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*By Alameda County Environmental Health 9:10 am, Mar 11, 2016*

March 4, 2016

Ms. Karel Detterman
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

I, Michael Waltz, hereby authorize ERAS Environmental, Inc. to submit the Workplan for Limited Phase II Subsurface Investigation for 1814-1818 Everett Street and 2514-2516 Clement Street in Alameda, California, dated March 4, 2016 to the Alameda County Health Care Services Agency.

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

Signature: Michael Waltz

Printed Name: Michael Waltz

Mr. Michael Waltz
Michael J. Waltz Trust
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ERAS Environmental, Inc.

1533 B Street

Hayward, CA 94541

Phone (510) 247-9885 Facsimile: (510) 886-5399 info@eras.biz

# WORK PLAN FOR LIMITED PHASE II SUBSURFACE INVESTIGATION

AT

**1814-1818 Everett Street**
**2514-2516 Clement Street**
**Alameda, California**

**ERAS PROJECT NUMBER: 16-001-02**
**Alameda County Fuel Leak Case No. RO0003193**
**GeoTracker Global ID T10000007934**

Prepared for

Mr. Michael Waltz
Michael J. Waltz Trust
9524 West Cottonwood Drive
Sun City, Arizona 85373

March 4, 2016

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**CERTIFICATION**

This **Work Plan for Limited Phase II Subsurface Investigation** at 1814-1818 Everett Street and 2514-2516 Clement Street in Alameda, California, has been prepared by ERAS Environmental, Inc. (ERAS) under the professional supervision of the Registered Professional Geologist whose signature appears hereon.

This work plan was prepared in general accordance with the accepted standard of practice that exists in Northern California at the time the investigation was performed. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive studies, including additional environmental investigations, can tend to reduce the inherent uncertainties associated with such studies.

Our firm has prepared this work plan for the Client's exclusive use for this particular project and in accordance with generally accepted professional practices within the area at the time of our investigation. No other representations, expressed or implied, and no warranty or guarantee is included or intended.

This work plan may be used only by the client and only for the purposes stated within a reasonable time from its issuance. Land use, site conditions (both on-site and off-site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify ERAS of such intended use. Based on the intended use of report, ERAS may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release ERAS from any liability resulting from the use of this report by any unauthorized party.

Sincerely,
ERAS Environmental, Inc.


Andrew Savage
Project Geologist

Curtis Payton
California Registered Professional Geologist 5608

March 4, 2016

## 1.0 INTRODUCTION

The following is a work plan for the collection of soil and groundwater samples to define the lateral extent of contamination at a commercial site located at 1814-1818 Everett Street and 2514-2516 Clement Street in Alameda, California (the "Property").

Two underground storage tanks (USTs) (500-gallon waste oil UST and 2,000-gallon gasoline UST) were removed from the Property in 2015 along with three underground hydraulic lifts. At the time of removal concentrations of contamination were found to be present above regulatory limits in soil and groundwater samples collected from the vicinity of the former USTs and hydraulic lifts.

This work plan was prepared to further investigate contamination near the former USTs and hydraulic lifts so that an environmental site case closure can be obtained from the Alameda County Environmental Health Care Services Agency (ACHCSA).

The Property consists of two parcels with the Alameda County Assessor's numbers 70-166-27 and 70-166-2 located on the south corner of the intersection between Everett Street and Clement Avenue in the southeastern portion of the City of Alameda. The Property is located approximately 750 feet southwest of the tidal channel which connects the San Francisco Bay and Oakland Inner Harbor to San Leandro Bay.

The location of the Property is shown on **Figure 1**. The layout of the Property is shown on **Figure 2**.

## 1.1 BACKGROUND

The history and the description of the Property is based on information obtained during a Phase 1 Environmental Site Assessment (ESA) performed by ERAS in 2015. The Property was located in an area of commercial land use and was occupied by an auto body shop, a residence and concrete paved parking and outside storage areas.

The Property appeared to have been used for residences from at least 1897 through at least 1950. All dwellings on the Property were demolished except for 1818 Everett Street and the remainder of the Property was developed for commercial uses from the early 1960's, including a gift shop and auto service garages. By 1972, Alameda Auto Body occupied the commercial portion of the Property.

*1814 Everett Street*

A residential building at 1814 Everett Street was demolished in 1963 and was replaced with the current garage and office. By 1972 Alameda Auto Body occupied the 1814 Everett Street building.

*1818 Everett Street*

A residential building was not identified on the Property until after 1950. A block fence was

added between the residence at 1818 Everett Street and 2514 Clement Street in 1970.

*2514 Clement Avenue*

In 1911, a single story, 5 room dwelling was developed on the 2514 Clement Avenue parcel. In 1926, a garage was developed on the parcel. In 1948 and 1950, a dwelling was located on the parcel. In 1986 the building on the parcel was demolished.

*2516 Clement Avenue*

In 1897 a dwelling was located on this parcel. In 1948 and 1950 the building on the parcel was identified as a dwelling. In 1960 partitions were removed from a building, which was identified as a gift shop in 1962. In 1964 a warehouse on the parcel was demolished and in 1965 the current service garage was constructed.

## 1.2 PREVIOUS SUBSURFACE INVESTIGATIONS

During the ESA project ERAS identified the presence of a 500-gallon waste oil UST, 2,000-gallon gasoline UST, and three underground hydraulic lifts. Environmental Restoration Services (Enrest) performed the removal of the above identified items in August and September of 2015.

Groundwater was encountered in the gasoline UST excavation at a depth of 7.5 feet below ground surface (bgs). A groundwater sample collected from the base of the excavation was analyzed for volatile organic compounds (VOCs) by EPA Method 8260 and total petroleum hydrocarbons quantified as gasoline range organics (TPH-gro[1]), total petroleum hydrocarbons quantified as diesel range organics (TPH-dro), and oil range organics (TPH-oro) by EPA method 8015, and dissolved lead.

A soil sample was collected from the base of the waste oil UST from a depth of 7 feet bgs and was analyzed for VOCs by EPA Method 8260, TPH-gro, TPH-dro, and TPH-oro by EPA method 8015, polychlorinated biphenyls (PCB's) by EPA method 8082, semi volatile organic compounds (SVOCs) by EPA method 8270, and LUFT 5 metals.

Soil samples were also collected from beneath each of the lifts after removal from a depth of 8 feet bgs. The samples were analyzed for petroleum hydrocarbons in the TPH-dro and oro range which also includes hydraulic oil. No testing of the soil for PCB's was conducted. These soil samples also appear to have been collected from the groundwater bearing zone yet no groundwater sample was collected.

The results of the soil and groundwater sampling are included as **Tables 1-5**.

[1] TPH-gro, TPH-dro, and TPH-oro are methods that compare analytical results to standards for gasoline, diesel and motor oil, respectively. Therefore, analytical results are estimates of quantities based on what would be expected for the range of hydrocarbon results for the standard. Gasoline range organics (gro) are those hydrocarbon compounds that are in the range of C6 to C10, diesel range organics (dro) are those hydrocarbon compounds that are in the range of C10 to C23, and oil range organics (oro) are those hydrocarbon compounds that are in the range of C18 to C36. There can be overlap in reporting methods as well as identification of compounds that fall within the standard that may not necessarily be derived from gasoline, diesel, or oil.

The results of the investigation indicated the former presence of the gasoline UST and underground hydraulic lifts on the Property has impacted the subsurface environmental conditions beneath the Property with contaminants at concentrations above the environmental screening limits (ESLs) set forth by the Regional Water Quality Control Board (RWQCB) as of December 2013.

## 2.0 REGIONAL GEOLOGY/HYDROLOGY

The Property is in the southeastern part of the City of Alameda, in the eastern part of the San Francisco Bay Area. The San Francisco Bay Area occupies the central part of the Santa Clara Valley, a broad alluvial valley that slopes gently northward toward San Francisco Bay and is flanked by alluvial fans deposited at the foot of the Diablo Range to the east and the Santa Cruz Mountains to the west (Goldman, 1967). The upland surfaces rising abruptly approximately 2.5 miles to the northeast of the Property are known as the East Bay Hills.

Surface topography in the vicinity of the Property slopes gently to the northeast. The Property is at an elevation of approximately 15-20 feet above Mean Sea Level according to the United States Geological Survey (USGS) Oakland East Quadrangle California 7.5 Minute Series topographic map. Regionally, topography in the area of the Property slopes down to the east toward the Tidal Canal between the San Leandro Bay and Oakland Inner Harbor portion of the San Francisco Bay.

The sediments in the vicinity of the Property are fine-grained alluvial sediments that represent distal deposits of alluvial fans that were deposited by rivers draining upland surfaces to the east of the Property. These sediments were deposited in a low energy environment on the margins of San Francisco Bay (Helley, et al, 1974). At shallow depths beneath these sediments are a series of Recent-age (<10,000 years) blue clay layers that become increasingly thicker toward San Francisco Bay. These clay layers are known as the Bay Mud and were deposited in San Francisco Bay during higher stands of sea level. In the vicinity of the Property it is likely that these sediments overlie bedrock of the Jurassic-aged Franciscan Assemblage.

The subject site is located on the San Francisco Bay Plain in the northernmost part of the Santa Clara Valley Groundwater Basin, (RWQCB, 1986), the surface of which slopes gently down toward San Francisco Bay. The regional groundwater flow follows the topography, moving from areas of higher elevation to areas of lower elevation. In this area the groundwater flow direction is inferred to be to the northeast toward the tidal channel.

## 3.0 SITE CONCEPTUAL MODEL

A summary of the current site conceptual model is included on **Table 6** and the current data gaps and proposed investigation are summarized on **Table 7**.

## 3.1 HYDROGEOLOGIC SETTING

Shallow groundwater has been observed approximately 7.5 feet bgs. The shallow water-bearing zone appears to be located in sandy silt and likely is tidally influenced. The base of the shallow water bearing zone has not been determined.

## 3.2 EXTENT OF CONTAMINATION

*Gasoline UST*
Groundwater in the vicinity of the former gasoline UST was determined to have been impacted by TPH-gro (738 µg/L) and TPH-oro (112 µg/L) at concentrations above their respective ESLs. Benzene (51.2 µg/L), toluene (75 µg/L), and xylene (110 µg/L) were also detected above their respective ESL's.

*Waste Oil UST*
No concentrations of the contaminants of concern were determined to be present in the soil beneath the former waste oil UST above their respective ESLs.

*Underground Hydraulic Lifts*
No concentrations of petroleum hydrocarbons were determined to be present in the soil samples collected from beneath the former underground hydraulic lifts above their respective ESLs. No analysis for PCBs in the soil beneath the hydraulic lifts was conducted. These soil samples also appear to have been collected from the groundwater bearing zone yet no groundwater sample was collected.

# 4.0 WORK PLAN

## 4.1 SCOPE OF PROPOSED INVESTIGATION

ERAS proposes a scope of work for this investigation as follows.

- Obtain a permit for drilling from the Alameda County Public Works Department (ACPWD).
- Clear the boring locations for the presence of utilities by notifying Underground Service Alert and employing a private underground locating/clearance service.
- Advance four borings using a direct push sample rig to approximately 12 feet in the vicinity of the former gasoline USTs. These borings will be continuously logged by a field geologist.
- Advance three borings using a direct push sample rig to approximately 12 feet in the vicinity of the former underground hydraulic lifts. These borings will be continuously logged by a field geologist.

- Groundwater samples will be collected from each boring provided groundwater enters the boreholes advanced to the target depth.

- Analyze the groundwater samples collected from the vicinity of the former gasoline UST for TPH-dro and TPH-oro by EPA method 8015, TPH-gro, benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tert butyl ether (MTBE), naphthalene and fuel oxygenates plus lead scavengers (ethylene dibromide and 1,2-dichloroethane) by EPA Method 8260B.

- Analyze the groundwater samples in the vicinity of the former underground hydraulic lifts for TPH as hydraulic oil by EPA method 8015 along with PCBs by EPA method 8082.

- Collect a soil gas sample from a depth of 4 feet bgs in the vicinity of the former gasoline UST. This sample will be collected just inside the auto body shop.

- Analyze the soil gas sample for VOCs by TO-15.

- Prepare a report detailing the field procedures and results of the investigation.

## 4.2 FIELD WORK COORDINATION

ERAS will procure a drilling permit from the ACPWD prior to drilling activities.

The boring locations will be marked with paint and Underground Service Alert notified at least 48 hours in advance to give owners of underground utilities an opportunity to mark their lines. Prior to drilling, each boring location will be cleared using a private underground utility locator.

## 4.3 BORING LOCATIONS AND SAMPLING

*Groundwater Sampling*

The locations of the borings are shown on **Figure 2**. The Standard Operating Procedures for direct-push sampling is included in **Appendix C**.

Four borings will be advanced using a direct push sample rig to a maximum of approximately 12 feet in the vicinity of the former gasoline UST in an attempt to horizontally delineate the extent of the contamination. These borings will be continuously logged. A groundwater sample will be collected from each boring for analysis.

Three borings will be advanced using a direct push sample rig to approximately 12 feet in the vicinity of the former underground hydraulic lifts. These borings will be continuously logged by a field geologist. A groundwater sample will be collected from each boring for analysis.

The groundwater samples will be kept chilled pending transport under chain-of-custody

procedures to a California certified environmental analytical laboratory.

The groundwater samples collected from the vicinity of the former gasoline UST for TPH-dro and TPH-oro by EPA method 8015, TPH-gro, BTEX, MTBE, naphthalene and fuel oxygenates plus lead scavengers (ethylene dibromide and 1,2-dichloroethane) by EPA Method 8260B.

The groundwater samples in the vicinity of the former underground hydraulic lifts for TPH as hydraulic oil by EPA method 8015 along with PCBs by EPA method 8082.

*Soil Gas Sampling*

The locations of the soil gas samples are shown on **Figure 2**. The Standard Operating Procedures for The Standard Operating Procedures for soil gas sampling is included in **Appendix C**.

A soil gas sample will be collected from a depth of 4 feet bgs in the vicinity of the former gasoline UST inside the auto body shop to evaluate potential vapor migration. The sample will be analyzed for VOCs by EPA Method TO-15.

## 4.4 FIELD AND REPORT SCHEDULE

The field work will be scheduled as soon as possible following approval of this work plan by the ACEHD. A report will be submitted within 30 working days of the completion of field activities.

## 5.0 REFERENCES

Alameda County Environmental Health Services, Technical Report Request for Fuel Leak Case No. RO0003193 and GeoTracker Global ID T10000007934, Waltz Living Trust, 1818 Everett Street, Alameda, CA 94501, January 21, 2016.

California Regional Water Quality Control Board, Water Quality Control Plan, San Francisco Bay Basin Region (2), December 1986.

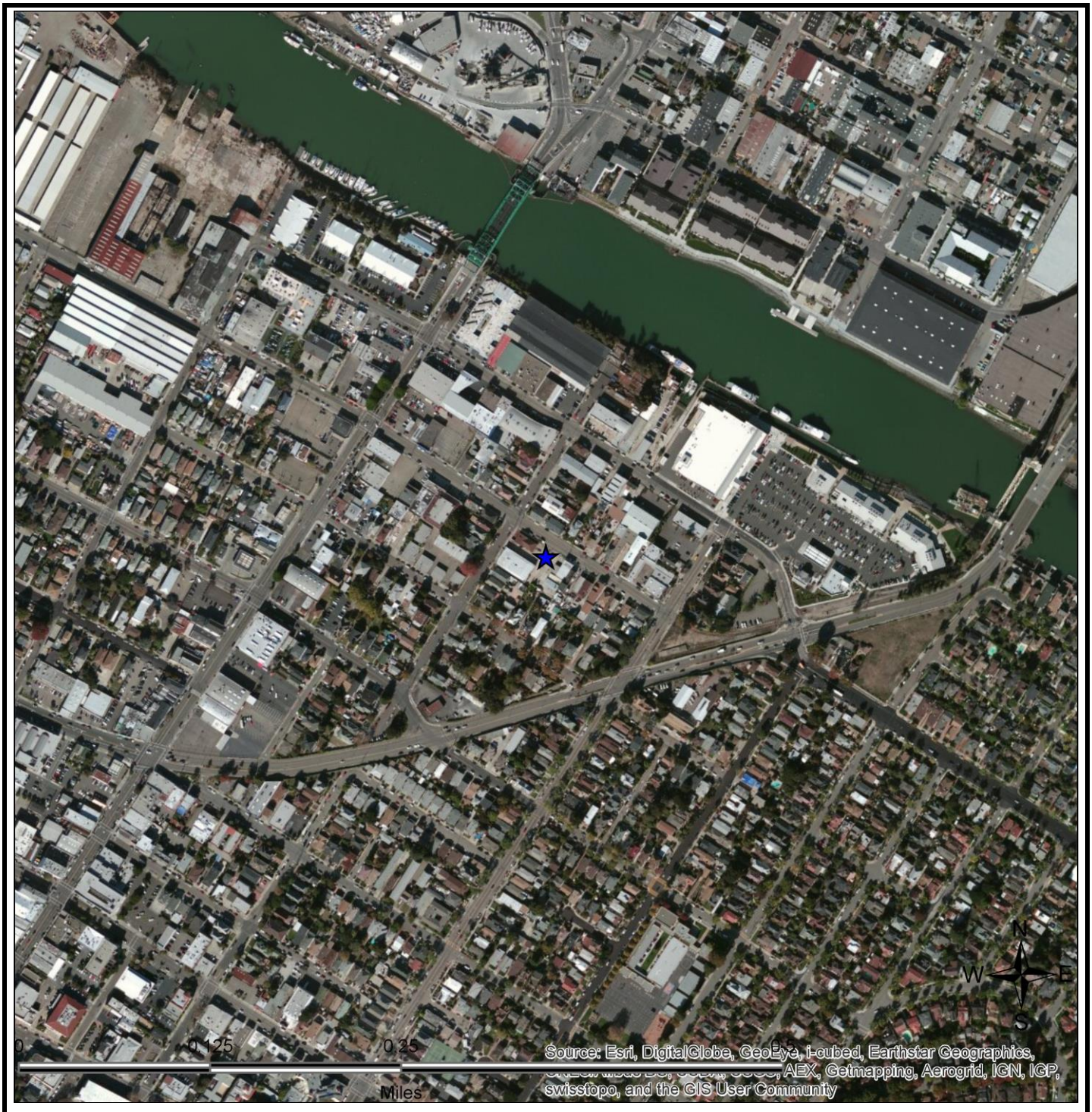
Environmental Restoration Services, Underground Tank Technical Closure Report, 1814 Everett Street, Alameda, California, August 31, 2015.

Environmental Restoration Services, Report of Hydraulic Hoist Removals at 1814 Everett Street, Alameda, California, September 16, 2015.

ERAS Environmental, Inc., Phase 1 Environmental Site Assessment, 1814-1818 Everett Street, 2514-2516 Clement Street, Alameda, California, May 22, 2015.

Goldman, Harold B., Geology of Burlingame Bay prepared for Burlingame Bay Conservation and Development Commission, February 1967.

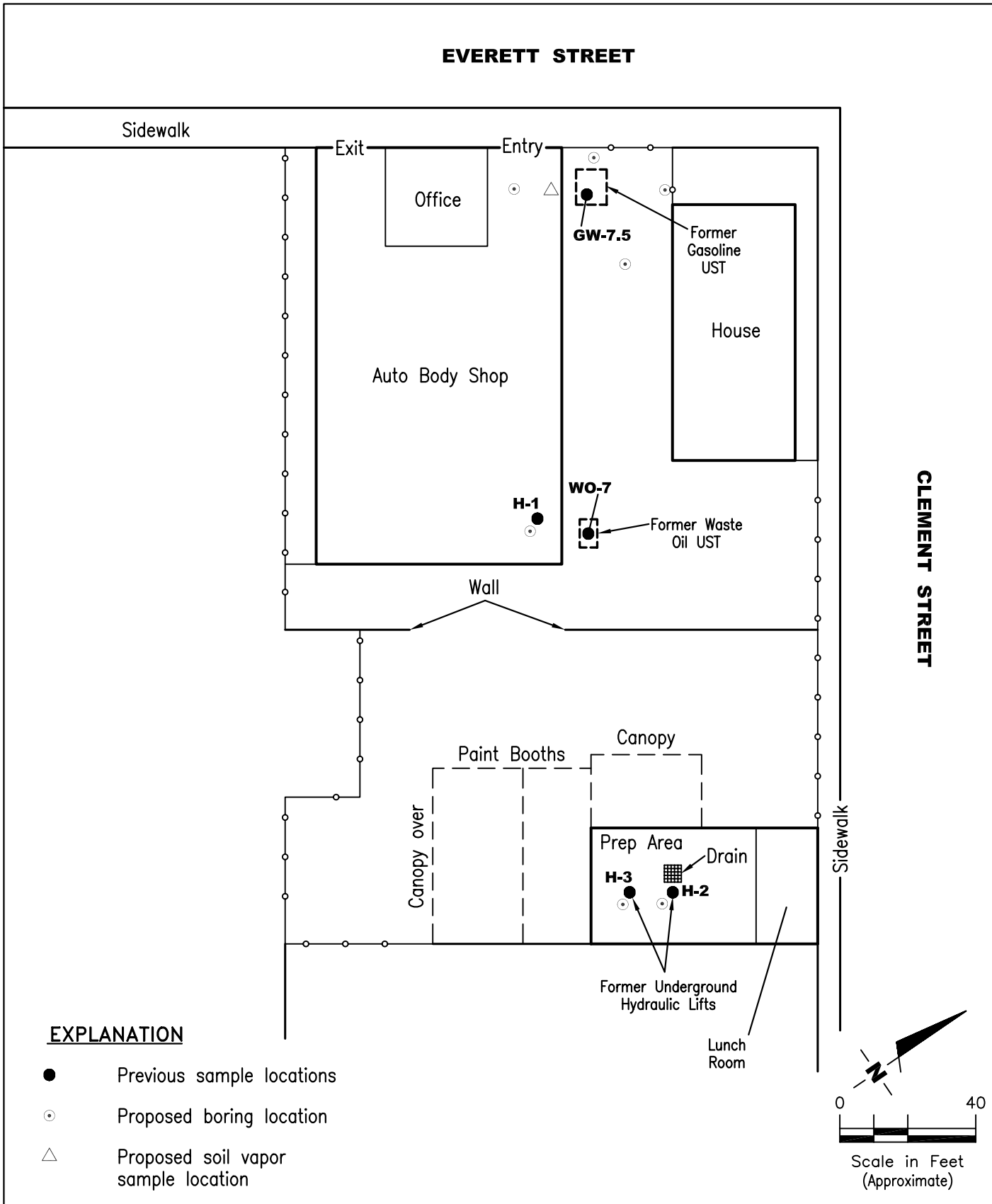
# FIGURES AND TABLES




# SITE LOCATION MAP

| | | |
|---|---|---|
| ERAS Environmental, Inc. | 1814 Everett St.<br>Alameda, CA | FIGURE: 1<br>JOB: 15095<br>DATE: 5/7/2015 |

2104652499




**PROPOSED BORING LOCATION MAP**

DATE
02/28/2016
REVIEWED BY
AS

1814–1818 Everett St./2514–2516 Clement St.
Alameda, California

JOB NUMBER
16-001-02
FIGURE
2

ERAS Environmental Inc.

ERAS 03-02-2016 Proposed Boring Location Map.dwg

# TABLE 1. ANALYTICAL RESULTS - SOIL

## 1814 Everett Street, Alameda

| Sample ID | Date | TPH-gro | TPH-dro | TPH-oro | VOCs | SVOCs | PCBs | LUFT 5 |
|---|---|---|---|---|---|---|---|---|
| | | (mg/Kg) | | | | | | |
| H-1 | 7-Sep-15 | NA | 92.6 | 167 | NA | NA | NA | NA |
| H-2 | 7-Sep-15 | 0.0942 J | 83.8 | 56.6 | See Table 2 | NA | NA | NA |
| H-3 | 7-Sep-15 | NA | **128** | 237 | NA | NA | NA | NA |
| WO-7 | 31-Aug-15 | NA | <6.6 | <13 | See Table 2 | ND | ND | See Table 3 |
| | | | | | | | | |
| ESL | | 500 | 110 | 500 | - | - | - | - |

Notes
NA = Not Analyzed
(mg/Kg) = Miligrams per Kilogram
TPH-gro = Total petroleum hydrocarbons quantified as gasoline range organics
TPH-dro = Total petroleum hydrocarbons quantified as diesel range organics
TPH-oro = Total petroleum hydrocarbons quantified as oil range organics
VOCs= volitile organic compounds
SVOCs = semivolitile organic compounds
PCBs = poly chlorinated biphenyls
LUFT 5 = cadmium, chromium, lead, nickel, and zinc
ESL = environmental screening limits set forth by the RWQCQ for soil shallower than 3 meters on a commercial Property where groundwater is considered a potential source of drinking water
Bold Type Indicates Reported Value Above the ESL.
J indicates an estimated value between the reporting limit and the method detection limit

# TABLE 2. ANALYTICAL RESULTS - SOIL - VOC

## 1814 Everett Street, Alameda

| Sample ID | Date | Acetone | MEK | 1,2,4-TMB | Toluene | Xylenes |
|---|---|---|---|---|---|---|
| | | (mg/Kg) | | | | |
| H-1 | 7-Sep-15 | NA | NA | NA | NA | NA |
| H-2 | 7-Sep-15 | 0.121 | <0.02 | <0.005 | <0.005 | <0.01 |
| H-3 | 7-Sep-15 | NA | NA | NA | NA | NA |
| WO-7 | 31-Aug-15 | 0.0656 | 0.0115 J | 0.0024 J | 0.00058 J | 0.0011 J |
| | | | | | | |
| ESL | | 0.5 | 4.5 | - | 2.9 | 2.3 |

Notes
NA = Not Analyzed
(mg/Kg) = Miligrams per Kilogram
MEK = methyl ethyl ketone
1,2,4-TMB = 1,2,4-trimethylbenzene
ESL = environmental screening limits set forth by the RWQCQ for soil shallower than 3 meters on a commercial Property where groundwater is considered a potential source of drinking water
J indicates an estimated value between the reporting limit and the method detection limit
Bold Type Indicates Reported Value Above the ESL.

## TABLE 3. ANALYTICAL RESULTS - SOIL - METALS

### 1814 Everett Street, Alameda

| Sample ID | Date | Cadmium | Chromium | Lead | Nickel | Zinc |
|---|---|---|---|---|---|---|
| | | (mg/Kg) | | | | |
| WO-7 | 31-Aug-15 | <0.82 | 43 | 9 | 29 | 23 |
| | | | | | | |
| ESL | | 12 | 2,500 | 320 | 150 | 600 |

Notes
NA = Not Analyzed
(mg/Kg) = Miligrams per Kilogram
ESL = environmental screening limits set forth by the RWQCQ for soil shallower than 3 meters on a commercial Property where groundwater is considered a potential source of drinking water
Bold Type Indicates Reported Value Above the ESL.

## TABLE 4. ANALYTICAL RESULTS - GROUNDWATER

### 1814 Everett Street, Alameda

| Sample ID | Date | TPH-gro | TPH-dro | TPH-oro | VOC | Total Lead |
|---|---|---|---|---|---|---|
| | | μg/L | | | | |
| GW-7.5 | 31-Aug-15 | **738** | 36 | **112** | See Table 6 | **<10** |
| | | | | | | |
| ESL | | 100 | 100 | 100 | - | 2.5 |

Notes
NA = Not Analyzed
ND = Below laboratory detection limits
BESL = All concentrations detected were below the ESL
μg/L = Micrograms per liter
TPH-gro = Total petroleum hydrocarbons quantified as gasoline range organics
TPH-dro = Total petroleum hydrocarbons quantified as diesel range organics
TPH-oro = Total petroleum hydrocarbons quantified as oil range organics
VOC = Volitile organioc compounds
ESL = environmental screening limits set forth by the RWQCQ for drinking water
Bold Type Indicates Reported Value Above the ESL.
J indicates an estimated value between the reporting limit and the method detection limit

## TABLE 5. ANALYTICAL RESULTS - GROUNDWATER - VOC

### 1814 Everett Street, Alameda

| Sample ID | Date | Benzene | Toluene | Ethylbenzene | Xylenes | MTBE | Napth | Other VOCs |
|---|---|---|---|---|---|---|---|---|
| | | µg/L | | | | | | |
| GW-7.5 | 31-Aug-15 | **51.2** | **75** | 10.4 | **110** | <1.0 | 1.8 J | BESL |
| | | | | | | | | |
| ESL | | 1 | 40 | 30 | 20 | 5 | 6.1 | - |

Notes
NA = Not Analyzed
ND = Below laboratory detection limits
BESL = All concentrations detected were below the ESL
µg/L = Micrograms per liter
MTBE = methyl tert butyl ether
Napth = naphthalene
VOCs = volitile organic compounds
BESL = all detected concentrations were below their respective ESLs
ESL = environmental screening limits set forth by the RWQCQ for drinking water
Bold Type Indicates Reported Value Above the ESL.
J indicates an estimated value between the reporting limit and the method detection limit

# TABLE 6 - SITE CONCEPTUAL MODEL
## 1814 Everett Street, Alameda

| CSM Element | CSM Sub-Element | Description | Potential Data Gap(s) |
|---|---|---|---|
| Geology and Hydrogeology | Regional | The Property is in the southeastern part of the City of Alameda, in the eastern part of the San Francisco Bay Area. The San Francisco Bay Area occupies the central part of the Santa Clara Valley, a broad alluvial valley that slopes gently northward toward San Francisco Bay and is flanked by alluvial fans deposited at the foot of the Diablo Range to the east and the Santa Cruz Mountains to the west (Goldman, 1967). The upland surfaces rising abruptly approximately 2.5 miles to the northeast of the Property are known as the East Bay Hills.<br><br>Surface topography in the vicinity of the Property slopes gently to the northeast. The Property is at an elevation of approximately 17 feet above Mean Sea Level according to the United States Geological Survey (USGS) Oakland East Quadrangle California 7.5 Minute Series topographic map. Regionally, topography in the area of the Property slopes down to the east toward the Tidal Canal between the San Leandro Bay and Oakland Inner Harbor portion of the San Francisco Bay.<br><br>The sediments in the vicinity of the Property are fine-grained alluvial sediments that represent distal deposits of alluvial fans that were deposited by rivers draining upland surfaces to the east of the Property. These sediments were deposited in a low energy environment on the margins of San Francisco Bay (Helley, et al, 1974). At shallow depths beneath these sediments are a series of Recent-age (<10,000 years) blue clay layers that become increasingly thicker toward San Francisco Bay. These clay layers are known as the Bay Mud and were deposited in San Francisco Bay during higher stands of sea level. In the vicinity of the Property it is likely that these sediments overlie bedrock of the Jurassic-aged Franciscan Assemblage.<br><br>The subject site is located on the San Francisco Bay Plain in the northernmost part of the Santa Clara Valley Groundwater Basin, (RWQCB, 1986), the surface of which slopes gently down toward San Francisco Bay. | None |
| | Site | ***Geology:*** Based on the lithology observed during the UST removal the subsurface environmental conditions consist of sandy silt to a depth of 9 feet bgs. | None |
| | | ***Hydrogeology:*** Groundwater at the Property was encountered at a depth of 7.5 feet bgs in sandy silt. | None |
| Surface Water Bodies | -- | The closest surface water bodies are the Brooklyn Basin and tidal channel which was located approximately 750 feet northeast of the Property. | None |
| Nearby Wells | -- | A well survey has not been conducted. | Yes |
| **CSM Element** | **CSM Sub-Element** | **Description** | **Potential Data Gap(s)** |
| Constituents of Concern | -- | Constituents of concern for the former underground hydraulic lifts are petroleum hydrocarbons and PCBs.<br><br>Constituents of concern for the former gasoline UST are petroleum hydrocarbons, VOCs (including BTEX, MTBE, naphthalene and fuel oxygenates plus lead scavengers), and dissolved lead.<br><br>Constituents of concern for the former waste oil UST are VOCs, petroleum hydrocarbons, PCB's, SVOCs, and LUFT 5 metals. | Yes |
| Potential Sources | On-site | The Property formerly contained two USTs (gasoline and waste oil) along with three underground hydraulic lifts. | None |
| **CSM Element** | **CSM Sub-Element** | **Description** | **Potential Data Gap(s)** |
| Nature and Extent of Environmental Impacts | Extent in Soil, TPH | A concentration of total petroleum hydrocarbons (128 mg/Kg) within the carbon range of hydraulic oil was found to be present above the ESL in the vicinity of the hydraulic lift (H-3) formerly located at 2514-2516 Clement Street. The extent is unknown. The soil samples collected beneath the former underground hydraulic lifts appear to have been collected from the groundwater bearing zone however no groundwater sample appears to have been collected.<br><br>No soil samples were collected in the vicinity of the former gasoline UST due to shallow groundwater. There were no concentrations of petroleum hydrocarbons above their respective ESLs detected in the soil collected from beneath the former waste oil UST. | The full extent of TPH in the soil has not been determined in the vicinity of the former hydraulic lifts. |
| | Extent in Soil, PCBs | The soil samples collected in the vicinity of the former underground hydraulic lifts were not analyzed for PCBs. The soil sample collected in the vicinity of the former waste oil tank was not found to contain concentrations of PCB's above the laboratory detection limit. | The subsurface environmental conditions have not been evaluated for the potential presence of PCBs in the vicinity of the former underground hydraulic lifts. |

# TABLE 6 - SITE CONCEPTUAL MODEL
## 1814 Everett Street, Alameda

| | | | |
|---|---|---|---|
| Nature and Extent of Environmental Impacts | Extent in Soil, VOCs | No concentrations of VOC's in soil were detected above their respective ESLs in the vicinity of the waste oil tank. No soil samples were collected in the vicinity of the former gasoline UST due to shallow groundwater. | None |
| | Extent in Soil, SVOCs | No concentrations of SVOC's in soil were detected above their respective ESLs in the vicinity of the waste oil tank. | None |
| | Extent in Soil, Metals | No concentrations of LUFT 5 metals in soil were detected above their respective ESLs in the vicinity of the waste oil tank. No soil samples were collected in the vicinity of the former gasoline UST due to shallow groundwater. | None |
| | Extent in Groundwater, TPH | Petroleum hydrocarbons have been detected in the groundwater in the vicinity of the former gasoline UST at concentrations above the ESLs. TPH-gro was detected at a concentration of 738 µg/L and TPH-oro was detected at a concentration of 112 µg/L above the ESL of 100 µg/L. The extent is unknown. No groundwater samples were collected in the vicinity of the former waste oil UST since the soil samples collected did not indicate a threat to the groundwater. The soil samples collected in the vicinity of the former underground hydraulic lifts appear to have been collected from the groundwater bearing zone however no groundwater sample was collected. | The full extent of TPH in the groundwater has not been determined in the vicinity of the former gasoline UST or hydraulic lifts. |
| | Extent in Groundwater, VOC | Only the groundwater sample in the vicinity of the former gasoline UST was analyzed for VOCs. Concentrations of benzene, toluene, and xylenes were detected above their respective ESLs. The extent is unknown. No groundwater samples were collected in the vicinity of the former waste oil UST since the soil samples collected did not indicate a threat to the groundwater. | The full extent of VOCs in the groundwater has not been determined in the vicinity of the former gasoline UST. |
| | Extent in Groundwater, Lead | Only the groundwater sample in the vicinity of the former gasoline UST was analyzed for lead. No concentration was detected above the laboratory reporting limit. | None |
| | VOC Soil Vapor | Has not been evaluated. | VOC soil vapor has not been evaluated |
| Migration Pathways | Potential Conduits | The locations of on-site utilities, including sanitary sewer laterals, water, gas, and electrical lines are unknown. | The locations of onsite utilities have not been determined |
| Potential Receptors/Risk | On-site | Potable water at the site currently is provided via municipal supply and will continue to be in the foreseeable future. As such, direct contact to groundwater is not contemplated. | None |
| Potential Receptors/Risk | Off-site | A well survey has not been conducted. | A well survey has not been completed |

Notes
1. Environmental Restoration Services, Underground Tank Technical Closure Report, 1814 Everett Street, Alameda, California, August 31, 2015
2. Environmental Restoration Services, Report of Hydraulic Hoist Removals at 1814 Everett Street, Alameda, California, September 16, 2015.
3. ERAS Environmental, Inc., Phase 1 Environmental Site Assessment, 1814-1818 Everett Street, 2514-2516 Clement Street, Alameda, California, May 22, 2015.

Abbreviations
UST = underground storage tank
bgs = below ground surface
VOCs = volatile organic compounds
BTEX = benzene, toluene, ethylbenzene, xylene
SVOCs = semi volatile organic compounds
PCBs = poly chlorinated biphenyl's
TPH-gro = total petroleum hydrocarbons quantified as gasoline range organics
TPH-dro = total petroleum hydrocarbons quantified as diesel range organics
TPH-oro = total petroleum hydrocarbons quantified as oil range organics
LUFT 5 = cadmium, chromium, lead, nickel, and zinc
mg/Kg = milligrams per kilogram
µg/L = micrograms per liter

# TABLE 7 - DATA GAPS AND PROPOSED INVESTIGATION

## 1814 Everett Street, Alameda

| Item | Data Gap | Proposed Investigation | Rational | Analysis |
|---|---|---|---|---|
| 1 | Well Survey | None | Not requested at this time | |
| 2 | The full extent of TPH in the soil has not been determined in the vicinity of the former hydraulic lifts. | Advance three borings using a direct push sample rig to approximately 12 feet in the vicinity of the former underground hydraulic liftsfor the collection of groundwater samples. | To determine potential impact to groundwater since the previous soil samples were collected from the groundwater bearing zone. | Analyze the groundwater samples in the vicinity of the former underground hydraulic lifts for TPH as hydraulic oil by EPA method 8015. |
| 3 | The subsurface environmental conditions have not been evaluated for the potential presence of PCBs in the vicinity of the former underground hydraulic lifts. | Advance three borings using a direct push sample rig to approximately 12 feet in the vicinity of the former underground hydraulic liftsfor the collection of groundwater samples. | To determine potential impact to groundwater since the previous soil samples were collected from the groundwater bearing zone and were not analyzed for PCBs. | Analyze the groundwater samples in the vicinity of the former underground hydraulic lifts for PCBs by EPA method 8082. |
| 4 | The full extent of TPH in the groundwater has not been determined in the vicinity of the former gasoline UST or hydraulic lifts. | Advance four borings using a direct push sample rig to approximately 12 feet in the vicinity of the former gasoline USTs for the collection of groundwater samples.<br><br>Advance three borings using a direct push sample rig to approximately 12 feet in the vicinity of the former underground hydraulic lifts for the collection of groundwater samples. | To determine potential impact to the groundwater in the vicinity of the former underground hydraulic lifts and evaluate the extent in the vicinity of the former gasoline UST. | Analyze the groundwater from the vicinity of the former gasoline UST for TPH-dro and TPH-oro by EPA method 8015 and TPH gro by EPA Method 8260B.<br><br>Analyze the groundwater samples in the vicinity of the former underground hydraulic lifts for TPH as hydraulic oil by EPA method 8015. |
| 5 | The full extent of VOCs in the groundwater has not been determined in the vicinity of the former gasoline UST. | Advance four borings using a direct push sample rig to approximately 12 feet in the vicinity of the former gasoline USTs for the collection of groundwater samples. | Evaluate the extent of previously detected concentrations of VOCs in the vicnity of the former gasoline UST. | Analyze the groundwater from the vicinty of the former gasoline UST for BTEX, MTBE, naphthalene and fuel oxygenates plus lead scavengers (ethylene dibromide and 1,2-dichloroethane) by EPA Method 8260B. |
| 6 | VOC soil vapor has not been evaluated. | Collect a soil gas sample from a depth of 4 feet bgs in the vicinity of the former gasoline UST. | Evaluate the potential presenvce of a threat to indoor air quality due to elevated concentrarions of VOCs perviously detected in the groundwater. | Analyze the soil gas sample for VOC's by TO-15. |

Abbreviations
UST = underground storage tank
bgs = below ground surface
VOCs = volatile organic compounds
BTEX = benzene, toluene, ethylbenzene, xylene
SVOCs = semi volatile organic compounds
PCBs = poly chlorinated biphenyl's
TPH-gro = total petroleum hydrocarbons quantified as gasoline range organics
TPH-dro = total petroleum hydrocarbons quantified as diesel range organics
TPH-oro = total petroleum hydrocarbons quantified as oil range organics
LUFT 5 = cadmium, chromium, lead, nickel, and zinc

# APPENDIX A

# ACHCSA Letter – January 21, 2016

ALAMEDA COUNTY
**HEALTH CARE SERVICES**
AGENCY
REBECCA GEBHART, Acting Director

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

January 21, 2016

Michael Waltz (Sent via e-mail to: F40RACER@aol.com)
Michael J. Waltz Trust
9524 West Cottonwood Drive
Sun City, AZ 85373-2128

Ky Truong
1818 Everett Street
Alameda, CA 94501

Samuel Schnear
1814 Everett Street
Alameda, CA 94501

Subject: Technical Report Request for Fuel Leak Case No. RO0003193 and GeoTracker Global ID T10000007934, Waltz Living Trust, 1818 Everett Street, Alameda, CA 94501

Gentlemen:

Alameda County Environmental Health (ACEH) has reviewed the *Underground Tank Technical Closure Report* (UST Report) dated September 17, 2015, prepared on your behalf by Environmental Restoration Services, Inc. (ERS). According to the UST Report, two underground storage tanks (USTs), a 500-gallon waste oil and a 2,000 gallon gasoline UST were removed from the site on August 31, 2015. Visible holes were not observed on either UST during removal but petroleum hydrocarbon odor was noted. A soil sample was not collected from beneath the gasoline UST because groundwater was encountered at 7 feet 4 inches below grade. A water sample collected from the gasoline UST excavation detected 51.2 microgram per liter (ug/L) benzene and 738 ug/L total petroleum hydrocarbons (TPH) gasoline range organics (GRO). Concentrations of up to 112 milligrams per kilogram (mg/kg) TPH as waste oil (TPHwo) and 36.1 mg/kg TPH diesel (TPHd) were detected in composite soil samples from the WO UST. The stockpiled soil was reused at the site without authorization from the ACEH. These data indicate that unauthorized releases from the USTs had occurred at the site. The release was referred to the ACEH Local Oversight Program (LOP), the lead agency for oversight of investigation and cleanup of petroleum hydrocarbon releases in Alameda County. ACEH-LOP subsequently listed the subject case on our data base of fuel leak sites.

ACEH has also evaluated the data presented in the UST Report to the State Water Resources Control Board's Low Threat Closure Policy (LTCP) and due to the lack of site data we have determined the site does not meet the LTCP General Criteria e (Site Conceptual Model), f (Secondary Source Removal) and the Media-Specific Criteria for Groundwater, the Media-Specific Criteria for Vapor Intrusion to Indoor Air, and the Media-Specific Criteria for Direct Contact and Outdoor Air Exposure.

Therefore, ACEH requests that you prepare a Data Gap Investigation Work Plan that is supported by a Site Conceptual Model (SCM) to address the Technical Comments provided below.

**TECHNICAL COMMENTS**

1. **LTCP General Criteria e (Site Conceptual Model) –** According to the LTCP, the SCM is a fundamental element of a comprehensive site investigation. The SCM establishes the source and

attributes of the unauthorized release, describes all affected media (including soil, groundwater, and soil vapor as appropriate), describes local geology, hydrogeology and other physical site characteristics that affect contaminant environmental transport and fate, and identifies all confirmed and potential contaminant receptors (including water supply wells, surface water bodies, structures and their inhabitants). The SCM is relied upon by practitioners as a guide for investigative design and data collection. All relevant site characteristics identified by the SCM shall be assessed and supported by data so that the nature, extent and mobility of the release have been established to determine conformance with applicable criteria in this policy.

Our review of the case files indicates that insufficient data collection and analysis has not been presented to assess the nature, extent, and mobility of the release and to support compliance with General Criteria e and f, Media Specific Criteria for Vapor Intrusion to Indoor Air, Groundwater, and Direct Contact and Outdoor Air Exposure as described in Items 1 through 7. Please present a strategy in the Data Gap Work Plan (described in Item 6 below) to address the data gaps identified above. Alternatively, please provide justification of why the site satisfies this general criterion in the focused SCM described in Item 6 below.

2. **General Criteria f – Secondary Source Has Been Removed to the Extent Practicable –** "Secondary source" is defined as petroleum-impacted soil or groundwater located at or immediately beneath the point of release from the primary source. Unless site attributes prevent secondary source removal (e.g. physical or infrastructural constraints exist whose removal or relocation would be technically or economically infeasible), petroleum-release sites are required to undergo secondary source removal to the extent practicable as described in the policy. "To the extent practicable" means implementing a cost-effective corrective action which removes or destroys-in-place the most readily recoverable fraction of source-area mass. It is expected that most secondary mass removal efforts will be completed in one year or less. Following removal or destruction of the secondary source, additional removal or active remedial actions shall not be required by regulatory agencies unless (1) necessary to abate a demonstrated threat to human health or (2) the groundwater plume does not meet the definition of low threat as described in this policy.

   The UST Report describes that soil removed from the UST excavations was stockpiled adjacent to each respective UST and the backfill material was "native". ACEH's understands that the stockpiled soil was reused at the site without authorization from the ACEH. Because composite soil samples from the stockpiled soil from the waste oil UST detected up to 112 mg/kg TPH WO and 36.1 mg/kg TPHd and confirmation soil samples were not taken below the gasoline UST, ACEH's review of the case files indicates that insufficient data and analysis has been presented to assess compliance with General Criteria f.

   Please present a strategy in the Data Gap Work Plan (described in Item 6 below) to address the items discussed above. Alternatively, please provide justification of why the site satisfies this general criterion in the focused SCM described in Item 6 below.

3. **LTCP Media Specific Criteria for Groundwater –** To satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites listed in the policy.

   Our review of the case files indicates that insufficient data and analysis has been presented to support the requisite characteristics of plume stability or plume length classification. Please present a

strategy in the Data Gap Work Plan discussed in Item 6 below to determine if groundwater in the vicinity of the site has been impacted by a release.

Alternatively, please provide justification of why the site satisfies the media-specific criteria for groundwater in the SCM that assures that threats to existing and anticipated beneficial uses of groundwater have been mitigated or are de minimis.

4. **LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air –** The LTCP describes conditions, including bioattenuation zones, which if met will assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks to human occupants of existing or future site buildings, and adjacent parcels. Appendices 1 through 4 of the LTCP criteria illustrate four potential exposure scenarios and describe characteristics and criteria associated with each scenario.

   Our review of the case files indicates that soil samples were not collected from the gasoline UST excavation due to encountering groundwater at a depth of 7 feet 4 inches below ground surface (bgs) in the excavation. Additionally, due to the lack of data in the case file on the excavation extent, lack of discrete soil analytical data, the concentration of contaminants in excavated soil either reused onsite or disposed offsite, the risk of vapor intrusion to indoor air to onsite and offsite building occupants cannot be assessed. Please present a strategy in the Data Gap Work Plan (described in Item 6 below) to address the data gaps identified above. Alternatively, please provide justification of why the site satisfies this general criterion in the focused SCM described in Item 6 below.

   Alternatively, please provide justification of why the site satisfies the Media-Specific Criteria for Vapor Intrusion to Indoor Air in a SCM that assures that exposure to petroleum vapors in indoor air will not pose unacceptable health risks to occupants of current or future buildings.

   Please note, that if direct measurement of soil gas is proposed, ensure that your strategy is consistent with the field sampling protocols described in the Department of Toxic Substances Control's Final Vapor Intrusion Guidance (October 2011). Consistent with the guidance, ACEH requires installation of permanent vapor wells to assess temporal and seasonal variations in soil gas concentrations.

5. **LTCP Media Specific Criteria for Direct Contact and Outdoor Air Criteria** – The LTCP describes conditions where direct contact with contaminated soil or inhalation of contaminants volatized to outdoor air poses a low threat to human health. According to the policy, release sites where human exposure may occur satisfy the media-specific criteria for direct contact and outdoor air exposure and shall be considered low-threat if the maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 for the specified depth bgs. Alternatively, the policy allows for a site specific risk assessment that demonstrates that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health, or controlling exposure through the use of mitigation measures, or institutional or engineering controls.

   Insufficient data collection and analysis in the depth intervals of both 0 to 5 feet below ground surface (bgs) and the 5 to 10 feet bgs has been presented to satisfy the media-specific criteria for direct contact and outdoor air exposure.

   Therefore, please present a strategy in the Data Gap Work Plan described in Item 6 below to collect sufficient data to satisfy the LTCP direct contact and outdoor air exposure criteria. Sample and analyze soil at the zero to five and five to ten foot intervals, at the groundwater interface, lithologic

changes, and at areas of obvious impact. Please include the requisite analysis for benzene, ethylbenzene, naphthalene and polycyclic aromatic hydrocarbons (PAH) analysis.

Alternatively, please provide justification of why the site satisfies the Media-Specific Criteria for Direct Contact and Outdoor Air Exposure in the focused SCM described in Item 6 below that assures that exposure to petroleum constituents in soil will have no significant risk of adversely affecting human health.

6. **Data Gap Investigation Work Plan and Site Conceptual Model –** Please prepare Data Gap Investigation Work Plan to address the technical comments listed above. Please support the scope of work in the Data Gap Investigation Work Plan with a focused SCM and Data Quality Objectives (DQOs) that relate the data collection to each LTCP criteria. For example please clarify which scenario within each Media-Specific Criteria a sampling strategy is intended to apply to. If the sampling strategy includes data collection to support the proposed site redevelopment, a description of that redevelopment should be included in the Data Gap Investigation Work Plan to support your sampling strategy so that ACEH can verify the appropriateness of the proposed sample locations.

   Please include a site map with a bar scale showing the location of the former UST, the locations of all soil samples taken during the UST removal, the extent of the excavation, the fill pipe, and all UST system appurtenances by the date specified below. Please include in all future reports an extended site map using an aerial photographic base map to depict both the site and immediate vicinity to facilitate understanding the site and surrounding vicinity.

   In order to expedite review, ACEH requests the SCM be presented in a tabular format that highlights the major SCM elements and associated data gaps, which need to be addressed to progress the site to case closure under the LTCP. Please see Attachment B “Site Conceptual Model Requisite Elements in Tabular Form”. Please sequence activities in the proposed Data Gap Investigation scope of work to enable efficient data collection in the fewest mobilizations possible.

7. **Claim Site On Geotracker -** As described in the Attachment 1, Responsible Party(ies) Legal Requirements/Obligations, all technical reports must be submitted to both the ACEH ftp website and the State Water Resource Control Board (SWRCB) GeoTracker website. To upload to the Geotracker website you will need to claim your site on GeoTracker and then upload the Work Plan and all future reports to the GeoTracker website. Pursuant to CCR Sections 2729 and 2729.1, all analytical data submitted in a report to a regulatory agency as part of the LUFT program, must be transmitted electronically to the SWRCB Geotracker website via the internet. Additionally, should groundwater wells be required, all permanent monitoring points utilized to collect groundwater samples (i.e. monitoring wells) and submitted in a report to a regulatory agency, must be surveyed (top of casing) to mean sea level and latitude and longitude accurate to within 1-meter accuracy, using NAD 83, and transmitted electronically to the SWRCB Geotracker website. Beginning July 1, 2005, electronic submittal of a complete copy of all reports (LUFT or SLIC) is required in GeoTracker (in PDF format). Please upload all reports prepared after July 1, 2005 to the SWRCB's Geotracker database website in accordance with the above-cited regulation. Please additionally upload the reports to the ACEH ftp website.

**UNDERGROUND STORAGE TANK CLEANUP FUND**

Please be aware that site investigation/site cleanup costs may be reimbursable from the California Underground Storage Tank Cleanup Fund. The application and additional information is available at the State Water Resources Control Board’s website at:

http://www.waterboards.ca.gov/water_issues/programs/ustcf. Please be aware that reimbursement monies are contingent upon maintaining compliance with directives from ACEH. Additional information about the USTCF can be found below in the attachments to this letter.

**TECHNICAL REPORT REQUEST**

Please upload technical reports to the ACEH ftp site (Attention: Karel Detterman), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- **February 26, 2016** – Claim site in Geotracker

- **March 25, 2016** – Data Gap Investigation Work Plan and Site Conceptual Model
  File to be named: RO3193_WP_SCM_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/lop/ust.htm

Thank you for your cooperation. If your email address does not appear on the cover page of this notification, ACEH is requesting you provide your email address so that we can correspond with you quickly and efficiently regarding your case. Should you have any questions or concerns regarding this correspondence or your case, please send me an e-mail message at karel.detterman@acgov.org or call me at (510) 567-6708.

Sincerely,

Karel Detterman, PG
Hazardous Materials Specialist

Enclosures: Attachment 1 - Responsible Party(ies) Legal Requirements/Obligations
ACEH Electronic Report Upload (ftp) Instructions
Attachment A - Site Conceptual Model Requisite Elements in Tabular Format

cc: Dilan Roe, ACEH (Sent via E-mail to: dilan.roe@acgov.org)
Karel Detterman, ACEH (Sent via E-mail to: karel.detterman@acgov.org)
GeoTracker, Electronic Case File

**Attachment 1**

**Responsible Party(ies) Legal Requirements / Obligations**

REPORT REQUESTS

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.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).

PERJURY STATEMENT

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

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

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

AGENCY OVERSIGHT

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

| Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) | **REVISION DATE:** May 15, 2014 |
|---|---|
| | **ISSUE DATE:** July 5, 2005 |
| | **PREVIOUS REVISIONS:** October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010 |
| **SECTION:** Miscellaneous Administrative Topics & Procedures | **SUBJECT:** Electronic Report Upload (ftp) Instructions |

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

**REQUIREMENTS**

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

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

**Submission Instructions**

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

# ATTACHMENT A

# Site Conceptual Model Requisite Elements

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

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

For ease of review, Alameda County Environmental Health (ACEH) requests utilization of tabular formats to (1) highlight the major SCM elements and their associated data gaps which need to be addressed to progress the site to case closure (see Table 4-1 of attached example), and (2) highlight the identified data gaps and proposed investigation activities (see Table 5-1 of the attached example). ACEH requests that the tables presenting the SCM elements, data gaps, and proposed investigation activities be updated as appropriate at each stage of the project and submitted with work plans, feasibility studies, corrective action plans, and requests for closures to support proposed work, conclusions, and/or recommendations.

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

a. Regional and local (on-site and off-site) geology and hydrogeology. Include a discussion of the surface geology (e.g., soil types, soil parameters, outcrops, faulting), subsurface geology (e.g., stratigraphy, continuity, and connectivity), and hydrogeology (e.g., water-bearing zones, hydrologic parameters, impermeable strata). Please include a structural contour map (top of unit) and isopach map for the aquitard that is presumed to separate your release from the deeper aquifer(s), cross sections, soil boring and monitoring well logs and locations, and copies of regional geologic maps.

b. Analysis of the hydraulic flow system in the vicinity of the site. Include rose diagrams for depicting groundwater gradients. The rose diagram shall be plotted on groundwater elevation contour maps and updated in all future reports submitted for your site. Please address changes due to seasonal precipitation and groundwater pumping, and evaluate the potential interconnection between shallow and deep aquifers. Please include an analysis of vertical hydraulic gradients, and effects of pumping rates on hydraulic head from nearby water supply wells, if appropriate. Include hydraulic head in the different water bearing zones and hydrographs of all monitoring wells.

c. Release history, including potential source(s) of releases, potential contaminants of concern (COC) associated with each potential release, confirmed source locations, confirmed release locations, and existing delineation of release areas. Address primary leak source(s) (e.g., a tank, sump, pipeline, etc.) and secondary sources (e.g., high-

## Site Conceptual Model Requisite Elements (continued)

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

d. Plume (soil gas and groundwater) development and dynamics including aging of source(s), phase distribution (NAPL, dissolved, vapor, residual), diving plumes, attenuation mechanisms, migration routes, preferential pathways (geologic and anthropogenic), magnitude of chemicals of concern and spatial and temporal changes in concentrations, and contaminant fate and transport. Please refer to the *Preferential Pathway and Sensitive Preceptor Study* description on the next page. Please include three-dimensional plume maps for groundwater and two-dimensional soil vapor plume plan view maps to provide an accurate depiction of the contaminant distribution of each COC.

e. Summary tables of chemical concentrations in different media (i.e., soil, groundwater, and soil vapor). Please include applicable environmental screening levels on all tables. Include graphs of contaminant concentrations versus time.

f. Current and historic facility structures (e.g., buildings, drain systems, sewer systems, underground utilities, etc.) and physical features including topographical features (e.g., hills, gradients, surface vegetation, or pavement) and surface water features (e.g. routes of drainage ditches, links to water bodies). Please include current and historic site maps.

g. Current and historic site operations/processes (e.g., parts cleaning, chemical storage areas, manufacturing, etc.).

h. Other contaminant release sites in the vicinity of the site. Hydrogeologic and contaminant data from those sites may prove helpful in testing certain hypotheses for the SCM. Include a summary of work and technical findings from nearby release sites, including the two adjacent closed LUFT sites, (i.e., Montgomery Ward site and the Quest Laboratory site).

i. Land uses and exposure scenarios on the facility and adjacent properties. Include beneficial resources (e.g., groundwater classification, wetlands, natural resources, etc.), resource use locations (e.g., water supply wells, surface water intakes), subpopulation types and locations (e.g., schools, hospitals, day care centers, etc.), exposure scenarios (e.g. residential, industrial, recreational, farming), and exposure pathways, and potential threat to sensitive receptors. Include an analysis of the contaminant volatilization from the subsurface to indoor/outdoor air exposure route (i.e., vapor pathway). Please include copies of Sanborn maps and aerial photographs, as appropriate. Please refer to the *Preferential Pathway and Sensitive Preceptor Study* description on the next page.

j. Identification and listing of specific data gaps that require further investigation during subsequent phases of work. Proposed activities to investigate and fill data gaps identified.

## Preferential Pathway and Sensitive Receptor Study

Please conduct a study as a part of the SCM requested in order to (1) locate potential anthropogenic migration pathways on and in the vicinity of the site that could spread contamination through vertical and lateral migration, and (2) identify exposure scenarios and sensitive receptors that are linked to site contamination through these preferential pathways. The results of your study shall contain all information required by California Code of Regulations, Title 23, Division 3, Chapter 16, §2654(b) including but not limited to the following components, as applicable to the site:

**a.** **Utility Survey** - An evaluation of all existing subsurface utility lines, laterals, and trenches including sewers, electrical, fiber optic cable, cable, water, storm drains, trench backfill, etc. within and near the site and plume area(s). Please include an evaluation of shallow utilities associated with current and historical site operations/processes including UST systems, remediation systems, parts cleaning, sumps, etc.

**b.** **Updated Well Survey** – ACEH requests that well data sources (Alameda County Public Works Agency [ACPWA] and Department of Water Resources [DWR]) be reviewed for more recently installed vicinity water supply wells. ACEH requests the identification of all active, inactive, standby, decommissioned (sealed with concrete), unrecorded, and abandoned (improperly decommissioned or lost) wells including monitoring, remediation, irrigation, water supply, industrial, livestock, dewatering, and cathodic protection wells within a ¼-mile radius of the subject site. Please inspect all available Well Completion Reports filed with the DWR and ACPWA in your survey, and perform a background study of the historical land uses of the site and properties in the vicinity of the site. Use the results of your background study to determine the existence of unrecorded/unknown (abandoned) wells, which can act as contaminant migration pathways at or from your site.

**c.** **Land Uses and Exposure Scenarios on the Facility and Adjacent Properties** – The surrounding land use appears to be predominately agricultural; however, redevelopment of the site as a service station has been planned. Consequently, the identification of existing and future land use on and in the vicinity of the site is requested, including:

- Beneficial resources (e.g., groundwater classification, wetlands, surface water bodies, natural resources, etc.)
- Subpopulation types and locations (e.g., schools, hospitals, day care centers, elder care facilities, etc.)
- Exposure scenarios (e.g. residential, industrial, recreational, farming) and exposure pathways including those identified in the Low Threat Underground Storage Tank Case Closure Policy General Criteria h – Nuisance Conditions, and Media-Specific Criteria for Groundwater, Vapor Intrusion to Indoor Air, and Direct Contact and Outdoor Air Exposure

**d.** **Planned Development** – Future development activities are planned in the vicinity of the site. Please include an analysis of new utility corridors, building foundations, wells, and/or development activities that could significantly alter contaminant migration (i.e., covering of large areas of the site with pavement, etc.).

Please synthesize this information and discuss your analysis and interpretation of the results of the preferential pathway and sensitive receptor study and incorporate into the requested SCM. Please provide the following supporting documentation and data as applicable:

- Copies of current and historical maps, such as site maps, Sanborn maps, aerial photographs, etc., used when conducting the background study.
- DWR well logs, marked as confidential, uploaded to Alameda County Environmental Health's ftp site. For confidentiality purposes do not upload the DWR well logs to Geotracker. The well logs will be placed in our confidential file and will be available only to internal staff for review.
- Table with details of the well search findings including Map ID corresponding to well location on map, State Well ID, Well Owner ID, approximate distance from the site, direction from the site, use, installation date, depth (feet below ground surface [bgs]), screened interval (feet bgs), sealed interval (feet bgs), diameter (inches), and well location address.
- Maps and geologic cross-sections illustrating historical groundwater elevations and flow directions (rose diagram) at the site. Synthesize the data requested above and include the location and depth of all utility lines, trenches, UST pits and piping trenches, wells, surface water bodies, foundational elements, surface covering types (pavement, landscaped, etc.) within and near the site and plume area(s), and the location of potential receptors.

## Table 4-1
## Site Conceptual Model

| CSM Element | CSM Sub-Element | Description | Data Gap Item # | Resolution |
|---|---|---|---|---|
| Geology and Hydrogeology | Regional | As described by URS (2004), the lithology encountered in the subsurface beneath the Site during drilling activities consisted predominantly of a brown to greenish-gray silty clay with sand and gravel. The primary stratigraphic units at the Site are listed below, with the approximate ranges of depth (bgs) each unit was encountered across the Site:<br>• 0 to 5 feet bgs: The surface soil typically consisted of very dark-brown clay to dark-gray gravel fill, depending on whether the boring was in the vacant vegetated parcel (dark-brown clay), at 3860 MLK Jr. Way; or beneath the asphalt and concrete surfaces at the Lucky's Auto Body parcel at 3884 MLK Jr. Way (gravel fill).<br>• 5 to 20 feet bgs: very dark-brown silty clay grades to a greenish-gray silty clay and brown silty clay and gravelly clay.<br>Groundwater was encountered in direct-push boreholes at an average depth of 17.2 feet bgs, with depths ranging from 16.2 to 19.6 feet bgs. This groundwater depth is not considered a stabilized groundwater depth, because it was not measured from appropriately constructed monitoring wells. | None | NA |

## Table 4-1
## Site Conceptual Model (Continued)

| CSM Element | CSM Sub-Element | Description | Data Gap Item # | Resolution |
|---|---|---|---|---|
| Geology and Hydrogeology | Site | Regional groundwater in the Oakland area generally follows topography, from areas of higher elevation in the east toward lower elevation in the west and southwest. The groundwater flow direction in the vicinity of the Site is to the west towards San Francisco Bay (Arcadis, 2012).<br>URS reviewed groundwater investigation reports from the ARCO #4931 station at 731 West MacArthur Boulevard, approximately 1,000 feet southwest of the Site (Arcadis, 2012). The depth to water in the groundwater monitoring wells at the ARCO site ranged from approximately 3.2 to 10.8 feet bgs (approximately 52.2 to 43 feet elevation). | 1.There are no monitoring wells on site so that the local groundwater flow direction and gradient is not known. | Five groundwater wells are to be installed at the site. |
| Surface Water Bodies | | The closest surface water body is the San Francisco Bay, which is 1.5 miles west of the site. | | |
| Nearby Wells | | The State Water Resource Quality Control Board (RWQCB) Geotracker GAMA website provides the locations of water supply wells proximal to the site. The nearest supply well is located approximately 2 miles southwest of the site. There are multiple monitoring wells in the vicinity of the site including those at the Arco services station at 781 West MacArthur Blvd., and Dollar Cleaners, 4860 – 4868 Telegraph Avenue, Oakland. | 2. | NA |
| Release Source and Volume | | The three prior gasoline USTs (two 650-gallon and one 500-gallon) are considered the main source of the release of fuel hydrocarbons that have been detected in soil and groundwater beneath the Site. Tanks #1 and #2 were both observed to have one or more holes from corrosion at the time of removal. Although no holes were observed in Tank #3 during removal, the integrity of the tank was questionable as it split into two pieces along the weld during removal. Soil surrounding the tanks was stained green and was noted to have strong petroleum hydrocarbon odors. The release from the Tanks at the Site was discovered on January 5, 1995 during tank removal activities. The volume of the release is not known. | 5. & 6. Additional soil and groundwater data is required in the source areas. | See data gaps table. Additional soil borings will be advanced in the source areas. Groundwater monitoring wells will be installed. |

## Table 4-1
## Site Conceptual Model (Continued)

| CSM Element | CSM Sub-Element | Description | Data Gap Item # | Resolution |
|---|---|---|---|---|
| | | The area around the ramps and pit in the southern area of the site is considered a potential source area. | | |
| LNAPL | | There are currently no groundwater monitoring wells located at the Site. Although light non-aqueous phase liquids were not observed during grab groundwater sampling activities, concentrations of TPH-g in sample G2 (22,000 µg/L), located near former Tank #3, and sample GP3 (79,800 µg/L), located adjacent to former Tank #1 may indicate the potential for the presence of light non-aqueous phase liquid (LNAPL) to be present. | 1. Need monitoring wells at the site. | Monitoring wells (5) to be installed. |
| Source Removal Activities | | Soil that was excavated from the UST pits during tank removal activities was returned to the excavation after the collection of soil samples for chemical analysis. There is no information regarding the quality of the soil that was placed back in the UST excavations. As such, with the exception of the removal of the USTs themselves, there have been no other source removal activities conducted at the Site. | 2., 5.,6. Soil contamination at depth (12-foot bgs and deeper) is not well characterized. Since the site is to be excavated to approximately 12 feet bgs for the construction of a parking garage, additional shallow soil sampling is not required. | Ten soil borings are proposed, as discussed in the data gaps table. |
| Contaminants of Concern | | Based on the historical investigations conducted at the Site, BTEX, cis-1,2-dichloroethene (cis-1,2-DCE), 1,2-dichloroethane (1,2-DCA) and TPH-g are present in groundwater above their respective MCLs and/or ESLs. However, based on correspondence from the ACEHSD, the contaminants of concern (COCs) for the site are BTEX, and TPH-g. These COCs are present above the screening levels primarily in the northern corner of the Site, near the location of the former USTs. Benzene and TPH-g are also present in groundwater above their MCLs and ESLs in the southern portion of the Site in the vicinity of the truck ramp and pit adjacent to the | 4. | |

## Table 4-1
## Site Conceptual Model (Continued)

| CSM Element | CSM Sub-Element | Description | Data Gap Item # | Resolution |
|---|---|---|---|---|
| | | former shop building, and in the northwestern area of the Site. | | |
| Petroleum Hydrocarbons in Soil | | Of the 58 samples analyzed from the two investigations, eight samples from seven borings exceeded their respective screening criteria. These samples were typically the deepest sample from the boring, ranging from 8.0 to 14.0 feet bgs. This is consistent with releases from a UST as opposed to a surface spill or release. Based on the historical investigation data, BTEX and TPH-g are the contaminants present in soil at concentrations exceeding their respective screening criteria. The contaminants are present mainly in soil at the location of former Tanks #1 through #3, and to a lesser extent, near the former fuel pump island in the northern corner of the Site.<br>The lateral extent of contamination exceeding the screening criteria appears to be limited to the area around the former USTs. Soil concentration in all the samples from boring GP3 and S10, located in the sidewalk by Martin Luther King Jr. Way near former Tank #1 and Tank #2 are below their respective screening criteria. There is no additional data from around former Tank #3. Given the nature of the petroleum hydrocarbon (mainly light fraction gasoline), the vertical extent of contamination beneath and in close proximity to the former tanks is likely limited to the lowest level of groundwater fluctuation. | 4. & 7. Additional soil sampling is required to better define the vertical extent of contamination. Redevelopment will include excavation of the entire site to a depth of 12 feet bgs for the construction of an underground parking garage. | Additional soil borings to be advanced, as described in the data gaps table. |
| Petroleum Hydrocarbons in Groundwater | | During the two subsurface investigations conducted at the Site, a total of 15 grab groundwater samples were collected and analyzed for TPH-g and BTEX. The results of the analyses are summarized in Table 2-2. Concentration of TPH-g and/or BTEX exceeded their respective screening criteria in ten of the 15 samples analyzed. Similar to the soil sampling results, the highest concentrations were detected beneath or in close proximity to the former USTs. However, TPH-g and benzene were detected in one Site boring (G7) exceeding their respective screening criteria near the southern corner of the Site. There are no permanent monitoring wells located at the Site. As such, the groundwater flow direction across | 8. There are no monitoring wells on site. | Five monitoring wells will be installed, as described in the data gaps table and in the work plan. |

## Table 4-1
## Site Conceptual Model (Continued)

| CSM Element | CSM Sub-Element | Description | Data Gap Item # | Resolution |
|---|---|---|---|---|
| | | the Site cannot be evaluated. This has been defined as a significant data gap. The scope of work presented in this work plan includes the installation of four groundwater monitoring wells at the Site. | | |
| Risk Evaluation | | The Site is a former auto body and car wash facility. The Site is currently vacant, and with the exception of a billboard located in the northwest corner of the Site, has no structures and is covered with either asphalt or concrete foundations from former buildings located at the Site. The Site is zoned for residential and current plans are to redevelop the Site for residential use. However, there may be some commercial use on the ground level. This preliminary CSM assumes that development would consist of an underground parking garage; store fronts and residential units at ground level; and second story residential units.<br>The CSM identifies the primary source; impacted media; release mechanism(s); secondary source(s); exposure route; potential receptors (residential, commercial/industrial worker, and construction worker), and an assessment of whether the exposure route/pathway is potentially complete, incomplete, or insignificant. Potential exposure routes that have been evaluated include incidental ingestion, dermal contact, dust inhalation, and vapor inhalation.<br>For direct contact with contaminated soil, the exposure route for incidental ingestion, dermal contact, and dust inhalation for a residential and commercial/industrial worker are considered incomplete. These exposure routes for the construction worker are considered a potentially complete pathway, depending on the nature of the work. For volatilization from soil to outdoor air, vapor inhalation is the potential exposure pathway. Given dilution effects that take place outdoors, this exposure pathway is considered incomplete for all three potential receptors. For indoor air, this exposure pathway is considered potentially complete for all three potential receptors. | | |

## Table 4-1
## Site Conceptual Model (Continued)

| CSM Element | CSM Sub-Element | Description | Data Gap Item # | Resolution |
|---|---|---|---|---|
| | | For leaching of contaminants from soil to groundwater, the ingestion and dermal pathways for groundwater are considered incomplete, except for the construction worker, as shallow groundwater is not utilized as a drinking water source at the Site. For the construction worker, incidental ingestion and dermal contact is a potentially complete pathway. For volatilization from groundwater to outdoor air, the exposure pathway is considered insignificant due to dilution effects that take place outdoors. For indoor air, volatilization from groundwater to indoor air is considered a potentially complete pathway. | | |

## Table 5-1
## Data Gaps Summary and Proposed Investigation

| Item | Data Gap Item # | Proposed Investigation | Rationale | Analyses |
|---|---|---|---|---|
| 1 | Groundwater flow direction and gradient is unknown.<br>There are only grab groundwater data points; there are no monitoring wells on site.<br>There are no upgradient groundwater sample locations.<br>The current groundwater data sets are 7 and 9 years old and may not be representative of current site conditions. | Install five groundwater monitoring wells, as described in the work plan. Wells will be constructed of 2-inch-diameter Schedule 40 PVC well casing, total depth up to 25 feet bgs; the screened interval will be determined based on observations of groundwater levels during field work. The well screen will consist of 5 to 10 feet of 0.010-inch well screen.<br>Soil samples will be collected at 12 feet, 15 feet, and 20 feet bgs. Additional samples may be collected based on professional judgment. | The wells will be located to provide up- and downgradient control for the shallow groundwater plume. They will enable water level data to be collected to allow the groundwater flow direction and gradient to be calculated.<br>Wells will be installed as follows:<br>At the source area associated with UST #3.<br>Downgradient of the site to the northwest, near the billboard.<br>At the source area associated with USTs 1 and 2.<br>Upgradient of the site adjacent to the ramp and pit.<br>Adjacent to prior soil boring S4 (prior BTEX detections).<br>Soil samples will be collected during well installation to further characterize subsurface soil contamination.<br>Northern (off-site, downgradient) grab groundwater samples (far side of MLK, sidewalk): three borings. | Soil: TPH-g, BTEX, EDB, EDC.<br>Soil samples from MW-1 will also be analyzed for PAHs.<br>Groundwater: Natural attenuation parameters [COD, Fe(2+), Dissolved Gases (methane)] at selected locations (2).<br><br>BTEX, TPH-g |

## Table 5-1
## Data Gaps Summary and Proposed Investigation (Continued)

| Item | Data Gap Item # | Proposed Investigation | Rationale | Analyses |
|---|---|---|---|---|
| 2 | The soil data set does not adequately characterize the contamination (if any) that may remain on site after the excavation to approximately 11 to 12 feet bgs for the underground parking structure.<br>The current soil data sets are 7 and 9 years old and may not be representative of current site conditions.<br>Lithology below is not adequately characterized. | Ten soil borings will be drilled to a total depth of 20 feet bgs.<br>Soil samples will be collected at 12 feet, 15 feet, and 20 feet bgs from soil borings SB-4 through SB-10. Soil samples will not be collected from soil borings SB-1, SB-2, and SB-3 which are located across MLK north of the site, as there is no reason to suspect an off-site soil contamination source in this area.<br>Borings will be logged using the Unified Soil Classification System.<br>Grab groundwater samples will be collected from the first encountered groundwater at each soil boring. | Soil samples will be collected starting at 12 feet bgs. Shallow soil on site is to be excavated for disposal during the construction of the underground parking garage. Excavation will be conducted to a depth of about 12 feet bgs.<br>Soil borings will be located as shown in the work plan figure:<br>Source area borings: At the former locations of USTs 1, 2 and 3. One boring north of the site on the side walk of MLK Way. One boring between USTs 1 and 2 and the pump island (potential leakage from conveyance piping). One boring at the approximate location of UST 3 (in addition to the soil samples to be collected from the monitoring well to be installed at this location). One boring in the vicinity of the ramps and pit in the southern portion of the site (in addition to soil samples to be collected from the monitoring well in this area).<br>Step out borings: Step out boring SB-5 to be completed proximal to the UST #3 source area.<br>GP4 Area: Benzene was previously detected at 25,000 µg/kg at location GP4 (Carver, 2006). Two step-out borings will be completed in this area to further characterize soils at depth. | TPH-g, BTEX, EDB, EDC.<br><br>Boring SB-4 (on sidewalk of MLK near UST 1): PAHs |

## Table 5-1
## Data Gaps Summary and Proposed Investigation (Continued)

| Item | Data Gap Item # | Proposed Investigation | Rationale | Analyses |
|---|---|---|---|---|
| 3 | There is no data on the presence and usage of wells in the vicinity of the site. | Obtain a well survey. | Identify irrigation and other wells in the site vicinity. | N/A |
| 4 | PAHs are potential COCs at the northern boundary of the site. | See soil borings – Item 2.<br>PAHs will be analyzed at select locations as described in Item 2. | Item 2 | Item 2 |
| 5 | There is a potential source area in the vicinity of the ramps and pit. | A monitoring well will be installed in this area. It will also serve as the upgradient well for the site. See Item 2. A soil boring will also be completed in this area. | Item 2 | Item 2 |
| 6 | Determine size and contents of the three USTs that were removed from the site | Review prior reports. | Tanks #1 and #2 were identified as 650-gallon gasoline tanks. Tank #3 was a 500-gallon gasoline tank [Tank Removal Report – 1995]. Tanks #2 and #3 were observed to be badly deteriorated with holes due to corrosion. | NA |
| 7 | Confirm whether TPH-g and BTEX were detected during construction of the adjacent residential unit | Review prior reports. | The URS site investigation conducted in 2004 found no detections of TPH-g [<1,000 µg/kg] or BTEX [<5.0 µg/kg] in the borings completed to 14 feet bgs. | NA |

## Table 5-1
## Data Gaps Summary and Proposed Investigation (Continued)

| Item | Data Gap Item # | Proposed Investigation | Rationale | Analyses |
|---|---|---|---|---|
| 8 | Review data from the nearby service stations (Arco) | Review prior reports. | The former Arco station (731 West MacArthur Blvd.) is about 0.5 miles crossgradient of the 3884 MLK site. The BTEX levels are lower than those at the subject site; the Arco site does not appear to be contributing to on site TPH or BTEX contamination. Groundwater elevation data from this site was used to calculate groundwater flow direction, since there are currently no wells at the 3884 MLK site. | NA |

# APPENDIX B

# Standard Operating Procedures

## STANDARD OPERATING PROCEDURE – DIRECT PUSH BORINGS

### SOIL CORING AND SAMPLING PROCEDURES

Prior to drilling, all boreholes will be hand dug to a depth of 4-5 feet below ground surface (bgs) to check for underground utilities.

Soil and groundwater samples are collected for lithologic and chemical analyses using a direct driven soil coring system. A hydraulic hammer drives sampling rods into the ground to collect continuous soil cores. As the rods are advanced, soil is driven into an approximately 2.5-inch-diamter sample barrel that is attached to the end of the rods. Soil samples are collected in sleeves inside the sample barrel as the rods are advanced. After being driven 4 to 5 feet into the ground, the rods are removed from the borehole. The sleeve containing the soil core is removed from the sample barrel, and can then be preserved for chemical analyses, or used for lithologic description. This process is repeated until the desired depth or instrument refusal is reached.

A soil core interval selected for analyses is cut from the sleeve using a pre-cleaned hacksaw. The ends of the tube are covered with aluminum foil or Teflon liner and sealed with plastic caps. The soil-filled liner is labeled with the bore number, sample depth, site location, date, and time. The samples are placed in bags and stored in a cooler containing ice. Soil from the core adjacent to the interval selected for analyses is placed in a plastic zip-top bag. The soil is allowed to volatilize for a period of time, depending on the ambient temperature. The soil is scanned with a flame-ionization detector (FID) or photo-ionization detector (PID).

All sample barrels, rods, and tools (e.g. hacksaw) are cleaned with Alconox or equivalent detergent and de-ionized water. All rinsate from the cleaning is contained in 55-gallon drums at the project site.

### GROUNDWATER SAMPLING FROM DIRECT PUSH BORINGS

After the targeted water-bearing zone has been penetrated, the soil-sample barrel is removed from the borehole. Small-diameter well casing with 0.010-inch slotted well screen may be installed in the borehole to facilitate the collection of groundwater samples. Threaded sections of PVC are lowered into the borehole. Groundwater samples may then be collected with a bailer, peristaltic pump, submersible or other appropriate pump until adequate sample volume is obtained. Perstaltic pumps are not used in applications requiring a lift of greater than 1 foot of net head.

Groundwater samples are preserved, stored in an ice-filled cooler, and are delivered, under chain-of-custody, to a laboratory certified by the California Department of Health Services (DHS) for hazardous materials analysis.

### BOREHOLE GROUTING FOR DIRECT PUSH BORINGS

Upon completion of soil and water sampling, boreholes will be abandoned with neat cement grout to the surface. If the borehole was advanced into groundwater, the grout is pumped through a grouting tube positioned at the bottom of the borehole.

**STANDARD OPERATING PROCEDURE –SOIL GAS SAMPLING**

The collection of soil gas samples will not be conducted in the event of precipitation or heavy irrigation. 5-days of dry weather and the lack or heavy irrigation is required prior to the collection of the vapor samples.

The installation of the sample probes and the sampling procedures follows the Department of Toxic Substances Control, California Environmental Protection Agency, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air Vapor Intrusion Guidance document dated October 2011. Along with the California Environmental Protection Agency, Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, San Francisco Regional Water Quality Control Board, Advisory for Active Soil Gas Investigations dated April 2012.

Sample rods are driven to the desired depth. A soil-gas sampling tubing system is inserted into the rods and connected to an expandable point. The rods are retracted a desired 6-inch interval and the expandable drive point on the bottom of the rods is opened. Hydrated bentonite is placed around where the drill rod exits the ground and where the tubing enters the rods in order to prevent surface air migrating down the inner and outer portion of the rods. The bentonite will be allowed to hydrate and expand for at least 30 minutes prior to purging the sample line.

The soil gas sample is collected into a Summa canister. A summa canister is a stainless steel vessel which has had the internal surfaces specially passivated using a “Summa” process. The Summa canister arrives pre-cleaned from the laboratory and with an internal vacuum between 25” Hg and 30” Hg. Prior to use, the pressure in the summa canister is checked by the sampler with a pressure gauge to ensure a vacuum of at least 25” Hg for quality control purposes.

A sampling manifold is connected to the sample tubing which originated from the target depth for the sample collection. The sample manifold is connected to a purge Summa canister and a sample Summa canister. The sample manifold contains a gauge to display the vacuum remaining in the canister, valves to isolate the sample train, a particulate filter, and a flow controller to maintain a low purge rate.

A leak test is performed on the sampling manifold prior to sample collection. A vacuum is applied and required to stabilize and remain at the same pressure for a time period of 30 minutes. Once the leak test has been performed a vacuum is applied to the tubing to purge at least three volumes of air from the sample tubing at a purge rate from 100 to 200 ml/min.

The valve on the summa canister is opened, and the soil-gas sample is drawn into the canister. The sample tubing will be checked for water. If observed, the sample will be discarded. The sample collection will be stopped with about 5-inches Hg remaining in the Summa canister. The soil-gas samples will be transferred under chain-of-custody procedures to a state certified laboratory for analyses.

As a leak detector aerosol dust removal containing 1,1-Difluoroethane (1,1-DFA) will be used in a shroud during sample collection. Analysis of the sample for 1,1-Difluoroethane will indicate if ambient air entered the sample. A sample of the shroud will also be collected and analyzed for 1,1-DFA.