EAST BAY ASIAN LOCAL DEVELOPMENT CORPORATION
BUILDING HEALTHY AND VIBRANT NEIGHBORHOODS SINCE 1975

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By Alameda County Environmental Health 10:15 am, Jul 23, 2015

July 16, 2015

Karel Detterman, P.G.
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502
Karel.detterman@acgov.org

RE: Work Plan, Additional Subsurface Investigation, Properties at 760 22nd Street and 2201 Brush Street, Oakland, California 94612

Dear Alameda County Environmental Health:

Please find attached for your review the following document:

- Addendum to Work Plan for Additional Subsurface Investigation, Properties at 760 22nd Street and 2201 Brush Street, Oakland, California 94612. (ACEH Document No. RO3153_SCM_WP_ADDEN_R_2015-07-15)

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

Please call Everett Cleveland Jr., Senior Project Manager at (510) 287-5353 ext. 339 if you have any questions.

Yours Truly,

Everett Cleveland Jr.
Senior Project Manager

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July 15, 2015

Ms. Karel Detterman, P. G.
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: Addendum to Work Plan for Additional Subsurface Investigation, Properties at 760 22nd Street and 2201 Brush Street, Oakland, California 94612.
Fuel Leak Case No. RO0003153
GeoTracker Global ID T10000006348

Ms. Detterman:

In a July 1, 2015 letter to East Bay Asian Local Development Corporation (EBALDC), Alameda County Environmental Health (ACEH) has requested that EBALDC submit an addendum to Essel Environmental Consulting's (Essel's) April 8, 2015 work plan for additional subsurface investigation (work plan) at the properties located at 760 22nd Street and 2201 Brush Street in Oakland, California. The ACEH requested that the addendum address data gaps discussed at a June 26, 2015 meeting between ACEH, EBALDC, and Essel and include a focused Site Conceptual Model and data gaps summary in table format. Attached are Tables 3 and 4 and Plate 5 (Addendum), which are presented to supplement Essel's April 8, 2015 work plan for additional subsurface investigation. Table 3 presents descriptions of the elements of the Site Conceptual Model including data gaps and Table 4 presents the proposed work that will be performed to address the data gaps with the goal of meeting the screening criteria of the State Water Resources Control Board's Low Threat Underground Storage Tank Closure Policy. Plate 5 (Addendum) is a revision of Plate 5 in the April 8, 2015 work plan that shows the locations of additional data points to address some of the data gaps.

Seven direct-push borings for soil and ground-water sampling and analysis and two soil vapor probes were proposed in the April 8 work plan. This addendum proposes an additional five soil borings (for a total of 12 borings) to be advanced on-site for soil and ground-water sampling and analysis. This addendum also proposes two off-site borings to be advanced downgradient of the site for soil and ground-water sampling and analysis. These borings are proposed as a contingency in the event on-site investigation does not sufficiently delineate the extent of potential contaminants in the ground water. Following is a discussion of the additional proposed tasks to address the technical comments provided in ACEH's July 1, 2015 letter.

1. Site Development Plans

Essel understands that EBALDC has or will provide currently available architectural plans to ACEH. Plate 5 (Addendum) presents the locations of the current site building, former underground storage tanks (USTs), dispenser island, and previous on-site borings advanced at the site, and the locations of the 12 borings and two soil vapor probes proposed for on-site investigation and two borings proposed for contingent off-site investigation.

The proposed development will be a multi-story residential structure that will include four ground floor stairwells, three elevators, and two puzzle-lift parking structures. Plans developed by EBALDC indicate that the puzzle-lift structures will extend to an approximate depth of 8 feet below the ground surface. These plans

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do not show any belowground portions of the stairwells or elevator shafts or any other belowground structures. Plate 5 (Addendum) presents the future residential building footprint, which will cover the entire area of the two properties, puzzle lifts, stairwells, and elevators relative to historic and current facilities and to previous and proposed boring locations.

2. LTCP General Criteria b (Unauthorized Release Consists Only of Petroleum)

The ACEH has requested that the proposed work include investigation for potential waste oil discharge and that laboratory analyses of soil and ground-water samples include total petroleum hydrocarbons as gasoline (TPHg), as diesel (TPHd), as motor oil (TPHmo), benzene, toluene, ethylbenzene, total xylenes (BTEX), methyl tertiary butyl ether (MTBE), fuel oxygenates, naphthalene, chlorinated hydrocarbons, and polycyclic aromatic hydrocarbons (PAHs).

Essel's April 8, 2015 proposed to analyze soil and ground water samples for TPHg, TPHd, TPHmo, and aromatic and chlorinated hydrocarbons using United States Environmental Protection Agency (USEPA) Method 8260B. Method 8260B includes BTEX, MTBE, fuel oxygenates, naphthalene, and the chlorinated hydrocarbons. Select soil and ground water samples will, in addition, be analyzed for PAHs using USEPA 8270C-selected ion monitoring (SIM). Data gap Items 4, 5, and 6 in Tables 3 and 4 address the previously proposed and newly proposed laboratory analytical protocol.

Data gap item No. 4 addresses work to identify potential impact from PAHs. The former vehicle oil change building is the most likely area where impact from waste oil discharge might have taken place. One soil boring will be advanced in this building (Plate 5 Addendum) and two soil samples and one grab ground-water sample will be analyzed for PAHs. In addition, two soil samples and one ground-water sample from three borings advanced in the areas of the former gasoline and diesel USTs and dispenser island will be analyzed for PAHs; and one ground-water sample from three of the five borings proposed to be advanced at the downgradient (western) edge of the property will be analyzed for PAHs.

3. General Criteria f – Secondary Source Has Been removed to the Extent Practicable

The ACEH has requested that additional investigation be performed to assess the potential for secondary source material to still be present at the off-site location of the former gasoline UST. Essel proposes to advance two slant borings to ground water into the northern and southern ends of the former gasoline UST excavation (Plate 5 Addendum). Two soil and one ground-water sample will be collected from each boring for analysis for TPHg, TPHd, TPHmo, and USEPA 8260B analytes. Item 3 in Tables 3 and 4 addresses this data gap. Two soil samples from a slant borings will be collected from the 0- to 5- and 5- to 10-foot-depth intervals. These samples will be submitted for analysis of the above-described analytes and for PAHs to evaluate direct contact and outdoor air inhalation impacts as addressed by Item 8 of Tables 3 and 4.

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4. LTCP Media Specific for Groundwater

The ACEH requested that additional boring locations be proposed to provide better delineation of on-site ground-water impact. The ACEH also requested that a contingency be proposed for off-site borings to assess the extent of impacted ground water in the event on-site investigation does not sufficiently delineate plume extent. Additional on-site ground-water data points will include the two above-described slant borings proposed to investigate potential source material in the former gasoline UST excavation (Data Gap Item 3), the additional boring to be advanced in the vehicle oil change building (Data Gap Item 4), and two additional borings proposed to be advanced at the western edge of the site, as shown on Plate 5 (Addendum). A total of 12 ground-water samples will be collected for laboratory analyses for TPHg, TPHd, TPHmo, and USEPA 8260B analytes. A total of seven water samples will be analyzed for PAHs. Item 6 (with reference to Item 4) in Tables 3 and 4 addresses delineation of the extent of the on-site ground-water plume.

To additional soil borings are proposed to be advance along West Grand Avenue and 22nd Street at locations that are approximately 40 feet to the northwest of the Site. The need for these borings will be contingent on the analytical data collected in on-site borings. These two borings will be advanced and ground water will be sampled and analyzed for TPHg, TPHd, TPHmo, and the USEPA 8260B analytes if on-site data do not adequately define the plume extent.

5. LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air

The ACEH has requested an evaluation of the potential impacts from vapor intrusion in the secondary source material areas. Assessment of potential vapor intrusion risk can be performed through soil and ground-water sampling and analysis or by direct measurement of potential contaminants in soil gas. The ACEH indicates that if direct measurement of soil gas is proposed, permanent vapor wells must be installed and sampled according to applicable guidance of the California Department of Toxic Substances Control.

In the April 8, 2015 work plan, Essel proposed to install two temporary soil vapor probes at the locations of the former diesel UST excavation and dispenser island (secondary source areas) and sample soil vapor for TPHg and the USEPA 8260B analytes using USEPA Methods TO-3 and TO-15, respectively. In this addendum, Essel proposes to install the vapor probes as permanent vapor wells to be available for sampling soil vapor. Sampling of the vapor wells will be contingent upon the analytical results of soil and ground-water samples collected in the secondary source material areas. These data may either meet the Low Threat Closure Policy criteria or may show that no bioattenuation zone is present, thereby negating the need or usefulness of sampling soil vapor. Item 7 in Tables 3 and 4 addresses the vapor intrusion to indoor air data gap.

6. LTCP Media Specific Criteria for Direct Contact and Outdoor Air Criteria

The ACEH indicates that analytical data for indicator contaminants for which an evaluation of direct soil contact or inhalation of outdoor air has not been generated. Essel proposes to collect soil samples within the 0- to 5- and 5- to 10-foot-depth intervals at three borings advanced at the former diesel and gasoline UST excavations and the dispenser island, and the boring advanced inside the vehicle oil change building. These soil samples will be analyzed for the above-described total petroleum hydrocarbon and USEPA 8260B analytes and for PAHs to identify potential concentrations of benzene, naphthalene, and the carcinogenic

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PAHs for comparison to applicable criteria. Item 8 in Tables 3 and 4 addresses the direct contact and outdoor air criteria.

7. Focused Site Conceptual Model and Data Gap Investigation Work Plan Addendum

The ACEH has requested that EBALDC prepare this work plan addendum and a focused Site Conceptual Model, the latter of which is attached as Table 3.

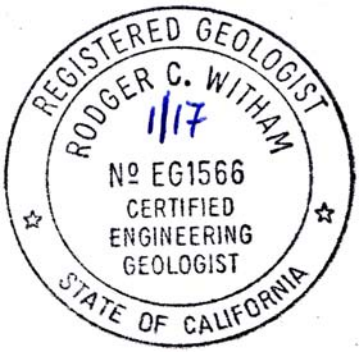
8. Other Potential Data Gaps

Items 1 and 2 in attached Tables 3 and 4 identify the absence of information on nearby water-supply wells and on whether or not free-phase petroleum product is present at the site, respectively. Essel proposes to request available records of wells that are within ¼-mile of the site from the Alameda County Public Works Agency and the California Department of Water Resources to identify potential sensitive receptor water-supply wells. Essel will check for the presence of free-phase product on the ground water in each of the direct-push borings advanced at the site using an oil/water interface probe or clear plastic bailers.

Please call if you have any questions.

Sincerely,

ESSEL ENVIRONMENTAL CONSULTING



Rodger C. Witham
Senior Geologist

Nik Lahiri
Principal

Attachments: Table 3: Site Conceptual Model
Table 4: Data Gaps Summary and Proposed Investigation
Plate 5 (Addendum): Proposed Boring and Soil Vapor Locations

Table 3
Site Conceptual Model

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Regional	The Site is located on the East Bay Plain, which consists of a series of alluvial fans and dune sands that were deposited on a westward sloping bedrock surface. This bedrock is presumed to consist of rocks of the Jurassic to Cretaceous-age Franciscan complex. The alluvial fan and dune sand deposits that overlie the Franciscan complex rocks are Pleistocene to Holocene in age and, from oldest to youngest, include the Santa Clara, Alameda, and Temescal Formations. The early Pleistocene-age Santa Clara Formation contains semi-consolidated units of conglomerate, sandstone, siltstone, and claystone. The Alameda Formation, of Pleistocene to Holocene age, comprises lower unnamed units and several upper members that include the Yerba Buena mud (black, organic-rich clay); a sequence of alluvial fan and eolian deposits (sand, gravel, silt) referred to as the San Antonio/Merritt/Posey member, and the Young Bay mud (black, organic-rich clay). The Temescal Formation is early Holocene in age and is an alluvial deposit consisting of silt and clay. The total thickness of these Pleistocene to Holocene sediments in the general area is reported to range from 450 to 500 feet (California Regional Water Quality Control Board, San Francisco Bay Region [RWQCB], 1999). The RWQCB considers regional shallow ground-water-bearing units to be those that are above the Yerba Buena mud (i.e., San Antonio, Merritt, and Posey members of the Alameda Formation; Temescal Formation) and deeper regional ground water to be below the Yerba Buena mud (i.e., lower unnamed units of the Alameda Formation; Santa Clara Formation). The direction of ground-water flow in the area of the Site varies, but is generally westward, consistent with the surface topographic slope.	None	NA

Table 3
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Site	Graymer (2000) shows surface sediments on the Site and to the south to be the Merritt sand, which is a fine-grained, very well sorted, well-drained eolian deposit, and surface sediments on adjacent West Grand Avenue and areas to the north to be Holocene-age alluvial fan and fluvial deposits, which are equivalent to the Temescal Formation. PES Environmental, Inc. (PES, 2005; 2011) describes the sediments encountered in borings drilled at the Site as: • 0 to 8 feet - black to dark greenish gray clay, sandy clay, silt • 8 to 12 feet - dark greenish gray to brown sand, clayey sand • 12 to 16 feet - dark greenish-gray to brown clay PES encountered ground water in borings at the Site in 2005 at 12 to 13 feet below the ground surface. Green Star Environmental (2011) reported that depth to ground water at the Oakland Bus Terminal, located approximately 600 feet southeast and upgradient of the Site to vary from 12 to 22 feet below the ground surface, with the direction of ground-water flow varying from west-southwest to northwest. Broadbent & Associates, Inc. (2014) reports depth to ground water at an ARCO gasoline service station located approximately 900 feet west-northwest and downgradient from the site to range from 9 to 12 feet below the ground surface, with a direction of ground-water flow approximately toward the northwest. Ground-water flow beneath the Site is inferred to be between west and northwest.	None	NA
Surface Water Bodies		Lake Merritt is located approximately 3,900 feet east-southeast and Oakland Inner Harbor is located approximately 6,700 feet south of the Site.	None	NA

Table 3
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Nearby Wells		The State Water Resources Control Board's GeoTracker GAMA website provides the locations of ground-water-monitoring and ground-water-supply wells. The GAMA website shows that no ground-water-supply wells are located within ¼-mile (1,320 feet) of the Site. Three groups of environmental monitoring wells, related to leaking underground storage tank properties, are located at distances of 600 feet south-southwest, 900 feet west-northwest, and 1,350 feet south of the Site.	1. Confirmation of GAMA data through well records search at applicable state and local agencies.	See data gaps table. Well records search.
Release Source and Volume		The release sources include: • One 7,000-gallon diesel underground storage tank (UST) formerly located in the northeastern corner of the Site; • A fuel dispenser island located in the east-central portion of the Site; and • One 2,000-gallon gasoline UST formerly located off-Site beneath the sidewalk adjacent to the diesel UST. The two USTs were removed in October 1986. No description of the conditions of the tanks or observations of the tank excavations is available. The volume of the release is not known.	None	NA
LNAPL		Grab ground-water samples were collected from four borings in 2005. No mention of the presence or absence of light non-aqueous phase liquids was made in the investigation report. No gasoline constituents were detected in ground-water samples, except trace (less than 1 microgram per liter [ug/L]) methyl tertiary butyl ether (MTBE). Gasoline LNAPL is not expected. Total petroleum hydrocarbons as diesel (TPHd) was found in one boring at 3,200 ug/L. The significantly lower solubility of diesel (1,000 to 6,000 ug/L) may suggest localized diesel LNAPL in the vicinity of the former diesel UST. This LNAPL is not suspected to be migrating.	2. The presence of LNAPL has not been confirmed.	Grab ground-water samples will be checked for the presence of LNAPL before collecting ground-water samples.

Table 3
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Source Removal Activities		Primary sources: The USTs were removed in October 1986. Secondary sources: Information on the disposition of petroleum hydrocarbon-impacted soil removed from the former diesel and gasoline UST excavation(s) or material used to backfill the excavation(s) is not available. Potential diesel-contaminated source material was identified in 1986 at 12 and 13 feet below grade at the northern end of the diesel UST excavation. A boring (B-2) advanced by PES in 2005 in the former diesel UST pit found no detectable TPH fractions (gasoline, diesel, motor oil) in soil at 7 feet and a low level (1.5 milligrams per kilogram) of TPHd only in soil at 12 feet. Soil encountered was reported to be clay from 0 to 10 feet and sand from 10 to 12 feet below the ground surface. Investigation of the backfill materials in the off-Site gasoline UST pit has not been performed.	3. Potential secondary source at the former gasoline UST excavation has not been investigated.	Three vertical and two slant soil borings will be advanced in the former diesel and gasoline UST pits and near the dispenser (three source areas). Analysis of soil and ground-water samples for potential contaminants.
Contaminants of Concern		Historical records indicate diesel and gasoline USTs were present at and adjacent to the Site and that the present-day Site building was used for vehicle oil changes. The results of subsurface investigations performed by PES in 2005 and 2011 found relatively localized concentrations of TPHg and TPHd in soil at concentrations greater than applicable environmental screening levels (ESLs) and TPHd and TPHmo in ground water at concentrations greater than applicable environmental screening levels. Soil and ground-water samples were analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), and MTBE and none was detected above laboratory reporting limits, except 0.61-ug/L MTBE in one water sample. Other potential petroleum fuel constituents and additives, such as naphthalene and the fuel oxygenates and potential waste petroleum oil constituents and associated chemicals, such as polynuclear aromatic hydrocarbons (PAHs) and chlorinated volatile organic compounds (VOCs) have not been investigated.	4. Data on naphthalene, fuel oxygenates, and VOCs in soil and ground water site wide, in soil gas near the source areas, and on PAHs in soil and ground water at and near the former vehicle oil change building are lacking.	Analyze soil, soil gas, and ground-water samples for TPHg, TPHd, and TPHmo (USEPA Method 8015); and BTEX, fuel oxygenates, naphthalene and other volatile organic compounds (USEPA Method 8260B), as applicable. Advance a boring in the oil-change building and analyzed two soil and one water

Table 3
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
				sample from this boring and two water samples in downgradient borings for PAHs (EPA 8270 selected ion monitoring [SIM]).
Petroleum Hydrocarbons in Soil		The results of subsurface investigations performed by PES in 2005 and 2011 found relatively localized concentrations of TPHg and TPHd in soil at levels greater than applicable environmental screening levels (ESLs). TPHg: Detectable levels of TPHg were found in the two soil samples collected from the gasoline UST pit in 1986 and in three of 25 soil samples collected from borings. Concentrations of TPHg at the bottom of the gasoline UST excavation were 70 and 1.8 mg/kg in 1986, which are less than the current residential ESL for TPHg. Soil collected at a depth of 8 feet below the ground surface in boring B-4, advanced next to the dispenser island, was the only sample containing TPHg at a concentration greater than the applicable ESL. Data from boring B-4 and adjacent boring SB1 constrain the vertical extent of the TPHg to an interval between 4 and 10 feet below the ground surface. The lateral extent of relatively elevated levels of TPHg is likely restricted to an area within a radius of 10 feet from the dispenser as defined by no detectable TPHg at 2, 4, and 8 feet below grade in nearby borings SB2, SB3, and SB4. TPHd: Concentrations of 250 and 220 milligrams per kilogram (mg/kg) TPHd were found in 1986 at the northern end of the on-site 7,000-gallon diesel UST at respective depths of 12 and 13 feet below the ground surface and 80 mg/kg TPHd was detected at 12	5. Vertical and lateral extent of TPHd at the northern end of the former diesel UST are not defined. Presence of PAHs in soil at the vehicle oil change building is not known. Presence and distribution of naphthalene, oxygenates, and VOCs in soil is not known.	Twelve on-site soil borings to be advanced in the former tank and dispenser areas, the former vehicle oil change building, and at crossgradient and downgradient locations to sample and analyze soil for applicable contaminants of concern (Item 4 above).

Table 3
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
		feet below grade beneath the southern end of the former UST. A concentration of 230 ppm TPHd, associated with the elevated TPHg, was also detected in the soil sample collected at the 8-foot depth in boring B-4, advanced next to the former fuel dispenser. This concentration dropped to 23 ppm at the 12-foot depth in boring B-4. At the northern end of the former diesel UST, TPHd-impacted soil appears to be vertically restricted to a depth of 12 feet (the bottom of the former UST) and greater. The maximum depth of elevated impact is not known, but is likely within the zone of ground-water fluctuation (smear zone), which may be up to approximately 4 feet thick. The lateral extent is also inferred to be relatively localized (within 10 to 15 feet of the former UST) as soil analyzed from nearby borings B-2 and SB6 contained TPHd at a maximum concentration of 12 ppm. At the location of the fuel dispenser, the vertical and lateral extent of TPHd is likely approximately the same as for TPHg; that is, constrained within a vertical interval between 4 and 10 feet below the ground surface and within a lateral distance of a 10-foot radius of the dispenser. TPHmo: TPHmo has not been detected in soil samples, including two samples collected from boring B-5, advanced in the former oil changing building. Individual Constituents: No BTEX has been detected in 25 soil samples and no MTBE has been detected in eight soil samples. Soil samples have not been analyzed for naphthalene, fuel oxygenates, PAHs, or chlorinated volatile organic compounds (VOCs).		

Table 3
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Petroleum Hydrocarbons in Groundwater		PES sampled ground water from borings B-1, B-2, B-5, and B-6 in 2005 and concentrations of TPHd and TPHmo were greater than current applicable ESLs. No TPHg or BTEX was detected in water samples and trace MTBE (0.61 ug/L) was found in one grab ground-water sample. Both TPHd and TPHmo were present across the site and, possibly may have migrated off-site to the northwest.	6. Current on-site distribution of potential contaminants of concern in ground water is not defined. Potential off-site migration has not been assessed.	Twelve on-site soil borings to be advanced in the former tank and dispenser areas, the former vehicle oil change building, and at crossgradient and downgradient locations to sample and analyze ground water for applicable contaminants (see Item 4). Two off-site downgradient borings might be advanced to assess plume dimensions.
Vapor Intrusion to Indoor Air		No investigations of subsurface vapor concentrations have been performed.	7. Potential vapor intrusion risk is not known.	Install two vapor-monitoring wells near the former source areas and sample soil gas, as needed.
Direct Contact and Outdoor Air		Soil samples collected within the 0- to 5-foot and 5- to 10-foot depth intervals have been analyzed for benzene. Benzene was not detected in 25 soil samples at a laboratory-reporting limit of 0.005	8. Risk for direct contact and outdoor air is not	Collect soil samples within the 0- to 5- and 5- to

Table 3
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
		mg/kg. Soil samples collected near the source areas have not been analyzed for naphthalene and samples collected at the vehicle oil change building have not been analyzed for PAHs.	known for indicator constituents naphthalene and PAHs.	10-foot-depth intervals at applicable borings for analysis for naphthalene and PAHs.
Risk Evaluation		Essel (2014) evaluated risk at the site with respect to a future residential use. The risk assessment found that potential exposed populations would include on-site future construction workers, future residents, and future visitors; and off-site current and future office workers and residents at adjacent properties. Complete exposure pathways were identified to be direct contact with soil (absorption, ingestion) by construction workers, inhalation of volatile gasoline compounds (from soil) by construction workers and residents, and direct contact (absorption and ingestion) with ground water by construction workers. Other exposure pathways, including ingestion of ground water, were found to be incomplete. Ground water that is impacted by petroleum contaminants at the site is not used. Health hazard (non-cancer) risk was calculated for potential exposed populations, using applicable reference doses from the literature, default ingestion/inhalation rates from the United States Environmental Protection Agency, and the maximum historic concentrations detected in soil and ground water at the site. The results show that no health hazard is present for a future child resident (most sensitive receptor) or a future construction worker for the applicable exposure pathways. Potential cancer risk was not calculated because laboratory data were not available for carcinogenic indicator compounds.		

Table 4
Data Gaps Summary and Proposed Investigation

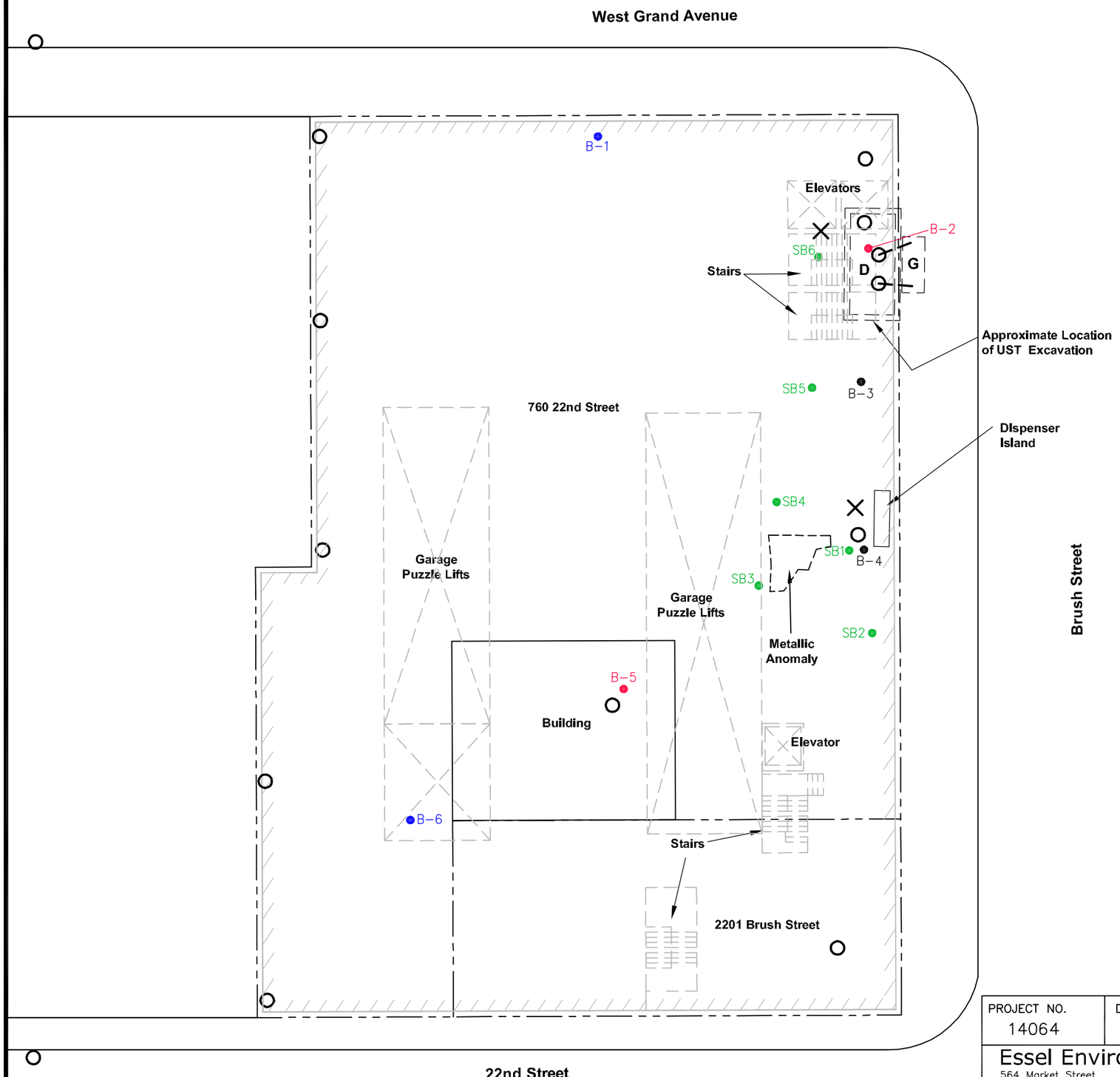
Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
1	1. Confirm presence or absence of water-supply wells (sensitive receptors) within ¼-mile of the site.	Request available well records from Alameda County Public Works Agency and California Department of Water Resources.	Confirm presence, absence, and status of water-supply wells that might potentially be affected by site contaminants.	None.
2	2. The presence of LNAPL has not been confirmed.	Ten soil borings will be advanced into the ground water (15 to 20 feet below grade) and ground water will be checked for free-phase petroleum product using an oil-water interface probe and/or bailers.	NA	NA
3	3. Potential secondary source at the former gasoline UST excavation has not been investigated.	Two vertical soil borings have been proposed to investigate source material at the northern end of the former diesel UST excavation and one vertical boring has been proposed to investigate source material at the dispenser. Propose to advance two slant borings beneath the sidewalk at the former location of the former gasoline UST excavation. Borings will be advanced to ground water at the northern and southern ends of the former excavation. Two soil samples and one ground-water sample will be collected from each boring for laboratory analysis.	Assess whether hydrocarbon-impacted soil was either left in place or placed back into the excavation after gasoline UST removal.	TPHg, TPHd, TPHmo, and VOCs by USEPA 8260B (includes BTEX, MTBE, oxygenates, naphthalene, and chlorinated hydrocarbons)

Table 4
Data Gaps Summary and Proposed Investigation (Continued)

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
4	4. Data on naphthalene, fuel oxygenates, and VOCs in soil and ground water site wide, and on PAHs in soil and ground water at and near the former vehicle oil change building are lacking.	Seven previously proposed and five newly proposed borings will be advanced on-site. One of the 12 borings will be advanced in the oil-change building and two soil and one water sample from this boring will be analyzed for PAHs (USEPA 8270C selected ion monitoring [SIM]) in addition to previously mentioned analytes. Analyze two soil and one water sample from three source material borings for PAHs; analyze one water sample from three downgradient borings (western edge of site) for PAHs.	Additional borings and analyses will provide data on the presence and distribution of previously untested fuel constituents. An oil-changing pit located in the oil-changing building is the likely place for discharges of waste oil. The remaining portion of the site is paved with concrete. Proposed numbers of samples for analysis for PAHs should provide sufficient characterization.	Analyze from one to three soil samples and one ground-water sample per boring for TPHg, TPHd, and TPHmo (USEPA Method 8015); and BTEX, fuel oxygenates, naphthalene and other volatile organic compounds (USEPA Method 8260B). Analyze select soil and water samples, described at left, for PAHs (8270C SIM)
5	5. Vertical and lateral extent of TPHd in soil at the northern end of the former diesel UST is not defined. Presence of PAHs in soil at the vehicle oil change building is not known. Presence and distribution of naphthalene, oxygenates, and VOCs in soil is not known.	Seven previously proposed and five newly proposed borings will be advanced on-site as described in Item 4.	See Item 4	See Item 4. Two soil samples from three source material borings and the oil change building boring will be analyzed for PAHs.
6	6. Current magnitude and extent of potential	Seven previously proposed and five newly proposed borings will be	See Item 4	See Item 4. Water samples collected from three source

Table 4
Data Gaps Summary and Proposed Investigation (Continued)

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
	contaminants of concern in ground water are not defined. Potential off-site migration has not been assessed.	advanced on-site as described in Item 4. Two borings, as needed, to be advanced on West Grand Avenue and 22nd Street 40 feet downgradient of the site at assess plume extent.		material borings, the oil change building boring, and three downgradient borings to be analyzed for PAHs. Off-site water samples to be analyzed for TPHg, TPHd, TPHmo, and USEPA Method 8260B.
7	7. Potential vapor intrusion risk is not known.	Two permanent vapor wells are proposed to be installed near the diesel UST excavation and the dispenser island for possible soil vapor sampling. Each well will be installed to a minimum depth of 7 feet below the ground surface and sampled following applicable Department of Toxic Substances Control soil gas advisory and vapor intrusion guidance.	The soil vapor wells will be sampled as a contingency measure if concentrations of indicator contaminants of concern do not meet other applicable criteria of the low threat closure policy or show a bioattenuation zone is not present.	TPHg using USEPA Method TO-3, VOCs (including naphthalene and BTEX), using USEPA Method TO-15; oxygen, carbon dioxide, methane using ASTM Method D-1946
8	8. Risk for direct contact and outdoor air is not known for indicator constituents naphthalene and PAHs.	Collect soil samples from 0- to 5- and 5- to 10-foot-depth intervals in three source area borings and the boring advanced in the vehicle oil change building.	The former UST, dispenser, and vehicle oil changing areas likely areas of are of potential risk for direct soil contact and inhalation exposure to naphthalene and PAHs.	Naphthalene using USEPA Method 8260B and PAHs using USEPA Method 8270C-SIM.



EXPLANATION

- APPROXIMATE PROPERTY BOUNDARY
- SOIL BORING LOCATION (2005)
- SOIL/GROUND-WATER BORING LOCATION (2005)
- GROUND-WATER BORING LOCATION (2005)
- SOIL BORING LOCATION (2011)
- FORMER UNDERGROUND STORAGE TANK
- D DIESEL
- G GASOLINE
- PROPOSED BORING LOCATION
- PROPOSED SLANT BORING LOCATION
- PROPOSED SOIL VAPOR LOCATION
- PROPOSED BUILDING FOOTPRINT

NOTES: BORING LOCATIONS FROM PES ENVIRONNMENTAL, INC. (2005, 2011)

UNDERGROUND STORAGE TANK LOCATIONS FROM HAGEMAN-SCHANK, INC. (1987)

PUZZLE LIFT EXCAVATIONS TO BE 8 FEET BELOW GRADE.

N

Approximate Scale

0 20 40

feet

PROJECT NO.	DRAWN BY	REPORT DATE
14064	EC	July 2015

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Proposed Boring and Soil Vapor Locations
760 22nd Street and
2201 Brush Street
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PLATE 5 (ADDENDUM)