**Holliday Development**
**1201 Pine Street, Suite 151 – Oakland, CA 94607**

September 30, 2016



Mr. Mark Detterman, P.G.
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: *Revised Site Investigation Work Plan*, 5th Street and Magnolia Street, West Oakland, California (Case No.: RO0003194).

Dear Mr. Detterman:

Please find attached the *Revised Site Investigation Work Plan* prepared by West Environmental Services & Technology, Inc. (WEST) for the 5th Street and Magnolia Street property in West Oakland, California (the "Site"). 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 me at 510-588-5152 if you have any questions or wish to discuss this further.

Sincerely,

Kevin Brown
Holliday Development

**REVISED**
**SITE INVESTIGATION WORK PLAN**
**5TH Street and Magnolia Street**
**West Oakland, California**

**September 2016**

*Prepared for*

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## SIGNATURE PAGE

All information, conclusions and recommendations contained in this report have been prepared under the supervision of the undersigned professional(s).

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# 1.0 INTRODUCTION

This *Revised Site Investigation Work Plan* ("*Revised Work Plan*") has been prepared by West Environmental Services & Technology, Inc., (WEST) and presents a scope of work to further characterize the presence of metals in soil at 5th Street and Magnolia Street property located in West Oakland, California ("Site;" Figure 1-1). This *Revised Work Plan* incorporates the Alameda County Environmental Health's (ACEH) comments on the April 2016 *Site Investigation Work Plan* (Appendix A) and includes: a description of the Site background and setting; summary of previous investigations; data evaluation and comparative analysis; and a scope of work to conduct additional investigations. The *Revised Work Plan* was prepared in accordance with regulatory guidance documents including the State Water Resources Control Board (SWRCB) *Resolution 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code 13304* (SWRCB, 1996).

## 1.1 BACKGROUND

The approximately 0.5-acre Site is an undeveloped asphalt paved lot bounded by: 5th Street to the south; Union Street to the west; commercial businesses to the north; and Magnolia Street to the east; and is located within a commercial zone. The Site was formerly part of the California Department of Transportation's (Caltrans) Interstate 880 (Cypress Freeway) right-of-way that was demolished following the 1989 Loma Prieta earthquake. As part of the demolition, the freeway support columns were demolished to approximately three-feet below ground surface. In August 2015, Caltrans auctioned the Site for redevelopment.

Neighboring commercial businesses include automobile repair and service operations. Releases to soil and groundwater occurred on the adjacent commercial properties (1225 7th Street and 1211 7th Street) from underground storage tanks (USTs) containing petroleum products. In June 1997, the releases from the USTs at 1225 7th Street were closed by the Alameda County Health Care Services Agency (ACHCSA, 1997). Investigations of the UST releases at 1211 7th Street are currently ongoing.

In September 2015, an investigation was conducted to characterize the Site environmental conditions and potential impacts from the UST releases on the adjacent properties. Eight borings (W-1 to W-8) were advanced for the collection of soil, soil gas and groundwater samples. Laboratory analysis of the soil samples revealed the presence of polycyclic aromatic hydrocarbons (PAHs) including benzo(a)pyrene up to 119 micrograms per kilogram (µg/kg). Organochlorine pesticides were also detected in the soil samples including chlordane up to 18.4 µg/kg and 4,4-DDE up to 7.54 µg/kg. Metals were detected in the soil samples including arsenic up to 7.21 milligrams per kilogram (mg/kg) and lead up to 2,180 mg/kg.

Volatile organic compounds (VOCs) were detected in the soil gas samples collected from borings W-1, W-2, W-4 and W-7 including: tetrachloroethene (PCE) up to 352 micrograms per cubic meter (µg/$m^3$) and benzene up to 9.14 µg/$m^3$. Laboratory analysis of the groundwater samples did not reveal total petroleum hydrocarbons (TPH) as gasoline (TPHg) or VOCs above the laboratory-reporting limits, except for PCE up to 0.850 micrograms per liter (µg/l).

The Site is proposed for a multi-story mixed commercial/multi-family residential building. Based on the findings of the September 2015 investigations, additional sampling will be conducted to further characterize the presence of metals in soil that will be excavated as part of the development foundation work. This *Revised Work Plan* presents the scope of work to conduct additional sampling at the Site.

# 2.0 SITE DESCRIPTION

The approximately 0.5-acre Site is an undeveloped asphalt paved lot located within a commercial zone and bounded by: 5th Street to the south; Union Street to the west; commercial businesses to the north; and Magnolia Street to the east (Figure 2-1). As part of the demolition, the freeway support columns were demolished to approximately three-feet below ground surface. In August 2015, Caltrans auctioned the Site for redevelopment.

## 2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

The geology encountered in borings at the Site is comprised of fill and unconsolidated sands, silty sands and clay sands of the Merritt Formation. The fill material is approximately three-feet thick and comprised of sands and gravels with brick and concrete debris. Unconsolidated sands, silty sands and clayey sands of the Merritt Formation were encountered beneath the fill material to approximately 16-feet below ground surface (WEST, 2015).

Groundwater was encountered in the borings advanced at the Site between approximately 10-feet and 12-feet below ground surface. The groundwater flow direction measured at nearby sites is to the west-southwest (AEC, 1995).

## 2.2 SURFACE WATER

The San Francisco Bay is located approximately 500-feet west of the Site.

## 2.3 HISTORICAL SITE USE

The Site was formerly part of the Caltrans Interstate 880 (Cypress Freeway) right-of-way that was demolished following the 1989 Loma Prieta earthquake. Following freeway demolition, the Site was paved and fenced for use as a parking and equipment storage lot.

## 2.4 CURRENT USES OF ADJOINING PROPERTIES

Two adjoining properties to the north (1211 and 1225 7th Street) have been used for automobile repair and service operations. Releases of petroleum products from USTs have occurred at 1211 and 1225 7th Street. The UST release at 1225 7th Street (Zentrum Motors) impacted soil and occurred from a 10,000-gallon gasoline UST that was removed in 1992. In 1997, the ACHCSA closed the UST release at 1225 7th Street (ACHCSA, 1997).

The release at 1211 7th Street (Former Everidge Service Co.) impacted soil and groundwater and occurred from three 4,000-gallon gasoline USTs and one 250-gallon waste oil UST. The four USTs were installed in the 1960s (AEC, 1995). In 1992, the four USTs were removed. Between 1992 and 1995, investigations were conducted at 1211 7th Street to characterize the UST releases. In September 2015, the California Regional Water Quality Control Board – San Francisco Bay Region (Regional Water Board) approved a work plan to address data gaps at 1211 7th Street including: membrane interface probe (MIP); soil and groundwater sampling; preferential pathway study; monitoring well installation; and soil gas sampling (Regional Water Board, 2015).

## 2.5 PROPOSED DEVELOPMENT

The Site will be developed with a multi-story mixed commercial/multi-family residential building. The ground floor will be occupied by commercial offices, parking, landscaping and hardscape. Residential studio, one bedroom and two bedroom apartments will be constructed above the parking garage and commercial offices (Appendix B). As part of the construction, foundation footings will be excavated between approximately two-feet and four-feet below ground surface. Soil generated during the foundation excavations will be characterized for off-Site disposal.

# 3.0 SUMMARY OF INVESTIGATIONS

In September 2015, soil, soil gas and groundwater samples were collected from eight borings, W-1 to W-8, advanced at the Site. The borings were advanced between three-feet and 16-feet below ground surface. A summary of the investigation is presented below. Summaries of the laboratory analytical results are also included in Tables 3-1 to 3-5 and depicted on Figures 3-1 and 3-2.

## 3.1 SOIL SAMPLING

Twenty-four soil samples were collected from eight borings advanced at the Site on September 17, 2015 (Figure 2-1). The soil samples were collected between approximately one-foot and six-feet below ground surface using direct push drilling equipment operated by a California licensed C-57 well drilling contractor. Soil cores were collected from the borings continuously using a four-foot long, two-inch diameter stainless steel Macrocore core barrel outfitted with an acetate liner. The soil cores were described on boring logs using the Unified Soil Classification System (USCS) and field screened for total organic vapors using a photoionization detector (PID) equipped with a 10.6 electron-Volt (eV) lamp and calibrated to 100 parts per million by volume ($ppm_v$) isobutylene gas. The soil samples were analyzed for PAHs by United States Environmental Protection Agency (USEPA) Method 8270C, organochlorine pesticides by USEPA Method 8081A and Title 22 Metals by USEPA Method 6000/7000 series.

### 3.1.1 Laboratory Analytical Results

#### 3.1.1.1 PAHs

Laboratory analysis of the soil samples collected from the borings at approximately one-foot below ground surface revealed PAHs including: Acenaphthylene up to 32 µg/kg (W-4); anthracene up to 25.9 µg/kg (W-4); benzo(a)anthracene up to 105 µg/kg (W-4); benzo(b)fluoranthene up to 187 µg/kg (W-7); benzo(k)fluoranthene up to 60.7 µg/kg (W-4);

benzo(a)pyrene up to 119 µg/kg (W-4); benzo(g,h,i)perylene up to 287 µg/kg (W-4); chrysene up to 130 µg/kg (W-3); dibenzo(a,h)anthracene up to 430 µg/kg (W-6); fluoranthene up to 87 µg/kg (W-4); fluorene up to 28.2 µg/kg (W-4); indeno(1,2,3-c,d)pyrene up to 120 µg/kg (W-7); naphthalene up to 26.2 µg/kg (W-2); phenanthrene up to 129 µg/kg (W-4); and pyrene up to 184 µg/kg (W-4; Table 3-1).

#### 3.1.1.2 ORGANOCHLORINE PESTICIDES

The organochlorine pesticides chlordane and 4,4-DDE were detected in the soil samples collected from borings W-1 to W-8 at one-foot below ground surface. Chlordane was detected up to 18.4 µg/kg (W-8). 4,4-DDE was detected up to 7.54 µg/kg (W-5; Table 3-2). Other organochlorine pesticides were not detected above the laboratory-reporting limits.

#### 3.1.1.3 METALS

Soil samples collected from the borings at one-foot, three-feet and six-feet below ground surface were analyzed for metals. Arsenic was detected up to 7.21 mg/kg (W-2 at one-foot below ground surface); barium up to 1,790 mg/kg (W-2 at three-feet below ground surface); chromium up to 29.9 mg/kg (W-4 at three-feet below ground surface); cobalt up to 8.18 mg/kg (W-3 at one-foot below ground surface); copper up to 43.4 mg/kg (W-4 at three-feet below ground surface); lead up to 2,180 mg/kg (W-4 at three-feet below ground surface); mercury up to 0.38 mg/kg (W-2 at three-feet below ground surface); nickel up to 34.5 mg/kg (W-4 at three-feet below ground surface); vanadium up to 43.2 mg/kg (W-3 at one-foot below ground surface); and zinc up to 701 mg/kg (W-4 at three-feet below ground surface)(Table 3-3 and Figure 3-1).

## 3.2 SOIL GAS SAMPLING

Four soil gas samples were collected from four borings, W-1, W-2, W-4 and W-7, at approximately five-feet below ground surface. The soil gas samples were analyzed for VOCs by USEPA Method TO-15 and helium by ATM Method D 1945.

### 3.2.1 Laboratory Analytical Results

Laboratory analysis of the soil gas samples revealed the presence of VOCs including: PCE up to 352 µg/m$^3$ (W-4); benzene up to 9.14 µg/m$^3$ (W-1); toluene up to 15.8 µg/m$^3$ (W-1); ethyl benzene up to 4.60 µg/m$^3$ (W-1); xylenes up to 19.11 µg/m$^3$ (W-1); 1,3,5-trimethylbenzene (1,3,5-TMB) up to 10.4 µg/m$^3$ (W-1); 1,2,4-trimethylbenzene (1,2,4-TMB) up to 17 µg/m$^3$; and trichlorofluoromethane (TCFM) up to 16.7 µg/m$^3$ (W-1)(Table 3-4 and Figure 3-2). The helium leak tracer gas was not detected in the soil gas samples above the laboratory-reporting limit of 0.100-percent.

## 3.3 GROUNDWATER SAMPLING

Three groundwater samples were collected from borings W-1, W-2 and W-4. The groundwater samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline (TPHg) by USEPA Method 8015M modified and for VOCs by USEPA Method 8260B. Laboratory analysis of the groundwater samples did not reveal the presence of TPHg above its laboratory-reporting limit of 0.050 milligrams per liter (mg/l)(Table 3-5). VOCs were not detected in the groundwater samples above their laboratory-reporting limits, except for PCE at 0.850 µg/l (W-2)(Table 3-5).

# 4.0 DATA EVALUATION

Consistent with Regional Water Board guidance, a screening level assessment was performed to assist in assessing the adequacy of the existing data (Regional Water Board, 2016). The screening level assessment consisted of three components: (1) identification of potential exposure pathways; (2) identification of appropriate screening levels for each media; and (3) a comparative analysis. The screening level assessment has been used to evaluate conditions of potential concern and identify areas for additional investigations, i.e., data gaps.

## 4.1 SCREENING LEVEL ASSESSMENT

### 4.1.1 Exposure Pathways Evaluation

Exposure pathways for PAHs, pesticides and metals in soil, VOCs in soil gas and VOCs in groundwater at the Site have been evaluated to assess the potential impacts to human health and the environment. Direct contact and ingestion of soil is identified as complete exposure pathway for future construction and maintenance workers. Direct contact and ingestion of soil is not identified as complete exposure pathway for future occupants due to the proposed hardscapes and buildings to be constructed on the Site. Inhalation of VOCs is identified as a potentially complete exposure pathway for future Site occupants. Direct exposure to VOCs in groundwater is not identified as a potentially complete exposure pathway as the Site is served by municipal water supply (Figure 4-1).

#### 4.1.1.1 EXPOSURE CONCENTRATIONS

Where sample data were limited, the maximum-detected concentration of the chemicals was compared with the screening levels. Where an adequate number of data points were available, the 95 percent upper confidence level (UCL) of the mean concentration, i.e., the Reasonable Maximum Exposure (RME) was compared with the screening levels, pursuant to CalEPA and USEPA guidance (CalEPA, 1996). The 95-percent UCL was calculated using ProUCL Version

5.0 (USEPA, 2013) and was performed on the soil laboratory analytical results for lead in soil (WEST, 2015).

The USEPA recommends that maximum beneficial uses of a property be the basis for evaluation. Based on the development plans for ground floor commercial offices, above grade residential, parking garage, landscaping and hardscape, the Site soil conditions have been screened using the methods described below based on a commercial/construction worker exposure scenario. The Site soil gas conditions wee screened based on a residential and commercial exposure scenario.

#### 4.1.1.2 COMMERCIAL/INDUSTRIAL WORKER

The commercial/industrial scenario uses the conservative assumption that on-Site workers spend all or most their workday outdoors. The exposure for commercial/industrial workers is presumed to include: (1) a full time employee of a company operating on-site who spends most of the work day conducting maintenance or manual labor activities outdoors or (2) a worker who is assumed to regularly perform grounds-keeping activities as part of his/her daily responsibilities (Regional Water Board, 2013). Exposure to surface and shallow subsurface soils (i.e., at depths of zero- to two-feet below ground surface) is expected to occur during excavation of foundations and subsurface utilities during Site construction and moderate digging associated with routine maintenance and grounds-keeping. The commercial/industrial worker scenario is based on a worker that is exposed to chemicals at the Site for 24-hours per day during 250-days per year for 25-years.

### 4.1.2 Identification of Screening Levels

Based on the identified exposure pathways, screening levels were identified for chemicals in soil, soil gas and groundwater as non-drinking water source. Chemical-specific screening levels were developed from concentrations based on published environmental screening criteria. The screening levels that were considered include the Regional Water Board Environmental Screening Levels (ESLs). Exceeding a screening level "does not necessarily indicate that adverse

impact to human health or the environment are occurring, [it] simply indicates that potential for adverse impacts may exist and that additional evaluation is warranted" (Regional Water Board, 2016).

#### 4.1.2.1 REGIONAL WATER BOARD ESLS

The Regional Water Board has identified ESLs for PAHs, pesticides and metals in soil, VOCs in soil gas and VOCs in groundwater (Regional Water Board, 2016). The Regional Water Board ESLs "are intended to be conservative" and "the presence of a chemical at […] concentrations below the corresponding ESL can be assumed to not pose a significant threat to human health and the environment." While a chemical may be measured at concentrations above the Regional Water Board ESL, it "does not necessarily indicate adverse effects on human health or the environment are occurring, rather that additional evaluation is warranted." In developing the ESLs, the Regional Water Board has considered exposure pathways to humans, including inhalation of VOCs in indoor air from migration of contaminated soil gas.

## 4.2 COMPARATIVE ANALYSIS

An evaluation between the identified screening levels and the soil laboratory analytical results was performed to characterize the Site conditions.

### 4.2.1 Soil Conditions

#### 4.2.1.1 PAHs

PAHs were detected in the soil samples collected at the Site at concentrations below their respective commercial and construction worker Regional Water Board ESLs with the exception of dibenzo(a,h)anthracene. Dibenzo(a,h)anthracene was detected up to 430 µg/kg, which is above its commercial Regional Water Board ESL of 290 µg/kg, but below its construction worker Regional Water Board ESL of 1,600 µg/kg (W-6; Table 3-1). However, as the

commercial worker is not anticipated to be exposed to soil below two-feet; the presence of dibenzo(a,h)anthracene at this depth does not represent a complete exposure pathway. The 95-percent UCL, i.e., exposure point concentration of dibenzo(a,h)anthracene in soil at one-foot below ground surface was calculated at 185 µg/kg, which is below the commercial Regional Water Board ESL of 290 µg/kg.

#### 4.2.1.2 ORGANOCHLORINE PESTICIDES

The organochlorine pesticides chlordane and 4,4-DDE were detected in the soil samples above the laboratory-reporting limits. Chlordane was detected up to 18.4 µg/kg, which is below its commercial Regional Water Board ESL of 2,200 µg/kg. 4,4-DDE was detected up to 7.54 µg/kg, which is below its commercial Regional Water Board ESL of 8,500 µg/kg (Table 3-1).

#### 4.2.1.3 METALS

Metals were detected in the soil samples collected between one-foot and six-feet below ground surface. Arsenic was detected up to 7.21 mg/kg, which is within the range of background arsenic concentrations up to 11 mg/kg for the San Francisco Bay Area (Duverge, 2011). Lead was detected up to 2,180 mg/kg (W-4 at three-feet below ground surface), which is above its commercial Regional Water Board ESL of 320 mg/kg (Table 3-2 and Figure 3-1). However, as the commercial worker is not anticipated to be exposed to soil below two-feet; the presence of lead at this depth does not represent a complete exposure pathway. The 95-percent UCL, i.e., exposure point concentration of lead in soil at one-foot below ground surface was calculated at 185 mg/kg, which is below the commercial Regional Water Board ESL of 320 mg/kg. Other metals were detected above the laboratory-reporting limits but at concentrations below their respective commercial Regional Water Board ESLs (Table 3-2).

Currently, landscaped areas are proposed for the development. The planter areas will be over-excavated a minimum of two-feet and backfilled with clean imported fill to address the potential

exposure pathway to future maintenance workers. In addition, land use restrictions will also be recorded for the Site restricting the use of planter areas for cultivation by Site occupants.

### 4.2.2 Soil Gas Conditions

VOCs were detected in the soil gas samples collected from borings W-1, W-2, W-4 and W-7. PCE was detected up to 352 $\mu g/m^3$ (W-4), which is below its commercial Regional Water Board ESL of 2,100 $\mu g/m^3$ for the protection of indoor air but above the residential Regional Water Board ESL of 240 $\mu g/m^3$. Benzene was detected up to 9.14 $\mu g/m^3$ (W-1), which is below its commercial and residential Regional Water Board ESLs of 420 $\mu g/m^3$ and 48 $\mu g/m^3$, respectively. Toluene was detected up to 15.8 $\mu g/m^3$, which is below its commercial and residential Regional Water Board ESLs of 1,300,000 $\mu g/m^3$ and 160,000 $\mu g/m^3$. Ethyl benzene was detected up to 4.60 $\mu g/m^3$, which is below its commercial and residential Regional Water Board ESLs of 4,900 $\mu g/m^3$ and 560 $\mu g/m^3$. Xylenes were detected up to 19.11 $\mu g/m^3$, which is below its commercial and residential Regional Water Board ESLs of 440,000 $\mu g/m^3$ and 52,000 $\mu g/m^3$, respectively (Table 3-3 and Figure 3-2).

Other VOCs were detected in the soil gas samples including 1,3,5-TMB (up to 10.4 $\mu g/m^3$), 1,2,4-TMB (up to 17 $\mu g/m^3$) and TCFM (up to 16.7 $\mu g/m^3$); however, there are currently no promulgated Regional Water Board ESLs for these compounds.

Current Site development plans include an elevator that connects to the residential units above the parking garage. The elevator could facilitate vapor migration from the subsurface to the above ground residential units. Therefore, vapor mitigation could be included with the elevator foundation at the Site Vapor mitigation could be accomplished with installation of a vapor barrier underlying the elevator foundation. Design of the vapor mitigation would be performed by a Professional Engineer.

### 4.2.3 Groundwater Conditions

Groundwater samples were collected from borings W-1, W-2 and W-4 (Figure 2-1). Laboratory analysis of the groundwater samples did not reveal the presence of TPHg above its laboratory-reporting limit of 0.050 mg/l. The VOC PCE was detected up to 0.850 µg/l, which is below its maximum contaminant level (MCL) of 5 µg/l. Other VOCs were not detected in the groundwater samples above their respective laboratory-reporting limits (Table 3-4).

## 4.3 SUMMARY

The findings of the Site investigation indicate that the exposure point concentration for the PAH dibenzo(a,h)anthracene (185 µg/kg) and lead (185 mg/kg) are present in soil below their respective commercial and construction worker ESLs Regional Water Board ESLs of 290 µg/kg and 320 mg/kg, for the protection of human health under a commercial use scenario. The VOC PCE was detected in the soil gas samples, at levels below its commercial indoor air protection ESL of 2,100 µg/mg but above its residential Regional Water Board ESL of 240 $\mu g/m^3$.. The VOC PCE was detected in the groundwater sample at 0.850 µg/l (boring W-2) but at a concentration below its MCL of 5 µg/l.

The development plan includes excavation of soil for construction of building foundations; hardscapes; and landscaping. The foundations will be advanced between approximately one-foot and 2.5-feet below ground surface. Based on the comparative analysis, soil-containing lead was detected at one-foot below applicable Regional Water Board ESLs. However, since the proposed excavations will extend to approximately 2.5-feet below ground surface, additional data are needed to characterize soil conditions within and at the base of the proposed excavations. In addition, PCE was detected above its residential Regional Water Board ESL; thus, additional soil gas samples are needed to further characterize the presence of PCE in soil gas. The scope-of-work for conducting the additional investigations are presented in Section 5.0.

# 5.0 SCOPE-OF-WORK

A scope of work has been developed to further characterize the soil conditions within the footprint of the proposed foundations at the Site (Figure 5-1). The following tasks have been developed to conduct the additional soil characterization.

- Task 1.0: Permitting, Health and Safety, Utility Clearance
- Task 2.0: Soil Sampling
- Task 3.0: Soil Gas Sampling
- Task 4.0: Site Management Plan

Details of the tasks are presented below.

## 5.1 TASK 1.0: PERMITTING, HEALTH AND SAFETY, UTILITY CLEARANCE

In preparation for sample collection, WEST will obtain appropriate boring permits from the Alameda County Public Works Agency (ACPWA). WEST will also prepare a site-specific Health and Safety Plan (HASP) pursuant to CalOSHA Title 8 §5192 Hazardous Waste Operations and Emergency Response and the United States Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 Hazardous Waste Operations and Emergency Responses, which outlines worker protection procedures, chemical toxicology and training requirements for worker safety. Pursuant to California Assembly Bill AB 73, the work areas will be outlined on the ground surface and Underground Services Alert (USA) will be contacted to locate and clear the work areas for underground utilities. A private utility locator will also be used to clear the work areas.

## 5.2 TASK 2.0: SOIL SAMPLING

### 5.2.1 Borings

The borings will be advanced using hydraulic direct push drilling equipment operated by a California licensed C-57 well drilling contractor (Figure 5-1). Soil cores will be collected from the borings continuously using a four-foot long, two-inch diameter stainless steel Macrocore core barrel outfitted with an acetate liner. The soil cores will be described on boring logs using the Unified Soil Classification System (USCS) and field screened for total organic vapors using a photoionization detector (PID). The PID will be equipped with a 10.6 electron-Volt (eV) lamp and calibrated to 100 parts per million by volume ($ppm_v$) isobutylene gas. Downhole drilling rods and sampling equipment will be cleaned prior to sample collection and between boring locations.

### 5.2.2 Sample Collection Methodology

Soil samples for laboratory analyses will then be cut from approximately six-inch lengths of the acetate liner at target depths below ground surface (Table 5-1). The ends of the soil samples will then be covered with Teflon® sheets and plastic end caps, labeled and placed in a cooler with ice for transportation to a California Department of Public Health (CDPH) Environmental Laboratory Accreditation Program (ELAP) certified laboratory for chemical analysis following ASTM D4840 chain-of-custody protocols. The soil samples will be analyzed for the suite of analytes included in Table 5-1.

### 5.2.3 Investigation-Derived Waste Management

Soil cuttings and decontamination water generated during soil sampling will be placed in United States Department of Transportation (DOT)-approved drums. The drums will be labeled and temporarily stored on-Site pending waste profile acceptance at an appropriate off-Site disposal facility.

## 5.3 TASK 3.0: SOIL GAS SAMPLING

Borings will also be advanced for installation of temporary vapor wells to facilitate soil gas sampling (Figure 5-1). Standard Operating Procedures (SOPs) detailing the soil gas sample collection procedures and protocols (SOP-SG-1; Appendix C). The soil gas samples will be analyzed for the Suite of analytes included in Table 5-1.

## 5.4 TASK 4.0: SITE MANAGEMENT PLAN

WEST will prepare a Site Management Plan (SMP) for the project, which will outline the protocols and procedures for managing soil during Site development. The laboratory analytical results from the additional sampling will be incorporated into the SMP. The SMP will include: Site description; summary of investigations; a Conceptual Site Model (CSM); risk assessment; and a description of soil management measures to be implemented during and after Site development. The SMP will be prepared under the supervision of a California licensed Professional Engineer and a California licensed Professional Geologist and submitted to the Alameda County Department of Environmental Health for review and approval.

# 6.0 SCHEDULE

A schedule has been developed for implementation of the work and beginning of Site development activities

- October to November 2016 – Review and approval of Revised Work Plan by ACEH;
- November 2016 – Implementation of Revised Work Plan and preparation of Site Management Plan;
- December 2016 to January 2017 – Review and approval of Site Management Plan by ACEH; and
- February 2017 – Implementation of Site development activities/Site Management Plan.

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# 8.0 DISTRIBUTION LIST

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# TABLES

TABLE 3-1
SUMMARY OF SOIL ANALYTICAL RESULTS - PAHS
5th Street and Magnolia Street
West Oakland, California

| Sample ID | Date | Depth (feet) | Acenaphthene | Acenaphthylene | Anthracene | Benzo(a) anthracene | Benzo(b) fluoranthene | Benzo(k) fluoranthene | Benzo(a)pyrene | Benzo(g,h,i) perylene | Chrysene | Dibenzo(a,h) anthracene | Fluoranthene | Fluorene | Indeno (1,2,3-c,d) pyrene | Naphthalene | Phenanthrene | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) |
| W-1 | 9/17/18 | 1 | <2.50 | 9.42 | 5.46 | 14.8 | 80 | 15.6 | 47.1 | 209 | 53.4 | 36.5 | 8.07 | <2.50 | 41.8 | 14 | 19.3 | 29.5 |
| W-2 | 9/17/18 | 1 | <2.50 | 14.8 | 10.1 | 55.1 | 132 | 35.8 | 99.8 | 255 | 79.6 | 59.3 | 31.5 | <2.50 | 103 | 26.2 | 36 | 97.1 |
| W-3 | 9/17/18 | 1 | <2.50 | 11.3 | 6.73 | 26 | 176 | 27 | 87.4 | 240 | 130 | 98.1 | 14.4 | 23 | 87.3 | 12.3 | 49.2 | 101 |
| W-4 | 9/17/18 | 1 | <2.50 | 32 | 25.9 | 105 | 178 | 60.7 | 119 | 287 | 91.9 | 70.6 | 87 | 28.2 | 107 | 13.9 | 129 | 184 |
| W-5 | 9/17/18 | 1 | <2.50 | 20.3 | 18.3 | 67.5 | 130 | 47.2 | 81.5 | 159 | 75.9 | 26 | 74 | <2.50 | 99.6 | 11.4 | 49.7 | 127 |
| W-6 | 9/17/18 | 1 | <2.50 | 17.7 | 9.44 | 36.9 | 74.5 | 28.3 | 44.4 | 226 | 40.5 | **430** | 28.2 | 19.5 | 59.2 | 11.7 | 38.3 | 72.6 |
| W-7 | 9/17/18 | 1 | <2.50 | 18.8 | 15.7 | 61.2 | 187 | 45.2 | 111 | 264 | 97.2 | 77.3 | 50.7 | 9.02 | 120 | 13.5 | 84.2 | 144 |
| W-8 | 9/17/18 | 1 | <2.50 | 13.9 | 6.45 | 41.7 | 134 | 38.5 | 78.2 | 234 | 80.1 | 73.1 | 17.1 | 13 | 99.7 | 23.6 | 30.9 | 48.4 |
| ESLs-Commercial | | | 45,000 | -- | 2.3.E+08 | 2,900 | 2,900 | 29,000 | 290 | -- | 260,000 | 290 | 3.0E+07 | 3.0E+07 | 2,900 | 14,000 | -- | 2.3E+07 |
| ESLs-Construction worker | | | 10,000 | -- | 5.0.E+07 | 16,000 | 16,000 | 150,000 | 1,600 | -- | 1,500,000 | 1,600 | 6.7E+06 | 6.7E+06 | 16,000 | 350,000 | -- | 5.0E+06 |
| ESLs-Residential | | | 3,600,000 | -- | 1.8.E+07 | 160 | 160 | 1,600 | 16 | -- | 15,000 | 16 | 2.4E+06 | 2.4E+06 | 160 | 3,300 | -- | 1.8E+06 |

Notes:

PAHs: Polycyclic aromatic hydrocarbons
µg/kg: micrograms per kilogram
--: Not analyzed/not available
ESLs: California Regional Water Quality Control Board - San Francisco Bay Region Environmental Screening Levels, Rev. 3
<2.50: Less than the laboratory-reporting limit of 2.50 µg/kg
TEF: Toxicity Equivalency Factor
BaP: Benzo(a)pyrene

TABLE 3-2
SUMMARY OF SOIL ANALYTICAL RESULTS - PESTICIDES
5th Street and Magnolia Street
West Oakland, California

| Sample ID | Date | Depth (feet) | Pesticides | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Alpha-BHC | Beta-BHC | Gamma-BHC (Lindane) | Heptachlor | Delta-BHC | Aldrin | Heptachlor epoxide | Endosulfan I | 4,4-DDE | Dieldrin | Endrin | 4,4-DDD | Endosulfan II | 4,4-DDT | Endrin aldehyde | Endosulfan Sulfate | Methoxychlor | Chlordane | Toxaphene |
| | | | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) |
| W-1 | 9/17/18 | 1 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <12.5 | <12.5 | <62.5 |
| W-2 | 9/17/18 | 1 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <12.5 | 17.6 | <62.5 |
| W-3 | 9/17/18 | 1 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <12.5 | <12.5 | <62.5 |
| W-4 | 9/17/18 | 1 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <12.5 | 15.2 | <62.5 |
| W-5 | 9/17/18 | 1 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | 7.54 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <12.5 | <12.5 | <62.5 |
| W-6 | 9/17/18 | 1 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <12.5 | 15.8 | <62.5 |
| W-7 | 9/17/18 | 1 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <12.5 | 15.3 | <62.5 |
| W-8 | 9/17/18 | 1 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <2.50 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 | <12.5 | 18.4 | <62.5 |
| ESLs-Commercial | | | -- | -- | 2,500 | -- | -- | 160 | 300 | 5.8E+06 | 8,500 | 170 | 290,000 | 12,000 | 5.8E+06 | 8,500 | -- | 5.8E+06 | 4.8E+06 | 2,200 | 2,200 |
| ESLs-Construction worker | | | -- | -- | 16,000 | -- | -- | 1,000 | 1,900 | 1.5E+06 | 57,000 | 1,100 | 74,000 | 81,000 | 1.5E+06 | 57,000 | -- | 1.5E+06 | 1.2E+06 | 14,000 | 14,000 |
| ESLs-Residential | | | -- | -- | 550 | -- | -- | 36 | 67 | 4.2E+05 | 1,900 | 38 | 21,000 | 2,700 | 4.2E+05 | 1,900 | -- | 4.2E+05 | 3.5E+05 | 480 | 510 |

Notes:
PAHs: Polycyclic aromatic hydrocarbons
µg/kg: micrograms per kilogram
--: Not analyzed/not available
ESLs: California Regional Water Quality Control Board - San Francisco Bay Region Environmental Screening Levels
<2.50: Less than the laboratory-reporting limit of 2.50 µg/kg

TABLE 3-3
SUMMARY OF SOIL ANALYTICAL RESULTS - METALS
5th Street and Magnolia Street
West Oakland, California

| Sample ID | Date | Depth (feet) | Metals | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Copper | Lead | Mercury | Molybdenum | Nickel | Selenium | Silver | Thallium | Vanadium | Zinc |
| | | | (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) |
| W-1 | 9/17/15 | 1 | -- | 3.58 | -- | -- | -- | -- | -- | -- | 25.9 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 3 | -- | <2.50 | -- | -- | -- | -- | -- | -- | 119 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 6 | -- | <2.50 | -- | -- | -- | -- | -- | -- | 3.45 | -- | -- | -- | -- | -- | -- | -- | -- |
| W-2 | 9/17/15 | 1 | -- | 7.21 | -- | -- | -- | -- | -- | -- | 36.4 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 3 | <2.50 | 6.91 | 1,790 | <2.50 | <2.50 | 25.6 | 3.92 | 37.7 | **661** | 0.38 | <2.50 | 20 | <2.50 | <2.50 | <2.50 | 28.5 | 688 |
| | | 6 | -- | <2.50 | -- | -- | -- | -- | -- | -- | <2.50 | -- | -- | -- | -- | -- | -- | -- | -- |
| W-3 | 9/17/15 | 1 | <2.50 | 2.61 | 99.1 | <2.50 | <2.50 | 23.1 | 8.18 | 40.1 | 19.6 | 0.127 | <2.50 | 27.8 | <2.50 | <2.50 | <2.50 | 43.2 | 87.1 |
| | | 3 | -- | <2.50 | -- | -- | -- | -- | -- | -- | 169 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 6 | -- | <2.50 | -- | -- | -- | -- | -- | -- | **1,360** | -- | -- | -- | -- | -- | -- | -- | -- |
| W-4 | 9/17/15 | 1 | -- | 3.54 | -- | -- | -- | -- | -- | -- | 24.7 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 3 | <2.50 | 7.17 | 990 | <2.50 | <2.50 | 29.9 | 6.35 | 43.4 | **2,180** | 0.344 | <2.50 | 34.5 | <2.50 | <2.50 | <2.50 | 26.7 | 701 |
| | | 6 | -- | <2.50 | -- | -- | -- | -- | -- | -- | <2.50 | -- | -- | -- | -- | -- | -- | -- | -- |
| W-5 | 9/17/15 | 1 | -- | 5.60 | -- | -- | -- | -- | -- | -- | **510** | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 3 | -- | <2.50 | -- | -- | -- | -- | -- | -- | 50.2 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 6 | -- | <2.50 | -- | -- | -- | -- | -- | -- | <2.50 | -- | -- | -- | -- | -- | -- | -- | -- |
| W-6 | 9/17/15 | 1 | -- | 4.34 | -- | -- | -- | -- | -- | -- | 25.5 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 3 | -- | 4.36 | -- | -- | -- | -- | -- | -- | 316 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 6 | <2.50 | <2.50 | 36.1 | <2.50 | <2.50 | 22.3 | <2.50 | 4.04 | 7.87 | <0.100 | <2.50 | 11.9 | <2.50 | <2.50 | <2.50 | 15.6 | 12.8 |
| W-7 | 9/17/15 | 1 | -- | 4.90 | -- | -- | -- | -- | -- | -- | 18.9 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 3 | -- | 2.50 | -- | -- | -- | -- | -- | -- | **199** | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 6 | -- | 2.64 | -- | -- | -- | -- | -- | -- | 2.87 | -- | -- | -- | -- | -- | -- | -- | -- |
| W-8 | 9/17/15 | 1 | -- | 3.28 | -- | -- | -- | -- | -- | -- | 20.1 | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 3 | -- | 2.76 | -- | -- | -- | -- | -- | -- | **174** | -- | -- | -- | -- | -- | -- | -- | -- |
| | | 6 | -- | 2.93 | -- | -- | -- | -- | -- | -- | 3.58 | -- | -- | -- | -- | -- | -- | -- | -- |
| ESLs-Commercial | | | 470 | bg | 220,000 | 2,200 | 580 | 1,800,000 | 350 | 47,000 | 320 | 190 | 5,800 | 11,000 | 5,800 | 5,800 | 12 | 5,800 | 350,000 |
| ESLs-Construction Worker | | | 140 | bg | 3,000 | 42 | 43 | 530,000 | 28 | 14,000 | 160 | 44 | 1,800 | 86 | 1,700 | 1,800 | 3.5 | 470 | 110,000 |
| ESLs-Residential | | | 31 | bg | 15,000 | 150 | 39 | 120,000 | 23 | 3,100 | 80 | 13 | 390 | 820 | 390 | 390 | 0.78 | 390 | 23,000 |

Notes:

mg/kg: milligrams per kilogram

<2.50: Less than the laboratory-reporting limit of 2.50 µg/kg

--: Not analyzed

ESLs: California Regional Water Quality Control Board - San Franicsco Bay Region Environmental Screening Levels, Rev. 3

TABLE 3-4
SUMMARY OF SOIL GAS ANALYTICAL RESULTS
5th Street and Magnolia Street
West Oakland, California

| Sample ID | Depth (feet) | Date | Dichlorodifluoromethmane | Dichlorotetrafluoroethane | Chloroemethane | Chloroethene | Bromomethane | Chloroethane | Trichlorofluoro-methane | 1,1-Dchloroethene | Trichlorotrifluoroethane | Methylene chloride | 1,1-Dichloroethane | cis-1,2-Dichloroethene | Chloroform | 1,1,1-Trichloroethane | Carbon Tetrachloride | 1,2-Dichloroethane | Benzene | Trichloroethene | 1,2-Dichloropropane |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (ug/m3) | | | | | | | | | | | | | | | | | | |
| W-1 | 5 | 9/17/15 | <4.95 | <6.99 | <2.07 | <2.56 | <3.88 | <2.64 | 16.7 | <3.97 | <7.66 | <3.47 | <4.05 | <3.97 | <4.88 | <5.46 | <6.29 | <4.05 | 9.14 | <5.37 | <4.62 |
| W-2 | 5 | 9/17/15 | <24.7 | <35 | <10.3 | <12.8 | <19.4 | <13.2 | <28.1 | <19.8 | <38.3 | <17.4 | <20.2 | <19.8 | <24.4 | <27.3 | <31.5 | <20.2 | <16.0 | <26.9 | <23.1 |
| W-4 | 5 | 9/17/15 | <24.7 | <35 | <10.3 | <12.8 | <19.4 | <13.2 | <28.1 | <19.8 | <38.3 | <17.4 | <20.2 | <19.8 | <24.4 | <27.3 | <31.5 | <20.2 | <16.0 | <26.9 | <23.1 |
| W-7 | 5 | 9/17/15 | <24.7 | <35 | <10.3 | <12.8 | <19.4 | <13.2 | <28.1 | <19.8 | <38.3 | <17.4 | <20.2 | <19.8 | <24.4 | <27.3 | <31.5 | <20.2 | <16.0 | <26.9 | <23.1 |
| ESLs-Commercial | | | -- | -- | 3.9E+05 | 160 | 22,000 | 4.4E+07 | -- | 3.1E+05 | -- | 12,000 | 7,700 | 35,000 | 530 | 4.4E+06 | 290 | 470 | 420 | 3,000 | 1,200 |
| ESLs-Residential | | | -- | -- | 47,000 | 4.7 | 2,600 | 5.2E+06 | -- | 37,000 | -- | 510 | 880 | 4,200 | 61 | 5.2E+05 | 33 | 54 | 48 | 240 | 140 |

Notes:

$\mu g/m^3$: micrograms per meter cubed

<21.8: Less than the laboratory-reporting limit of 21.8 $\mu g/m^3$

--: not available

ESLs: California Regional Water Quality Control Board - San Franicsco Bay Region Environmental Screening Levels (Rev. 3)

TABLE 3-4
SUMMARY OF SOIL GAS ANALYTICAL RESULTS
5th Street and Magnolia Street
West Oakland, California

| Sample ID | Depth (feet) | Date | trans 1.2-Dichloroethene | Toluene | cis-1,3-Dichloroprpene | 1,1,2-Tetrachloroethane | Tetrachloroethene | 1,2-Dibromomethane | Chlorobenzene | Ethyl Benzene | Xylenes | Styrene | 1,1,2,2-Tetrachloroethane | 1,3,5-Trimethylbenzene | 1,2,4-Trimethylbenzene | 1,3-Dichlorobenzene | 1,4-Dichlorobenzene | 1,2-Dichlorobenzene | 1,2,4-Trichlorobenzene | Hexachlorobutadiene | Helium |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (ug/m3) | | | | | | | | | | | | | | | | | | (%) |
| W-1 | 5 | 9/17/15 | <4.54 | 15.8 | <4.54 | <5.46 | 29.4 | <7.68 | <4.60 | 4.60 | 19.11 | <4.26 | <6.87 | <4.92 | <4.92 | <6.01 | <6.01 | <6.01 | <14.8 | <10.7 | <0.100 |
| W-2 | 5 | 9/17/15 | <22.7 | <18.8 | <22.7 | <27.3 | 224 | <38.4 | <23 | <21.7 | <21.7 | <21.3 | <34.3 | <24.6 | <24.6 | <30.1 | <30.1 | <30.1 | <74.2 | <53.3 | <0.100 |
| W-4 | 5 | 9/17/15 | <22.7 | <18.8 | <22.7 | <27.3 | **352** | <38.4 | <23 | <21.7 | <21.7 | <21.3 | <34.3 | <24.6 | <24.6 | <30.1 | <30.1 | <30.1 | <74.2 | <53.3 | <0.100 |
| W-7 | 5 | 9/17/15 | <22.7 | <18.8 | <22.7 | <27.3 | 64 | <38.4 | <23 | <21.7 | <21.7 | <21.3 | <34.3 | <24.6 | <24.6 | <30.1 | <30.1 | <30.1 | <74.2 | <53.3 | <0.100 |
| ESLs-Commercial | | | 3.5E+05 | 1.3E+06 | 770 | 770 | 2,100 | 20 | 2.2E+05 | 4,900 | 4.4E+05 | 3.9E+06 | 210 | -- | -- | -- | 1,100 | 8.8E+05 | 8,800 | -- | -- |
| ESLs-Residential | | | 420 | 1.6E+05 | 88 | 88 | 240 | 2.3 | 26,000 | 560 | 5.2E+04 | 4.7E+05 | 24 | -- | -- | -- | 130 | 1.0E+05 | 1,000 | -- | -- |

Notes:

µg/m$^3$: micrograms per m

<21.8: Less than the labor

--: not available

ESLs: California Regiona

TABLE 3-5
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
5th Street and Magnolia Street
West Oakland, California

| Sample ID | Date | TPHg | Dichlorodifluoromethmane | Chloromethane | Chloroethene | Bromomethane | Chloroethane | Trichlorofluoromethane | 1,1-Dchloroethene | Trichlorotrifluoroethane | Methylene chloride | trans-1,2-Dichloroethene | 1,1-Dichloroethane | cis-1,2-Dichloroethene | 2-2Dichloropropane | Bromochloromnethane | Chloroform | 1,1,1-Trichloroethane | Carbon Tetrachloride | 1,1-Dichlorpropene | Benzene | 1,2-Dichloroethane | Trichloroethene | 1,2-Dichloropropane | Dibromomethane | Bromodichloromethane | trans-1,3-Dichloroprrpene | Toluene | cis-1,3-Dichloroprrpene | 1,1,2-Tetrachloroethane | Tetrachloroethene | 1,3-Dichloropropene | Dibromochloromethane | 1,2-Dibromomethane |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (mg/l) | (ug/l) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W-1 | 9/17/15 | <0.050 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 |
| W-2 | 9/17/15 | <0.050 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | 0.850 | <0.500 | <0.500 | <0.500 |
| W-4 | 9/17/15 | <0.050 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 |
| MCLs | | | 220 | 190 | 0.5 | 7.5 | 21,000 | -- | 6 | -- | 5 | 10 | 5 | 6 | -- | -- | 80 | 200 | -- | -- | 1 | 0.5 | 5 | 5 | -- | 80 | -- | 40 | -- | 5 | 5 | 0.5 | 80 | 0.05 |

Notes:
µg/l: micrograms per liter
mg/l: milligrams per liter
<0.500: Less than the laboratory-reporting limit of 0.500
MCLs: Maximum Contaminant Levels

TABLE 3-5
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
5th Street and Magnolia Street
West Oakland, California

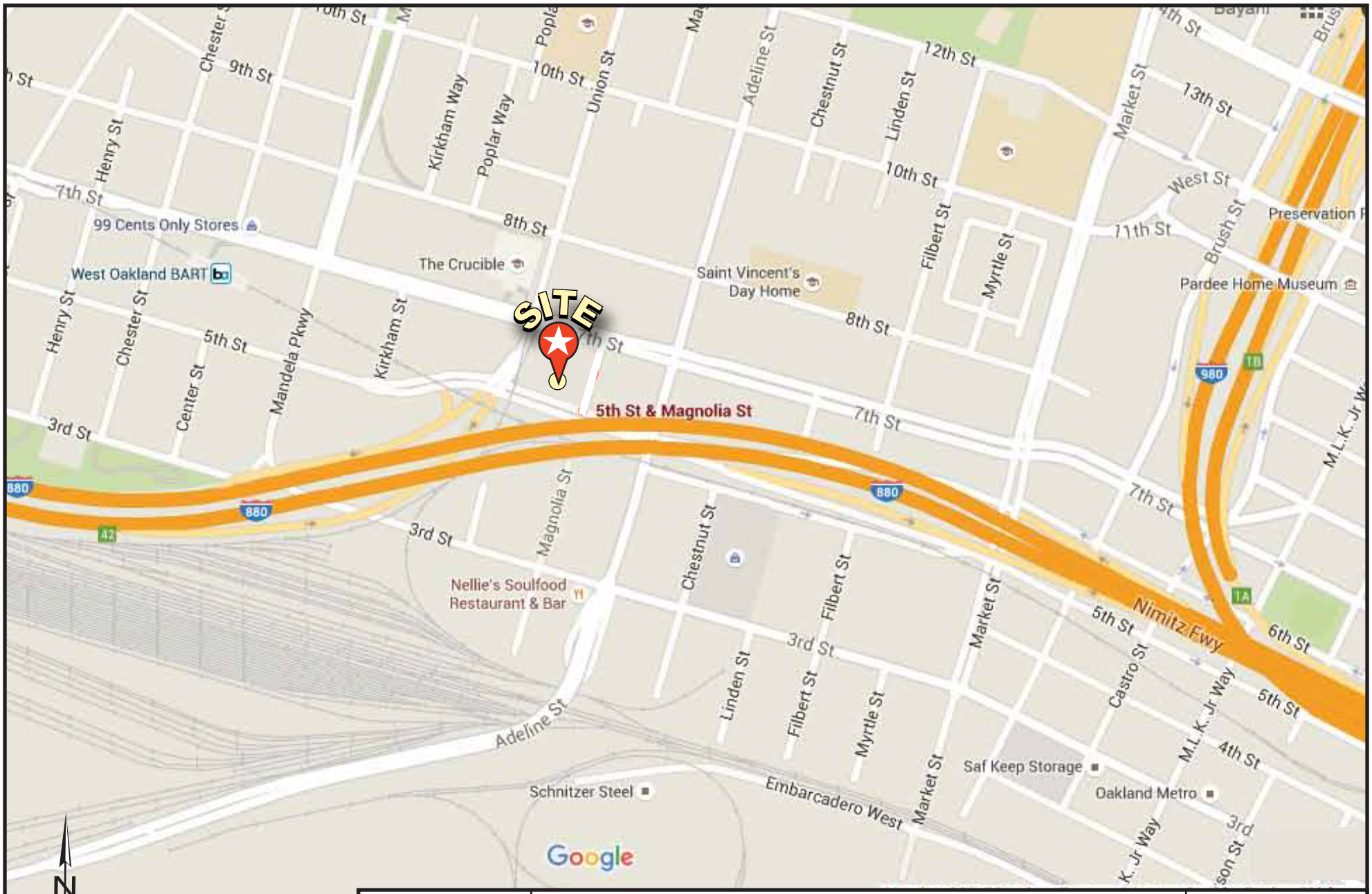
| Sample ID | Date | Chlorobenzene | 1,1,1,2-Tetrachloroethane | Ethyl Benzene | Xylenes | Styrene | Bromoform | Isoprpylbenzene | 1,1,2,2-Tetrachloroethane | Bromomethane | 1,2,3-Trichloropropane | n-Propylbenzene | 2-Chlorotoluene | 1,3,5-Trimethylbenzene | 4-Chlorotoluene | Tert-Butylbenzene | 1,2,4-Trimethylbenzene | sec-Butylbenzene | 1,3-Dichlorobenzene | 4-Isopropyltoluene | 1,4-Dichlorobenzene | n-Butylbenzene | 1,2-Dichlorbenzene | 1,2-Dibromo-3-chloropropane | 1,2,4-Trichlorobenzene | Hexachlorobutadiene | Naphthalene | 1,2,3-Trichlorobenzene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (ug/l) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W-1 | 9/17/15 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 |
| W-2 | 9/17/15 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 |
| W-4 | 9/17/15 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 | <0.500 |
| MCLs | | -- | 0.57 | 30 | 20 | -- | 80 | -- | 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 60 | -- | 5 | -- | 100 | -- | 5 | 0.14 | 0.17 | -- |

Notes:
µg/l: microgra
mg/l: milligram
<0.500: Less than
MCLs: Maximur

TABLE 5-1
PROPOSED LABORATORY ANALYSES
5th Street and Magnolia Street
West Oakland, California

| Media | Sample ID | Depth | Proposed Laboratory Analyses | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | TPHg/BTEX (8015M/8260B) | TPHd/TPHmo (8015M) | VOCs (TO-15) | PAHs (8270C-SIM) | Lead (6020) | Title 22 Metals (6000/7000) |
| Soil | B-1 | 1.5 | X | X | | X | X | |
| | B-2 | 1 | | | | | X | |
| | | 2.5 | X | X | | X | | X |
| | B-3 | 1.5 | | | | | X | |
| | | 3 | | | | | | X |
| | B-4 | 1.5 | X | X | | X | X | |
| | B-5 | 1.5 | | | | | X | |
| | B-6 | 1 | | | | | X | |
| | | 2.5 | X | X | | X | | X |
| | B-7 | 1.5 | | | | | X | |
| | | 2.5 | | | | X | X | |
| | B-8 | 1.5 | | | | X | | X |
| | B-9 | 1 | X | X | | X | X | |
| | | 2 | | | | | X | X |
| Soil gas | SG-1 | 5 | | | X | | | |
| | SG-2 | 5 | | | X | | | |
| | SG-3 | 5 | | | X | | | |
| | SG-4 | 5 | | | X | | | |

# FIGURES




| | | |
|---|---|---|
| Figure 1-1 | **SITE LOCATION MAP** | WEST Environmental Services & Technology |
| September 2016 | 5th Street and Magnolia Street, West Oakland, California | |


| | | |
|---|---|---|
| Figure 2-1 | **SITE PLAN** | WEST Environmental Services & Technology |
| September 2016 | 5th Street and Magnolia Street, West Oakland, California | |


Figure 3-1

# SUMMARY OF LEAD IN SOIL ANALYTICAL RESULTS

September 2016

5th Street and Magnolia Street, West Oakland, California

WEST Environmental Services & Technology

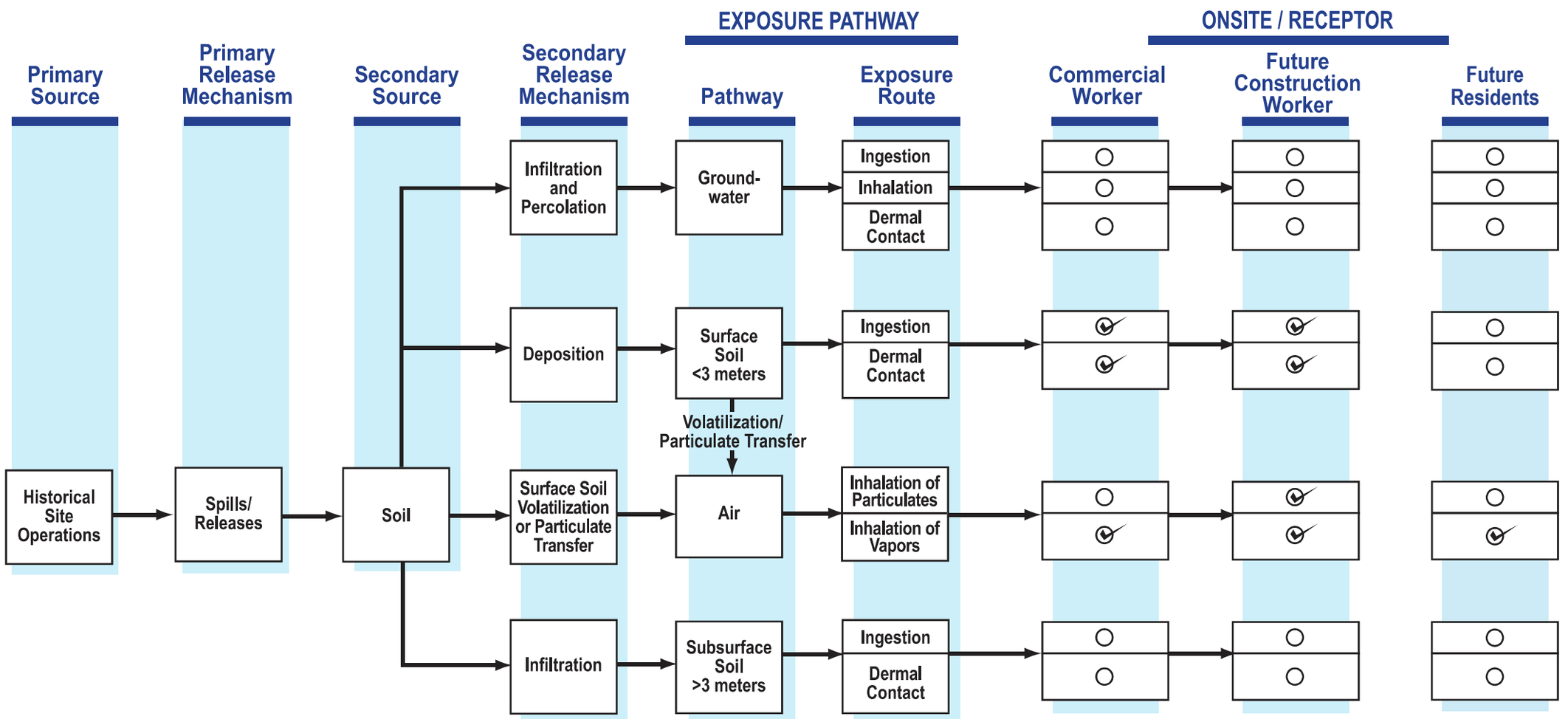

Figure 3-2

# SUMMARY OF SOIL GAS ANALYTICAL RESULTS

September 2016

5th Street and Magnolia Street, West Oakland, California

WEST Environmental Services & Technology




○ Incomplete exposure pathway

✓ Complete exposure pathway

| | | |
|---|---|---|
| Figure 4-1 | **EXPOSURE PATHWAY CHART** | WEST Environmental Services & Technology |
| September 2016 | 5th Street and Magnolia Street, West Oakland, California | |

FOOTING SCHEDULE:

COLUMN:

F9 = 9'–0" SQ x 30" DEEP
F8 = 8'–0" SQ X 30" DEEP
F7 = 7'–0" SQ X 24" DEEP
F6 = 6'–0" SQ X 24" DEEP

WALL:

WF4 = 4'–0" WIDE x 30" DEEP
WF3 = 3'–0" WIDE x 24" DEEP
WF2 = 2'–0" WIDE x 24" DEEP

Union Street

Magnolia Street

5th Street

B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9

SG-1
SG-2
SG-3
SG-4

W-1: 1' 25.9 | 3' 119 | 6' 3.45
W-2: 1' 36.4 | 3' 661 | 6' <2.50
W-3: 1' 19.6 | 3' 169 | 6' 1,360
W-4: 1' 24.7 | 3' 2,180 | 6' <2.50
W-5: 1' 510 | 3' 50.2 | 6' <2.50
W-6: 1' 25.5 | 3' 316 | 6' 7.87
W-7: 1' 18.9 | 3' 199 | 6' 2.87
W-8: 1' 20.1 | 3' 174 | 6' 3.58

5" SLAB ON GRADE

ELEVATOR PIT 14" MATT SLAB

EXPLANATION

Sample Location

Sample ID

Lead

Depth (feet)

Soil Results in mg/kg

FOUNDATION NOTES:

1. FOUNDATION IS BASED ON PRELIMINARY ROCKRIDGE GEOTECHNICAL REPORT DATED OCT 16, 2015
2. ASSUMED ALLOWABLE DEAD+LIVE SOIL BEARING PRESSURE = 6000 PSF

Proposed Soil Gas Sample Location

Proposed Soil Sample Location

0 FEET 40

# PROPOSED BORING LOCATIONS

5th Street and Magnolia Street
West Oakland, California

WEST Environmental Services & Technology

Figure 5-1

September 2016

# APPENDIX A

# RESPONSE TO ACEH COMMENTS

TABLE 1
RESPONSES TO ACEH COMMENTS ON SITE INVESTIGATION WORK PLAN
5th and Magnolia Streets
West Oakland, California

| | ACEH Comment | WEST Response |
|---|---|---|
| *Work Plan Addendum* | | |
| 1a | **a. Environmental Screening Level (ESL) Updates –** A majority of ESLs cited in tables contained in the work plan appear to be either dated or mis-cited. There have been three revisions to the ESLs this year, and it is likely some of the confusion derives from the continued updates. ACDEH requests that the tables be updated with the most recent ESL version, currently "Revision 3". In general, the proposed development appears to include a separation between subsurface contamination and residential portions of the structure; however, preferential pathways such as stairs or elevators are present and any residual concentrations of volatile compounds in proximity to these structures are required to meet residential cleanup goals. | The tables and text have been updated to reflect the most recent version of the ESLs (Revision 3). In addition, the tables have also been updated to include residential ESLs. |
| 1b | **b. Exposure Scenarios –** The work plan states that only commercial or construction worker ESLs apply at the site. For non-volatile compounds, this may largely be correct, except in planned unpaved greenscaped outdoor areas. Residential, including infant, and as well as gardener or maintenance worker exposure is a possibility in these areas unless specific remedial measures have been identified to prevent these exposures. For volatile compounds this may not be correct; especially near potential conduits such as stairs or elevators that allow vertical volatile migration into residential areas of the development. Consequently, ACDEH requests the tables be revised to manage this important distinction. This requires an evaluation of the adequacy of existing site data to allow an evaluation of this distinction. Additional data collection is requested to be included in the work plan addendum. | Please see response to comment 1a. With regard to unpaved greenscaped outdoor areas, the development is proposed to have planter areas over-excavated and backfilled with a minimum of 2-feet of clean imported fill to address the potential exposure to future maintenance workers. The deed restriction for the Site will include restrictions on gardening by future occupants. |
| 1c | **c. Source of Volatile Organic Compound Contaminants –** At this time ACDEH does not regard the source of soil vapor volatile compounds, including but not limited to, tetrachloroethene (PCE), to be resolved. PCE concentrations appear to increase onsite and downgradient from soil vapor location W-2 to W-4, and it appears the source may be onsite in soil and / or groundwater. Additionally, vapor location W-4 with the highest PCE vapor concentration (above residential ESLs) is nearly co-incident with the elevator pit locations which provides a preferential pathway to residential areas of the development. Preferential pathways to residential areas must meet identified residential cleanup objectives, such as ESLs or other site specific goals.<br>Additionally, soil vapor location W-1 detected low petroleum hydrocarbon vapor concentrations (benzene, toluene, ethylbenzene, xylenes, and trimethylbenzenes); however, grab groundwater did not detect these compounds at the location. Site reports have indicated that upgradient sites are the likely sources for the petroleum hydrocarbon contamination; however, based on the analytical data, groundwater does not appear to have been the source of these contaminants at this location.<br>It appears appropriate to propose additional data collection locations in order to identify, define, and isolate either onsite or offsite potential sources. | The work plan has been updated to include additional soil gas sampling to further characterize the soil gas conditions at the Site. |

TABLE 1
RESPONSES TO ACEH COMMENTS ON SITE INVESTIGATION WORK PLAN
5th and Magnolia Streets
West Oakland, California

| | ACEH Comment | WEST Response |
|---|---|---|
| 1d | **d. Petroleum Analytical Samples –** The potential presence of petroleum hydrocarbon contamination at the site, as discussed above, indicates that it is appropriate to additionally include Total Petroleum Hydrocarbons as gasoline (TPHg), as diesel (TPHd), as motor oil (TPHmo), as well as related compounds benzene, toluene, ethylbenzene, total xylenes (BTEX), and methyl tert butyl either (MTBE) in the soil analytical suite for the site. The former presence of the Cypress Structure also implies that motor vehicle related contamination may be present at the site. To date these contaminants have not been included in the analytical suite, except for TPHg in groundwater analysis. | The work plan has been updated to include additional soil sample analysis for TPHg, TPHd, TPHmo, BTEX and MTBE to further characterize the soil conditions at the Site. |
| 1e | **e. Proposed Bore Locations –** While the location of proposed bore locations B-1 to B-8 are undefined in the work plan and related figures, the numbering appears to conform to existing bore locations W-1 to W-8. Presuming this summarization is correct, some confusion is generated using this labeling system and it may be reasonable to clarify proposed bore locations or the bore numbering system. | The work plan has been updated to more clearly depict the proposed boring/sampling locations. |
| 2a | **a. Phase 1 and Other Reports –** All reports or other communications associated with the site are requested to be submitted, including any Phase 1 or other reports or communications, that have been generated for the site and that contain environmental data. Updated and current development plans are to be included as a submittal. | Reports prepared for the Site have been uploaded to the ACEH's electronic database as well as the SWRCB's Geotracker database. The work plan has also been updated to include the current development plans for the Site. |
| 2b | **b. Redevelopment Cross Sections and Residual Contamination –** In order to clearly depict any, or no, residual contamination proposed to remain at the site, ACDEH requests multiple cross sections through the entire site, depicting the specific proposed structural foundation elevations, stripped of geologic content, with soil, vapor, or other sample analytical data proposed to reamin, depth controlled and located appropriately. Contaminated material proposed to be excavated does not need to be depicted in the cross section data, but is requested to be retained in tables (see below). The intent of this request is to allow quick review of site data in a graphic fashion, and to assemble support for the eventual case closure and required communications with the public during a public comment period. This is requested to include detailed cross sections through areas of environmental interest, such as the elevator sumps, other potential exposure routes including greenscapes, and soil, soil vapor, or groundwater data relative to the future foundation and walls. | Based on the proposed additional sampling included in the Revised Work Plan, the cross-sections depicting the residual contamination with respect to the subsurface features will be prepared and submitted in the Site Management Plan (SMP). The SMP will include summaries of the data collected as part of the Revised Work Plan as well as include the laboratory data certificates, chain-of-custody forms and field data sheets. |
| 2c | **c. Data Tables -** All tables are requested to include all historic and all recently collected analytical data, and that all soil that has been removed or is proposed to be removed to accommodate foundations indicated by shading or strike out (remaining legible). If it is important for the project to distinguish between historic removed and future proposed removal, different shadings may be useful. | The data tables indicating where soil is proposed to be removed with respect to the subsurface foundations will be prepared following receipt of the data collected from the work proposed in the Revised Work Plan The updated data tables will be included in the SMP. |

TABLE 1
RESPONSES TO ACEH COMMENTS ON SITE INVESTIGATION WORK PLAN
5th and Magnolia Streets
West Oakland, California

| | ACEH Comment | WEST Response |
|---|---|---|
| 2d | **d. Analytical Detection Limits –** ACDEH requests that all non-detectable analytical data be listed by the individual chemical detection limit (<x), and include highlighting or bolding of detects, or of concentrations (including non-detectable concentrations) over site identified goals (ESLs or other goals). | The tables in the work plan have been updated to include analytes that were not detected above the laboratory-reporting limits and their corresponding ESLs, where applicable. |
| 2e | **e. Added Table Column –** ACDEH additionally requests the addition of a "Relative to Future Building Foundation Elevation" column in soil and vapor analytical tables. The intent of this column is to quickly indicate the depth of the sample relative to the proposed future building foundation depth. As noted above, data proposed to be excavated or otherwise removed is requested to be retained in the tables, but lined or shaded out, but in either case kept legible. | Please see response to comment 2c. |
| 2f | **f. Appropriate Use of ESLs –** This comment may not be of concern at the site; however, must be communicated. Please be aware that all ESLs use must reflect the future proposed foundation depth. For example, groundwater or a vapor sample at a site may have been 10 feet below grade surface (bgs) when collected, but may now be 2 ft below the foundation upon excavation, and would not meet the 10 foot separation distance groundwater ESLs assume or the 5 foot separation between a receptor and the contaminant that vapor intrusion ESLs assume. | Noted |

TABLE 1
RESPONSES TO ACEH COMMENTS ON SITE INVESTIGATION WORK PLAN
5th and Magnolia Streets
West Oakland, California

| | ACEH Comment | WEST Response |
|---|---|---|
| 2g | g. **Project Schedule –** It is important to communicate to ACDEH where the project is in the entitlement, project planning, CEQA, building and planning department approval process, when construction is hoped to begin and when project proponents may need a letter from ACDEH for financing concerns. Additionally, a realistic time frame for regulatory review (60 days is standard, however, ACDEH will attempt for a faster response if able to). | The work plan has been updated to include a project schedule. Site development is proposed to begin in February 2017. |
| 2h | h. **Mitigation Measures –** Should mitigation measures be required at the site, the site will require a RAP and / or a HHRA to evaluate risk with and without mitigation measures (assuming no removal of residual contamination below the future foundation). The RAP must be approved by ACDEH and then incorporated into the building plans, which requires coordination with ACDEH, the building department, and the consultant throughout the final plan approval to ensure changes made during building department or planning review do not conflict with ACDEH approved plans. This is a consistent and continued concern at redevelopment sites. All plan changes will also require a professional signed statement from the registered professional that the changes do not affect the proposed mitigation measures. Please recognize that if mitigation measures are required, closure cannot be provided until a final confirmation sampling report is submitted and reviewed (60 days). | As previously discussed with ACEH staff and proposed in the April 2016 Site Investigation Work Plan , a Site Management Plan (SMP) will be prepared for managing soil, soil gas and groundwater, as necessary, during Site development. The SMP would be included as part of the Site development plan submittals and contractor documents. The SMP would be submitted to ACEH for review and approval. |
| 2i | i. **Short-Term Site Management Plan -** Generation of a robust Short-Term SMP to deal with known or unexpected contamination found during redevelopment, including the potential for underground storage tanks that would suggest a contact for the ACDEH CUPA program (Oakland CUPA no longer exists). The SMP must include dust management and monitoring for onsite and offsite receptors, calculations to determine dust trigger values, groundwater or stormwater management, step-out contingency soil samples, and etc. As discussed in the meeting, please be aware that a large removal is essentially a Corrective Action, and a 30 day public notification may be required per state requirements (affecting the Gantt chart inputs; see below). Minor cleanup of incidental contamination is not considered a corrective action. | Please see response to comment 2h. |

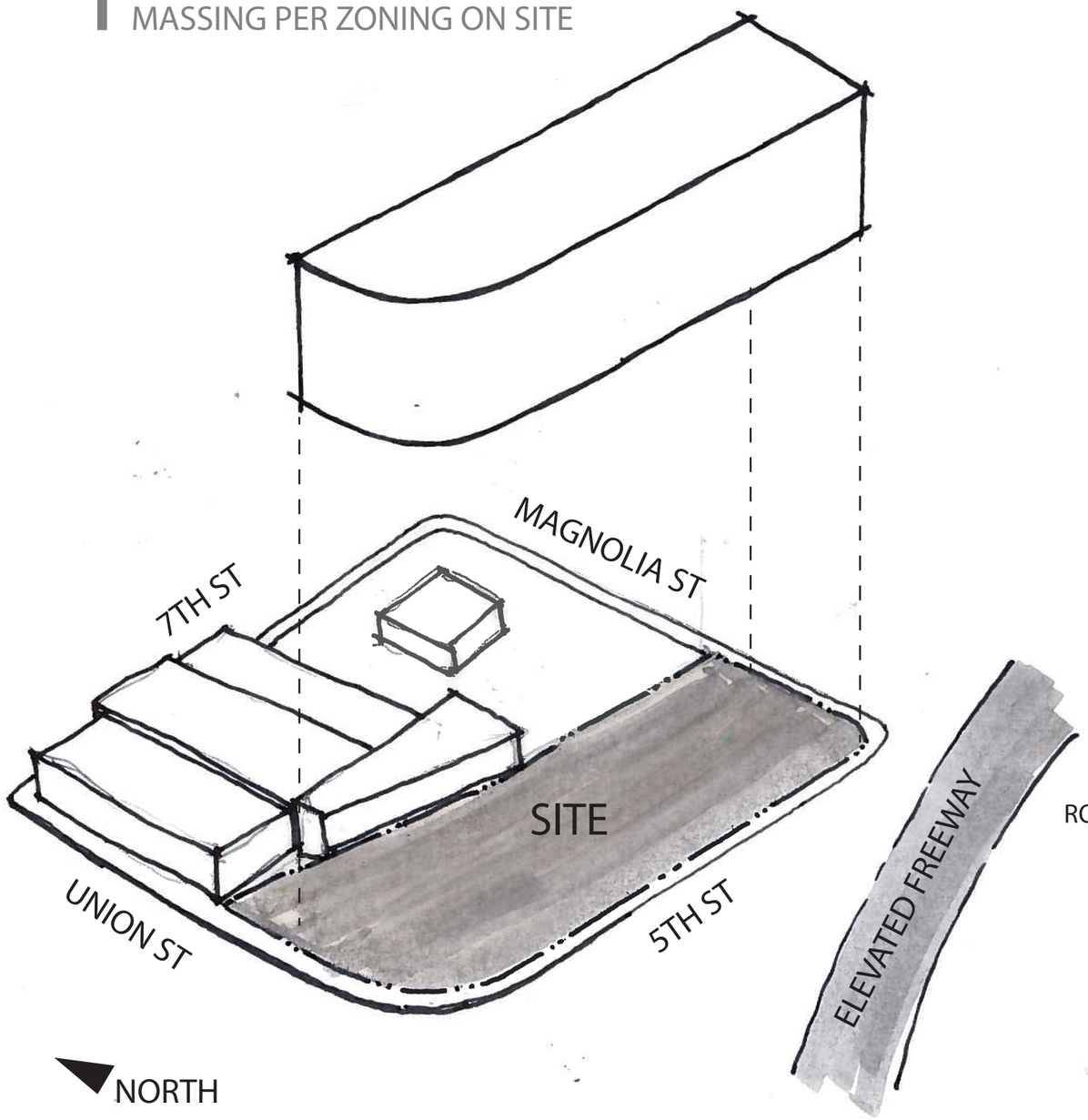
TABLE 1
RESPONSES TO ACEH COMMENTS ON SITE INVESTIGATION WORK PLAN
5th and Magnolia Streets
West Oakland, California

| | ACEH Comment | WEST Response |
|---|---|---|
| 2j | **j. Gantt Chart –** In order for all parties to understand project timelines and goals, and what or what may not, possible relative to the timeline, ACDEH requests the generation and submittal of a Gantt Chart that incorporates standard regulatory review time frames. With concurrence, changes can be made to meet certain timelines. This is requested to be submitted as a separate document, concurrent with the requested work plan addendum, in order to allow for modifications to be made. | A Gantt Chart depicting the project timelines is being prepared and will be submitted to ACEH under separate cover. The proposed development start is for February 2017. |
| 3 | **3. Land Use Covenant –** The Porter-Cologne Water Quality Act requires that any regulatory agency in California use a deed restriction / land use covenant (LUC) if contamination above goals (ESLs or other) is proposed to remain at a site. As discussed in the meeting, ACDEH understands that a LUC is acceptable to project proponents. As planned residual non-volatile contamination will be left in-place at the site that is above site defined goals (such as ESLs), but which will be isolated from potential receptors. A Long-Term SMP, Institutional Controls (ICs), Activity Use Limitations (AULs) and Codes, Covenants, and Restrictions (CCRs) will be required to manage the potential for receptors, principally through subsurface incursions, to encounter and properly manage residual contamination that is encountered. Potential receptors will include maintenance, construction, and garden workers, among others that may be identified. A copy of the standard Alameda County LUC will be forwarded under separate cover. | Noted. Please forward a copy of the standard Alameda County LUC for review. |
| 4 | **4. GeoTracker Compliance** – A review of the State Water Resources Control Board's (SWRCB) GeoTracker website indicates the site has not been claimed. Because this is a state requirement, ACDEH requests that the site be claimed in GeoTracker by the date identified below.<br>Pursuant to California Code of Regulations, Title 23, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1, beginning September 1, 2001, all analytical data, including monitoring well samples, submitted in a report to a regulatory agency as part of the UST or LUST program, must be transmitted electronically to the SWRCB GeoTracker system via the internet. Also, beginning January 1, 2002, all permanent monitoring points utilized to collect groundwater samples (i.e. monitoring wells) and submitted in a report to a regulatory agency, must be surveyed (top of casing) to mean sea level and latitude and longitude to sub-meter accuracy using NAD 83. A California licensed surveyor may be required to perform this work. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs, including SLIC programs. Additionally, pursuant to California Code of Regulations, Title 23, Division 3, Chapter 30, Articles 1 and 2, Sections 3893, 3894, and 3895, beginning July 1, 2005, the successful submittal of electronic information (i.e. report in PDF format) shall replace the requirement for the submittal of a paper copy. Please claim your site and upload all future submittals to GeoTracker by the date specified below. Electronic reporting is described below on the attachments.<br>Additional information regarding the SWRCB's GeoTracker website may be obtained online at http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/ and http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml) or by contacting the GeoTracker Help Desk at geotracker@waterboards.ca.gov or (866) 480-1028. | The Site has been claimed on Geotracker and documents uploaded. |

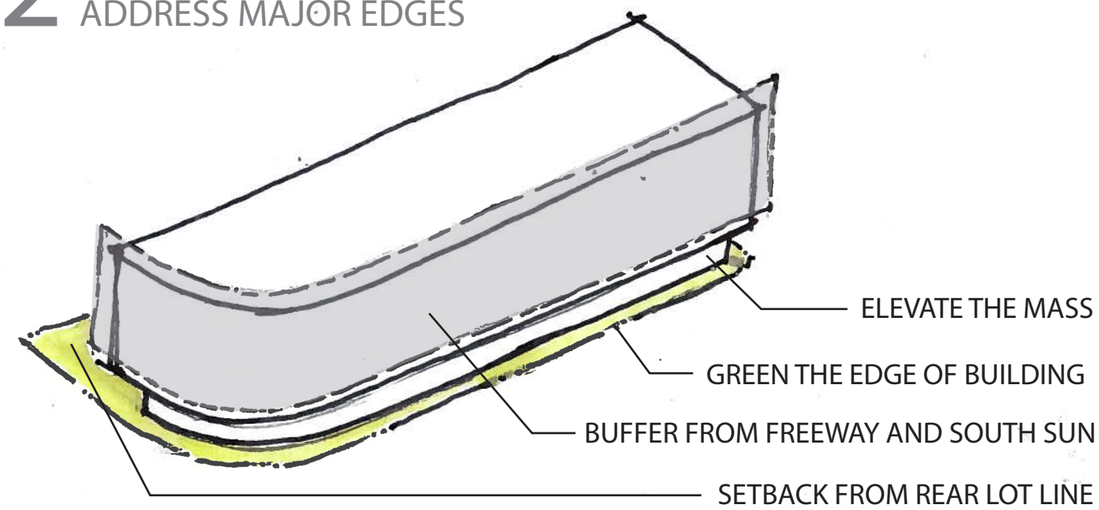
# APPENDIX B

# PROPOSED DEVELOPMENT PLANS

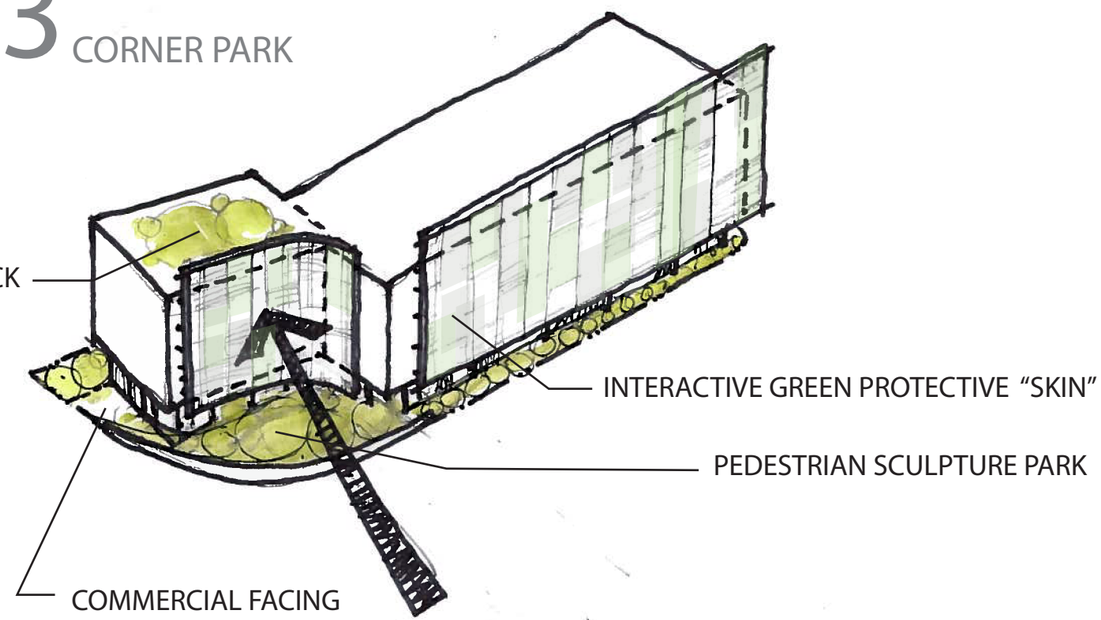
## 1 MASSING PER ZONING ON SITE




## 2 ADDRESS MAJOR EDGES

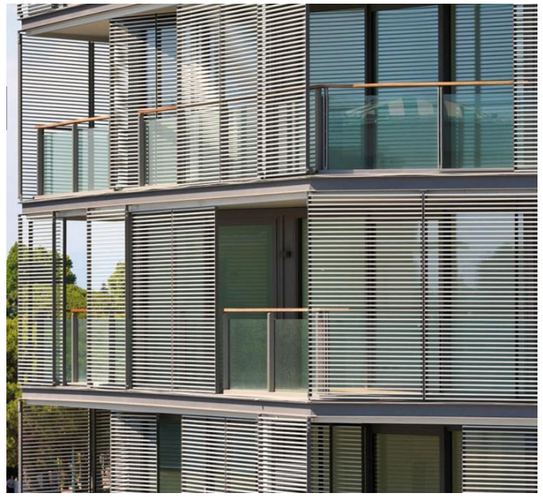


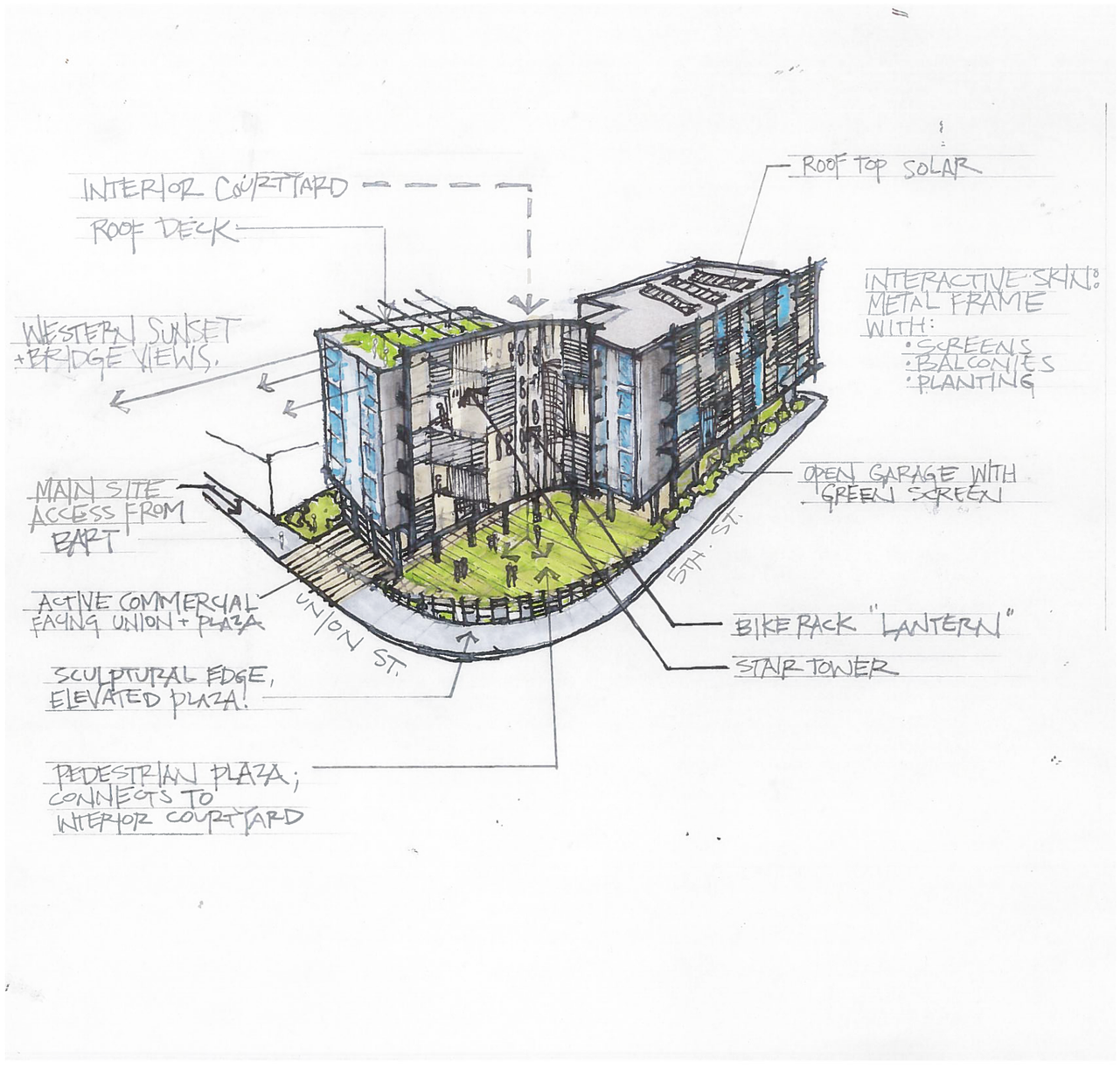

## 3 CORNER PARK

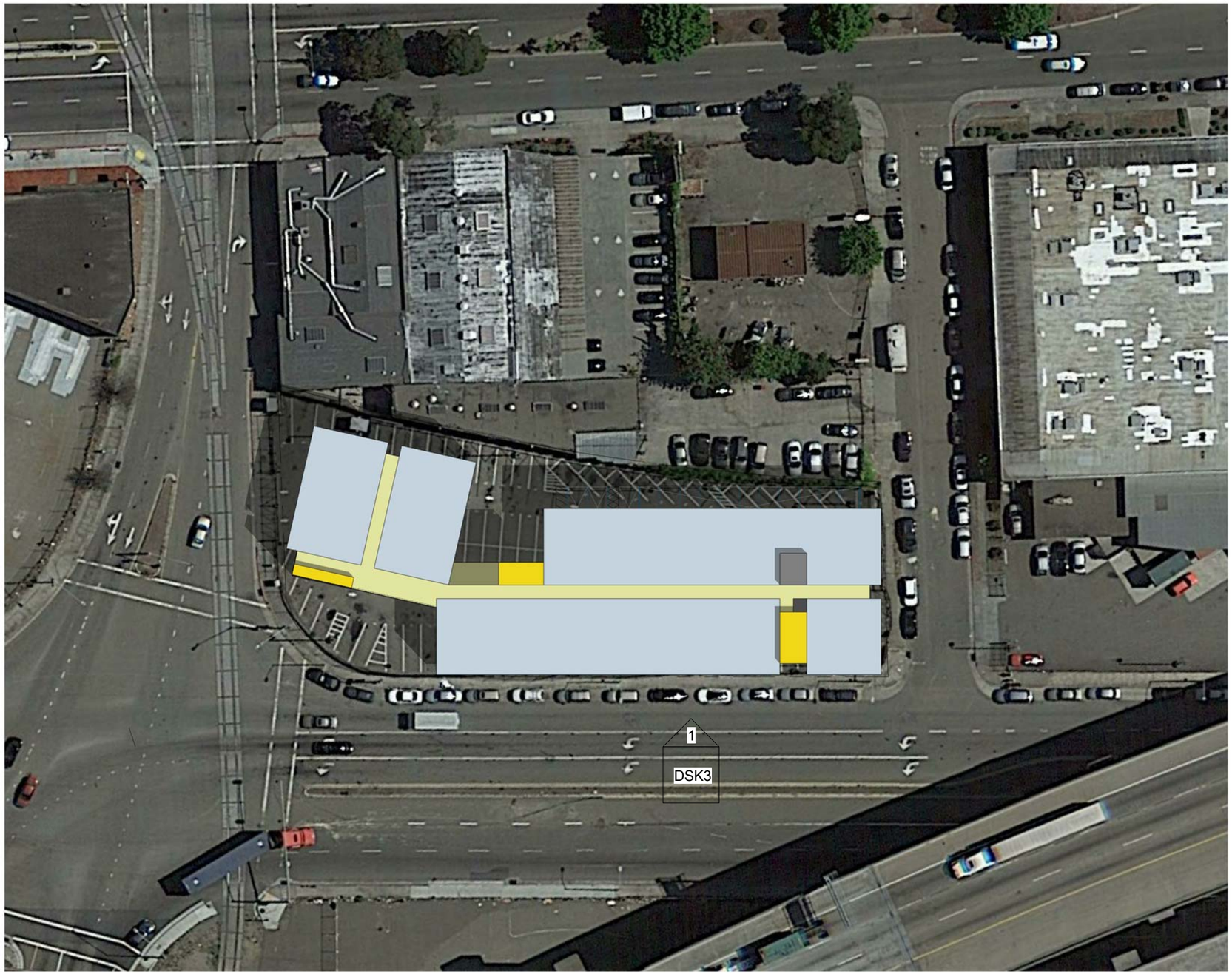



INVERT CORNER CURVE TO
CREATE SUNNY CORNER PARK

21525 THE UNION
2015-10-21




INTERIOR COURTYARD
ROOF DECK
ROOF TOP SOLAR
WESTERN SUNSET
+BRIDGE VIEWS.
INTERACTIVE SKIN:
METAL FRAME
WITH:
• SCREENS
• BALCONIES
• PLANTING
MAIN SITE
ACCESS FROM
BART
OPEN GARAGE WITH
GREEN SCREEN
5TH. ST.
ACTIVE COMMERCIAL
FACING UNION + PLAZA
UNION ST.
BIKE RACK "LANTERN"
STAIR TOWER
SCULPTURAL EDGE,
ELEVATED PLAZA!
PEDESTRIAN PLAZA;
CONNECTS TO
INTERIOR COURTYARD




David Baker Architects

Holliday Development

# The Union

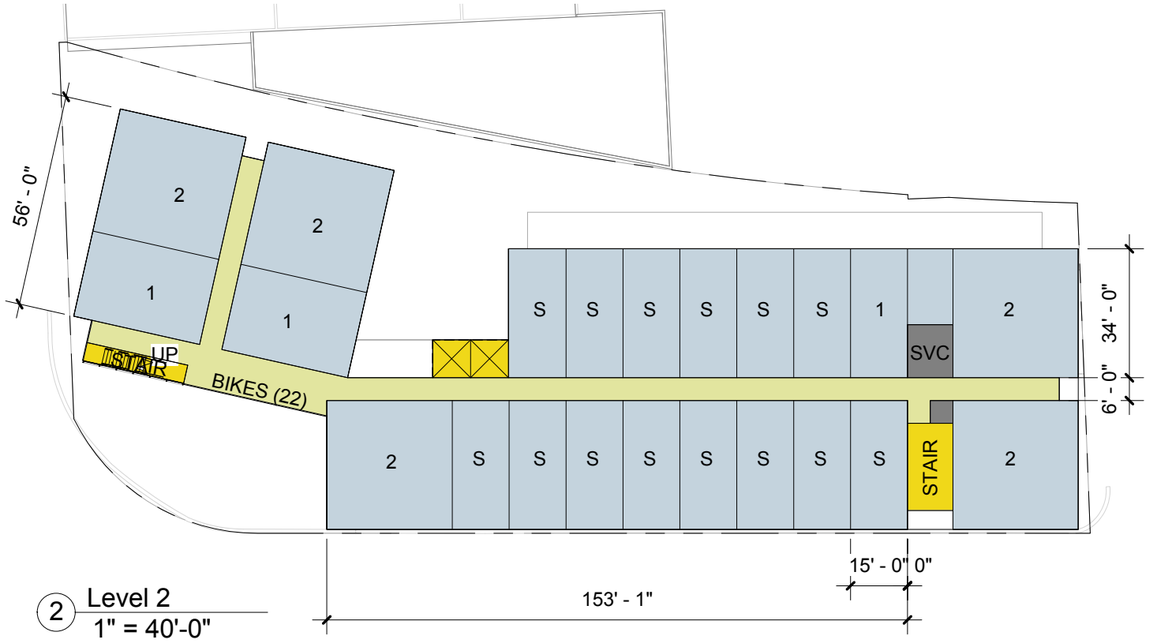
Site Plan

21410

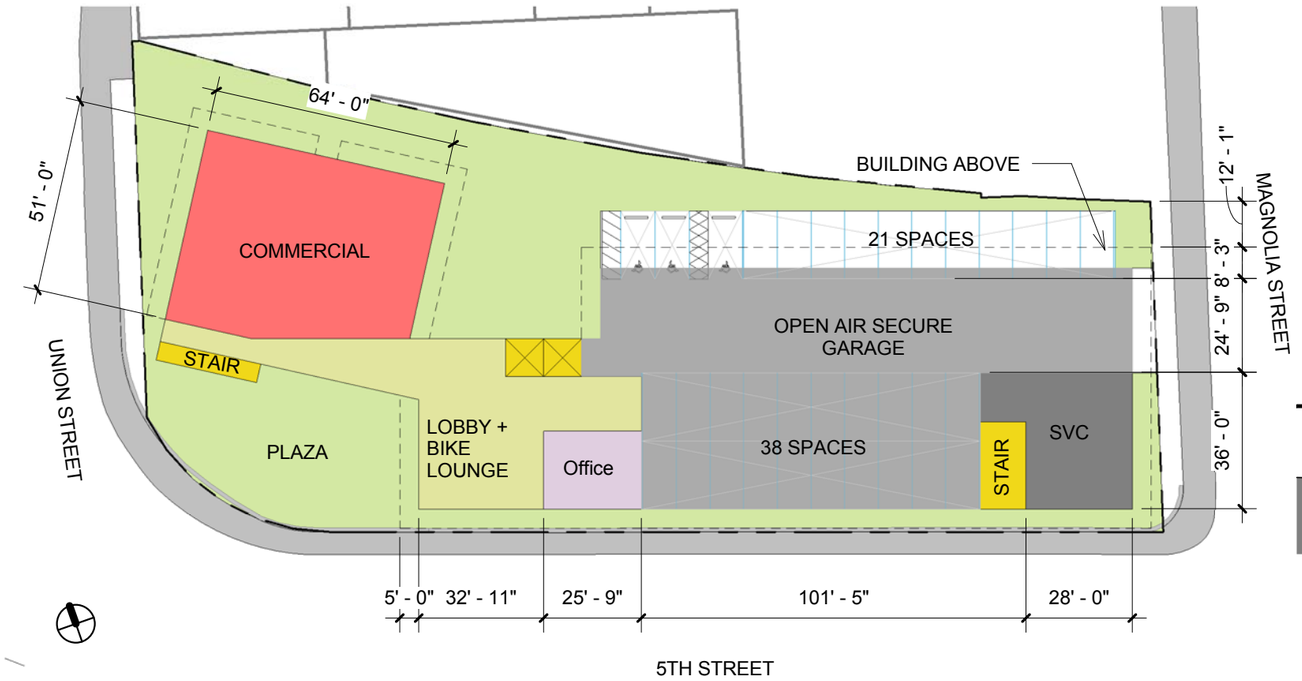
scale: 1" = 50'-0"

date: 10/22/2015

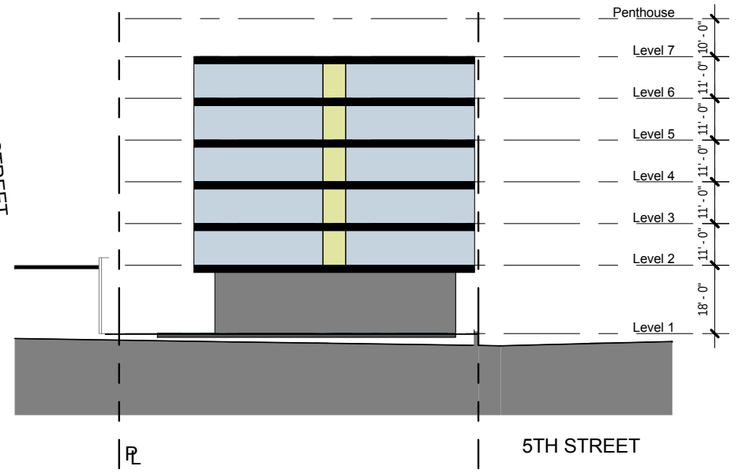
A101




2 Level 2
1" = 40'-0"




1 Level 1
1" = 40'-0"




4 Section 2
1" = 40'-0"

PROJECT DATA

| | |
|---|---|
| Circulation Horiz. | 12778 SF |
| Circulation Vert. | 2882 SF |
| Commercial | 3079 SF |
| Common | 531 SF |
| Garage | 7131 SF |
| Residential | 75363 SF |
| Service | 1164 SF |
| | 102927 SF |

| UNIT SUMMARY | | |
|---|---|---|
| UNIT MIX | AREA | COUNT |
| Studio | 510 SF | 80 UNITS |
| 1 Bedroom | 730 SF | 15 UNITS |
| 2 Bedroom | 1000 SF | 25 UNITS |
| **TOTAL** | | 110 **UNITS** |

David Baker Architects

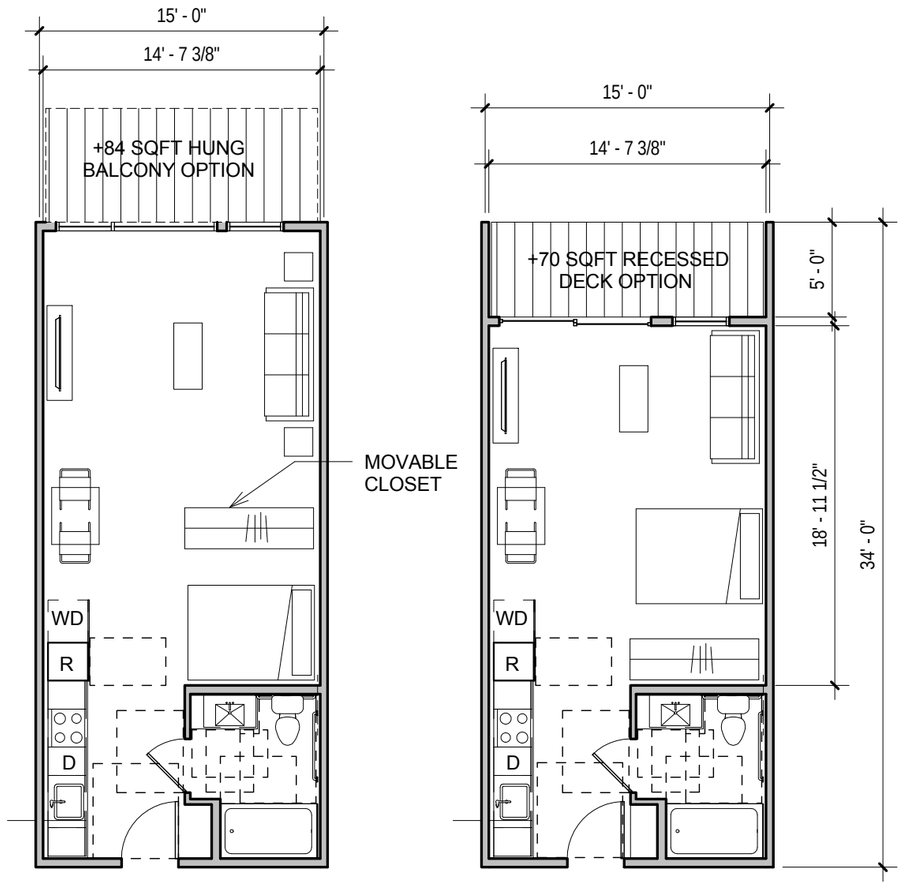
Holliday Development

# The Union

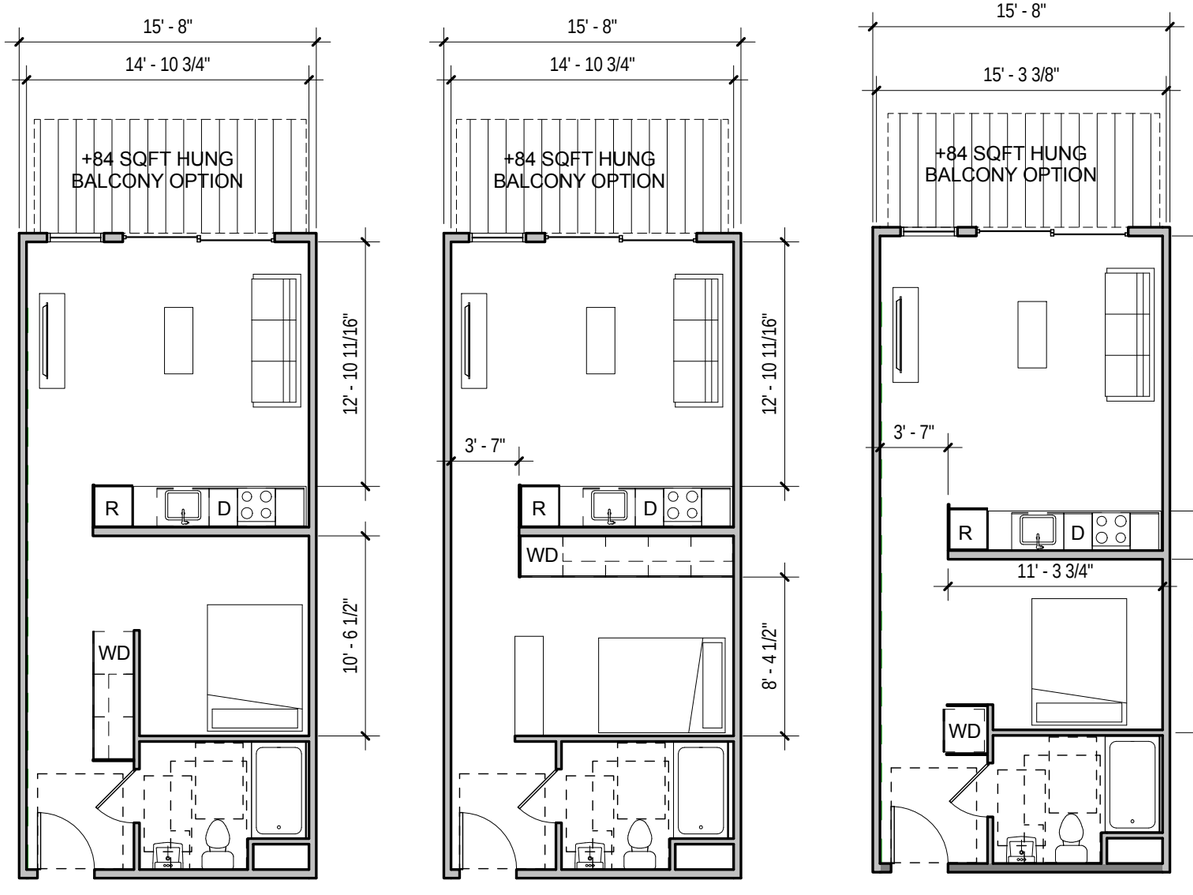
VERSION 2

21410
scale: 1" = 40'-0"
date: 10/22/2015

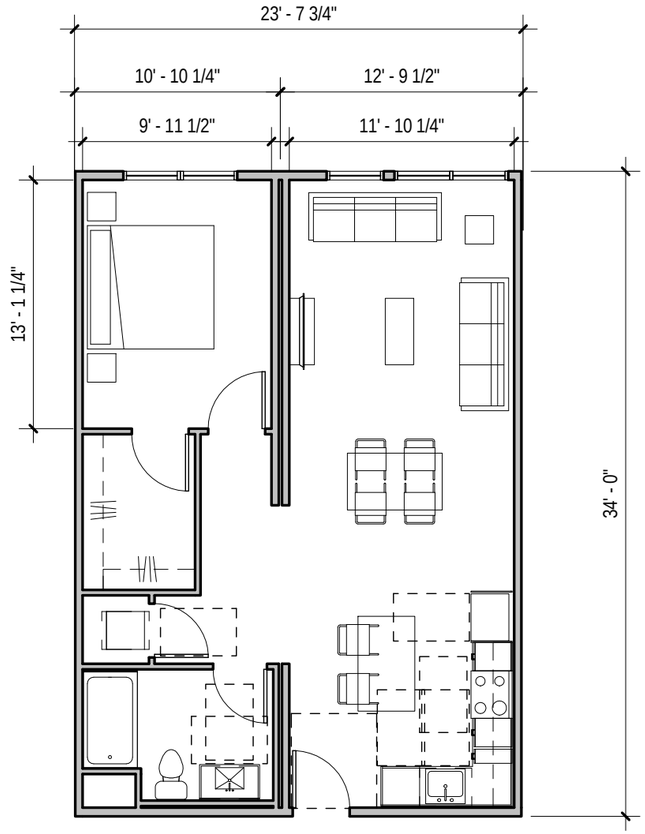
A102



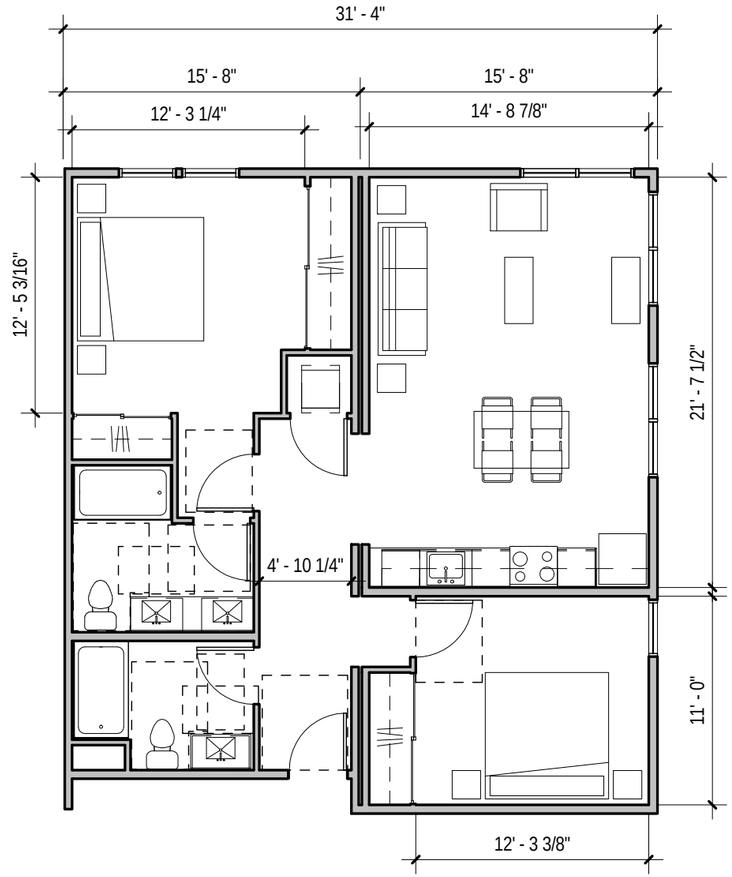

1 Studio Type A
1/8" = 1'-0"




2 Studio Type B
1/8" = 1'-0"




1 1BR
1/8" = 1'-0"




2 2BR
1/8" = 1'-0"

# APPENDIX C

# STANDARD OPERATING PROCEDURES

WEST
Environmental Services & Technology

# SOP-SG-1

# STANDARD OPERATING PROCEDURE

# SOIL GAS WELL SAMPLING

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# 1.0 PRE-FIELD ACTIVITIES

Prior to conducting sampling, the following pre-field activities will be conducted.

## 1.1 PERSONNEL QUALIFICATIONS AND HEALTH AND SAFETY

All field samplers working at sites containing hazardous waste will meet the requirements of the Occupational Safety and Health Administration (OSHA) regulations. This may include the sampler being 40-hour HAZWOPER trained and 8-hour HAZWOPER refresher trained in accordance with federal OSHA regulation 29 CFR 1910.120. Field samplers will also be trained in the use of the sampling equipment either prior to use of the equipment or onsite during the sampling by trained sampler. The sampling team will read, and be familiar with the site Health and Safety Plan and relevant standard operating procedures (SOPs).

### 1.1.1 Health and Safety Equipment

For safety purposes, a reflective safety vest, steel-toed shoes and disposable nitrile gloves will be worn during sampling activities. Refer to the Health and Safety Plan for the site-specific personnel protective equipment and job hazards. The gloves will be changed between sampling locations.

#### 1.1.1.1 PHOTOIONIZATION DETECTOR

Total organic vapors will be monitored using a photoionization detector (PID) equipped with a 10.6 electron volt (eV) lamp and calibrated to 100 parts per million by volume ($ppm_v$) using isobutylene gas.

## 1.2 SAMPLING SUPPLIES

Sampling supplies and forms will include sample containers, sample tags or labels, and documentation including logbook or forms and site details.

### 1.2.1 Informational Materials and Forms

A copy of the Health and Safety Plan, monitoring well construction data, relevant work plans and/or SOPs, location map(s), field data from previous sampling event, and sampling forms will be brought for the sampling event. Sampling forms may include, but are not limited to: field notebook or field record forms; chain-of-custody forms; and/or sample collection field data sheets.

## 1.3 PRE-SAMPLING OBSERVATIONS

Prior to sampling, the condition of the vapor wells will be checked and observations recorded. If repairs are needed, appropriate personnel will be notified and the wells repaired prior to sampling.

# 2.0 SAMPLE COLLECTION

The purpose of the vapor well sampling procedure is to collect samples from existing vapor wells that are representative of conditions. Details of the vapor well sampling protocols are presented below.

## 2.1 APPLICABLE GUIDANCE

Vapor samples will be collected following the October 2011 California Environmental Protection Agency's (CalEPA) Department of Toxic Substances Control (DTSC) *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (*Vapor Intrusion Guidance*) and CalEPA's 2015 *Advisory Active Soil Gas Investigation* and whole gas sampling technique as outlined in ASTM D 5466 *Standard Test Method for Determination of Volatile Organic Chemicals in Atmospheres – Canister Sampling Methodology* (ASTM D 5466).

## 2.2 SAMPLING EQUIPMENT

Prior to the site visit, equipment and supplies will be collected that are appropriate for the site conditions. An equipment and supply checklist will be filled out prior to mobilization to the site. Details of the types of equipment needed for sample collection are provided below.

### 2.2.1 Sampling Devices

The vapor well samples collected using Summa canister whole gas sampling technique will be conducted as outlined in ASTM D 5466. The crawlspace samples will be collected using laboratory-prepared one-liter passivated stainless steel Summa canisters delivered by the analytical laboratory with approximately 30-inches of mercury vacuum. The vacuum within the Summa canisters will be measured before sample collection to document the canister atmosphere.

The vapor well samples collected using sorbent tube sampling technique will be conducted as outlined in USEPA Compendium Method TO-17 (Method TO-17).

## 2.3 LEAK TESTING

Before obtaining soil gas samples, leak tests will be conducted. Details of the types of leak tests to be conducted are presented below.

### 2.3.1 "Shut-In" Test

Prior to purging or sampling soil gas, a test will be conducted to check for leaks in the aboveground fittings, i.e., "shut-in" test. The shut-in test will consist of assembling the above ground apparatus (e.g., valves, lines and fittings downstream from the top of the probe), and evacuating the lines to a measured vacuum of approximately 100-inches of water column, then shutting the vacuum with closed valves on opposite ends of the sampling equipment. The vacuum gauge connected to the line via "T"-fitting will be observed for at least one minute and if there is observable loss of vacuum, the fittings will be adjusted, as needed, until the vacuum in the aboveground portion of the sampling equipment does not dissipate.

### 2.3.2 Quantitative Leak Testing in the Probe and Sampling Train

Following the "shut-in" test, helium will be applied at the connections of the sampling equipment including valves, gauges, tubing, manifold and sample container. Helium will be used for leak tracer testing by placing a shroud over the probe and sampling equipment. Helium will be released into the shroud and a handheld helium detector will be used to monitor and maintain a reasonably steady concentration, which will be recorded on field data forms. The helium concentration in the shroud will be at least 10-percent or two orders of magnitude higher than the reporting-limit of the field meter used to analyze the sample. Laboratory analysis of the soil gas samples will include testing for helium gas. The analysis of the tracer compound will be used to assess leakage.

## 2.4 SAMPLE COLLECTION

Following purging activities, the tubing will then be attached to an analytical laboratory-prepared one-liter Summa canister or sorbent tube. The Summa canisters will be delivered by the analytical laboratory with a vacuum of approximately 30-inches of mercury and outfitted with 0.125-liter per minute flow control valve. The tubing will be connected to the Summa canister or sorbent tube using airtight fittings. The flow control valve on the Summa will be opened slowly to draw the vapor sample from the target depth. For sorbent tube sampling, tubing will be connected to as peristaltic pump with a flow rate between 50ml/min to 200 ml/min (dependant on sorbent tube type; for typical flow rates see attached Method TO-17). Following sample collection, the Summa canister atmosphere will be measured with a vacuum gauge and recorded on field data forms. Flow rates and duration for sorbent tube sampling will be recorded on field data forms.

The Summa canisters and/or sorbent tubes will then be labeled and transported to a California Department of Public Health (CDPH) Environmental Laboratory Accreditation Program (ELAP) certified laboratory pursuant to ASTM D 4840 chain-of-custody protocols.

If low-flow or no-flow conditions (e.g., fine-grained soil, clay, soil with vacuum readings that exceed approximately 10-inches of mercury or 136 inches of water) are encountered, and low-flow sampling is not successful, soil matrix sampling using EPA Method 5035A and analysis using United States Environmental Protection Agency (USEPA) 8260B will be conducted (DTSC, 2011).

## 2.5 LABORATORY ANALYSIS

Once the sampling has been completed, the samples will be transported to the laboratory following the chain-of-custody procedures outlined in ASTM D 4840 for chemical analysis using USEPA Method TO-15 (summa canisters) or USEPA TO-17 (sorbent tubes). The laboratory will be advised to conduct analysis of the whole gas samples within 30-days of receipt.

## 2.6 QUALITY CONTROL

Analytical data will be subject to quality control review and validation by both the laboratory and prior to completion of the report by WEST. A data quality usability evaluation will be conducted and will incorporate the following: (1) review of laboratory reports; (2) documentation of geographic location of samples and sampling procedures; (3) whether data are representative of Site conditions; (4) appropriateness of laboratory analytical methods and detection limits; and (5) laboratory surrogate recovery, method blank data, precision and accuracy.

The laboratory quality assurance will included a review of method blanks, matrix spike recovery; matrix spike duplicates; and sample hold times. Field sampling and transportation procedures will also be reviewed for: sample collection methodology; sample containers; sample storage; and sample duplicates.

# 3.0 REFERENCES

ASTM, *Standard Guide for Sample Chain-of-Custody Procedures D 4840-99* (ASTM D 4840).

ASTM, *Standard Test Method for Determination of Volatile Organic Chemicals in Atmospheres - Canister Sampling Methodology* (ASTM D 5466).

CalEPA, *Advisory Active Soil Gas Investigation*, July 2015 (CalEPA, 2015).

DTSC, *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)*, October 2011 (DTSC, 2011).

USEPA, *Compendium Method TO-17, Determination of Volatile Organic Compounds in Ambient Air Using Active Sampling Onto Sorbent Tubes, EPA/625/R-96/010b*, January 1999 (USEPA, 1999).