

Los Angeles Regional Water Quality Control Board

February 13, 2019

Steve Christie
Signal Hill XC, LLC
3010 Old Ranch Parkway, Suite 470
Seal Beach, CA 90740

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. 7017 0190 0000 4169 6096

SUBJECT: REVIEW AND COMMENTS ON REVISED SOIL REUSE PLAN

SITE: FORMER CHEMOIL REFINERY, 2020 WALNUT AVENUE, SIGNAL HILL, CALIFORNIA 90755 (SCP NO. 1391, SITE ID NO. 2040510)

Dear Mr. Christie:

In a letter dated October 24, 2018, the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) requested a Revised Soil Reuse Plan to address comments provided by the Regional Board and the Office of Environmental Health Hazard Assessment for the subject site (Site). A meeting was held at the Regional Board on November 19, 2018 to discuss the October 24, 2018 letter, and thereafter, the Regional Board received a document titled *Soil Reuse Plan Response* dated January 7, 2019. Upon receiving and reviewing that document, multiple discussions were held between you, your representatives, and Regional Board staff. As a result of the discussions, a document titled *Revised Soil Reuse Plan*, (Revised Plan) dated January 11, 2019, was submitted on your behalf by your environmental consultant, Apex Companies, LLC (Apex).

Regional Board staff and Apex had further discussions on January 17, 2019 regarding the field work schedule.

The Revised Plan and the January 17, 2019 communication are summarized below.

SUMMARY OF REVISED SOIL REUSE PLAN

- Figure 1 (attached) provides a conceptual grading plan that is designed to minimize excavation of soil where highest soil contamination is expected.
 - Areas in red are where soil will be excavated, and fill areas are shown in green.

- Any disturbed soil will be preliminarily screened using a PID¹.
 - Soil with PID readings less than 50 ppmv² will be stockpiled for reuse consideration pending further characterization.
 - Soil with PID readings greater than 50 ppmv but less than 1,000 ppmv will be:
 - Sprayed with water and/or vapor suppressant;
 - Placed in segregated stockpiles for additional laboratory analysis;
 - Covered with plastic sheeting and to prevent exposure to the atmosphere; and
 - Reused as backfill only with prior approval from the Regional Board and the South Coast Air Quality Management District (SCAQMD).
 - Soil with PID readings greater than 1,000 ppmv shall be:
 - Sprayed with water and/or vapor suppressant; and
 - Loaded immediately into SCAQMD approved sealed containers or loaded in trucks for immediate offsite disposal. Alternate handling procedures shall have prior written approval from the SCAQMD. The SCAQMD will be notified within one hour of detection.
- **Any excavated soil to be considered for reuse (less than PID reading of 50 ppmv) will be characterized prior to reuse of the soil as backfill. The excavated soil must meet the Soil Screening Levels (SLs) as proposed in the attached Table 1.**
 - Samples will be analyzed in a California-certified laboratory for VOCs³, TPH⁴, and PAHs⁵.
- **Soil that exceed the SLs will be treated via ex-situ methods or properly disposed of off-site.**
 - Soils disposed offsite must be to a facility that possesses a current permit to accept the soil.
 - **A separate ex-situ Soil Treatment Workplan will be submitted to the Regional Board prior to consideration for reuse. Treated soil must meet the SLs for commercial/industrial land use.**
 - Impacted soil volumes treated and reused on Site over an amount specified by the Regional Board will be subject to Waste Discharge Requirements (WDR).

¹ PID = photoionization detector

² ppmv = parts per million by volume

³ VOCs = volatile organic compounds

⁴ TPH = total petroleum hydrocarbons

⁵ PAHs = Polycyclic aromatic hydrocarbons

- Stockpile soil will be sampled according to the DTSC's⁶ *Information Advisory for Clean Imported Fill Material*, dated 2001. All samples will be randomly selected and collected as 3-point composite samples according to the following criteria:
 - For stockpiles of up to 1,000 cubic yards:
 - 1 sample per 250 cubic yards.
 - For stockpiles from 1,000 to 5,000 cubic yards:
 - 4 samples for the first 1,000 cubic yards, and 1 additional sample for each additional 500 cubic yards.
 - For stockpiles greater than 5,000 cubic yards:
 - 12 samples for the first 5,000 cubic yards, and 1 additional sample per each additional 1,000 cubic yards.
- In-situ soil boring samples will also be collected and may be used for characterization if:
 - Samples are representative of the soil present in the stockpile being considered for reuse;
 - Sampling frequency meets the DTSC fill material criteria.
- **Soil determined to be below SLs and/or treated via ex-situ methods may be reused anywhere within the Site.**

SUMMARY OF JANUARY 17, 2019 COMMUNICATION

Prior to the start of field work, a Mitigated Negative Declaration (MND) Notice or other document approved by the City of Signal Hill pursuant to the California Environmental Quality Act (CEQA) (hereafter, the "CEQA document") is required. The CEQA document is expected to be issued by the City of Signal Hill by June 2019. Upon receiving the CEQA document, the following schedule is proposed:

- Site grading is expected to begin in the late third quarter of 2019 and will be underway for 3 to 4 months.
- Summary of analytical data for the characterization of all stockpile soil will be provided to the Regional Board 14 days prior to determining if soil is to be reused, remediated, or disposed offsite.
- A report documenting the activities of excavated soil, laboratory analysis, and final disposition of reused soil will be submitted 45 days after the completion of site grading activities.
- A Soil Treatment Workplan for ex-situ remediation will be submitted 60 days prior to the start of treated soil.

⁶ DTSC = Department of Toxic Substances Control

REGIONAL BOARD COMMENTS

The Regional Board has determined that the Revised Plan is satisfactory, with the following comments:

1. In-situ boring samples may be collected and analyzed for additional site characterization, however, it may not be used in lieu of characterization of stockpiled soil. Adherence to DTSC's sampling frequency criteria is required for all excavated soil.
2. As stated in the California Land Reuse and Revitalization Act Agreement (CLRRA Agreement) section 5.1.2, a soil vapor mitigation system will be installed in the new construction. As part of the soil vapor mitigation system, a workplan shall be developed to include the installation of a robust network of soil vapor probes throughout the Site (vertically and laterally) to ensure soil vapor concentrations beneath the subsurface soil, including any and all backfill areas, will not migrate and pose a vapor intrusion threat.

In 2015, the USEPA's⁷ OSWER⁸ *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* recommended an attenuation factor of 0.03 to calculate the screening levels of slab and soil vapor. Regional Board staff also recommends this attenuation factor to be used for USEPA's RSLs⁹, SFRWQCB ESLs¹⁰, and DTSC's Note 3¹¹ residential and industrial indoor air screening levels as the soil vapor screening levels, whichever is most stringent. If data from the soil vapor probe monitoring indicate VOC concentrations are detected above the USEPA and Regional Board recommended soil vapor screening levels, either in the backfill or areas in the subsurface soil where the planned SVE¹² system is not capturing the soil vapor, additional action may be warranted within these areas.

In addition, the soil vapor mitigation plan shall include, but is not limited to:

- A map showing the locations and the depths of the soil vapor probes.
- A schedule for the monitoring of the vapor probes.
- A contingency plan detailing appropriate actions to be taken in order to protect human health and the environment in case vapor monitoring data indicates a threat to human health or failure of the operation of the SVE system.

⁷ USEPA = United States Environmental Protection Agency

⁸ OSWER = Office of Solid Waste and Emergency Response

⁹ RSLs = Regional Screening Level, May 2018

¹⁰ SFRWQCB ESLs = San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels

¹¹ Note 3 = Human health Risk Assessment Note Number: 3, DTSC-modified Screening Levels, June 2018

¹² SVE = soil vapor extraction

- **The soil vapor mitigation plan is due to the Regional Board by January 15, 2020.**
3. A PID shall be used for **field screening of VOCs during the excavation of the cut areas. If PID readings are observed or if visual staining is observed:**
 - **Soil samples shall be collected at 5 feet below proposed grade and assessed to ensure the exposed area will not pose a threat to future workers (i.e. construction workers, landscapers, etc.) via dermal contact.**
 - Laboratory analytical results shall be submitted to Regional Board staff for review within 14 days of receipt of data.
 - **If results indicate exceedance of SLs, a contingency plan shall be submitted to address these areas of concern.** The contingency plan is due to the Regional Board within 60 days of receipt of laboratory results.
 4. A report documenting the findings of field work, laboratory results, stockpile sample analysis, in-situ boring sample analysis, and soil to be treated and/or disposed of offsite is due to the Regional Board by **April 15, 2020.** **The report shall include details of the quantity and identify the location of reused soil as backfill.**
 5. **A separate Soil Treatment Workplan is due to the Regional Board by April 15, 2020 if ex-situ treatment of the stockpiled soil is warranted.** A WDR permit will be required for all proposed ex-situ remediation of stockpiled soil.

If you have any questions, please contact Ms. Jessica Pao, Case Manager, at (213) 576-6729 or Jessica.Pao@waterboards.ca.gov, or Ms. Jillian Ly, Site Cleanup Unit IV, Chief, at (213) 576-6664 or Jillian.Ly@waterboards.ca.gov.

Sincerely,



Deborah J. Smith
Executive Officer

Attachments:

Figure 1 – Conceptual Grading and Utility Plan
Table 1 – Summary of Soil Screening Levels

cc:

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Mr. Steven Christie
Signal Hill XC, LLC

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February 13, 2019
SCP No. 1391

cc (hard copy):

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Central Basin Municipal Water District
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Table 1
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 ⁷		
	Residential		Construction	Commercial/Industrial		Groundwater at 20 feet bgs ⁶				Residential (mg/kg)	Construction (mg/kg)	Commercial/ Industrial (mg/kg)
	SFBRWQCB ESL (mg/kg)	USEPA RSL/DTSC SL ² (mg/kg)	SFBRWQCB ESL ¹ (mg/kg)	SFBRWQCB ESL ¹ (mg/kg)	USEPA RSL/DTSC SL ² (mg/kg)	100X LARWQCB Soil SLs ⁴ (0 to 10 ft bgs)		100X LARWQCB Soil SLs ⁴ (10 to 20 ft bgs)				
						LARWQCB Soil SL ⁵ (mg/kg)	LARWQCB Soil SL ⁵ (mg/kg)	LARWQCB Soil SL ⁵ (mg/kg)	LARWQCB Soil SL ⁵ (mg/kg)			
Total Petroleum Hydrocarbons (TPH)												
TPHg (C4-C12)	7.4E+02	8.2E+01	2.8E+03	3.9E+03	4.2E+02	--	--	1.0E+03	1.0E+03	8.2E+01	1.0E+03	4.2E+02
TPH (C5-C12)	7.4E+02	8.2E+01	2.8E+03	3.9E+03	4.2E+02	--	--	1.0E+03	1.0E+03	8.2E+01	1.0E+03	4.2E+02
TPH (C13-C22)	2.3E+02	9.6E+01	8.8E+02	1.1E+03	4.4E+02	--	--	1.0E+04	1.0E+04	9.6E+01	8.8E+02	4.4E+02
TPH (C23-C44)	1.1E+04	2.5E+03	3.2E+04	1.4E+05	3.3E+04	--	--	5.0E+04	5.0E+04	2.5E+03	3.2E+04	3.3E+04
Volatiles Organic Compounds (VOCs)												
Acetone	5.9E+04	6.1E+04	2.6E+05	6.3E+05	6.7E+05	--	--	1.6E+02	1.5E+02	1.5E+02	1.5E+02	1.5E+02
Benzene	2.3E-01	3.3E-01	2.4E+01	1.0E+00	1.4E+00	--	--	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	2.2E+03	NV	NV	1.2E+04	--	--	2.8E+01	2.6E+01	2.6E+01	2.6E+01	2.6E+01
sec-Butylbenzene	NV	2.2E+03	NV	NV	1.2E+04	--	--	2.8E+01	2.6E+01	2.6E+01	2.6E+01	2.6E+01
n-Butylbenzene	NV	3.9E+03	NV	NV	1.8E+04	--	--	2.8E+01	2.6E+01	2.6E+01	2.6E+01	2.6E+01
Ethylbenzene	5.1E+00	5.8E+00	4.8E+02	2.2E+01	2.5E+01	--	--	6.8E+01	3.2E+01	5.1E+00	3.2E+01	2.2E+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	NV	NV	NV	NV	--	--	8.4E+01	7.7E+01	7.7E+01	7.7E+01	7.7E+01
MTBE	4.2E+01	4.7E+01	3.7E+03	1.8E+02	2.1E+02	--	--	1.3E+00	1.3E+00	1.3E+00	1.3E+00	1.3E+00
n-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	9.7E+02	1.1E+03	4.1E+03	4.6E+03	5.3E+03	--	--	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	--	--	3.6E+01	3.3E+01	3.3E+01	3.3E+01	3.3E+01
(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	5.6E+02	5.8E+02	2.4E+03	2.4E+03	2.5E+03	--	--	2.3E+02	1.8E+02	1.8E+02	1.8E+02	1.8E+02
Polycyclic Aromatic Hydrocarbons (PAHs)												
Acenaphthene	3.6E+03	3.6E+03	1.0E+04	4.5E+04	4.5E+04	1.9E+01	5.5E+00	NV	NV	5.5E+00	5.5E+00	5.5E+00
(11) Acenaphthylene	3.6E+03	3.6E+03	1.0E+04	4.5E+04	4.5E+04	1.3E+01	5.5E+00	NV	NV	5.5E+00	5.5E+00	5.5E+00
Anthracene	1.8E+04	1.8E+04	5.0E+04	2.3E+05	2.3E+05	2.8E+00	5.8E+01	NV	NV	2.8E+00	2.8E+00	2.8E+00
Benzo(a)anthracene	1.6E-01	1.1E+00	1.6E+01	2.9E+00	2.1E+01	1.2E+01	4.2E-03	NV	NV	4.2E-03	4.2E-03	4.2E-03
Benzo(a)pyrene	1.6E-02	1.1E-01	1.6E+00	2.9E-01	2.1E+00	1.3E+02	4.0E-03	NV	NV	4.0E-03	4.0E-03	4.0E-03
Benzo(b)fluoranthene	1.6E-01	1.1E+00	1.6E+01	2.9E+00	2.1E+01	6.4E+02	4.1E-02	NV	NV	4.1E-02	4.1E-02	4.1E-02
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	1.6E+00	1.1E+01	1.5E+02	2.9E+01	2.1E+02	3.7E+01	4.0E-01	NV	NV	4.0E-01	4.0E-01	4.0E-01
Chrysene	1.5E+01	1.1E+02	1.5E+03	2.6E+02	2.1E+03	2.3E+01	1.2E+00	NV	NV	1.2E+00	1.2E+00	1.2E+00
Dibenz(a,h)anthracene	1.6E-02	1.1E-01	1.6E+00	2.9E-01	2.1E+00	1.4E+02	1.3E-02	NV	NV	1.3E-02	1.3E-02	1.3E-02
Fluoranthene	2.4E+03	2.4E+03	6.7E+03	3.0E+04	3.0E+04	6.0E+01	8.9E+01	NV	NV	6.0E+01	6.0E+01	6.0E+01
Fluorene	2.4E+03	2.4E+03	6.7E+03	3.0E+04	3.0E+04	8.9E+00	5.4E+00	NV	NV	5.4E+00	5.4E+00	5.4E+00
Indeno(1,2,3-cd)pyrene	1.6E-01	1.1E+00	1.6E+01	2.9E+00	2.1E+01	7.0E+01	1.3E-01	NV	NV	1.3E-01	1.3E-01	1.3E-01
Naphthalene	3.3E+00	3.8E+00	3.5E+02	1.4E+01	1.7E+01	--	--	1.8E+00	1.7E+00	1.7E+00	1.7E+00	1.7E+00
(12) Phenanthrene	1.8E+04	1.8E+04	5.0E+04	2.3E+05	2.3E+05	1.1E+01	5.8E+01	NV	NV	1.1E+01	1.1E+01	1.1E+01
Pyrene	1.8E+03	1.8E+03	5.0E+03	2.3E+04	2.3E+04	8.5E+01	1.3E+01	NV	NV	1.3E+01	1.3E+01	1.3E+01
Metals												
Lead	8.0E+01	8.0E+01	1.6E+02	3.2E+02	3.2E+02	NV	NV	NV	NV	8.0E+01	1.6E+02	3.2E+02

Notes:
 C4-C12 = Carbon range.
 ft bgs = feet below ground surface.
 mg/kg = milligram per kilogram.
 NV = No published value.

100X = One hundred times.
 TBA = tert-Butyl alcohol.
 MTBE = Methyl-tert-butyl ether.
 TMB = Trimethylbenzene.

TPHg = TPH as gasoline.
 USEPA RSL = U.S. Environmental Protection Agency Regional Screening Level (USEPA, 2018).
 LARWQCB Soil SL = Los Angeles Regional Water Quality Control Board Soil Screening Level (LARWQCB, 1996).
 DTSC SL = Department of Toxic Substances Control Screening Level (DTSC, 2018).
 SFBRWQCB ESL = San Francisco Bay Regional Water Quality Control Board Environmental Screening Level (SFBRWQCB, 2016).

¹ 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.

² USEPA RSL/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.

³ 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.

⁴ 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.

⁵ 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.

⁶ 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.

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

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

⁹ If screening level for 4-isopropyltoluene was not available; therefore, the value for Isopropylbenzene was used.

Table 1
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 ⁷		
	Residential		Construction	Commercial/Industrial				Groundwater at 20 feet bgs ⁶		Residential (mg/kg)	Construction (mg/kg)	Commercial/ Industrial (mg/kg)
	SFBRWQCB ESL ¹ (mg/kg)	USEPA RSL/DTSC SL ⁴ (mg/kg)	SFBRWQCB ESL ¹ (mg/kg)	SFBRWQCB ESL ¹¹ (mg/kg)	USEPA RSL/DTSC SL ⁴ (mg/kg)			100X LARWQCB Soil SLs ⁸ (0 to 10 ft bgs)	100X LARWQCB Soil SLs ⁸ (10 to 20 ft bgs)			
								LARWQCB Soil SL ⁸ (mg/kg)	LARWQCB Soil SL ⁸ (mg/kg)			

¹⁰ Screening level for m,p-xylenes represents the value for m-xylene.

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

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

References:

DTSC. 2018. Human Health Risk Assessment (HHRA) Note Number 3. DTSC-modified Screening Levels (DTSC SLs). Human and Ecological Risk Office (HERO). June.
LARWQCB. 1996. Interim Site Assessment & Cleanup Guidebook. California Regional Water Quality Control Board, Los Angeles and Ventura Counties, Region 4. May 1996.
SFBRWQCB. 2016. Environmental Screening Levels (ESLs). San Francisco Bay Regional Water Quality Control Board. Revision 3. February.
USEPA. 2018. Regional Screening Levels (TR-1E-06, HQ=1). November.