

**SOIL REMOVAL ACTION PLAN**  
**Former Chemoil Refinery**  
**Site Cleanup Program Number 0453A**  
**Site ID No. 2047W00**  
**Global ID SL 2047W2348**  
**2020 Walnut Avenue**  
**Signal Hill, California**

093-CHEMOIL-003

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## 1.0 INTRODUCTION

On behalf of Signal Hill XC, LLC and RE | Solutions, LLC (RES), The Source Group, Inc., a division of Apex Companies, LLC. (Apex-SGI), has prepared this *Soil Removal Action Plan* (Plan) for the former Chemoil Refinery property located at 2020 Walnut Avenue Signal Hill, California (the Site). This Plan has been prepared to address Item 4 of the bulleted list of information requests e-mailed to RES on February 19, 2019, by the City of Signal Hill (the City). Item 4 requires that Signal Hill XC submit a Soil Removal Action Plan to be implemented during property redevelopment if acceptable soil contaminant levels, as specified in a Los Angeles Regional Water Quality Control Board (LARWQCB) letter dated February 13, 2019, are not met.

Soils with unacceptable levels of contaminants are defined as:

- Soils exceeding the South Coast Air Quality Management District (SCAQMD) thresholds of 50 parts per million by volume (ppmv) and/or 1,000 ppmv when field measured using a hand-held vapor monitoring device; and
- Soils with concentrations of contaminants exceeding the soil screening levels for the various chemicals of concern, as further discussed below.

This Plan will be used to direct the handling and management of impacted soil, potentially impacted soil, comingled construction debris, and other waste if encountered during redevelopment activities. Key documents that complement and were considered during preparation of this Plan include:

- *Site Redevelopment Soil Management Plan* dated July 13, 2017, which was included as Appendix G in Apex-SGI's *Response Plan and Remedial Technology Evaluation* (Apex-SGI, 2017b) (the Response Plan), approved by the LARWQCB on September 15, 2017 (included herein as Appendix A).
- *Revised Soil Reuse Plan* (Apex-SGI, 2019) dated January 11, 2019.
- Correspondence from the LARWQCB (*LARWQCB Letter*), dated February 13, 2019, which conditionally approved the January 11, 2019 Revised Soil Reuse Plan.
- Correspondence from Apex-SGI to the City of Signal Hill dated June 13, 2019 (*Apex California Environmental Quality Act [CEQA] Letter*), in response to the City's February 19, 2019, information request to support the City's CEQA analysis and determination.

Also presented in this Plan are analytical results from recent test pits advanced in the planned cut areas of the Site.

### 1.1 Project Description

The Site is approximately 8.2 acres located north of the intersection of East 20th Street, East Wesley Drive, Walnut Avenue, and Alamitos Avenue. The Site is divided into areas referred to as the East Parcel, the Northwest Parcel, and the Southwest Parcels, as shown on Figure 1. Plans are currently underway to redevelop the Site with nine light industrial/commercial buildings. Redevelopment work

will include grading, excavation, and backfilling (hereafter referred to as Site Preparation Activities) to level the site, to install underground utilities and other subsurface features, and to assure that geotechnical parameters are achieved. Given the former use of the property as a refinery, it is expected that petroleum-impacted soils and construction debris will be encountered during Soil Preparation Activities.

## **1.2 Purpose and Objective**

This Plan provides guidance for handling contaminated soil, potentially contaminated soil, and construction debris. This Plan includes protocols to be implemented during property redevelopment if acceptable levels aren't met as noted in the LARWQCB letter dated February 13, 2019, including but not limited to, soil exceeding the SCAQMD thresholds.

## **2.0 SITE SOIL CONDITIONS AND CUT AREA PRE-CHARACTERIZATION RESULTS**

This section provides a brief summary of soil conditions and applicable screening levels. Further details can be found in the Site Investigation and Conceptual Model Report (Apex-SGI, 2017a), the Response Plan, and other referenced documents, as discussed below.

### **2.1 Soil Screening Levels**

Soil screening levels (SLs) developed for the Site will be used in conjunction with field observations and PID field screening, to evaluate soil data and determine the appropriate reuse or other handling of excavated soils. Soil SLs are based on direct contact exposure pathways for commercial/industrial workers and construction workers as published in 2019 by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) and in 2019 by the U.S. Environmental Protection Agency (USEPA). The soil SLs presented in Table 4-1 of the Response Plan were based on published regulatory screening levels at the time, which have since been updated. Appendix B to this Plan summarizes applicable soil SLs based on the updated values. The selected applicable SLs, based on commercial/industrial land use, are highlighted in yellow in Appendix B.

### **2.2 Chemicals of Potential Concern in Soil**

Subsurface media beneath the Site is impacted by historic petroleum releases. Total petroleum hydrocarbons (TPH) in the gasoline, diesel, and oil range, as well as volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and some metals have been identified in soil at concentrations that exceed regulatory screening levels. The VOCs that were detected above regulatory screening levels are non-chlorinated aromatic benzene derivatives typical of petroleum refineries.

Figures showing the areas of the Site where COPCs exceed soil SLs, and tables summarizing analytical data collected to date, were presented to the City in the Apex-SGI CEQA letter. As indicated in that letter, historical sampling data indicate the following:

- Soil beneath the majority of the Northwest and Southwest Areas exceeds SLs, except for the area near the northern property boundary and soils under 21<sup>st</sup> Street.
- Soil beneath the East Area meets the SLs except for an isolated sample location in the northwestern corner. Apex notes, however, that this sample was collected in 1999 and may no longer be representative of current conditions.

### **2.3 Grading Plan Summary**

The cut-and-fill grading plan for property redevelopment was designed to minimize excavation of soil in areas with the highest levels of contamination and provide for a thick cap of clean soils (cover soils) above contaminated soils that are to remain onsite. The Site Grading Plan is provided in Appendix C. Areas in red indicate cut portions of the Site where excavation will be conducted. Areas in green indicate where fill will be placed on top of the current grade to raise

the final elevation of the property. In addition, relatively small volumes of soil not indicated in Appendix C will be excavated for geotechnical reasons and for underground utilities and building footings.

During grading activities, approximately 14,330 cubic yards (CY) of soil (in place volume) will be excavated and 39,545 CY of soil will be imported as fill. Excavation will be conducted up to 10 feet below current grade.

## **2.4 Cut Area Pre-characterization Results**

In April 2019, Signal Hill XC conducted potholing and soil sampling in the planned cut areas for the purpose of evaluating the amount of soil that may be suitable for onsite re-use and the amount that may have to be transported offsite. Multiple test pits were advanced to observe in-place soil conditions, assess the presence of subsurface debris, and collect soil samples for laboratory analysis. Results of this investigation are summarized below. Test pit locations are shown on Figures 2 through 4. Figures 2 through 4 also depict anticipated cut and fill areas with excavated (cut) areas depicted in red and fill (additional soil deposited to increase elevation) areas in green.

Composite soil samples were collected from each test pit and analyzed for TPH, VOCs, and PAHs. The soils excavated from the test pits were also screened with a photoionization detector (PID), using methods consistent with those that will be required during Site grading under a SCAQMD 1166 permit. Results of the laboratory analyses are included in Tables 1 through 3. The soil sampling results all indicate soils are non-hazardous concentrations for all analytes. Figures 2 through 4 display the highest recorded PID reading at each test pit location and illustrate which test pits exceed SLs based on laboratory analytical data. These recent data indicate that greater than 80% of the soils in the cut areas meet SLs and do not exceed a PID concentration of 50 parts per million (ppm), and thus would be suitable for onsite reuse.

### **2.4.1 Identified Debris Pits and Soils Impacted with Free Product**

During pothole and trenching activities conducted in 2017 and 2019, several abandoned pipes, debris pits, and an area with free product in shallow soil were identified. In order to determine whether the soil with free product was classified as RCRA hazardous or non-RCRA California hazardous for offsite disposal, the soil with free product was analyzed for TPH, toxicity characteristic leaching procedure (TCLP), PAHs, title 22 metals, flashpoint, and fish bioassay. Laboratory data indicates that the soil in this area meets criteria for non-RCRA California hazardous offsite disposal. Any free product encountered during grading will be analyzed for the above-listed parameters to determine the hazardous waste classification of the material due to the presence of both RCRA hazardous and non-RCRA California hazardous free product.

Approximate locations of abandoned pipes, debris pits, and the area with free product are included on Figures 2 through 4. Although these areas may not be areas of cut for purposes of the grading plan, the debris must be removed and the voids eliminated to meet geotechnical requirements. Thus,

these areas will be excavated, the debris will be removed, and the areas recompact. Any debris or soil generated during this process will be managed in accordance with this Plan.

Geotechnical preparation of the surface to receive fill will involve scarifying the upper approximately five to seven feet of surface soil, and moisture conditioning the soil with water amended with Simple Green, as described in the Geotechnical Work Plan. Additional debris and/or soil impacted with free product may be identified during this surface preparation. Any debris or soil generated during scarification will be managed in accordance with this Plan.

The total estimated volume of additional soil to be managed as a result of debris and free product excavation is approximately 1,400 CY.



### **3.0 SOIL MANAGEMENT ACTIVITIES**

General Soil Management procedures are detailed in the Site Redevelopment Soil Management Plan (SRSMP), provided as Appendix G to the Response Plan. For easy reference, a copy of the SRSMP is provided as Appendix A to this Plan. Note that the Revised Soil Reuse Plan supersedes the portion of the SRSMP that discusses procedures for onsite treatment and reuse of impacted soil with PID concentrations greater than 50 ppm; these procedures are no longer applicable and will not be implemented.

Elements covered in the SRSMP include:

- Required dust control measures
- Equipment decontamination measures
- Storm water controls
- Stockpile management
- Field screening and soil segregation
- Written record and reporting requirements

SCAQMD permitting requirements and criteria for onsite soil reuse are summarized below.

#### **3.1 SCAQMD Permitting**

Soil management will comply with the requirements of a Site-specific Rule 1166 SCAQMD permit, which includes handling protocols for soil exceeding SCAQMD thresholds of 50 ppmv and 1,000 ppmv VOCs. Apex-SGI submitted a Rule 1166 permit application for the Site to SCAQMD on April 11, 2019. A copy of the permit application was provided to the City as Appendix C to the Apex CEQA Letter.

Prior to excavation of VOC-impacted soil, the SCAQMD will be notified at least 24 hours in advance as required by Rule 1166. Since there is potential for excavation or disturbance of greater than 2,000 CY of VOC contaminated soil, a Site-specific VOC Contaminated Soil Mitigation Plan will be prepared by the SCAQMD and implemented during grading activities.

#### **3.2 Soil Reuse**

As detailed in the Revised Soil Reuse Plan (Apex-SGI, 2019), soil that is excavated or disturbed during site grading will be considered for reuse in fill areas of the Site. In order for soil to be acceptable for onsite reuse, the following conditions must be met:

- Soil must be free of contamination based on field observations (i.e., visual staining or strong odors);
- PID readings must be less than 50 ppmv as required by SCAQMD Rule 1166 (details included in the SRSMP); and

- Soil samples must be collected and analyzed at a laboratory. Laboratory analytical data for samples collected will be compared to commercial/industrial SLs (Appendix B) to determine whether soil can be reused onsite, or if offsite disposal is required. Details regarding the required soil sampling and analysis, such as sampling frequency and analytical testing, are detailed in the Revised Soil Reuse Plan.

If geotechnically acceptable, soil that meets the criteria for commercial/industrial soil may be reused anywhere within the Former Chemoil Refinery property boundary, If soil does not meet the above criteria for reuse, the soil shall be managed as detailed in Section 5.

#### 4.0 CONTINGENCY MEASURES FOR DISCOVERY OF UNEXPECTED UNDERGROUND STRUCTURES

If any previously unidentified or unknown underground structures including tanks, vaults, sumps, containment structures, separators, piping, or debris pit that previously contained or had the potential to contain hazardous materials is encountered during Site grading activities, the LARWQCB and Los Angeles County Public Works Underground Storage Tank Program (LA UST) will be notified within 24 hours and consulted on appropriate next steps. The removal or burying of any of these structures without prior acknowledgement and approval from LARWQCB is prohibited. Discovered structures will be assessed by the EC for the following:

- The structure will be inspected to assess whether it contains any indication of chemical residuals or free-phase liquids other than water. This assessment will be conducted by the EC and will be based on visual evidence and the results of vapor monitoring using a PID. Under no circumstances will any personnel enter an unknown subsurface structure at any time;
- If liquids or solids are present within the structure, measures will be taken to contain the liquids to avoid spills to the subsurface. Samples will be collected and submitted to a California-certified laboratory for analysis. Liquids or solids may be temporarily drummed, or liquids may be collected by vacuum truck, while analysis is pending. Based on analytical results, the liquids or solids will be disposed of under the direction of the EC in accordance with all applicable environmental laws and disposal requirements;
  - If contaminated liquid or solids are present in the structure, the structure will be inspected for physical integrity following removal of the contaminated media. The EC will document the results of this inspection, including an estimation of the volume and former use of the structure; and
- If the physical inspection of the structure suggests that chemicals may have been released to the underlying soils, additional environmental investigations of the underlying soils will be conducted to assess whether a release sufficient to warrant removal has occurred.

The primary points of contact for the LARWQCB and LA UST are provided below. All agency notifications must be made by phone and email, if available.

Agency	Regulated Activity	Telephone	E-mail
LA Public Works UST Program	UST Removals/ Closures	(626) 458-3517	None provided
LA RWQCB	Site Activities	(213) 576-6729	Jessica.Pao@waterboards.ca.gov
SCAQMD	Air Emissions	(909) 396.2141	Stephen Boggs, sboggs@aqmd.gov

## 5.0 MANAGEMENT OF SOIL THAT DOES NOT MEET REUSE CRITERIA

Based on the pre-characterization of the cut areas, as discussed in Section 2.2, it is expected that the majority of soils excavated from the cut areas will meet the soil reuse criteria during site grading. Any excavated soil that does not meet the criteria set forth in the LARWQCB Letter will be managed consistent with SCAQMD Rule 1166 requirements, as follows:

- Contaminated soil that is field screened and registers a concentration of 50 ppmv or more, but less than 1,000 ppmv on a PID, will be staged in stockpiles of no more than 1,000 CY and will be characterized for offsite disposal. The stockpiles will be placed on plastic liner of 30-mil or greater. During construction, the piles will be lightly sprayed with water amended with Simple Green for dust and odor suppression and will be covered with plastic sheeting of 10-mil or greater. Plastic sheeting will be secured with sandbags.
- Soil that is field screened and registers a concentration of 1,000 ppmv or more when measured within three inches of the soil with a calibrated PID will be immediately placed into SCAQMD-approved sealed containers or loaded into trucks for immediate offsite disposal, unless prior written approval from SCAQMD is received

Documentation of soil disposal activities will be completed and reported to LARWQCB consistent with requirements specified in Section 6 of the SRSMP. A copy of any reports and documentation will be provided to the City.

### 5.1 Offsite Disposal Facilities

Proposed off-site disposal facilities for debris and soil are presented in the table below:

Disposal Media	Name	Address	Phone Number
Clean Concrete	LOVCO Recycling Site	23320 S. Alameda St. Carson, CA 90810	(562) 673-6759
Clean Metal	SA Recycling	22606 Alameda St. Carson, CA 90810	(310) 835-7291
Clean Soil	Maitri Road Recycling	24980 Maitri Road Corona CA 92883	(951) 277-5915
Non-Hazardous Soil (Contaminated)	Simi Valley Landfill	2801 Madera Road Simi Valley, CA 93065	(805) 579-7267
	Soil Safe	12328 Hibiscus Rd. Adelanto, CA 92301	(760) 246-8001
	Chiquita Canyon Landfill	29201 Henry Mayo Dr. Castaic, CA 91384	(661) 257-3655
Hazardous Soil (Contaminated)	US Ecology – Nevada Operations (EPA ID: NVT330010000)	Highway 95, 11 Miles South of Beatty Beatty, Nevada 89003	(775) 553-2203
	South Yuma County Landfill (EPA ID: AZR000506980)	19536 S Avenue 1E Yuma, AZ 85365	(928) 341-8454

## **5.2 Contingency Plan for Cut Areas with SL Exceedances**

If field observations (based on visual observation or PID readings) indicate soil contamination during excavation of the cut areas, soil samples will be collected at 5 feet below proposed grade and assessed to ensure the exposed area will not pose a risk to future workers (i.e. construction workers, landscapers, etc.) via dermal contact or inhalation. Soil samples will be submitted under chain-of-custody protocols to a state-certified laboratory for the following analyses:

- VOCs using EPA Method 8260.
- TPHg, TPHd, and TPHmo using modified EPA Method 8015.
- PAHs using EPA Method 8270.

If results indicate exceedances of SLs, a contingency plan shall be submitted to LARWQCB to address these areas of concern. The contingency plan is due to LARWQCB within 60 days of receipt of laboratory results.

## 6.0 LIMITATIONS

This Plan was prepared to address potential TPH, VOCs, PAHs, and metals present in the soil at the Site and current known site conditions, regulations and laws. This Plan does not address issues related to groundwater, other chemicals, or future site conditions that may be encountered during construction projects, including but not limited to, demolition and construction debris, asphalt, concrete, and asbestos-containing materials. If such materials are encountered during a construction project, contractors and workers are responsible for complying with all applicable laws pertaining to the handling and disposal of these materials.

The Site-related activities may be subject to federal, state, and local laws and regulations, including those published by U.S. Environmental protection Agency (USEPA), the SCAQMD, California Environmental Protection Agency (Cal-EPA), California Occupational Safety and Health Administration (Cal-OSHA), Los Angeles County, and the City of Signal Hill. These regulations address issues such as health and safety, hazardous waste, dust generation, storm water, and community right-to-know. It is the responsibility of the parties involved to ensure that all construction and maintenance activities abide by current applicable laws and regulations.

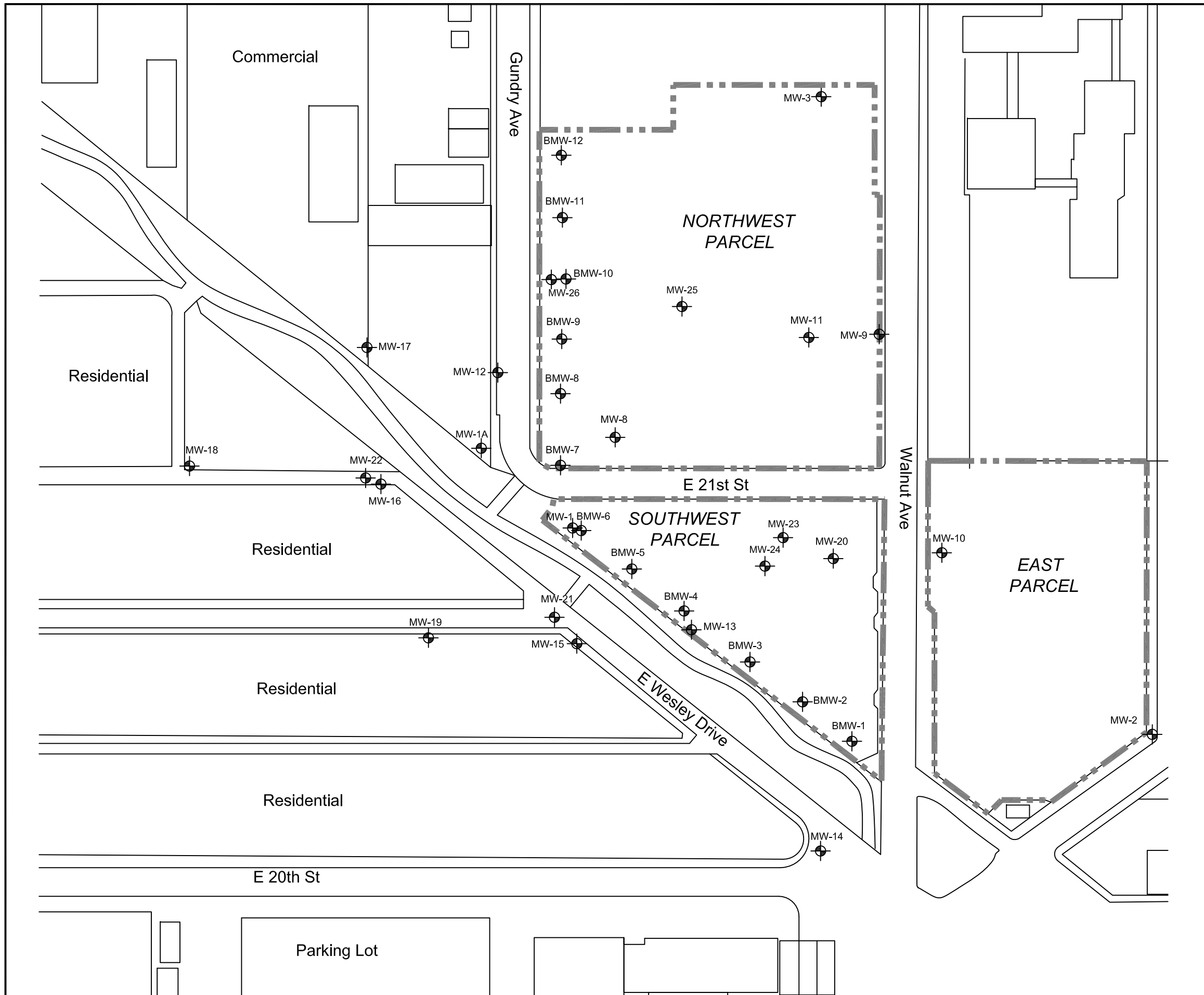
Apex-SGI disclaims any responsibility for any unauthorized use of this Plan. It is understood that while this Plan is intended to provide guidance and establish a framework for the management of potential chemical impacts in the subsurface soil to protect human health and the environment, this SMP shall not create any warranties or obligations to RES/Signal Hill XC as to implementation, adequacy, or success of protective measures under this Plan.

## 7.0 REFERENCES

- Los Angeles Regional Water Quality Control Board (LARWQCB). 2019. Review and Comments on Revised Soil Reuse Plan for Former Chemoil Refinery. February 13.
- The Source Group, Inc., A Division of Apex Companies, LLC (Apex-SGI). 2017a. Site Investigation and Conceptual Model Report for Former Chemoil Refinery. March 29.
- The Source Group, Inc., A Division of Apex Companies, LLC (Apex-SGI). 2017b. Response Plan and Remedial Technology Evaluation for Former Chemoil Refinery. June 13.
- The Source Group, Inc., A Division of Apex Companies, LLC (Apex-SGI). 2019. Revised Soil Reuse Plan for Former Chemoil Refinery. January 11.

## FIGURES





**LEGEND**

--- Site Boundary

MW-16 Groundwater Monitoring Well Locations

**SITE PLAN**

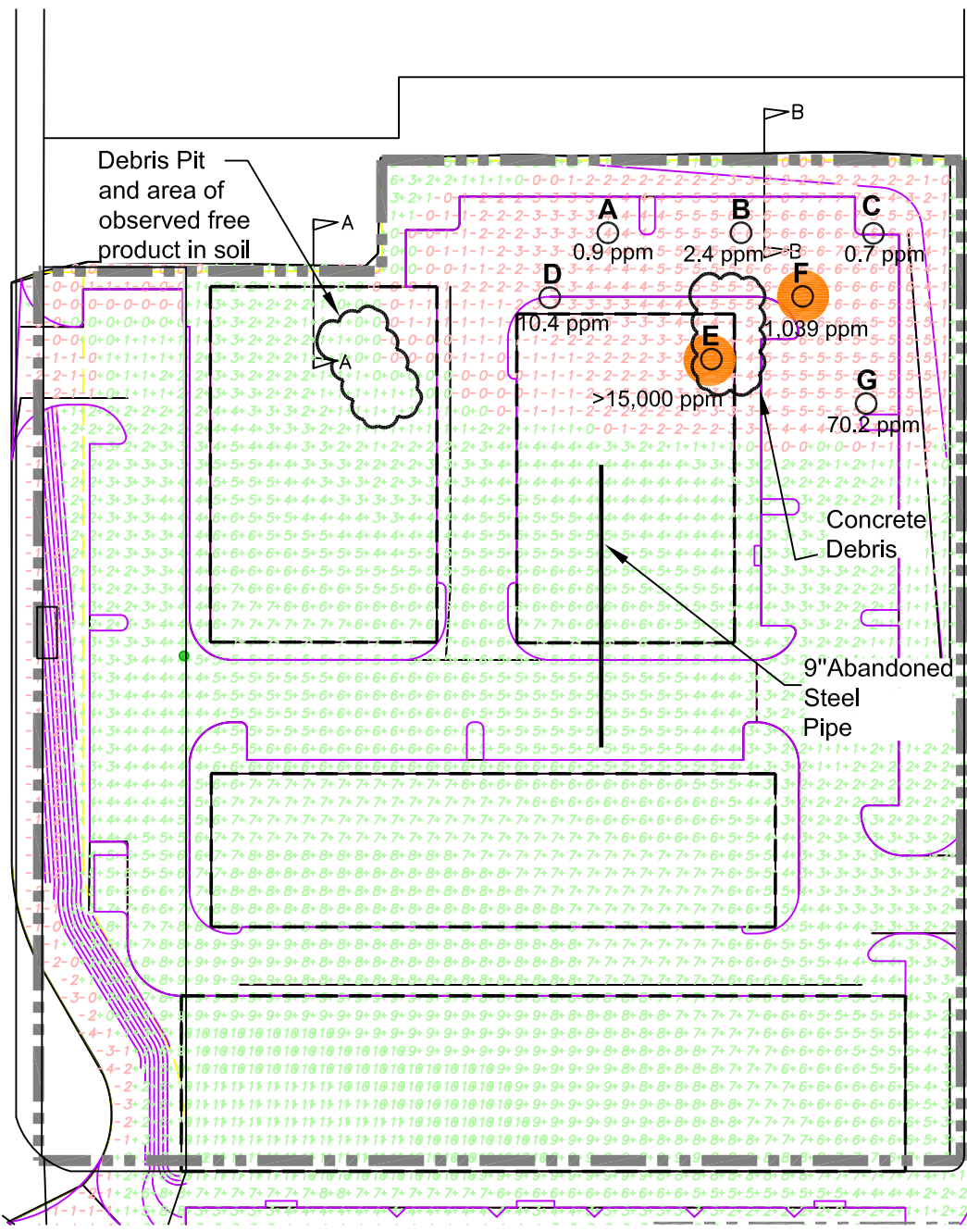
FORMER CHEMOIL REFINERY  
2020 WALNUT AVENUE  
SIGNAL HILL, CA

PROJECT NO.	DATE	DRAWN BY:	APP. BY:
093-CHEMOIL-001	01/30/19	ZA	KD

0 120 240  
HORIZONTAL SCALE IN FEET

**APEX**  
3478 BUSKIRK AVENUE, SUITE 100  
PLEASANT HILL, CA 94523

**FIGURE**  
**1**



Location	Depth (ft)*
A	4
B	6
C	6
D	3
E	5
F	6
G	5

\* Depth indicated is approximate depth of pothole. A 3-point composite sample was collected from each pothole location.

**LEGEND**

- Site Boundary
- 3-Point Composite Pothole Soil Sample Location (Apex, 2019)
- 0.9 ppm Volatile Organic Compounds Measured by Photoionization Detector
- Concentration of any 3-Point Composite Soil Sample COPC is above its Final Soil Screening Level, Commercial/Industrial Scenario
- COPC Chemical of Potential Concern
- ppm Parts Per Million
- > Reading Exceeded Instrument Calibration Range

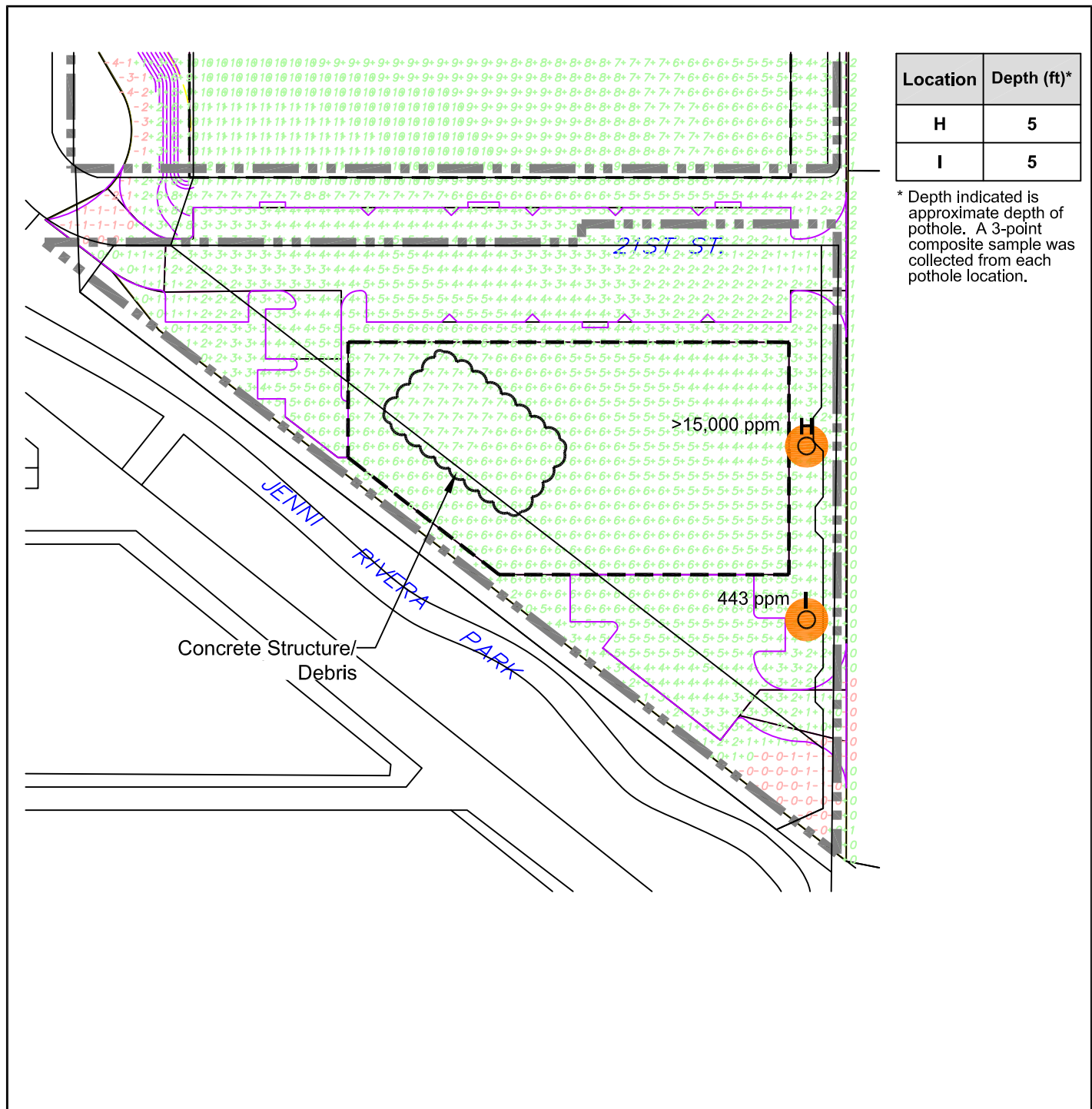
**APEX**  
 3478 BURSKIRK AVENUE, SUITE 100  
 PLEASANT HILL, CA 94523

FORMER CHEMOIL REFINERY 2020 WALNUT AVENUE SIGNAL HILL, CA			
PROJECT NO.	DATE	DR. BY:	APP. BY:
093-CHEMOIL-003	03/26/19	JP	KD

**EXTENT OF SHALLOW SOIL  
CONCENTRATIONS ABOVE  
SCREENING LEVELS -  
NORTHWEST PARCEL**

HORIZONTAL SCALE IN FEET

**FIGURE  
2**



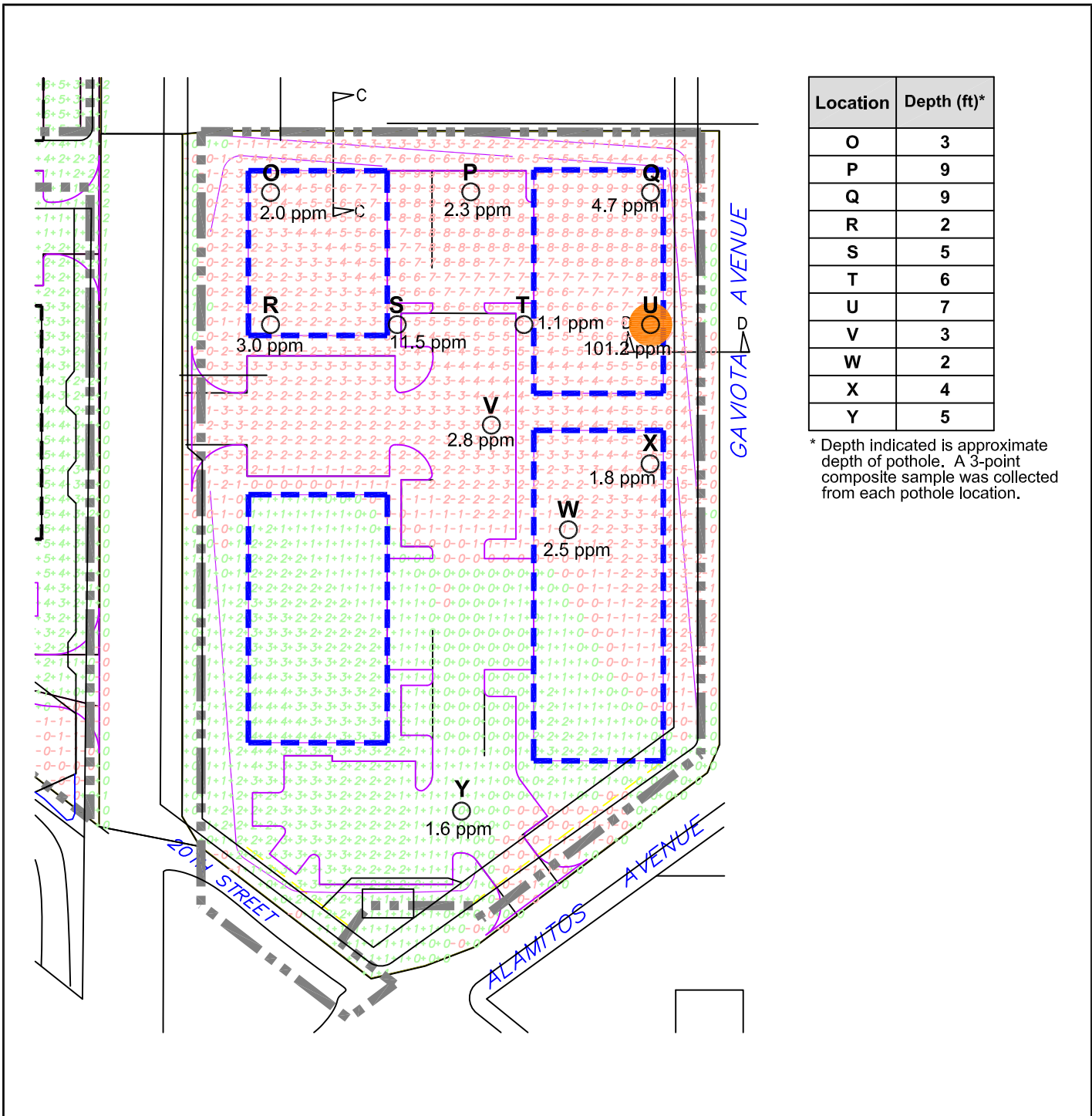
Location	Depth (ft)*
H	5
I	5

\* Depth indicated is approximate depth of pothole. A 3-point composite sample was collected from each pothole location.

**LEGEND**

- Site Boundary
- 3-Point Composite Pothole Soil Sample Location (Apex, 2019)
- 443 ppm Volatile Organic Compounds Measured by Photoionization Detector
- Concentration of any 3-Point Composite Soil Sample COPC is above its Final Soil Screening Level, Commercial/Industrial Scenario
- COPC Chemical of Potential Concern
- ppm Parts Per Million
- > Reading Exceeded Instrument Calibration Range

 <b>APEX</b> 3478 BURSKIRK AVENUE, SUITE 100 PLEASANT HILL, CA 94523	FORMER CHEMOIL REFINERY 2020 WALNUT AVENUE SIGNAL HILL, CA				EXTENT OF SHALLOW SOIL CONCENTRATIONS ABOVE SCREENING LEVELS - SOUTHWEST PARCEL			 <b>FIGURE 3</b>
	PROJECT NO. 093-CHEMOIL-003	DATE 03/26/19	DR. BY: JP	APP. BY: KD	 HORIZONTAL SCALE IN FEET			



Location	Depth (ft)*
O	3
P	9
Q	9
R	2
S	5
T	6
U	7
V	3
W	2
X	4
Y	5

\* Depth indicated is approximate depth of pothole. A 3-point composite sample was collected from each pothole location.

**LEGEND**

- Site Boundary
- 3-Point Composite Pothole Soil Sample Location (Apex, 2019)
- 3.0 ppm Volatile Organic Compounds Measured by Photoionization Detector
- Concentration of any 3-Point Composite Soil Sample COPC is above its Final Soil Screening Level, Commercial/Industrial Scenario
- COPC Chemical of Potential Concern
- ppm Parts Per Million

**APEX**  
 3478 BURSKIRK AVENUE, SUITE 100  
 PLEASANT HILL, CA 94523

FORMER CHEMOIL REFINERY 2020 WALNUT AVENUE SIGNAL HILL, CA			
PROJECT NO. 093-CHEMOIL-003	DATE 03/26/19	DR. BY: JP	APP. BY: KD

**EXTENT OF SHALLOW SOIL  
CONCENTRATIONS ABOVE  
SCREENING LEVELS -  
EAST PARCEL**

HORIZONTAL SCALE IN FEET

**FIGURE  
4**

## **TABLES**

**Table 1**  
**Summary of Soil Analytical Data - Pothole Investigation**  
**Hydrocarbon Chain Characterization**  
Former ChemOil Refinery  
Signal Hill, California

Appendix B	Sample Date	Hydrocarbon Chain Identification																TPH (C6-C44)	TPH (C6-C12) <sup>Note 1</sup>	TPH (C13-C22) <sup>Note 2</sup>	TPH (C23-C44) <sup>Note 3</sup>
		C6-C8	C8-C10	C10-C12	C12-C14	C14-C16	C16-C18	C18-C20	C20-C22	C22-C24	C24-C26	C26-C28	C28-C32	C32-C34	C34-C36	C36-C40	C40-C44				
Final Soil Screening Level Commerical/Industrial <sup>Note 4</sup>		NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	420	440	21,000
<b>NORTHWEST PARCEL</b>																					
TP-A-4	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	<1.0	<1.0	4.7	2.7	1.6	3.0	1.3	18	<3.0	<5.0	14.3
TP-B-6	4/16/2019	3,800	<1.0	<1.0	24,000	<1.0	<1.0	1.4	2.8	3.3	4.7	4.1	12	8.7	3.9	7.6	1.1	52	<3.0	24,004.2	43.8
TP-C-6	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	3.7	3.0	10	6.4	3.4	11	2.5	45	<3.0	<5.0	40.7
TP-D-3	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	4.4	9.0	35	37	54	46	100	63	14	41	2.4	410	<3.0	48.4	338.9
TP-E-5	4/16/2019	10	800	1,300	1,900	2,100	2,400	1,600	2,000	1,700	2,000	1,200	3,100	1,800	440	1,300	350	24,000	2,110	9,050	11,040
TP-F-6	4/16/2019	<5.0	120	320	620	800	780	560	710	570	690	410	1,000	430	300	410	140	7,900	440	3,160	3,665
TP-G-5	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	<1.0	<10	<3.0	<5.0	1.5
<b>SOUTHWEST PARCEL</b>																					
TP-H-5	4/16/2019	<5.0	290	620	600	370	280	230	240	130	190	140	320	91	59	120	16	3,700	910	1,420	1,001
TP-I-5	4/16/2019	<10	31	110	290	540	810	930	840	820	1,100	860	1,700	870	290	560	110	9,900	141	3,265	5,900
<b>EAST PARCEL</b>																					
TP-O-3	4/16/2019	<1.0	<1.0	<1.0	<1.0	1.3	4.2	9.3	26	31	40	79	160	110	21	74	6.8	560	<3.0	40.8	506.3
TP-P-9	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.9	7.5	12	17	45	27	21	29	7.8	170	<3.0	3.9	162.6
TP-Q-9	4/16/2019	<5.0	<5.0	<5.0	<5.0	7.5	23	29	57	57	80	82	190	110	56	130	23	850	<15.0	116.5	699.5
TP-R-2	4/16/2019	<1.0	<1.0	<1.0	<1.0	1.3	5.2	12	30	30	61	55	120	70	17	35	1.3	430	<3.0	48.5	374.3
TP-S-5	4/16/2019	<1.0	<1.0	<1.0	12	<1.0	3.2	5.5	15	20	34	39	97	71	13	53	6.2	360	<3.0	35.7	323.2
TP-T-6	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<3.0	<5.0	<18.0
TP-U-7	4/16/2019	<5.0	48	240	530	790	820	780	860	540	630	480	970	490	190	400	39	7,800	288	3,515	3,469
TP-V-3	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	2.6	4.5	4.7	4.3	4.5	12	5.2	3.1	4.4	<1.0	48	<3.0	8.4	35.9
TP-W-2	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<10	<3.0	<5.0	1.1
TP-X-4	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<3.0	<5.0	<18.0
TP-Y-5	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	3.2	5.8	13	14	21	21	48	31	5.6	21	<1.0	190	<3.0	22	154.6

**Notes:**

TPH = Total petroleum hydrocarbons by EPA Method 8015M.

C6-C8 = Carbon range.

mg/kg = milligram per kilogram.

NV = No value.

<X.XX = Not detected above indicated reporting limit (RL).

**Bold values were reported above laboratory RL.**

**Shaded and bold values exceed Final Soil Screening Level, Commercial/Industrial.**

<sup>1</sup> TPH (C6-C12) was calculated based on summing detected results between C6 and C12.

<sup>2</sup> TPH (C13-C22) was calculated based on summing detected results of one half C12-C14 and the results between C14 and C22.

<sup>3</sup> TPH (C23-C44) was calculated based on summing the results of one half C22-C24 and the results between C24 and C44.

<sup>4</sup> Final Soil Screening Level, Commercial/Industrial as presented in Revised Soil Reuse Plan (Apex, 2019).

**Reference**

Apex Companies, LLC (Apex), 2019. Revised Soil Reuse Plan. January 11.

**Table 2**  
**Summary of Soil Analytical Data - Pothole Investigation**  
**Volatile Organic Compounds**  
Former ChemOil Refinery  
Signal Hill, California

Appendix B	Sample Date	Acetone	Benzene	TBA	tert-Butylbenzene	sec-Butylbenzene	n-Butylbenzene	Ethylbenzene	Isopropylbenzene	4-Isopropyltoluene	MTBE	Naphthalene	n-Propylbenzene	Toluene	1,3,5-TMB	1,2,4-TMB	o-Xylene	m,p-Xylenes	Total Xylenes	TPHg
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
<b>Final Soil Screening Level</b> <b>Commerical/Industrial</b> <small>Note 1</small>		<b>150</b>	<b>0.15</b>	<b>1.2</b>	<b>26</b>	<b>26</b>	<b>26</b>	<b>25</b>	<b>77</b>	<b>77</b>	<b>1.3</b>	<b>0.00054</b>	<b>26</b>	<b>16</b>	<b>33</b>	<b>33</b>	<b>2,800</b>	<b>2,400</b>	<b>180</b>	<b>420</b>
<b>NORTHWEST PARCEL</b>																				
TP-A-4	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-B-6	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-C-6	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-D-3	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-E-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<b>0.015</b>	<b>0.010</b>	<b>0.013</b>	<b>0.023</b>	<0.0050	<0.0050	<b>0.038</b>	<b>0.018</b>	<0.0020	<b>0.0055</b>	<b>0.027</b>	<0.0020	<b>0.0033</b>	<b>0.0033</b>	<b>1,500</b>
TP-F-6	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<b>0.023</b>	<b>0.016</b>	<b>0.0048</b>	<b>0.043</b>	<0.0050	<0.0050	<b>0.039</b>	<b>0.042</b>	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<b>520</b>
TP-G-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
<b>SOUTHWEST PARCEL</b>																				
TP-H-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<b>0.080</b>	<b>0.038</b>	<b>0.10</b>	<b>0.12</b>	<0.0050	<0.0050	<b>4.2</b>	<b>0.13</b>	<0.0020	<0.0050	<b>0.015</b>	<b>0.0044</b>	<0.0020	<b>0.0044</b>	<b>720</b>
TP-I-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<b>0.0078</b>	<b>0.0057</b>	<0.0050	<0.0050	<b>0.017</b>	<b>0.0050</b>	<0.0020	<0.0050	<0.0050	<b>0.0038</b>	<0.0020	<b>0.0038</b>	<b>270</b>
<b>EAST PARCEL</b>																				
TP-O-3	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-P-9	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-Q-9	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-R-2	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-S-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-T-6	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-U-7	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<b>0.0099</b>	<0.0050	<b>0.0020</b>	<b>0.0052</b>	<0.0050	<0.0050	<b>0.042</b>	<b>0.0063</b>	<0.0020	<b>0.0081</b>	<b>0.016</b>	<0.0020	<b>0.0021</b>	<b>0.0021</b>	<b>460</b>
TP-V-3	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-W-2	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50

**Table 2**  
**Summary of Soil Analytical Data - Pothole Investigation**  
**Volatile Organic Compounds**  
Former ChemOil Refinery  
Signal Hill, California

Appendix B	Sample Date	Acetone	Benzene	TBA	tert-Butylbenzene	sec-Butylbenzene	n-Butylbenzene	Ethylbenzene	Isopropylbenzene	4-Isopropyltoluene	MTBE	Naphthalene	n-Propylbenzene	Toluene	1,3,5-TMB	1,2,4-TMB	o-Xylene	m,p-Xylenes	Total Xylenes	TPHg	
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
<b>Final Soil Screening Level</b> <b>Commerical/Industrial</b> <small>Note 1</small>		<b>150</b>	<b>0.15</b>	<b>1.2</b>	<b>26</b>	<b>26</b>	<b>26</b>	<b>25</b>	<b>77</b>	<b>77</b>	<b>1.3</b>	<b>0.00054</b>	<b>26</b>	<b>16</b>	<b>33</b>	<b>33</b>	<b>2,800</b>	<b>2,400</b>	<b>180</b>	<b>420</b>	
TP-X-4	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0020	<0.50
TP-Y-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.0020	<0.50

**Notes:**

VOC = Volatile organic compounds, fuel oxygenates, and TPHg by EPA Method 8260B.

TPHg = Total petroleum hydrocarbons as gasoline.

TBA = tert-Butyl alcohol.

MTBE = Methyl-tert-butyl ether.

TMB = Trimethylbenzene.

mg/kg = milligram per kilogram.

<X.XX = Not detected above indicated reporting limit (RL).

**Bold values were reported above laboratory RL.**

**Shaded and bold values exceed Final Soil Screening Level, Commercial/Industrial.**

<sup>1</sup> Final Soil Screening Level, Commercial/Industrial as presented in Revised Soil Reuse Plan (Apex, 2019).

**Reference**

Apex Companies, LLC (Apex), 2019. Revised Soil Reuse Plan. January 11.



**Table 3**  
**Summary of Soil Analytical Data - Pothole Investigation**  
**Polycyclic Aromatic Hydrocarbons**  
Former ChemOil Refinery  
Signal Hill, California

Appendix B	Sample Date	Acenaphthene mg/kg	Acenaphthylene mg/kg	Anthracene mg/kg	Benzo(a)anthracene mg/kg	Benzo(a)pyrene mg/kg	Benzo(b)fluoranthene mg/kg	Benzo(g,h,i)perylene mg/kg	Benzo(k)fluoranthene mg/kg	Chrysene mg/kg	Dibenzo(a,h)anthracene mg/kg	Fluoranthene mg/kg	Fluorene mg/kg	Indeno (1,2,3-cd) pyrene mg/kg	Naphthalene mg/kg	Phenanthrene mg/kg	Pyrene mg/kg
<b>Final Soil Screening Level Commerical/Industrial</b> <small>Note 1</small>		<b>5.5</b>	<b>5.5</b>	<b>1.9</b>	<b>0.0011</b>	<b>0.029</b>	<b>0.3</b>	<b>27</b>	<b>2.9</b>	<b>9.0</b>	<b>0.096</b>	<b>86</b>	<b>5.4</b>	<b>0.98</b>	<b>0.00054</b>	<b>1.9</b>	<b>13</b>
<b>NORTHWEST PARCEL</b>																	
TP-A-4	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-B-6	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-C-6	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-D-3	4/16/2019	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.40	<0.10	<0.10	<0.10
TP-E-5	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<b>1.4</b>	<b>1.1</b>	<1.0
TP-F-6	4/16/2019	<b>0.60</b>	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<b>0.70</b>	<2.0	<b>1.5</b>	<b>1.6</b>	<0.50
TP-G-5	4/16/2019	130000	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<b>0.024</b>	<0.010
<b>SOUTHWEST PARCEL</b>																	
TP-H-5	4/16/2019	<b>0.80</b>	<0.50	<b>0.66</b>	<b>1.0</b>	<b>0.64</b>	<b>0.70</b>	<0.50	<0.50	<b>0.96</b>	<0.50	<b>1.3</b>	<b>1.2</b>	<2.0	<0.50	<b>2.7</b>	<b>1.3</b>
TP-I-5	4/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<b>0.61</b>	<0.50	<0.50	<b>0.60</b>	<2.0	<b>0.69</b>	<b>1.2</b>	<0.50
<b>EAST PARCEL</b>																	
TP-O-3	4/16/2019	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.40	<0.10	<0.10	<0.10
TP-P-9	4/16/2019	3800	<0.10	<0.10	24000	<0.10	<0.10	<0.10	<0.10	3.3	<0.10	<0.10	<0.10	<0.40	<0.10	<0.10	<0.10
TP-Q-9	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.80	<0.20	<0.20	<0.20
TP-R-2	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.80	<0.20	<0.20	<0.20
TP-S-5	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-T-6	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-U-7	4/16/2019	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<b>0.12</b>	<0.40	<0.10	<b>0.39</b>	<0.10
TP-V-3	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-W-2	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-X-4	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-Y-5	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.80	<0.20	<0.20	<0.20

**Notes:**  
mg/kg = milligram per kilogram.  
<X.XX = Not detected above indicated reporting limit (RL).  
bgs = below ground surface.  
**Bold values were reported above laboratory RL.**  
**Shaded and bold values exceed Final Soil Screening Level, Commercial/Industrial.**

<sup>1</sup> Final Soil Screening Level, Commercial/Industrial as presented in Revised Soil Reuse Plan (Apex, 2019)

**Reference**  
Apex Companies, LLC (Apex), 2019. Revised Soil Reuse Plan. January 11.

## **APPENDIX A**

Site Redevelopment Soil Management Plan

**APPENDIX G  
SITE REDEVELOPMENT SOIL  
MANAGEMENT PLAN**

**Former Chemoil Refinery  
Site Cleanup Program Number 0453A  
Site ID No. 2047W00  
Global ID SL 2047W2348  
2020 Walnut Avenue  
Signal Hill, California**

093-CHEMOIL-001

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July 13, 2017

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Figure G-1 Site Map

## 1.0 INTRODUCTION

On behalf of Signal Hill Enterprises, LLC (SHE) and RE | Solutions, LLC (RES), The Source Group, Inc., a division of Apex Companies, LLC. (Apex-SGI), has prepared this *Soil Management Plan* (Plan) for the former Chemoil Refinery property located at 2020 Walnut Avenue Signal Hill, California (the Site). This Plan will be used in support of pending redevelopment activities at the above referenced Site. Currently, environmental remediation and monitoring is ongoing at the Site under the direction of the Los Angeles Regional Water Quality Control Board (LARWQCB). This Plan will be used as a guidance document for handling potentially impacted soil during redevelopment activities.

### 1.1 Project Description

The Site is approximately 8.2 acres, located north of the intersection of East 20th Street, East Wesley Drive, Walnut Avenue, and Alamitos Avenue. The Site is divided into areas referred to as the East Parcel, the Northwest Parcel, and the Southwest Parcel. All parcels are currently vacant. The division of the Site into the above-indicated parcels is shown on Figure G-1. Plans are currently underway to redevelop the Site into a light industrial/commercial complex. As a component of redevelopment, grading and potential excavation of the redevelopment area will be required to assure that geotechnical parameters within the near surface soil are achieved and/or for the establishment of underground utility trenches (hereafter referred to as Site Preparation Activities). Given the former use of the property as an oil refinery, and known impact in soil, the potential exists to encounter impacted soils during these activities. Utilizing this Plan, the Environmental Consultant (EC) for the project will guide the Construction Contractor (CC) in proper handling and storage of impacted and potentially impacted soils, which may be encountered during Site Preparation Activities.

### 1.2 Purpose and Objective

This SMP was prepared to provide guidance for handling potentially contaminated soil. This SMP will provide Site management and workers with procedures for internal and agency notifications, excavation/grading oversight, air and safety monitoring, soil segregation and monitoring, soil sampling and analysis, waste characterization and profiling, waste recycling and disposal procedures, record keeping and reporting in areas of known or encountered impacts. This Plan was prepared to govern Site Preparation Activities associated with future redevelopment and/or intrusive work at the Site, such as soil excavation, trenching, and backfilling.

### 1.3 Project Responsibilities

The CC will be responsible for implementing provisions outlined in this SMP. An EC will be responsible for field observations and photoionization detector (PID) screening, collection of any soil

samples required, and for coordinating the disposition of excavated/disturbed soil as defined in this SMP.

It is the responsibility of all contractors to adhere to this SMP, project specifications, and site safety.

All on-Site personnel handling or conducting intrusive work in contaminated soils shall be trained in accordance with Occupational Safety and Health Administration (OSHA) regulations for hazardous waste operations. These regulations are based on the Code of Federal Regulations (CFR) 1910.120 (e) and 8 CCR 5192, which states that “general site workers” shall receive a minimum of 40 hours of classroom training and a minimum of three days of field training. This training provides precautions and protective measures to reduce or eliminate hazardous materials/waste hazards at the work place.

## 2.0 BACKGROUND

This section provides a summary of Site history and subsurface conditions. Further details can be found in the Site Investigation and Site Conceptual Model Report (Apex-SGI, 2017a).

The Site operated as an oil refinery from the early 1920s until the 1990s. All the above ground structures were dismantled in early 1997. It has been reported that known below ground structures, including piping, sumps, footings, and foundations, were also removed at that time. Currently the Site is vacant, and does not contain any above ground storage tanks (ASTs) or known underground storage tanks (USTs). The site currently consists of exposed surface soils, with perimeter chain link fencing and stormwater controls. A few temporary above ground facilities are onsite; associated with groundwater remediation activities.

### 2.1 Chemicals of Potential Concern in Soil and Soil Vapor

Soil and underlying groundwater at the Site are impacted by historic petroleum releases. Historically, light non-aqueous phase liquid (LNAPL) presence was reported at three onsite locations. The LNAPL occurrences were characterized as heavy crude oil or lubricating oil, or a combination of naphtha, kerosene, and gas oil. Primary chemicals of potential concern (COPCs) present in Site soils and soil vapor as identified in Apex-SGI's Site Investigation and Site Conceptual Model Report (Apex-SGI, 2017a) consist of:

#### Soil

- Total petroleum hydrocarbons (TPH) in the C4-C12, C13-C22, and C23-C44 ranges
- Volatile organic compounds (VOC)
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Metals

#### Soil Vapor

- VOCs

### 2.2 Surface Topography and Ground Cover

The upper soils range from two to seven feet in depth and are classified as fill, consisting of silty sand with intermittent gravels and some intermixed debris. The upper fill is underlain by a silt or silty fine grained sand.

All three parcels are generally flat, with scattered earthen berms or hummocks, and slope toward the south and southeast from a topographic high of approximately 45 feet above mean sea level at the northern boundary. The parcels are separated by public surface streets with East 21st Street dividing the north and south parcels and North Walnut Avenue dividing the east and west parcels.



### **3.0 PLANNING AND NOTIFICATIONS**

#### **3.1 Utility Clearance and Protection**

All locations where ground is to be disturbed will be cleared of potential utilities by Underground Service Alert (USA). USA will be contacted at least 72 hours prior to commencing any excavation work. It is anticipated that Site Preparation Activities will progress in stages. To accommodate this, USA will be contacted prior to moving to new areas of the Site that are outside of prior USA notified area(s).

#### **3.2 Health & Safety**

Excavation and soil management activities will be completed with safety as the foremost concern to minimize the potential for accidents, injuries, contaminant exposures, and or illnesses. Per OSHA requirements, a site-specific Health and Safety Plan (HASP) will be developed, implemented, reviewed and followed by all personnel working at the Site. The EC will generally also provide their site-specific HASP and this may be used for the CC (with EC approval) if they do not provide their own HASP. All work will be performed as minimum safety Level D. This may be upgraded depending on the area of the site where excavation is planned, expected conditions change, and by field-encountered conditions during digging.

#### **3.3 Protection of Existing Wells**

The Site has existing remediation and groundwater monitoring wells installed across the property. Once the redevelopment plan is finalized with planned building footprints and other features, the EC will determine which wells require abandonment and which wells will remain in place and require protection during grading activities. Any well abandonments will occur prior to redevelopment activities under direction from the EC and under a permit issued by the County of Los Angeles.

The EC will communicate to the CC which wells will remain in place prior to the start of earthwork activities. Groundwater monitoring wells are constructed using PVC casing and are thus susceptible to breakage during earth moving activities. In some cases, wellheads may be lowered to an elevation below the lowest grading elevations, capped and marked. The temporary wellhead elevation will be established for each excavation area. These wellheads should be restored to final grade level following excavation during the backfill and compaction activities and accurately marked to avoid future damage. A detailed map showing all well locations will be provided to all field personnel to facilitate the protection and preservation of this equipment/infrastructure prior to earthwork activities.

#### **3.4 SCAQMD Permitting**

Prior to the start of field work, the South Coast Air Quality Management District (SCAQMD) will be notified of the planned excavation of VOC-impacted soil as required by SCAQMD Rule 1166. Since there is potential for greater than 2,000 cubic yards (cy) of VOC contaminated soil will require

excavation or disturbance, a Site-specific VOC Contaminated Soil Mitigation Plan will be prepared and submitted to the SCAQMD for approval.

## **4.0 SOIL MANAGEMENT GENERAL ACTIVITIES**

This section outlines the general soil management guidelines that shall be implemented by parties involved in Site Preparation or other soil intrusive activities during future redevelopment of the Site.

### **4.1 Soil Management Plan Designated Areas**

Contractors or personnel working at the Site should be aware that there may be locations with contaminants that exceed soil screening levels. Personnel working at the Site are required to adhere to this SMP. The planned redevelopment has been divided into three Designated Areas for the purpose of soil screening, segregation, analysis and re-use/disposal. The three Designated Areas as identified on Figure G-1 are as follows:

- The East Parcel;
- The Northwest Parcel; and
- The Southwest Parcel.

Excavated soil from these areas shall not be combined with one another nor should soil be moved to a different area from its origin without prior approval from the EC.

### **4.2 General Site Control and Soil Handling Procedures**

The following procedures shall be followed during all soil intrusive activities conducted during property redevelopment:

- Any stockpiled soil shall be covered with plastic sheeting or tarps and will not be stockpiled in or near storm drains;
- Specified areas shall be identified and used for stockpiling soil that does not pass field screening to minimize cross-contamination with clean soil;
- The access to the excavated areas shall be controlled to prevent unauthorized persons accessing exposed soil; and
- Access to the work zones where soil will be disturbed shall be controlled using caution tape, cones, fencing, steel plates, or other measures to clearly designate the active work area and to prevent access by the public.

### **4.3 Dust/Vapor Control Measures**

As necessary, dust control measures shall be utilized during all excavation, soil segregation, soil stockpiling, transport, and compaction activities to prevent or control surface and air movement of dust from disturbed soil surfaces. As necessary, the following dust control measures shall be utilized:

- All active construction activities within the Soil Management Plan Designated Areas shall be watered at least twice daily;

- All trucks hauling soil, sand, or other loose materials excavated from the Site shall be covered or shall maintain at least two feet of freeboard; and
- If visible soil material is carried onto adjacent public streets, the streets shall be swept with water sweepers as necessary to maintain them free of material.

#### **4.4 Decontamination**

Decontamination procedures shall be developed and followed to minimize the equipment contamination during excavation activities. The procedures should include removing loose soil from the vehicle exterior using dry methods, such as brushing, scraping or vacuuming. Soil not removed by dry methods, should be cleaned by pressure washing or steam cleaning.

#### **4.5 Storm Water Control**

Storm water pollution controls shall be implemented by the CCs to minimize sediment runoff in storm water, which could include soil containing contaminants of concern. Procedures to prevent erosion and sediment runoff from the Site shall include grading the Site, installing storm water control devices such as temporary earth berms or erecting silt fences around the perimeter of exposed soil at the Site. Straw bale barriers or sediment traps are required to protect any existing catch basins or drainage channels. A separate storm water pollution prevention plan shall be provided by the CC's Qualified Stormwater Plan Developer (QSD) prior to beginning Site activities.

## 5.0 FIELD SCREENING AND SOIL SEGREGATION

During any Site Preparation Activities, visual observation and field screening measurements will be conducted by the EC. Initial field screening measurements will consist of the following and observations/measurements will be noted and documented on field forms by the EC:

- Odorous soil;
- Stained or discolored soil;
- Presence of free-phase petroleum product;
- Any encountered subsurface features; and
- Photoionization detector (PID) field screening readings, further detailed in the following section.

### 5.1 PID Field Screening Methodology

A (PID) or other organic vapor detecting device shall be present during grading and excavation activities. Field screening using a PID shall be conducted pursuant to SCAQMD Rule 1166 and shall be conducted continuously by the EC during soil intrusive activities. PID field screening procedures are summarized as follows:

- The PID shall be calibrated daily, utilizing hexane gas or other equivalent method with prior approval from SCAQMD;
- The PID probe inlet should be placed no more than three inches from the surface of the excavated soil and while slowly moving the probe across the soil surface, the instrument readout shall be observed; and
- The maximum meter reading shall be recorded at a minimum of every 15 minutes on a Rule 1166 Soil Monitoring Record.

#### 5.1.1 Trigger Levels

The following trigger levels and associated actions will be implemented during intrusive fieldwork at the Site:

PID Measurement or Visual Condition	Required Mitigation Measures
Less than 50 parts per million by volume (PPMV) with no visual or odor indicators	<ul style="list-style-type: none"> <li>• Stockpiled as Site soils for reuse.</li> </ul>
Greater than 50 PPMV but less than 1,000 PPMV	<ul style="list-style-type: none"> <li>• Affected work area and soil load sprayed with water and/or vapor suppressant;</li> </ul>

<p>or less than 50 PPMV but with visual or odor indicators</p>	<ul style="list-style-type: none"><li>• Placed in segregated stockpiles, bins or drums for additional laboratory analysis;</li><li>• Stockpiles covered with plastic sheeting and are secured so that no portion of the contaminated soil is exposed to the atmosphere. During handling the stockpile, only the working face of the stockpile may be uncovered;</li><li>• May not be used as backfill for the Site without prior approval from SCAQMD and LARWQCB; and</li><li>• Managed according to Section 6.2.</li></ul>
<p>Greater than 1,000 PPMV</p>	<ul style="list-style-type: none"><li>• SCAQMD notification within one hour of detection;</li><li>• Affected work area and soil load sprayed with water and/or vapor suppressant; and</li><li>• Soil immediately loaded into SCAQMD approved sealed containers or loaded in trucks for immediate offsite disposal, unless prior written approval from SCAQMD.</li></ul>

## **6.0 STOCKPILE MANAGEMENT AND SOIL REUSE/DISPOSAL REQUIREMENTS**

This section describes the monitoring of VOC emission and dust, and management of stockpiles with contaminated soil. In general, and as indicated in Section 5.0, field observations (i.e., visual staining, strong odors, PID readings of greater than 50 ppmv) will serve as the first line of screening. Soil with PID readings of less than 50 ppmv will be segregated from contaminated soil and will be reused during redevelopment activities.

Stockpile management of contaminated soil will be handled as described in the following section.

### **6.1 Handling of Contaminated Soil**

As mentioned previously, soil that is field screened and determined to contain greater than 1,000 ppmv when measured within three inches of the soil with a calibrated PID will immediately be loaded into SCAQMD approved sealed containers or loaded in trucks for immediate offsite disposal, unless prior written approval from SCAQMD is received.

Soil that is field screened and determined to contain greater than 50 ppmv (but less than 1,000 ppmv) or appears impacted by visual/odor screening observations will be staged in stockpiles no greater than 1,000 cubic yards and will be characterized for offsite disposal or onsite treatment with prior approval from SCAQMD and LARWQCB. The stockpiles will be placed on plastic liner of 30-mil or greater. During construction, the piles will be lightly sprayed with water and covered with plastic sheeting of 10-mil or greater. Plastic sheeting will be secured with sandbags.

Soil that is planned for offsite disposal will be sampled in accordance with the receiving facilities' guidelines. Approximate sampling frequency is as follows:

- A minimum of one (1) 4-point composite sample will be collected from stockpiles of less than 100 cubic yards;
- Three (3) 4-point composite soil samples per 500 cubic yards in a stockpile containing up to 1,000 cubic yards; and
- Five (5) 4-point composite soil samples for the first 1,000 cubic yards and one (1) sample for each additional 500 cubic yards in a stockpile containing up to 5,000 cubic yards.

In the event that contaminated soil is treated onsite for reuse in lieu of offsite disposal, a separate Workplan detailing proposed treatment methodologies and confirmation sampling criteria will be submitted to RWQCB and SCAQMD for approval.

## **7.0 WRITTEN RECORDS AND REPORTING**

At the completion of the redevelopment activities, a report will be prepared by the EC that summarizes the findings of the field observations, laboratory results, and final disposition of any excavated soil. A map will be provided which documents any underground features (not expected) that are unearthed during redevelopment. The headspace log forms will be presented as appendices to the report. If applicable, copies of receipts pertaining to the disposition of the soil will be appended to the report.



## 8.0 LIMITATIONS

This Plan was prepared to address potential TPH, VOCs, PAHs, and metals present in the soil at the Site and current known site conditions, regulations and laws. This Plan does not address issues related to groundwater, other chemicals or future site conditions that may be encountered during construction projects, including but not limited to, demolition and construction debris, asphalt, concrete, and asbestos-containing materials. If such materials are encountered during a construction project, contractors and workers are responsible for complying with all applicable laws pertaining to the handling and disposal of these materials.

The site-related activities may be subject to federal, state, and local laws and regulations, including those published by U.S. Environmental protection Agency (USEPA), the SCAQMD, California Environmental Protection Agency (Cal-EPA), Los Angeles County, and the City of Signal Hill. These regulations address issues such as health and safety, hazardous waste, dust generation, storm water, and community right-to-know. It is the responsibility of the parties involved to ensure that all construction and maintenance activities abide by current applicable laws and regulations.

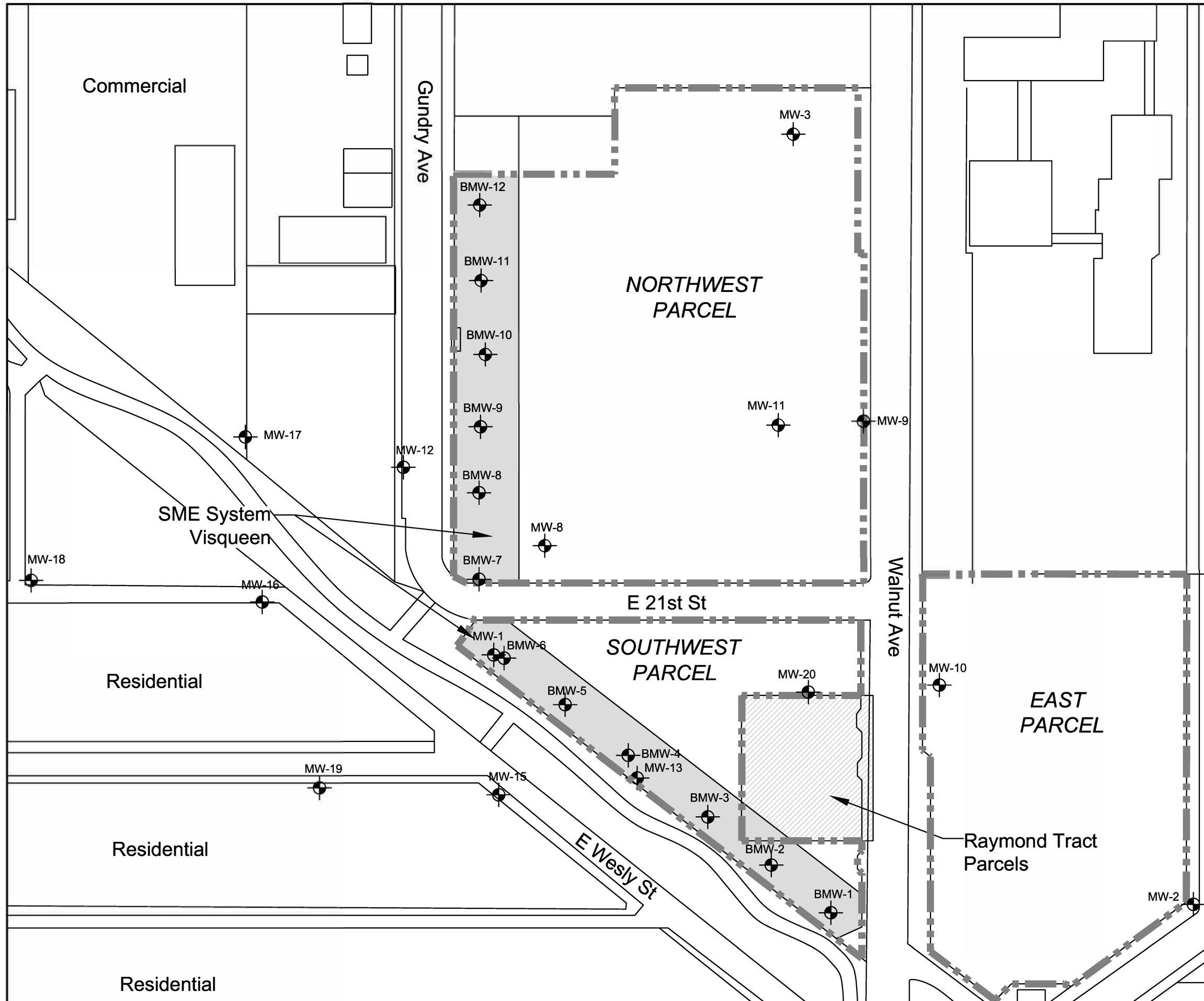
Apex-SGI disclaims any responsibility for any unauthorized use of this SMP. It is understood that while this SMP is intended to provide guidance and establish a framework for the management of potential chemical impacts in the subsurface soil to protect human health and the environment, this SMP shall not create any warranties or obligations to RES/SHE as to implementation, adequacy, or success of protective measures under this SMP.

## 9.0 REFERENCES

- The Source Group, Inc., A Division of Apex Companies, LLC (Apex-SGI). 2017a. Site Investigation and Conceptual Model Report for Former Chemoil Refinery. March 29.
- The Source Group, Inc., A Division of Apex Companies, LLC (Apex-SGI). 2017b. Response Plan and Remedial Technology Evaluation for Former Chemoil Refinery. June 13.

## FIGURES

S:\Clients A - F\ChemOil Refinery\Reports\Response Plan\App\SMP\Fig.1-2-Site Map.dwg, 5/11/2017 11:26:48 AM



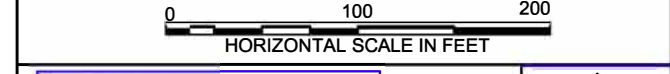
**LEGEND**

- Site Boundary
- MW-16 Groundwater Monitoring Well Locations
- SME Subsurface Metabolic Enhancement

**SITE MAP**

FORMER CHEMOIL REFINERY  
2020 WALNUT AVENUE  
SIGNAL HILL, CA

PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-CHEMOIL-001	02/08/17	ZA	KD








**FIGURE G-1**

3478 BUSKIRK AVENUE, SUITE 100  
PLEASANT HILL, CA 94523

**APPENDIX B**  
**SUMMARY OF SOIL SCREENING LEVELS**

**Appendix B**  
**Summary of Soil Screening Levels**  
Former ChemOil Refinery  
Signal Hill, California

Chemical	Direct Contact with Soil					Protection of Groundwater, Aquifer is Not a Source of Drinking Water				Final Screening Levels <sup>7</sup>		
	Residential		Construction	Commercial/Industrial		Groundwater at 20 feet bgs <sup>5</sup>				Residential (mg/kg)	Construction (mg/kg)	Commercial/ Industrial (mg/kg)
	SFBRWQCB ESL <sup>1</sup> (mg/kg)		USEPA RSL/DTSC SL <sup>2</sup> (mg/kg)	SFBRWQCB ESL <sup>1</sup> (mg/kg)		SLs <sup>6</sup> (0 to 10 ft bgs)		SLs <sup>6</sup> (10 to 20 ft bgs)				
	SFBRWQCB ESL <sup>1</sup> (mg/kg)		USEPA RSL/DTSC SL <sup>2</sup> (mg/kg)	SFBRWQCB ESL <sup>1</sup> (mg/kg)		SFBRWQCB ESL <sup>3</sup> (mg/kg)	USEPA RSL <sup>4</sup> (mg/kg)	LARWQCB Soil SL <sup>5</sup> (mg/kg)	LARWQCB Soil SL <sup>5</sup> (mg/kg)			
<b>Total Petroleum Hydrocarbons (TPH)</b>												
TPHg (C4-C12)	4.3E+02	8.2E+01	1.8E+03	2.0E+03	4.2E+02	--	--	1.0E+03	1.0E+03	8.2E+01	1.0E+03	4.2E+02
TPH (C5-C12)	4.3E+02	8.2E+01	1.8E+03	2.0E+03	4.2E+02	--	--	1.0E+03	1.0E+03	8.2E+01	1.0E+03	4.2E+02
TPH (C13-C22)	2.6E+02	9.6E+01	1.1E+03	1.2E+03	4.4E+02	--	--	1.0E+04	1.0E+04	9.6E+01	1.1E+03	4.4E+02
TPH (C23-C44)	1.2E+04	2.5E+03	5.4E+04	1.8E+05	<b>2.1E+04</b>	--	--	5.0E+04	5.0E+04	2.5E+03	5.0E+04	2.1E+04
<b>Volatile Organic Compounds (VOCs)</b>												
Acetone	6.1E+04	6.1E+04	2.7E+05	6.7E+05	6.7E+05	--	--	1.6E+02	1.5E+02	1.5E+02	1.5E+02	1.5E+02
Benzene	3.3E-01	<b>3.3E-01</b>	3.3E+01	1.4E+00	<b>1.4E+00</b>	--	--	6.2E-01	1.5E-01	1.5E-01	1.5E-01	1.5E-01
(8) TBA	NV	1.3E+05	NV	NV	1.5E+06	--	--	1.3E+00	1.2E+00	1.2E+00	1.2E+00	1.2E+00
tert-Butylbenzene	NV	<b>2.2E+03</b>	NV	NV	1.2E+05	--	--	2.8E+01	2.6E+01	2.6E+01	2.6E+01	2.6E+01
sec-Butylbenzene	NV	<b>2.2E+03</b>	NV	NV	<b>1.2E+04</b>	--	--	2.8E+01	2.6E+01	2.6E+01	2.6E+01	2.6E+01
n-Butylbenzene	NV	<b>2.4E+03</b>	NV	NV	<b>1.8E+04</b>	--	--	2.8E+01	2.6E+01	2.6E+01	2.6E+01	2.6E+01
Ethylbenzene	5.9E+00	5.8E+00	5.4E+02	2.6E+01	2.5E+01	--	--	6.8E+01	3.2E+01	5.8E+00	3.2E+01	2.5E+01
Isopropylbenzene	NV	NV	NV	NV	NV	--	--	8.4E+01	7.7E+01	7.7E+01	7.7E+01	7.7E+01
(9) 4-Isopropyltoluene	NV	3.8E+03	NV	NV	2.4E+04	--	--	8.4E+01	7.7E+01	7.7E+01	7.7E+01	7.7E+01
MTBE	4.7E+01	4.7E+01	4.1E+03	2.1E+02	2.1E+02	--	--	1.3E+00	1.3E+00	1.3E+00	1.3E+00	1.3E+00
Propylbenzene	NV	3.8E+03	NV	NV	2.4E+04	--	--	2.8E+01	2.6E+01	2.6E+01	2.6E+01	2.6E+01
Toluene	1.1E+03	<b>1.1E+03</b>	4.7E+03	5.3E+03	<b>5.3E+03</b>	--	--	2.5E+01	1.6E+01	1.6E+01	1.6E+01	1.6E+01
1,3,5-TMB	NV	2.7E+02	NV	NV	1.5E+03	--	--	3.6E+01	3.3E+01	3.3E+01	3.3E+01	3.3E+01
1,2,4-TMB	NV	3.0E+02	NV	NV	1.8E+03	--	--	3.6E+01	3.3E+01	3.3E+01	3.3E+01	3.3E+01
o-Xylene	NV	6.5E+02	NV	NV	2.8E+03	--	--	NV	NV	6.5E+02	0.0E+00	2.8E+03
(10) m,p-Xylenes	NV	5.5E+02	NV	NV	2.4E+03	--	--	NV	NV	5.5E+02	0.0E+00	2.4E+03
Total Xylenes	5.8E+02	5.8E+02	2.4E+03	2.5E+03	2.5E+03	--	--	2.3E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>												
Acenaphthene	3.6E+03	<b>3.3E+03</b>	1.0E+04	4.5E+04	<b>2.3E+04</b>	1.2E+01	5.5E+00	NV	NV	5.5E+00	5.5E+00	5.5E+00
(11) Acenaphthylene	3.6E+03	<b>3.3E+03</b>	1.0E+04	4.5E+04	<b>2.3E+04</b>	1.2E+01	5.5E+00	NV	NV	5.5E+00	5.5E+00	5.5E+00
Anthracene	1.8E+04	<b>1.7E+04</b>	5.0E+04	2.3E+05	<b>1.3E+05</b>	1.9E+00	5.8E+01	NV	NV	1.9E+00	1.9E+00	1.9E+00
Benz(a)anthracene	1.1E+00	1.1E+00	1.1E+02	2.0E+01	<b>1.2E+01</b>	1.0E+01	1.1E-02	NV	NV	1.1E-02	1.1E-02	1.1E-02
Benzo(a)pyrene	1.1E-01	1.1E-01	1.0E+01	2.1E+00	<b>1.3E+00</b>	5.7E+00	2.9E-02	NV	NV	2.9E-02	2.9E-02	2.9E-02
Benzo(b)fluoranthene	1.1E+00	1.1E+00	1.1E+02	2.1E+01	<b>1.3E+01</b>	7.5E+01	3.0E-01	NV	NV	3.0E-01	3.0E-01	3.0E-01
Benzo(g,h,i)perylene	NV	NV	NV	NV	NV	2.7E+01	NV	NV	NV	2.7E+01	2.7E+01	2.7E+01
Benzo(k)fluoranthene	1.1E+01	1.1E+01	9.1E+02	2.1E+02	<b>1.3E+02</b>	3.9E+01	2.9E+00	NV	NV	2.9E+00	2.9E+00	2.9E+00
Chrysene	1.1E+02	1.1E+02	9.1E+03	2.1E+03	<b>1.3E+03</b>	1.0E+01	9.0E+00	NV	NV	9.0E+00	9.0E+00	9.0E+00
Dibenzo(a,h)anthracene	1.1E-01	<b>2.8E-02</b>	1.1E+01	2.1E+00	<b>3.1E-01</b>	3.9E+02	9.6E-02	NV	NV	2.8E-02	9.6E-02	9.6E-02
Fluoranthene	2.4E+03	2.4E+03	6.7E+03	3.0E+04	<b>1.8E+04</b>	8.6E+01	8.9E+01	NV	NV	8.6E+01	8.6E+01	8.6E+01
Fluorene	2.4E+03	<b>2.3E+03</b>	6.7E+03	3.0E+04	<b>1.7E+04</b>	6.0E+00	5.4E+00	NV	NV	5.4E+00	5.4E+00	5.4E+00
Indeno(1,2,3-cd)pyrene	1.1E+00	1.1E+00	1.1E+02	2.1E+01	<b>1.3E+01</b>	3.2E+01	9.8E-01	NV	NV	9.8E-01	9.8E-01	9.8E-01
Naphthalene	3.8E+00	<b>2.0E+00</b>	4.0E+02	1.7E+01	<b>6.5E+00</b>	1.2E+00	5.4E-04	1.8E+00	1.7E+00	5.4E-04	5.4E-04	5.4E-04
(12) Phenanthrene	1.8E+04	<b>1.7E+04</b>	5.0E+04	2.3E+05	<b>1.3E+05</b>	1.9E+00	5.8E+01	NV	NV	1.9E+00	1.9E+00	1.9E+00
Pyrene	1.8E+03	1.8E+03	5.0E+03	2.3E+04	<b>1.3E+04</b>	4.5E+01	1.3E+01	NV	NV	1.3E+01	1.3E+01	1.3E+01
<b>Metals</b>												
Lead	8.0E+01	<b>8.0E+01</b>	1.6E+02	3.2E+02	<b>3.2E+02</b>	NV	NV	NV	NV	8.0E+01	1.6E+02	3.2E+02

**Notes:**

C4-C12 = Carbon range. 100X = One hundred times. TPHg = TPH as gasoline. USEPA RSL = U.S. Environmental Protection Agency Regional Screening Level (USEPA, 2019).  
ft bgs = feet below ground surface. TBA = tert-Butyl alcohol. LARWQCB Soil SL = Los Angeles Regional Water Quality Control Board Soil Screening Level (LARWQCB, 1996).  
mg/kg = milligram per kilogram. MTBE = Methyl-tert-butyl ether. DTSC SL = Department of Toxic Substances Control Screening Level (DTSC, 2019).  
NV = No published value. TMB = Trimethylbenzene. SFBRWQCB ESL = San Francisco Bay Regional Water Quality Control Board Environmental Screening Level (SFBRWQCB, 2019).  
-- = Not applicable.

<sup>1</sup> SFBRWQCB ESLs for soil for direct contact exposure pathways. Screening levels for TPH (C5-C12), TPH (C13-C22), and TPH (C23-C44) represent ESLs for TPH gasoline (C5-C12), TPH diesel (C10-C24), and TPH motor oil (C24-C36), respectively.

<sup>2</sup> USEPA RSLs/DTSC SLs for soil for direct contact exposure pathways represents the lowest of the available DTSC SL or USEPA RSL. Screening levels for TPH (C5-C12), TPH (C13-C22), and TPH (C23-C44) represent lowest of aliphatic and aromatic USEPA RSLs for TPH Low (C5-C8), TPH Middle (C9-C18), and TPH High (C17-C32), respectively.

<sup>3</sup> SFBRWQCB ESL represents soil SL for protection of groundwater, assuming groundwater aquifer is not a source of drinking water. Screening levels for TPH (C5-C12), TPH (C13-C22), and TPH (C23-C44) represent ESLs for TPH gasoline (C5-C12), TPH diesel (C10-C24), and TPH motor oil (C24-C36), respectively.

<sup>4</sup> USEPA RSL represents soil SL for protection of groundwater, assuming groundwater aquifer is not a source of drinking water. Screening levels for TPH (C5-C12), TPH (C13-C22), and TPH (C23-C44) represent lowest of aliphatic and aromatic USEPA RSLs for TPH Low (C5-C8), TPH Middle (C9-C18), and TPH High (C17-C32), respectively.

<sup>5</sup> LARWQCB SL represents soil SL for protection of groundwater at 20 ft bgs, assuming groundwater aquifer is not a source of drinking water. As recommended by LARWQCB (1996), for non-drinking water aquifers, screening level for TPH carbon ranges represent the LARWQCB SLs for TPH where distance above groundwater is greater than 150 feet (>150 feet). Values from LARWQCB (1996) for PAHs were not available.

<sup>6</sup> As recommended by LARWQCB (1996), for non-drinking water aquifers, benzene, toluene, ethylbenzene, and xylene (BTEX) screening levels are set at 100 times (100X) respective maximum contaminant levels (MCLs) as preliminary levels to be protection of human health and the environment. This method was applied to all VOCs.

<sup>7</sup> Final screening level represents the lowest available screening level for each exposure scenario/receptor.

<sup>8</sup> If screening level for tert-butyl alcohol was not available; therefore, the value for sec-butyl alcohol was used.

<sup>9</sup> If screening level for 4-Isopropyltoluene was not available; therefore, the value for Propylbenzene was used.

<sup>10</sup> Screening level for m,p-xylenes represents the value for m-xylene.

<sup>11</sup> If screening level for acenaphthylene was not available; therefore, the value for acenaphthene was used.

<sup>12</sup> If screening level for phenanthrene was not available; therefore, the value for anthracene was used.

**References:**

DTSC. 2019. Human Health Risk Assessment (HHRA) Note Number 3, DTSC-modified Screening Levels (DTSC SLs). Human and Ecological Risk Office (HERO). April.  
LARWQCB. 1996. Interim Site Assessment & Cleanup Guidebook. California Regional Water Quality Control Board, Los Angeles and Ventura Counties, Region 4. May 1996.  
SFBRWQCB. 2019. Environmental Screening Levels (ESLs). San Francisco Bay Regional Water Quality Control Board. Revision 1. January.  
USEPA. 2019. Regional Screening Levels (TR=1E-06, HQ=1). April.

Appendix B	Sample Date	Hydrocarbon Chain Identification <sup>1</sup>															TPH (C6-C44)	TPH (C6-C12) <sup>Note 1</sup>	TPH (C13-C22) <sup>Note 2</sup>	TPH (C23-C44) <sup>Note 3</sup>	
		C6-C8	C8-C10	C10-C12	C12-C14	C14-C16	C16-C18	C18-C20	C20-C22	C22-C24	C24-C26	C26-C28	C28-C32	C32-C34	C34-C36	C36-C40					C40-C44
Final Soil Screening Level <sup>Note 4</sup>		NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	420	440	21,000
<b>NORTHWEST PARCEL</b>																					
TP-A-4	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	<1.0	<1.0	4.7	2.7	1.6	3.0	1.3	18	<3.0	<5.0	14.3
TP-B-6	4/16/2019	3,800	<1.0	<1.0	24,000	<1.0	<1.0	1.4	2.8	3.3	4.7	4.1	12	8.7	3.9	7.6	1.1	52	<3.0	24,004.2	43.8
TP-C-6	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	3.7	3.0	10	6.4	3.4	11	2.5	45	<3.0	<5.0	40.7
TP-D-3	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	4.4	9.0	35	37	54	46	100	63	14	41	2.4	410	<3.0	48.4	338.9
TP-E-5	4/16/2019	10	800	1,300	1,900	2,100	2,400	1,600	2,000	1,700	2,000	1,200	3,100	1,800	440	1,300	350	24,000	2,110	9,050	11,040
TP-F-6	4/16/2019	<5.0	120	320	620	800	780	560	710	570	690	410	1,000	430	300	410	140	7,900	440	3,160	3,665
TP-G-5	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	<1.0	<10	<3.0	<5.0	1.5
<b>SOUTHWEST PARCEL</b>																					
TP-H-5	4/16/2019	<5.0	290	620	600	370	280	230	240	130	190	140	320	91	59	120	16	3,700	910	1,420	1,001
TP-I-5	4/16/2019	<10	31	110	290	540	810	930	840	820	1,100	860	1,700	870	290	560	110	9,900	141	3,265	5,900
<b>EAST PARCEL</b>																					
TP-O-3	4/16/2019	<1.0	<1.0	<1.0	<1.0	1.3	4.2	9.3	26	31	40	79	160	110	21	74	6.8	560	<3.0	40.8	506.3
TP-P-9	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.9	7.5	12	17	45	27	21	29	7.8	170	<3.0	3.9	162.6
TP-Q-9	4/16/2019	<5.0	<5.0	<5.0	<5.0	7.5	23	29	57	57	80	82	190	110	56	130	23	850	<15.0	116.5	699.5
TP-R-2	4/16/2019	<1.0	<1.0	<1.0	<1.0	1.3	5.2	12	30	30	61	55	120	70	17	35	1.3	430	<3.0	48.5	374.3
TP-S-5	4/16/2019	<1.0	<1.0	<1.0	12	<1.0	3.2	5.5	15	20	34	39	97	71	13	53	6.2	360	<3.0	35.7	323.2
TP-T-6	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<3.0	<5.0	<18.0
TP-U-7	4/16/2019	<5.0	48	240	530	790	820	780	860	540	630	480	970	490	190	400	39	7,800	288	3,515	3,469
TP-V-3	4/16/2019	<1.0	<1.0	<1.0	<1.0	1.3	2.6	4.5	4.7	4.3	4.5	12	5.2	3.1	4.4	<1.0	48	<3.0	8.4	35.9	
TP-W-2	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<10	<3.0	<5.0	1.1
TP-X-4	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<3.0	<5.0	<18.0
TP-Y-5	4/16/2019	<1.0	<1.0	<1.0	<1.0	3.2	5.8	13	14	21	21	48	31	5.6	21	<1.0	190	<3.0	22	154.6	

**Notes:**

TPH = Total petroleum hydrocarbons by EPA Method 8015M.

C6-C8 = Carbon range.

mg/kg = milligram per kilogram.

NV = No value.

<X.XX = Not detected above indicated reporting limit (RL).

**Bold values were reported above laboratory RL.**

**Shaded and bold values exceed Final Soil Screening Level, Commercial/Industrial.**

<sup>1</sup> TPH (C6-C12) was calculated based on summing detected results between C6 and C12

<sup>2</sup> TPH (C13-C22) was calculated based on summing detected results of one half C12-C14 and the results between C14 and C22

<sup>3</sup> TPH (C23-C44) was calculated based on summing the results of one half C22-C24 and the results between C24 and C44

<sup>4</sup> Final Soil Screening Level, Commercial/Industrial as presented in Revised Soil Reuse Plan (Apex, 2019).

**Reference**

Apex Companies, LLC (Apex), 2019. Revised Soil Reuse Plan. January 11.

Appendix B	Sample Date	Table 2 Summary of Soil Analytical Data - Potable Investigation Former Chemical Refinery Signal Hill, California Volatile Organic Compounds																		
		Acetone mg/kg	Benzene mg/kg	TBA mg/kg	tert-Butylbenzene mg/kg	sec-Butylbenzene mg/kg	n-Butylbenzene mg/kg	Ethylbenzene mg/kg	Isopropylbenzene mg/kg	4-Isopropylbenzene mg/kg	MTBE mg/kg	Naphthalene mg/kg	n-Propylbenzene mg/kg	Toluene mg/kg	1,3,5-TMB mg/kg	1,2,4-TMB mg/kg	o-Xylene mg/kg	m,p-Xylenes mg/kg	Total Xylenes mg/kg	TPHg mg/kg
<b>Final Soil Screening Level Commerical/Industrial <sup>Note 1</sup></b>		<b>150</b>	<b>0.15</b>	<b>1.2</b>	<b>26</b>	<b>26</b>	<b>26</b>	<b>25</b>	<b>77</b>	<b>77</b>	<b>1.3</b>	<b>0.00054</b>	<b>26</b>	<b>16</b>	<b>33</b>	<b>33</b>	<b>2,800</b>	<b>2,400</b>	<b>180</b>	<b>420</b>
<b>NORTHWEST PARCEL</b>																				
TP-A-4	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-B-6	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-C-6	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-D-3	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-E-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<b>0.015</b>	<b>0.010</b>	<b>0.013</b>	<b>0.023</b>	<0.0050	<0.0050	<b>0.038</b>	<b>0.018</b>	<0.0020	<b>0.0055</b>	<b>0.027</b>	<0.0020	<b>0.0033</b>	<b>0.0033</b>	<b>1,500</b>
TP-F-6	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<b>0.023</b>	<b>0.016</b>	<b>0.0048</b>	<b>0.043</b>	<0.0050	<0.0050	<b>0.039</b>	<b>0.042</b>	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<b>520</b>
TP-G-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
<b>SOUTHWEST PARCEL</b>																				
TP-H-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<b>0.080</b>	<b>0.038</b>	<b>0.10</b>	<b>0.12</b>	<0.0050	<0.0050	<b>4.2</b>	<b>0.13</b>	<0.0020	<0.0050	<b>0.015</b>	<b>0.0044</b>	<0.0020	<b>0.0044</b>	<b>720</b>
TP-I-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<b>0.0078</b>	<b>0.0057</b>	<0.0050	<0.0050	<b>0.017</b>	<b>0.0050</b>	<0.0020	<0.0050	<0.0050	<b>0.0038</b>	<0.0020	<b>0.0038</b>	<b>270</b>
<b>EAST PARCEL</b>																				
TP-O-3	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-P-9	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-Q-9	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-R-2	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-S-5	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-T-6	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-U-7	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<b>0.0099</b>	<0.0050	<b>0.0020</b>	<b>0.0052</b>	<0.0050	<0.0050	<b>0.042</b>	<b>0.0063</b>	<0.0020	<b>0.0081</b>	<b>0.016</b>	<0.0020	<b>0.0021</b>	<b>0.0021</b>	<b>460</b>
TP-V-3	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-W-2	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50



Appendix B	Sample Date	Table 2 Summary of Soil Analytical Data - Pot Holes Investigation Former Chem Oil Refinery Signal Hill, California																		
		Acetone mg/kg	Benzene mg/kg	TBA mg/kg	tert-Butylbenzene mg/kg	sec-Butylbenzene mg/kg	n-Butylbenzene mg/kg	Ethylbenzene mg/kg	Isopropylbenzene mg/kg	4-Isopropylbenzene mg/kg	MTBE mg/kg	Naphthalene mg/kg	n-Propylbenzene mg/kg	Toluene mg/kg	1,3,5-TMB mg/kg	1,2,4-TMB mg/kg	o-Xylene mg/kg	m,p-Xylenes mg/kg	Total Xylenes mg/kg	TPHg mg/kg
<b>Final Soil Screening Level Commercial/Industrial</b> <sup>Note 1</sup>		<b>150</b>	<b>0.15</b>	<b>1.2</b>	<b>26</b>	<b>26</b>	<b>26</b>	<b>25</b>	<b>77</b>	<b>77</b>	<b>1.3</b>	<b>0.00054</b>	<b>26</b>	<b>16</b>	<b>33</b>	<b>33</b>	<b>2,800</b>	<b>2,400</b>	<b>180</b>	<b>420</b>
TP-X-4	4/16/2019	<0.10	<0.0020	<0.050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50
TP-Y-5	4/16/2019	<b>17000</b>	<0.0020	<0.050	<b>130000</b>	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0020	<0.0050	<0.0050	<0.0020	<0.0020	<0.0020	<0.50

**Notes:**

VOC = Volatile organic compounds, fuel oxygenates, and TPHg by EPA Method 8260B.

TPHg = Total petroleum hydrocarbons as gasoline.

TBA = tert-Butyl alcohol.

MTBE = Methyl-tert-butyl ether.

TMB = Trimethylbenzene.

mg/kg = milligram per kilogram.

<X.XX = Not detected above indicated reporting limit (RL).

**Bold values were reported above laboratory RL.**

**Shaded and bold values exceed Final Soil Screening Level, Commercial/Industrial.**

<sup>1</sup> Final Soil Screening Level, Commercial/Industrial as presented in Revised Soil Reuse Plan (Apex, 2019).

**Reference**

Apex Companies, LLC (Apex), 2019. Revised Soil Reuse Plan. January 11.

Appendix B	Sample Date	Table 3 Summary of Soil Analytical Data - Pothole Investigation Polycyclic Aromatic Hydrocarbons Former ChemOil Refinery Signal Hill, California															
		Acenaphthene mg/kg	Acenaphthylene mg/kg	Anthracene mg/kg	Benzo(a)anthracene mg/kg	Benzo(a)pyrene mg/kg	Benzo(b)fluoranthene mg/kg	Benzo(g,h,i)perylene mg/kg	Benzo(k)fluoranthene mg/kg	Chrysene mg/kg	Dibenzo(a,h)anthracene mg/kg	Fluoranthene mg/kg	Fluorene mg/kg	Indeno (1,2,3-cd) pyrene mg/kg	Naphthalene mg/kg	Phenanthrene mg/kg	Pyrene mg/kg
<b>Final Soil Screening Level Commercial/Industrial</b> <sup>Note 1</sup>		<b>5.5</b>	<b>5.5</b>	<b>1.9</b>	<b>0.0011</b>	<b>0.029</b>	<b>0.3</b>	<b>27</b>	<b>2.9</b>	<b>9.0</b>	<b>0.096</b>	<b>86</b>	<b>5.4</b>	<b>0.98</b>	<b>0.00054</b>	<b>1.9</b>	<b>13</b>
<b>NORTHWEST PARCEL</b>																	
TP-A-4	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-B-6	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-C-6	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-D-3	4/16/2019	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.40	<0.10	<0.10	<0.10
TP-E-5	4/16/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<b>1.4</b>	<b>1.1</b>	<1.0
TP-F-6	4/16/2019	<b>0.60</b>	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<b>0.70</b>	<2.0	<b>1.5</b>	<b>1.6</b>	<0.50
TP-G-5	4/16/2019	130000	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<b>0.024</b>	<0.010
<b>SOUTHWEST PARCEL</b>																	
TP-H-5	4/16/2019	<b>0.80</b>	<0.50	<b>0.66</b>	<b>1.0</b>	<b>0.64</b>	<b>0.70</b>	<0.50	<0.50	<b>0.96</b>	<0.50	<b>1.3</b>	<b>1.2</b>	<2.0	<0.50	<b>2.7</b>	<b>1.3</b>
TP-I-5	4/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<b>0.61</b>	<0.50	<0.50	<b>0.60</b>	<2.0	<b>0.69</b>	<b>1.2</b>	<0.50
<b>EAST PARCEL</b>																	
TP-O-3	4/16/2019	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.40	<0.10	<0.10	<0.10
TP-P-9	4/16/2019	3800	<0.10	<0.10	24000	<0.10	<0.10	<0.10	<0.10	3.3	<0.10	<0.10	<0.10	<0.40	<0.10	<0.10	<0.10
TP-Q-9	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.80	<0.20	<0.20	<0.20
TP-R-2	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.80	<0.20	<0.20	<0.20
TP-S-5	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-T-6	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-U-7	4/16/2019	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<b>0.12</b>	<0.40	<0.10	<b>0.39</b>	<0.10
TP-V-3	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-W-2	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-X-4	4/16/2019	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.040	<0.010	<0.010	<0.010
TP-Y-5	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.80	<0.20	<0.20	<0.20

**Notes:**

mg/kg = milligram per kilogram.

<X.XX = Not detected above indicated reporting limit (RL).

bgs = below ground surface.

**Bold values were reported above laboratory RL.**

**Shaded and bold values exceed Final Soil Screening Level, Commercial/Industrial.**

<sup>1</sup> Final Soil Screening Level, Commercial/Industrial as presented in Revised Soil Reuse Plan (Apex, 2019)

**Reference**

Apex Companies, LLC (Apex), 2019. Revised Soil Reuse Plan. January 11.

**APPENDIX C**

**CONCEPTUAL GRADING AND UTILITY PLAN (REVISED JUNE 19, 2019)**

**CONCEPTUAL GRADING  
AND UTILITY PLAN #16**  
WALNUT AVE.  
SIGNAL HILL, CA



**LEGEND**

- PROPOSED STORM DRAIN
- PROPOSED SEWER
- EXISTING SEWER
- PROPOSED WATER
- EXISTING WATER
- SW — STEM WALL
- RW — RETAINING WALL
- PROPOSED CUT FROM EXISTING TO PROPOSED FINISHED SURFACE
- PROPOSED FILL FROM EXISTING TO PROPOSED FINISHED SURFACE
- 2.87' — DEPTH FROM EXISTING TO NATIVE SOIL

EARTHWORK ESTIMATE	QUANTITIES	
	CUT	FILL
ROUGH GRADING	14,303 CY	39,826 CY
OVER EXCAVATION	29,051 CY	29,051 CY
SUBSIDENCE (0.15')	(2,179) CY	
SHRINKAGE (12.5%)	(5,419) CY	
<b>SUBTOTAL PROJECT EARTHWORK QUANTITIES</b>	<b>35,756 CY</b>	<b>68,877 CY</b>
NET	33,121 CY (SHORT)	



FRED CORNWELL R.C.E. 45591 DATE

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