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Project Manager

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RECEIVED
By Alameda County Environmental Health 11:06 am, Oct 06, 2017

October 6, 2017

Mr. Mark Detterman
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502-6577

RE: Former Exxon RAS #79374/990 San Pablo Avenue, Albany, California.

Dear Mr. Detterman:

Attached for your review and comment is a copy of the report entitled ***Semi-Annual Soil Vapor Assessment, Third Quarter 2017,*** dated October 6, 2017, for the above-referenced site. The report was prepared by Cardno of Petaluma, California, and details activities related to the subject site.

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

If you have any questions or comments, please contact me at 510.547.8196.

Sincerely,

Jennifer C. Sedlachek
Project Manager

Attachment: Cardno's ***Semi-Annual Soil Vapor Assessment, Third Quarter 2017,*** dated October 6, 2017

cc: w/ attachment
Ms. Muriel T. Blank, Trustee, The Blank Family Trust
Reverend Deborah Blank, Trustee, The Blank Family Trust
Ms. Marcia Blank Kelly, The Blank Family Trust
Mr. Charles Drexler, Esq.

w/o attachment
Mr. Scott Perkins, Cardno

Semi-Annual Soil Vapor Assessment, Third Quarter 2017

Former Exxon Service Station 79374
Alameda County RO 2974

Cardno 2735C.R15

October 6, 2017

Cardno
Shaping the Future

Semi-Annual Soil Vapor Assessment, Third Quarter 2017

Former Exxon Service Station 79374
990 San Pablo Avenue
Albany, California

Alameda County RO 2974

Cardno 2735C.R15

October 6, 2017

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1 Introduction

At the request of ExxonMobil Environmental Services (EMES), on behalf of Exxon Mobil Corporation, Cardno prepared this semi-annual soil vapor assessment for the site, as requested by the Alameda County Department of Environmental Health (ACEH) in a letter dated July 21, 2017 (Appendix A). The work included sampling the soil vapor wells at the site continue to evaluate the risk associated with soil vapor concentrations at the site.

2 Site Description

Former Exxon Service Station 79374 is located at 990 San Pablo Avenue, on the northwestern corner of the intersection of Buchanan Street and San Pablo Avenue, Albany, California (Plate 1). The site is a retail outlet for paint and painting products and is located in an area of mixed commercial and residential land use. The neighboring properties include another retail paint store, a restaurant, a beauty supply store, the City of Albany police department, the City of Albany Fire Department, and residential housing. A Generalized Site Plan is included as Plate 2. A tabular site conceptual model for the site detailing additional site information is included as Appendix B.

3 Geology and Hydrogeology

The site lies at an approximate elevation of 40 feet above msl, and the local topography slopes toward the southwest. The site is located along the eastern margin of the San Francisco Bay within the East Bay Plain (Hickenbottom and Muir, 1988). The surficial deposits in the site vicinity are mapped as Holocene alluvial fan and fluvial deposits (Graymer, 2000). The site is located approximately 1,630 feet north-northwest of Cordornices Creek and approximately 1½ miles southwest of the active northwest trending Hayward fault.

The East Bay Plain is regionally divided into two major groundwater basins: the San Pablo and the San Francisco Basin. These basins are tectonic depressions that are filled primarily with a sequence of coalescing alluvial fans. The San Francisco Basin is further divided into seven sub-areas. The site is located in the Berkeley Sub-Area, which is filled primarily by alluvial deposits that range from 10 to 300 feet thick with poorly defined aquitards (CRWQCB, 1999). Under natural conditions, the direction of groundwater flow in the East Bay Plain is east to west.

Soil boring logs indicate that the soil beneath the site consists predominantly of silt and clay with an apparently continuous coarse-grained unit 2 to 8 feet thick encountered between approximately 8 and 20 feet bgs (EC&A, 2008; Cardno ERI, 2011; Cardno ERI, 2012a). Fill material was encountered in the boring for well SVE3 (located in the former UST pit) to approximately 7 feet bgs. CPT soil borings indicate the presence of predominantly silt and clay between approximately 20 and 60 feet bgs, the maximum depth explored.

Historical groundwater elevation data indicate that DTW ranges from 5 to 11 feet bgs beneath the site with varying groundwater flow directions. The distribution of dissolved-phase hydrocarbons suggests that the dominant groundwater flow direction is west to southwest.

4 Previous Work

Additional site information is included in the FS/CAP, dated February 4, 2015 (Cardno ERI, 2015b).

4.1 Fueling System Activities

In 1983, one used-oil UST and four gasoline USTs were removed and the resulting tank cavity was backfilled with sand and compacted to 90% (City of Albany, 1983).

4.2 Site Assessment Activities

Six exploratory borings (B1 through B6) were advanced on site in 2008. Maximum residual concentrations of TPHg, TPHd, and benzene were reported in the soil samples collected at 10.5 feet bgs from borings B1 and B2, located near the former USTs. Maximum dissolved-phase TPHg, TPHd, and benzene concentrations were also reported in the samples collected from soil borings B1 and B2, and the laboratory reported an immiscible sheen in the samples (EC&A, 2008).

Monitoring wells MW1 through MW6 and borings CPT1/HP1 and CPT2/HP2 were installed on site in 2010. Maximum residual concentrations of TPHg and TPHd in soil were reported in samples collected at 10.5 feet bgs from borings MW3 and MW5, located west of the former USTs. Dissolved-phase hydrocarbons were adequately delineated vertically at the site with petroleum hydrocarbon concentrations below or near the laboratory reporting limits in groundwater samples collected deeper than 27.5 feet bgs (Cardno ERI, 2011).

In January 2012, Cardno ERI installed SVE wells SVE1 through SVE3, AS well AS1, and monitoring well MW3A to be used during feasibility testing (Cardno ERI, 2012a).

In February and March 2014, Cardno ERI installed soil vapor sampling (SVS) wells SVS1 through SVS3 at the site and advanced on-site and off-site borings B7 through B17 (Cardno ERI, 2014).

In December 2014, Cardno ERI installed off-site monitoring wells MW7 and MW8 (Cardno ERI, 2015a).

Off-site wells MW7 and MW8 were installed in December 2014 to evaluate the lateral extent of dissolved-phase hydrocarbons (Cardno ERI, 2015a). Off-site well MW9 and off-site boring B18 were installed in October 2015 along with on-site wells SVE4 through SVE7 (Cardno, 2015a).

4.3 Remediation Activities

According to City of Albany Building Permit 82-0708, the USTs were removed and the resulting excavation backfilled in 1983 (City of Albany, 1983). It is unknown if over-excavation was performed during UST removal.

Between January 31 and February 1, 2012, Cardno ERI conducted three four-hour feasibility tests: a DPE only test, a combined AS and DPE test, and an AS only test. Approximately 93 pounds of TPHg and 0.09 pound of benzene were removed during feasibility testing (Cardno ERI, 2012b).

Cardno ERI prepared a FS/CAP, dated February 4, 2015. Cardno ERI recommended conducting DPE HIT events at the site to remediate hydrocarbon concentrations in soil, soil vapor, and groundwater and installing four extraction wells along the north and west sides of the site and monitoring wells off site to the southwest (Cardno ERI, 2015b).

Between October 21 and 29, 2015, Cardno conducted a HIT event at the site using a mobile SVS system. Approximately 75 pounds of TPHg and 0.09 pound of benzene were removed during approximately 40 hours of operation (Cardno, 2015b).

In March 2017, a site-specific discharge permit was issued by the Bay Area Air Quality Management District (BAAQMD). An additional HIT event will be scheduled as soon as power is acquired from Pacific Gas & Electric (PG&E). A power pole was installed during the first week of October 2017. It is expected to take approximately

four weeks to secure the power connection from PG&E. Remediation activities are expected to commence during November 2017.

4.4 Groundwater Monitoring Activities

Groundwater monitoring began at the site in 2010 with the installation of wells MW1 through MW6. Maximum concentrations were reported in the UST cavity and southwest of the UST cavity in wells MW3, MW3A, MW4, and MW5. Concentrations of MTBE are typically not reported above the laboratory reporting limit.

4.5 Soil Vapor Monitoring Activities

Soil vapor monitoring began at the site in 2014 with the installation of wells SVS1 through SVS3, screened from 5.4 to 5.6 feet bgs (Cardno ERI, 2014). Shallow wells SVS4 through SVS8, screened from 2.1 to 2.3 feet bgs, were installed in 2016 (Cardno, 2016).

Sampling results indicate that maximum concentrations are present in the deeper wells with concentrations of TPHg and benzene exceeding screening levels. Concentrations in the shallow wells are one to three orders of magnitude lower than the deeper wells. The attenuation shown between approximately 5.5 and 2.2 feet indicate that concentrations decrease prior to reaching the building slabs (Cardno, 2016). Concentrations and/or reporting limits have exceeded select screening levels in shallow wells SVS7 and SVS8, located near the commercial building on site.

5 Soil Vapor Sampling

On August 24, 2017, soil vapor samples were collected from the soil vapor wells installed at the site. Due to wet and/or saturated conditions, samples were not collected from well SVS5. Due to a potential leak in the well seal, samples were not collected from well wells SVS1 and SVS2.

On September 5, 2017, Cardno chipped out the top layer of concrete inside the well boxes of wells SVS1, SVS2, and SVS4. Bentonite grout was then poured into the well box, sealing the vault. Cardno collected a sample from well SVS1, but was unable to collect a sample from well SVS2 due to the continued presence of a potential leak.

The samples were collected using a custom-made purging manifold consisting of airtight valves, a flow regulator, pressure and vacuum gauges, and a vacuum pump capable of producing a vacuum of approximately 30 inches of mercury (in Hg). The manifold also includes a port that connects sample collection vessels and/or sorbent tubes (Summa™ canisters).

Prior to purging and sampling, the manifold was connected to each well, and the tubing and fittings downstream from the wellhead valves were vacuum tested at approximately 20 to 30 in Hg. The sampling manifold and tubing held the applied vacuum for five minutes at each well.

Purge volumes were calculated for each well. One volume of vapor was purged from each well. Prior to sampling, a helium leak test was performed at each well, including a Summa™ canister and its fittings, to check for leaks in the annulus. To assess the potential for leaks in the well annulus, a shroud was placed over the well and Summa™ canister, and helium was introduced into the shroud and maintained at a constant concentration. Helium screening was performed in the field by drawing soil gas into a Tedlar bag via a lung-box and screening the contents of the Tedlar bag with a helium meter. The concentration of helium in the sample divided by the concentration of helium in the shroud provides a measure of the proportion of the sample attributable to leakage. A leak that comprises less than 5% of the sample is insignificant. Helium screening was also performed using laboratory analysis of the contents of the Summa™ canister collected under the shroud. Sampling was conducted at approximately the same rate of purging, at 100 to 200 milliliters per minute. Field data sheets are included in Appendix D.

Cardno submitted soil vapor samples for analysis to H&P Mobil Geochemistry, Inc. and Eurofins Calscience, Inc., California state-certified laboratories, under COC protocol. Laboratory analytical results and sampling methods are summarized in Tables 2A and 2B. Select soil vapor analytical results are illustrated on Plate 3. Laboratory analytical reports are included in Appendix E.

6 Results

The leak detection compound (helium) was reported in wells SVS4 at 0.34% and SVS7 at 0.17%, indicating a minor leak in the well annular seal and sampling equipment. The helium concentration was approximately 10% in the shroud, indicating a leak of approximately 3.4% and 1.7%, respectively. The California EPA states that ambient air leaks of up to 5% are acceptable (DTSC, 2015).

Oxygen concentrations ranged from 5.1% to 9.4% in the deep wells and in shallow well SVS8. Oxygen concentrations ranged from 17% to 21% in the remaining shallow wells, indicating favorable conditions for bio-attenuation at shallower depths.

6.1 Near On-Site Commercial Building

Vapor-phase concentrations in well SVS3 (screened from 5.4 to 5.6 feet bgs) were consistent with or higher than historical results. Concentrations of TPHd, TPHg, and benzene and reporting limits for select constituents exceeded both residential and commercial ESLs in the well.

Vapor-phase concentrations in well SVS7 (screened from 2.1 to 2.3 feet bgs) were below both residential and commercial ESLs, with the exception of TPHd and TPHg, and were one to three orders of magnitude lower than concentrations reported in well SVS3.

Vapor-phase concentrations in well SVS8 (screened from 2.1 to 2.3 feet bgs) increased from the previous result with concentrations of TPHd and TPHg and select reporting limits exceeding both residential and commercial ESLs in the well.

6.1.1 Potential Preferential Pathways

The soil vapor wells near the on-site commercial building are not located within 15 feet of known utilities. Maximum concentrations (well SVS3) are located over 30 feet away from the nearest known utility line. Known utility locations are illustrated on Plate 4.

6.2 Near Adjacent Residential Building

Vapor-phase concentrations in well SVS1 (screened from 5.4 to 5.6 feet bgs) were consistent with historical results. Concentrations of TPHd and TPHg and reporting limits for select constituents exceeded both residential and commercial ESLs.

Vapor-phase concentrations in wells SVS4 and SVS6 (screened from 2.1 to 2.3 feet bgs) were below ESLs, with the exception of chloroform in well SVS4, and were two to four orders of magnitude lower than concentrations reported in well SVS1.

Concentrations of bromodichloromethane and/or chloroform have been reported above ESLs in site wells during select events. Bromodichloromethane and chloroform are common byproducts of drinking water chlorination (ATSDR, 1989; ATSDR, 2016). These concentrations are suspected to be related to leaking water pipes and not operations related to EMES.

6.2.1 Potential Preferential Pathways

An underground electrical line (street lighting) runs adjacent to the wells located along the residential building (Plate 4). Maximum concentrations in this area are present in well SVS1. Concentrations decrease both north along the electrical line (well SVS6) and south along the electrical line (well SVS2) from well SVS1, indicating

that the electrical line is not acting as a conduit for the migration of concentrations. In addition, the electrical line is associated with street lighting and is not installed to depths where maximum concentrations occur.

7 Conclusions

Cardno concludes that concentrations reported in the soil vapor wells warrant additional assessments, additional sampling and active remediation. The attenuation shown between approximately 5 and 2 feet indicate that concentrations decrease prior to reaching the building slabs. Select concentrations in well SVS8 were reported above applicable screening levels during this event, inconsistent with 2016 results for this well and the results of other shallow wells (screened from 2.1 to 2.3 feet bgs) at the site. Continued sampling and the installation of additional sampling points to evaluate fluctuations and effectiveness of remediation is warranted.

8 Site Conceptual Model

A tabular site conceptual model for the site is included in Appendix B.

9 Recommendations and Work in Progress

Cardno recommends initiating active remediation and continued semi-annual soil vapor sampling to further evaluate soil vapor concentrations. Additionally, Cardno recommends performing the additional soil vapor assessment work detailed in the *Work Plan for Additional Soil Vapor Assessment and Response to Comments* (Cardno, 2017).

10 Contact Information

The responsible party contact is Ms. Jennifer C. Sedlachek, ExxonMobil Environmental Services Company, 4096 Piedmont Avenue #194, Oakland, California, 94611. The consultant contact is Mr. Scott Perkins, Cardno, and 601 North McDowell Boulevard, Petaluma, California, 94954. The agency contact is Mr. Mark Detterman, Alameda County Health Care Services Agency, Environmental Health Services, 1131 Harbor Bay Parkway, Suite 250, Alameda, California, 94502-6577.

11 Limitations

For documents cited that were not generated by Cardno, the data taken from those documents is used “as is” and is assumed to be accurate. Cardno does not guarantee the accuracy of this data and makes no warranties for the referenced work performed nor the inferences or conclusions stated in these documents.

This document and the work performed have been undertaken in good faith, with due diligence and with the expertise, experience, capability, and specialized knowledge necessary to perform the work in a good and workmanlike manner and within all accepted standards pertaining to providers of environmental services in California at the time of investigation. No soil engineering or geotechnical references are implied or should be inferred. The evaluation of the geologic conditions at the site for this investigation is made from a limited number of data points. Subsurface conditions may vary away from these data points.

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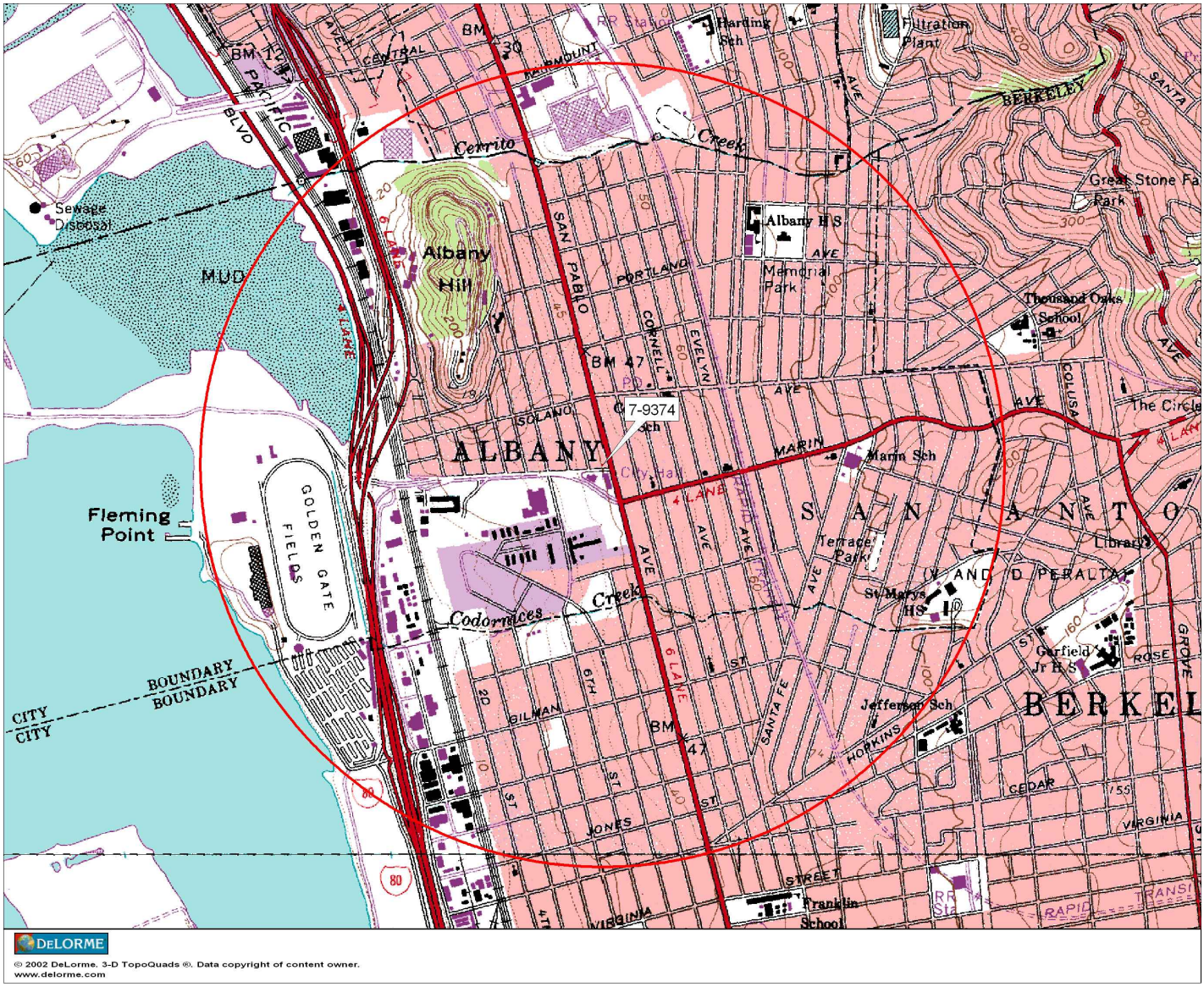
13 Acronym List

µg/L	Micrograms per liter
µg/m^3	Micrograms per cubic meter
µs	Microsiemens
1,2-DCA	1,2-dichloroethane
acfm	Actual cubic feet per minute
AS	Air sparge
AST	Aboveground storage tank
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
cfm	Cubic feet per minute
COC	Chain-of-Custody
CPT	Cone Penetration (Penetrometer) Test
DIPE	Di-isopropyl ether
DO	Dissolved oxygen
DOT	Department of Transportation
DPE	Dual-phase extraction
DTW	Depth to water
EDB	1,2-dibromoethane
EPA	Environmental Protection Agency
ESL	Environmental screening level
ETBE	Ethyl tertiary butyl ether
FID	Flame-ionization detector
fpm	Feet per minute
GAC	Granular activated carbon
gpd	Gallons per day
gpm	Gallons per minute
GWPTS	Groundwater pump and treat system
HIT	High-intensity targeted
HVOC	Halogenated volatile organic compound
J	Estimated value between MDL and PQL (RL)
LEL	Lower explosive limit
LPC	Liquid-phase carbon
LRP	Liquid-ring pump
LUFT	Leaking underground fuel tank
LUST	Leaking underground storage tank
MCL	Maximum contaminant level
MDL	Method detection limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
mg/m^3	Milligrams per cubic meter
MPE	Multi-phase extraction
MRL	Method reporting limit
msl	Mean sea level
MTBE	Methyl tertiary butyl ether
MTCA	Model Toxics Control Act
NAI	Natural attenuation indicators
NAPL	Non-aqueous phase liquid
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
ORP	Oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OVA	Organic vapor analyzer
P&ID	Process and Instrumentation Diagram
PAH	Polycyclic aromatic (or polyaromatic) hydrocarbon
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene or perchloroethylene
PID	Photo-ionization detector
PLC	Programmable logic control
POTW	Publicly-owned treatment works
ppmv	Parts per million by volume
PQL	Practical quantitation limit
psi	Pounds per square inch
PVC	Polyvinyl chloride
QA/QC	Quality assurance/quality control
RBSL	Risk-based screening levels
RCRA	Resource Conservation and Recovery Act
RL	Reporting limit
scfm	Standard cubic feet per minute
SSTL	Site-specific target level
STLC	Soluble threshold limit concentration
SVE	Soil vapor extraction
SVOC	Semi-volatile organic compound
TAME	Tertiary amyl methyl ether
TBA	Tertiary butyl alcohol
TCE	Trichloroethene
TOC	Top of well casing elevation; datum is msl
TOG	Total oil and grease
TPH	Total petroleum hydrocarbons
TPHd	Total petroleum hydrocarbons as diesel
TPHg	Total petroleum hydrocarbons as gasoline
TPHmo	Total petroleum hydrocarbons as motor oil
TPHs	Total petroleum hydrocarbons as stoddard solvent
TRPH	Total recoverable petroleum hydrocarbons
UCL	Upper confidence level
USCS	Unified Soil Classification System
USGS	United States Geologic Survey
UST	Underground storage tank
VCP	Voluntary Cleanup Program
VOC	Volatile organic compound
VPC	Vapor-phase carbon



FN 2735 TOPO

EXPLANATION

1/2-mile radius circle

N

APPROXIMATE SCALE

0 0.5 1 mile

SOURCE:
Modified from a map
provided by
DeLorme 3-D TopoQuads

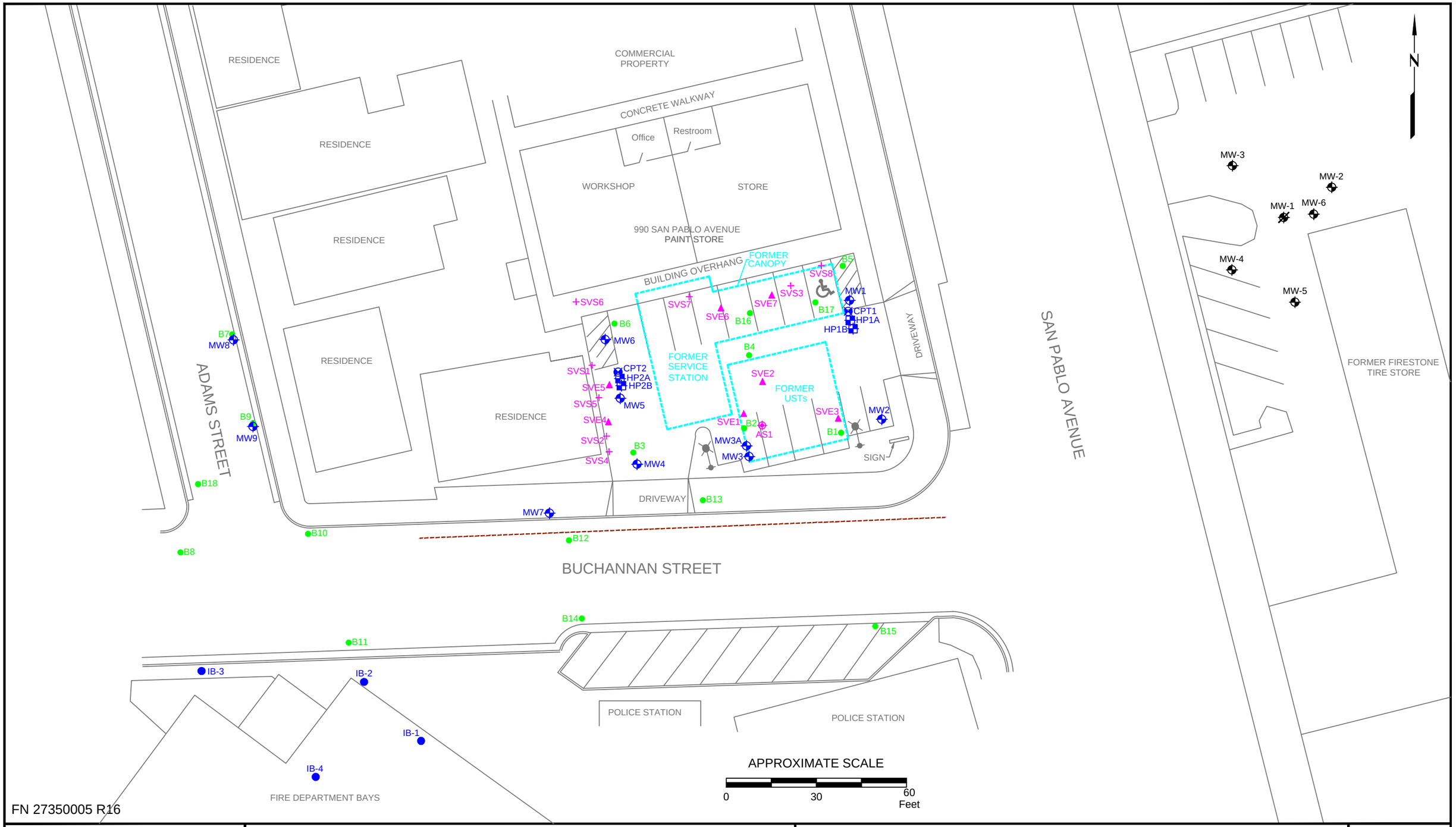
SITE VICINITY MAP

FORMER EXXON SERVICE STATION 79374
990 San Pablo Avenue
Albany, California

Cardno Shaping the Future

PROJECT NO. 2735

PLATE 1



FN 27350005 R16

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GENERALIZED SITE PLAN

FORMER EXXON SERVICE STATION 79374
990 San Pablo Avenue
Albany, California

EXPLANATION

- MW9 — Groundwater Monitoring Well
- MW-6 — Groundwater Monitoring Well for Firestone
- MW-1 — Destroyed Groundwater Monitoring Well for Firestone
- HP2B — Hydropunch Boring
- CPT2 — Cone Penetration Test Boring
- IB-4 — Soil Boring by Other Consultant for City of Albany
- B18 — Soil Boring
- AS1 — Air Sparge Well
- SVE7 — Soil Vapor Extraction Well
- SVS8 — Soil Vapor Sampling Well

PROJECT NO. 2735

PLATE 2

Analyte Concentrations in ug/m^3

Sample Date
Sample Depth
Total Petroleum Hydrocarbons as diesel
Total Petroleum Hydrocarbons as gasoline
Benzene

<	Less than the Stated Laboratory Reporting Limit
ug/m^3	Micrograms per cubic meter
NA	Not analyzed
b	Analyte reported in associated equipment blank.
d	Reporting limits elevated due to high levels of non-target analytes.
e	Concentration exceeds the calibration range.
g	TPHg, MTBE, BTEX, and VOCs analyzed using EPA Method 8260.
i	Well not sampled due to saturated conditions.
l	Well not sampled due to potential leak in well seal.

08/24/17	
2.2 FT.	REP.
<5,000	<5,000
2,100b	NA
<3.2	NA

08/24/17
2.2 FT.
320,000e
670,000
<32

08/24/17	
5.5 FT.	DUP.
NA	2,000,000e,g
56,000,000g	67,000,000g
15,000g	17,000g

08/24/17
2.2 FT.
340,000e,g
25,000,000g
<10,000g

09/05/17
5.5 FT
650,000e
61,000,000
<4,000d

08/24/17
5.5 FT.
l
l

08/24/17
2.2 FT.
i
i
i

08/24/17
2.2 FT.
7,600
630b
<3.2

COMMERCIAL PROPERTY
CONCRETE WALKWAY
Office
Restroom
RESIDENCE
RESIDENCE
RESIDENCE
RESIDENCE
WORKSHOP
STORE
990 SAN PABLO AVENUE
PAINT STORE
BUILDING OVERHANG
FORMER CANOPY
FORMER SERVICE STATION
FORMER USTs
DRIVEWAY
SAN PABLO AVENUE
ADAMS STREET
BUCHANNAN STREET
DRIVEWAY
SIGN
FORMER FIRESTONE TIRE STORE
POLICE STATION
POLICE STATION
FIRE DEPARTMENT BAYS

SVS1 SVS2 SVS3 SVS4 SVS5 SVS6 SVS7 SVS8
SVE1 SVE2 SVE3 SVE4 SVE5 SVE6 SVE7
B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16 B17 B18
MW1 MW2 MW3 MW3A MW4 MW5 MW6 MW7 MW8 MW9
CPT1 HP1A HP1B
CPT2 HP2A HP2B
AS1
IB-1 IB-2 IB-3 IB-4
MW-1 MW-2 MW-3 MW-4 MW-5 MW-6

N

APPROXIMATE SCALE
0 30 60 Feet

FN 27350005 R16

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SELECT SOIL VAPOR ANALYTICAL RESULTS

FORMER EXXON SERVICE STATION 79374
990 San Pablo Avenue
Albany, California

EXPLANATION

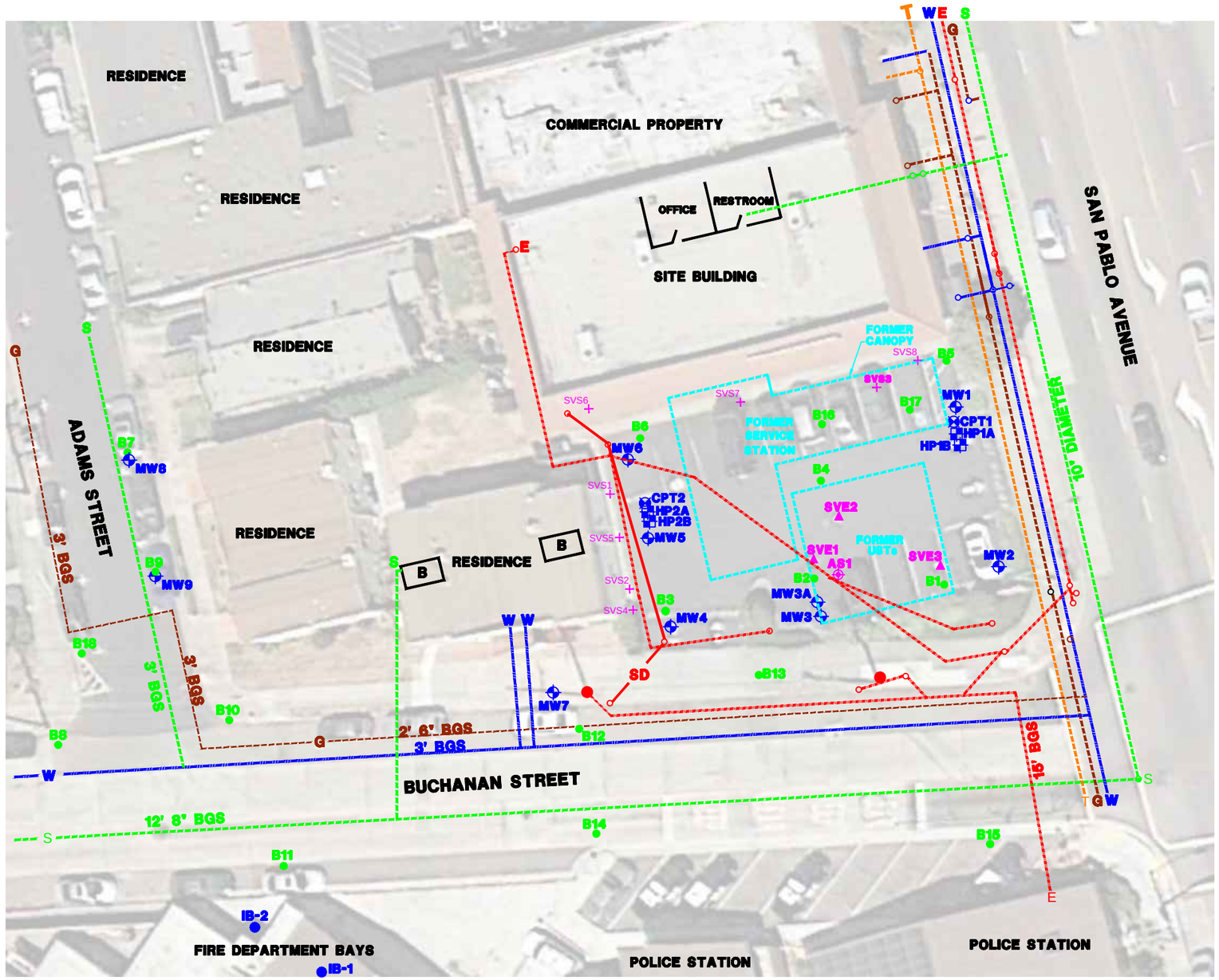
- MW9 — Groundwater Monitoring Well
- MW-6 — Groundwater Monitoring Well for Firestone
- MW-1 — Destroyed Groundwater Monitoring Well for Firestone
- HP2B — Hydropunch Boring
- CPT2 — Cone Penetration Test Boring
- IB-4 — Soil Boring by Other Consultant for City of Albany
- B18 — Soil Boring
- AS1 — Air Sparge Well
- SVE7 — Soil Vapor Extraction Well
- SVS8 — Soil Vapor Sampling Well

PROJECT NO. 2735

PLATE 3

UTILITIES LEGEND

- TELEPHONE
- ELECTRICAL
- WATER
- GAS
- SEWER
- STORM DRAIN
- POWER POLE
- B — BATHROOM



N

APPROXIMATE SCALE

0 30 60 Feet

FN 2735 GSP AERIAL _SP R16

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UTILITY LOCATION MAP

FORMER EXXON SERVICE STATION 79374
990 San Pablo Avenue
Albany, California

EXPLANATION

- MW9 — Groundwater Monitoring Well
- B18 — Soil Boring
- IB-2 — Soil Boring by Other Consultant for City of Albany
- HP2B — Hydropunch Boring
- CPT2 — Cone Penetration Test Boring
- SVS8 — Soil Vapor Sampling Well
- AS1 — Air Sparge Well
- SVE3 — Soil Vapor Extraction Well

PROJECT NO. 2735

PLATE 4

TABLE 1
WELL CONSTRUCTION DETAILS
Former Exxon Service Station 79374
990 San Pablo Avenue
Albany, California

Well ID	Well Installation Date	TOC Elevation (feet)	Borehole Diameter (inches)	Total Depth of Boring (feet bgs)	Well Depth (feet bgs)	Casing Diameter (inches)	Well Casing Material	Screened Interval (feet bgs)	Slot Size (inches)	Filter Pack Interval (feet bgs)	Filter Pack Material
MW1	11/04/10	44.19	8	17	17	2	Schedule 40 PVC	12-17	0.020	10-17	#3 Sand
MW2	11/04/10	43.99	8	17	17	4	Schedule 40 PVC	12-17	0.020	10-17	#3 Sand
MW3	11/08/10	43.16	8	17	17	4	Schedule 40 PVC	11-16	0.020	9-16	#3 Sand
MW3A	01/18/12	43.42	10	15.5	15.5	4	Schedule 40 PVC	5-15	0.020	4.5-15.5	#2/12 Sand
MW4	11/05/10	42.04	8	17	13	2	Schedule 40 PVC	8-13	0.020	6-13	#3 Sand
MW5	11/05/10	43.12	8	17	14	2	Schedule 40 PVC	9-14	0.020	7-14	#3 Sand
MW6	11/03/10	43.80	10	20	20	2	Schedule 40 PVC	15-20	0.020	13-20	#3 Sand
MW7	12/08/14	41.21	10	15	15	2	Schedule 40 PVC	5-15	0.020	4-15	#3 Sand
MW8	12/08/14	39.65	10	15	15	2	Schedule 40 PVC	5-15	0.020	4-15	#3 Sand
MW9	10/08/15	39.50	10	16	15	2	Schedule 40 PVC	5-15	0.020	4-15	#3 Sand
AS1	01/18/12	---	8	15.5	15.5	1	Schedule 80 PVC	10.25-13.5	#60 mesh	10.5-15.5	#2/12 Sand
SVE1	01/17/12	43.32	10	15.5	15.5	4	Schedule 40 PVC	5-15	0.020	4.5-15.5	#2/12 Sand
SVE2	01/17/12	43.68	10	15	15	4	Schedule 40 PVC	5-15	0.020	4.5-15	#2/12 Sand
SVE3	01/17/12	43.67	10	15	15	4	Schedule 40 PVC	5-15	0.020	4.5-15.5	#2/12 Sand
SVE4	10/09/15	43.10	12	16	15	4	Schedule 40 PVC	5-15	0.020	4-15	#3 Sand
SVE5	10/09/15	43.70	12	16	15	4	Schedule 40 PVC	5-15	0.020	4-15	#3 Sand
SVE6	10/09/15	44.37	12	16	15	4	Schedule 40 PVC	5-15	0.020	4-15	#3 Sand
SVE7	10/09/15	44.48	12	16	15	4	Schedule 40 PVC	5-15	0.020	4-15	#3 Sand
SVS1	02/25/14	---	4	5.6	5.6	0.25	PVC	5.4-5.6	0.010	4.6-5.6	#3 Sand
SVS2	02/25/14	---	4	5.6	5.6	0.25	PVC	5.4-5.6	0.010	4.6-5.6	#3 Sand
SVS3	02/25/14	---	4	5.6	5.6	0.25	PVC	5.4-5.6	0.010	4.6-5.6	#3 Sand
SVS4	09/28/16	---	2.25	2.5	2.5	0.25	PVC	2.1-2.3	0.010	2-2.5	#3 Sand
SVS5	09/28/16	---	2.25	2.5	2.5	0.25	PVC	2.1-2.3	0.010	2-2.5	#3 Sand
SVS6	09/28/16	---	2.25	3.0	2.5	0.25	PVC	2.1-2.3	0.010	2-3	#3 Sand
SVS7	09/28/16	---	2.25	2.5	2.5	0.25	PVC	2.1-2.3	0.010	2-2.5	#3 Sand
SVS8	09/28/16	---	2.25	2.5	2.5	0.25	PVC	2.1-2.3	0.010	2-2.5	#3 Sand

Notes:
TOC = Top of well casing elevation; datum is NAVD88.
PVC = Polyvinyl chloride.
feet bgs = Feet below ground surface.

TABLE 2A
CUMULATIVE SOIL VAPOR ANALYTICAL RESULTS
Former Exxon Service Station 79374
990 San Pablo Avenue
Albany, California

Sample ID	Sampling Date	Depth (feet)	TPHd (µg/m³)	TPHg (µg/m³)	MTBE (µg/m³)	B (µg/m³)	T (µg/m³)	E (µg/m³)	o-X (µg/m³)	pm-X (µg/m³)	X (µg/m³)	Methane (%V)	Helium (%V)	CO_2 (%V)	O_2+ Ar (%V)	O_2 (%V)	Nitrogen (%V)	Vacuum (in Hg)
Environmental Screening Levels, Subslab/Soil Gas, Table SG-1 (February 2016)																		
Residential			68,000	300,000	5,400	48	160,000	560	52,000c	52,000c	52,000	---	---	---	---	---	---	---
Commercial/Industrial			570,000	2,500,000	47,000	420	1,300,000	4,900	440,000c	440,000c	440,00	---	---	---	---	---	---	---
Media-Specific Criteria for Vapor Intrusion to Indoor Air, No Bioattenuation Zone (SWRCB, 2012)																		
Residential			---	---	---	85	---	1,100	---	---	---	---	---	---	---	---	---	---
Commercial			---	---	---	280	---	3,600	---	---	---	---	---	---	---	---	---	---
Media-Specific Criteria for Vapor Intrusion to Indoor Air, With Bioattenuation Zone (SWRCB, 2012)																		
Residential			---	---	---	85,000	---	1,100,000	---	---	---	---	---	---	---	---	---	---
Commercial			---	---	---	280,000	---	3,600,000	---	---	---	---	---	---	---	---	---	---
Near Commercial Building on the Site																		
SVS3	03/07/14	5.5	---	**150,000,000**	**<5,800**	**15,000**	<1,500	**15,000**	<1,700	<6,900	<1,700	6.29	<0.0100	13.3	4.41	---	---	-5.00
SVS3 Dup	03/07/14	5.5	---	**150,000,000**	**<5,800**	**22,000**	<1,500	**23,000**	<1,700	<6,900	<1,700	6.73	<0.0100	14.4	3.10	---	---	-5.00
SVS3	08/28/14	5.5	---	**87,000,000**	**<36,000**	**21,000**	13,000	**31,000**	<11,000	<43,000	<11,000	5.11	<0.0100	14.7	5.49	---	---	-5.00
SVS3	10/03/16 g	5.5	h	**41,000,000**	**<20,000**	**12,000**	<40,000	**<20,000**	<20,000	<20,000	---	3.5	<0.10	14	---	5.4	77	-5.39
SVS3 Dup	10/03/16 g	5.5	h	**34,000,000**	**<20,000**	**11,000**	<40,000	**<20,000**	<20,000	<20,000	---	3.9	<0.10	15	---	4.6	77	-5.37
SVS3	04/05/17 g	5.5	**760,000e**	**26,000,000**	**<20,000**	**12,000**	<40,000	**<20,000**	<20,000	<20,000	---	3.6	<0.10	11	---	4.7	81	-5.39
SVS3 Dup	04/05/17 g	5.5	---	**23,000,000**	**<20,000**	**11,000**	<40,000	**<20,000**	<20,000	<20,000	---	3.6	<0.10	11	---	4.6	81	-5.61
SVS3	08/24/17 g	5.5	---	**56,000,000**	**<50,000**	**15,000**	<100,000	**<50,000**	<50,000	<50,000	---	3.6	<0.10	12	---	5.6	79	-5.01
SVS3 Dup	08/24/17 g	5.5	**2,000,000e**	**67,000,000**	**<50,000**	**17,000**	<100,000	**<50,000**	<50,000	<50,000	---	3.5	<0.10	13	---	5.1	79	-5.02
SVS7	10/03/16 f	2.2	9,000	27,000	42	<16	40	<22	190	71	---	0.0057	0.35	0.93	---	20	79	-2.93
SVS7	04/05/17 f	2.2	<5,000	130,000	<18	18	34	<22	38	57	---	0.41	0.75	2.5	---	19	78	-8.23
SVS7	08/24/17	2.2	**320,000e**	**670,000**	<36	<32	<38	110	<44	<88	---	0.83	0.17	5.0	---	17	77	-3.74
SVS8	10/03/16 g	2.2	28,000	**350,000**	<500	**<100**	<1,000	<500	<500	<500	---	0.030	<0.10	1.0	---	20	79	-3.18
SVS8	04/05/17 g	2.2	**250,000e**	**15,000,000**	**<10,000d**	**<2,000d**	<20,000d	**<10,000d**	<10,000d	<10,000d	---	2.6	<0.10	13	---	4.6	81	-4.52
SVS8	08/24/17 g	2.2	**340,000e**	**25,000,000**	**<50,000**	**<10,000**	<100,000	**<50,000**	<50,000	<50,000	---	0.84	<0.10	14	---	5.3	79	-3.54

TABLE 2A
CUMULATIVE SOIL VAPOR ANALYTICAL RESULTS
Former Exxon Service Station 79374
990 San Pablo Avenue
Albany, California

Sample ID	Sampling Date	Depth (feet)	TPHd (µg/m³)	TPHg (µg/m³)	MTBE (µg/m³)	B (µg/m³)	T (µg/m³)	E (µg/m³)	o-X (µg/m³)	pm-X (µg/m³)	X (µg/m³)	Methane (%V)	Helium (%V)	CO_2 (%V)	O_2+ Ar (%V)	O_2 (%V)	Nitrogen (%V)	Vacuum (in Hg)
Environmental Screening Levels, Subslab/Soil Gas, Table SG-1 (February 2016)																		
Residential			68,000	300,000	5,400	48	160,000	560	52,000c	52,000c	52,000	---	---	---	---	---	---	---
Commercial/Industrial			570,000	2,500,000	47,000	420	1,300,000	4,900	440,000c	440,000c	440,00	---	---	---	---	---	---	---
Media-Specific Criteria for Vapor Intrusion to Indoor Air, No Bioattenuation Zone (SWRCB, 2012)																		
Residential			---	---	---	85	---	1,100	---	---	---	---	---	---	---	---	---	---
Commercial			---	---	---	280	---	3,600	---	---	---	---	---	---	---	---	---	---
Media-Specific Criteria for Vapor Intrusion to Indoor Air, With Bioattenuation Zone (SWRCB, 2012)																		
Residential			---	---	---	85,000	---	1,100,000	---	---	---	---	---	---	---	---	---	---
Commercial			---	---	---	280,000	---	3,600,000	---	---	---	---	---	---	---	---	---	---
Near Residential Building Adjacent to the Site																		
SVS1	03/06/14	5.5	---	**180,000,000**	**<12,000d**	**<2,600d**	<3,000d	**<3,500d**	<3,500d	<14,000d	<3,500d	15.5	<0.0100	10.0	2.58	---	---	-5.00
SVS1	08/28/14	5.5	---	**90,000,000**	**<36,000**	**<8,000**	12,000	**<11,000**	<11,000	<43,000	<11,000	15.3	<0.0100	13.2	2.49	---	---	-5.00
SVS1	10/03/16 g	5.5	h	**43,000,000**	**<20,000d**	**<4,000d**	<40,000d	**<20,000d**	<20,000d	<20,000d	---	12	<0.10	11	---	4.8	73	-5.81
SVS1	04/05/17 g	5.5	**510,000e**	**25,000,000**	**<20,000d**	**<4,000d**	<40,000d	**<20,000d**	<20,000d	<20,000d	---	12	<0.10	8.8	---	5.5	76	-5.64
SVS1	08/24/17 l	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS1	09/05/17	5.5	**650,000e**	**61,000,000**	**<20,000d**	**<4,000d**	<40,000d	**<20,000d**	<20,000d	<20,000d	---	14	<0.10	8.0	---	9.4	72	-5.65
SVS2	03/06/14	5.5	---	**190,000,000**	<1,800	**1,700**	740	**650**	<540	3,100	3,100	11.4	<0.0100	8.31	3.62	---	---	-5.00
SVS2	08/28/14	5.5	---	**80,000,000**	**<36,000**	**<8,000**	13,000	**<11,000**	<11,000	<43,000	<11,000	11.5	<0.0100	9.67	5.54	---	---	-5.00
SVS2 Dup	08/28/14	5.5	---	**89,000,000**	**<36,000**	**<8,000**	13,000	**<11,000**	<11,000	<43,000	<11,000	13.5	<0.0100	11.3	2.82	---	---	-5.00
SVS2	10/03/16 g	5.5	h	**35,000,000**	**<20,000d**	**<4,000d**	<40,000d	**<20,000d**	<20,000d	<20,000d	---	16	<0.10	11	---	3.7	72	-3.26
SVS2	04/05/17 i	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS2	08/24/17 l	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS4	10/03/16 f	2.2	9,800	5,900	19	<3.2	11	8.1	16	15	---	0.0031	0.94	0.86	---	20	79	--3.83
SVS4	04/05/17	2.2	47,000	2,900	<3.6	<3.2	10	4.9	11	18	---	0.0380	<0.10	2.4	---	17	81	-5.11
SVS4	08/24/17	2.2	7,600	630b	<3.6	<3.2	<3.8	<4.4	<4.4	<8.8	---	<0.001	0.34	0.80	---	21	78	-4.63
SVS5	10/03/16	2.2	16,000	3,000	38	<3.2	82	24	230	97	---	<0.0010	<0.10	1.2	---	20	79	-4.52
SVS5	04/05/17 j	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS5	08/24/17 i	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS6	10/03/16	2.2	<5,000	440b	4.6	<3.2	4.2	<4.4	4.7	<8.8	---	<0.0010	<0.10	0.44	---	20	79	-3.43
SVS6	04/05/17	2.2	12,000	3,200	<3.6	<3.2	16	8.2	15	32	---	0.0010	<0.10	0.37	---	21	79	-4.31
SVS6	08/24/17	2.2	<5,000	2,100b	<3.6	<3.2	7.4b	<4.4	<4.4	<8.8	---	<0.001	<0.10	0.38	---	21	79	-4.38
SVS6 Rep	08/24/17	2.2	<5,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 2A
CUMULATIVE SOIL VAPOR ANALYTICAL RESULTS
Former Exxon Service Station 79374
990 San Pablo Avenue
Albany, California

Notes:

TPHd	=	Total petroleum hydrocarbons as gasoline analyzed using EPA Method TO-17(M).
TPHg	=	Total petroleum hydrocarbons as gasoline analyzed using EPA Method TO-3M (March 2014), TO-17 (August 2014), or TO-15 (2016 and onward).
MTBE	=	Methyl tertiary butyl ether analyzed using EPA Method TO-15.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method TO-15.
VOCs	=	Volatile organic compounds analyzed using EPA Method TO-15. Naphthalene analyzed using both EPA Method TO-15 and TO-17(M).
Methane	=	Methane analyzed using ASTM Method D-1946 (2014) or EPA Method 8015M (2016 and onward).
Helium	=	Helium analyzed using ASTM Method D-1946 (M).
CO_2	=	Carbon dioxide analyzed using ASTM Method D-1946.
O_2 + Ar	=	Oxygen plus argon analyzed using ASTM Method D-1946.
O_2	=	Oxygen analyzed using ASTM Method D-1946.
Nitrogen	=	Nitrogen analyzed using ASTM Method D-1946.
Vacuum	=	Vacuum measured using a vacuum gauge.
µg/m³	=	Micrograms per cubic meter.
%V	=	Percent by volume.
in Hg	=	Inches of mercury.
ND	=	Not detected. March 2014 samples analyzed for 1,2-dibromoethane , 1,2-dichloroethane, tertiary butyl alcohol, tertiary amyl methyl ether, ethyl tertiary butyl ether, and di-isopropyl only.
Bold	=	Greater than or equal to the most stringent, applicable screening level.
<	=	Less than the stated method detection limit.
---	=	Not applicable.
a	=	Possibly biased high due to results of associated standard.
b	=	Analyte reported in associated equipment blank.
c	=	Screening level for total xylenes.
d	=	Reporting limits elevated due to high levels of non-target analytes.
e	=	Concentration exceeds the calibration range.
f	=	Leak detection compound reported. Concentration may have a low bias.
g	=	TPHg, MTBE, BTEX, and VOCs analyzed using EPA Method 8260.
h	=	Unable to sample due to elevated diesel concentrations above instrumentation limits.
i	=	Well not sampled due to saturated conditions.
j	=	Well not sampled due to tight and possibly saturated conditions.
k	=	4-Ethyltoluene.
l	=	Well not sampled due to potential leak in well seal.

TABLE 2B
ADDITIONAL CUMULATIVE SOIL VAPOR ANALYTICAL RESULTS - VOCs
Former Exxon Service Station 79374
990 San Pablo Avenue
Albany, California

Sample ID	Sampling Date	Depth (feet)	Bromo-dichloro-methane (µg/m³)	Carbon Disulfide (µg/m³)	Chloro-form (µg/m³)	Chloro-methane (µg/m³)	Dibromo-chloro-methane (µg/m³)	4-Methyl-2-Pentanone (µg/m³)	Naph-thalene TO-15 (µg/m³)	Naph-thalene TO-17 (µg/m³)	Tri-chloro-ethane (µg/m³)	1,2,4-Trimethyl-benzene (µg/m³)	1,3,5-Trimethyl-benzene (µg/m³)	Tetra-chloro-ethane (µg/m³)	Tertiary Butyl Alcohol (µg/m³)	Add'l VOCs (µg/m³)
Environmental Screening Levels, Subslab/Soil Gas, Table SG-1 (February 2016)																
Residential			38	---	61	47,000	---	---	41	41	340	---	---	240	---	---
Commercial/Industrial			330	---	530	390,000	---	---	360	360	3,000	---	---	2,100	---	---
Media-Specific Criteria for Vapor Intrusion to Indoor Air, No Bioattenuation Zone (SWRCB, 2012)																
Residential			---	---	---	---	---	---	93	93	---	---	---	---	---	---
Commercial			---	---	---	---	---	---	310	310	---	---	---	---	---	---
Media-Specific Criteria for Vapor Intrusion to Indoor Air, With Bioattenuation Zone (SWRCB, 2012)																
Residential			---	---	---	---	---	---	93,000	93,000	---	---	---	---	---	---
Commercial			---	---	---	---	---	---	310,000	310,000	---	---	---	---	---	---
Near Commercial Building on the Site																
SVS3	03/07/14	5.5	---	---	---	---	---	---	---	1.1	---	---	---	---	<4,900	ND
SVS3 Dup	03/07/14	5.5	---	---	---	---	---	---	---	---	---	---	---	---	<4,900	ND
SVS3	08/28/14	5.5	**<17,000**	<31,000	**<12,000**	<5,200	<21,000	<31,000	---	**820a**	**<13,000**	<12,000	<12,000	**<17,000**	<30,000	ND
SVS3	10/03/16 g	5.5	**<20,000**	<20,000	**<4,000**	<20,000	<20,000	<100,000	**<4,000**	**390**	**<4,000**	<20,000	<20,000	**<4,000**	<200,000	ND
SVS3 Dup	10/03/16 g	5.5	**<20,000**	<20,000	**<4,000**	<20,000	<20,000	<100,000	**<4,000**	**480**	**<4,000**	<20,000	<20,000	**<4,000**	<200,000	ND
SVS3	04/05/17 g	5.5	**<20,000**	<20,000	**<4,000**	<20,000	<20,000	<100,000	**<4,000**	**470**	**<4,000**	<20,000	<20,000	**<4,000**	<200,000	ND
SVS3 Dup	04/05/17 g	5.5	**<20,000**	<20,000	**<4,000**	<20,000	<20,000	<100,000	**<4,000**	---	**<4,000**	<20,000	<20,000	**<4,000**	<200,000	ND
SVS3	08/24/17 g	5.5	**<50,000**	<50,000	**<10,000**	**<50,000**	<50,000	<250,000	**<10,000**	<20	**<10,000**	<50,000	<50,000	**<10,000**	<500,000	ND
SVS3 Dup	08/24/17 g	5.5	**<50,000**	<50,000	**<10,000**	**<50,000**	<50,000	<250,000	**<10,000**	---	**<10,000**	<50,000	<50,000	**<10,000**	<500,000	ND
SVS7	10/03/16 f	2.2	<34	42	58	<10	<43	51	<27	28	<27	55	38	<34	49	ND
SVS7	04/05/17 f	2.2	<34	36	<25	<10	<43	<41	<27	<20	<27	<25	<25	<34	120	ND
SVS7	08/24/17	2.2	**<68**	<63	<49	<21	<86	<83	**<53**	<20	<55	200	260	<69	<61	63k
SVS8	10/03/16 g	2.2	**<500**	<500	**<100**	<500	<500	<2,500	**<100**	<20	<100	<500	<500	<100	<5,000	ND
SVS8	04/05/17 g	2.2	**<10,000d**	<10,000d	**<2,000d**	<10,000d	<10,000d	<40,000d	**<2,000d**	23	**<2,000d**	<10,000d	<10,000d	**<2,000d**	<100,000d	ND
SVS8	08/24/17 g	2.2	**<50,000**	<50,000	**<10,000**	**<50,000**	<50,000	<250,000	**<10,000**	<20	**<10,000**	<50,000	<50,000	**<10,000**	<500,000	ND

TABLE 2B
ADDITIONAL CUMULATIVE SOIL VAPOR ANALYTICAL RESULTS - VOCs
Former Exxon Service Station 79374
990 San Pablo Avenue
Albany, California

Sample ID	Sampling Date	Depth (feet)	Bromo-dichloro-methane (µg/m³)	Carbon Disulfide (µg/m³)	Chloro-form (µg/m³)	Chloro-methane (µg/m³)	Dibromo-chloro-methane (µg/m³)	4-Methyl-2-Pentanone (µg/m³)	Naph-thalene TO-15 (µg/m³)	Naph-thalene TO-17 (µg/m³)	Tri-chloro-ethane (µg/m³)	1,2,4-Trimethyl-benzene (µg/m³)	1,3,5-Trimethyl-benzene (µg/m³)	Tetra-chloro-ethane (µg/m³)	Tertiary Butyl Alcohol (µg/m³)	Add'l VOCs (µg/m³)
Environmental Screening Levels, Subslab/Soil Gas, Table SG-1 (February 2016)																
Residential			38	---	61	47,000	---	---	41	41	340	---	---	240	---	---
Commercial/Industrial			330	---	530	390,000	---	---	360	360	3,000	---	---	2,100	---	---
Media-Specific Criteria for Vapor Intrusion to Indoor Air, No Bioattenuation Zone (SWRCB, 2012)																
Residential			---	---	---	---	---	---	93	93	---	---	---	---	---	---
Commercial			---	---	---	---	---	---	310	310	---	---	---	---	---	---
Media-Specific Criteria for Vapor Intrusion to Indoor Air, With Bioattenuation Zone (SWRCB, 2012)																
Residential			---	---	---	---	---	---	93,000	93,000	---	---	---	---	---	---
Commercial			---	---	---	---	---	---	310,000	310,000	---	---	---	---	---	---
Near Residential Building Adjacent to the Site																
SVS1	03/06/14	5.5	---	---	---	---	---	---	---	<0.020	---	---	---	---	<9,700d	ND
SVS1	08/28/14	5.5	**<17,000**	<31,000	**<12,000**	<5,200	<21,000	<31,000	---	<20	**<13,000**	<12,000	<12,000	**<17,000**	<30,000	ND
SVS1	10/03/16 g	5.5	**<20,000d**	<20,000d	**<4,000d**	<20,000d	<20,000d	<100,000d	**<4,000d**	<20	**<4,000d**	<20,000d	<20,000d	**<4,000d**	<200,000d	ND
SVS1	04/05/17 g	5.5	**<20,000d**	<20,000d	**<4,000d**	<20,000d	<20,000d	<100,000d	**<4,000d**	34	**<4,000d**	<20,000d	<20,000d	**<4,000d**	<200,000d	ND
SVS1	08/24/17 l	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS1	09/05/17	5.5	**<20,000d**	<20,000d	**<4,000d**	<20,000d	<20,000d	<100,000d	**<4,000d**	<20	**<4,000d**	<20,000d	<20,000d	**<4,000d**	<200,000d	ND
SVS2	03/06/14	5.5	---	---	---	---	---	---	---	<0.020	---	---	---	---	<1,500	ND
SVS2	08/28/14	5.5	**<17,000**	<31,000	**<12,000**	<5,200	<21,000	<31,000	---	<20	**<13,000**	<12,000	<12,000	**<17,000**	<30,000	ND
SVS2 Dup	08/28/14	5.5	**<17,000**	<31,000	**<12,000**	<5,200	<21,000	<31,000	---	---	**<13,000**	<12,000	<12,000	**<17,000**	<30,000	ND
SVS2	10/03/16 g	5.5	**<20,000d**	<20,000d	**<4,000d**	<20,000d	<20,000d	<100,000d	**<4,000d**	<20	**<4,000d**	<20,000d	<20,000d	**<4,000d**	<200,000d	ND
SVS2	04/05/17 i	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS2	08/24/17 l	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS4	10/03/16 f	2.2	**48**	<6.3	**63**	2.3	21	8.9	<5.3	<20	<5.5	23	19	<6.9	<6.1	7.5k
SVS4	04/05/17	2.2	<6.8	<6.3	<4.9	<2.1	<8.6	<8.3	<5.3	<20	<5.5	<5.0	<5.0	<6.9	<6.1	ND
SVS4	08/24/17	2.2	20	<6.3	**310**	<2.1	<8.6	<8.3	<5.3	<20	<5.5	<5.0	<5.0	19	<6.1	ND
SVS5	10/03/16	2.2	**38**	<6.3	54	<2.1	14	<8.3	<5.3	<20	<5.5	86	34	<6.9	<6.1	16k
SVS5	04/05/17 j	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS5	08/24/17 i	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SVS6	10/03/16	2.2	<6.8	<6.3	<4.9	<2.1	<8.6	<8.3	<5.3	<20	<5.5	<5.0	<5.0	<6.9	<6.1	ND
SVS6	04/05/17	2.2	<6.8	<6.3	<4.9	<2.1	<8.6	<8.3	<5.3	<20	<5.5	5.0	<5.0	7.5	12	ND
SVS6	08/24/17	2.2	<6.8	<6.3	<4.9	<2.1	<8.6	<8.3	<5.3	<20	<5.5	<5.0	<5.0	<6.9	<6.1	ND
SVS6 Rep	08/24/17	2.2	---	---	---	---	---	---	---	<20	---	---	---	---	---	---

TABLE 2B
ADDITIONAL CUMULATIVE SOIL VAPOR ANALYTICAL RESULTS - VOCs
Former Exxon Service Station 79374
990 San Pablo Avenue
Albany, California

Notes:

TPHd	=	Total petroleum hydrocarbons as gasoline analyzed using EPA Method TO-17(M).
TPHg	=	Total petroleum hydrocarbons as gasoline analyzed using EPA Method TO-3M (March 2014), TO-17 (August 2014), or TO-15 (2016 and onward).
MTBE	=	Methyl tertiary butyl ether analyzed using EPA Method TO-15.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method TO-15.
VOCs	=	Volatile organic compounds analyzed using EPA Method TO-15. Naphthalene analyzed using both EPA Method TO-15 and TO-17(M).
Methane	=	Methane analyzed using ASTM Method D-1946 (2014) or EPA Method 8015M (2016 and onward).
Helium	=	Helium analyzed using ASTM Method D-1946 (M).
CO_2	=	Carbon dioxide analyzed using ASTM Method D-1946.
O_2 + Ar	=	Oxygen plus argon analyzed using ASTM Method D-1946.
O_2	=	Oxygen analyzed using ASTM Method D-1946.
Nitrogen	=	Nitrogen analyzed using ASTM Method D-1946.
Vacuum	=	Vacuum measured using a vacuum gauge.
µg/m³	=	Micrograms per cubic meter.
%V	=	Percent by volume.
in Hg	=	Inches of mercury.
ND	=	Not detected. March 2014 samples analyzed for 1,2-dibromoethane , 1,2-dichloroethane, tertiary butyl alcohol, tertiary amyl methyl ether, ethyl tertiary butyl ether, and di-isopropyl only.
Bold	=	Greater than or equal to the most stringent, applicable screening level.
<	=	Less than the stated method detection limit.
---	=	Not applicable.
a	=	Possibly biased high due to results of associated standard.
b	=	Analyte reported in associated equipment blank.
c	=	Screening level for total xylenes.
d	=	Reporting limits elevated due to high levels of non-target analytes.
e	=	Concentration exceeds the calibration range.
f	=	Leak detection compound reported. Concentration may have a low bias.
g	=	TPHg, MTBE, BTEX, and VOCs analyzed using EPA Method 8260.
h	=	Unable to sample due to elevated diesel concentrations above instrumentation limits.
i	=	Well not sampled due to saturated conditions.
j	=	Well not sampled due to tight and possibly saturated conditions.
k	=	4-Ethyltoluene.
l	=	Well not sampled due to potential leak in well seal.

APPENDIX

A

CORRESPONDENCE

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ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
REBECCA GEBHART, Interim Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
LOCAL OVERSIGHT PROGRAM (LOP)
For Hazardous Materials Releases
1131 HARBOR BAY PARKWAY, SUITE 250
ALAMEDA, CA 94502
(510) 567-6700
FAX (510) 337-9335

July 21, 2017

Ms. Jennifer Sedlachek
ExxonMobil
4096 Piedmont Ave., #194
Oakland, CA 94611
(Sent via electronic mail to:
jennifer.c.sedlachek@exxonmobil.com)

Ms. Muriel Blank
Blank Family Trust
1164 Solano Ave., #406
Albany, CA 94706

Subject: Vapor Intrusion Work Plan Request; Fuel Leak Case No. RO0002974 and GeoTracker Global ID T0619716673, Exxon, 990 San Pablo Ave., Albany, CA 94706

Dear Ms. Sedlachek and Ms. Blank:

Alameda County Department of Environmental Health (ACDEH) staff has reviewed the case file for the above referenced site including the *Semi-Annual Soil Vapor Assessment, Second Quarter 2017*, dated May 31, 2017, and the *Semi-Annual Groundwater Monitoring and Remediation Status Report*, dated June 23, 2017. The reports were prepared and submitted on your behalf by Cardno. Thank you for submitting them.

The referenced soil vapor assessment documented seasonal vapor sampling at the subject site, and stated the revised Bay Area Air Quality Management District (BAAQMD) permit was approved December 15, 2016. It is understood that the High Intensity Targeted (HIT) corrective action events will be started when appropriate power is acquired from the Pacific Gas & Electric Company (PGE); however, the report did not provide an estimated date.

The vapor analytical documented both increasing and decreasing vapor concentrations in site wells. Vapor wells are set at two depths, 5.5 feet below grade surface (bgs), and 2.2 feet bgs. The shallow vapor wells were installed to determine the presence of a shallow low-hydrocarbon vapor bio-zone sufficient to be protective of onsite and offsite structures. In general, concentrations in shallow vapor wells, remained consistent, or increased substantially (SVS8). Concentrations in shallow well SVS8 were documented at 15,000,000 micrograms per cubic meter ($\mu g/m^3$) Total Petroleum Hydrocarbons as gasoline (TPHg), <2,000 $\mu g/m^3$ benzene, <10,000 $\mu g/m^3$ ethylbenzene, and 23 $\mu g/m^3$ naphthalene. Elevated vapor concentrations at this well, located proximal to groundwater monitoring well MW-1, with non-detectable concentrations at standard reporting limits or very low volatile hydrocarbon concentrations, is problematic. The disjunction between vapor data and groundwater data can be suggestive of undiscovered sources. Regardless of the source of the vapor data, it represents a risk of vapor intrusion to the onsite building.

Thus, based on the review of the case file ACDEH requests that you address the following technical comments and send us the documents requested below.

TECHNICAL COMMENTS

1. **Vapor Intrusion Work Plan** – ACDEH requests the submittal of a vapor intrusion work plan by the date referenced below.
2. **Semi-Annual Vapor Monitoring** – Due to the substantial vapor concentration fluctuations in soil vapor wells at the site, the recommended semi-annual soil vapor sampling to further evaluate soil vapor concentrations appears appropriate due to potentially sensitive population (residential), and Department of Toxics Substance Control (DTSC) guidance. Please submit the results of the vapor sampling in a report by the dates identified below.

3. **Temporary HIT Events –** As noted above, the HIT events are planned once PGE provides appropriate power for the site; however, based on typical PGE timeframes it appears that this timeframe is unpredictable. Therefore, unless an estimated reasonable timeframe for the power drop is known, in the interim, it appears reasonable to request that temporary HIT events resume using previously approved temporary mobile equipment. As noted in the State Water Board (SWB) Low Threat Closure Policy (LTCP), it is expected that the removal or destruction of secondary mass will be completed in one year or less, and the rate of action has been limited by outside events at the site. The presence of a potential vapor intrusion risk additionally indicates the appropriateness of actions.

   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.

4. **Semi-Annual Groundwater Monitoring –** Please continue to conduct groundwater monitoring and sampling at the site on a semi-annual basis, and submit reports by the dates identified below.

SUBMITTAL ACKNOWLEDGEMENT STATEMENT

Please note that ACDEH has updated its Attachment 1 with regard to report submittals to ACDEH. ACDEH will now be requiring a Submittal Acknowledgement Statement, replacing the Perjury Statement, as a cover letter signed by the Responsible Party (RP). The language for the Submittal Acknowledgement Statement is as follows:

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

Please make this change to your submittals to ACDEH.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACDEH 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:

- **September 29, 2017 –** Vapor Intrusion Work Plan
  File to be named: RO2974_WP_R_yyyy-mm-dd

- **October 6, 2017 –** Site Vapor Investigation Report (Can be combined with above report)
  File to be named: RO2974_SWI_R_yyyy-mm-dd

- **December 15, 2017 –** Second 2017 Semi-Annual Groundwater Monitoring
  File to be named: RO2974_GWM_R_yyyy-mm-dd

- **June 8, 2018 –** First 2018 Semi-Annual Groundwater Monitoring
  File to be named: RO2974_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.

Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm. If your email address is not listed on the first page of this letter, or in the list of cc's listed below, ACDEH is requesting your email address to help expedite communications and to help lower overall costs.

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

Sincerely,

Mark E. Detterman, PG, CEG
Senior Hazardous Materials Specialist
Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations and Electronic Report Upload (ftp) Instructions

cc: Christine Capwell, Cardno, 601 North McDowell Blvd., Petaluma, CA 94954
(Sent via electronic mail to: christine.capwell@cardno.com)

David Daniels, Cardno, 601 North McDowell Blvd., Petaluma, CA 94954
(Sent via electronic mail to: david.daniels@cardno.com)

Mrs. Marcia B. Kelly, 641 SW Morningside Rd., Topeka, KS 66615
(Sent via electronic mail to: marciabkelly@earthlink.net)

Rev. Deborah Blank, 1563 Solano Ave. #344, Berkeley, CA 94707
(Sent via electronic mail to: miracoli@earthlink.net)

Dilan Roe, ACDEH, (Sent via electronic mail to: dilan.roe@acgov.org)
Paresh Khatri, ACDEH; (Sent via electronic mail to: paresh.khatri@acgov.org)
Mark Detterman, ACDEH, (Sent via electronic mail to: mark.detterman@acgov.org)
Electronic File; GeoTracker

APPENDIX

B

SITE CONCEPTUAL MODEL

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Element	Description	Data Gaps
Geology and Hydrogeology		
Regional Geology and Hydrogeology	The site lies at an approximate elevation of 40 feet above msl, and the local topography slopes toward the southwest. The site is located along the eastern margin of the San Francisco Bay within the East Bay Plain (Hickenbottom and Muir, 1988). The surficial deposits in the site vicinity are mapped as Holocene alluvial fan and fluvial deposits (Graymer, 2000). The active northwest trending Hayward fault is located approximately 1.5 miles northeast of the site. The East Bay Plain is regionally divided into two major groundwater basins: the San Pablo and the San Francisco Basin. These basins are tectonic depressions that are filled primarily with a sequence of coalescing alluvial fans. The San Francisco Basin is further divided into seven sub-areas. The site is located in the Berkeley Sub-Area, which is filled primarily by alluvial deposits that range from 10 to 300 feet thick with poorly defined aquitards (CRWQCB, 1999). Under natural conditions, the direction of groundwater flow in the East Bay Plain is east to west.	None
Site Geology, Hydrogeology, Hydraulic Flow, and Groundwater Gradient	Soil boring logs indicate that the soil beneath the site consists predominantly of silt and clay with an apparently continuous coarse-grained unit 2 to 8 feet thick encountered between approximately 8 and 20 feet bgs. Fill material was encountered in the boring for well SVE3 (located in the former UST pit) to approximately 7 feet bgs. CPT borings indicate the presence of predominantly silt and clay between approximately 20 and 60 feet bgs, the maximum depth explored. Coarse-grained layers up to 3 feet thick are interbedded with the silt and clay (EC&A, 2008; Cardno ERI, 2011; Cardno ERI, 2012). Historical groundwater elevation data indicate that DTW ranges from 5 to 11 feet bgs beneath the site with varying groundwater flow directions. The distribution of dissolved-phase hydrocarbons suggests that the dominant groundwater flow direction is west to southwest (Cardno ERI, 2014b). Due to varying well construction, Cardno ERI separated the wells into shallow and deep water-bearing zones. Wells MW3A, MW4, MW5, and SVE1 through SVE3 are screened no deeper than 15 feet bgs and are referred to as the shallow water-bearing zone; wells MW1 through MW3 and MW6 have screened intervals that extend deeper than 15 feet bgs and are referred to as the deep water-bearing zone. The groundwater elevations in wells screened deeper than 15 feet are commonly irregular and do not agree with the distribution of petroleum hydrocarbon concentrations. Although the water-bearing zones are referred to as shallow and deep, they likely do not represent unique water-bearing zones. During fourth quarter 2016, the groundwater flow direction in the shallow water-bearing zone was towards the southwest with a hydraulic gradient of approximately 0.02 (Cardno, 2016). Due to varying well construction, the groundwater flow in the deep water-bearing zone is not calculated (Cardno ERI, 2014b).	None
Facility History		
Facility Structures and Site Operations	In 1945, a service station owned by Signal Oil Company occupied the site. Humble Oil company acquired the site in 1967 from Standard Oil Company of California (Chevron), rebranding the site as an Enco station. The station was rebranded as an Exxon service station in 1975 (EDR, 2009a; EDR, 2009b). The service station was demolished in 1983. During demolition activities, one used-oil UST and four gasoline USTs were removed and the resulting tank cavity was backfilled with sand and compacted to 90% (City of Albany, 1983). Cardno ERI reviewed eight aerial photographs of the site and site vicinity dated from September 6, 1949, to June 21, 1983 (EDR, 2009b). Based on these photographs, the dispenser islands appeared to be located beneath the station canopy on the northern portion of the site and the former USTs appeared to be located on the southern portion of the site, east of the station's service bays. The location of the former used-oil UST is unknown. The approximate location of the former USTs are shown on the Generalized Site Plan. A retail outlet for Benjamin Moore paints and painting products and associated asphalt parking currently occupy the site.	None

Element	Description	Data Gaps
Sensitive Receptors, Land Use, and Nearby Sites		
Surface Water Bodies	The site is located approximately 1,630 feet north-northwest of Cordornices Creek. No other surface water bodies have been located within a 300-meter radius of the site.	None
Nearby Wells	There are not public water supply, municipal, or domestic wells located within a ¼-mile radius of the site.	None
Public Use Areas	Two public use areas are present within a 100-meter radius of the site: the City of Albany Police, Fire, and City offices located across Buchanan Street at 1000 San Pablo Avenue and a physical therapy office located in the strip mall approximately 50 meters north of the site.	None
Residences	Sixteen residential buildings have been identified within a 300-meter radius of the site; five of those buildings are located within a 100-meter radius of the site.	None
Sub-Grade	Sub-grade structures have not been identified within a 100-meter radius of the site.	None
Utility Vaults	Twenty-three vaults have been identified on or immediately adjacent to the site. Vault uses include: water, telephone, gas meter, electric, sewer, traffic box, traffic signal, and anode.	None
Storm and Sanitary Sewers	Three storm drains are located on or adjacent to the site. The storm drains daylight along the curb and water flows west along Buchanan Street. The City of Albany Public Works Department confirmed that the storm drains discharge directly into the Bay. Two sanitary sewer cleanout vaults are located on site. The City of Albany Public Works Department confirmed that sewage is discharged at the East Bay Municipal Utilities District Treatment Plant, located 4.5 miles south of the site, at the entrance to the San Francisco Bay Bridge.	None
Other	Other site receptors have not been identified.	None
Nearby Sites	The surrounding areas consist of residential and commercial properties. The City of Albany Fire Department and Police Department are located south of the site on Buchanan Street. ACEH case number RO0000119, identified as Firestone #3655 in the GeoTracker™ database, is located across San Pablo Avenue to the east. A Shell Service Station and an Atlantic Richfield Company Service Station (Arco) are located approximately 350 and 500 feet away, respectively, south-southeast of the site.	None
Release Information		
Release History	The primary sources of petroleum hydrocarbons at the site are the former used-oil UST and the four former gasoline USTs. The USTs were removed in 1983 (City of Albany, 1983).	None
Extent and Distribution of Petroleum Hydrocarbon Concentrations	**Non-Aqueous Phase Liquid** An immiscible sheen was reported in groundwater samples collected from borings B1 and B2 (EC&A, 2008). Neither NAPL nor sheen have been observed in the groundwater monitoring wells at the site; however, during fourth quarter 2012, concentrations of TPHg (270,000 µg/L) reported in well MW4 were potentially indicative of the presence of NAPL. Although the TPHg concentrations increased, BTEX concentrations were consistent with previous data. Concentrations of TPHg reported since fourth quarter 2012 are not indicative of the presence of NAPL and second quarter 2015 (22,000 µg/L) data is consistent with historical results. The fourth quarter 2012 TPHd result for well MW4 appears to have been anomalous.	None

Element	Description	Data Gaps
	Hydrocarbons in Groundwater Current and historic maximum dissolved-phase petroleum hydrocarbon concentrations have been reported in well MW3 (located in the vicinity of the former USTs) and wells MW4 and MW5 (located west of the former USTs). Concentrations are delineated to the east of the site by wells MW1 and MW2 and to the south of the site by borings B11 and B15. Dissolved-phase hydrocarbons are adequately vertically delineated at the site with petroleum hydrocarbon concentrations below or near the laboratory reporting limits in groundwater samples collected deeper than 27.5 feet bgs (Cardno ERI, 2011). **Data Gap:** Dissolved-phase petroleum hydrocarbons require monitoring off site to the west and southwest near borings B9 and B12. **How to Address:** Cardno installed off-site wells MW7 through MW9 to monitor dissolved-phase petroleum hydrocarbons west and southwest of the site. Monitoring and sampling activities in these wells are ongoing. The need for installation of additional wells will be evaluated.	**Yes**
	Hydrocarbons in Soil Maximum residual petroleum hydrocarbon concentrations are present at approximately 10.5 feet bgs in the vicinity of the former USTs. With the exception of naphthalene by EPA Method 8310 in boring B13 (5 feet bgs) and TPHg in borings B4 (5 feet bgs) and SVE1 (8.5 feet bgs), residual petroleum hydrocarbon concentrations have been near or below reporting limits in the shallow soil samples collected at the site, including samples collected in the vicinity of the former UST and suspected dispenser island locations. Residual petroleum hydrocarbon concentrations are adequately delineated in both shallow (less than 10 feet bgs) and deep (greater than or equal to 10 feet bgs) soil to the northeast, the northwest, the west, the east, the southwest, and the south by borings B5 through B11, B14, B15, MW1, MW2, and CPT1. Residual TPHg (530 mg/kg) is present to the north at 10 feet bgs in boring B16, but is near or below reporting limits at 5 and 15.5 feet bgs (EC&A, 2008; Cardno ERI, 2011; Cardno ERI, 2014a).	None
	Hydrocarbons in Soil Vapor Maximum vapor-phase concentrations are present in well SVS3, located in the vicinity of the suspected locations of the former dispenser islands. Petroleum hydrocarbons exceed ESLs by up to three orders of magnitude in wells SVS1 through SVS3. **Data Gap:** Vapor-phase concentrations exceed applicable screening levels. **How to Address:** DPE HIT events and soil vapor sampling are ongoing.	**Yes**
Exposure Routes and Potential Receptors		
Exposure Routes and Potential Receptors	Utility trench backfill material is not acting as a preferential pathway for petroleum hydrocarbon concentrations (Cardno ERI, 2014a). There are not public water supply, municipal, or domestic wells located within a quarter mile of the site. The nearest surface water body (Cordornices Creek) is located approximately 1,630 feet south-southeast of the site. Residual and dissolved-phase petroleum hydrocarbons are delineated south and east of the site and are not likely to migrate to Cordornices Creek. A construction worker excavating soil at the site is a potential receptor; however, since the site is paved, direct exposure (via ingestion or dermal contact) to chemicals of concern released during Exxon's operations is not likely. The potential exposure route of vapor inhalation may exist in the commercial/industrial setting for workers in the on-site retail outlet. Users of shallow and deep groundwater are potential receptors. **Data Gap:** See the groundwater and soil vapor data gaps in the Release Information section.	**Yes**

REFERENCES

California Regional Water Quality Control Board San Francisco Bay Region Groundwater Committee (CRWQCB). June 1999. *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, Alameda and Contra Costa Counties, CA.*

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Cardno ERI. July 7, 2014a. *Work Plan for Well Installation, Former Exxon Service Station 79374, 990 San Pablo Avenue, Albany, California.*

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Environmental Data Resources Inc. (EDR). December 1, 2009b. *Certified Sanborn® Map Report, 990 San Pablo Avenue, Albany, CA 94706. Inquiry Number: 2648519.36.*

Graymer, R.W. 2000. *Geological map and map database of the Oakland metropolitan area, Alameda, Contra Costa, and San Francisco Counties, California. USGS, Miscellaneous Field Studies MF-2342.*

Hickenbottom, Kelvin, and Muir, Kenneth S. June 1988. *Geohydrology and Groundwater Quality Overview of the East Bay Plain Area, Alameda County, CA. Alameda County Flood Control and Water Conservation District. 83p.*

APPENDIX

C

FIELD PROTOCOLS

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Soil Vapor Sampling Well Installation and Sampling Field Protocol

Preliminary Activities

Prior to the onset of field activities at the site, Cardno obtains the appropriate permit(s) from the governing agency(s). Advance notification is made as required by the agency(s) prior to the start of work. Cardno marks the borehole locations and contacts the local one call utility locating service at least 48 hours prior to the start of work to mark buried utilities. Borehole locations may also be checked for buried utilities by a private geophysical surveyor. Prior to drilling, the borehole location is cleared in accordance with the client's procedures. Fieldwork is conducted under the advisement of a registered professional geologist and in accordance with an updated site-specific safety plan prepared for the project, which is available at the job site during field activities.

Well Construction

The borehole is advanced to the desired depth using either a direct-push rig, hand auger, or air vacuum rig. Lithologic conditions are recorded on a boring log during borehole advancement, and select soil matrix sampling may be conducted based on soil characteristics.

Each soil vapor sampling (SVS) well is constructed using inert screen material attached to $^1/_8$- to ¼-inch outer diameter inert tubing. A gas-tight vacuum fitting or valve is attached to the top of each length of tubing using a female compression fitting. Each screen is set within a minimum of a 12-inch thick appropriately sized sand pack, with a minimum of 3 inches of sand pack above the top of the screen. A minimum of 4 inches of dry granular bentonite is set above each screen and associated sand pack. In SVS wells with multiple and separate casings and screens, the annular space between the top of the dry granular bentonite above the deep screen and the bottom of the sand pack associated with the shallow screen is sealed with a minimum of 18 inches of hydrated bentonite. The remainder of the annular space of the well is sealed with hydrated bentonite to 1 foot below ground surface. Wellheads are finished with traffic-rated well boxes set in concrete flush with the surrounding grade. No glues, chemical cements, or solvents are used in well construction.

A boring log is completed with the construction details for each well, including the materials of construction, depth of the borehole, screen length, and annular seal thickness.

Soil Vapor Sampling

Samples are collected using a soil vapor purging and sampling manifold consisting of a flow regulator, vacuum gauges, vacuum pump, shroud, and laboratory-prepared, gas-tight, opaque containers such as Summa™ canisters. Samples may also be collected using a syringe and analyzed by a mobile laboratory. Prior to use, Summa™ canisters are checked to ensure they are under the laboratory induced vacuum between 31 and 25 inches of mercury (in. Hg). New inert tubing is used to purge and sample each well. Prior to purging and sampling each SVS well, the sampling manifold is connected to the gas-tight vacuum fitting or valve at the wellhead, and the downstream tubing and fittings are vacuum tested at approximately 24 to 28 in. Hg. Purging and sampling are conducted only on SVS wells when the tubing and fittings hold the applied vacuum for 5 minutes per vacuum gauge reading.

When required, Cardno conducts a purge volume versus constituent concentration test on at least one SVS well prior to purging and sampling activities. The purge volume test well is selected based on the location of the anticipated source of chemical constituents at the site and on the location of anticipated maximum soil vapor concentrations based on lithologic conditions. If the SVS well has been in place for more than 1 week, it is assumed that soil vapor in the sand pack has equilibrated with the surrounding soil, and only the screen and tubing volumes are included in the purge volume calculation. If the SVS well has been in place for less than 1 week, the volume of the sand pack around the screen is included in the purge volume calculation. A photo-ionization detector (PID) or on-site mobile laboratory is used to evaluate concentrations of chemical constituents in the vapor stream after 1, 3, and 10 volumes of vapor have been purged from the SVS well. Purging is conducted at a rate of 100 to 200

milliliters per minute (ml/min). The purge volume exhibiting the highest concentration is the volume of vapor purged from each SVS well prior to sampling. If the three separate purge volumes produce equal concentrations a default of 3 purge volumes is extracted prior to sampling.

Prior to sampling, a helium leak test is performed at each SVS well, including a summa canister and its fittings, to check for leaks in the SVS annulus. To assess the potential for leaks in the SVS well annulus, a shroud is placed over the SVS well and summa canister and the shroud is filled with a measured amount of helium. Helium screening is performed in the field by drawing soil gas into a Tedlar bag via a lung-box and screening the contents of the Tedlar bag with a helium meter. The concentration of helium in the sample divided by the concentration of helium in the shroud provides a measure of the proportion of the sample attributable to leakage. A leak that comprises less than 5% of the sample is insignificant. Helium screening is also performed using laboratory analysis of the contents of the summa canister collected under the shroud. Sampling is conducted at approximately the same rate of purging, at 100 to 200 ml/min. Soil vapor samples are submitted under chain-of-custody protocol for the specified laboratory analyses.

At a minimum, weather conditions (temperature, barometric pressure and precipitation), the sampling flow rate, the purge volume, the helium leak detection percentage results, the sample canister identification number, the method of sample collection, and the vacuum of the sampling canister at the start and end of sample collection (if applicable) are recorded on a log for each SVS well purged and sampled.

Decontamination Procedures

If soil samples are collected, Cardno or the contracted driller decontaminates the soil sampling equipment between each sampling interval using a non-phosphate solution, followed by a minimum of two tap water rinses. De-ionized water may be used for the final rinse. Downhole drilling equipment is steam-cleaned or triple-rinsed prior to advancing each borehole.

Waste Treatment and Disposal

Soil cuttings generated from the well installation are stored on site in labeled, Department of Transportation-approved, 55-gallon drums or other appropriate storage container. The soil is removed from the site and transported under manifest to a client- and regulatory-approved facility for recycling or disposal. Decontamination water is stored on site in labeled, regulatory-approved storage containers, and is subsequently transported under manifest to a client- and regulatory-approved facility for disposal or treated with a permitted mobile or fixed-base carbon treatment system.

APPENDIX

D

FIELD DATA SHEETS

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Soil Vapor Sampling Datasheet

Site ID: Former Exxon 79374	**Cardno Project #: 2735**
Site Address: 990 San Pablo Ave, Albany, CA	**Weather / Air Temp (F°):** 65°
Location ID: SVS1 **Well Depth:** 5.6'	**Atmospheric Pressure (in Hg):** 29.95"
Date: 8-24-17	**Helium Detector #: MGD 2002**
Field Personnel: Nadya Vicente	**Purge Volume (mL - 3PV):** 3254 ml

Pre-Sampling Information

Shut In Test : **Start Time:** 1150 **End Time:** 1155 **Initial Vacuum** 20 **(in Hg)** **Final Vacuum** 20 **(in Hg)**

	Start Time	End Time	Maintained % Helium in Shroud	Flow Rate (cc/min)	Down-hole Vacuum (in Hg)	Helium Leak (ppm)	Notes:
Well Purge	1155	1214	+10%	200 cc/min	0	+2%	He > limit. Change summa & tubing - same result. NO SAMPLE

Sample Information

Sample ID	Start Time	End Time	Maintained % Helium in Shroud	Canister ID	Flow Controller #	Initial Vacuum (in Hg)	Final Vacuum (in Hg)	Down-hole Vacuum (in Hg)
	NO SAMPLE							
Duplicate								

Sorbant Tube ID # **Time:**

Comments:	

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Soil Vapor Sampling Datasheet

Site ID: Former Exxon 79374	**Cardno Project #: 2735**
Site Address: 990 San Pablo Ave, Albany, CA	**Weather / Air Temp (F°):** 69°
Location ID: SVS2 **Well Depth:** 5.6"	**Atmospheric Pressure (in Hg):** 29.93"
Date: 8-24-17	**Helium Detector #: MGD 2002**
Field Personnel: Nadya Vicente	**Purge Volume (mL - 3PV):** 3254 ml

Pre-Sampling Information

Shut In Test : **Start Time:** 1255 **End Time:** 1300 **Initial Vacuum** 19 **(in Hg)** **Final Vacuum** 19 **(in Hg)**

	Start Time	End Time	Maintained % Helium in Shroud	Flow Rate (cc/min)	Down-hole Vacuum (in Hg)	Helium Leak (ppm)	Notes:
Well Purge	1302	1318	+10%.	200 cc/min	0	+2%	He > limit. Change Summa & tubing. Same result.

Sample Information

Sample ID	Start Time	End Time	Maintained % Helium in Shroud	Canister ID	Flow Controller #	Initial Vacuum (in Hg)	Final Vacuum (in Hg)	Down-hole Vacuum (in Hg)
	NO SAMPLE							
Duplicate								

Sorbant Tube ID # **Time:**

Comments:	

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Soil Vapor Sampling Datasheet

Site ID: Former Exxon 79374	Cardno Project #: 2735
Site Address: 990 San Pablo Ave, Albany, CA	Weather / Air Temp (F°): 63°
Location ID: SVS 3 Well Depth: 5.6'	Atmospheric Pressure (in Hg): 29.94"
Date: 8-24-17	Helium Detector #: MGD 2002
Field Personnel: Nadya Vicente	Purge Volume (mL - 3PV): 3254 ml

Pre-Sampling Information

Shut In Test : Start Time: 0940 End Time: 0945 Initial Vacuum 19 (in Hg) Final Vacuum 19 (in Hg)

	Start Time	End Time	Maintained % Helium in Shroud	Flow Rate (cc/min)	Down-hole Vacuum (in Hg)	Helium Leak (ppm)	Notes:
Well Purge	0945	1001	+10%	200 cc/min	0	0 ppm	

Sample Information

Sample ID	Start Time	End Time	Maintained % Helium in Shroud	Canister ID	Flow Controller #	Initial Vacuum (in Hg)	Final Vacuum (in Hg)	Down-hole Vacuum (in Hg)
SVS 3	1002	1006	+10%	380	226	-27	-5	0
Duplicate	1002	1006	+10%	275	226	-27	-5	0

Sorbant Tube ID # G0141338 Time: 1012

Comments:	

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Soil Vapor Sampling Datasheet

Site ID: Former Exxon 79374	**Cardno Project #:** 2735
Site Address: 990 San Pablo Ave, Albany, CA	**Weather / Air Temp (F°):** 68°
Location ID: SVS4 **Well Depth:** 2'	**Atmospheric Pressure (in Hg):** 29.96"
Date: 8-24-17	**Helium Detector #:** MGD 2002
Field Personnel: Nadya Vicente	**Purge Volume (mL - 3PV):** 889ml

Pre-Sampling Information

Shut In Test : **Start Time:** 1320 **End Time:** 1325 **Initial Vacuum** 19 **(in Hg)** **Final Vacuum** 19 **(in Hg)**

	Start Time	End Time	Maintained % Helium in Shroud	Flow Rate (cc/min)	Down-hole Vacuum (in Hg)	Helium Leak (ppm)	Notes:
Well Purge	1328	1333	+10%	200 cc/min	0	1660 ppm	

Sample Information

Sample ID	Start Time	End Time	Maintained % Helium in Shroud	Canister ID	Flow Controller #	Initial Vacuum (in Hg)	Final Vacuum (in Hg)	Down-hole Vacuum (in Hg)
	1337	1340	+10%	134	081	-30	-5	0
Duplicate								

Sorbant Tube ID # G0189328 **Time:** 1342

Comments:	

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Soil Vapor Sampling Datasheet

Site ID: Former Exxon 79374	**Cardno Project #:** 2735
Site Address: 990 San Pablo Ave, Albany, CA	**Weather / Air Temp (F°):** 68°
Location ID: SVS 5 **Well Depth:** 2'	**Atmospheric Pressure (in Hg):** 29.96"
Date: 8-24-17	**Helium Detector #:** MGD 2002
Field Personnel: Nadya Vicente	**Purge Volume (mL - 3PV):** 889ml

Pre-Sampling Information

Shut In Test : **Start Time:** 1235 **End Time:** 1240 **Initial Vacuum** 20 **(in Hg)** **Final Vacuum** 20 **(in Hg)**

	Start Time	End Time	Maintained % Helium in Shroud	Flow Rate (cc/min)	Down-hole Vacuum (in Hg)	Helium Leak (ppm)	Notes:
Well Purge	1244	/	+10%	/	/		@ 7.5"/Hg after 2 minutes purging @ 50 cc/min. Purge with syringe — WET. H_2O in well.

Sample Information

Sample ID	Start Time	End Time	Maintained % Helium in Shroud	Canister ID	Flow Controller #	Initial Vacuum (in Hg)	Final Vacuum (in Hg)	Down-hole Vacuum (in Hg)
	NO SAMPLE			WET.				
Duplicate								

Sorbant Tube ID # **Time:**

Comments:	

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Soil Vapor Sampling Datasheet

Site ID: Former Exxon 79374	**Cardno Project #:** 2735
Site Address: 990 San Pablo Ave, Albany, CA	**Weather / Air Temp (F°):** 65°
Location ID: SVS6 **Well Depth:** 7	**Atmospheric Pressure (in Hg):** 29.95"
Date: 8-24-17	**Helium Detector #:** MGD 2002
Field Personnel: Nadya Vicente	**Purge Volume (mL - 3PV):** 1365

Pre-Sampling Information

Shut In Test : **Start Time:** 1120 **End Time:** 1125 **Initial Vacuum** 20 **(in Hg)** **Final Vacuum** 20 **(in Hg)**

	Start Time	End Time	Maintained % Helium in Shroud	Flow Rate (cc/min)	Down-hole Vacuum (in Hg)	Helium Leak (ppm)	Notes:
Well Purge	1126	1133	+10%	200cc/min	0	0 ppm	

Sample Information

Sample ID	Start Time	End Time	Maintained % Helium in Shroud	Canister ID	Flow Controller #	Initial Vacuum (in Hg)	Final Vacuum (in Hg)	Down-hole Vacuum (in Hg)
SVS6	1133	1136	+10%	321	143	-30	-5	0
Duplicate								

Sorbant Tube ID # G0141370 **Time:** 1139

Replicate - G0141306 Time: 1140

Comments:	

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Soil Vapor Sampling Datasheet

Site ID: Former Exxon 79374	**Cardno Project #:** 2735
Site Address: 990 San Pablo Ave, Albany, CA	**Weather / Air Temp (F°):** 63°
Location ID: SVS 7 **Well Depth:** 2	**Atmospheric Pressure (in Hg):** 29.94"
Date: 8-24-17	**Helium Detector #:** MGD 2002
Field Personnel: Nadya Vicente	**Purge Volume (mL - 3PV):** 889mL

Pre-Sampling Information

Shut In Test : **Start Time:** 1030 **End Time:** 1035 **Initial Vacuum** 19 (in Hg) **Final Vacuum** 19 (in Hg)

	Start Time	End Time	Maintained % Helium in Shroud	Flow Rate (cc/min)	Down-hole Vacuum (in Hg)	Helium Leak (ppm)	Notes:
Well Purge	1035	1043	+10%	100-150	0-6.5	0 ppm	3 minutes @ 150 cc/mi 5 minutes @ 100 cc/mi Tight Conditions

Sample Information

Sample ID	Start Time	End Time	Maintained % Helium in Shroud	Canister ID	Flow Controller #	Initial Vacuum (in Hg)	Final Vacuum (in Hg)	Down-hole Vacuum (in Hg)
SVS7	1047	1054	+10%	057	039	-29	~~-25~~	0-7
Duplicate							-5	

Sorbant Tube ID # G0141358 **Time:** 1100

Comments:	

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Soil Vapor Sampling Datasheet

Site ID: Former Exxon 79374	**Cardno Project #: 2735**
Site Address: 990 San Pablo Ave, Albany, CA	**Weather / Air Temp (F°):** 63°
Location ID: SVS8 **Well Depth:** 2'	**Atmospheric Pressure (in Hg):** 29.94
Date: 8-24-17	**Helium Detector #: MGD 2002**
Field Personnel: Nadya Vicente	**Purge Volume (mL - 3PV):** 889 ml

Pre-Sampling Information

Shut In Test : **Start Time:** 0855 **End Time:** 0900 **Initial Vacuum** 19 **(in Hg)** **Final Vacuum** 19 **(in Hg)**

	Start Time	End Time	Maintained % Helium in Shroud	Flow Rate (cc/min)	Down-hole Vacuum (in Hg)	Helium Leak (ppm)	Notes:
Well Purge	0902	0907	+10%	200 cc/min	0	0 ppm	

Sample Information

Sample ID	Start Time	End Time	Maintained % Helium in Shroud	Canister ID	Flow Controller #	Initial Vacuum (in Hg)	Final Vacuum (in Hg)	Down-hole Vacuum (in Hg)
SVS8	0909	0912	+10%	390	099	-27	-5	0
Duplicate								

Sorbant Tube ID # G0150657 **Time:** 0920

Comments:	

APPENDIX

E

LABORATORY ANALYTICAL REPORTS

Cardno
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Mobile Geochemistry Inc.

08 September 2017

Mr. Scott Perkins
Cardno ERI - Petaluma
601 N. McDowell Blvd
Petaluma, CA 94954

H&P Project: CAR082917-13
Client Project: Former Exxon 79374 / 990 San Pablo Ave.

Dear Mr. Scott Perkins:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 29-Aug-17 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody
- Sampling Logs (if applicable)

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis La Roux
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP and the National Environmental Laboratory Accreditation Conference (NELAC). H&P is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP Program and ISO/IEC 17025:2005 programs, accreditation number 69070 for EPA Method TO-15, H&P Method TO-15, EPA Method 8260B and H&P 8260SV.

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760-804-9678 Phone
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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SVS3	E708119-01	Vapor	24-Aug-17	29-Aug-17
SVS3 DUP	E708119-02	Vapor	24-Aug-17	29-Aug-17
SVS4	E708119-03	Vapor	24-Aug-17	29-Aug-17
SVS6	E708119-04	Vapor	24-Aug-17	29-Aug-17
SVS7	E708119-05	Vapor	24-Aug-17	29-Aug-17
SVS8	E708119-06	Vapor	24-Aug-17	29-Aug-17
QCEB	E708119-07	Vapor	24-Aug-17	29-Aug-17
QCTB	E708119-08	Vapor	24-Aug-17	29-Aug-17

Due to the presence of elevated analytes, samples SVS3, SVS3 DUP and SVS8 were analyzed using H&P 8260SV rather than EPA Method TO-15. The following EPA Method TO-15 analytes are not reported by H&P 8260SV:
Dichlorotetrafluoroethane
4-Ethyltoluene

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

DETECTIONS SUMMARY

Sample ID: **SVS3** Laboratory ID: **E708119-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Carbon dioxide	**12**	0.20	%	ASTM D1945	
Oxygen	**5.6**	0.20	%	ASTM D1945	
Nitrogen	**79**	0.20	%	ASTM D1945	
Methane	**36000**	100	ppmv	EPA 8015M	
Benzene	**15000**	10000	ug/m3	H&P 8260SV	
TPHv (C6-C12)	**56000000**	2000000	ug/m3	H&P 8260SV	

Sample ID: **SVS3 DUP** Laboratory ID: **E708119-02**

Analyte	Result	Reporting Limit	Units	Method	Notes
Carbon dioxide	**13**	0.20	%	ASTM D1945	
Oxygen	**5.1**	0.20	%	ASTM D1945	
Nitrogen	**79**	0.20	%	ASTM D1945	
Methane	**35000**	100	ppmv	EPA 8015M	
Benzene	**17000**	10000	ug/m3	H&P 8260SV	
TPHv (C6-C12)	**67000000**	2000000	ug/m3	H&P 8260SV	

Sample ID: **SVS4** Laboratory ID: **E708119-03**

Analyte	Result	Reporting Limit	Units	Method	Notes
Helium (LCC)	**0.34**	0.10	%	ASTM D1945M	
Carbon dioxide	**0.80**	0.20	%	ASTM D1945	
Oxygen	**21**	0.20	%	ASTM D1945	
Nitrogen	**78**	0.20	%	ASTM D1945	
Chloroform	**310**	4.9	ug/m3	EPA TO-15	
Bromodichloromethane	**20**	6.8	ug/m3	EPA TO-15	
Tetrachloroethene	**19**	6.9	ug/m3	EPA TO-15	
TPHv (C6 - C12)	**630**	100	ug/m3	EPA TO-15	

Sample ID: **SVS6** Laboratory ID: **E708119-04**

Analyte	Result	Reporting Limit	Units	Method	Notes
Carbon dioxide	**0.38**	0.20	%	ASTM D1945	
Oxygen	**21**	0.20	%	ASTM D1945	
Nitrogen	**79**	0.20	%	ASTM D1945	
Toluene	**7.4**	3.8	ug/m3	EPA TO-15	
TPHv (C6 - C12)	**2100**	100	ug/m3	EPA TO-15	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Sample ID: **SVS7** Laboratory ID: **E708119-05**

Analyte	Result	Reporting Limit	Units	Method	Notes
Helium (LCC)	**0.17**	0.10	%	ASTM D1945M	
Carbon dioxide	**5.0**	0.20	%	ASTM D1945	
Oxygen	**17**	0.20	%	ASTM D1945	
Nitrogen	**77**	0.20	%	ASTM D1945	
Methane	**8300**	10	ppmv	EPA 8015M	
Ethylbenzene	**110**	44	ug/m3	EPA TO-15	
4-Ethyltoluene	**63**	50	ug/m3	EPA TO-15	
1,3,5-Trimethylbenzene	**260**	50	ug/m3	EPA TO-15	
1,2,4-Trimethylbenzene	**200**	50	ug/m3	EPA TO-15	
TPHv (C6 - C12)	**670000**	5000	ug/m3	EPA TO-15	

Sample ID: **SVS8** Laboratory ID: **E708119-06**

Analyte	Result	Reporting Limit	Units	Method	Notes
Carbon dioxide	**14**	0.20	%	ASTM D1945	
Oxygen	**5.3**	0.20	%	ASTM D1945	
Nitrogen	**79**	0.20	%	ASTM D1945	
Methane	**8400**	10	ppmv	EPA 8015M	
TPHv (C6-C12)	**25000000**	2000000	ug/m3	H&P 8260SV	

Sample ID: **QCEB** Laboratory ID: **E708119-07**

Analyte	Result	Reporting Limit	Units	Method	Notes
Oxygen	**21**	0.20	%	ASTM D1945	
Nitrogen	**79**	0.20	%	ASTM D1945	
Toluene	**10**	3.8	ug/m3	EPA TO-15	
TPHv (C6 - C12)	**700**	100	ug/m3	EPA TO-15	

Sample ID: **QCTB** Laboratory ID: **E708119-08**

Analyte	Result	Reporting Limit	Units	Method	Notes
Oxygen	**2.1**	0.20	%	ASTM D1945	
Nitrogen	**98**	0.20	%	ASTM D1945	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Soil Gas and Vapor Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS3 (E708119-01) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Carbon dioxide	**12**	0.20	%	1	EH73017	30-Aug-17	30-Aug-17	ASTM D1945	
Oxygen	**5.6**	0.20	"	"	"	"	"	"	
Nitrogen	**79**	0.20	"	"	"	"	"	"	
Helium (LCC)	ND	0.10	"	"	EH73016	30-Aug-17	30-Aug-17	ASTM D1945M	
Methane	**36000**	100	ppmv	10	EH73015	30-Aug-17	30-Aug-17	EPA 8015M	
SVS3 DUP (E708119-02) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Carbon dioxide	**13**	0.20	%	1	EH73017	30-Aug-17	30-Aug-17	ASTM D1945	
Oxygen	**5.1**	0.20	"	"	"	"	"	"	
Nitrogen	**79**	0.20	"	"	"	"	"	"	
Helium (LCC)	ND	0.10	"	"	EH73016	30-Aug-17	30-Aug-17	ASTM D1945M	
Methane	**35000**	100	ppmv	10	EH73015	30-Aug-17	30-Aug-17	EPA 8015M	
SVS4 (E708119-03) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Carbon dioxide	**0.80**	0.20	%	1	EH73017	30-Aug-17	30-Aug-17	ASTM D1945	
Oxygen	**21**	0.20	"	"	"	"	"	"	
Nitrogen	**78**	0.20	"	"	"	"	"	"	
Helium (LCC)	**0.34**	0.10	"	"	EH73016	30-Aug-17	30-Aug-17	ASTM D1945M	
Methane	ND	10	ppmv	"	EH73015	30-Aug-17	30-Aug-17	EPA 8015M	
SVS6 (E708119-04) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Carbon dioxide	**0.38**	0.20	%	1	EH73017	30-Aug-17	30-Aug-17	ASTM D1945	
Oxygen	**21**	0.20	"	"	"	"	"	"	
Nitrogen	**79**	0.20	"	"	"	"	"	"	
Helium (LCC)	ND	0.10	"	"	EH73016	30-Aug-17	30-Aug-17	ASTM D1945M	
Methane	ND	10	ppmv	"	EH73015	30-Aug-17	30-Aug-17	EPA 8015M	

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601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Soil Gas and Vapor Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS7 (E708119-05) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Carbon dioxide	**5.0**	0.20	%	1	EH73017	30-Aug-17	30-Aug-17	ASTM D1945	
Oxygen	**17**	0.20	"	"	"	"	"	"	
Nitrogen	**77**	0.20	"	"	"	"	"	"	
Helium (LCC)	**0.17**	0.10	"	"	EH73016	30-Aug-17	30-Aug-17	ASTM D1945M	
Methane	**8300**	10	ppmv	"	EH73015	30-Aug-17	30-Aug-17	EPA 8015M	
SVS8 (E708119-06) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Carbon dioxide	**14**	0.20	%	1	EH73017	30-Aug-17	30-Aug-17	ASTM D1945	
Oxygen	**5.3**	0.20	"	"	"	"	"	"	
Nitrogen	**79**	0.20	"	"	"	"	"	"	
Helium (LCC)	ND	0.10	"	"	EH73016	30-Aug-17	30-Aug-17	ASTM D1945M	
Methane	**8400**	10	ppmv	"	EH73015	30-Aug-17	30-Aug-17	EPA 8015M	
QCEB (E708119-07) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Carbon dioxide	ND	0.20	%	1	EH73017	30-Aug-17	30-Aug-17	ASTM D1945	
Oxygen	**21**	0.20	"	"	"	"	"	"	
Nitrogen	**79**	0.20	"	"	"	"	"	"	
Helium (LCC)	ND	0.10	"	"	EH73016	30-Aug-17	30-Aug-17	ASTM D1945M	
Methane	ND	10	ppmv	"	EH73015	30-Aug-17	30-Aug-17	EPA 8015M	
QCTB (E708119-08) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Carbon dioxide	ND	0.20	%	1	EH73017	30-Aug-17	30-Aug-17	ASTM D1945	
Oxygen	**2.1**	0.20	"	"	"	"	"	"	
Nitrogen	**98**	0.20	"	"	"	"	"	"	
Helium (LCC)	ND	0.10	"	"	EH73016	30-Aug-17	30-Aug-17	ASTM D1945M	
Methane	ND	10	ppmv	"	EH73015	30-Aug-17	30-Aug-17	EPA 8015M	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by EPA TO-15

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Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS4 (E708119-03) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Dichlorodifluoromethane (F12)	ND	5.0	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Chloromethane	ND	2.1	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	7.1	"	"	"	"	"	"	
Vinyl chloride	ND	2.6	"	"	"	"	"	"	
Bromomethane	ND	16	"	"	"	"	"	"	
Chloroethane	ND	8.0	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	5.6	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	6.1	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	7.7	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
Carbon disulfide	ND	6.3	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	3.6	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.1	"	"	"	"	"	"	
2-Butanone (MEK)	ND	30	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	4.2	"	"	"	"	"	"	
Chloroform	**310**	4.9	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	4.2	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.5	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Carbon tetrachloride	ND	6.4	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	4.2	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	9.4	"	"	"	"	"	"	
Bromodichloromethane	**20**	6.8	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	8.3	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
Toluene	ND	3.8	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.5	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	8.3	"	"	"	"	"	"	
Dibromochloromethane	ND	8.6	"	"	"	"	"	"	
Tetrachloroethene	**19**	6.9	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	7.8	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by EPA TO-15

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Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS4 (E708119-03) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Chlorobenzene	ND	4.7	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
Styrene	ND	4.3	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Bromoform	ND	10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
4-Ethyltoluene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	12	"	"	"	"	"	"	
Naphthalene	ND	5.3	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	38	"	"	"	"	"	"	
Hexachlorobutadiene	ND	54	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*98.3 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*105 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*		*77-127*	"	"	"	"	
SVS6 (E708119-04) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Dichlorodifluoromethane (F12)	ND	5.0	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Chloromethane	ND	2.1	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	7.1	"	"	"	"	"	"	
Vinyl chloride	ND	2.6	"	"	"	"	"	"	
Bromomethane	ND	16	"	"	"	"	"	"	
Chloroethane	ND	8.0	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	5.6	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	6.1	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	7.7	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
Carbon disulfide	ND	6.3	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	3.6	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.1	"	"	"	"	"	"	
2-Butanone (MEK)	ND	30	"	"	"	"	"	"	

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601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by EPA TO-15

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Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS6 (E708119-04) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
cis-1,2-Dichloroethene	ND	4.0	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Diisopropyl ether (DIPE)	ND	4.2	"	"	"	"	"	"	
Chloroform	ND	4.9	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	4.2	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.5	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Carbon tetrachloride	ND	6.4	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	4.2	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	9.4	"	"	"	"	"	"	
Bromodichloromethane	ND	6.8	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	8.3	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
Toluene	**7.4**	3.8	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.5	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	8.3	"	"	"	"	"	"	
Dibromochloromethane	ND	8.6	"	"	"	"	"	"	
Tetrachloroethene	ND	6.9	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	7.8	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
Chlorobenzene	ND	4.7	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
Styrene	ND	4.3	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Bromoform	ND	10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
4-Ethyltoluene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	12	"	"	"	"	"	"	
Naphthalene	ND	5.3	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	38	"	"	"	"	"	"	
Hexachlorobutadiene	ND	54	"	"	"	"	"	"	

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601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by EPA TO-15

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Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS6 (E708119-04) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Surrogate: 1,2-Dichloroethane-d4		*101 %*		*76-134*	*EH73112*	*31-Aug-17*	*31-Aug-17*	*EPA TO-15*	
Surrogate: Toluene-d8		*101 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*		*77-127*	"	"	"	"	
SVS7 (E708119-05) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Dichlorodifluoromethane (F12)	ND	50	ug/m3	10	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Chloromethane	ND	21	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	71	"	"	"	"	"	"	
Vinyl chloride	ND	26	"	"	"	"	"	"	
Bromomethane	ND	160	"	"	"	"	"	"	
Chloroethane	ND	80	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	56	"	"	"	"	"	"	
1,1-Dichloroethene	ND	40	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	61	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	77	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	35	"	"	"	"	"	"	
Carbon disulfide	ND	63	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	80	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	36	"	"	"	"	"	"	
1,1-Dichloroethane	ND	41	"	"	"	"	"	"	
2-Butanone (MEK)	ND	300	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	40	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	42	"	"	"	"	"	"	
Chloroform	ND	49	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	42	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	55	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	41	"	"	"	"	"	"	
Benzene	ND	32	"	"	"	"	"	"	
Carbon tetrachloride	ND	64	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	42	"	"	"	"	"	"	
Trichloroethene	ND	55	"	"	"	"	"	"	
1,2-Dichloropropane	ND	94	"	"	"	"	"	"	
Bromodichloromethane	ND	68	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	46	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	83	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	46	"	"	"	"	"	"	
Toluene	ND	38	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	55	"	"	"	"	"	"	

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Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS7 (E708119-05) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
2-Hexanone (MBK)	ND	83	ug/m3	10	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Dibromochloromethane	ND	86	"	"	"	"	"	"	
Tetrachloroethene	ND	69	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	78	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	70	"	"	"	"	"	"	
Chlorobenzene	ND	47	"	"	"	"	"	"	
Ethylbenzene	**110**	44	"	"	"	"	"	"	
m,p-Xylene	ND	88	"	"	"	"	"	"	
Styrene	ND	43	"	"	"	"	"	"	
o-Xylene	ND	44	"	"	"	"	"	"	
Bromoform	ND	100	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	70	"	"	"	"	"	"	
4-Ethyltoluene	**63**	50	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	**260**	50	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	**200**	50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	120	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	120	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	120	"	"	"	"	"	"	
Naphthalene	ND	53	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	380	"	"	"	"	"	"	
Hexachlorobutadiene	ND	540	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*107 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*104 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.0 %*		*77-127*	"	"	"	"	

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Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
QCEB (E708119-07) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Dichlorodifluoromethane (F12)	ND	5.0	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Chloromethane	ND	2.1	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	7.1	"	"	"	"	"	"	
Vinyl chloride	ND	2.6	"	"	"	"	"	"	
Bromomethane	ND	16	"	"	"	"	"	"	
Chloroethane	ND	8.0	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	5.6	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	6.1	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	7.7	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
Carbon disulfide	ND	6.3	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	3.6	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.1	"	"	"	"	"	"	
2-Butanone (MEK)	ND	30	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	4.2	"	"	"	"	"	"	
Chloroform	ND	4.9	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	4.2	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.5	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Carbon tetrachloride	ND	6.4	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	4.2	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	9.4	"	"	"	"	"	"	
Bromodichloromethane	ND	6.8	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	8.3	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
Toluene	**10**	3.8	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.5	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	8.3	"	"	"	"	"	"	
Dibromochloromethane	ND	8.6	"	"	"	"	"	"	
Tetrachloroethene	ND	6.9	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	7.8	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
QCEB (E708119-07) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Chlorobenzene	ND	4.7	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
Styrene	ND	4.3	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Bromoform	ND	10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
4-Ethyltoluene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	12	"	"	"	"	"	"	
Naphthalene	ND	5.3	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	38	"	"	"	"	"	"	
Hexachlorobutadiene	ND	54	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*99.1 %*		*76-134*	"	"	"	"	
Surrogate: Toluene-d8		*101 %*		*78-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*		*77-127*	"	"	"	"	
QCTB (E708119-08) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Dichlorodifluoromethane (F12)	ND	5.0	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Chloromethane	ND	2.1	"	"	"	"	"	"	
Dichlorotetrafluoroethane (F114)	ND	7.1	"	"	"	"	"	"	
Vinyl chloride	ND	2.6	"	"	"	"	"	"	
Bromomethane	ND	16	"	"	"	"	"	"	
Chloroethane	ND	8.0	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	5.6	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.0	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	6.1	"	"	"	"	"	"	
1,1,2-Trichlorotrifluoroethane (F113)	ND	7.7	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	3.5	"	"	"	"	"	"	
Carbon disulfide	ND	6.3	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	8.0	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	3.6	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.1	"	"	"	"	"	"	
2-Butanone (MEK)	ND	30	"	"	"	"	"	"	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
QCTB (E708119-08) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
cis-1,2-Dichloroethene	ND	4.0	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
Diisopropyl ether (DIPE)	ND	4.2	"	"	"	"	"	"	
Chloroform	ND	4.9	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	4.2	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.5	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.1	"	"	"	"	"	"	
Benzene	ND	3.2	"	"	"	"	"	"	
Carbon tetrachloride	ND	6.4	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	4.2	"	"	"	"	"	"	
Trichloroethene	ND	5.5	"	"	"	"	"	"	
1,2-Dichloropropane	ND	9.4	"	"	"	"	"	"	
Bromodichloromethane	ND	6.8	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	8.3	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.6	"	"	"	"	"	"	
Toluene	ND	3.8	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.5	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	8.3	"	"	"	"	"	"	
Dibromochloromethane	ND	8.6	"	"	"	"	"	"	
Tetrachloroethene	ND	6.9	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	7.8	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
Chlorobenzene	ND	4.7	"	"	"	"	"	"	
Ethylbenzene	ND	4.4	"	"	"	"	"	"	
m,p-Xylene	ND	8.8	"	"	"	"	"	"	
Styrene	ND	4.3	"	"	"	"	"	"	
o-Xylene	ND	4.4	"	"	"	"	"	"	
Bromoform	ND	10	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	7.0	"	"	"	"	"	"	
4-Ethyltoluene	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	12	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	12	"	"	"	"	"	"	
Naphthalene	ND	5.3	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	38	"	"	"	"	"	"	
Hexachlorobutadiene	ND	54	"	"	"	"	"	"	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
QCTB (E708119-08) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Surrogate: 1,2-Dichloroethane-d4		*98.8 %*	*76-134*		*EH73112*	*31-Aug-17*	*31-Aug-17*	*EPA TO-15*	
Surrogate: Toluene-d8		*101 %*	*78-125*		*"*	*"*	*"*	*"*	
Surrogate: 4-Bromofluorobenzene		*99.7 %*	*77-127*		*"*	*"*	*"*	*"*	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS3 (E708119-01) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
2-Butanone (MEK)	ND	250000	ug/m3	5	EI70710	06-Sep-17	06-Sep-17	H&P 8260SV	
2-Hexanone (MBK)	ND	250000	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	250000	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	50000	"	"	"	"	"	"	
Chloromethane	ND	50000	"	"	"	"	"	"	
Vinyl chloride	ND	5000	"	"	"	"	"	"	
Bromomethane	ND	50000	"	"	"	"	"	"	
Chloroethane	ND	50000	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	50000	"	"	"	"	"	"	
1,1-Dichloroethene	ND	50000	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	50000	"	"	"	"	"	"	
Carbon disulfide	ND	50000	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	50000	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	50000	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	50000	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	100000	"	"	"	"	"	"	
1,1-Dichloroethane	ND	50000	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	100000	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	50000	"	"	"	"	"	"	
Chloroform	ND	10000	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	50000	"	"	"	"	"	"	
Carbon tetrachloride	ND	10000	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	10000	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	100000	"	"	"	"	"	"	
Benzene	**15000**	10000	"	"	"	"	"	"	
Trichloroethene	ND	10000	"	"	"	"	"	"	
1,2-Dichloropropane	ND	50000	"	"	"	"	"	"	
Bromodichloromethane	ND	50000	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	50000	"	"	"	"	"	"	
Toluene	ND	100000	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	50000	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	50000	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	50000	"	"	"	"	"	"	
Tetrachloroethene	ND	10000	"	"	"	"	"	"	
Dibromochloromethane	ND	50000	"	"	"	"	"	"	
Chlorobenzene	ND	10000	"	"	"	"	"	"	
Ethylbenzene	ND	50000	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	50000	"	"	"	"	"	"	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS3 (E708119-01) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
m,p-Xylene	ND	50000	ug/m3	5	EI70710	06-Sep-17	06-Sep-17	H&P 8260SV	
o-Xylene	ND	50000	"	"	"	"	"	"	
Styrene	ND	50000	"	"	"	"	"	"	
Bromoform	ND	50000	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	50000	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	50000	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	50000	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	50000	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	50000	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	50000	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	50000	"	"	"	"	"	"	
Hexachlorobutadiene	ND	50000	"	"	"	"	"	"	
Naphthalene	ND	10000	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	500000	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*100 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*96.8 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*109 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*		*75-125*	"	"	"	"	
SVS3 DUP (E708119-02) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
2-Butanone (MEK)	ND	250000	ug/m3	5	EI70710	06-Sep-17	06-Sep-17	H&P 8260SV	
2-Hexanone (MBK)	ND	250000	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	250000	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	50000	"	"	"	"	"	"	
Chloromethane	ND	50000	"	"	"	"	"	"	
Vinyl chloride	ND	5000	"	"	"	"	"	"	
Bromomethane	ND	50000	"	"	"	"	"	"	
Chloroethane	ND	50000	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	50000	"	"	"	"	"	"	
1,1-Dichloroethene	ND	50000	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	50000	"	"	"	"	"	"	
Carbon disulfide	ND	50000	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	50000	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	50000	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	50000	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	100000	"	"	"	"	"	"	
1,1-Dichloroethane	ND	50000	"	"	"	"	"	"	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

SVS3 DUP (E708119-02) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
Ethyl tert-butyl ether (ETBE)	ND	100000	ug/m3	5	EI70710	06-Sep-17	06-Sep-17	H&P 8260SV	
cis-1,2-Dichloroethene	ND	50000	"	"	"	"	"	"	
Chloroform	ND	10000	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	50000	"	"	"	"	"	"	
Carbon tetrachloride	ND	10000	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	10000	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	100000	"	"	"	"	"	"	
Benzene	**17000**	10000	"	"	"	"	"	"	
Trichloroethene	ND	10000	"	"	"	"	"	"	
1,2-Dichloropropane	ND	50000	"	"	"	"	"	"	
Bromodichloromethane	ND	50000	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	50000	"	"	"	"	"	"	
Toluene	ND	100000	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	50000	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	50000	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	50000	"	"	"	"	"	"	
Tetrachloroethene	ND	10000	"	"	"	"	"	"	
Dibromochloromethane	ND	50000	"	"	"	"	"	"	
Chlorobenzene	ND	10000	"	"	"	"	"	"	
Ethylbenzene	ND	50000	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	50000	"	"	"	"	"	"	
m,p-Xylene	ND	50000	"	"	"	"	"	"	
o-Xylene	ND	50000	"	"	"	"	"	"	
Styrene	ND	50000	"	"	"	"	"	"	
Bromoform	ND	50000	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	50000	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	50000	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	50000	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	50000	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	50000	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	50000	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	50000	"	"	"	"	"	"	
Hexachlorobutadiene	ND	50000	"	"	"	"	"	"	
Naphthalene	ND	10000	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	500000	"	"	"	"	"	"	

Surrogate: Dibromofluoromethane	*97.5 %*	*75-125*	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4	*92.6 %*	*75-125*	"	"	"	"

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS3 DUP (E708119-02) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
Surrogate: Toluene-d8		*111 %*		*75-125*	*EI70710*	*06-Sep-17*	*06-Sep-17*	*H&P 8260SV*	
Surrogate: 4-Bromofluorobenzene		*103 %*		*75-125*	"	"	"	"	
SVS8 (E708119-06) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									**R-05**
2-Butanone (MEK)	ND	250000	ug/m3	5	EI70710	06-Sep-17	06-Sep-17	H&P 8260SV	
2-Hexanone (MBK)	ND	250000	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	250000	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	50000	"	"	"	"	"	"	
Chloromethane	ND	50000	"	"	"	"	"	"	
Vinyl chloride	ND	5000	"	"	"	"	"	"	
Bromomethane	ND	50000	"	"	"	"	"	"	
Chloroethane	ND	50000	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	50000	"	"	"	"	"	"	
1,1-Dichloroethene	ND	50000	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	50000	"	"	"	"	"	"	
Carbon disulfide	ND	50000	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	50000	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	50000	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	50000	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	100000	"	"	"	"	"	"	
1,1-Dichloroethane	ND	50000	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	100000	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	50000	"	"	"	"	"	"	
Chloroform	ND	10000	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	50000	"	"	"	"	"	"	
Carbon tetrachloride	ND	10000	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	10000	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	100000	"	"	"	"	"	"	
Benzene	ND	10000	"	"	"	"	"	"	
Trichloroethene	ND	10000	"	"	"	"	"	"	
1,2-Dichloropropane	ND	50000	"	"	"	"	"	"	
Bromodichloromethane	ND	50000	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	50000	"	"	"	"	"	"	
Toluene	ND	100000	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	50000	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	50000	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	50000	"	"	"	"	"	"	
Tetrachloroethene	ND	10000	"	"	"	"	"	"	

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Cardno ERI - Petaluma	Project: CAR082917-13	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS8 (E708119-06) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									**R-05**
Dibromochloromethane	ND	50000	ug/m3	5	EI70710	06-Sep-17	06-Sep-17	H&P 8260SV	
Chlorobenzene	ND	10000	"	"	"	"	"	"	
Ethylbenzene	ND	50000	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	50000	"	"	"	"	"	"	
m,p-Xylene	ND	50000	"	"	"	"	"	"	
o-Xylene	ND	50000	"	"	"	"	"	"	
Styrene	ND	50000	"	"	"	"	"	"	
Bromoform	ND	50000	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	50000	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	50000	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	50000	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	50000	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	50000	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	50000	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	50000	"	"	"	"	"	"	
Hexachlorobutadiene	ND	50000	"	"	"	"	"	"	
Naphthalene	ND	10000	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	500000	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*97.2 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*93.4 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*106 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*		*75-125*	"	"	"	"	

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Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Petroleum Hydrocarbon Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS3 (E708119-01) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
TPHv (C6-C12)	**56000000**	2000000	ug/m3	5	EI70710	06-Sep-17	06-Sep-17	H&P 8260SV	
SVS3 DUP (E708119-02) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
TPHv (C6-C12)	**67000000**	2000000	ug/m3	5	EI70710	06-Sep-17	06-Sep-17	H&P 8260SV	
SVS4 (E708119-03) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
TPHv (C6 - C12)	**630**	100	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
SVS6 (E708119-04) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
TPHv (C6 - C12)	**2100**	100	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
SVS7 (E708119-05) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
TPHv (C6 - C12)	**670000**	5000	ug/m3	50	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
SVS8 (E708119-06) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
TPHv (C6-C12)	**25000000**	2000000	ug/m3	5	EI70710	06-Sep-17	06-Sep-17	H&P 8260SV	
QCEB (E708119-07) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
TPHv (C6 - C12)	**700**	100	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	
QCTB (E708119-08) Vapor Sampled: 24-Aug-17 Received: 29-Aug-17									
TPHv (C6 - C12)	ND	100	ug/m3	1	EH73112	31-Aug-17	31-Aug-17	EPA TO-15	

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Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Soil Gas and Vapor Analysis - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH73015 - GC										
Blank (EH73015-BLK1)				Prepared & Analyzed: 30-Aug-17						
Methane	ND	10	ppmv							
Batch EH73016 - GC										
Blank (EH73016-BLK1)				Prepared & Analyzed: 30-Aug-17						
Helium (LCC)	ND	0.10	%							
Batch EH73017 - GC										
Blank (EH73017-BLK1)				Prepared & Analyzed: 30-Aug-17						
Carbon dioxide	ND	0.20	%							

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Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	08-Sep-17 12:27

Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH73112 - TO-15										
Blank (EH73112-BLK1)				Prepared & Analyzed: 31-Aug-17						
Dichlorodifluoromethane (F12)	ND	5.0	ug/m3							
Chloromethane	ND	2.1	"							
Dichlorotetrafluoroethane (F114)	ND	7.1	"							
Vinyl chloride	ND	2.6	"							
Bromomethane	ND	16	"							
Chloroethane	ND	8.0	"							
Trichlorofluoromethane (F11)	ND	5.6	"							
1,1-Dichloroethene	ND	4.0	"							
Tertiary-butyl alcohol (TBA)	ND	6.1	"							
1,1,2-Trichlorotrifluoroethane (F113)	ND	7.7	"							
Methylene chloride (Dichloromethane)	ND	3.5	"							
Carbon disulfide	ND	6.3	"							
trans-1,2-Dichloroethene	ND	8.0	"							
Methyl tertiary-butyl ether (MTBE)	ND	3.6	"							
1,1-Dichloroethane	ND	4.1	"							
2-Butanone (MEK)	ND	30	"							
cis-1,2-Dichloroethene	ND	4.0	"							
Diisopropyl ether (DIPE)	ND	4.2	"							
Chloroform	ND	4.9	"							
Ethyl tert-butyl ether (ETBE)	ND	4.2	"							
1,1,1-Trichloroethane	ND	5.5	"							
1,2-Dichloroethane (EDC)	ND	4.1	"							
Benzene	ND	3.2	"							
Carbon tetrachloride	ND	6.4	"							
Tertiary-amyl methyl ether (TAME)	ND	4.2	"							
Trichloroethene	ND	5.5	"							
1,2-Dichloropropane	ND	9.4	"							
Bromodichloromethane	ND	6.8	"							
cis-1,3-Dichloropropene	ND	4.6	"							
4-Methyl-2-pentanone (MIBK)	ND	8.3	"							
trans-1,3-Dichloropropene	ND	4.6	"							
Toluene	ND	3.8	"							
1,1,2-Trichloroethane	ND	5.5	"							
2-Hexanone (MBK)	ND	8.3	"							

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH73112 - TO-15										
Blank (EH73112-BLK1)				Prepared & Analyzed: 31-Aug-17						
Dibromochloromethane	ND	8.6	ug/m3							
Tetrachloroethene	ND	6.9	"							
1,2-Dibromoethane (EDB)	ND	7.8	"							
1,1,1,2-Tetrachloroethane	ND	7.0	"							
Chlorobenzene	ND	4.7	"							
Ethylbenzene	ND	4.4	"							
m,p-Xylene	ND	8.8	"							
Styrene	ND	4.3	"							
o-Xylene	ND	4.4	"							
Bromoform	ND	10	"							
1,1,2,2-Tetrachloroethane	ND	7.0	"							
4-Ethyltoluene	ND	5.0	"							
1,3,5-Trimethylbenzene	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	5.0	"							
1,3-Dichlorobenzene	ND	12	"							
1,4-Dichlorobenzene	ND	12	"							
1,2-Dichlorobenzene	ND	12	"							
Naphthalene	ND	5.3	"							
1,2,4-Trichlorobenzene	ND	38	"							
Hexachlorobutadiene	ND	54	"							
Surrogate: 1,2-Dichloroethane-d4	*41.9*		*"*	*42.9*		*97.9*	*76-134*			
Surrogate: Toluene-d8	*41.6*		*"*	*41.4*		*100*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*71.2*		*"*	*72.9*		*97.7*	*77-127*			
LCS (EH73112-BS1)				Prepared & Analyzed: 31-Aug-17						
Dichlorodifluoromethane (F12)	96	5.0	ug/m3	101		95.5	59-128			
Vinyl chloride	49	2.6	"	52.0		95.0	64-127			
Chloroethane	46	8.0	"	53.6		86.6	63-127			
Trichlorofluoromethane (F11)	100	5.6	"	113		91.5	62-126			
1,1-Dichloroethene	75	4.0	"	80.8		93.1	61-133			
1,1,2-Trichlorotrifluoroethane (F113)	140	7.7	"	155		93.1	66-126			
Methylene chloride (Dichloromethane)	63	3.5	"	70.8		89.1	62-115			
trans-1,2-Dichloroethene	70	8.0	"	80.8		86.9	67-124			

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Volatile Organic Compounds by EPA TO-15 - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH73112 - TO-15										
LCS (EH73112-BS1)				Prepared & Analyzed: 31-Aug-17						
1,1-Dichloroethane	71	4.1	ug/m3	82.4		86.4	68-126			
cis-1,2-Dichloroethene	73	4.0	"	80.0		91.7	70-121			
Chloroform	92	4.9	"	99.2		92.4	68-123			
1,1,1-Trichloroethane	110	5.5	"	111		95.6	68-125			
1,2-Dichloroethane (EDC)	77	4.1	"	82.4		93.7	65-128			
Benzene	60	3.2	"	64.8		92.4	69-119			
Carbon tetrachloride	120	6.4	"	128		97.3	68-132			
Trichloroethene	100	5.5	"	110		92.7	71-123			
Toluene	54	3.8	"	76.8		70.4	66-119			
1,1,2-Trichloroethane	100	5.5	"	111		90.0	73-119			
Tetrachloroethene	120	6.9	"	138		89.2	66-124			
1,1,1,2-Tetrachloroethane	130	7.0	"	140		96.4	67-129			
Ethylbenzene	88	4.4	"	88.4		99.5	70-124			
m,p-Xylene	84	8.8	"	88.4		94.5	61-134			
o-Xylene	80	4.4	"	88.4		90.7	67-125			
1,1,2,2-Tetrachloroethane	110	7.0	"	140		79.4	65-127			
Surrogate: 1,2-Dichloroethane-d4	*44.2*		*"*	*42.9*		*103*	*76-134*			
Surrogate: Toluene-d8	*39.6*		*"*	*41.4*		*95.5*	*78-125*			
Surrogate: 4-Bromofluorobenzene	*74.9*		*"*	*72.9*		*103*	*77-127*			

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Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI70710 - EPA 5030										
Blank (EI70710-BLK1)				Prepared & Analyzed: 06-Sep-17						
2-Butanone (MEK)	ND	2500	ug/m3							
2-Hexanone (MBK)	ND	2500	"							
4-Methyl-2-pentanone (MIBK)	ND	2500	"							
Dichlorodifluoromethane (F12)	ND	500	"							
Chloromethane	ND	500	"							
Vinyl chloride	ND	50	"							
Bromomethane	ND	500	"							
Chloroethane	ND	500	"							
Trichlorofluoromethane (F11)	ND	500	"							
1,1-Dichloroethene	ND	500	"							
1,1,2 Trichlorotrifluoroethane (F113)	ND	500	"							
Carbon disulfide	ND	500	"							
Methylene chloride (Dichloromethane)	ND	500	"							
Methyl tertiary-butyl ether (MTBE)	ND	500	"							
trans-1,2-Dichloroethene	ND	500	"							
Diisopropyl ether (DIPE)	ND	1000	"							
1,1-Dichloroethane	ND	500	"							
Ethyl tert-butyl ether (ETBE)	ND	1000	"							
cis-1,2-Dichloroethene	ND	500	"							
Chloroform	ND	100	"							
1,1,1-Trichloroethane	ND	500	"							
Carbon tetrachloride	ND	100	"							
1,2-Dichloroethane (EDC)	ND	100	"							
Tertiary-amyl methyl ether (TAME)	ND	1000	"							
Benzene	ND	100	"							
Trichloroethene	ND	100	"							
1,2-Dichloropropane	ND	500	"							
Bromodichloromethane	ND	500	"							
cis-1,3-Dichloropropene	ND	500	"							
Toluene	ND	1000	"							
trans-1,3-Dichloropropene	ND	500	"							
1,1,2-Trichloroethane	ND	500	"							
1,2-Dibromoethane (EDB)	ND	500	"							
Tetrachloroethene	ND	100	"							

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Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI70710 - EPA 5030										
Blank (EI70710-BLK1)				Prepared & Analyzed: 06-Sep-17						
Dibromochloromethane	ND	500	ug/m3							
Chlorobenzene	ND	100	"							
Ethylbenzene	ND	500	"							
1,1,1,2-Tetrachloroethane	ND	500	"							
m,p-Xylene	ND	500	"							
o-Xylene	ND	500	"							
Styrene	ND	500	"							
Bromoform	ND	500	"							
1,1,2,2-Tetrachloroethane	ND	500	"							
1,3,5-Trimethylbenzene	ND	500	"							
1,2,4-Trimethylbenzene	ND	500	"							
1,3-Dichlorobenzene	ND	500	"							
1,4-Dichlorobenzene	ND	500	"							
1,2-Dichlorobenzene	ND	500	"							
1,2,4-Trichlorobenzene	ND	500	"							
Hexachlorobutadiene	ND	500	"							
Naphthalene	ND	100	"							
Tertiary-butyl alcohol (TBA)	ND	5000	"							
Surrogate: Dibromofluoromethane	*2580*		*"*	*2500*		*103*	*75-125*			
Surrogate: 1,2-Dichloroethane-d4	*2510*		*"*	*2500*		*100*	*75-125*			
Surrogate: Toluene-d8	*2500*		*"*	*2500*		*100*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*2480*		*"*	*2500*		*99.3*	*75-125*			
LCS (EI70710-BS1)				Prepared & Analyzed: 06-Sep-17						
Dichlorodifluoromethane (F12)	4800	500	ug/m3	5000		95.4	70-130			
Vinyl chloride	5300	50	"	5000		106	70-130			
Chloroethane	5400	500	"	5000		108	70-130			
Trichlorofluoromethane (F11)	5200	500	"	5000		103	70-130			
1,1-Dichloroethene	5200	500	"	5000		103	70-130			
1,1,2 Trichlorotrifluoroethane (F113)	5200	500	"	5000		105	70-130			
Methylene chloride (Dichloromethane)	5100	500	"	5000		101	70-130			
trans-1,2-Dichloroethene	5100	500	"	5000		102	70-130			
1,1-Dichloroethane	5000	500	"	5000		101	70-130			

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Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI70710 - EPA 5030										
LCS (EI70710-BS1)				Prepared & Analyzed: 06-Sep-17						
cis-1,2-Dichloroethene	5100	500	ug/m3	5000		102	70-130			
Chloroform	5400	100	"	5000		107	70-130			
1,1,1-Trichloroethane	5200	500	"	5000		105	70-130			
Carbon tetrachloride	5800	100	"	5000		117	70-130			
1,2-Dichloroethane (EDC)	5200	100	"	5000		104	70-130			
Benzene	5100	100	"	5000		102	70-130			
Trichloroethene	5400	100	"	5000		108	70-130			
Toluene	5100	1000	"	5000		101	70-130			
1,1,2-Trichloroethane	5000	500	"	5000		101	70-130			
Tetrachloroethene	5200	100	"	5000		105	70-130			
Ethylbenzene	5200	500	"	5000		103	70-130			
1,1,1,2-Tetrachloroethane	5700	500	"	5000		114	70-130			
m,p-Xylene	11000	500	"	10000		105	70-130			
o-Xylene	5000	500	"	5000		100	70-130			
1,1,2,2-Tetrachloroethane	4500	500	"	5000		89.1	70-130			
Surrogate: Dibromofluoromethane	*2500*		*"*	*2500*		*99.8*	*75-125*			
Surrogate: 1,2-Dichloroethane-d4	*2470*		*"*	*2500*		*98.6*	*75-125*			
Surrogate: Toluene-d8	*2540*		*"*	*2500*		*102*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*2380*		*"*	*2500*		*95.3*	*75-125*			

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Petroleum Hydrocarbon Analysis - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH73112 - TO-15										
Blank (EH73112-BLK1)				Prepared & Analyzed: 31-Aug-17						
TPHv (C6 - C12)	ND	100	ug/m3							
Batch EI70710 - EPA 5030										
Blank (EI70710-BLK1)				Prepared & Analyzed: 06-Sep-17						
TPHv (C6-C12)	ND	200000	ug/m3							

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Petaluma, CA 94954	Project Manager:	Mr. Scott Perkins	08-Sep-17 12:27

Notes and Definitions

R-05	The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.
LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

All soil results are reported in wet weight.

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP Program and ISO/IEC 17025:2005 programs, accreditation number 69070 for EPA Method TO-15, H&P Method TO-15, EPA Method 8260B and H&P 8260SV.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

H&P Mobile Geochemistry Inc.
2470 Impala Drive, Carlsbad, CA 92010
& Field Office - Signal Hill, CA
W handpmg.com E info@handpmg.com
P 760.804.9678 F 760.804.9159

VAPOR / AIR Chain of Custody

DATE: 8/24/17
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Lab Client and Project Information

Lab Client/Consultant:	Cardno	Project Name / #:	Former Exxon 79374
Lab Client Project Manager:	Scott Perkins	Project Location:	990 San Pablo Ave, Albany, CA
Lab Client Address:	601 N.McDowell Blvd	Report E-Mail(s):	scott.perkins@cardno.com
Lab Client City, State, Zip:	Petaluma, CA, 94954		norcallabs@cardno.com
Phone Number:	(707) 766-2000		

Sample Receipt (Lab Use Only)

Date Rec'd: 8/29/17 Control #: 170732.02
H&P Project # CAR082917-13
Lab Work Order # E708119
Sample Intact: [X] Yes [ ] No [ ] See Notes Below
Receipt Gauge ID: 11167 Temp: RT
Outside Lab:
Receipt Notes/Tracking #: 1293TT6190517980 32
Lab PM Initials: KRI

Reporting Requirements

[X] Standard Report [ ] Level III [ ] Level IV
[X] Excel EDD [ ] Other EDD:
[X] CA Geotracker Global ID: T0619716673

Turnaround Time

[X] 5-7 day Stnd [ ] 24-Hr Rush
[ ] 3-day Rush [ ] Mobile Lab
[ ] 48-Hr Rush [ ] Other:

Sampler Information

Sampler(s): Nadya Vicente
Signature:
Date: 8/24/17

Additional Instructions to Laboratory:

[ ] Check if Project Analyte List is Attached

* Preferred VOC units (please choose one):
[ ] µg/L [X] µg/m³ [ ] ppbv [ ] ppmv

* SEE KRISTIN BECKLEY*
EDF deliverable to norcallabs@eri-us.com
QCEB = Equipment Blank QCTB=Trip Blank
TPHg using GC/MS C6-C12

(X) Analyzed by H&P 8260SV 9/8/17

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List X TO-15M	Oxygenates [ ] 8260SV X TO-15	Naphthalene X TO-15M [ ]	TPHv as Gas [ ] X ~~TO-3m~~ TO-17S	TPHv as Diesel (sorbent tube) [ ] TO-17m	Leak Check Compound X He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 X CO2 X O2 X N2	
~~SVS1~~	~~SVS1~~	~~8/24/2017~~	~~—~~	~~SV~~	400mL Summa			~~X~~	~~X~~	~~X~~	~~X~~		~~X~~	~~X~~	~~X~~	
SVS3 (X)	SVS3	8/24/2017	1006	SV	400mL Summa	380	-5.01	X	X	X	X		X	X	X	
SVS3 DUP (X)	SVS3	8/24/2017	1006	SV	400mL Summa	275	-5.02	X	X	X	X		X	X	X	
SVS4	SVS4	8/24/2017	1340	SV	400mL Summa	134	-4.63	X	X	X	X		X	X	X	
SVS6	SVS6	8/24/2017	1136	SV	400mL Summa	321	-4.38	X	X	X	X		X	X	X	
SVS7	SVS7	8/24/2017	1054	SV	400mL Summa	057	-3.74	X	X	X	X		X	X	X	
SVS8 (X)	SVS8	8/24/2017	0912	SV	400mL Summa	398	-3.54	X	X	X	X		X	X	X	
QCEB	QCEB	8/24/2017	1430	SV	400mL Summa	335	-4.01	X	X	X	X		X	X	X	
QCTB	QCTB	8/24/2017	NA	SV	400mL Summa	123 ~~NA~~	+28.0	X	X	X	X		X	X	X	

Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Cardno	Cardno	8/24/17	1500	Fow Unnorth	H&P	8/29/17	11:45
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

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WORK ORDER NUMBER: 17-08-2466

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For
Client: Cardno
Client Project Name: ExxonMobil 79374/022735C
Attention: Scott Perkins
601 North McDowell Blvd.
Petaluma, CA 94954-2312

Approved for release on 09/13/2017 by:
Cecile deGuia
Project Manager

ResultLink ▸

Email your PM ▸

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Contents

Client Project Name: ExxonMobil 79374/022735C
Work Order Number: 17-08-2466

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Work Order Narrative

Work Order: 17-08-2466 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 08/30/17. They were assigned to Work Order 17-08-2466.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

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Sample Summary

Client:	Cardno	Work Order:	17-08-2466
	601 North McDowell Blvd.	Project Name:	ExxonMobil 79374/022735C
	Petaluma, CA 94954-2312	PO Number:	022735C
		Date/Time Received:	08/30/17 19:00
		Number of Containers:	6
Attn:	Scott Perkins		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
ST-SVS3	17-08-2466-1	08/24/17 10:12	1	Air
ST-SVS4	17-08-2466-2	08/24/17 13:42	1	Air
ST-SVS6	17-08-2466-3	08/24/17 11:39	1	Air
ST-SVS7	17-08-2466-4	08/24/17 11:00	1	Air
ST-SVS8	17-08-2466-5	08/24/17 09:20	1	Air
ST-SVS6REP	17-08-2466-6	08/24/17 11:40	1	Air

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Analytical Report

Cardno
601 North McDowell Blvd.
Petaluma, CA 94954-2312

Project: ExxonMobil 79374/022735C

Date Received: 08/30/17
Work Order: 17-08-2466
Preparation: N/A
Method: EPA TO-17 (M)
Units: ug/m3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS3	**17-08-2466-1-A**	**08/24/17 10:12**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 19:46**	**170908L01**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	20	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	1198	57-129	AZ

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS4	**17-08-2466-2-A**	**08/24/17 13:42**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 20:29**	**170908L01**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	20	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	96	57-129	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS6	**17-08-2466-3-A**	**08/24/17 11:39**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 21:11**	**170908L01**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	20	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	102	57-129	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS7	**17-08-2466-4-A**	**08/24/17 11:00**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 21:54**	**170908L01**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	20	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	98	57-129	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS8	**17-08-2466-5-A**	**08/24/17 09:20**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 22:36**	**170908L01**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	20	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	64	57-129	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno
601 North McDowell Blvd.
Petaluma, CA 94954-2312

Project: ExxonMobil 79374/022735C

Date Received: 08/30/17
Work Order: 17-08-2466
Preparation: N/A
Method: EPA TO-17 (M)
Units: ug/m3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS6REP	**17-08-2466-6-A**	**08/24/17 11:40**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 23:59**	**170908L01**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	20	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	109	57-129	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-178-73**	**N/A**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 19:03**	**170908L01**

Comment(s): - MB data is reported in ng/sample.

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	2.0	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	97	57-129	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno
601 North McDowell Blvd.
Petaluma, CA 94954-2312

Project: ExxonMobil 79374/022735C

Date Received: 08/30/17
Work Order: 17-08-2466
Preparation: N/A
Method: EPA TO-17 (M)
Units: ug/m3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS3	**17-08-2466-1-A**	**08/24/17 10:12**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 19:46**	**170908L02**

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel (C10-C21)	2000000	5000	1.00	E

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	1202	50-150	AZ
Toluene-d8	1422	50-150	AZ

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS4	**17-08-2466-2-A**	**08/24/17 13:42**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 20:29**	**170908L02**

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel (C10-C21)	7600	5000	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	91	50-150	
Toluene-d8	142	50-150	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS6	**17-08-2466-3-A**	**08/24/17 11:39**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 21:11**	**170908L02**

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel (C10-C21)	ND	5000	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	103	50-150	
Toluene-d8	114	50-150	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS7	**17-08-2466-4-A**	**08/24/17 11:00**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 21:54**	**170908L02**

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel (C10-C21)	320000	5000	1.00	E

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	85	50-150	
Toluene-d8	122	50-150	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno
601 North McDowell Blvd.
Petaluma, CA 94954-2312

Project: ExxonMobil 79374/022735C

Date Received: 08/30/17
Work Order: 17-08-2466
Preparation: N/A
Method: EPA TO-17 (M)
Units: ug/m3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS8	**17-08-2466-5-A**	**08/24/17 09:20**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 22:36**	**170908L02**

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel (C10-C21)	340000	5000	1.00	E

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	60	50-150	
Toluene-d8	275	50-150	AZ

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS6REP	**17-08-2466-6-A**	**08/24/17 11:40**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 23:59**	**170908L02**

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel (C10-C21)	ND	5000	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	99	50-150	
Toluene-d8	133	50-150	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-426-136**	**N/A**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 19:03**	**170908L02**

Comment(s): - MB data is reported in ng/sample.

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel (C10-C21)	ND	500	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	102	50-150	
Toluene-d8	103	50-150	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - LCS/LCSD

Cardno
601 North McDowell Blvd.
Petaluma, CA 94954-2312

Project: ExxonMobil 79374/022735C

Date Received: 08/30/17
Work Order: 17-08-2466
Preparation: N/A
Method: EPA TO-17 (M)
Page 1 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-178-73	**LCS**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 15:17**	**170908L01**
099-15-178-73	**LCSD**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 16:00**	**170908L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Naphthalene	100.0	98.84	99	98.33	98	40-190	1	0-35	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

Cardno		Date Received:	08/30/17
601 North McDowell Blvd.		Work Order:	17-08-2466
Petaluma, CA 94954-2312		Preparation:	N/A
		Method:	EPA TO-17 (M)
Project: ExxonMobil 79374/022735C			Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-426-136	**LCS**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 13:09**	**170908L02**
099-15-426-136	**LCSD**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 13:52**	**170908L02**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
TPH as Diesel (C10-C21)	2000	1661	83	2100	105	50-150	23	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

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Sample Analysis Summary Report

Work Order: 17-08-2466 Page 1 of 1

Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA TO-17 (M)	N/A	953	GC/MS MMM	2

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Glossary of Terms and Qualifiers

Work Order: 17-08-2466 Page 1 of 1

Qualifiers	Definition
AZ	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
B	Analyte was present in the associated method blank.
BA	The MS/MSD RPD was out of control due to suspected matrix interference.
BB	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
DF	Reporting limits elevated due to matrix interferences.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
GE	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
HD	Chromat. profile inconsistent with pattern(s) of ref. fuel stnds.
HO	High concentration matrix spike recovery out of limits
HT	Analytical value calculated using results from associated tests.
HX	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS was in control.
IL	Relative percent difference out of control.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
LD	Analyte presence was not confirmed by second column or GC/MS analysis.
LP	The LCS and/or LCSD recoveries for this analyte were above the upper control limit. The associated sample was non-detected. Therefore, the sample data was reported without further clarification.
LQ	LCS recovery above method control limits.
LR	LCS recovery below method control limits.
ND	Parameter not detected at the indicated reporting limit.
QO	Compound did not meet method-described identification guidelines. Identification was based on additional GC/MS characteristics.
RU	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
SG	A silica gel cleanup procedure was performed.
SN	See applicable analysis comment.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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KR1 170732.01 | CARO82917-CE1

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7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

AIR CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY
17-08-2466

DATE: 8/24/2017
PAGE: 1 OF 1

LABORATORY CLIENT: Exxon Mobil / Cardno	CLIENT PROJECT NAME / NUMBER: Former Exxon Service Station 79374		P.O. NO.: 022735CX
ADDRESS: 601 N. McDowell Blvd	PROJECT ADDRESS: 990 San Pablo Avenue		LAB CONTACT OR QUOTE NO.: Cecile: Quote # 9614/14
CITY: Petaluma STATE: CA ZIP: 94954	CITY: Albany STATE: CA ZIP:		SAMPLER(S): (PRINT) Nadya Vicente
TEL: 707-766-2000 E-MAIL: scott.perkins@cardno.com	PROJECT CONTACT: Scott Perkiins		

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ **STANDARD**

EDF
☑ EDD ☒ UNITS ug/m3

SPECIAL INSTRUCTIONS:
Invoice to H&P, include Kristin.Beckley@HandPmg.com on all Reports and emails

Reporting Limits - ug/m3
Global ID = T0619716673

EDF deliverable to norcallabs@eri-us.com

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD ID / POINT OF COLLECTION	Air Type (I) Indoor (SV) Soil Vap. (A) Ambient	Sampling Equipment: Media ID #	Tube Size	Flow Controller ID #	Start Sampling Information: Date	Time (24 hr clock)	Canister Pressure ("Hg)	Stop Sampling Information: Date	Time (24 hr clock)	Canister Pressure ("Hg)	TO-17 Napthalene	TO-17 TPHd		
	~~ST-SVS1~~	~~SVS1~~	~~SV~~	~~G01~~	~~100ml~~	~~NA~~	~~8/24/2017~~	~~NA~~	~~NA~~	~~8/24/2017~~		NA	X	X		
1	ST-SVS3	SVS3	SV	G0141338	100ml	NA	8/24/2017	NA	NA	8/24/2017	1012	NA	X	X		
2	ST-SVS4	SVS4	SV	G0189328	100ml	NA	8/24/2017	NA	NA	8/24/2017	1342	NA	X	X		
3	ST-SVS6	SVS6	SV	G0141370	100ml	NA	8/24/2017	NA	NA	8/24/2017	1139	NA	X	X		
4	ST-SVS7	SVS7	SV	G0141358	100ml	NA	8/24/2017	NA	NA	8/24/2017	1100	NA	X	X		
5	ST-SVS8	SVS8	SV	G0150657	100ml	NA	8/24/2017	NA	NA	8/24/2017	0920	NA	X	X		
6	ST-SVS 6 REP	SVS	SV	G0141306	100ml	NA	8/24/2017	NA	NA	8/24/2017	1140	NA	X	X		

Relinquished by: (Signature)	Received by: (Signature/Affiliation) Jon Unsworth	Date: 8/29/17	Time: 10:45
Relinquished by: (Signature)	Received by: (Signature/Affiliation) ECI	Date: 08/30/17	Time: 13:05
Relinquished by: (Signature)	Received by: (Signature/Affiliation) Dannyle ECI	Date: 8/30/17	Time: 19:20

06/02/14 Revision

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eurofins | Calscience

WORK ORDER NUMBER: 17-08- 2466

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1

CLIENT: H&P

DATE: 08 / 30 / 2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 3.2 °C (w/ CF): 3.4 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 671

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 671

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1050

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☐	☐	☑
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB

☐ 125PB**znna** ☐ 250AGB ☐ 250CGB ☐ 250CGB**s** ☐ 250PB ☐ 250PB**n** ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s**

☐ 500PB ☐ 1AGB ☐ 1AGB**na$_2$** ☐ 1AGB**s** ☐ 1PB ☐ 1PB**na** ☐ _____ ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☑ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1050

Reviewed by: 1017

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Mobile Geochemistry Inc.

15 September 2017

Mr. Scott Perkins
Cardno ERI - Petaluma
601 N. McDowell Blvd
Petaluma, CA 94954

H&P Project: CAR090617-11
Client Project: Former Exxon 79374 / 990 San Pablo Ave.

Dear Mr. Scott Perkins:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 06-Sep-17 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody
- Sampling Logs (if applicable)

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

Janis La Roux
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP and the National Environmental Laboratory Accreditation Conference (NELAC). H&P is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP Program and ISO/IEC 17025:2005 programs, accreditation number 69070 for EPA Method TO-15, H&P Method TO-15, EPA Method 8260B and H&P 8260SV.

H&P Mobile
Geochemistry Inc.

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Cardno ERI - Petaluma	Project:	CAR090617-11	
601 N. McDowell Blvd	Project Number:	Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager:	Mr. Scott Perkins	15-Sep-17 10:31

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SVS1	E709020-01	Vapor	05-Sep-17	06-Sep-17

Due to an elevated petroleum hydrocarbon concentration, sample SVS1 was analyzed by H&P 8260SV rather than EPA Method TO-15.
The following EPA Method TO-15 analytes are not reported by H&P 8260SV:
Dichlorotetrafluoroethane
4-Ethyltoluene

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Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	15-Sep-17 10:31

DETECTIONS SUMMARY

Sample ID: **SVS1** Laboratory ID: **E709020-01**

Analyte	Result	Reporting Limit	Units	Method	Notes
Carbon dioxide	**8.0**	0.20	%	ASTM D1945	
Oxygen	**9.4**	0.20	%	ASTM D1945	
Nitrogen	**72**	0.20	%	ASTM D1945	
Methane	**140000**	1000	ppmv	EPA 8015M	
TPHv (C6-C12)	**61000000**	800000	ug/m3	H&P 8260SV	

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Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	15-Sep-17 10:31

Soil Gas and Vapor Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS1 (E709020-01) Vapor Sampled: 05-Sep-17 Received: 06-Sep-17									
Carbon dioxide	**8.0**	0.20	%	1	EI70802	08-Sep-17	08-Sep-17	ASTM D1945	
Oxygen	**9.4**	0.20	"	"	"	"	"	"	
Nitrogen	**72**	0.20	"	"	"	"	"	"	
Helium (LCC)	ND	0.10	"	"	EI70803	08-Sep-17	08-Sep-17	ASTM D1945M	
Methane	**140000**	1000	ppmv	100	EI71504	15-Sep-17	15-Sep-17	EPA 8015M	

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601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	15-Sep-17 10:31

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

SVS1 (E709020-01) Vapor Sampled: 05-Sep-17 Received: 06-Sep-17 **R-05**

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
2-Butanone (MEK)	ND	100000	ug/m3	2	EI71311	11-Sep-17	11-Sep-17	H&P 8260SV	
2-Hexanone (MBK)	ND	100000	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	100000	"	"	"	"	"	"	
Dichlorodifluoromethane (F12)	ND	20000	"	"	"	"	"	"	
Chloromethane	ND	20000	"	"	"	"	"	"	
Vinyl chloride	ND	2000	"	"	"	"	"	"	
Bromomethane	ND	20000	"	"	"	"	"	"	
Chloroethane	ND	20000	"	"	"	"	"	"	
Trichlorofluoromethane (F11)	ND	20000	"	"	"	"	"	"	
1,1-Dichloroethene	ND	20000	"	"	"	"	"	"	
1,1,2 Trichlorotrifluoroethane (F113)	ND	20000	"	"	"	"	"	"	
Carbon disulfide	ND	20000	"	"	"	"	"	"	
Methylene chloride (Dichloromethane)	ND	20000	"	"	"	"	"	"	
Methyl tertiary-butyl ether (MTBE)	ND	20000	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	20000	"	"	"	"	"	"	
Diisopropyl ether (DIPE)	ND	40000	"	"	"	"	"	"	
1,1-Dichloroethane	ND	20000	"	"	"	"	"	"	
Ethyl tert-butyl ether (ETBE)	ND	40000	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	20000	"	"	"	"	"	"	
Chloroform	ND	4000	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	20000	"	"	"	"	"	"	
Carbon tetrachloride	ND	4000	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4000	"	"	"	"	"	"	
Tertiary-amyl methyl ether (TAME)	ND	40000	"	"	"	"	"	"	
Benzene	ND	4000	"	"	"	"	"	"	
Trichloroethene	ND	4000	"	"	"	"	"	"	
1,2-Dichloropropane	ND	20000	"	"	"	"	"	"	
Bromodichloromethane	ND	20000	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	20000	"	"	"	"	"	"	
Toluene	ND	40000	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	20000	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	20000	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	20000	"	"	"	"	"	"	
Tetrachloroethene	ND	4000	"	"	"	"	"	"	
Dibromochloromethane	ND	20000	"	"	"	"	"	"	
Chlorobenzene	ND	4000	"	"	"	"	"	"	
Ethylbenzene	ND	20000	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	20000	"	"	"	"	"	"	

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Cardno ERI - Petaluma	Project: CAR090617-11	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	15-Sep-17 10:31

Volatile Organic Compounds by H&P 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS1 (E709020-01) Vapor Sampled: 05-Sep-17 Received: 06-Sep-17									**R-05**
m,p-Xylene	ND	20000	ug/m3	2	EI71311	11-Sep-17	11-Sep-17	H&P 8260SV	
o-Xylene	ND	20000	"	"	"	"	"	"	
Styrene	ND	20000	"	"	"	"	"	"	
Bromoform	ND	20000	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	20000	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	20000	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	20000	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	20000	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	20000	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	20000	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	20000	"	"	"	"	"	"	
Hexachlorobutadiene	ND	20000	"	"	"	"	"	"	
Naphthalene	ND	4000	"	"	"	"	"	"	
Tertiary-butyl alcohol (TBA)	ND	200000	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*96.8 %*		*75-125*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*99.0 %*		*75-125*	"	"	"	"	
Surrogate: Toluene-d8		*106 %*		*75-125*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95.5 %*		*75-125*	"	"	"	"	

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601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	15-Sep-17 10:31

Petroleum Hydrocarbon Analysis

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVS1 (E709020-01) Vapor Sampled: 05-Sep-17 Received: 06-Sep-17									
TPHv (C6-C12)	**61000000**	800000	ug/m3	2	EI71311	11-Sep-17	11-Sep-17	H&P 8260SV	

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601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	15-Sep-17 10:31

Soil Gas and Vapor Analysis - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI70802 - GC										
Blank (EI70802-BLK1)				Prepared & Analyzed: 08-Sep-17						
Carbon dioxide	ND	0.20	%							
Batch EI70803 - GC										
Blank (EI70803-BLK1)				Prepared & Analyzed: 08-Sep-17						
Helium (LCC)	ND	0.10	%							
Batch EI71504 - GC										
Blank (EI71504-BLK1)				Prepared & Analyzed: 15-Sep-17						
Methane	ND	10	ppmv							

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601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	15-Sep-17 10:31

Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI71311 - EPA 5030										
Blank (EI71311-BLK1)				Prepared & Analyzed: 11-Sep-17						
2-Butanone (MEK)	ND	2500	ug/m3							
2-Hexanone (MBK)	ND	2500	"							
4-Methyl-2-pentanone (MIBK)	ND	2500	"							
Dichlorodifluoromethane (F12)	ND	500	"							
Chloromethane	ND	500	"							
Vinyl chloride	ND	50	"							
Bromomethane	ND	500	"							
Chloroethane	ND	500	"							
Trichlorofluoromethane (F11)	ND	500	"							
1,1-Dichloroethene	ND	500	"							
1,1,2 Trichlorotrifluoroethane (F113)	ND	500	"							
Carbon disulfide	ND	500	"							
Methylene chloride (Dichloromethane)	ND	500	"							
Methyl tertiary-butyl ether (MTBE)	ND	500	"							
trans-1,2-Dichloroethene	ND	500	"							
Diisopropyl ether (DIPE)	ND	1000	"							
1,1-Dichloroethane	ND	500	"							
Ethyl tert-butyl ether (ETBE)	ND	1000	"							
cis-1,2-Dichloroethene	ND	500	"							
Chloroform	ND	100	"							
1,1,1-Trichloroethane	ND	500	"							
Carbon tetrachloride	ND	100	"							
1,2-Dichloroethane (EDC)	ND	100	"							
Tertiary-amyl methyl ether (TAME)	ND	1000	"							
Benzene	ND	100	"							
Trichloroethene	ND	100	"							
1,2-Dichloropropane	ND	500	"							
Bromodichloromethane	ND	500	"							
cis-1,3-Dichloropropene	ND	500	"							
Toluene	ND	1000	"							
trans-1,3-Dichloropropene	ND	500	"							
1,1,2-Trichloroethane	ND	500	"							
1,2-Dibromoethane (EDB)	ND	500	"							
Tetrachloroethene	ND	100	"							

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Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI71311 - EPA 5030										
Blank (EI71311-BLK1)				Prepared & Analyzed: 11-Sep-17						
Dibromochloromethane	ND	500	ug/m3							
Chlorobenzene	ND	100	"							
Ethylbenzene	ND	500	"							
1,1,1,2-Tetrachloroethane	ND	500	"							
m,p-Xylene	ND	500	"							
o-Xylene	ND	500	"							
Styrene	ND	500	"							
Bromoform	ND	500	"							
1,1,2,2-Tetrachloroethane	ND	500	"							
1,3,5-Trimethylbenzene	ND	500	"							
1,2,4-Trimethylbenzene	ND	500	"							
1,3-Dichlorobenzene	ND	500	"							
1,4-Dichlorobenzene	ND	500	"							
1,2-Dichlorobenzene	ND	500	"							
1,2,4-Trichlorobenzene	ND	500	"							
Hexachlorobutadiene	ND	500	"							
Naphthalene	ND	100	"							
Tertiary-butyl alcohol (TBA)	ND	5000	"							
Surrogate: Dibromofluoromethane	*2540*		*"*	*2500*		*102*	*75-125*			
Surrogate: 1,2-Dichloroethane-d4	*2250*		*"*	*2500*		*89.9*	*75-125*			
Surrogate: Toluene-d8	*2510*		*"*	*2500*		*100*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*2340*		*"*	*2500*		*93.5*	*75-125*			
LCS (EI71311-BS1)				Prepared & Analyzed: 11-Sep-17						
Dichlorodifluoromethane (F12)	4500	500	ug/m3	5000		90.5	70-130			
Vinyl chloride	4800	50	"	5000		96.2	70-130			
Chloroethane	4600	500	"	5000		91.9	70-130			
Trichlorofluoromethane (F11)	5000	500	"	5000		100	70-130			
1,1-Dichloroethene	5000	500	"	5000		100	70-130			
1,1,2 Trichlorotrifluoroethane (F113)	5900	500	"	5000		118	70-130			
Methylene chloride (Dichloromethane)	4900	500	"	5000		97.4	70-130			
trans-1,2-Dichloroethene	5000	500	"	5000		100	70-130			
1,1-Dichloroethane	4700	500	"	5000		94.3	70-130			

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601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	15-Sep-17 10:31

Volatile Organic Compounds by H&P 8260SV - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI71311 - EPA 5030										
LCS (EI71311-BS1)				Prepared & Analyzed: 11-Sep-17						
cis-1,2-Dichloroethene	5100	500	ug/m3	5000		102	70-130			
Chloroform	5000	100	"	5000		99.1	70-130			
1,1,1-Trichloroethane	4900	500	"	5000		97.7	70-130			
Carbon tetrachloride	5000	100	"	5000		100	70-130			
1,2-Dichloroethane (EDC)	4800	100	"	5000		96.5	70-130			
Benzene	4900	100	"	5000		97.4	70-130			
Trichloroethene	5300	100	"	5000		105	70-130			
Toluene	4300	1000	"	5000		85.1	70-130			
1,1,2-Trichloroethane	4800	500	"	5000		96.4	70-130			
Tetrachloroethene	4900	100	"	5000		97.6	70-130			
Ethylbenzene	5000	500	"	5000		100	70-130			
1,1,1,2-Tetrachloroethane	5300	500	"	5000		106	70-130			
m,p-Xylene	9700	500	"	10000		97.4	70-130			
o-Xylene	4900	500	"	5000		97.4	70-130			
1,1,2,2-Tetrachloroethane	4700	500	"	5000		93.1	70-130			
Surrogate: Dibromofluoromethane	*2560*		*"*	*2500*		*102*	*75-125*			
Surrogate: 1,2-Dichloroethane-d4	*2370*		*"*	*2500*		*94.8*	*75-125*			
Surrogate: Toluene-d8	*2550*		*"*	*2500*		*102*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*2570*		*"*	*2500*		*103*	*75-125*			

H&P Mobile
Geochemistry Inc.

2470 Impala Drive
Carlsbad, CA 92010
760-804-9678 Phone
760-804-9159 Fax

Cardno ERI - Petaluma	Project: CAR090617-11	
601 N. McDowell Blvd	Project Number: Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager: Mr. Scott Perkins	15-Sep-17 10:31

Petroleum Hydrocarbon Analysis - Quality Control

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI71311 - EPA 5030										
Blank (EI71311-BLK1)				Prepared & Analyzed: 11-Sep-17						
TPHv (C6-C12)	ND	200000	ug/m3							

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Carlsbad, CA 92010
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760-804-9159 Fax

Cardno ERI - Petaluma	Project:	CAR090617-11	
601 N. McDowell Blvd	Project Number:	Former Exxon 79374 / 990 San Pablo Ave.	Reported:
Petaluma, CA 94954	Project Manager:	Mr. Scott Perkins	15-Sep-17 10:31

Notes and Definitions

R-05	The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.
LCC	Leak Check Compound
ND	Analyte NOT DETECTED at or above the reporting limit
MDL	Method Detection Limit
%REC	Percent Recovery
RPD	Relative Percent Difference

All soil results are reported in wet weight.

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP Program and ISO/IEC 17025:2005 programs, accreditation number 69070 for EPA Method TO-15, H&P Method TO-15, EPA Method 8260B and H&P 8260SV.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

H&P Mobile Geochemistry Inc.
2470 Impala Drive, Carlsbad, CA 92010
& Field Office - Signal Hill, CA
W handpmg.com E info@handpmg.com
P 760.804.9678 F 760.804.9159

VAPOR / AIR Chain of Custody

DATE: 9-5-17
Page 1 of 1

Lab Client and Project Information

Lab Client/Consultant:	Cardno	Project Name / #:	Former Exxon 79374
Lab Client Project Manager:	Scott Perkins	Project Location:	990 San Pablo Ave, Albany, CA
Lab Client Address:	601 N.McDowell Blvd	Report E-Mail(s):	scott.perkins@cardno.com
Lab Client City, State, Zip:	Petaluma, CA, 94954		norcallabs@cardno.com
Phone Number:	(707) 766-2000		

Sample Receipt (Lab Use Only)

Date Rec'd: 9/6/17 Control #: 170732.04
H&P Project # CAR090617-11
Lab Work Order # E709020
Sample Intact: ☒ Yes ☐ No ☐ See Notes Below
Receipt Gauge ID: 11167 Temp: RT
Outside Lab:
Receipt Notes/Tracking #: 125774W60 13369 4350
Lab PM Initials: KR1

Reporting Requirements

☒ Standard Report ☐ Level III ☐ Level IV
☒ Excel EDD ☐ Other EDD:
☒ CA Geotracker Global ID: T0619716673

Turnaround Time

☒ 5-7 day Stnd ☐ 24-Hr Rush
☐ 3-day Rush ☐ Mobile Lab
☐ 48-Hr Rush ☐ Other:

Sampler Information

Sampler(s): Nadya Vicente
Signature:
Date: 9/5/17

Additional Instructions to Laboratory:
☐ Check if Project Analyte List is Attached

Preferred VOC units (please choose one):
☐ µg/L ☒ µg/m³ ☐ ppbv ☐ ppmv

*** SEE KRISTIN BECKLEY***
EDF deliverable to norcallabs@eri-us.com
QCEB = Equipment Blank QCTB=Trip Blank
TPHg using GC/MS C6-C12

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List ☒ ~~TO-15M~~ 8260SV	Oxygenates (5) 8260SV ☒ ~~TO-15~~	Naphthalene ☒ ~~TO-15M~~ ☐ 8260SV	TPHv as Gas ☐ ☒ TO-15	TPHv as Diesel (sorbent tube) ☐ TO-17m	Leak Check Compound ☒ He	Methane by EPA 8015m	Fixed Gases by ASTM D1945 ☒ CO2 ☒ O2 ☒ N2	
SVS1	SVS1	9/5/2017	1147	SV	400mL Summa	240	-5.65	x	x	x	x		x	x	x	

Approved/Relinquished by:		Company: Cardno	Date: 9/5/17	Time: 1430	Received by:	Company: H+P	Date: 9/6/17	Time: 10:45
Approved/Relinquished by:		Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Approved/Relinquished by:		Company:	Date:	Time:	Received by:	Company:	Date:	Time:

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

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WORK ORDER NUMBER: 17-09-0292

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For
Client: Cardno
Client Project Name: ExxonMobil 79374/022735C
Attention: Scott Perkins
601 North McDowell Blvd.
Petaluma, CA 94954-2312

Approved for release on 09/21/2017 by:
Cecile deGuia
Project Manager

ResultLink ▸

Email your PM ▸

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Contents

Client Project Name: ExxonMobil 79374/022735C
Work Order Number: 17-09-0292

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Work Order Narrative

Work Order: 17-09-0292 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 09/06/17. They were assigned to Work Order 17-09-0292.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

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Sample Summary

Client:	Cardno	Work Order:	17-09-0292
	601 North McDowell Blvd.	Project Name:	ExxonMobil 79374/022735C
	Petaluma, CA 94954-2312	PO Number:	022735C
		Date/Time Received:	09/06/17 18:30
		Number of Containers:	1
Attn:	Scott Perkins		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
ST-SVS1	17-09-0292-1	09/05/17 11:49	1	Air

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Analytical Report

Cardno
601 North McDowell Blvd.
Petaluma, CA 94954-2312

Project: ExxonMobil 79374/022735C

Date Received: 09/06/17
Work Order: 17-09-0292
Preparation: N/A
Method: EPA TO-17 (M)
Units: ug/m3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS1	**17-09-0292-1-A**	**09/05/17 11:49**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 23:18**	**170908L01**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	20	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	1273	57-129	AZ

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-178-73**	**N/A**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 19:03**	**170908L01**

Comment(s): - MB data is reported in ng/sample.

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	2.0	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	97	57-129	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno
601 North McDowell Blvd.
Petaluma, CA 94954-2312

Project: ExxonMobil 79374/022735C

Date Received: 09/06/17
Work Order: 17-09-0292
Preparation: N/A
Method: EPA TO-17 (M)
Units: ug/m3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ST-SVS1	**17-09-0292-1-A**	**09/05/17 11:49**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 23:18**	**170908L02**

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel (C10-C21)	650000	5000	1.00	E

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	1206	50-150	AZ
Toluene-d8	2880	50-150	AZ

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-426-136**	**N/A**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 19:03**	**170908L02**

Comment(s): - MB data is reported in ng/sample.

Parameter	Result	RL	DF	Qualifiers
TPH as Diesel (C10-C21)	ND	500	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	102	50-150	
Toluene-d8	103	50-150	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - LCS/LCSD

Cardno		Date Received:	09/06/17
601 North McDowell Blvd.		Work Order:	17-09-0292
Petaluma, CA 94954-2312		Preparation:	N/A
		Method:	EPA TO-17 (M)
Project: ExxonMobil 79374/022735C			Page 1 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-178-73	**LCS**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 15:17**	**170908L01**
099-15-178-73	**LCSD**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 16:00**	**170908L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Naphthalene	100.0	98.84	99	98.33	98	40-190	1	0-35	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

Cardno		Date Received:	09/06/17
601 North McDowell Blvd.		Work Order:	17-09-0292
Petaluma, CA 94954-2312		Preparation:	N/A
		Method:	EPA TO-17 (M)
Project: ExxonMobil 79374/022735C			Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-426-136	**LCS**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 13:09**	**170908L02**
099-15-426-136	**LCSD**	**Air**	**GC/MS MMM**	**N/A**	**09/08/17 13:52**	**170908L02**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
TPH as Diesel (C10-C21)	2000	1661	83	2100	105	50-150	23	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

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Sample Analysis Summary Report

Work Order: 17-09-0292 Page 1 of 1

Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA TO-17 (M)	N/A	953	GC/MS MMM	2

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Glossary of Terms and Qualifiers

Work Order: 17-09-0292 Page 1 of 1

Qualifiers	Definition
AZ	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
B	Analyte was present in the associated method blank.
BA	The MS/MSD RPD was out of control due to suspected matrix interference.
BB	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
DF	Reporting limits elevated due to matrix interferences.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
GE	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
HD	Chromat. profile inconsistent with pattern(s) of ref. fuel stnds.
HO	High concentration matrix spike recovery out of limits
HT	Analytical value calculated using results from associated tests.
HX	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS was in control.
IL	Relative percent difference out of control.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
LD	Analyte presence was not confirmed by second column or GC/MS analysis.
LP	The LCS and/or LCSD recoveries for this analyte were above the upper control limit. The associated sample was non-detected. Therefore, the sample data was reported without further clarification.
LQ	LCS recovery above method control limits.
LR	LCS recovery below method control limits.
ND	Parameter not detected at the indicated reporting limit.
QO	Compound did not meet method-described identification guidelines. Identification was based on additional GC/MS characteristics.
RU	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
SG	A silica gel cleanup procedure was performed.
SN	See applicable analysis comment.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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KRI 170732.03 / CARO90617-CEL

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7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

WO # / LAB USE ONLY
17-09-0292

AIR CHAIN OF CUSTODY RECORD

DATE: 9/5/2017

PAGE: 1 OF 1

LABORATORY CLIENT: Exxon Mobil / Cardno	CLIENT PROJECT NAME / NUMBER: Former Exxon Service Station 79374	P.O. NO.: 022735CX
ADDRESS: 601 N. McDowell Blvd	PROJECT ADDRESS: 990 San Pablo Avenue	LAB CONTACT OR QUOTE NO.: Cecile / Quote # 9101414
CITY: Petaluma STATE: CA ZIP: 94954	CITY: Albany STATE: CA ZIP:	SAMPLER(S): (PRINT) Nadya Vicente
TEL: 707-766-2000 E-MAIL: scott.perkins@cardno.com	PROJECT CONTACT: Scott Perkiins	

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ **STANDARD**

EDF ☐ EDD ☑ UNITS ug/m3

SPECIAL INSTRUCTIONS:

2 tubes Retured unused - KRI

Reporting Limits - ug/m3

100mL Sampled - KRI 9/6/17

Global ID = T0619716673

EDF deliverable to norcallabs@eri-us.com

LAB USE ONLY	SAMPLE ID	FIELD ID / POINT OF COLLECTION	Air Type (I) Indoor (SV) Soil Vap. (A) Ambient	Sampling Equipment: Media ID #	Sampling Equipment: Tube Size	Sampling Equipment: Flow Controller ID #	Start Sampling Information: Date	Start Sampling Information: Time (24 hr clock)	Start Sampling Information: Canister Pressure ("Hg)	Stop Sampling Information: Date	Stop Sampling Information: Time (24 hr clock)	Stop Sampling Information: Canister Pressure ("Hg)	REQUESTED ANALYSES: TO-17 Napthalene	TO-17 TPHd		
1	ST-SVS1	SVS1	SV	G0141323	100ml	NA	9/5/2017	NA	NA	9/5/2017	1149	NA	X	X		

Relinquished by: (Signature)	Received by: (Signature/Affiliation) Jon Unsworth	Date: 9/6/17	Time: 10:45
Relinquished by: (Signature)	Received by: (Signature/Affiliation) ECL	Date: 09/06/17	Time: 1632
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date: 9/6/17	Time: 1830

06/02/14 Revision

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WORK ORDER NUMBER: 17-09- 0292

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1

CLIENT: _____ DATE: 09/06/2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 3.1 °C (w/ CF): 3.3 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 671

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 671

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: SM

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☐	☐	☑
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☐	☐	☑
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOAh ☐ VOAna_2 ☐ 100PJ ☐ 100PJna_2 ☐ 125AGB ☐ 125AGBh ☐ 125AGBp ☐ 125PB ☐ 125PBznna (pH__9)
☐ 250AGB ☐ 250CGB ☐ 250CGBs (pH__2) ☐ 250PB ☐ 250PBn (pH__2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJs (pH__2) ☐ 500PB
☐ 1AGB ☐ 1AGBna_2 ☐ 1AGBs (pH__2) ☐ 1AGBs (O&G) ☐ 1PB ☐ 1PBna (pH__12) ☐ _____ ☐ _____ ☐ _____
Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____
Air: ☐ Tedlar™ ☐ Canister ☑ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na_2** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: SM

Reviewed by: ZM

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