-128

Field ID: APEX-S5-GW-041714 Batch#: 210301
 Type: SAMPLE Analyzed: 04/22/14
 Lab ID: 255714-007

Analyte	Result	RL
Gasoline C7-C12	4,500 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	160 *	77-128

Field ID: APEX-S7-GW-041714 Batch#: 210322
 Type: SAMPLE Analyzed: 04/23/14
 Lab ID: 255714-011

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	107	77-128

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/17/14
Units:	ug/L	Received:	04/17/14
Diln Fac:	1.000		

Field ID:	TB-041714	Batch#:	210301
Type:	SAMPLE	Analyzed:	04/22/14
Lab ID:	255714-014		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	102	77-128

Type:	BLANK	Batch#:	210301
Lab ID:	QC737052	Analyzed:	04/22/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	77-128

Type:	BLANK	Batch#:	210322
Lab ID:	QC737148	Analyzed:	04/22/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	77-128

*= Value outside of QC limits; see narrative

Y= Sample exhibits chromatographic pattern which does not resemble standard

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC737051	Batch#:	210301
Matrix:	Water	Analyzed:	04/22/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,141	114	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	77-128

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	210301
MSS Lab ID:	255720-001	Sampled:	04/17/14
Matrix:	Water	Received:	04/17/14
Units:	ug/L	Analyzed:	04/22/14
Diln Fac:	1.000		

Type: MS Lab ID: QC737053

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	10.77	2,000	2,111	105	74-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	107	77-128

Type: MSD Lab ID: QC737054

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,053	102	74-120	3	27

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	77-128

RPD= Relative Percent Difference

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC737147	Batch#:	210322
Matrix:	Water	Analyzed:	04/22/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	3,000	3,006	100	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	108	77-128

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Field ID:	APEX-S7-GW-041714	Batch#:	210322
MSS Lab ID:	255714-011	Sampled:	04/17/14
Matrix:	Water	Received:	04/17/14
Units:	ug/L	Analyzed:	04/23/14
Diln Fac:	1.000		

Type: MS Lab ID: QC737149

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	15.95	2,000	2,005	99	74-120

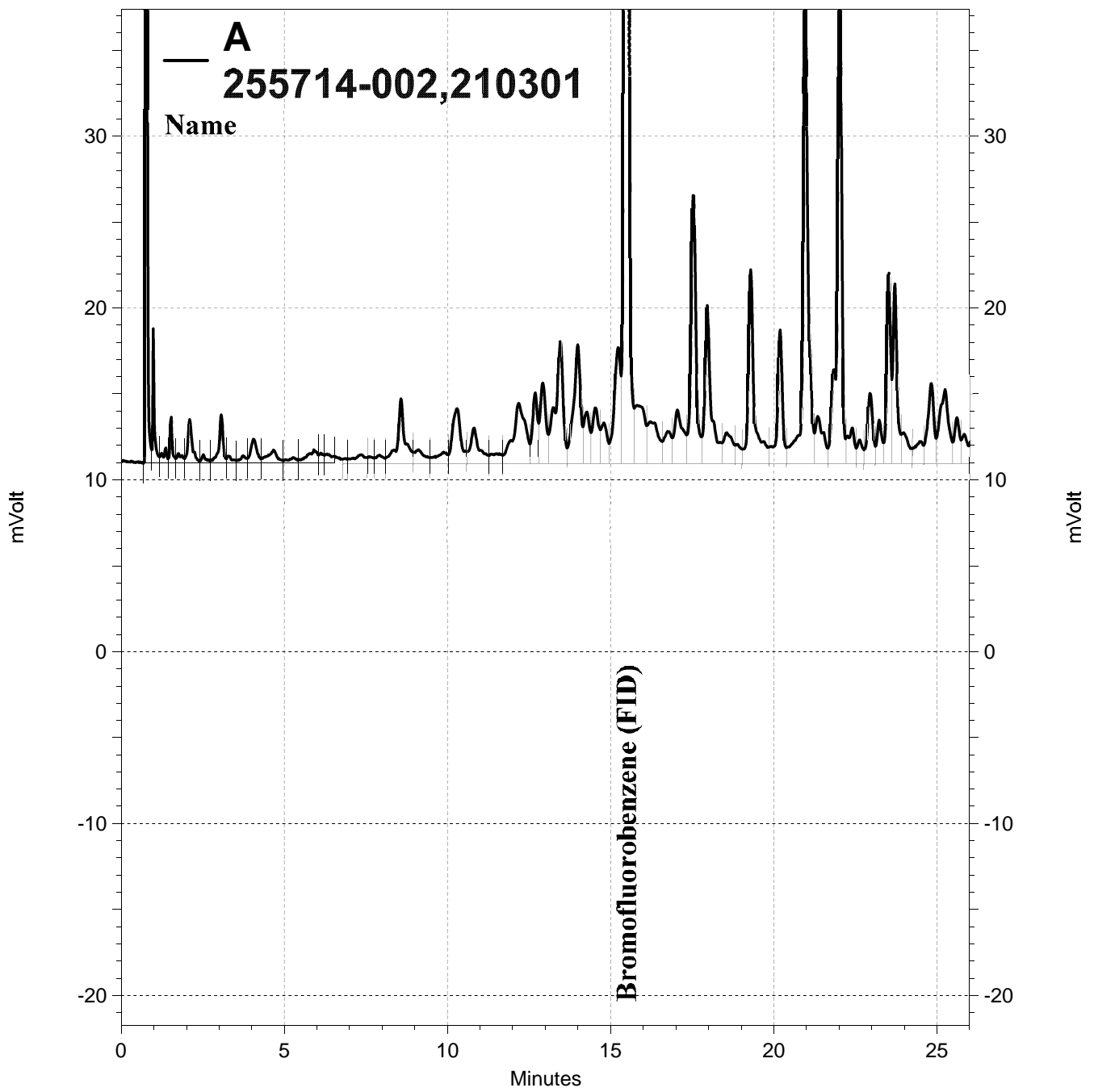
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	108	77-128

Type: MSD Lab ID: QC737150

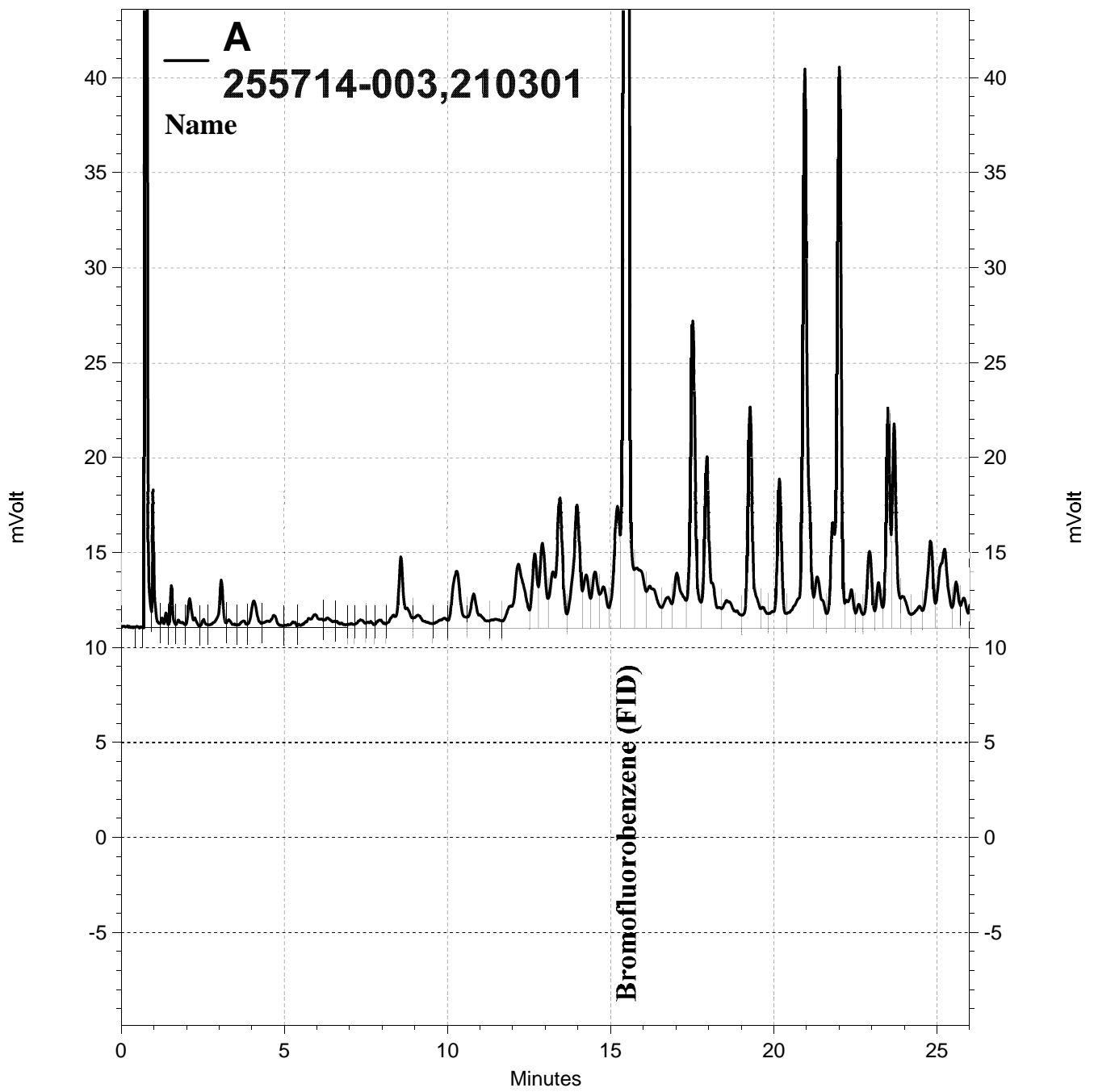
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,969	98	74-120	2	27

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	77-128

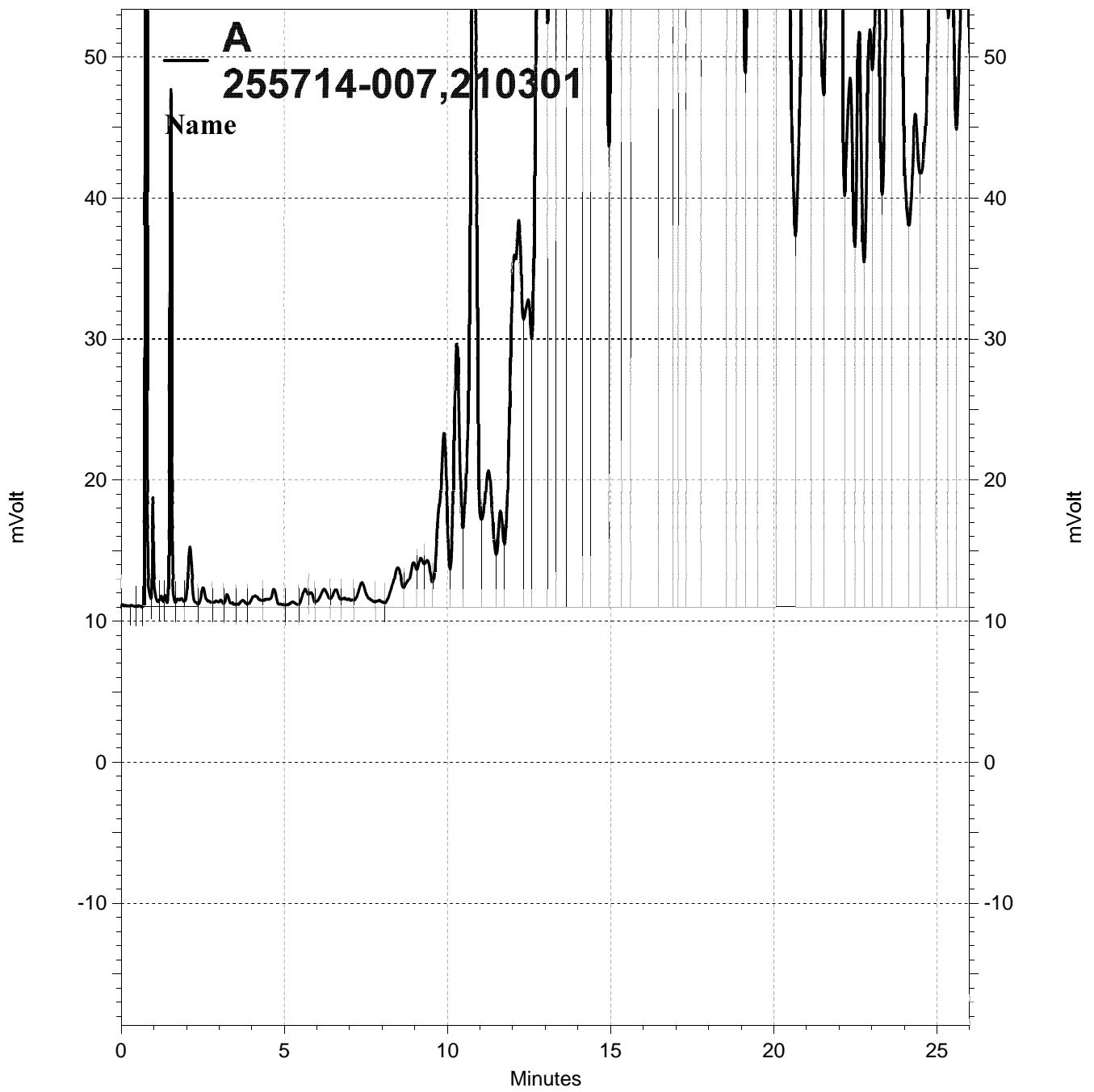
RPD= Relative Percent Difference



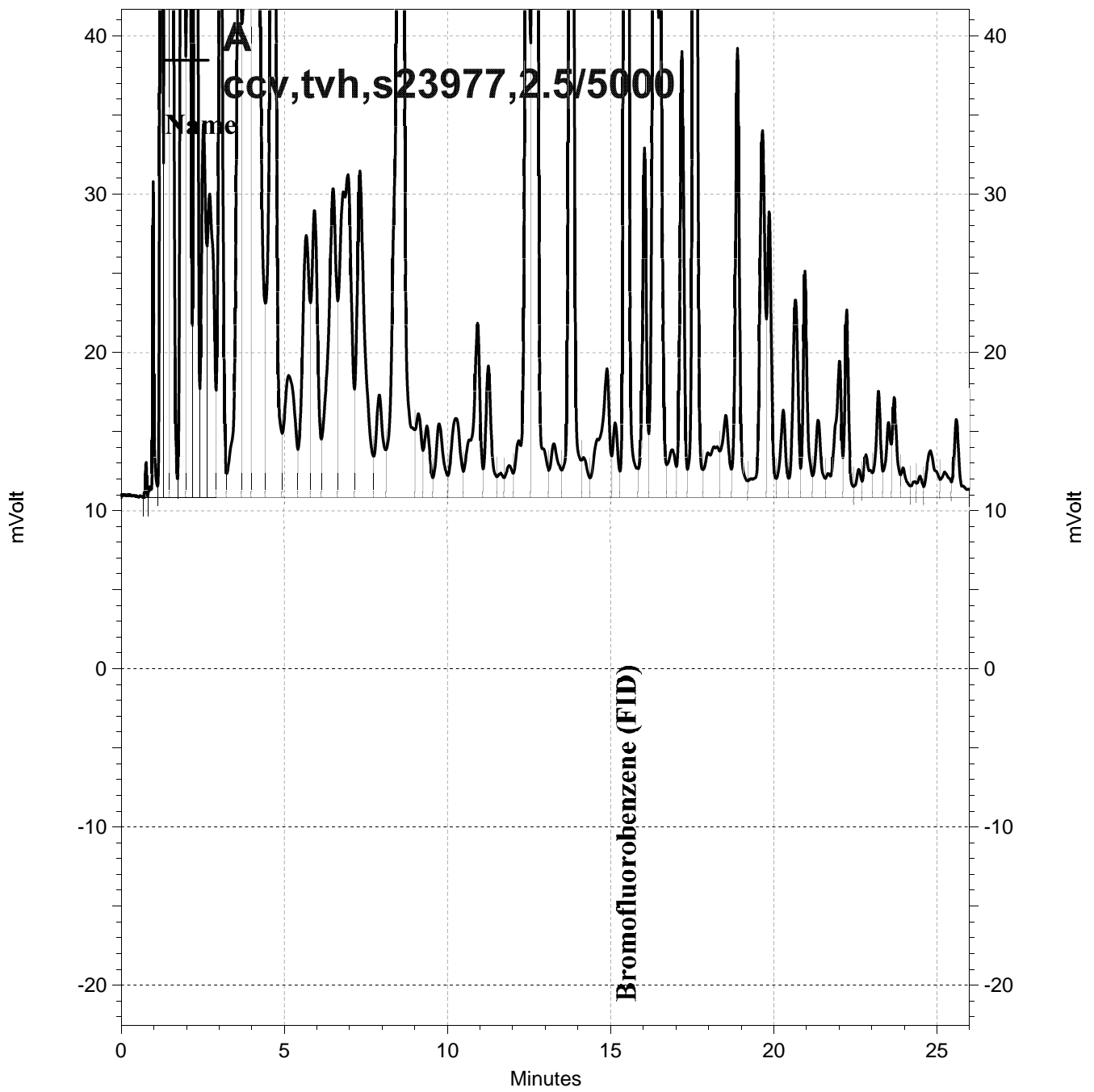
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Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	04/17/14
Units:	mg/Kg	Received:	04/17/14
Basis:	dry		

Field ID:	APEX-S10-4.5-041714	Diln Fac:	1,000
Type:	SAMPLE	Batch#:	210396
Lab ID:	255714-001	Analyzed:	04/24/14
Moisture:	25%		

Analyte	Result	RL
Gasoline C7-C12	1,200 Y	270

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	118	67-137

Field ID:	APEX-S10-8.0-041714	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	210238
Lab ID:	255714-004	Analyzed:	04/19/14
Moisture:	22%		

Analyte	Result	RL
Gasoline C7-C12	1.5 Y	1.4

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	67-137

Field ID:	APEX-S10-9.0-041714	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	210238
Lab ID:	255714-005	Analyzed:	04/19/14
Moisture:	20%		

Analyte	Result	RL
Gasoline C7-C12	4.0 Y	1.2

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	113	67-137

Field ID:	APEX-S5-4.5-041714	Diln Fac:	50.00
Type:	SAMPLE	Batch#:	210396
Lab ID:	255714-006	Analyzed:	04/24/14
Moisture:	26%		

Analyte	Result	RL
Gasoline C7-C12	110 Y	14

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	136	67-137

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	04/17/14
Units:	mg/Kg	Received:	04/17/14
Basis:	dry		

Field ID:	APEX-S5-7.5-041714	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	210401
Lab ID:	255714-008	Analyzed:	04/24/14
Moisture:	27%		

Analyte	Result	RL
Gasoline C7-C12	4.2 Y	1.4

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	130	67-137

Field ID:	APEX-S5-9.0-041714	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	210401
Lab ID:	255714-009	Analyzed:	04/24/14
Moisture:	20%		

Analyte	Result	RL
Gasoline C7-C12	5.6 Y	1.3

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	142 *	67-137

Field ID:	APEX-S7-5.5-041714	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	210238
Lab ID:	255714-010	Analyzed:	04/20/14
Moisture:	29%		

Analyte	Result	RL
Gasoline C7-C12	ND	1.4

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	67-137

Field ID:	APEX-S7-9.0-041714	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	210238
Lab ID:	255714-012	Analyzed:	04/20/14
Moisture:	23%		

Analyte	Result	RL
Gasoline C7-C12	ND	1.3

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	104	67-137

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	04/17/14
Units:	mg/Kg	Received:	04/17/14
Basis:	dry		

Field ID:	APEX-S13-4.0-041714	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	210238
Lab ID:	255714-013	Analyzed:	04/20/14
Moisture:	26%		

Analyte	Result	RL
Gasoline C7-C12	ND	1.3

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	108	67-137

Field ID:	APEX-S13-7.5-041714	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	210238
Lab ID:	255714-016	Analyzed:	04/20/14
Moisture:	26%		

Analyte	Result	RL
Gasoline C7-C12	ND	1.3

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	67-137

Field ID:	APEX-S13-9.0-041714	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	210238
Lab ID:	255714-017	Analyzed:	04/20/14
Moisture:	25%		

Analyte	Result	RL
Gasoline C7-C12	ND	1.5

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	67-137

Type:	BLANK	Batch#:	210238
Lab ID:	QC736794	Analyzed:	04/19/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	102	67-137

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Volatile Hydrocarbons

Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	04/17/14
Units:	mg/Kg	Received:	04/17/14
Basis:	dry		

Type:	BLANK	Batch#:	210396
Lab ID:	QC737432	Analyzed:	04/24/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	0.20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	67-137

Type:	BLANK	Batch#:	210401
Lab ID:	QC737449	Analyzed:	04/24/14
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	0.20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	86	67-137

*= Value outside of QC limits; see narrative

Y= Sample exhibits chromatographic pattern which does not resemble standard

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC736793	Batch#:	210238
Matrix:	Soil	Analyzed:	04/19/14
Units:	mg/Kg		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	1.136	114	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	67-137

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	210396
Units:	mg/Kg	Analyzed:	04/24/14
Diln Fac:	1.000		

Type: BS Lab ID: QC737485

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	0.9392	94	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	88	67-137

Type: BSD Lab ID: QC737486

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2.000	1.672	84	80-120	12	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	79	67-137

RPD= Relative Percent Difference

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	210401
Units:	mg/Kg	Analyzed:	04/24/14
Diln Fac:	1.000		

Type: BS Lab ID: QC737631

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	0.9440	94	80-120

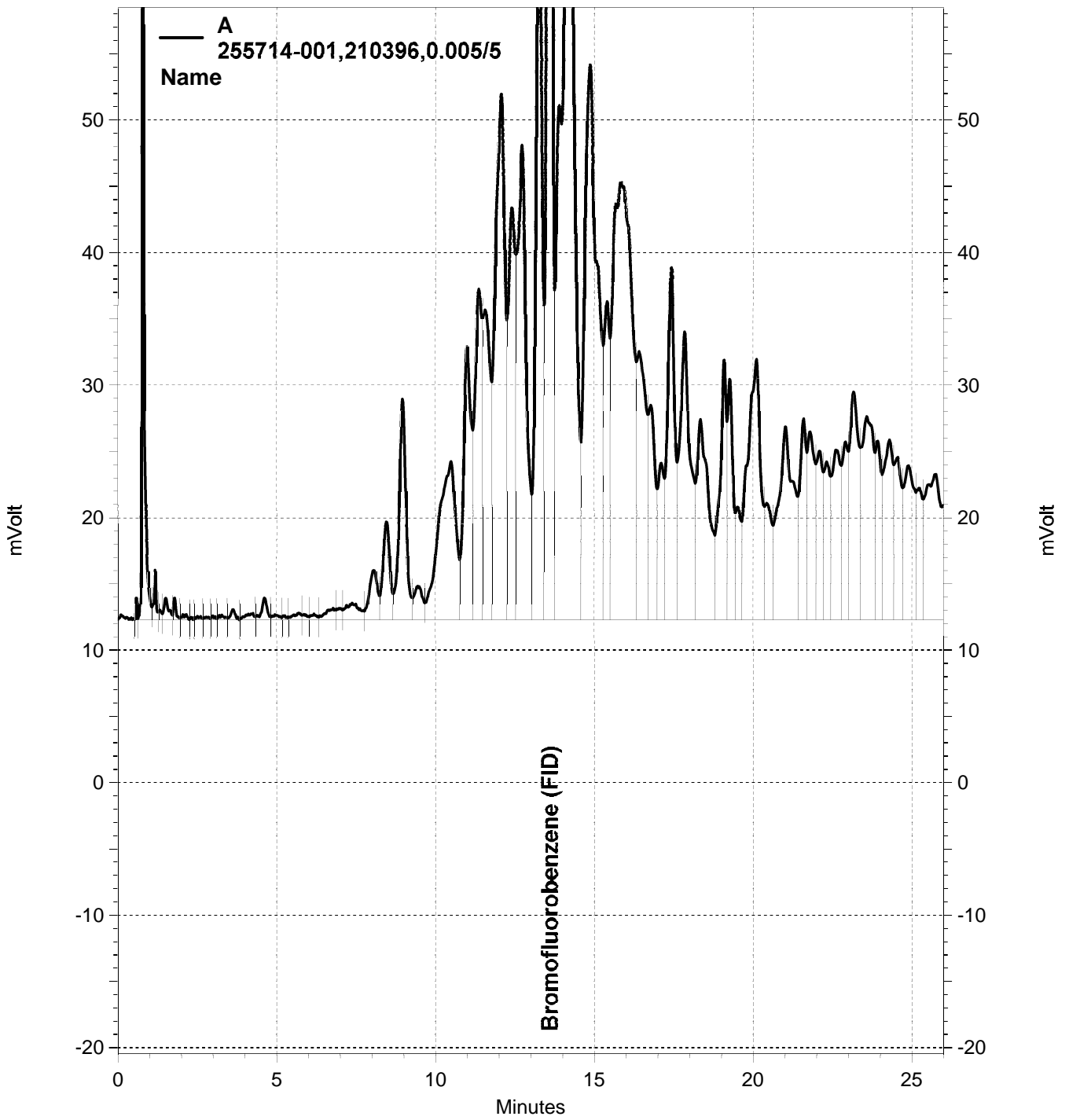
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Bromofluorobenzene (FID)	89	67-137

Type: BSD Lab ID: QC737632

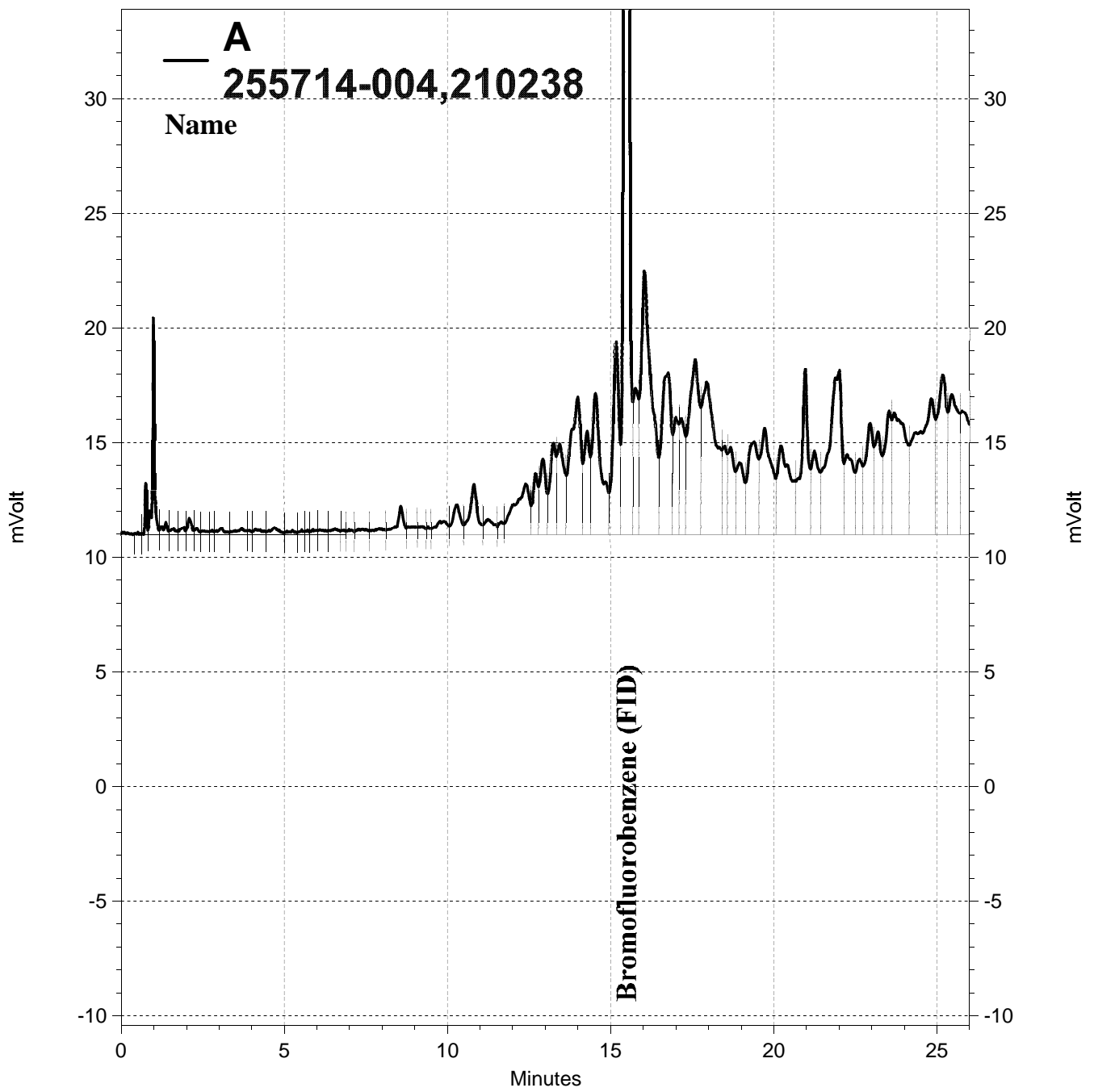
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2.000	2.134	107	80-120	12	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	120	67-137

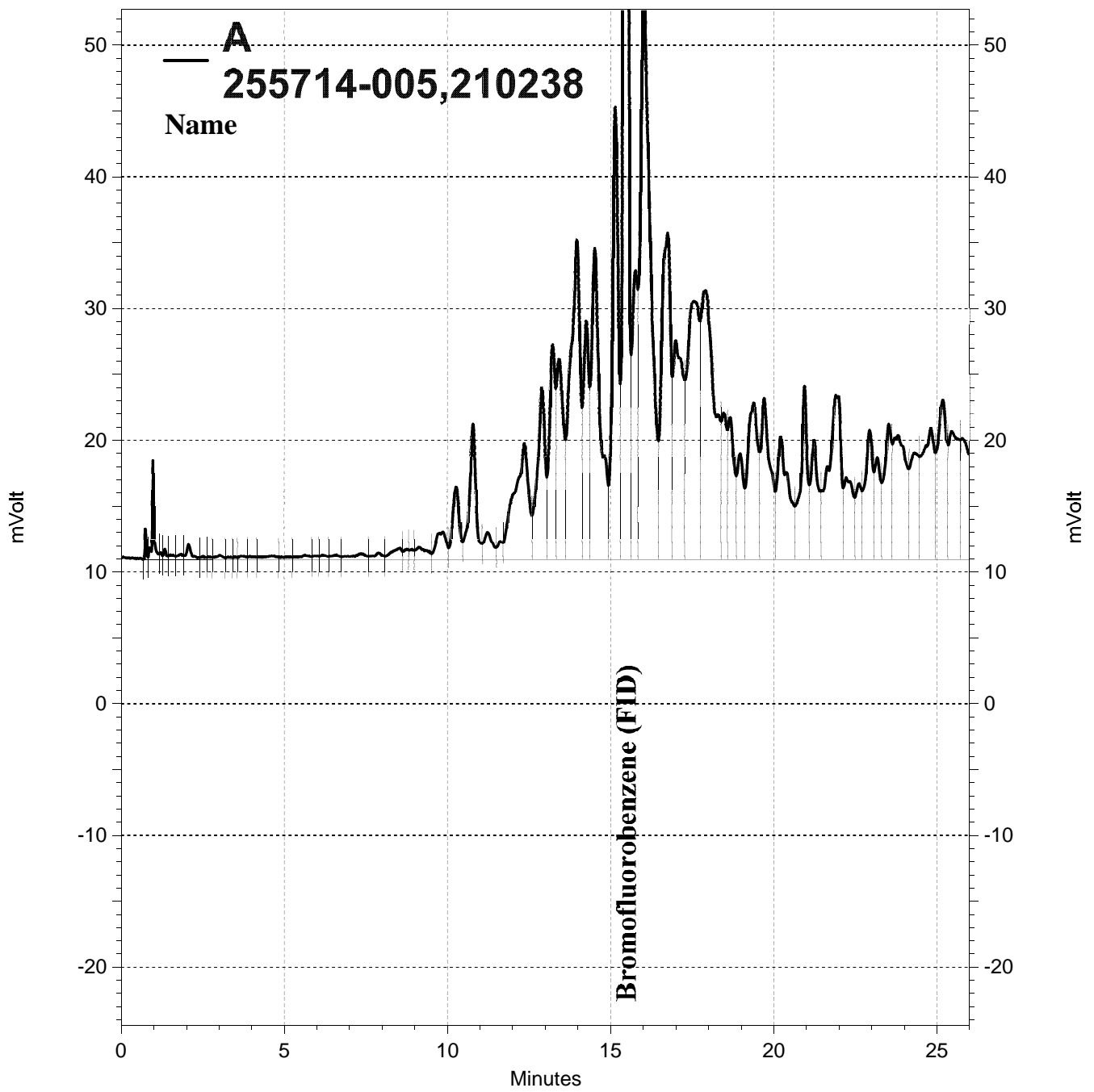
RPD= Relative Percent Difference



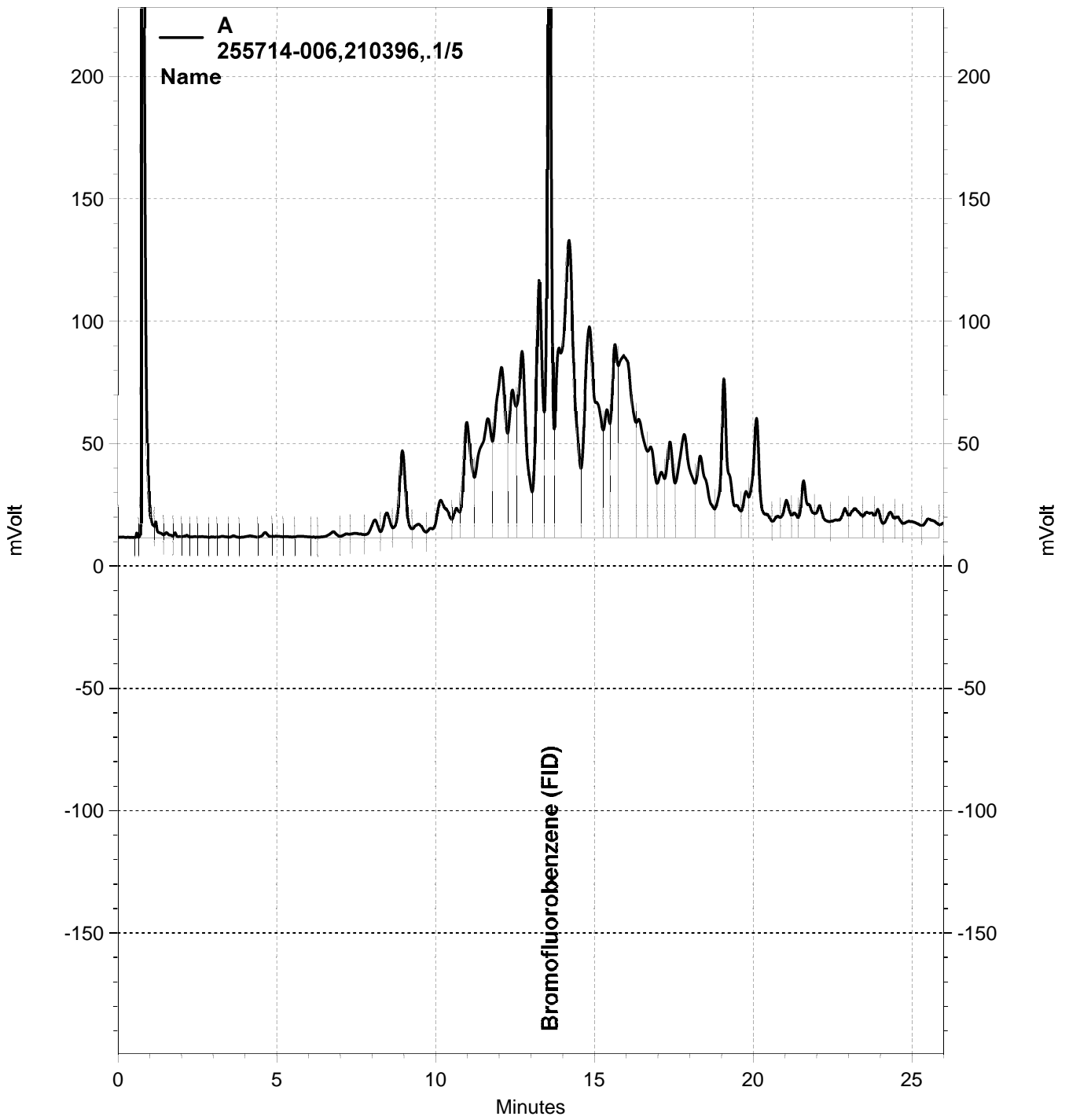
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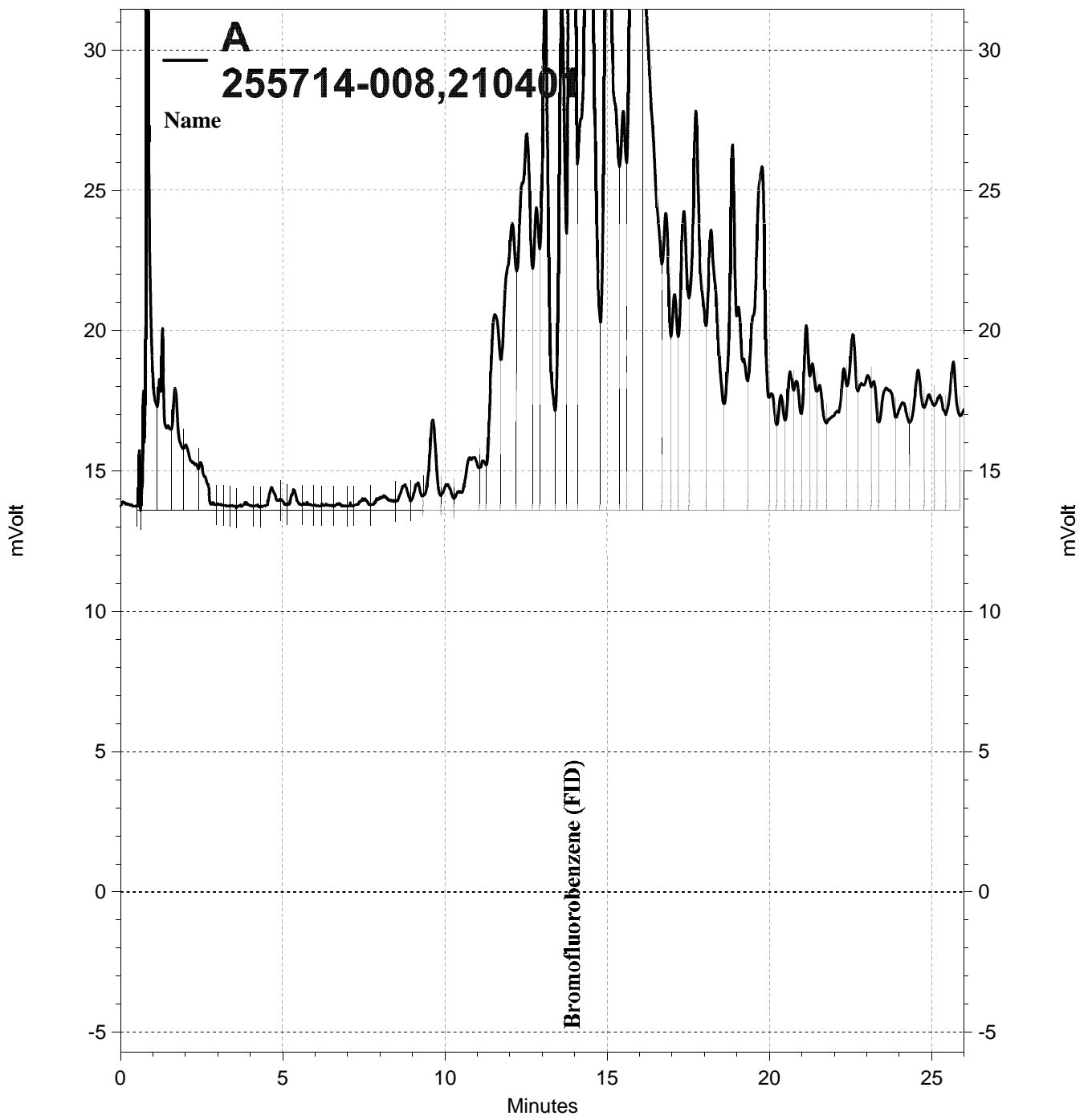
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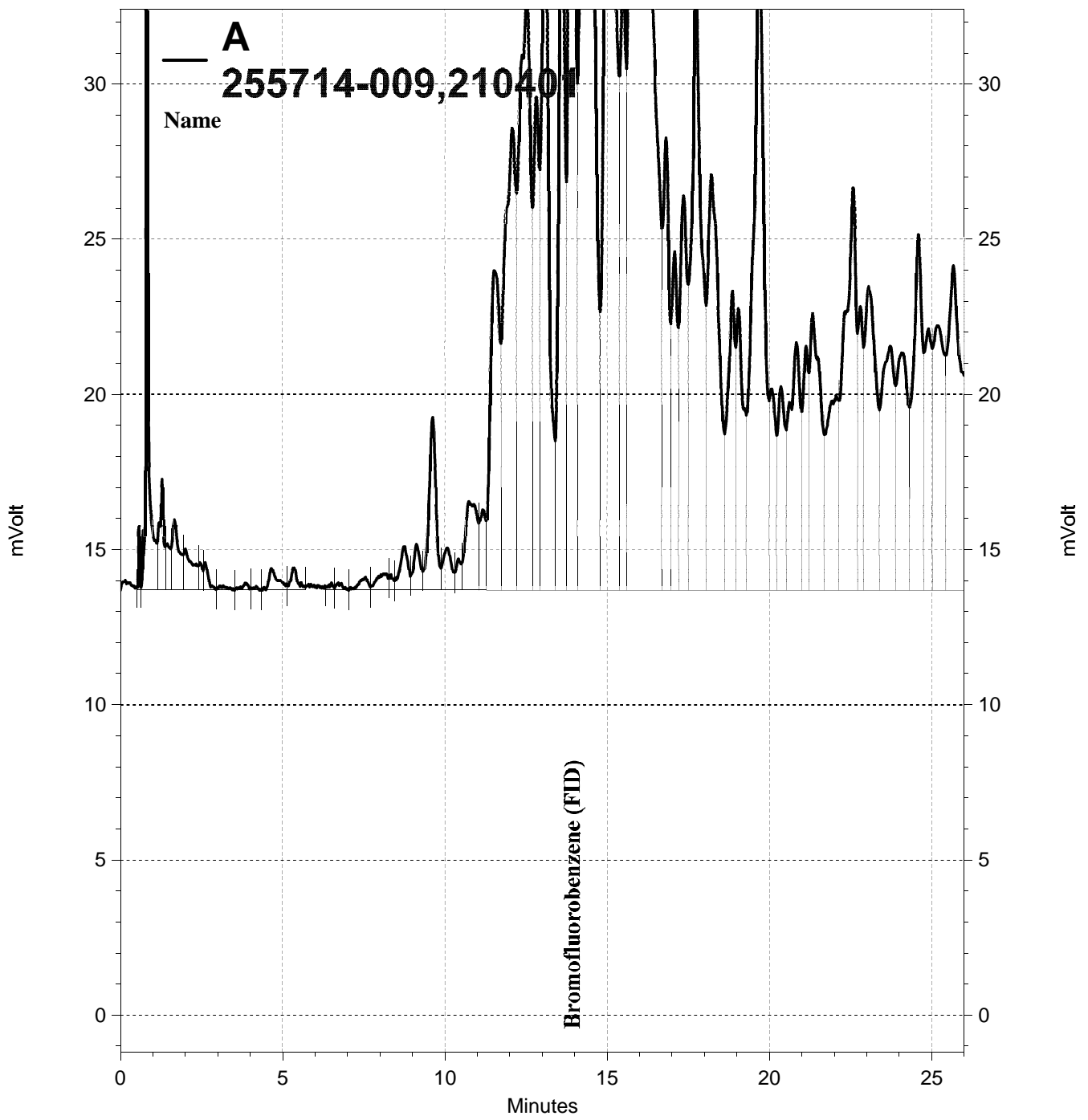
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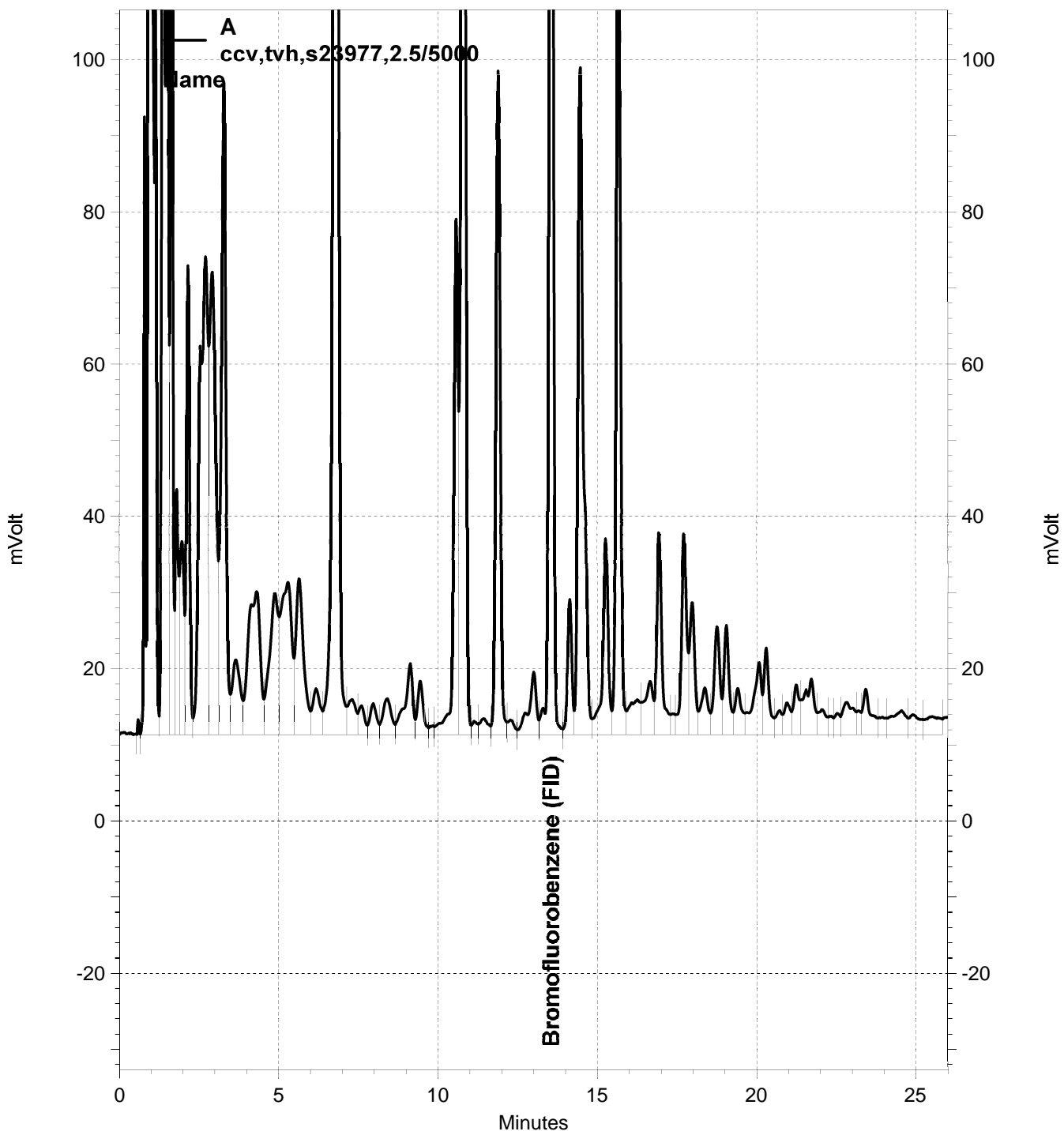
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Total Extractable Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/17/14
Units:	ug/L	Received:	04/17/14
Diln Fac:	1.000	Prepared:	04/18/14
Batch#:	210224		

Field ID: APEX-S10-GW-041714 Analyzed: 04/21/14
 Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 255714-002

Analyte	Result	RL
Diesel C10-C24	ND	52
Motor Oil C24-C36	ND	310

Surrogate	%REC	Limits
o-Terphenyl	138 *	66-129

Field ID: APEX-S14-GW-041714 Analyzed: 04/22/14
 Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 255714-003

Analyte	Result	RL
Diesel C10-C24	99 Y	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	107	66-129

*= Value outside of QC limits; see narrative

Y= Sample exhibits chromatographic pattern which does not resemble standard

ND= Not Detected

RL= Reporting Limit

Total Extractable Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/17/14
Units:	ug/L	Received:	04/17/14
Diln Fac:	1.000	Prepared:	04/18/14
Batch#:	210224		

Field ID: APEX-S5-GW-041714 Analyzed: 04/21/14
 Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 255714-007

Analyte	Result	RL
Diesel C10-C24	15,000	53
Motor Oil C24-C36	630	320

Surrogate	%REC	Limits
o-Terphenyl	122	66-129

Field ID: APEX-S7-GW-041714 Analyzed: 04/21/14
 Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 255714-011

Analyte	Result	RL
Diesel C10-C24	ND	53
Motor Oil C24-C36	ND	320

Surrogate	%REC	Limits
o-Terphenyl	126	66-129

Type: BLANK Analyzed: 04/21/14
 Lab ID: QC736747 Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	135 *	66-129

*= Value outside of QC limits; see narrative

Y= Sample exhibits chromatographic pattern which does not resemble standard

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	210224
Units:	ug/L	Prepared:	04/18/14
Diln Fac:	1.000		

Type: BS Analyzed: 04/22/14
 Lab ID: QC736748 Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,137	85	61-120

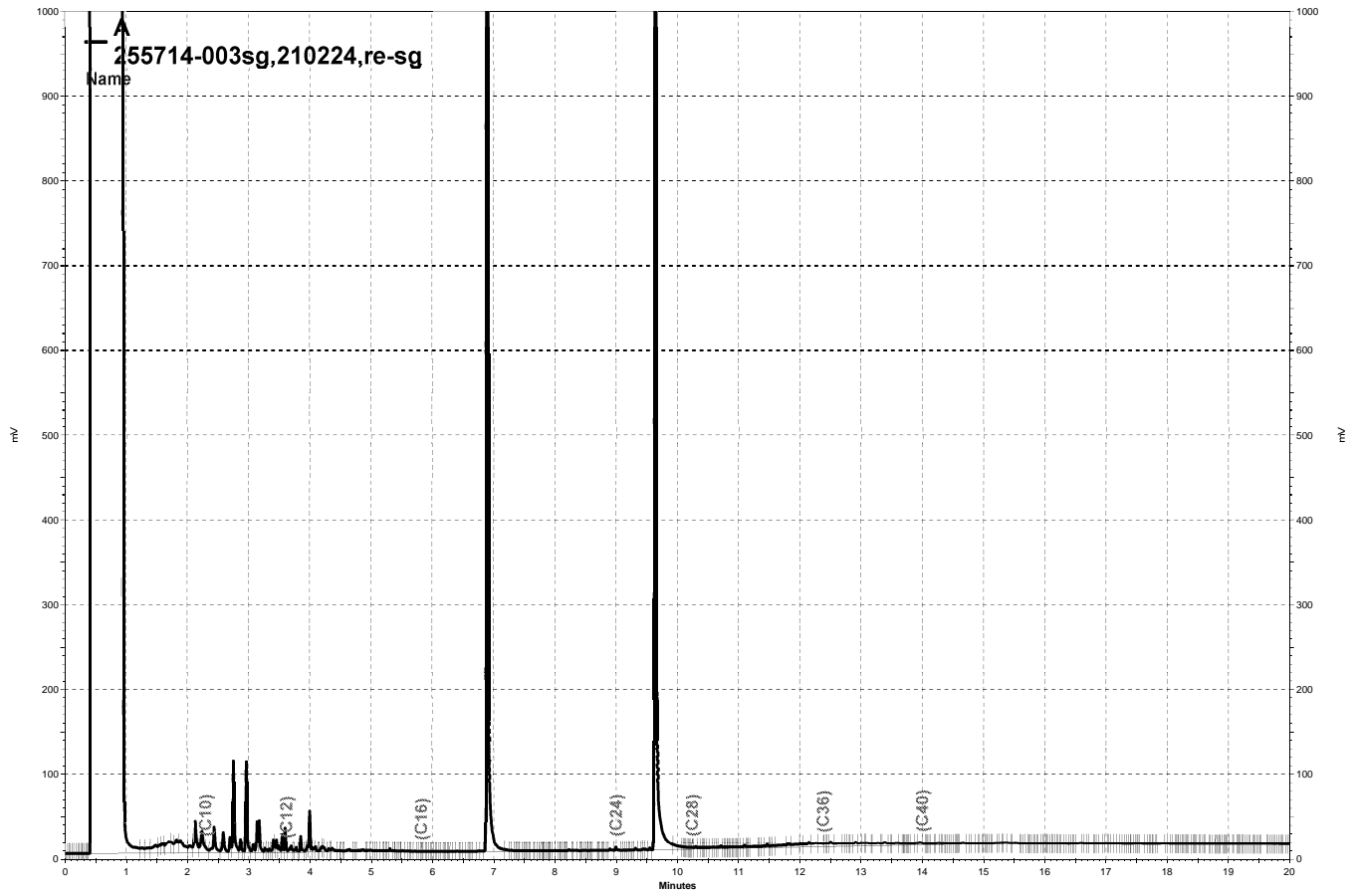
Surrogate	%REC	Limits
o-Terphenyl	106	66-129

Type: BSD Analyzed: 04/21/14
 Lab ID: QC736749 Cleanup Method: EPA 3630C

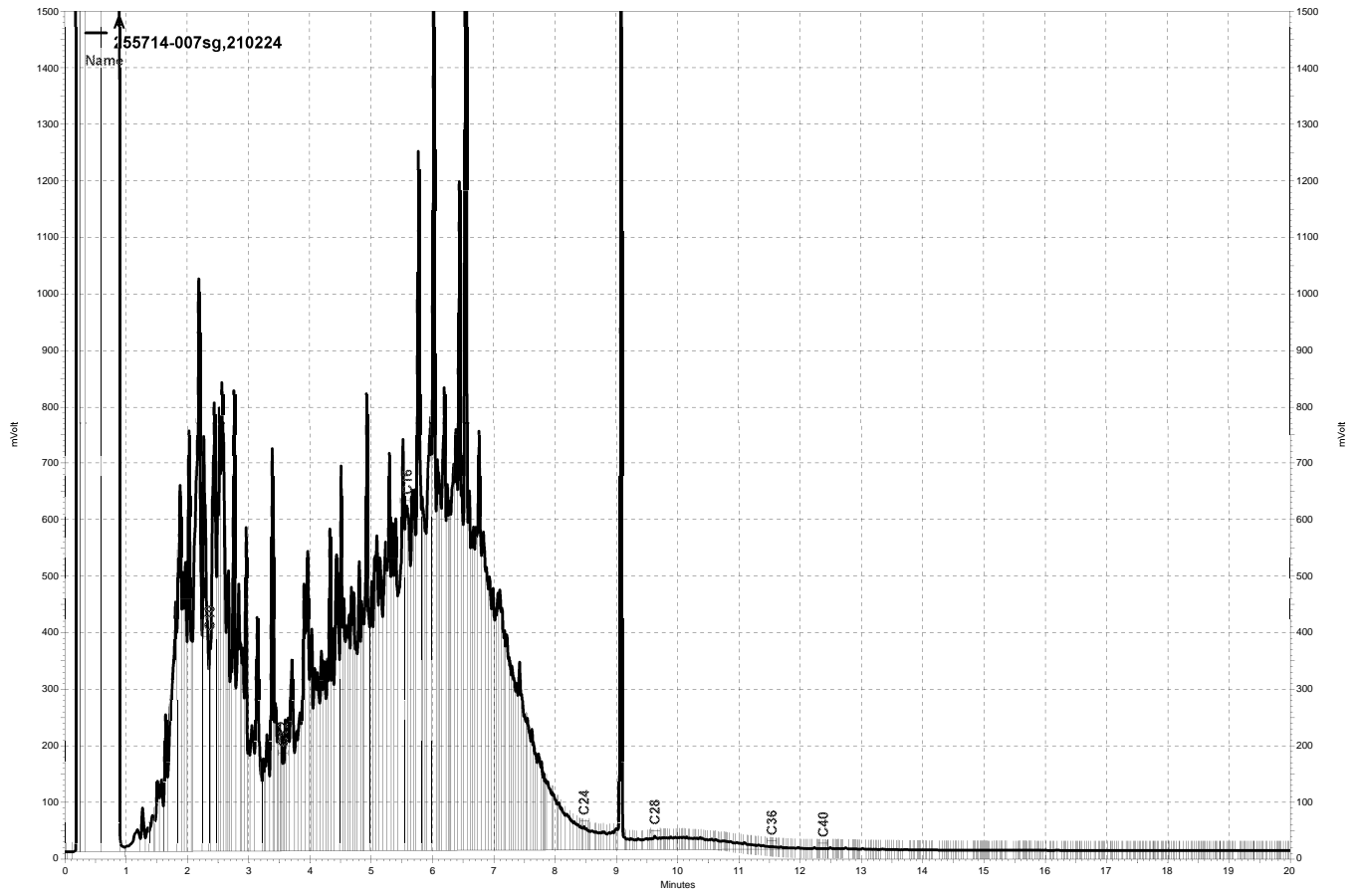
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,691	108	61-120	23	45

Surrogate	%REC	Limits
o-Terphenyl	127	66-129

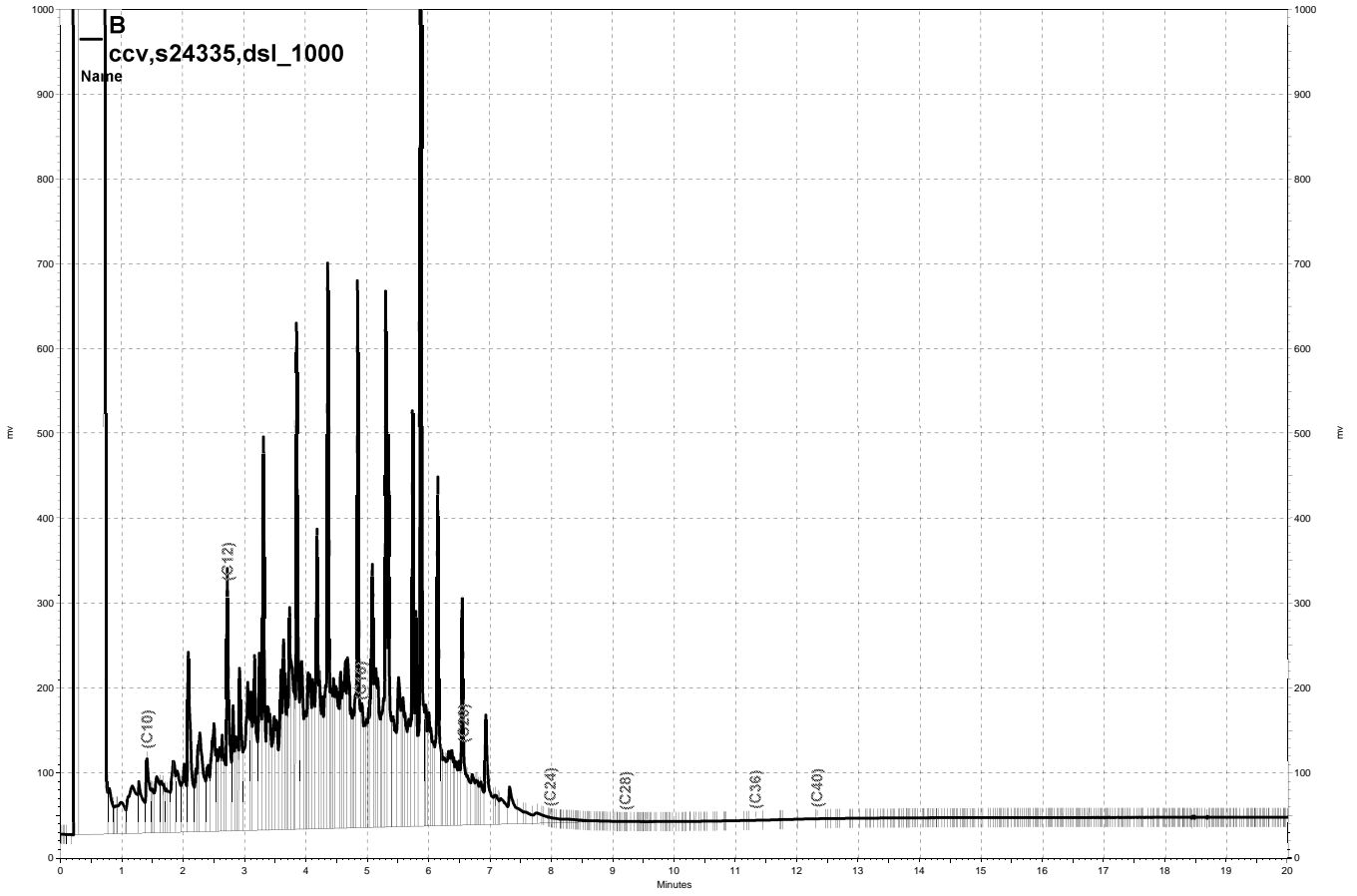
RPD= Relative Percent Difference



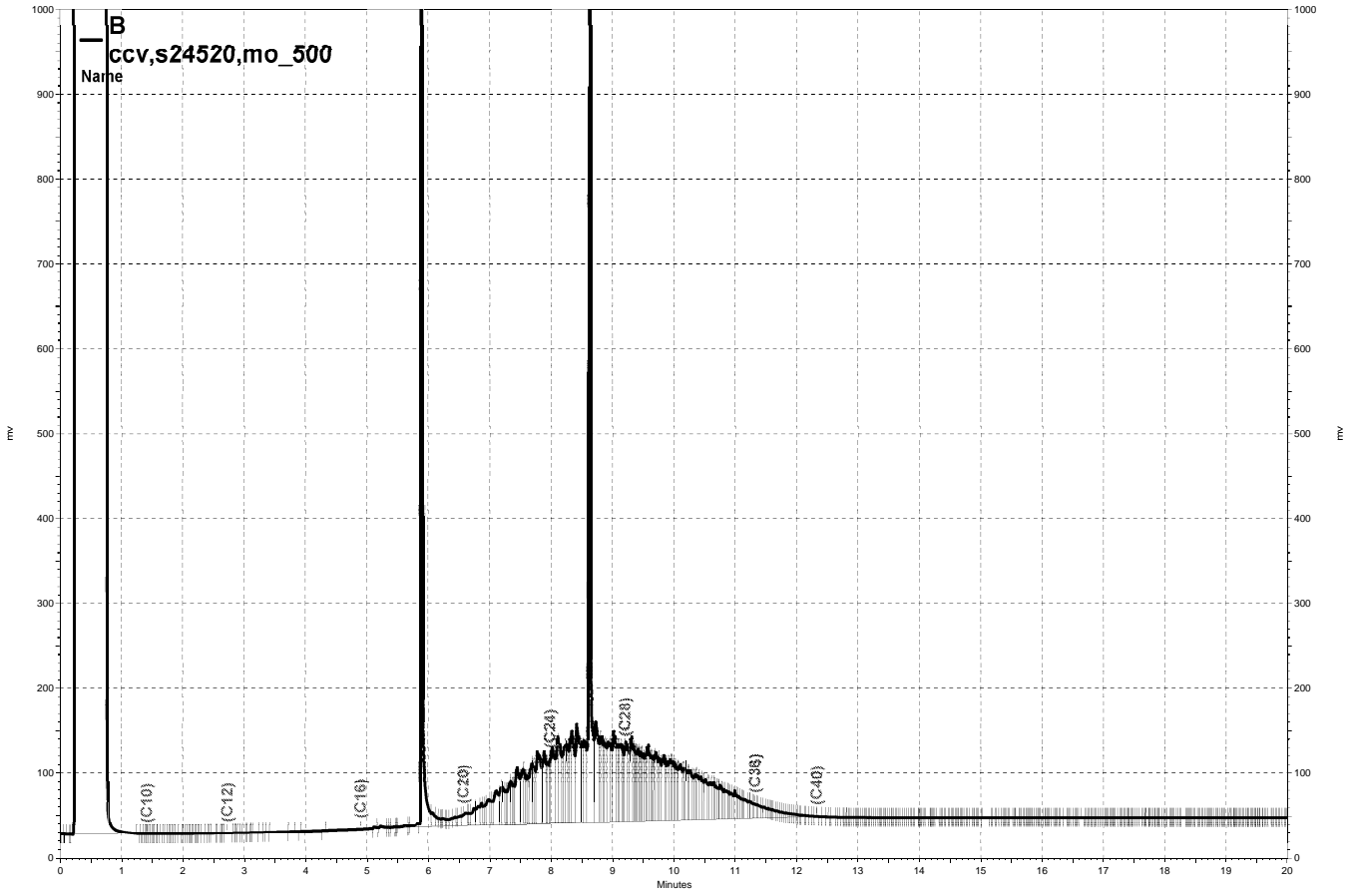
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Total Extractable Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3550B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	04/17/14
Units:	mg/Kg	Received:	04/17/14
Basis:	dry	Prepared:	04/21/14
Batch#:	210271		

Field ID:	APEX-S10-4.5-041714	Diln Fac:	50.00
Type:	SAMPLE	Analyzed:	04/23/14
Lab ID:	255714-001	Cleanup Method:	EPA 3630C
Moisture:	25%		

Analyte	Result	RL
Diesel C10-C24	4,700	66
Motor Oil C24-C36	ND	330

Surrogate	%REC	Limits
o-Terphenyl	DO	64-136

Field ID:	APEX-S10-8.0-041714	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	04/22/14
Lab ID:	255714-004	Cleanup Method:	EPA 3630C
Moisture:	22%		

Analyte	Result	RL
Diesel C10-C24	26	1.3
Motor Oil C24-C36	7.1	6.4

Surrogate	%REC	Limits
o-Terphenyl	117	64-136

Field ID:	APEX-S10-9.0-041714	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	04/22/14
Lab ID:	255714-005	Cleanup Method:	EPA 3630C
Moisture:	20%		

Analyte	Result	RL
Diesel C10-C24	32	1.2
Motor Oil C24-C36	ND	6.2

Surrogate	%REC	Limits
o-Terphenyl	135	64-136

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

Total Extractable Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3550B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	04/17/14
Units:	mg/Kg	Received:	04/17/14
Basis:	dry	Prepared:	04/21/14
Batch#:	210271		

Field ID: APEX-S5-4.5-041714 Diln Fac: 1.000
 Type: SAMPLE Analyzed: 04/22/14
 Lab ID: 255714-006 Cleanup Method: EPA 3630C
 Moisture: 26%

Analyte	Result	RL
Diesel C10-C24	250	1.3
Motor Oil C24-C36	29	6.7

Surrogate	%REC	Limits
o-Terphenyl	119	64-136

Field ID: APEX-S5-7.5-041714 Diln Fac: 1.000
 Type: SAMPLE Analyzed: 04/23/14
 Lab ID: 255714-008 Cleanup Method: EPA 3630C
 Moisture: 27%

Analyte	Result	RL
Diesel C10-C24	16	1.4
Motor Oil C24-C36	ND	6.9

Surrogate	%REC	Limits
o-Terphenyl	126	64-136

Field ID: APEX-S5-9.0-041714 Diln Fac: 1.000
 Type: SAMPLE Analyzed: 04/22/14
 Lab ID: 255714-009 Cleanup Method: EPA 3630C
 Moisture: 20%

Analyte	Result	RL
Diesel C10-C24	8.0 Y	1.2
Motor Oil C24-C36	ND	6.2

Surrogate	%REC	Limits
o-Terphenyl	135	64-136

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

Total Extractable Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3550B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	04/17/14
Units:	mg/Kg	Received:	04/17/14
Basis:	dry	Prepared:	04/21/14
Batch#:	210271		

Field ID: APEX-S7-5.5-041714 Diln Fac: 1.000
 Type: SAMPLE Analyzed: 04/22/14
 Lab ID: 255714-010 Cleanup Method: EPA 3630C
 Moisture: 29%

Analyte	Result	RL
Diesel C10-C24	4.1 Y	1.4
Motor Oil C24-C36	11	7.0

Surrogate	%REC	Limits
o-Terphenyl	104	64-136

Field ID: APEX-S7-9.0-041714 Diln Fac: 1.000
 Type: SAMPLE Analyzed: 04/22/14
 Lab ID: 255714-012 Cleanup Method: EPA 3630C
 Moisture: 23%

Analyte	Result	RL
Diesel C10-C24	ND	1.3
Motor Oil C24-C36	ND	6.5

Surrogate	%REC	Limits
o-Terphenyl	92	64-136

Field ID: APEX-S13-4.0-041714 Diln Fac: 1.000
 Type: SAMPLE Analyzed: 04/22/14
 Lab ID: 255714-013 Cleanup Method: EPA 3630C
 Moisture: 26%

Analyte	Result	RL
Diesel C10-C24	130	1.3
Motor Oil C24-C36	380	6.7

Surrogate	%REC	Limits
o-Terphenyl	122	64-136

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

Total Extractable Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3550B
Project#:	2013-094	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	04/17/14
Units:	mg/Kg	Received:	04/17/14
Basis:	dry	Prepared:	04/21/14
Batch#:	210271		

Field ID: APEX-S13-7.5-041714 Diln Fac: 1.000
 Type: SAMPLE Analyzed: 04/22/14
 Lab ID: 255714-016 Cleanup Method: EPA 3630C
 Moisture: 26%

Analyte	Result	RL
Diesel C10-C24	2.5 Y	1.3
Motor Oil C24-C36	ND	6.7

Surrogate	%REC	Limits
o-Terphenyl	64	64-136

Field ID: APEX-S13-9.0-041714 Diln Fac: 1.000
 Type: SAMPLE Analyzed: 04/23/14
 Lab ID: 255714-017 Cleanup Method: EPA 3630C
 Moisture: 25%

Analyte	Result	RL
Diesel C10-C24	ND	1.3
Motor Oil C24-C36	9.7	6.6

Surrogate	%REC	Limits
o-Terphenyl	119	64-136

Type: BLANK Analyzed: 04/22/14
 Lab ID: QC736922 Cleanup Method: EPA 3630C
 Diln Fac: 1.000

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

Surrogate	%REC	Limits
o-Terphenyl	135	64-136

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

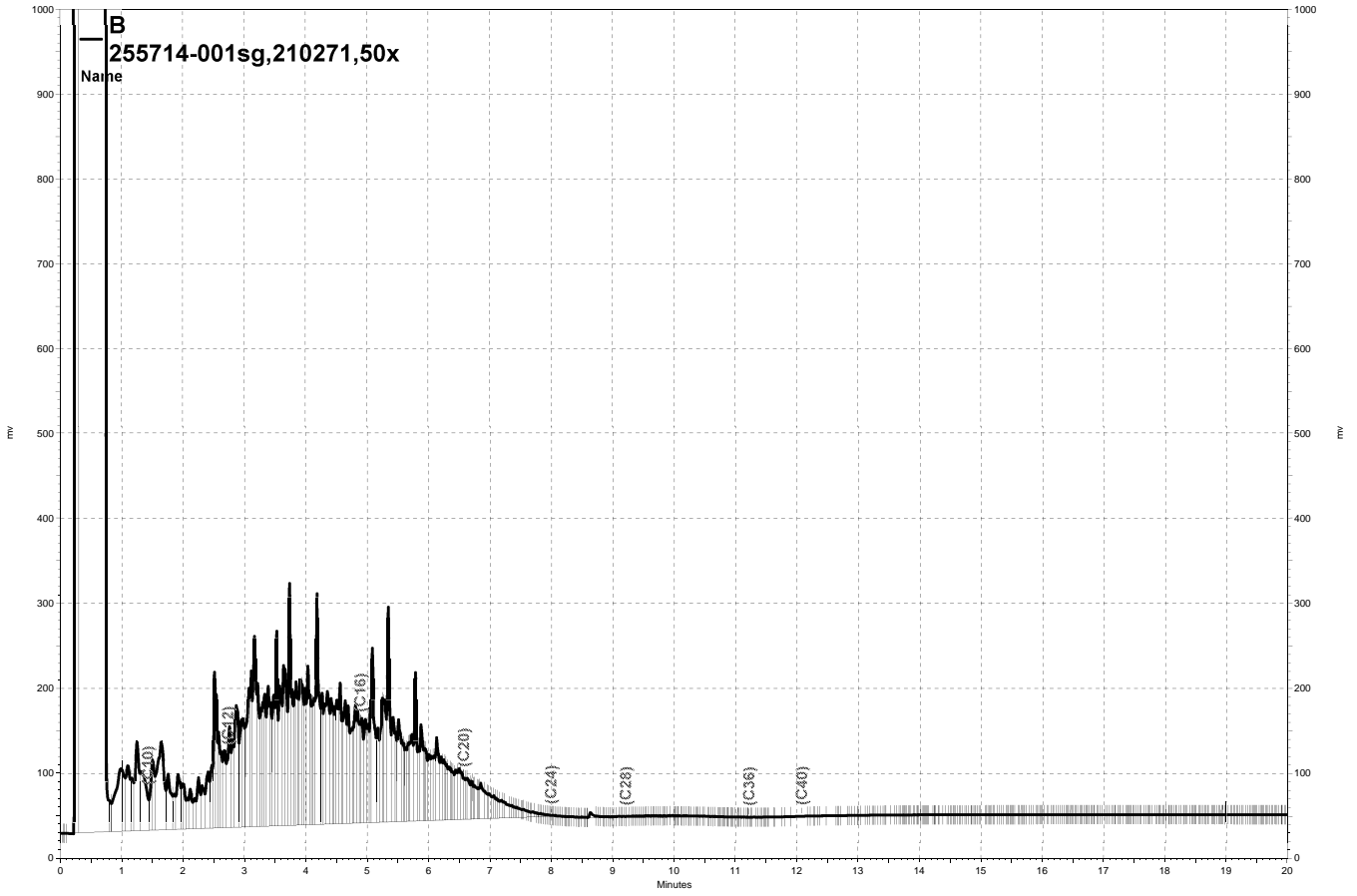
Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3550B
Project#:	2013-094	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC736923	Batch#:	210271
Matrix:	Soil	Prepared:	04/21/14
Units:	mg/Kg	Analyzed:	04/22/14

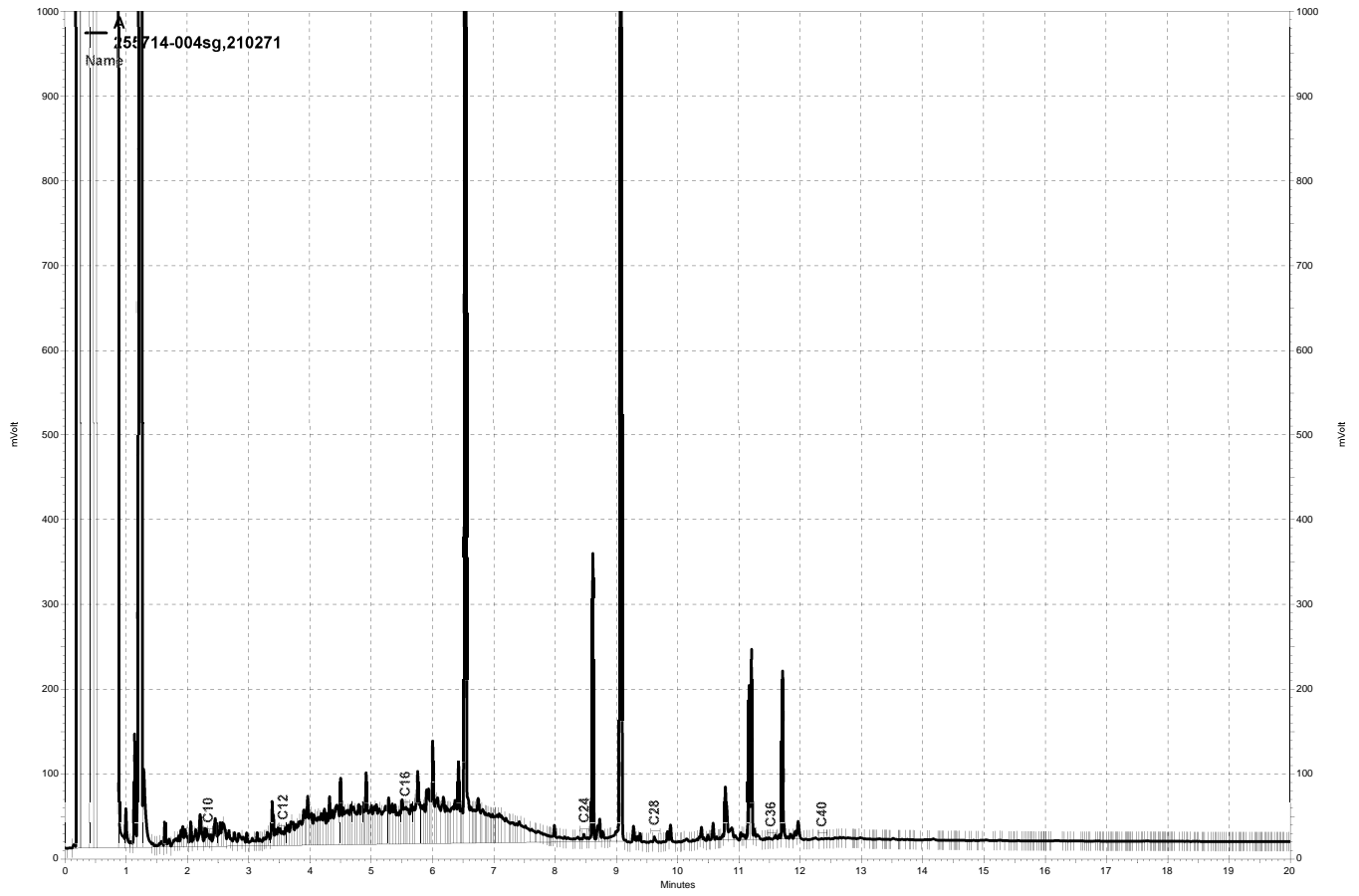
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.92	50.42	101	61-132

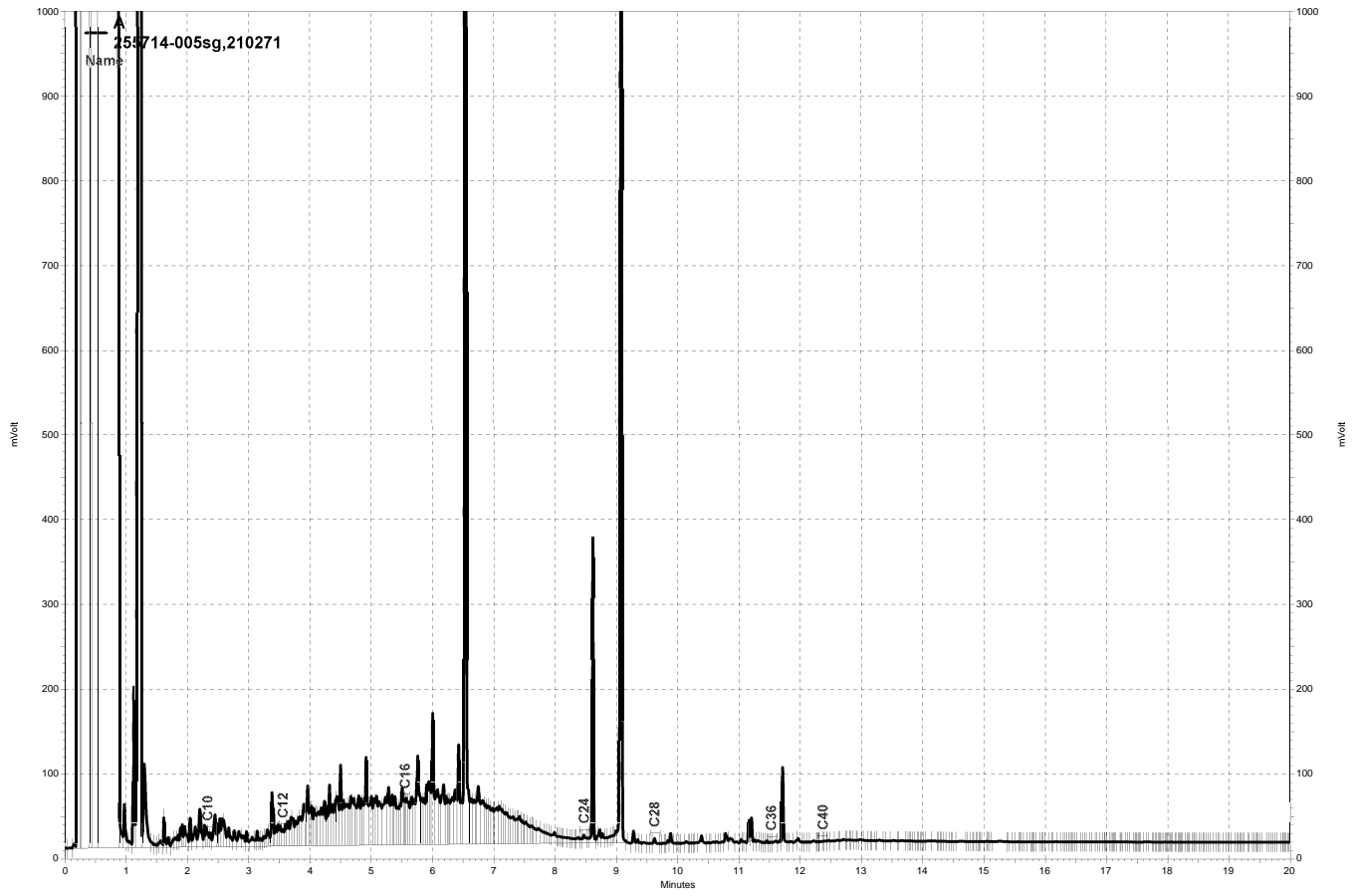
Surrogate	%REC	Limits
o-Terphenyl	122	64-136



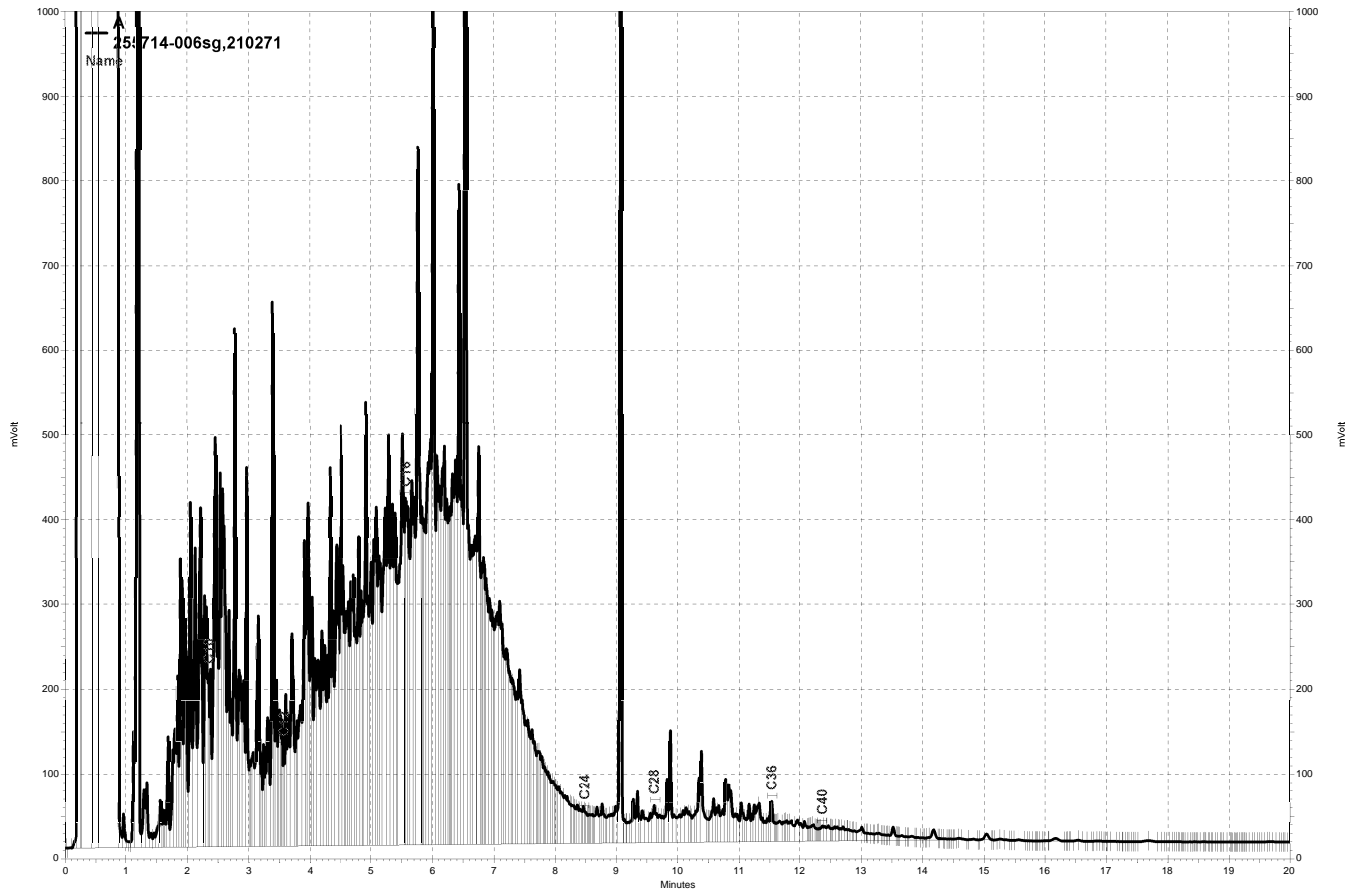
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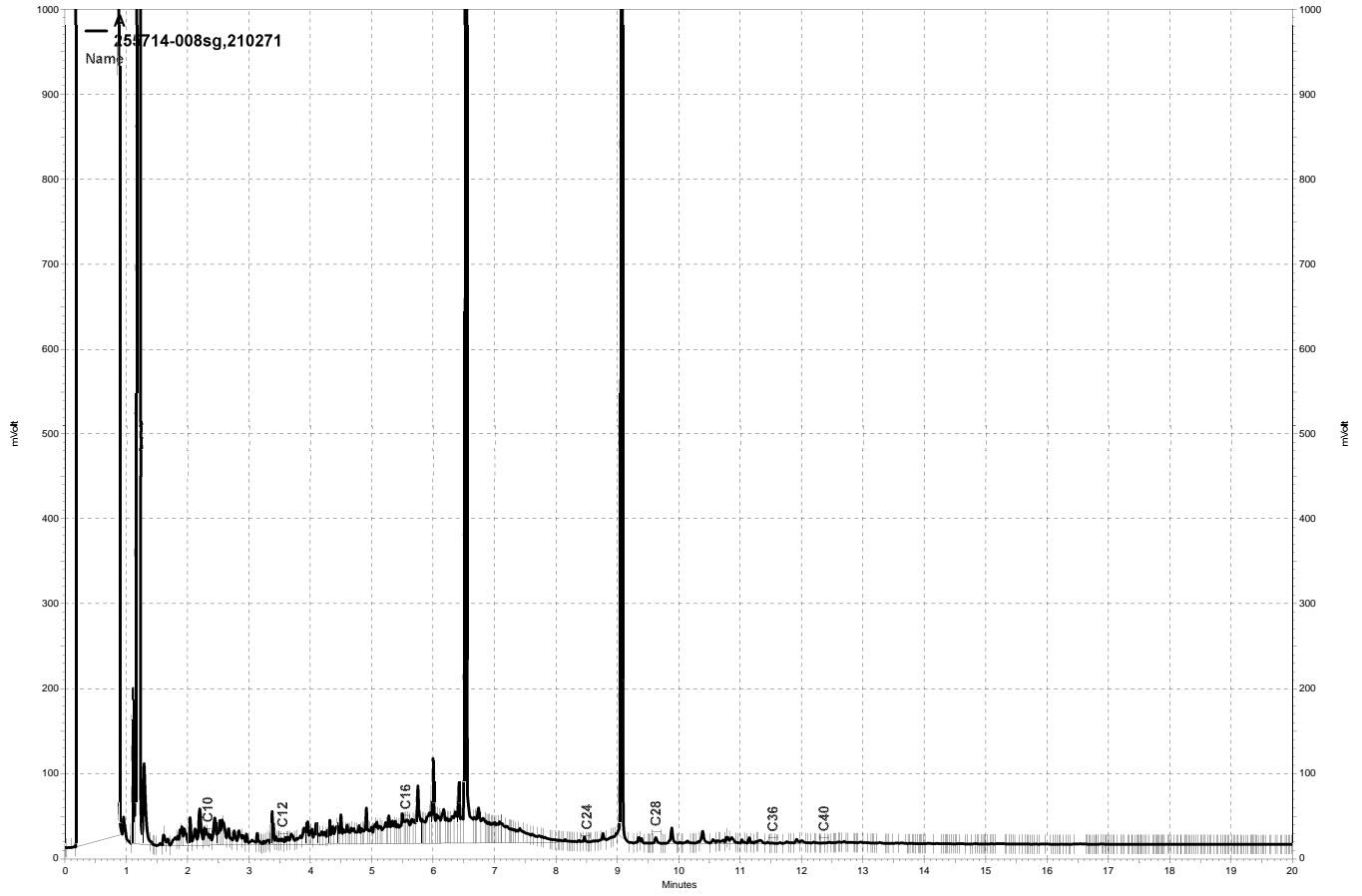
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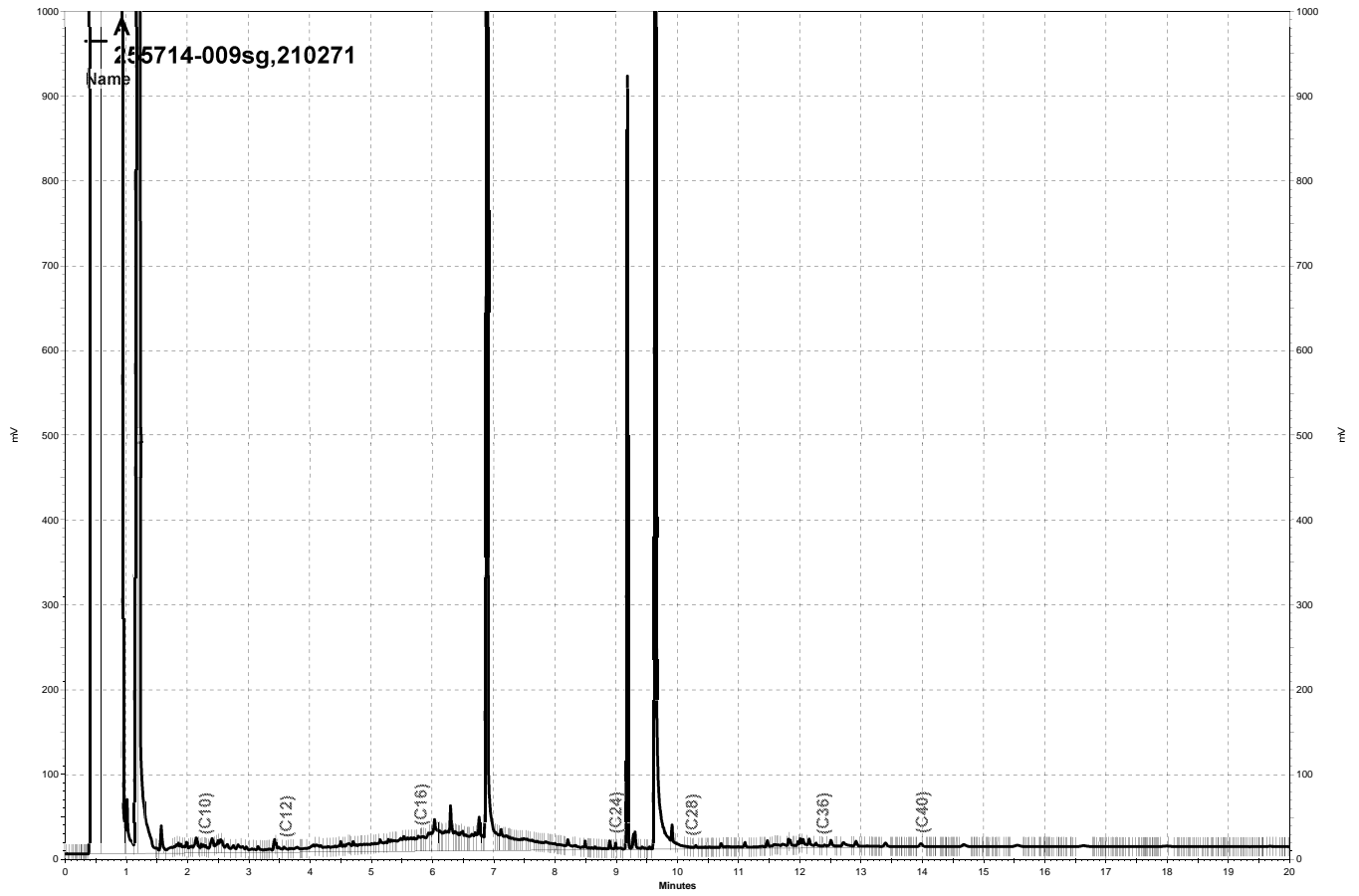
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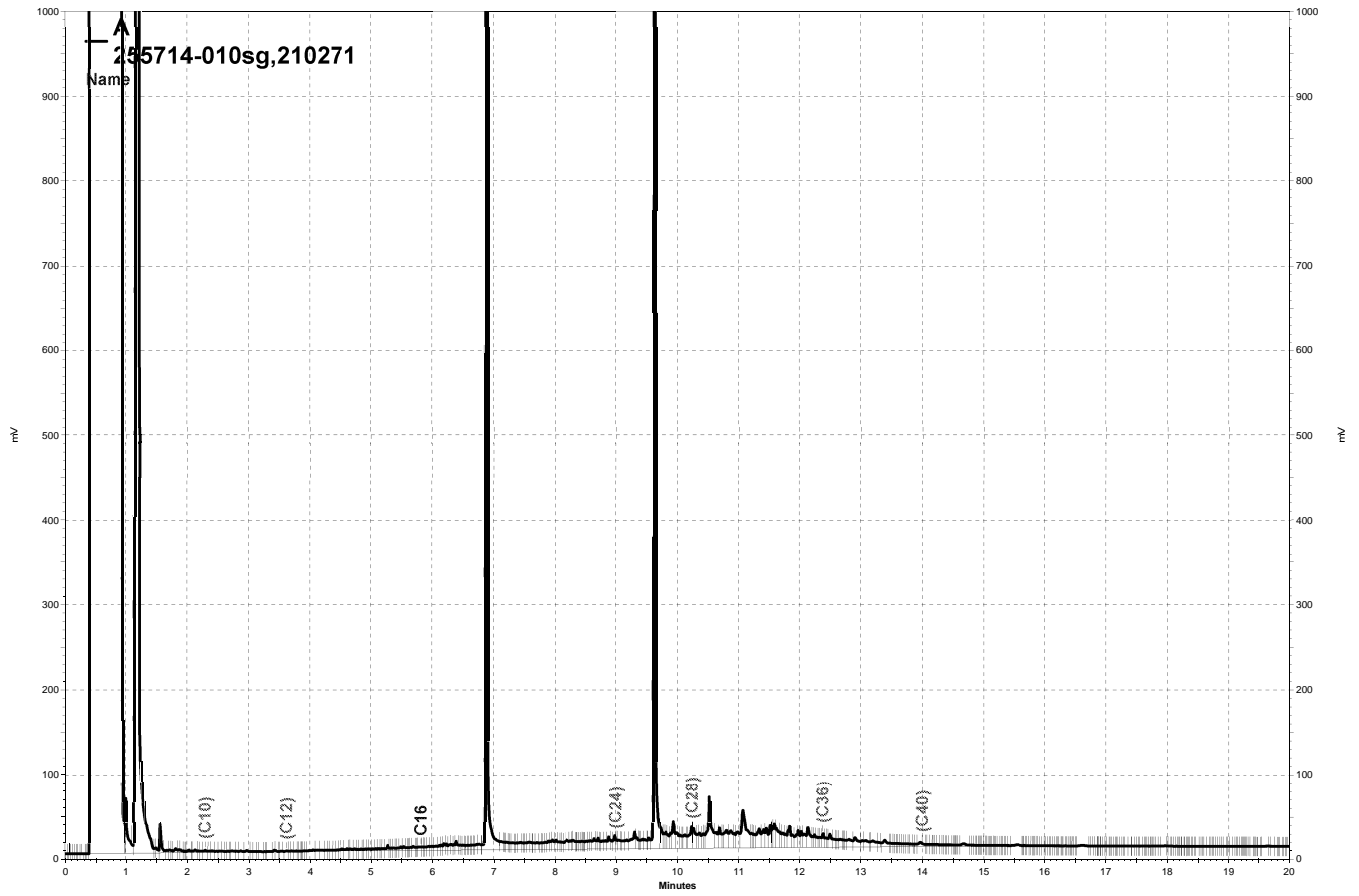
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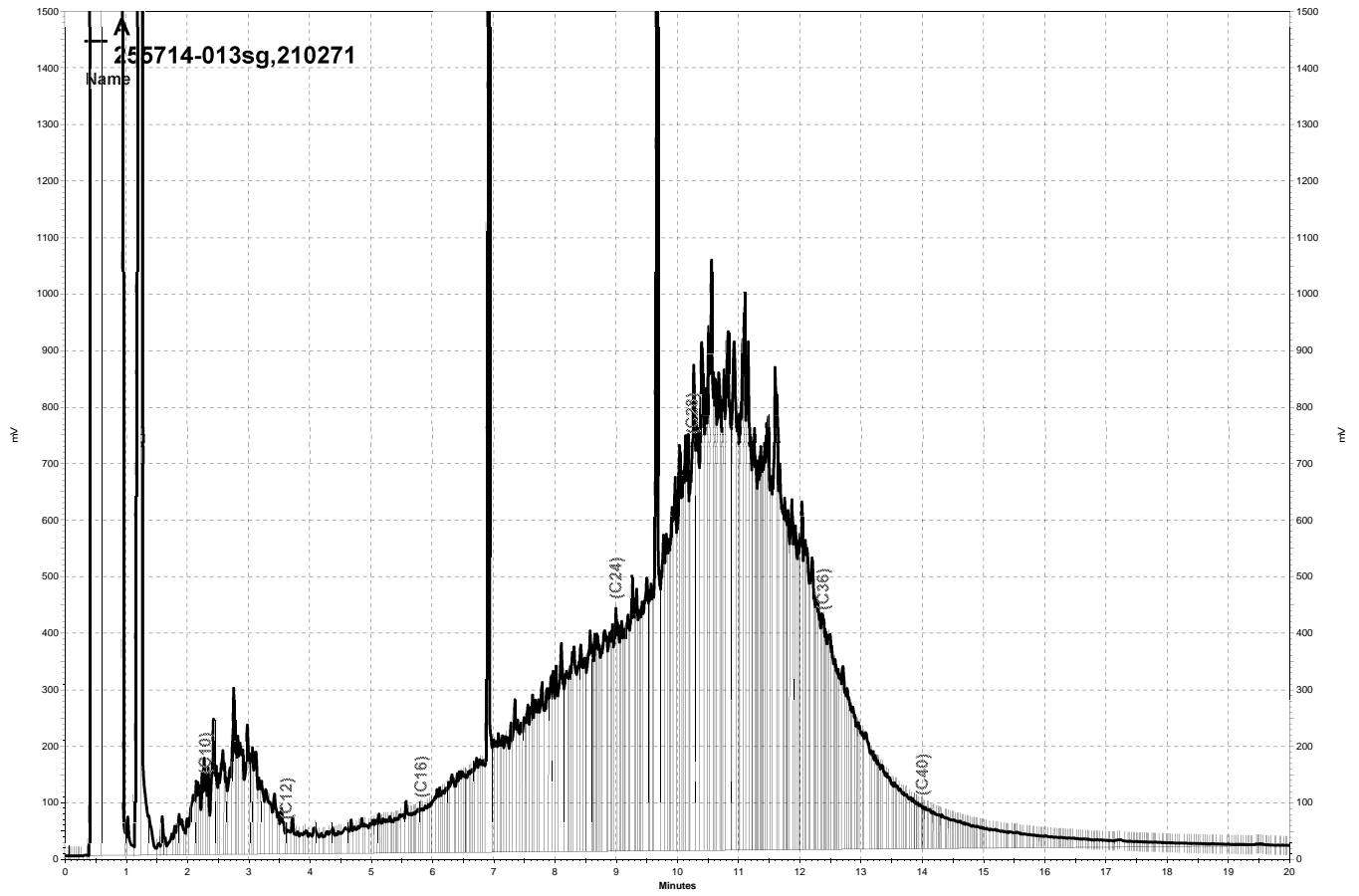
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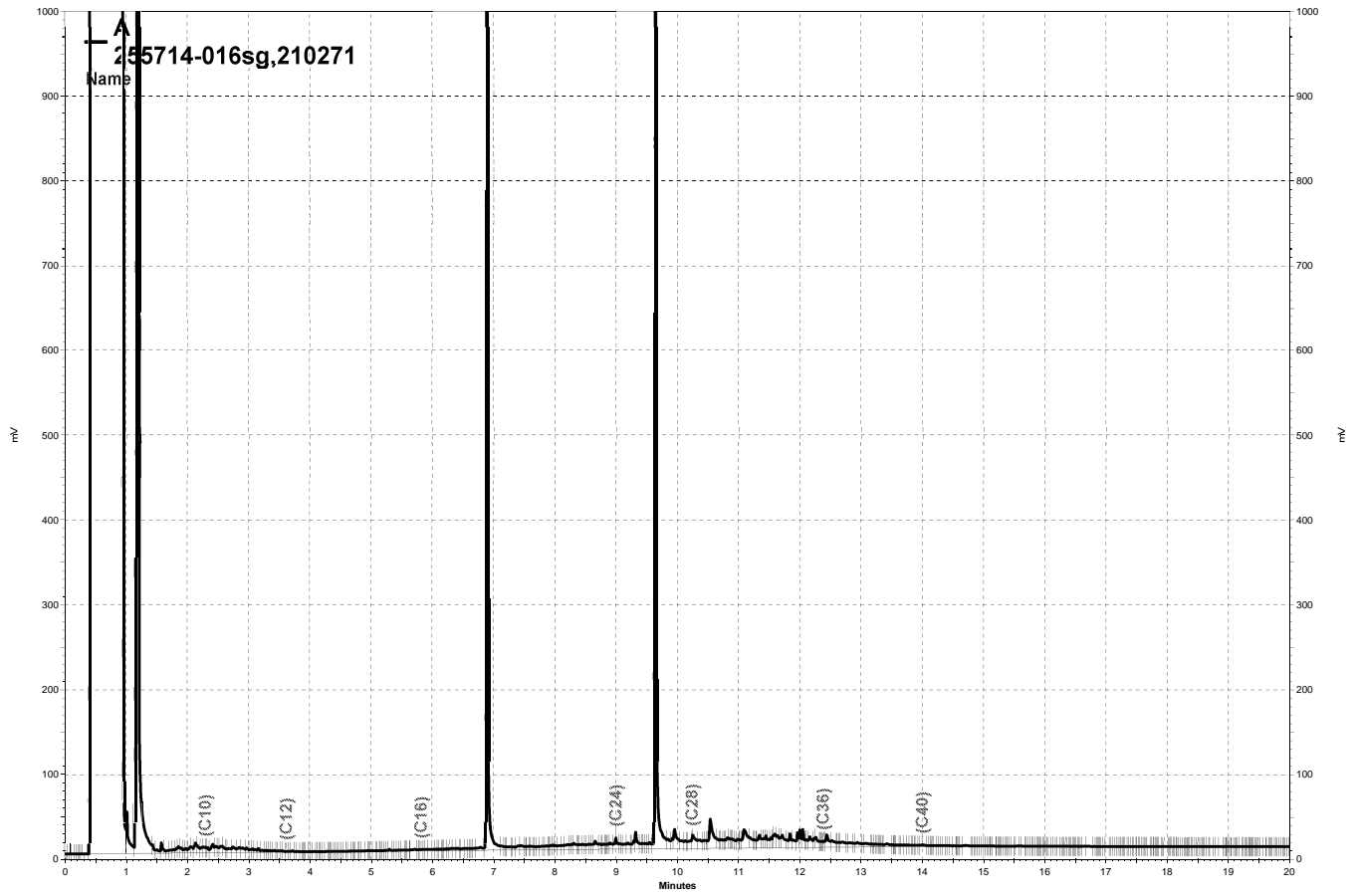
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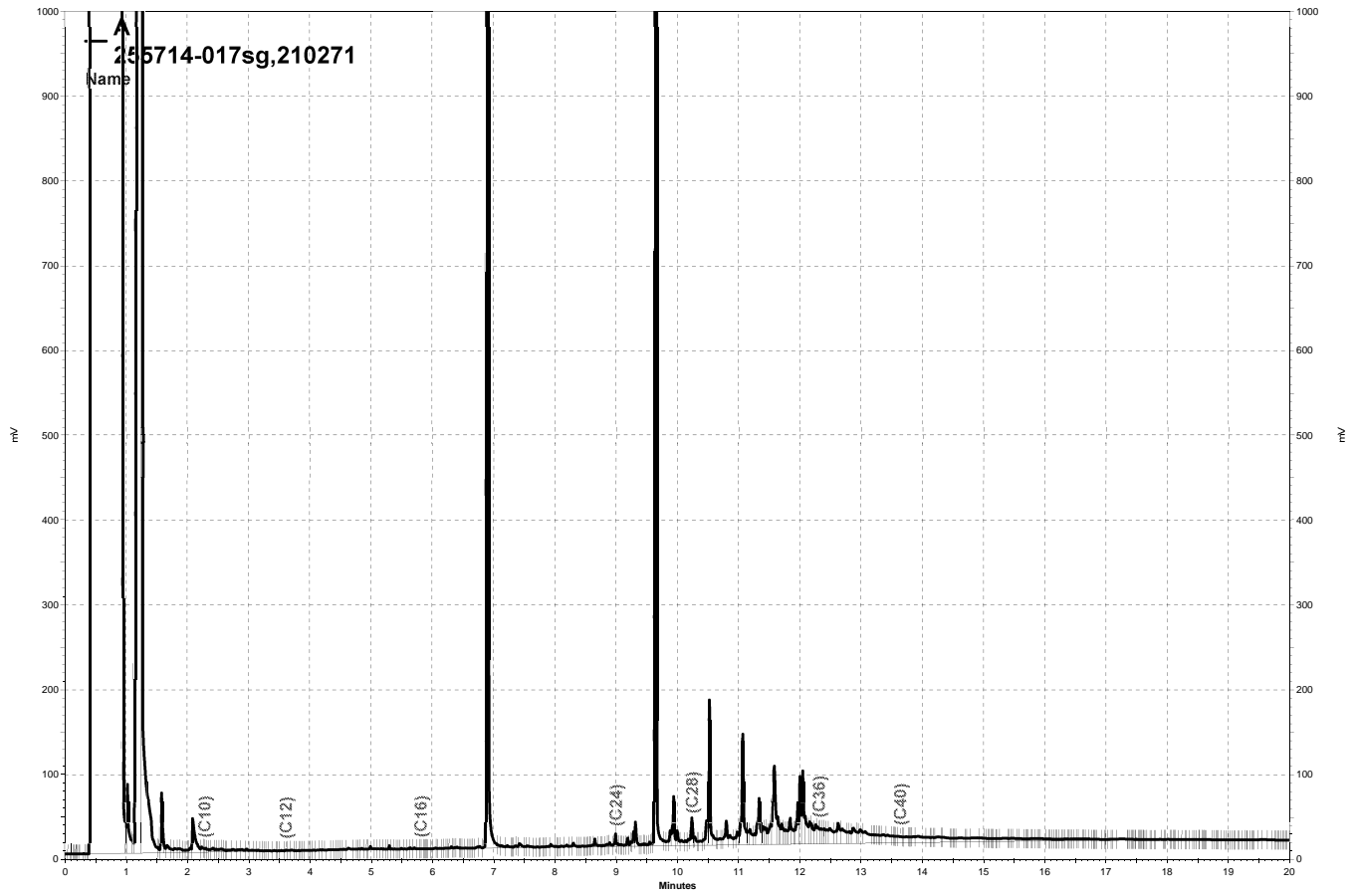
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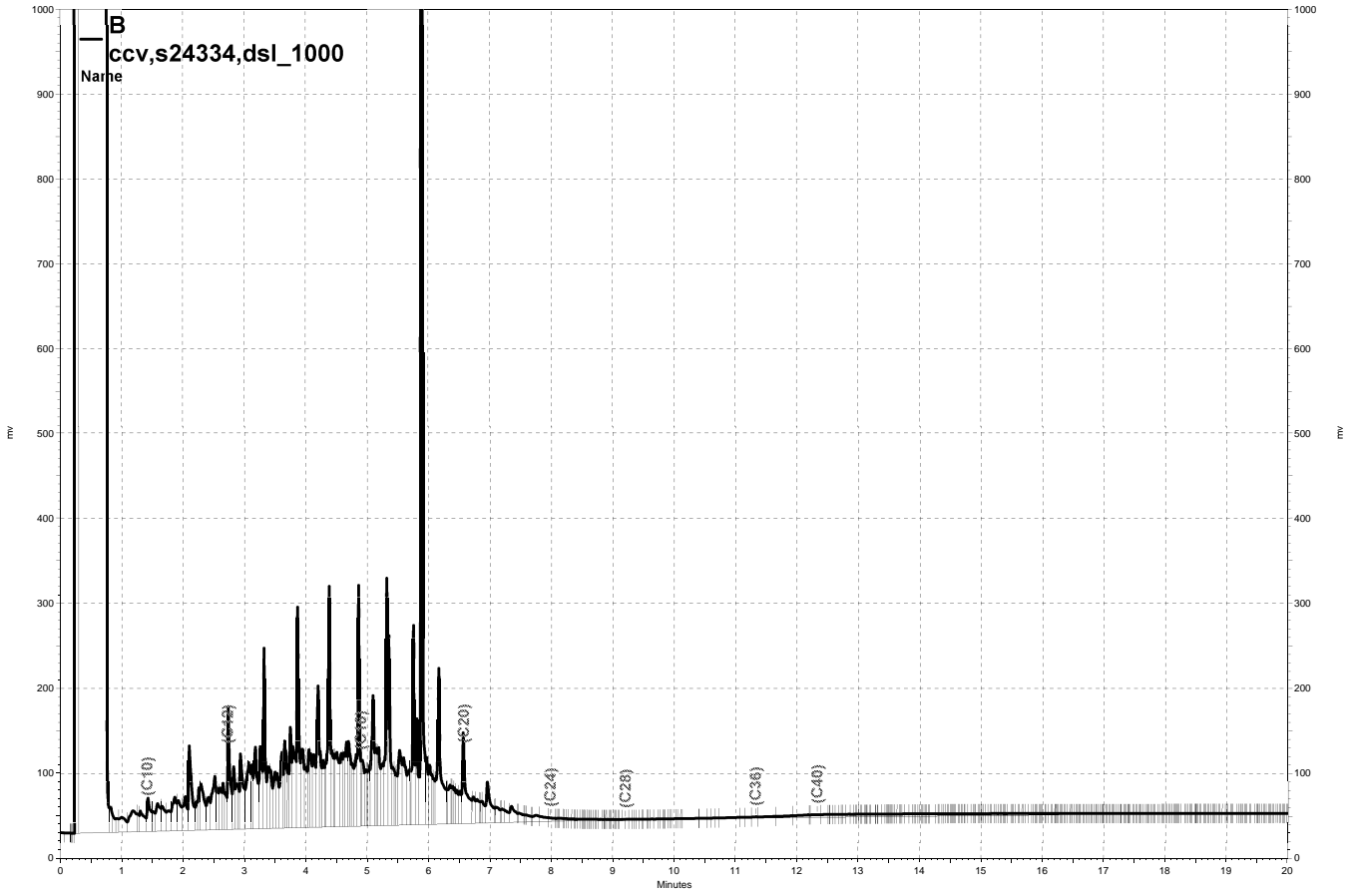
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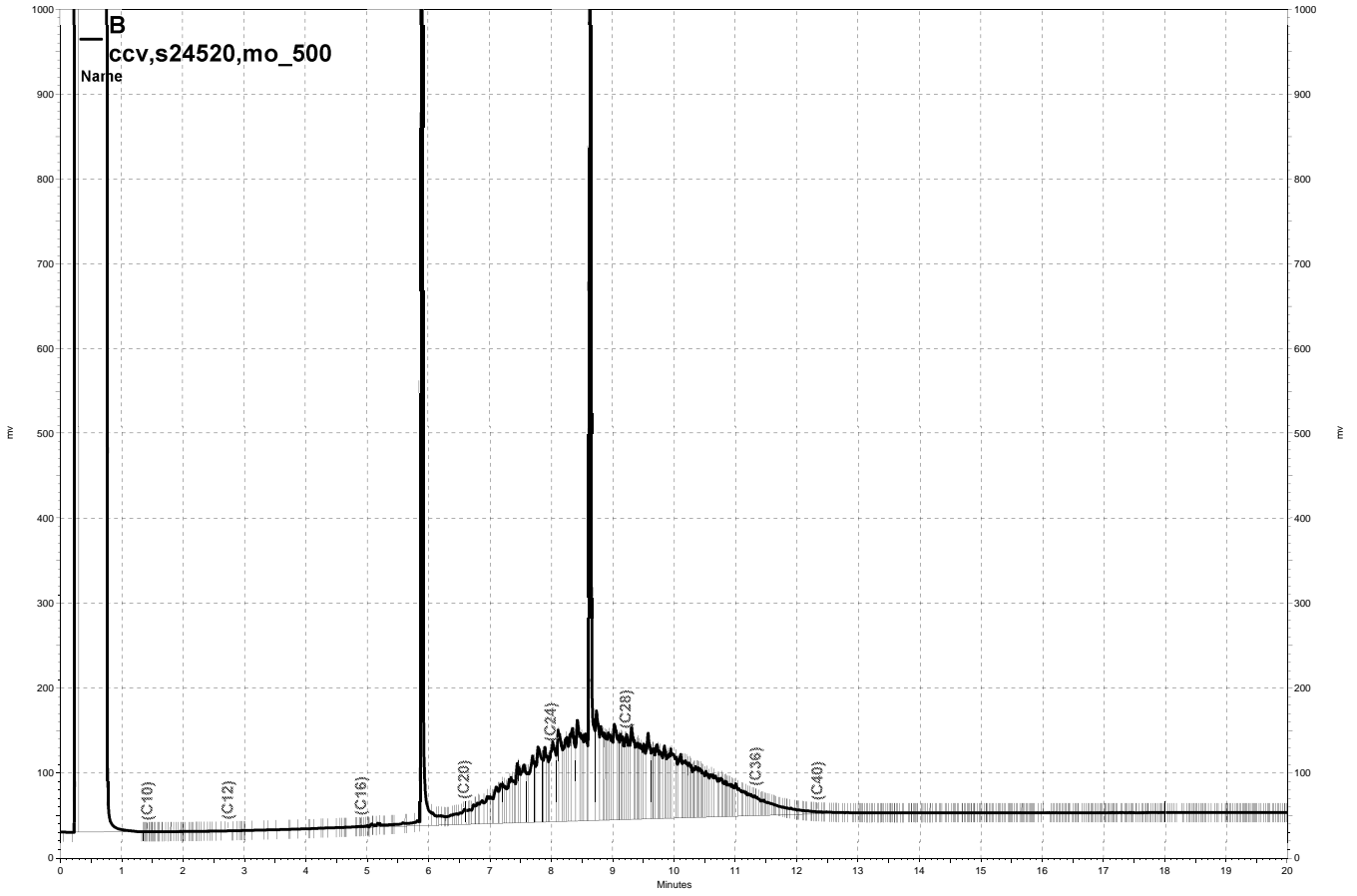
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California LUFT Metals			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3050B
Project#:	2013-094	Analysis:	EPA 6010B
Field ID:	APEX-WP-SOIL-041714	Batch#:	210317
Matrix:	Soil	Sampled:	04/17/14
Units:	mg/Kg	Received:	04/17/14
Basis:	dry	Prepared:	04/22/14
Diln Fac:	1.000	Analyzed:	04/22/14

Type: SAMPLE Moisture: 30%
Lab ID: 255714-018

Analyte	Result	RL
Cadmium	0.46	0.35
Chromium	52	0.35
Lead	24	0.35
Nickel	59	0.35
Zinc	80	1.4

Type: BLANK Lab ID: QC737127

Analyte	Result	RL
Cadmium	ND	0.25
Chromium	ND	0.25
Lead	ND	0.25
Nickel	ND	0.25
Zinc	ND	1.0

ND= Not Detected
RL= Reporting Limit

Batch QC Report

California LUFT Metals			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3050B
Project#:	2013-094	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	210317
Units:	mg/Kg	Prepared:	04/22/14
Diln Fac:	1.000	Analyzed:	04/22/14

Type: BS Lab ID: QC737128

Analyte	Spiked	Result	%REC	Limits
Cadmium	10.00	10.47	105	80-120
Chromium	100.0	103.9	104	80-120
Lead	100.0	96.85	97	80-120
Nickel	25.00	25.46	102	80-120
Zinc	25.00	25.68	103	80-120

Type: BSD Lab ID: QC737129

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Cadmium	10.00	9.932	99	80-120	5	20
Chromium	100.0	98.66	99	80-120	5	20
Lead	100.0	92.03	92	80-120	5	20
Nickel	25.00	24.19	97	80-120	5	20
Zinc	25.00	24.29	97	80-120	6	20

RPD= Relative Percent Difference

Batch QC Report

California LUFT Metals			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3050B
Project#:	2013-094	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	210317
MSS Lab ID:	255821-001	Sampled:	04/11/14
Matrix:	Soil	Received:	04/11/14
Units:	mg/Kg	Prepared:	04/22/14
Basis:	as received	Analyzed:	04/22/14
Diln Fac:	1.000		

Type: MS Lab ID: QC737130

Analyte	MSS Result	Spiked	Result	%REC	Limits
Cadmium	6.166	10.87	15.66	87	72-120
Chromium	86.71	108.7	188.2	93	61-120
Lead	95.59	108.7	171.2	70	52-122
Nickel	73.48	27.17	94.18	76	46-135
Zinc	1,815	27.17	1,234 >LR	-2138 NM	39-141

Type: MSD Lab ID: QC737131

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Cadmium	9.709	13.35	74	72-120	9	22
Chromium	97.09	170.7	87	61-120	4	31
Lead	97.09	177.3	84	52-122	9	49
Nickel	24.27	89.34	65	46-135	2	37
Zinc	24.27	1,076 >LR	-3045 NM	39-141	NC	37

NC= Not Calculated

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

>LR= Response exceeds instrument's linear range

RPD= Relative Percent Difference

Moisture			
Lab #:	255714	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	METHOD
Project#:	2013-094	Analysis:	ASTM D2216/CLP
Analyte:	Moisture, Percent	Batch#:	210233
Matrix:	Soil	Sampled:	04/17/14
Units:	%	Received:	04/17/14
Diln Fac:	1.000	Analyzed:	04/18/14

Field ID	Lab ID	Result	RL
APEX-S10-4.5-041714	255714-001	25	1
APEX-S10-8.0-041714	255714-004	22	1
APEX-S10-9.0-041714	255714-005	20	1
APEX-S5-4.5-041714	255714-006	26	1
APEX-S5-7.5-041714	255714-008	27	1
APEX-S5-9.0-041714	255714-009	20	1
APEX-S7-5.5-041714	255714-010	29	1
APEX-S7-9.0-041714	255714-012	23	1
APEX-S13-4.0-041714	255714-013	26	1
APEX-S13-7.5-041714	255714-016	26	1
APEX-S13-9.0-041714	255714-017	25	1
APEX-WP-SOIL-041714	255714-018	30	1

RL= Reporting Limit

Batch QC Report

Moisture				
Lab #:	255714	Location:	APEX	
Client:	Engineering/Remediation Resource Grp	Prep:	METHOD	
Project#:	2013-094	Analysis:	ASTM D2216/CLP	
Analyte:	Moisture, Percent	Units:	%	
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000	
Type:	SDUP	Batch#:	210233	
MSS Lab ID:	255768-001	Sampled:	04/16/14	
Lab ID:	QC736783	Received:	04/18/14	
Matrix:	Soil	Analyzed:	04/18/14	
MSS Result	Result	RL	RPD	Lim
27.36	27.80	1.000	2	24

RL= Reporting Limit

RPD= Relative Percent Difference



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

Laboratory Job Number 256605
ANALYTICAL REPORT

Engineering/Remediation Resource Grp
4585 Pacheco Blvd.
Martinez, CA 94553

Project : 2013-094
Location : APEX
Level : II

Sample ID
APEX-S13-GW-041714

Lab ID
256605-001

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

Signature: _____

Tracy Babjar
Project Manager
tracy.babjar@ctberk.com
(510) 204-2226

Date: 05/13/2014

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 256605
Client: Engineering/Remediation Resource Grp
Project: 2013-094
Location: APEX
Request Date: 05/09/14
Samples Received: 04/17/14

This data package contains sample and QC results for one water sample, requested for the above referenced project on 05/09/14. The sample was received cold and intact.

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

256605-001 was analyzed outside of hold time; affected data was qualified with "b". No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):

256605-001 was prepared outside of hold time; affected data was qualified with "b". No other analytical problems were encountered.

CHAIN OF CUSTODY

Page 2 of 2



ENVIRONMENTAL ANALYTICAL TESTING LABORATORY
In Business Since 1978

2323 Fifth Street
Berkeley, CA 94710

C&T LOGIN # 255714

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

Project No: 2013-094 Sampler: BRI FOSTER
 Project Name: APEX REFRIGERATION Report To: ERIK OEHLSCHLAGER
 Project P. O. No: 2013-094 Company: ERLGG
 EDD Format: Report Level II III IV Telephone: (925) 909-0750
 Turnaround Time: RUSH Standard Email: ERIK.OEHLSCHLAGER@ERLGG.COM

Chain of Custody #

ANALYTICAL REQUEST	
TPH - Purgeables (EPA 8015) - 4oz	X
TPH Extractables (EPA 8015) - 2oz	X
TPH - Purgeables (EPA 8015) 40 mL	X
TPH - Extractables (EPA 8015) 300 mL	X
LCFT Metals (Cd, Cr, Ni, Pb, Zn)	X
↳ by EPA 6010 B (47802145)	X
↳ w/ Silver Gel Cleanup	X
↳ w/ Silver Gel Cleanup	X
Hold After Analyzing	X
↳ composite	X
Mr. Shaw for All Stays	X

← Analyze ASAP 5-9-14

Lab No.	Sample ID.	SAMPLING		MATRIX	# of Containers	CHEMICAL PRESERVATIVE						
		Date Collected	Time Collected			Water	Solid	HCl	H2SO4	HNO3	NaOH	None
14	TB-041714	4-17-14	12:00	X	2	X						
15	APEX-S13-GW-041714	4-17-14	13:00	X	5	X						
16	APEX-S13-7.5-041714	4-17-14	13:25	X	2	X						
17	APEX-S13-9.0-041714	4-17-14	13:35	X	2	X						
18	APEX-WP-SOIL-041714	4-17-14	13:45	X	4	X						

RECEIVED BY: [Signature] DATE: 04/17/14 TIME: 14:50

RELINQUISHED BY: [Signature] DATE: 4-17-14 TIME: 14:50

Notes:
 * Lab will need to filter sample: APEX-S13-GW-041714
 * 4-point composite that lab will have to composite: APEX-WP-SOIL-041714

SAMPLE RECEIPT Intact Cold On Ice Ambient

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 255714 Date Received 04/17/14 Number of coolers 1
Client ERRG Project APEX REFRIGERATION

Date Opened 04/17/14 By (print) NY (sign) [Signature]
Date Logged in [Signature] By (print) MT (sign) [Signature]

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

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

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

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

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

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

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

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

7. Temperature documentation: * Notify PM if temperature exceeds 6°C
Type of ice used: Wet Blue/Gel None Temp(°C) 15°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? BRT By T. B. [Signature] Date: 4-18-14

COMMENTS

silica gel on all TEFM samples

Can not analyze TB-011714

Detections Summary for 256605

Client : Engineering/Remediation Resource Grp
 Project : 2013-094
 Location : APEX

Client Sample ID : APEX-S13-GW-041714 Laboratory Sample ID : 256605-001

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	290	Y,b	50	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C

Y = Sample exhibits chromatographic pattern which does not resemble standard
 b = See narrative

Total Volatile Hydrocarbons

Lab #:	256605	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Field ID:	APEX-S13-GW-041714	Batch#:	210953
Matrix:	Water	Sampled:	04/17/14
Units:	ug/L	Received:	04/17/14
Diln Fac:	1.000	Analyzed:	05/09/14

Type: SAMPLE Lab ID: 256605-001

Analyte	Result	RL
Gasoline C7-C12	ND b	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	100 b	77-128

Type: BLANK Lab ID: QC739733

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	77-128

b= See narrative
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	256605	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC739732	Batch#:	210953
Matrix:	Water	Analyzed:	05/09/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	948.5	95	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	98	77-128

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	256605	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 5030B
Project#:	2013-094	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	210953
MSS Lab ID:	256518-006	Sampled:	05/07/14
Matrix:	Water	Received:	05/07/14
Units:	ug/L	Analyzed:	05/10/14
Diln Fac:	1.000		

Type: MS Lab ID: QC739734

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	103.9	2,000	1,712	80	74-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	83	77-128

Type: MSD Lab ID: QC739735

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,672	78	74-120	2	27

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	84	77-128

RPD= Relative Percent Difference

Total Extractable Hydrocarbons			
Lab #:	256605	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Field ID:	APEX-S13-GW-041714	Sampled:	04/17/14
Matrix:	Water	Received:	04/17/14
Units:	ug/L	Prepared:	05/09/14
Diln Fac:	1.000	Analyzed:	05/12/14
Batch#:	210957		

Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 256605-001

Analyte	Result	RL
Diesel C10-C24	290 Y b	50
Motor Oil C24-C36	ND b	300

Surrogate	%REC	Limits
o-Terphenyl	129 b	66-129

Type: BLANK Cleanup Method: EPA 3630C
 Lab ID: QC739748

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	101	66-129

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

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	256605	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC739749	Batch#:	210957
Matrix:	Water	Prepared:	05/09/14
Units:	ug/L	Analyzed:	05/12/14

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,984	79	61-120

Surrogate	%REC	Limits
o-Terphenyl	94	66-129

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	256605	Location:	APEX
Client:	Engineering/Remediation Resource Grp	Prep:	EPA 3520C
Project#:	2013-094	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	210957
MSS Lab ID:	256518-006	Sampled:	05/07/14
Matrix:	Water	Received:	05/07/14
Units:	ug/L	Prepared:	05/09/14
Diln Fac:	1.000	Analyzed:	05/12/14

Type: MS Lab ID: QC739750

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	2,154	2,451	4,942	114	65-120

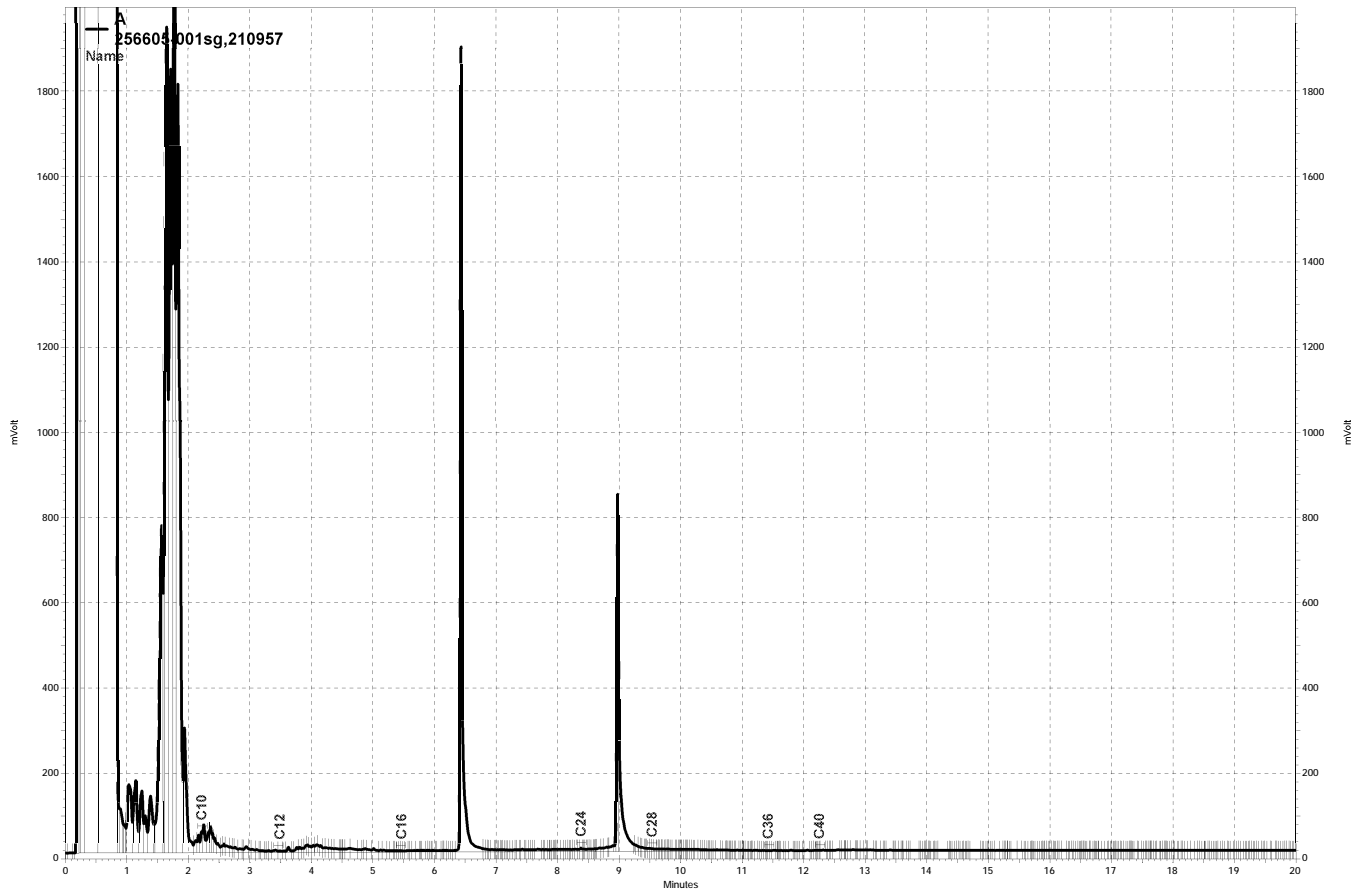
Surrogate	%REC	Limits
o-Terphenyl	86	66-129

Type: MSD Lab ID: QC739751

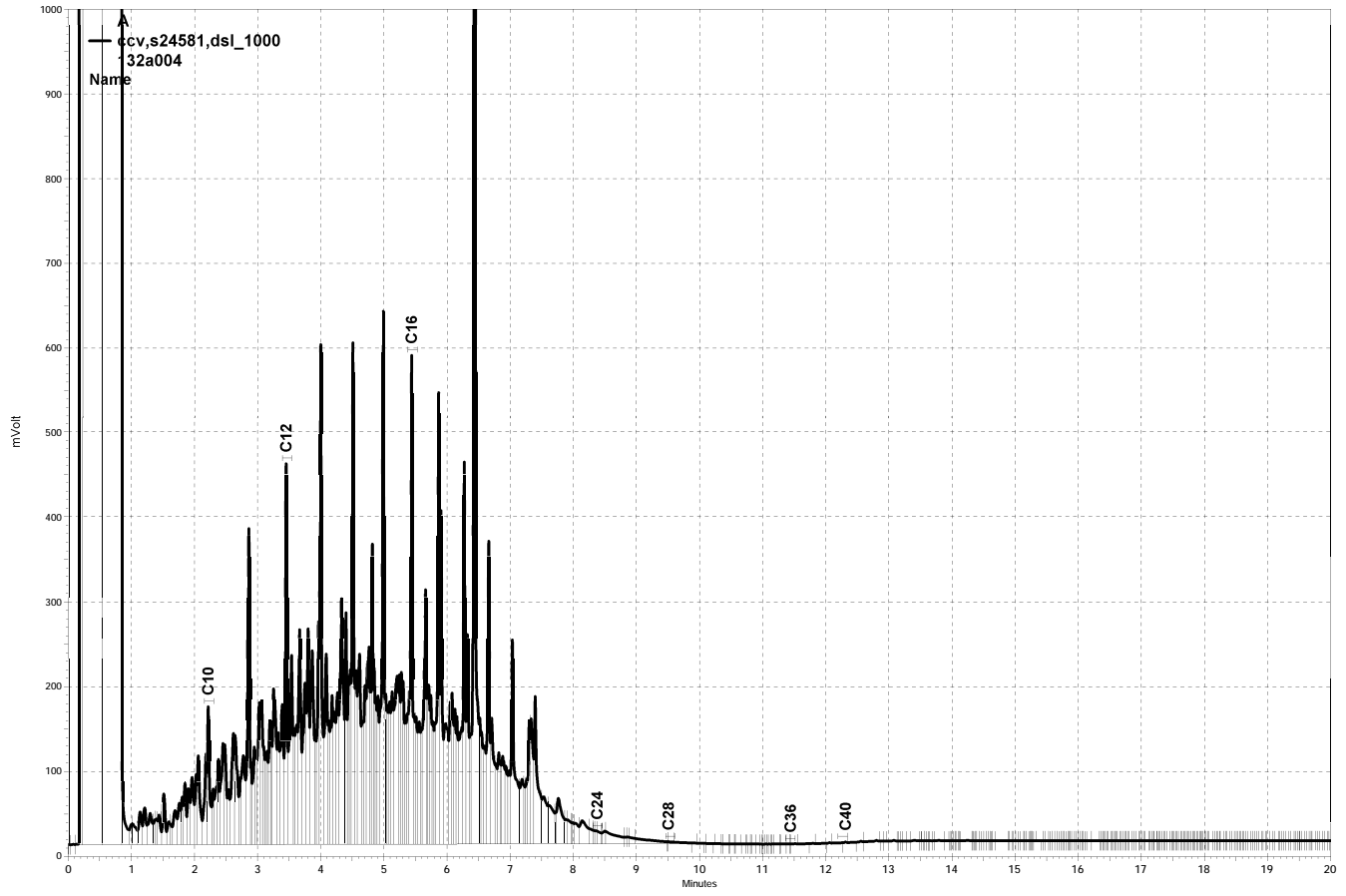
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,451	4,850	110	65-120	2	26

Surrogate	%REC	Limits
o-Terphenyl	83	66-129

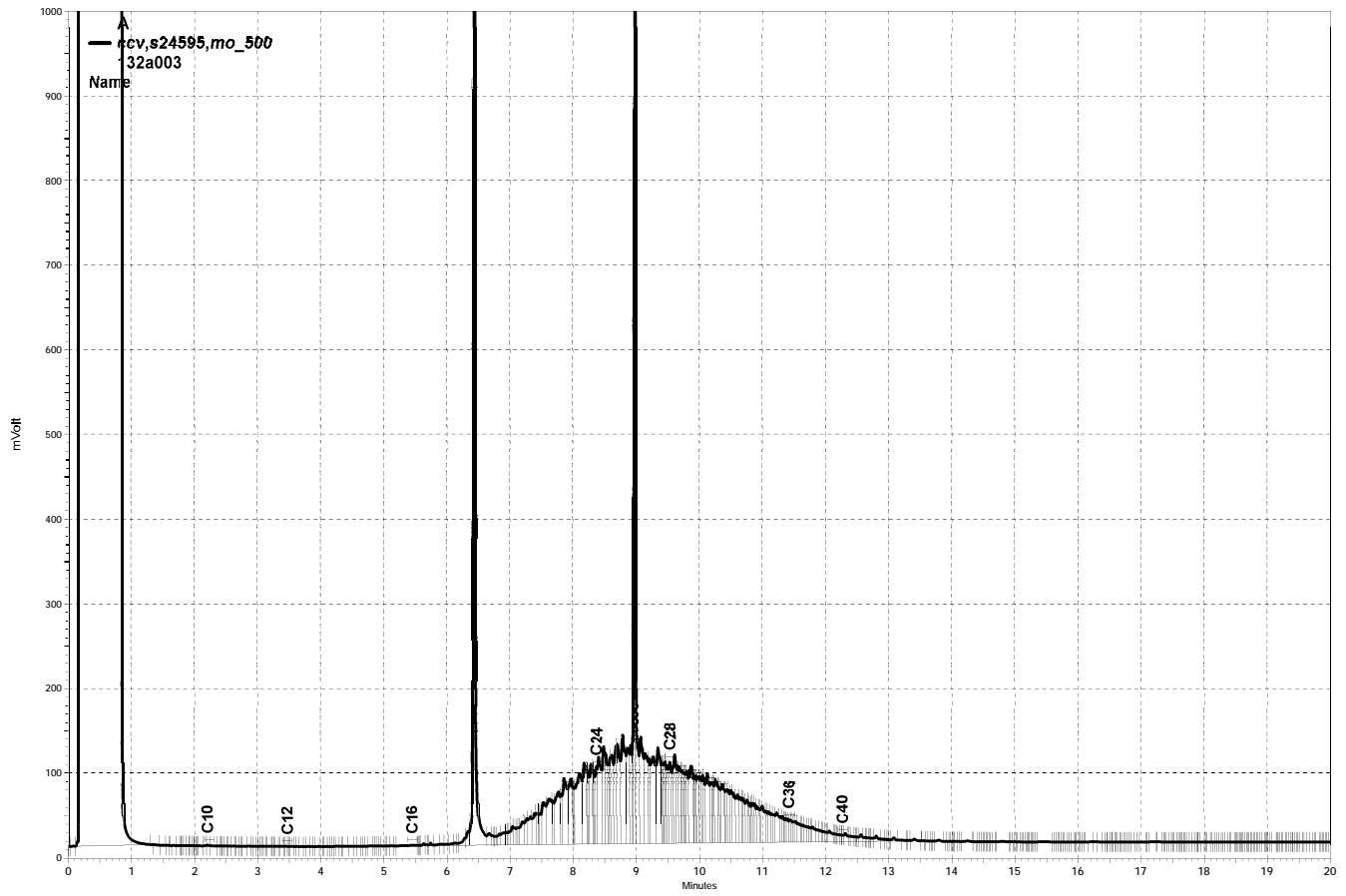
RPD= Relative Percent Difference



— \\Lims\gdrive\ezchrom\Projects\GC26\Data\132a027, A



— \\Lims\gdrive\ezchrom\Projects\GC26\Data\132a004, A



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