SITE ASSESSMENT REPORT AND REQUEST FOR SITE CLOSURE

Los Angeles County Sheriff's Department
Lomita Sheriff Station
26123 Narbonne Avenue,
Lomita, California 90717

Prepared for:

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1 INTRODUCTION

Alta Environmental (Alta), an NV5 company, submits this Site Assessment Report for the Los Angeles County Sheriff's Department, Facilities Planning Bureau (LACSD) and Los Angeles County Public Works (Public Works), Geotechnical and Materials Engineering Division (GMED) for the assessment of petroleum hydrocarbon contaminants at the LACSD Lomita Sheriff Station (hereafter referred to as "Site"), located at 26123 Narbonne Avenue in Lomita, California (Figure 1).

As indicated in a LARWQCB directive letter dated June 6, 2019, the City of Lomita has reported that benzene (3.7 micrograms per liter [µg/L] in May 2019) was detected in Lomita Well No. 5, located at the south end of Cypress Street approximately 450 feet west of the Site (Figure 2). The LARWQCB identified the underground storage tank (UST) area at the Site as a potential source and required that a Work Plan be prepared to outline the scope of work for evaluating the extent of petroleum contaminants in soil and groundwater originating from the former and/or existing USTs at the Site. Alta subsequently prepared the *Site Assessment Work Plan* (Work Plan), dated August 30, 2019, and submitted it to the LACSD, Public Works, and the LARWQCB. In a letter dated September 17, 2019, the LARWQCB approved the Work Plan.

The objective of this assessment was to assess the UST area and the subject Site for the presence of petroleum hydrocarbons (including benzene) in soil and groundwater at the Site, and to determine if the onsite UST area is a potential source of benzene contaminants detected in Lomita Well No. 5. The sampling activities described herein were conducted in general accordance with the Work Plan and the requirements of the LARWQCB approval letter dated September 17, 2019. All field work was conducted under the direct supervision of a California-licensed Professional Geologist (PG).

2 BACKGROUND

2.1 Site Location and Description

The Site is located on the western side of Narbonne Avenue, approximately 0.25-mile south of Pacific Coast Highway in Lomita, California (Figure 1). The irregular-shaped parcel is currently operated as a Sheriff's Station and is used for administrative/office duties, temporary inmate housing, fueling/vehicle maintenance service facility, and parking. The remainder of the Site is covered with asphalt paving. Site features, buildings, and property boundaries are identified on Figure 2.

2.2 Geology and Hydrogeology

2.2.1 Geology

The Site is located at the northeastern edge of the Palos Verdes Hills, within the southwestern portion of the Los Angeles Basin. The area is underlain by Quaternary marine and non-marine terrace deposits and by fine to medium-grained Pleistocene sands of the San Pedro formation (CDWR, 1961).

Based on observations during Alta's assessment, soil beneath the Site generally consists of Quaternary Alluvium deposits, consisting of alternating layers of silty to poorly-graded sand followed by lean to sandy lean clay, underlain by predominantly poorly-graded sands with thin and intermittent clay interbeds to total depths explored (155 feet below ground surface [bgs]).

2.2.2 Hydrogeology

The Site is located within the West Coast Basin of the Los Angeles Coastal Plain. The basin is bounded by the Ballona Escarpment to the north, the Palos Verdes Hills and Pacific Ocean to the south, the Newport-Inglewood fault to the east, and the Pacific Ocean to the west. Water bearing deposits of the basin include unconsolidated and semi-consolidated marine and alluvial sediments. The uppermost aquifer beneath the subject Site is the Gage Aquifer, which is underlain by the Lynwood and Silverado Aquifers of the San Pedro Formation (CDWR, 1961). Note that the Gage Aquifer was not encountered during this assessment.

Alta reviewed depth to water information provided in the *Fourth Quarter and Annual 2018 Post-Closure Groundwater Monitoring Report* prepared by Associates Environmental (dated December 17, 2018) for the former Chandler's Landfill, located adjacent to the Site to the southwest (Figures 2 and 3). The monitoring was conducted to satisfy the LARWQCB's Monitoring and Reporting Program CI-No. 5430 requirements. Based on the report, the depth to groundwater measured during four quarterly groundwater monitoring events during 2018 in the two monitoring wells (Well Nos. WRD-1 and 35-F2) ranged from approximately 223.89 to 230.20 feet below top of casing. Groundwater elevations in these wells ranged from 12.53 feet below mean sea level (msl) to 14.74 feet below msl. As stated in the report, these wells were installed approximately 400 to 1,000 feet east-northeast (downgradient) of the fill area. A third well (Well No. 35-E6) was installed as an upgradient production well, but this well was not equipped with a sounding tube, therefore neither the depth to water or groundwater elevations could be determined. These wells are screened in a deep aquifer and were used to measure the water quality beneath the former landfill. Discussion of the water quality and potential contaminants are further discussed in Section 2.5.

Based on information provided in a groundwater monitoring report for the former Texaco Service Station, located approximately 0.7 miles northeast of the Site at 1752 Pacific Coast Highway, depth to groundwater during the fourth quarter 2010 groundwater monitoring event was measured at approximately 102 to 109 feet below top of casing. The groundwater elevation was reported to range from 18.19 to 18.75 feet below msl. The groundwater flow direction was measured to the east-southeast (Conestoga-Rovers & Associates, 2011). The aquifer encountered during the quarterly monitoring events at the Former Texaco Service Station was believed to be the Gage Aquifer (Delta, 2010).

Based on the gradient of the surficial topography of the Site, the flow direction beneath the subject Site is also expected to be to the east. However, as described in Section 4.1, groundwater was not encountered during this investigation to the depths explored.

2.3 Existing and Former USTs

A dual-compartment UST (10,000-gallon gasoline/2,000-gallon diesel) and associated fuel dispenser island and product piping is situated behind the service building within the north-central portion of the property (Figures 2, 3, and 6 through 9).

Based on documents submitted by Public Works, four USTs were removed in 1987 and two USTs were removed in 1999. The USTs removed in 1987 consisted of one 550-gallon waste oil, one 2,000-gallon diesel, one 8,000-gallon leaded gasoline, and one 12,000-gallon unleaded gasoline UST (Groundwater Technology, 1987). The USTs removed in 1999 consisted of one 1,000-gallon double-walled diesel and one 12,000-gallon double-walled unleaded gasoline (Century West Environmental, Inc. 1999, identified on Figures 2, 3, and 6-9). Turbine, fill, and vent pipes were disassembled from the USTs and removed. Soil samples collected beneath the USTs did not reveal any detectable concentrations of total petroleum hydrocarbons as gasoline (TPH-g) or diesel (TPH-d), benzene, toluene, ethylbenzene, or total xylenes (BTEX), or methyl-tert-butyl ether (MTBE). However, following the 1987 UST removals, a composited soil sample collected from a 40-foot boring (drilled adjacent to the 8,000-gallon leaded gasoline UST) revealed TPH concentrations detected

at 9.6 milligrams per kilogram (mg/kg). In addition, TPH-g, TPH-d, and BTEX concentrations (benzene at 0.07 mg/kg) were detected in the soil stockpile generated from the 1999 UST removals.

The USTs removed in 1987 and 1999 were apparently located in the same vicinity as the current dual-compartment UST. The map showing locations of the former USTs removed in 1987 (included in the 1987 UST removal report) was very poor. However, these USTs are suspected to have been located behind the existing service building in the vicinity of the current dual-compartment UST. In addition, as indicated in the 1999 UST removal report, the 12,000-gallon gasoline UST removed in 1999 was replaced in the same excavation with a new 12,000-gallon double-walled UST (presumably to be the current dual-compartment UST).

2.4 Lomita Well No. 5

As indicated in the City of Lomita Water Master Plan Update, dated September 2015, Lomita Well No. 5 is located at 26112 Cypress Street in Lomita, California. The well is the main component of the Cypress Water Production Facility. The well was drilled in 1971 and it capable of producing 1,500 gallons per minute (gpm). According to the Water Master Plan Update, the well is 660 feet deep and is perforated with a 16-inch casing from 368 to 648 feet bgs. The depth to groundwater in the well was not reported in the Water Master Plan Update. The approximate location of the Lomita Well No. 5 relative to the Site is shown on Figures 1 through 3.

2.5 Former Chandler's Landfill

As discussed in Section 2.2.2, a former landfill (Chandler's Landfill) and currently a golf course (Rolling Hills Estate Country Club), is located adjacent to the Site to the southwest (Figures 2 and 3). As discussed in the aforementioned *Fourth Quarter and Annual 2018 Post-Closure Groundwater Monitoring Report*, groundwater monitoring and sampling was conducted to satisfy the LARWQCB's Monitoring and Reporting Program CI-No. 5430 requirements. Chandler's Palos Verdes Sand & Gravel Company formerly operated the landfill, identified in the report as an 110-acre Inert Debris Engineered Fill Operation (IDEFO). The IDEFO completed operations on June 15, 2015.

From September 1996 to November 2018, quarterly groundwater monitoring and sampling was conducted from three to four wells at the site. Since June 2017, groundwater samples were collected from three wells (Well Nos. WRD-1, 35-F2, and 35-E6). The samples from each sampling event were analyzed for various water quality parameters, including benzene, tetrachloroethene (PCE), trichloroethene (TCE), total dissolved solids (TDS), chloride, sulfate, and boron. No concentrations of benzene, PCE, or TCE were detected in any of the wells for each sampling event.

During September 2004 and September 2005, a Phase I Environmental Site Assessment and Phase II Subsurface Environmental Site Assessment, respectively, was conducted by Frey Environmental, Inc. The Phase I/II report was included as part of an overall Environmental Impact Report for the Chandler Ranch/Rolling Hills Country Club Project (Willdan, 2010). The assessments were conducted to assess the potential for hazardous materials to be present at the former Chandler's landfill site. As indicated in the report, in addition to landfill and golf course operations, observations of the property included the presence of a maintenance building and an adjacent storage facility containing several petroleum-based products, mostly related to vehicle operation and maintenance. Some of the substances included waste oil, antifreeze, grease, solvents, paints or gasoline. The report further stated that seven USTs were removed from the Chandler property in June 2002 and that approximately 251 tons of diesel impacted soils were removed on July 9, 2002. A concrete batch plant and two clarifiers were also reported to be present on the property. Soil samples collected below the USTs were reported to have low or non-detect TPH, BTEX and fuel oxygenate concentrations. The results of soil samples from the bottom of the UST excavations and from nearby borings were non-detect for TPH, BTEX and fuel oxygenate concentrations. It was therefore concluded that there

was a low likelihood that soil and groundwater beneath the Chandler property have been significantly impacted by releases of fuels from the former and /or existing fuel dispensing systems at the site. In addition, the County of Los Angeles Department of Public Works issued closure letters for these USTs.

In addition, it was reported that there were five oil wells on the property (Narbonne Well No. 1, Chandler Well No. 1, Chandler Well No. 2, Chandler Well No. 3, and Chandler Well No. 13). The wells were reportedly abandoned and sealed. However, it was recommended that these wells will likely need to be re-abandoned in accordance with California Division of Oil, Gas, and Geothermal Resources (DOGGR) and County of Los Angeles requirements. Based on records reviewed on the DOGGR database, only one well (Chandler No. 3, API: 03703164) was re-abandoned according to these requirements.

3 SITE ASSESSMENT ACTIVITIES

The scope of work as outlined in the Work Plan and approved by the LARWQCB included the advancement of five soil borings and convert the borings to groundwater monitoring wells (MW1 through MW5), collection of soil matrix samples, groundwater monitoring well development, groundwater monitoring well survey, quarterly groundwater monitoring and sampling, laboratory analysis of soil matrix and groundwater samples, and preparation of this report. Groundwater was not encountered during drilling activities at the Site to the anticipated depths of 100 to 125 feet. After collaborative discussions with Public Works and the LARWQCB, the borings were advanced an additional 30 feet to a total depth of 155 feet bgs where groundwater was not encountered. As a result, groundwater monitoring wells were not installed as originally proposed and activities associated with groundwater monitoring and sampling are not included in this report.

3.1 Health and Safety Plan

Prior to conducting field activities, a site-specific Health and Safety Plan (HASP) was prepared in accordance with 40 CFR Health and Safety Code 1910.120 and utilized by Alta personnel and associated subcontractors conducting fieldwork. The HASP addressed health and safety issues associated with the scope of work, including, but not limited to, requirements for personal protective equipment, potential contaminants and hazards onsite, and route to the closest hospital. Daily “tailgate” meetings were held with Alta and subcontractor personnel at the Site prior to initiation of any fieldwork to review the scope of work and safety procedures. Workers present onsite during drilling and sampling activities were required to read and sign the HASP. The HASP was onsite at all time while drilling and sampling activities took place.

3.2 Permitting

Prior to initiating fieldwork, Alta obtained a permit from the Los Angeles County Department of Public Health (LACDPH) to drill the five soil borings. A copy of the permit is included in Appendix A.

3.3 Site Reconnaissance and Utility Clearance

On December 10, 2019, Alta conducted a Site reconnaissance to mark proposed boring locations MW1 through MW5. The locations were inspected for accessibility, underground utilities, overhead power lines, and other potential issues that could be encountered during fieldwork. All locations were marked with white spray paint, as required by Underground Service Alert (USA). USA was notified at least 48 hours before any drilling activities commenced at the Site.

On December 12, 2019, a geophysical survey was conducted by Spectrum Geophysics of Burbank, California prior to any drilling activities. The objective of the geophysical survey was to locate identifiable buried utilities and other subsurface anomalies in the vicinity of each proposed boring location. Ground penetrating radar and other specialized utility locating methods were used to ensure that subsurface utilities

would not be damaged during the assessment activities. Detectable piping, utilities, and anomalies were marked on the ground with paint in a color code established by the American Public Works Association. Due to the presence of above-ground obstructions such as trees, potential underground utility lines identified during the geophysical survey, or due to the presence of pea gravel (encountered in proposed boring MW4, located in the vicinity of the former 1,000-gallon diesel UST which would have prevented boring advancement), several borings were moved from the planned locations. The final locations of MW1 through MW5 are presented on Figures 2 and 3.

3.4 Boring Advancement and Soil Sampling

From December 17 through December 26, 2019, Alta advanced five borings (MW1 through MW5) at the locations indicated on Figures 2 and 3. Prior to advancement, the asphalt surface at each location was cored, and the upper ten feet in borings MW1 through MW4 and the upper five feet in boring MW5 were hand-augered to minimize the potential for contacting subsurface utilities. The borings were then advanced with a hollow-stem auger drill rig equipped with 8-inch diameter (MW2 through MW5) and 10-inch diameter (MW1) augers to a total depth of 155 feet bgs. Soil samples were collected from each boring at 5-foot intervals to total depth by driving a modified California split-spoon sampler into the undisturbed ground. Soil samples were collected in 6-inch stainless streel rings and immediately transferred into preserved 40-milliliter vials in accordance with EPA Method 5035 procedures. The samples were then sealed with Teflon® sleeves and plastic end-caps, labeled, and stored in a chilled ice chest. Soil samples collected were submitted to American Environmental Testing Laboratory, Inc. (AETL), a state of California certified laboratory for analysis of TPH-g, TPH-d, TPH as waste oil (TPH-o) by EPA Method 8015M and for volatile organic compounds (VOCs) including BTEX, oxygenates, naphthalene, and ethanol by EPA Method 8260B. Due to the reported use of leaded gasoline in the former 8,000-gallon UST removed in 1987, the upper 40 feet at borings MW1 through MW4 were also analyzed for total lead by EPA Method 6010B. As required by the LARWQCB, selected soil samples were also analyzed for polyaromatic hydrocarbons (PAHs) by EPA Method 8270C. The soil sample results for TPH, VOCs, PAHs, and total lead are presented in Tables 1 through 4.

The soil encountered during the assessment was continuously logged using the Unified Soil Classification System (USCS) under the supervision of a California-licensed PG. Volatile organic vapor concentrations emanating from soil samples were measured using a photo-ionization detector (PID) calibrated to 50 parts per million by volume (ppmv) hexane. The lithology, exact sampling depths, and PID readings are presented on the boring logs, included in Appendix B.

All sampling equipment that was in contact with the soil was decontaminated with a three-bucket wash consisting of a non-phosphate cleaning solution, tap water, and a final rinse in distilled water. The decontamination water was placed in labeled Department of Transportation (DOT)-approved 55-gallon drums that were stored onsite pending disposal.

3.5 Site Survey

On December 27, 2019, a State of California-licensed land surveyor surveyed each boring location (MW1 through MW5), the Site and building corners, the UST manholes and dispenser locations, the outline of the onsite concrete pad, planter areas, and the onsite transmission tower relative to the Los Angeles County Public Work benchmark number 7Y10553. The northing and easting coordinates of the borings were surveyed in accordance with the California State Plane (NAD83) system, with the vertical datum measured in feet above msl (NAVD88 system). The ground surface elevation of each boring was documented on the boring logs, included in Appendix B. A copy of the boring survey data is provided in Appendix C.

3.6 Investigation-derived Waste Disposal

Two 20-cubic yard bins of soil and four 55-gallon drums of decontamination water were generated during the assessment. The soil bins and drums were labeled and temporarily stored onsite pending disposal. The contents of the soil bins are being profiled and will be transported for disposal at an approved disposal facility after profiling is complete. The 55-gallon drums containing decontamination water were removed from the Site on January 29, 2020. Waste disposal manifests of the soil and water waste will be issued under separate cover after the soil bins are transported offsite and disposed. The soil and water waste will be disposed as nonhazardous.

3.7 Quality Assurance/Quality Control

Field and laboratory quality assurance and quality control (QA/QC) procedures were implemented during the assessment activities to ensure the integrity of the collected data. Soil sample collection for quality control included collection duplicate samples collected at a frequency of one for every ten samples collected, and one trip blank and one equipment blank sample for each day of sampling. The duplicate samples were analyzed for the same constituents as primary samples, while the equipment blank samples were analyzed for the same constituents as soil samples collected that day. The trip blank samples were analyzed for VOCs, including BTEX, oxygenates, naphthalene, and ethanol by EPA Method 8260B.

4 FINDINGS

4.1 Field Observations

The soil observed during the drilling operations generally consisted of alternating layers of silty to poorly-graded sand in the upper 15 to 24 feet in borings MW1 through MW4 and silty sand in the upper 5 feet of boring MW5. Lean clay, sandy lean clay, and silt were then encountered beneath the sands to approximately 55 bgs. The clays were observed to be underlain by poorly graded sands, varying from fine to medium grained, to total depths explored. Thin clay lenses were observed in borings MW1, MW3, and MW5 from approximately 75 to 80 feet bgs. Groundwater was not encountered in any of the borings drilled during this assessment.

The PID readings recorded for soil samples collected from MW1 at approximately 10 to 25 feet bgs ranged from 41.6 ppmv (25 feet bgs) to greater than 15,000 ppmv (15 feet bgs), and were low in the remaining soil samples screened from MW1. Strong hydrocarbon odors and staining were observed in soil samples from MW1 at 10 and 15 feet bgs. Slight hydrocarbon odors were observed from MW1 at 20 feet bgs. No hydrocarbon odors or staining were recorded for the remaining soil samples collected from MW1. PID readings above 0.0 ppmv and hydrocarbon odors and staining were not detected or observed for all other soil samples collected from the other borings (MW2 to MW5).

Based on the Site survey for MW1 through MW5 (Appendix B), the ground surface elevations of the borings ranged from 155.62 to 158.19 feet above msl. Given the approximate depth of 155 feet drilled for each boring, the elevations of the bottom of the borings ranged from approximately ½ of a foot to 3 feet above msl.

4.2 Analytical Results

Soil sample analytical results for TPH, VOCs, PAHs, and total lead are provided in Tables 1 through 4. Laboratory results where the analyte concentrations were not detected above laboratory method detection limits (MDL) are identified as “ND.” Analyte concentrations detected above MDLs but below the practical quantitation limits (PQLs) are considered estimated values and are reported with a J-flag identifier.

The distribution of TPH-g and benzene in soil samples are illustrated on Figure 3. Cross sections A-A' and B'B' are illustrated on Figures 4 and 5. Isoconcentration plan-view maps illustrating the highest concentrations of TPH-g and benzene by sample depth (including samples collected from MW1 at 15 and 20 feet bgs) are presented in Figures 6 through 9.

The laboratory analytical reports and chain-of-custody documentation for soil are provided in Appendix D.

4.2.1 Soil Results

Total Petroleum Hydrocarbons

- As presented in Table 1, soil samples collected during this assessment exhibited concentrations of TPH-g ranging from ND to 985 mg/kg. The highest TPH-g concentration was detected in MW1 at 15 feet bgs.
- Low levels of TPH-g were detected in 8 soil samples (MW1 at 10 feet bgs and 20 to 40 feet bgs, and MW5 at 110 feet bgs) ranging from 0.128J mg/kg to 2.19 mg/kg.
- TPH-d was detected in two samples from MW1 at 15 feet bgs and MW4 at 5 feet bgs, at concentrations of 121 mg/kg and 6.60 mg/kg, respectively.
- TPH-o was not detected in any of the tested soil samples.

Volatile Organic Compounds

- As presented in Table 2, soil samples collected during this assessment exhibited concentrations of gasoline-related VOCs including benzene (ND to 396 micrograms per kilogram [µg/kg]), toluene (ND to 5.87J µg/kg), ethylbenzene (ND to 4,480 µg/kg), o-xylene (ND to 3.60J µg/kg) and m,p-xylenes (ND to 1,310 µg/kg), 1,2-dichloroethane (ND to 5.75J µg/kg), and naphthalene (ND to 1,290 µg/kg).
- Benzene was detected at trace J-flagged levels ranging up to 8.63J µg/kg in soil samples collected from MW1 (30 to 45 feet bgs), MW2 (20, and 30 to 40 feet bgs), MW3 (25, 30, and 40 feet bgs), and MW5 (15 to 50 feet bgs).
- Trace concentrations of fuel oxygenated compounds were detected, including MTBE (ND to 2.52J µg/kg), tert-butyl alcohol (TBA [ND to 50.9J µg/kg]), and di-isopropyl ether (DIPE [ND to 2.89J µg/kg]).
- Other detected VOCs included n-butylbenzene (ND to 570 µg/kg), isopropylbenzene (ND to 482J µg/kg), p-isopropyltoluene (ND to 8.33J µg/kg), n-propylbenzene (ND to 1,870 µg/kg), 1,2,4-trimethylbenzene (ND to 5,650 µg/kg), and 1,3,5-trimethylbenzene (ND to 38.5 µg/kg).
- The highest detected concentrations of VOCs, including benzene, ethylbenzene, and naphthalene, were detected in the soil samples collected from boring MW1 at 15 and 20 feet bgs. Predominantly, VOCs were only detected in soil samples collected from the upper 40 to 50 feet in all five borings. All remaining soil samples collected to total depths of 155 feet bgs did not exhibit detectable concentrations of any VOC.

Polyaromatic Hydrocarbons

- As presented in Table 3, trace concentrations of PAHs were detected in MW1 at 15 feet bgs, including benzo(a)pyrene at 0.0295J mg/kg and naphthalene at 2.87 mg/kg. Concentrations of PAHs were not detected in any other soil samples tested during this assessment.

Total Lead

- As presented in Table 4, soil samples collected during this assessment exhibited nominal concentrations of total lead in soil samples collected from borings MW1 through MW4, ranging from ND to 5.51 mg/kg.

5 CONCLUSIONS

The field and sampling activities described herein were conducted in general accordance with the Work Plan and the requirements of the LARWQCB approval letter dated September 17, 2019. Based on field observations and laboratory analytical results of soil samples collected from borings MW1 through MW5, Alta presents the following conclusions:

- Given that benzene and other VOCs were not detected in any of the soil samples collected from 50 feet to155 feet bgs and groundwater was not encountered in any soil borings drilled, petroleum hydrocarbons, including benzene and other VOCs, have not impacted groundwater.
- The TPH-g, TPH-d, and VOC concentrations detected at boring MW1 is suspected to originate from the former USTs removed from the Site.
- As illustrated on Cross Section A-A' (Figure 4), the lateral extent of TPH-g and benzene concentrations west-southwest of MW1 is defined and likely localized to the immediately area of MW1.
- As indicated on Tables 1 and 2 and illustrated on Cross Sections A-A' and B-B' (Figures 4 and 5, respectively), the downward extent of TPH-g, benzene, and other VOC concentrations are defined at depths of 45 and 50 feet bgs, respectively. The extent of TPH and VOCs are limited to the vadose zone and do not extend to the groundwater table (not encountered in any soil boring).
- As indicated on Figures 6 through 9, the lateral extent of TPH-g and benzene concentrations detected in boring MW1 at 15 to 20 feet bgs are defined to the southwest, south, and southeast by the nondetectable to trace levels in borings MW2 through MW4 at the same depths. Although the full extent of TPH-g and benzene concentrations were not fully defined laterally to west, east, and north, based on the findings, the extent of the TPH-g and benzene impacted soils are likely localized in the vicinity of MW1.
- The benzene concentrations in groundwater reported in Lomita Well No. 5 did not originate from the Site.
- The source of the trace J-flagged benzene concentrations detected in MW5 at 15 to 50 feet bgs is not likely from our site as there are no known on-site sources nearby. Specifically, no detectable concentrations of petroleum hydrocarbons were detected in the soil samples from MW5. The benzene concentrations likely originated from an off-site source, which may include the former landfill located adjacent to the subject Site.
- The reported concentrations of lead for all soil samples analyzed during this assessment are considered at background levels. Potential impacts from the former leaded gasoline UST were not observed in the analyzed soil samples.
- During 2018, the groundwater elevations in the wells within the Chandler landfill ranged from 12.53 to 14.74 feet below msl, which based on the surveyed ground surface elevations of borings MW1 through MW5 and total depths of 155 feet bgs, averages approximately 16 feet below the bottom of borings MW1 through MW5.

- The groundwater gradient direction of the uppermost groundwater beneath the Site (not encountered during this assessment) is expected to be to the east. The subject Site is likely downgradient from Lomita Well No. 5 and is not a source of the reported benzene impacts.

The soil analytical results for TPH, VOCs, and PAHs were compared to the screening level criteria described in the State Water Resources Control Board (SWRCB) Low Threat Underground Storage Tank Case Closure Policy (LTCP) for a residential scenario. TPH was compared to a value of 100 mg/kg for TPH-g and TPH-d combined identified in Scenario 2 of the Petroleum Vapor Intrusion to Indoor Air criteria (Unweathered LNAPL in Soil). This criterion applies to a bioattenuation zone that provides a separation of at least 30 feet both laterally and vertically between the contaminants in soil and the foundation of existing or potential buildings. The VOCs (benzene, ethylbenzene, and naphthalene) and PAHs were also compared to the Direct Contact and Outdoor Air Exposure criteria established in Table 1 of the LTCP (Concentrations of Petroleum Constituents in Soil That Will Have No Significant Risk of Adversely Affecting Human Health) for soil between the surface and 10 feet bgs. The following is concluded:

- The combined TPH-g and TPH-d concentrations for all soil samples analyzed during this assessment are below the LTCP criteria of 100 mg/kg (identified in Scenario 2 of the Petroleum Vapor Intrusion to Indoor Air criteria), with the exception of one soil sample collected from MW1 at 15 feet bgs (detected at 1,106 mg/kg TPH-g and TPH-d combined). However, the combined TPH-g and TPH-d in the sample collected at 20 feet from this boring was detected at 1.49 mg/kg, below the 100 mg/kg threshold for TPH-g and TPH-d combined. Despite the exceedance of the sample collected from MW1 at 15 feet bgs, the lateral distance of this sample is greater than 30 feet from the foundation of the nearest enclosed building (note that the service building east of MW1 is not an enclosed structure). Therefore, the Petroleum Vapor Intrusion to Indoor Air criteria of the LTCP has been met.
- The highest concentrations of benzene, ethylbenzene, and naphthalene observed in the soil samples collected from MW1 (at 15 and 20 feet bgs) are below the criteria established in Table 1 of the LTCP. Note that the LTCP criteria used are applicable for contaminants in soil between the surface and 10 feet bgs in a residential setting. Concentrations of benzene, ethylbenzene, and naphthalene at 5 and 10 feet bgs were lower (ND to trace levels) than at 15 to 20 feet bgs. Therefore, the criteria for Direct Contact and Outdoor Air Exposure has been met.
- The benzo(a)pyrene equivalent concentration for sample MW1-15 was calculated at 0.0465, which is below the LTCP criteria of 0.063 mg/kg (residential scenario) stated in Table 1 of the LTCP. The detection of PAHs at low concentrations in sample MW1-15 is not considered significant.
- The TPH and VOC impacts do not extend to the groundwater table, therefore the media-specific criteria for groundwater of the LTCP does not apply.

6 RECOMMENDATIONS

Based on the findings and conclusions presented above, Alta recommends the Site is no longer considered a source of benzene in groundwater and is cleared as potential responsible party to the groundwater contamination detected in Lomita Well No. 5. Also, based on the low-threat closure criteria, we recommend that the Site is closed from regulatory oversight and is issued a no further action determination.

7 ASSUMPTIONS AND LIMITATIONS

This report was prepared for use by the Los Angeles County Department of Public Works, Geotechnical and Materials Engineering Division and the Los Angeles County Sheriff's Department. Use of this report by any other party shall be at the risk of such party.

The information, conclusions and recommendations described in this report apply to conditions existing at certain locations when services were performed and are intended only for the specific purposes, locations, time frames and project parameters indicated. Alta Environmental cannot be responsible for the impact of any changes in environmental standards, practices or regulations after performance of services.

In performing our professional services, we have applied present engineering and scientific judgment and used a level of effort consistent with the current standard of practice for similar types of studies.

As applicable, Alta Environmental has relied in good faith upon representations and information furnished by individuals with respect to operations and existing Site conditions, to the extent that they have not been contradicted by data obtained from other sources. Accordingly, Alta Environmental accepts no responsibility for any deficiencies, omissions, misrepresentations, or fraudulent acts of persons interviewed.

Alta Environmental will not accept any liability for loss, injury claim, or damage arising directly or indirectly from any use or reliance on this report. Alta Environmental makes no warranty, expressed or implied.

This report is issued with the understanding that the client, the Site owner, or its representative is responsible for ensuring that the information, conclusions, and recommendations contained herein are brought to the attention of the appropriate regulatory agencies, as required.

8 REFERENCES

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Appendix A
LACDPH Permit

Appendix B
Boring Logs

Appendix C
Site Survey Data

Appendix D

Laboratory Analytical Reports and Chain-of-Custody Documentation