March 3, 2017

City Ventures

Mr. Keith Nowell
Hazardous Materials Specialist
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

RECEIVED
By Alameda County Environmental Health 2:53 pm, Apr 04, 2017

Re:
Remedial Action Plan
City Ventures Oakland 2 Site
2240 Filbert Street, Oakland
ACEH Site RO#0003157
Stantec PN: 185703027

Dear Mr. Nowell:

Enclosed with this cover letter is the Remedial Action Plan for the above-referenced City Ventures Oakland 2 location.

As an authorized representative of City Ventures, I offer the following statement:

I, Andrew Warner, declare, under penalty of perjury, that the information and/or recommendations contained in the enclosed Report are true and correct to the best of my knowledge.

Should you have any questions please contact me at (415) 845-0293 or andrew@cityventures.com.

Thank you,

Andrew Warner
Director Development
City Ventures

Remedial Action Plan

Multiple Parcels
West Grand Avenue, Filbert, and Myrtle Street
Voluntary Remediation Action
Case RO3157
Oakland, California
Stantec PN: 185703027

Prepared for:
City Ventures
444 Spear Street, Suite 200
San Francisco, California

Prepared by:
Stantec Consulting Services Inc.
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Rocklin California 95765

March 2, 2017

Limitations and Certifications

This report was prepared in accordance with the scope of work outlined in Stantec's Master Services Agreement with City Ventures and with generally accepted professional engineering and environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of City Ventures for the express purpose stated above. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Stantec. To the extent that this report is based on information provided to Stantec by third parties, Stantec may have made efforts to verify this third party information, but Stantec cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties, expressed or implied are made by Stantec.

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Information, conclusions, and recommendations provided by Stantec in this document have been prepared under the supervision of and reviewed by the licensed professional whose signature appears below.

Licensed Approver:

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Abbreviations and Acronyms

ACEH	Alameda County Environmental Health
APN	Assessor Parcel Number
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
COPC	chemical of potential concern
CV	City Ventures
DTSC	Department of Toxic Substance Control
ESA	Environmental Site Assessment
ESL	Environmental Screening Level
LRL	laboratory reporting limit
LTCP	Low Threat Closure Policy
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MTBE	methyl tertiary-butyl ether
PCB	polychlorinated biphenyl
PID	photoionization detector
ppb	parts per billion
RSL	Regional Screening Level
RWQCB	Regional Water Quality Control Board
Stantec	Stantec Consulting Services Inc.
SWRCB	State Water Resources Control Board
TMC	T. Makdissy Consulting, Inc.
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHms	total petroleum hydrocarbons as mineral spirits
TPHog	total petroleum hydrocarbons as oil and grease
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
USCS	Unified Soil Classification System
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

1.0 INTRODUCTION / EXECUTIVE SUMMARY

This Remedial Action Plan (RAP) was prepared by Stantec Consulting Services Inc. (Stantec), on behalf of City Ventures (CV) for the real property located at 2240 Filbert Street in Oakland, California (the "Site"; Figure 1). Previously, the Site was granted closure in 1997 as Alameda County Department of Environmental Health (ACEH) Case File RO0002722. CV previously notified ACEH of the proposed change in the use of the Site – from commercial/industrial use to residential use (*see* Voluntary Remedial Action Case File RO0003157). The purpose of the RAP is to outline the data gap analysis and investigation and the potential remedial actions necessary to obtain confirmation from ACEH that no further environmental assessment of the Site is required as a condition for redeveloping the Site for residential purposes. The term "Site" is used to refer to both the West Grand Block and the Market Street Block (Figure 2).

This document includes an update to the Environmental Site Summary (ESS) that was developed in March 2015, the *Amended* ESS submitted in December 2015, and the Revised ESS that was submitted in July 2016. The newly revised ESS Report documents recent sampling conducted in September 2016, and summarizes all known previous investigations and collected Site data (*Final Environmental Site Summary*) included in Appendix A.

This RAP also includes a *Human Health Risk Assessment* (HHRA), prepared using the current data set to evaluate for potential future receptors (the Site is currently vacant, bare soil and potentially complete exposure pathways include on-Site resident-inhalation of volatile organic compounds (VOCs) migrating from the subsurface to indoor air and outdoor air in areas designed for pavers, on-Site commercial (retail) workers- inhalation of VOCs migrating from the subsurface to indoor air, and onsite construction/utility workers during redevelopment activities- direct exposure to soil including incidental ingestion, dermal contact and inhalation of particulates and vapors (Appendix B). Based on the scenarios assessed in the HHRA, results indicate no unacceptable risk to future on-Site residential or commercial (retail) workers from the transport of VOCs to indoor air or to outdoor air, or to construction workers by any exposure route. The HHRA also provides conservative Site-specific screening levels for comparison to the proposed data gap sample results needed to confirm Site conditions in advance of Site closure.

As discussed below, multiple rounds of subsurface investigations have been performed at the Site to evaluate residual contaminant concentrations in soil, soil vapor, and groundwater. Previous investigation at the Market Street Block indicated that two limited and localized areas of lead-impacted soil were present at levels above the regulatory screening level. An Interim Remedial Action Plan (IRAP) was submitted in November 2015, and subsequently approved by the ACEH in a letter dated April 18, 2016. The lead-impacted soil at the Market Street Block was addressed through limited excavation and off-site disposal, as detailed in the *Excavation Summary Report (ESR),* included in Appendix C.

At the Market Street Block, soil excavation is complete and no additional remedial action is recommended. Soil vapor sampling to address previous detections of VOCs and petroleum hydrocarbons in groundwater from an upgradient source is proposed to document vapor

conditions for comparison to screening levels generated in the HHRA. If results of the sampling are favorable, no remedial activities will be recommended for the proposed residential development at the Market Street Block.

As discussed in the Final ESS, at the West Grand portion of the Site, soil excavation was conducted as part of elevator shaft, clarifier and tank removal activities. Based on the results of existing Site data and the HHRA, no further remedial action is recommended for the West Grand Block at this time. Soil vapor sampling to document maximum concentrations of VOCs in soil vapor and sampling of shallow soil to document residual metal and petroleum hydrocarbon concentrations are proposed to fill data gaps in the existing data set for the West Grand Block.

This RAP evaluates the potential need for additional work to achieve No Further Action status for the Site as a whole, which includes both the West Grand Block and the Market Street Block. As part of the scope of additional work, soil and soil vapor sampling is included to fill data gaps identified by in this RAP. In the event that the results of the proposed further data gap investigation indicate unforeseen elevated contaminant concentrations above screening levels, this RAP provides for specific remedial actions to address the detected contaminants.

As requested in a meeting between CV and ACEH on February 2, 2017, a master summary table has been generated to compile all historical data for the Site, and provide reference to the original report in which the data was presented (Appendix D).

2.0 BACKGROUND

2.1 SITE DESCRIPTION AND HISTORICAL USE

The Site is comprised of multiple parcels located between West Grand Avenue, 24th Street, Filbert Street, and Market Street in the City of Oakland, County of Alameda, California (see Figure 2). For purposes of this report, the area of the former Safeway Ice Cream Plant, between West Grand Avenue, Filbert Street, 24th Street, and Myrtle Street, will be referred to as the "West Grand Block" (see Figure 2). The area of the former parking lot property, located between Myrtle Street and Market Street, will be referred to as the "Market Street Block".

The Assessor Parcel Numbers (APNs) for the West Grand Block consist of the following:

- 005-430-017-02 (2338 Filbert Street); and
- 005-430-013-04 (2210 Filbert Street).

The APNs for the Market Street Block consist of the following:

- 005-431-024 (Myrtle Street), -025 (2242 Myrtle Street), -026 (Myrtle Street),-027 (Myrtle Street), and -028 (2310 Myrtle Street);
- 005-431-015-03 (2303 Market Street); and
- 005-431-011 (2317 Market Street) and -012 (2315 Market Street).

The Site is located in a mixed-use, light industrial and residential area of West Oakland. The Site is bounded to the north by 24th Street followed by a vacant light industrial structure, churches, and residences; to the east by Myrtle and Market Streets beyond which are residences, auto body shops, and a restaurant; to the west by Filbert Street beyond which are light industrial buildings and residences; and to the south by West Grand Avenue followed by a vacant light industrial building, residences, and a multi-tenant commercial structure.

2.2 SITE DEVELOPMENT

2.2.1 West Grand Block

The West Grand Block was historically occupied by residential structures until approximately 1950 when the Union Ice Company plant was built on the south side of the West Grand Block. Additional businesses, including an automobile repair shop, a cabinet shop, and a cleaning and dyeing works company, occupied the West Grand Block until the late 1950s. The Safeway Ice Cream Plant operated at the Site from 1960s until 1994.

The building was converted into multi-tenant space in 1994 when the plant closed. Former tenants included food storage companies, an import car service, and an auto repair facility. The building was vacated in mid-2011.

Historic files for the West Grand Block indicate the presence of former underground storage tanks (USTs). Further information regarding the USTs is provided in Section 2.8.

2.2.2 Market Street Block

The Market Street Block has been used either as residential or as a parking lot for the former Safeway Ice Cream Plant, with no significant industrial or commercial use, since at least the early 1900s (Gribi, 2005). Historical releases resulting in residual impacts to soil and groundwater have been documented at the adjacent property to the South of the Market Street Block (Cornerstone, 2016).

2.3 GEOLOGIC AND HYDROGEOLOGIC SETTINGS

2.3.1 Site Topography

The Site is at an elevation of approximately 16 feet above mean sea level and the regional topographic gradient is to the general west/northwest. Some areas of the West Grand Block property (the former loading dock areas on the east side and north end of the Site along Myrtle Street and 24th Street, respectively) were at one time topographically approximately 8 feet below grade and still remain below sidewalk grade. Prior to development, this area will be filled, and the site will be effectively flat. All fill soil will be approved by the County prior to importing.

In the past year the top 2-3 feet of portions of the West Grand Block have been sub-excavated and re-compacted in place. No soil was imported to the Site during those activities, and no on-site soil has been moved laterally across the West Grand Block.

2.3.2 Geologic Setting

Subsurface conditions beneath the Site consist of coarse gravel fill to a depth of up to one foot below ground surface (bgs); dense clay between approximately 1 and 9 feet bgs; well graded sand with gravel and clay between approximately 9 and 13 feet bgs; and clay between approximately 13 and 19 feet bgs (IT 1996a).

The depth-to-groundwater is approximately 9 to 11 feet bgs with a west/southwest flow direction at the Site (IT 1996b). Based on limited monitoring events at properties adjacent to and in the vicinity of the Site. More recently, groundwater has been documented to flow in the west to northwesterly direction (Cornerstone, 2016).

2.4 SUMMARY OF INVESTIGATIONS

A summary of Site investigations is provided in the Final ESS (Appendix A) and summarized in the sections below. Analytical results for the West Grand Block soil, groundwater, and soil vapor samples are provided in Tables 1,2, and 3, respectively. The analytical results for the Market Street Block soil and groundwater samples are presented in Tables 4 and 5, respectively. Sampling locations at the West Grand Block and Market Street Block are shown on Figure 2.

Environmental Screening Levels (ESLs) and Site-specific screening levels were used as screening criteria for detected chemical constituents. The ESLs are considered to provide long-term protections of human health and the environment. Site-specific screening levels were calculated in the HHRA for a number of chemicals. The comparison of detected concentrations to screening levels was conducted to determine where remediation efforts are necessary for the Site to achieve regulatory closure and be cleared for redevelopment.

Based on the subsurface investigations completed to date, the only potential existing exposure in a residential land use scenario is direct contact with petroleum-impacted soils at a depth of approximately 10 feet on the West Grand Block. Although soil is unlikely to be accessed at this depth, CV's proposed redevelopment plans (Figure 3) will include concrete, asphalt, or concrete cover across the Site, providing additional protection for the direct contact scenario as a potential exposure pathway. At the Market Street Block, soil excavation has been completed in accordance with the IRAP to remove areas where lead concentrations were previously reported above screening criteria. Figures 5 through 11 present the results of historical soil, groundwater, and soil vapor sampling conducted at the Market Street and West Grand Block. The Market Street Block summary of excavation activities and results of confirmation sampling are presented under separate cover (Appendix C).

A master summary table containing information for all known samples collected at the Site is included in Appendix D.

2.4.1 March 1994 Environmental Site Assessment

In March 1994, McCulley, Frick & Gilman, Inc. (MFG) completed an ESA (MFG, 1994) to evaluate soil and groundwater quality on the West Grand Block. MFG then conducted a geophysical survey in June 1994 to further assess the possible presence of USTs at the Site. That survey identified one UST and indicated two areas that were likely previous UST locations (Levine-Fricke, 1995).

2.4.2 1994 Site investigation (Phase I and Phase II)

In July 1994, Levine-Fricke conducted an initial subsurface investigation which included the advancement of 27 borings across the West Grand Block. This report is referenced and summarized in Levine-Fricke's document entitled, "*Soil and Ground-Water Investigation Report,*" dated January 17, 1995; however, a complete copy of the July 1994 report was not available for Stantec's review. According to the summary, soil samples were collected from 11 of the soil

borings and grab groundwater samples were collected from all 27 borings advanced in July 1994. The borings were advanced in order to evaluate the potential impact from the six suspected USTs and assess any other potential areas of impact.

In November 1994, Levine-Fricke conducted an additional soil and groundwater investigation to further characterize three areas of interest and delineate the limits of affected shallow groundwater. Thirty-six soil borings were advanced between 15 and 26 feet bgs. Grab groundwater samples were collected from the soil borings and soil samples were analyzed from 23 of the soil borings.

2.4.2.1 Tank 1 and Tank 3 Investigation

Seven borings (SB-22, SB-23, SB-24, SB-25, SB-26, SB-27, and SB-47), were located in the vicinity of the 10,000-gallon UST (Tank 1) and the suspected 1,000-gallon UST (Tank 3) on the west side of Myrtle Street (Figure 2). Soil samples were collected from three of the borings and grab groundwater samples were collected from all seven borings.

2.4.2.2 Soil Samples

Five soil samples were collected from the following borings and depths: B-25 at 13 feet bgs, B-26 at 12.5 feet bgs, and B-47 at 3-, 5-, and 10 feet bgs. All five samples were analyzed for TPH as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX). Two samples (B-25@13' and B-26@12.5') were analyzed for lead and one sample (B-26@12.5') was also analyzed for TPH as diesel (TPHd). The three samples from B-47 were additionally analyzed for TPHms.

The soil sample analytical results are presented in Table 1 and summarized below.

- BTEX, TPHd, and lead were not detected in any of the soil samples;
- TPHg was detected in only one (B-47@10') of the 5 samples at a concentration of 62 mg/kg; and
- TPHms was detected in B-47@10' at a concentration of 1,000 mg/kg.

2.4.2.3 Groundwater Samples

Groundwater samples were collected at all seven locations. The analysis performed for each sample is listed below:

- B-22 – ethylene glycol;
- B-23 – BTEX, TPHg, and ethylene glycol;
- B-24 - BTEX, TPHg, and ethylene glycol;
- B-25 – BTEX, TPHg, TPHd, and organic lead;

- B-26 - BTEX and TPHg;
- B-27 - BTEX, TPHg, and ethylene glycol; and
- B-47 - BTEX, TPHg, and TPHms.

The groundwater sample results are presented in Table 2 and summarized below.

- The grab groundwater sample collected from the boring SB-25, adjacent to Tank 1, contained 100 micrograms per liter (µg/L) of TPHg and 0.5 µg/L of benzene;
- All other results for BTEX, TPHg, TPHd, and TPHms were below laboratory reporting limits (LRLs) (i.e., the results were "non-detect"); and
- Ethylene glycol and lead were non-detect in all samples analyzed.

2.4.3 Tank 2 Investigation

Groundwater samples were collected at two locations (B-3 and B-4) in the vicinity of Tank 2 at the corner of Filbert Street and West Grand Avenue in July 1994 (Figure 2). Soil samples from this area were not analyzed as part of the 1994 or 1995 investigations.

Groundwater samples were analyzed for TPHd and ethylene glycol. The sample from B-4 was also analyzed for BTEX and TPHg. Groundwater sample results are presented in Table 2.

- TPHd, BTEX, and ethylene glycol were not detected above LRLs; and
- TPHg was the only detected analyte at 100 µg /L in the sample from B-4.

2.4.4 Tank 4 and Tank 5 Investigation

Two soil borings (B-5 and B-6) were advanced adjacent to the suspected former heating oil UST cavity (Tanks 4 and 5) along Filbert Street (Figure 2). The soil sample from B-5 was analyzed for TPH as oil and grease (TPHog) and non-polar hydrocarbons (NPH). The soil sample from B-6 was analyzed for BTEX, TPHg, TPHd, TPHog, NPH, and lead. Grab groundwater samples from these boreholes were analyzed for BTEX, TPHg, TPHog, and NPH. The sample from B-5 was also analyzed for ethylene glycol, and the sample from B-6 was additionally analyzed for organic lead, SVOCs, and VOCs. Analytical results for soil and groundwater are included in Tables 1 and 2, respectively.

2.4.5 Suspected Tank 6 Investigation

One soil boring, B-56, was advanced for collection of a soil and groundwater sample at the location of the suspected former UST (Tank 6) along Filbert Street in November 1994 (Figure 2). One soil sample, from a depth of 11.5 feet bgs (B-56@11.5) was analyzed for BTEX, TPHg, and TPHms. The grab groundwater sample was analyzed for BTEX, TPHg, TPHms, oil and grease, hydrocarbons, and VOCs.

The analytical results for soil and groundwater are presented in Tables 1 and 2, respectively, and summarized below.

- Ethylbenzene in soil was reported at 0.061 mg/kg, TPHg at 20 mg/kg and TPHms at 3 mg/kg;
- TPHg was reported at 300 µg/L in grab groundwater and TPHms at 100 µg/L; and
- VOCs detected in grab groundwater were benzene at 16 µg/L, 1,2-dichloroethane (1,2-DCA) at 3 µg/L, *cis*-1,2-dichlorethene (*cis*-1,2-DCE) at 130 µg/L, *trans*-1,2-dichloroethene (*trans*-1,2-DCE) at 0.5 µg/L, and vinyl chloride at 34 µg/L.

2.4.6 Other Areas of Interest

Based on the results of the 1994 investigations, three additional areas of interest were identified within the West Grand Block (Levine Fricke, 1995). Further investigation was completed in these areas. Results of the investigation indicated that soil beneath portions of the West Grand Block were affected by petroleum hydrocarbons. Soil chemical data are summarized in Table 1. Maximum concentrations in soil associated with the areas of interest are summarized below:

- Northwest area of Upper West Grand Block – soil samples collected from beneath the former cleaning and dyeing works and former benzin room reported maximum concentrations in soil of 1,900 mg/kg TPHg, 1,100 mg/kg TPHms, 1,300 mg/kg TPHd, 1.4 mg/kg ethylbenzene, and 7.2 mg/kg total xylenes. These maximum concentrations were detected at depths of approximately 10 to 12 feet below street grade. As discussed in Section 3.13 (2015 site demolition, clarifier removal and excavation details), excavation of impacted soil was completed to remove these reported impacts. Clean fill was emplaced in this area (Nova, 2015a). Additionally, soil excavation was conducted during removal of elevator sump #2, in the northwest area of West Grand Block (Nova, 2015b).
- Western area of Middle West Grand Block – soil samples collected from beneath the former auto repair shop/garage/hazardous materials storage room reported maximum concentrations in soil of 0.72 mg/kg of benzene, 1.7 mg/kg of toluene, 1.6 mg/kg of ethylbenzene, 1.7 mg/kg of total xylenes, 540 mg/kg of TPHg, 410 mg/kg of TPHms, and 4,400 mg/k of TPHog in addition to low SVOC and VOC detections (Table 1).

- Elevator Sump #1 within the Middle West Grand Block – soil samples collected from the area adjacent to the elevator sumps reported 0.31 mg/kg of toluene, 1.1 mg/kg of ethylbenzene, 300 mg/kg of TPHg, 82 mg/kg of TPHms, and 4,400 mg/kg of TPHog. Excavation of impacted soil was completed to remove these reported impacts in the area of the elevator sump (Nova, 2015c).

Constituents reported in groundwater beneath these additional areas of interest are summarized below.

- Maximum concentrations from the November 1994 grab groundwater samples were 59 milligrams per liter (mg/L) of TPHg (analysis pattern not typical of gasoline) and 270 mg/L of TPHms from the northwest portion of the West Grand Block, and 93 µg/L of benzene from the western portion of the West Grand Block (Levine Fricke, 1995).

- Separate-phase hydrocarbons (SPH) was reported on groundwater in several borings located in the northwestern portion of the West Grand Block (Levine Fricke, 1995). The SPH was not measured, and based on the description was likely a sheen. Other historical assessment activities conducted in the vicinity of the locations where SPH was reported did not confirm the presence of SPH on groundwater, indicating no wide-spread presence of SPH.

- Elevated concentrations of THPog and non-polar hydrocarbons were reported in grab groundwater samples collected adjacent and down gradient of the elevator shaft locations (Levine Fricke, 1995).

- Shallow groundwater beneath the Site did not appear to be significantly affected by VOCs or semi-volatile organic compounds; however, the gasoline additive 1,2-DCA was detected in eight samples from the western portion of the Site (Levine Fricke, 1995).

2.4.7 Monitoring Well Installation

Based on the soil and groundwater analytical results, Levine-Fricke recommended additional evaluation of surface soil in the northwestern portion of the Site and the installation of groundwater monitoring wells.

In September 1994, MFG installed two off-Site up gradient groundwater monitoring wells (MW-1 and MW-2) to evaluate the potential presence of petroleum hydrocarbons in shallow groundwater from possible releases believed to be sourced by off-site USTs. The locations of the monitoring wells are shown on Figure 2.

2.4.8 1996 Groundwater investigation

Two additional groundwater monitoring wells (MW-3 and MW-4) were installed in April 1996. MW-3 was located along Myrtle Street approximately mid-way between West Grand Avenue and 24th Street and MW-4 was located at the corner of West Grand Avenue and Filbert Street

(see Figure 4). According to the Groundwater Sampling Report, prepared by IT Corporation dated September 1996, maximum concentrations reported in groundwater during initial sampling consisted of the following:

- Benzene at 10 parts per billion (ppb);
- TPHg at 840 ppb; and,
- TPHd was non-detect.

Based on the results of the groundwater monitoring report, the LOP issued a conditional case closure and directed the decommissioning of the groundwater monitoring wells on-site. On January 8, 1997, IT Corporation decommissioned the four groundwater monitoring wells on the Site via over-drilling.

2.4.9 1997 Case closure

The LOP issued a, "*Final Case Closure Letter,*" dated January 30, 1997, for the former Safeway Ice Cream Plant (aka West Grand Refrigeration Facility) which stated that no further action was required regarding the subsurface investigation, the USTs and/or associated monitoring wells. However, the LOP stated that if there was a change in land use from industrial/commercial, the owner must notify the LOP and the City of Oakland Department of Public Works.

2.4.10 2005 Market Street Block Soil Investigation

A Phase II ESA report prepared by Gribi Associates (Gribi) dated March 18, 2005, presented results of a soil investigation conducted on the Market Street Block. A total of seven soil borings were advanced to evaluate the presence of petroleum hydrocarbons and lead in soil, and grab groundwater samples were collected from five of the soil borings. The sample locations, depths, and results for soil and groundwater are presented in Tables 4 and 5, respectively.

2.4.10.1 Petroleum Hydrocarbon Investigation

Soil samples analyzed for TPHg and BTEX were collected at depths ranging from 11.5 to 21.5 feet bgs. TPH constituents were detected in only one sample (B-3 at 13'). Analytical data are presented on Table 4.

Grab groundwater samples were collected between 9.6 and 11.2 feet below grade in five borings. TPHg and petroleum constituents were detected in two of the five borings. Analytical data are presented in Table 5.

2.4.10.2 Soil Lead Investigation

During the 2005 investigation, soil samples were collected at depths of either 2 or 4 feet below ground surface at seven locations (B-1 through B-7) on the Market Street Block and analyzed for total lead. Lead was reported in four of seven soil samples at concentrations ranging from 3.2 mg/kg to 310 mg/kg. As documented in the *ESR* (Appendix C), lead exceeded the 80mg/kg

screening level in 2 locations (B-1 and B-7). Soil from these areas was subsequently excavated to remove impacts above screening levels. Confirmation samples were collected to document the cleanup.

2.4.11 2014 Soil and Soil Vapor Investigation

Based on review of historical data, Stantec conducted a soil and soil vapor investigation in May 2014 to further evaluate potential chemical impacts associated with known and suspected USTs and areas of interest on the West Grand Block, and the potential extent of lead-impacted soil on the Market Street Block. The purpose of the investigation was to determine whether further remediation was necessary to render the Site suitable for residential development pursuant to conservative, human health-protective regulatory standards.

Soil and soil vapor samples were collected from four locations on the West Grand Block, and soil borings were advanced at four locations on the Market Street Block for collection of soil samples (Figure 2). Soil and soil vapor samples collected from West Grand Block were analyzed for PCBs and VOCs, respectively. In the Market Street Block, four samples were collected at depths between 0.5 and 9.5 feet bgs at each of the four locations and analyzed for total lead. Analytical results and summary data tables from the 2014 investigation are included in in the *Final Environmental Site Summary* (Appendix A).

2.4.11.1 West Grand Block Soil Vapor Investigation

Borings were advanced in each of the following four areas to evaluate areas of potential concern for vapor intrusion as identified in the 1994 investigation. At each of the four sample locations a sample was collected for soil (SB) and for soil vapor (SV). The four sample locations selected within the West Grand Block were:

- Northwest area – the former cleaning and dyeing works and former benzin room (samples SB-1 and SV-1);
- Tank 1 and Tank 3 – the suspected former USTs along Myrtle Street (samples SV-2 and SB-2);
- Tank 2 – the former 800-gallon UST closed in-place on the corner of West Grand Avenue and Filbert Street (samples SV-3 and SB-3); and,
- Western area – the former hazardous materials storage area and suspected Tanks 4, 5, and 6 (samples SV-4 and SB-4).

Sampling and Analysis

Temporary soil vapor probes were installed at four locations (SV-1, SV-2, SV-3, and SV-4) by TEG of Northern California (see Figure 2). Soil gas samples were collected using a low-dead volume soil vapor sampling system that utilizes soil vapor probes constructed of a 1 inch outside-diameter chrome-moly steel, equipped with a steel drop off tip. The soil vapor probes were

driven into the ground by the Stratoprobe and once inserted to a depth of 5 feet bgs, the probe was retracted slightly to open the tip and expose the vapor sampling port. Soil vapor was extracted through the tubing using a small calibrated syringe connected via an on/off valve.

After the initial three volumes of soil gas were discarded to flush the sample tubing and fill it with *in situ* soil vapor, a syringe was used to collect and transfer 20cc of soil gas to an on-site mobile lab for analysis. Soil gas samples were collected from the four locations and submitted to the on-site California-certified mobile lab (TEG) for immediate analysis of VOCs by EPA Method 8260.

Soil Vapor Results

Soil vapor analytical results are summarized in Table 3. Dichlorodifluoromethane (Freon-12) was the only VOC detected in the 2014 soil vapor samples. Freon-12 was detected at three of the four locations (SV-1, SV-2, and SV-4) at concentrations ranging from 110 micrograms per cubic meter (µg/m^3) in SV-4 to 19,000 µg/m^3 in SV-1. Further soil vapor sampling was conducted in 2016, as described later in this report. Upon request from Stantec, TEG re-evaluated the reporting limits for the soil vapor samples and indicated the presence of benzene at an approximate concentration of 75 µg/m^3 in SV-4 (see letter from TEG in Appendix C of the ESS) which is below the Site-specific screening level developed in the HHRA of 120 µg/m^3.

2.4.11.2 West Grand Block Soil Investigation

Sample Collection and Analysis

Soil borings were advanced at four locations (SB-1, SB-2, SB-3, and SB-4) in the West Grand Block (Figure 2), and one sample from each borehole was selected for chemical analysis based on field observations. Samples for VOC analysis were collected using EPA 5035-compliant containers. Samples from SB-2 and SB-4 were additionally analyzed for PCBs, and the sample from SB-4 was additionally analyzed for semivolatile organic compounds (SVOCs). Each soil boring was advanced with a continuous core to a total depth of approximately 10 feet bgs. A single soil sample was selected from each boring location based on field evidence of odor, staining, or elevated photoionization detector (PID) readings.

Each of the four soil samples obtained were collected directly from the soil core in Terra Core preservation vials in accordance with the U.S. EPA 5035 preparation method and analyzed for VOCs by EPA Method 8260B. The samples from borings SB-2 and SB-4 were also analyzed for PCBs by EPA Method 8082A and the sample from SB-4 was additionally analyzed for SVOCs by EPA Method 8270C-SIM.

Soil Sample Results

Soil sample results are listed in Table 1. Analytical results for VOCs below LRLs with the exception of the soil sample from boring SB-4 collected from the western area. No PCBs were detected above the LRL in samples SB-2 and SB-4. Concentrations of detected VOCs were all below residential ESLs or RSLs and limited to cumene, propylbenzene, cymene and naphthalene.

2.4.11.3 Market Street Block Soil Investigation and Excavation

Soil samples were collected in the Market Street Block to further evaluate the presence of lead in soil reported in the 2005 investigation.

Four soil borings (SB-5, SB-6, SB-7, and SB-8) were advanced and continuously cored to a total depth of approximately 10 feet bgs. Soil samples were collected for analysis from four depth intervals at each boring location (0-1 feet bgs, 2-3 feet bgs, 6-7 feet bgs, and 9-10 feet bgs). Samples retained for analysis were analyzed for total lead by EPA Method 6010.

Total lead was detected in each of the 16 samples analyzed at concentrations ranging from 2.1 mg/kg (SB-5, 9') to 94 mg/kg (SB-5, 1'). One sample (SB-5 at 1 feet bgs) contained lead above the 80 mg/kg screening level. Location SB-5 was immediately adjacent to boring B-7. As documented in the ESR (included as Appendix C), soil from this area was subsequently excavated to remove impacts above screening levels in 2016.

2.4.12 2014 Geophysical Subsurface Investigation

NOVA Abatement and Construction Services (NOVA) is the contractor overseeing the West Grand Block building demolition. Subtronic Corporation was contracted by NOVA in June 2014 to conduct a ground penetrating radar survey to attempt to determine whether any former USTs remained present at the Site.

NOVA representative Steve Schwartz reported that the initial survey and subsequent analysis of the waveforms provided by the geophysical equipment indicated that a UST may still remain on Filbert Street at a depth of approximately 2-2.5 feet bgs. Two locations within the suspected area were subsequently investigated by probing with a 5-foot steel rod. The probes verified that no obstructions were present at the depth of the anomaly and returned with a film of clean, fine sand, indicative of imported fill.

2.4.13 2014 Due Diligence Geotechnical Evaluation

CV contracted T. Makdissy Consulting, Inc. (TMC) to perform a due diligence geotechnical evaluation as part of the property acquisition process. In May 2014, two borings were advanced to a depth of 50 feet and one boring was advanced to a depth of 20 feet as part of the geotechnical evaluation.

The TMC report described the subsurface soils as consisting of firm to stiff low plasticity clays to the depths explored, with variable interbeds and layers of sandy gravel, medium dense sand, loose to medium dense clayey sand, and dense sand. The sandy and gravelly layers ranged in thickness from 2 to 5 feet. Groundwater was reportedly encountered at depths of 9, 19, and 13 feet below grade during the investigation.

2.4.14 2015 Freight Elevator #2 Vault Soil Removal

On February 3, 2015, CV was notified by NOVA that during the site demolition and removal activities, the north freight elevator shaft (Elevator #2) beneath the concrete flooring was encountered and removed. The piston and encasements extended to approximately 9 feet bgs.

NOVA reported that after removal of the cylinder, it was apparent that the soils surrounding the cylinder had been impacted with some form of hydraulic oil. NOVA performed excavation of the impacted soils to a depth of 11 feet below ground surface. Based on the analytical results for the floor sample, an additional two feet of soil were removed from the bottom of the excavation, whereon analytical testing results provided confirmation that the extent of impacted soil had been removed.

2.4.15 2015 Freight Elevator #1 Vault Soil Removal

On March 1, 2015, CV was notified by NOVA that during the site demolition and removal activities, the south freight elevator shaft (Elevator #1) beneath the concrete flooring was encountered and removed. The piston and encasements extended to approximately 9 feet bgs.

NOVA reported that after removal of the cylinder, it was apparent that the soils surrounding the cylinder had been impacted with some form of hydraulic oil. NOVA performed excavation of the impacted soils to a depth of 11 feet below ground surface. Based on the analytical results for the floor sample, an additional two feet of soil were removed from the bottom of the excavation. A final bottom sample could not be collected because of infiltrating groundwater and the excavation was immediately backfilled with clean fill.

2.4.16 2015 Underground Storage Tank 2 Removal

On July 15, 2015, CV was notified by NOVA that the underground storage tank at the corner of Filbert and West Grand (Tank 2) was removed as part of the site demolition activities. The tank was confirmed to have been previously filled with concrete and was removed without incident. NOVA reported that no holes were observed in the metal tank skin and no odors or soil issues were encountered during the removal.

2.4.17 2015 Due Diligence Geotechnical Evaluation

CV contracted Quantum Geotechnical (Quantum) to perform a due diligence geotechnical evaluation as part of the property acquisition. In May 2014 and August 2015 six borings were advanced to depths ranging from 21.5 to 51.5 feet below ground surface. Five cone penetrometer tests were advanced to a depth of 40 feet in August 2015. A draft Geotechnical Investigation Report (Geotechnical Report) was prepared by Quantum and submitted to CV in September 2015.

2.4.18 2015 Clarifier Removal

During removal of the concrete slab located within the northern portion of the West Grand Block, NOVA encountered a suspected clarifier near the corner of Filbert and 24th Streets. The location of the clarifier generally corresponds with the location of the former "Benzin Room" as identified in the Phase II report (Levine-Fricke, 1995). NOVA reports that soils in the vicinity of the suspected clarifier were discolored and had a strong petroleum odor. NOVA excavated the discolored and odorous soil and sampled the limits of the excavated area to confirm removal of the impacted soil.

The excavation of the area was conducted in four parts (Excavation #1, #2, #3, and #4) between July 16, 2015 and August 19, 2015. The final excavation limit was approximately 50 feet by 45 feet laterally with depth ranging from 10 to 12 feet below grade. Bottom confirmation samples were collected from each excavation area. Trenches were dug along the sidewalls of the excavation and confirmation samples collected from within the trenches.

2.4.1 2016 Soil vapor Investigation

During the 2016 soil vapor assessment, 9 soil vapor points were advanced to allow for collection of soil vapor data at the West Grand Block to evaluate areas of potential concern for vapor intrusion as identified during historical Site investigations. The completed soil vapor sample locations are shown on Figure 11. Soil vapor sampling was completed in the following areas:

- Northwest area – further assessment near the former cleaning and dyeing works and former benzin room (SV-5 through SV-8and SV-14);
- Western Area – further near the suspected former USTs along Myrtle Street (SV-9 through SV-12); and,
- Southwestern Area – further near tank 2, the former 800-gallon UST closed in-place on the corner of West Grand Avenue and Filbert Street (SV-13).

Sampling and Analysis

Temporary soil vapor probes were installed at all nine (9) locations (SV-5 through SV-13) by TEG of Northern California (see Figure 11). Soil gas samples were collected using a low-dead volume soil vapor sampling system that utilizes soil vapor probes constructed of a 1 inch outside-diameter chrome-moly steel, equipped with a steel drop off tip. The soil vapor probes were driven into the ground by the Stratoprobe and once inserted to a depth of 5 feet bgs, the probe was retracted slightly to open the tip and expose the vapor sampling port. Soil vapor was extracted through the tubing using a small calibrated syringe connected via an on/off valve.

After the initial three volumes of soil gas were discarded to flush the sample tubing and fill it with *in situ* soil vapor, a syringe was used to collect and transfer 20cc of soil gas to an on-site mobile lab for analysis. Soil gas samples were collected from the 10 locations and submitted to the on-

site California-certified mobile lab (TEG) for immediate analysis of VOCs by EPA Method 8260. Additionally, due to time restraints onsite, select samples were submitted to Curtis & Tompkins, a State-certified analytical laboratory located in Berkeley, California, for completion of analysis (SV-13) and additional methane and oxygen data (SV-5 and SV-7).

Soil Vapor Results

Soil vapor data collected at the Site (assessments in 2014 and 2016) indicate concentrations of benzene (SV-4, SV-10, and SV-14), Freon 12 (SV-14), and 1,1,2,2-DCE (SV-9) at concentrations above Tier 1 ESLs. Additionally, the reporting limits for vinyl chloride were above the ESL but below HHRA derived Site-specific screening levels.

Elevated hexane, cyclohexane and heptane in SV-13 raised concerns from ACEH regarding the potential that other contaminants with lower ESLs were masked by elevated reporting limits. As part of the data gap evaluation, Stantec has proposed screening soils in the area of SV-13 for VOCs and where concentrations exceed screening levels, excavate impacted soils.

Reported soil vapor results are provided in Table 3. Analytical reports for the 2016 soil vapor assessment are included in Appendix E.

2.5 SUMMARY

2.5.1 West Grand Block Summary

No new environmental releases have been identified since issuance of the 1997 Case Closure Letter. Soil and groundwater data collected prior to 1998 indicated the presence of petroleum hydrocarbons (TPHg) in soil above screening levels in the Northwest area. However, concentrations of petroleum hydrocarbon constituents in groundwater were below the RWQCB UST Low Threat Closure criteria (SWRCB, 2012). Comparison of groundwater chemical data to residential groundwater ESLs indicates several areas with minor exceedances of the screening criteria, primarily for benzene in historical groundwater samples, and TPHg in recent and historical samples. Overall, concentrations of volatile compounds in the groundwater are low, however.

VOCs have been detected only sporadically in soil and groundwater beneath the West Grand Block. VOCs in soil are generally confined to the western area (former auto repair shop, cabinet shop, etc.), and VOCs have been reported in groundwater in multiple areas. Concentrations of VOCs in soil and groundwater, however, are generally low, and are below screening criteria protective of vapor intrusion for residential use. The exception is a detection of vinyl chloride which was detected in groundwater from B-56 at 34 µg/L, in 1994 on the western side of the West Grand Block. This concentration exceeded the vapor intrusion ESL from groundwater to indoor air for residential use of 1.8 µg/l. However, groundwater chemical data from nearby locations reported no vinyl chloride above LRLs, suggesting the presence of vinyl chloride in groundwater in 1994 was anomalous and/or limited in extent. Characterization of soil gas at select locations beneath the West Grand Block has indicated no presence of vinyl chloride, although the detection limits were elevated above ESLs, nor was vinyl chloride reported in historical or recent soil samples.

With respect to the lateral extent, no vinyl chloride was detected in the three groundwater samples collected within 50 feet of the sample that showed the vinyl chloride detection. At the 16 VOC groundwater sample locations across the western and northwest areas of the West Grand Block, vinyl chloride was only detected in B-57, which indicates a very limited extent of the presence of vinyl chloride. In addition, the 2014 and 2016 soil vapor survey conducted in the vicinity reported no detections of vinyl chloride. Based on the singular detection of vinyl chloride and its limited extent, Stantec recommends no further investigation regarding this issue. Additional soil vapor samples will be collected and analyzed by a fixed lab to achieve lower detection limits and document that VC is not detected in soil vapor.

Two areas of concern were previously identified at the West Grand Block based on historical detections of benzene and cis-1,2-dichloroethene concentrations reported in a shallow sample from boring B-37 and TPHg reported in a shallow sample at boring B-44. Additional areas will also be evaluated (see Section 4) for potential remedial action based on elevated shallow soil vapor

in that area. During additional site characterization, Stantec will evaluate areas for residual VOCs and prior to development, CV will remove any soil identified to be above residential ESLs or Site-specific screening levels (provided in the HHRA).

Soil vapor data collected at the Site (assessments in 2014 and 2016) indicate concentrations of benzene (SV-4, SV-10, and SV-14), Freon 12 (SV-14), and 1,1,2,2-DCE (SV-9) at concentrations above Tier 1 ESLs, but below Site-specific screening levels. Additionally, the reporting limits were elevated for SV-13.

2.5.2 Market Street Block summary

Analytical data from the Market Street Block indicates limited impacts from petroleum hydrocarbons and lead.

- One soil sample, collected in 2005 from 13 feet below grade, reported total xylenes and MTBE at concentrations slightly above the ESL. Sampling information suggest this sample was collected from below-first encountered water, and reported concentrations were likely associated with impacted groundwater from an off-Site, upgradient source;

- Two grab groundwater samples collected from beneath the Market Street Block reported concentrations of fuel hydrocarbons above ESLs. The location of the samples adjacent to the eastern site boundary, along with the lack of appreciable soil impacts, suggest impacted groundwater may be migrating beneath the Site from an off-Site, upgradient source;

- Lead concentrations in two of seven soil samples collected in 2005 exceeded the ESL of 80 mg/kg with concentrations of 81 mg/kg and 310 mg/kg;

- Lead concentrations in fifteen of the sixteen soil samples collected in 2014 were below the ESL of 80 mg/kg. The single 2014 soil sample that showed lead above the ESL, with a concentration of 94 mg/kg, was at a depth of 1-foot below grade, and the sample collected at a depth of 2.5-feet in the same boring was an order of magnitude lower, confirming that the extent of lead impacted soil was localized;

- The potential risk to future residential receptors due to lead in soil on the Market Street Block was mitigated through limited excavation of surface soils to a depth of approximately 2 to 3 feet bgs in the areas around B-1 and B-7/SB-5 (ESR; Appendix C); and,

- While metals other than lead were not identified as contaminants of potential concern (COPCs) for the Market Street Block, waste characterization samples collected from the soil stockpiles generated during soil removal at the B-1 and B-7/SB-5 locations (Appendix F) indicate that the removed lead-impacted soil did not contain other metals at concentrations of concern.

3.0 DATA EVALUATION

3.1 CONCEPTUAL SITE MODEL

In this section, potential human receptors and potentially complete exposure pathways are identified at the site. A conceptual site model (CSM) was developed to facilitate the pathway analysis as part of the HHRA (Appendix B). The CSM is an important preliminary step in the exposure assessment portion of a risk assessment (USEPA, 1989). The CSM schematically presents the relationship between chemical sources in various environmental media and potential receptors at the site, and identifies potentially complete and significant pathways through which receptors may be exposed to the COPCs. This is accomplished by detailed analysis of historic uses of the site, current and anticipated future land use at the site and vicinity, and beneficial uses of groundwater, and considering such important site characteristics as the source(s) of chemical release, depth to the water table(s), distribution of chemical detections, and fate and transport of chemicals detected in site soil, groundwater, and soil gas. The CSM is presented graphically in the HHRA (Appendix B), and discussed below.

3.1.1 Summary of Exposure-Related Site Characteristics

The site characteristics provided below, were used to identify potential receptors and potentially complete exposure pathways for quantitative risk characterization specific to this site.

- Previous investigations conducted in 1994 and related to former on-Site USTs have indicated that the subsurface has been impacted by one or more historic releases of TPH, VOCs, and metals.

- Soil and groundwater grab sampling was expanded in 1994 to evaluate other areas of concern within the West Grand Block which included the former cleaning and dyeing works, the former auto repair shop/garage/hazardous materials storage room, and the former elevator sump #1. Impacts to soil and groundwater by BTEX, TPHog, TPHg, TPHms and 1,2-DCA (groundwater only) were identified in vadose zone soil and groundwater but were restricted to areas near these potential sources.

- The petroleum hydrocarbons and other VOCs detected in soil and groundwater may migrate vertically in the vapor phase from vadose soil or first-encountered groundwater to the ground surface. Vapors may enter structures above the plume (frequently termed "vapor intrusion"). Vapor emissions from both soil and groundwater to ambient air following re-development are not expected to occur since the Site will be covered almost completely by impervious surfaces, pavers and structures.

- Subsurface conditions beneath the Site consist of coarse gravel fill to a depth of one foot below ground surface (bgs); dense clay between approximately 1 and 9 feet bgs; well graded sand with gravel and clay between approximately 9 and 13 feet bgs; and clay between approximately 13 and 19 feet bgs (IT 1996a). The depth-to-groundwater is

approximately 9 to 11 feet bgs (IT 1996b). Based on limited monitoring events at properties adjacent to and in the vicinity of the Site, groundwater has been documented to flow towards the west to northwesterly direction (Cornerstone, 2016).

- Site redevelopment plans indicate that the majority of the Site will be covered with impervious surfaces (e.g., asphalt/concrete), pavers and structures.

3.1.2 Potential Exposure Areas

For purposes of the HHRA, the potential exposure areas are the West Grand Block and the Market Street Block (see Figure 2).

3.1.3 Human Receptors

The site currently consists of vacant land. Under the proposed future land use, potentially-exposed populations include onsite commercial outdoor workers, onsite construction/utility workers, future commercial workers (retail) and residents. Additional descriptions of these receptors are provided below.

- Onsite Commercial Worker (Outdoors) – A commercial outdoor worker is assumed to be a long-term receptor employed by the company operating on the Site. This receptor spends most of the work day conducting maintenance or manual labor activities outdoors or regularly performs grounds-keeping activities as part of his/her daily responsibilities. Because the entire Site will be covered with impervious surfaces (e.g., asphalt/concrete) pavers, and buildings, direct contact with soil (ingestion of soil, dermal contact to soil, and inhalation of particulates from soil) is considered an incomplete exposure pathway.

- Onsite Commercial Worker (Indoors) – The commercial indoor worker is assumed to be a long-term receptor employed by businesses operating in proposed ground floor commercial spaces, who spends most of the work day indoors, where they may be exposed to volatiles from subsurface sources while working inside onsite buildings. Because nearly the entire Site is paved, direct contact to soil (ingestion of soil, dermal contact to soil, and inhalation of particulates from soil) is considered an incomplete exposure pathway. Inhalation of VOCs from the subsurface entering indoor air via vapor intrusion is considered a potentially complete exposure pathway.

- Onsite Construction/Utility Worker – A construction/utility worker (trench worker) is assumed to be exposed to contaminated soil during the work day for the duration of an onsite construction project. The activities for this receptor typically involve substantial exposures to soil during excavation projects (soil intrusive operations). A construction worker is assumed to be exposed to contaminants via the following complete pathways: incidental soil ingestion, dermal contact with soil, and inhalation of volatiles and particulates from soil disturbance activities. While a construction worker is assumed to have a higher soil ingestion rate than a commercial/industrial worker due to the type of activities performed during construction projects, the exposure frequency and duration

are assumed to be significantly shorter due to the short-term nature of construction projects. Also, because groundwater at the Site is approximately 9 to 11 feet below ground surface, construction workers may be exposed to VOCs in groundwater seeping into open trenches, via inhalation of VOCs volatilized from the groundwater or dermal contact to groundwater. In general, any hypothetical construction worker receptor will be performing activities consistent with a Site Management Plan (SMP) and a Site Health and Safety Plan (HASP). The HASP will require the use of proper personal protective equipment (PPE) and the best management practices (BMPs) will require dewatering to preclude any direct contact with groundwater for workers at the Site. Therefore, direct contact with groundwater is considered an incomplete exposure pathway.

- Onsite Resident – The onsite residential receptor is assumed to be a long-term receptor occupying ground floor residences. This receptor is assumed to live in the dwelling 24 hours per day, 350 days per year for 26 years. Direct exposure to Site-related contaminants may occur through inhalation of vapors originating in the subsurface which are transported to indoor air via vapor intrusion and as such this pathway is considered complete. Direct contact with soil is considered to be an incomplete pathway since the Site will be almost completely covered by impervious materials and resident gardening (e.g., landscaping and yard work) activities are prohibited by the development Conditions, Covenants and Restrictions (CC&Rs) and the Homeowner's Association (HOA).

- Visitors to the Site are expected to be onsite for a shorter period of time than a residential receptor. As a result, the residential scenario will be protective of visitors to the Site, and hence, this receptor will not be evaluated in the HHRA.

3.1.4 Summary of Potentially-Complete Exposure Pathways

A receptor comes into contact with COPCs only if there is a complete exposure pathway (USEPA, 1989). For an exposure pathway to be considered complete, it must be possible for a chemical to be transported via an environmental medium to a potential receptor location, and for receptors to be in contact with the chemical and assimilate it into their bodies via different routes of exposure (e.g. ingestion, inhalation, or dermal contact).

A complete exposure pathway consists of the following four elements (USEPA, 1989):

- A source of chemical;

- A mechanism by which the chemical is released;

- A retention or transport medium through which a chemical travels from the point of release to the receptor location (leaching, volatilization, or uptake via food); and,

- A route of exposure (ingestion, inhalation, or dermal contact) by which the chemical enters the receptors' body.

data evaluation

If any of these elements do not exist, the exposure pathway is considered incomplete and further evaluation of the pathway is not required.

The following potentially-exposed populations and potentially-complete exposure pathways were quantified in the HHRA.

- Onsite commercial (retail) workers:
  - Inhalation of VOCs originating in subsurface which are transported to indoor air.
- Onsite construction/utility workers:
  - Incidental ingestion of surface soil;
  - Dermal contact with surface soil; and,
  - Inhalation of VOCs and particulates released from soil.
- Onsite residents.
  - Inhalation of VOCs originating in subsurface and transported to indoor air.

3.2 SCREENING LEVEL/RISK ASSESSMENT

3.2.1 Exposure Pathways Evaluation

Potential exposure areas, human receptors, and a summary of potentially-complete exposure pathways are addressed in the HHRA, Section 3.1.

3.2.2 Identification of Screening Levels and COPCs

The identification of COPCs is a process that involves reviewing the procedures used for collecting, organizing, and evaluating environmental data in order to identify the relevant data sets, and to focus the subsequent effort of the risk assessment process on Site-related contaminants that pose significant risks to human health. The primary goal of this evaluation is to identify chemicals that are Site-related which will be subject to a detailed analysis in the HHRA (USEPA, 1989a).

3.2.2.1 Selection of COPCs

A chemical was selected as a COPC in soil vapor according to the following criteria:

- All chemicals detected at least once above screening levels, Tier 1 SFRWQB Environmental Screening Levels for subslab/soil gas (February 2016), in soil vapor samples were retained as COPCs;

data evaluation

- All chemicals reported in samples where one or more screening levels were exceeded were carried forward for risk characterization; and,
- Chemicals reported as "non-detect" in all samples were selected as COPCs if the laboratory method reporting limit (MRL) was greater than or equal to the screening level.

This selection process resulted in identification of 10 COPCs which are presented in the HHRA (Appendix B).

3.3 COMPARATIVE ANALYSIS

Potential future receptors (the Site is currently vacant, bare land) and potentially complete exposure pathways include on-Site residents-inhalation of VOCs migrating from the subsurface to indoor air and outdoor air in areas designed for pavers, on-Site commercial (retail) workers-inhalation of VOCs migrating from the subsurface to indoor air, and construction workers during redevelopment activities-direct exposure to soil including incidental ingestion, dermal contact and inhalation of VOCs.

This human health risk assessment is based on the collection and evaluation of 14 soil vapor samples (2014 and 2016) and the 93 soil samples (1994). For potential vapor intrusion into on-Site residences, risks were evaluated on a point-by-point basis to guide risk management decisions regarding the need for vapor mitigation. For other receptors, risk was evaluated on the basis of a hypothetical sample containing the maximum concentrations of chemicals detected in all samples by medium.

Based on the results of this HHRA, Stantec makes the following conclusions:

- ❑ For future on-Site residents and commercial (retail) workers, no unacceptable risks or non-cancer hazards from the transport of VOCs in the subsurface to indoor air has been identified. Based on this, no vapor mitigation systems would be necessary or required.
- ❑ For on-Site residents, no unacceptable risk or non-cancer hazards have been identified resulting from transport of soil vapor to outdoor air at locations where pavers are proposed.
- ❑ No unacceptable risks or non-cancer hazards have been identified by any exposure route for construction workers.
- ❑ Based on risk characterization, the following screening levels have been developed for soil gas for the onsite resident exposure scenario;

data evaluation

Chemical	ESL Indoor Air (µg/m³)	Site-Specific Attenuation Factor-Loam[3]	Site-Specific SL-Soil Gas (µg/m³)
Dichlorodifluoromethane	100	7.3E-04	137,000
Trichlorofluoromethane	1,300	6.5E-04	2,000,000
Benzene	0.097	8.1E-04	120
Ethylbenzene	1.1	6.7E-04	1,640
Xylene (m, p and o)	100	6.7E-04	149,000
1,1,2,2-Tetrachloroethane	0.048	5.2E-04	92.3
Hexane	730	7.1E-04	1,030,000
Cyclohexane	6,300	7.5E-04	8,400,000

- Based on risk characterization, the following site-specific screening levels have been developed for soil for the on-Site construction worker exposure scenario:

Risk-Based Screening Levels-Construction Workers

Chemical	Screening Level (mg/kg)
Benzene	45
Toluene	7,900
Ethylbenzene	920
Xylenes (m,p and o)	4,500
1,4-Dichlorobenzene	610
Benzo[b]fluoranthene	65
Cis 1,2-Dichloroethene	160
1,1-Dichlorobenzene	16,000

3.4 DATA GAP ANALYSIS

CV is in the process of redeveloping the property for multi-unit residential housing. The data collected to date, presented herein and evaluated in the HHRA does not pose an unacceptable risk to human health assuming residential use of the Site. The ACEH has requested additional sampling to address potential data gaps. The RAP proposes further assessment that addresses these data gaps. Should the additional data generated by the data gap

investigation all fall below the HHRA Site specific screening levels, CV plans to request no further action status for the Site and approval for redevelopment under residential use.

Results of the HHRA completed for the Site indicate that residual contaminants in soil, groundwater, and soil vapor do not pose an unacceptable risk to future residential use of the property. However, based on a review of all known historical data, remedial actions, and analysis of residual concentrations to screening level criteria, the following data gaps were identified at the Site:

- No soil vapor assessment has been conducted at the Market Street Block to confirm residual impacts in groundwater and submerged soil do not pose an unacceptable risk to future residential occupants of the property, a soil vapor assessment is needed.
- Additional soil vapor assessment is needed at the West Grand Block to further delineate impacts reported during the 2014 and 2016 investigations and potential impacts coming from historical operations at neighboring properties (914 Grand Avenue).
- Soil parameter data collection for the additional soil vapor assessment locations is needed to confirm conservative default parameters used in the HHRA.
- Shallow soil assessment is needed at the West Grand Block to complete characterization of shallow (0 to 3 feet bgs) soil, where previous investigation has reported possible fill and where previous site grading activities have disturbed the shallow soil, and to address residual metals and historical detections of petroleum hydrocarbons in soil (based on soil sample locations B-37, B-44 and soil vapor location SV-13).

4.0 REMEDIAL ACTION IMPLEMENTATION

Stantec will prepare a work plan for supplemental sampling which will include the sampling described below, and submit it for approval by the ACEH. After completion of the supplemental sampling to address data gaps, Stantec will prepare a report describing the work performed and the results. Should the additional sampling results identify areas that exceed the ESLs or Site-specific screening levels for soil vapor, Stantec will prepare an Implementation work plan for this RAP describing the scope of work.

The following sections provide the scope of work for the additional sampling and implementation of the RAP.

4.1 TASK 1: SUPPLMENTAL SAMPLING

4.1.1 Shallow Soil Assessment

Details of the proposed shallow soil sampling will be submitted under separate cover to the ACEH for approval. A summary of the proposed assessment are provided following.

4.1.1.1 West Grand Block Soil Assessment

Ten (10) borings designated as S-1 through S-10 will be advanced at the West Grand Block to depths of 3 feet bgs at the approximate locations shown on Figure 12. Samples will be collected from each location at 0.5 and 3 feet bgs. Soil samples will be used to confirm the presence of contaminants historically detected from borings B-44 and B-37, with other soil samples used to further characterize shallow soils across the site. Further characterization of the shallow soil will help close a data gap identified in this RAP regarding shallow fill (as deep as 2.5 feet bgs) noted in historical assessment of the south western portion of the West Grand Block and provide data in other areas where shallow data may be lacking. Additionally, select samples, particularly near the proposed soil vapor locations, will be used to obtain geophysical soil parameter data that will verify Site specific assumptions made in the HHRA.

4.1.1.2 Market Street Block Soil Assessment

Two (2) borings designated as S-11 through S-12 will be advanced at the Market Street Block to depths of 3 feet bgs at the approximate locations shown on Figure 13. These proposed borings will be advanced and sampled in order to obtain geophysical soil parameter data that can be will verify Site specific assumptions made in the HHRA.

4.1.2 Soil Vapor Assessment

Additional soil vapor assessment will be conducted following applicable guidelines proposed in the California Department of Toxic Substances Control (DTSC) guidance document Advisory – Active Soil Gas Investigations updated April 2012 (DTSC 2012). Details of the proposed soil

vapors sampling will be submitted under separate cover to the ACEH for approval. A summary of the proposed assessment activities is provided below.

4.1.2.1 Market Street Block Soil Vapor Assessment

Three (3) borings designated as SV-15 through SV-17 will be advanced to depths of 5 feet bgs at the approximate locations shown on Figure 12. The proposed vapor probe locations were selected to provide adequate characterization of conditions across the Market Street Block area in the vicinity of historical detections of COPCs in groundwater. The boring locations may be modified from the proposed locations depending on potential overhead, surface, or subsurface obstructions. The borings will be advanced using hand auger methods. Soil samples will be collected at 5 feet bgs in each boring for soil matrix parameters such as site specificlithology, bulk density, porosity, and fixed gases.

The soil gas probes, attached to Teflon sampling tubing (1/4-inch outside diameter) will be installed in each boring at a target depth of 5 feet bgs. The soil gas probe tips are typically 3-inches long with a diameter of 0.25 inches.

Following placement of the probe at approximately 5 feet bgs, an annular one-foot thick sand pack will be placed across the vapor probe screen interval, extending approximately 6 inches above the point. One foot of dry bentonite will then be placed on top of the sand pack and overlain with pre-hydrated granular bentonite will then be placed on the top of the sand pack and overlain by a one foot thick cement slurry cap at the ground surface. The tubing connected to the sampling probe will extend through the bentonite and cement slurry seal to the ground surface and the ends of the tubing will be capped and covered.

4.1.2.2 West Grand Block Soil Vapor Assessment

Eleven (11) borings designated as SV-18 through SV-28 will be advanced to depths of 5 feet bgs at the approximate locations shown on Figure 12. The proposed vapor probe locations were selected based on the proximity to previous VOC detections and in areas selected to fill possible data gaps in uninvestigated areas (e.g., proposed ground floor commercial spaces, paver areas, etc.). The boring locations may be modified from the proposed locations depending on potential overhead, surface, or subsurface obstructions. The borings will be advanced using hand auger methods. Soil samples will be collected at 5 feet bgs in each boring for soil matrix parameters such as site specific lithology, bulk density, porosity, and fixed gases.

The soil gas probes, attached to Teflon vapor sampling tubing (1/4-inch outside diameter) will be installed in each boring at a target depth of 5 feet bgs. The soil gas probe tips are typically 3-inches long with a diameter of 0.25 inches.

Following placement of the probe at approximately 5 feet bgs, an annular one-foot thick sand pack will be placed across the vapor probe screen interval, extending approximately 6 inches above the point. One foot of dry bentonite will then be placed on top of the sand pack and

overlain with pre-hydrated granular bentonite will then be placed on the top of the sand pack and overlain by a one-foot thick cement slurry cap at the ground surface. The tubing connected to the sampling probe will extend through the bentonite and cement slurry seal to the ground surface and the ends of the tubing will be capped and covered.

4.1.3 Soil Vapor Sampling Procedures

The following sampling methodology will be employed during the performance of the soil gas assessment:

- Soil gas sampling will be performed at least 48 hours following probe installation to allow subsurface conditions to reach equilibrium.
- In accordance with DTSC, three purge volumes will be removed prior to sampling. The purge volume will be determined by the following:

  Minimum Purge Volume = 4.46 ml/foot of 0.25 in. OD tubing x length of tubing

- Purging and sampling will be conducted at a flow rate of less than 200 milliliters per minute (mL/min) using a low-flow sampling pump or a 6-liter evacuated canister (each 1-inch of mercury drop in canister vacuum equates to approximately 200 ml).
- Potential intrusion of atmospheric air into the sampling train can dilute the samples and compromise integrity. Furthermore, contaminants in ambient air can also enter the sampling system and may be interpreted as originating in soil gas. A leak test will be performed to evaluate potential atmospheric short circuiting at each soil gas sample location using helium as a tracer gas. Utilizing a shroud, helium will be introduced and maintained at a concentration of approximately 10%. Purged air will be collected into a 1-liter Tedlar bag and field measured using a portable helium detector. If the tracer gas is detected (> 5% of the shroud concentration), the soil vapor monitoring point and all connections will be checked, tightened, and resampled until no breakthrough is detected. The laboratory will be notified that analysis of helium is being requested and the analysis will be specifically requested on the chain-of-custody form, and at a minimum include VOCs, methane, and oxygen.
- In accordance with the DTSC guidance document, at least one duplicate per day will be collected and analyzed for QA/QC purposes. Duplicate samples will be collected in separate containers simultaneously using a duplicate sampling manifold (tee).

4.1.4 Laboratory Analysis

4.1.4.1 Soil Chemical Analysis

Shallow soil samples collected at approximately 0.5 and 3 feet bgs from each shallow soil assessment borings at the West Grand Block and Market Street Block will be submitted for analysis to a California-certified laboratory. All soil samples will be analyzed for CAM 17 metals.

Samples collected near areas where historical data suggests potential petroleum hydrocarbon impacts (near B37, B-44, and soil vapor location SV-13) will also be analyzed for VOCs by EPA Method 8260 and TPH by EPA Method 8015.

Additionally, soil matrix parameters will be collected from select soil samples, as described below.

4.1.4.2 Soil Matrix Parameters

For the assessment of potential health risk associated with direct contact and vapor intrusion from VOC, the following soil matrix parameters, in addition to visual soil description using the Unified Soil Classification System (USCS), will be obtained from each shallow soil sample collected near a proposed soil vapor boring location (Figures 12 and 13). Those associated shallow soil borings will be continued past the planned 3 foot depth, to a depth of approximately 5 feet bgs, for collection of soil to be analyzed for the following:

- Dry bulk density.
- Organic carbon content.
- Soil moisture content.
- Porosity (total and water-filled).
- Grain size distribution analysis.

4.1.4.3 Soil Vapor Analysis

Soil vapor samples collected from each of the sampling probes will be analyzed at a fixed-base California-certified laboratory for BTEX, naphthalene, and VOCs by EPA Method TO-15 full scan. Soil vapor analysis will also include fixed gases. The fixed gasses include oxygen, carbon dioxide, nitrogen, methane, and the tracer gas (helium) using American Society of Testing and Materials (ASTM) D-1946 or equivalent EPA test method.

4.2 TASK 2: SOIL EXCAVATION

This section presents the proposed soil investigation activities to be completed at locations B-37, B-44, SV-13, and other areas identified during additional characterization in the event that further assessment at the Site indicates the need for targeted remediation is necessary to eliminate a potential for risk to future Site occupants, and achieve regulatory closure.

4.2.1 Rationale and proposed action

ESLs and Site-specific screening levels were used as screening criteria for detected chemical constituents. The ESLs are considered to provide long-term protections of human health and the environment. Site-specific screening levels were calculated in the HHRA for a number of chemicals. The comparison of detected concentrations to screening levels was conducted to determine where remediation efforts are necessary for the Site to achieve regulatory closure and be cleared for redevelopment.

Based on an evaluation of historical data for B-37, the concentration of benzene was above 0.044 mg/kg in a duplicate sample at 1 ft (primary sample was below the ESL). In B-44, the TPH was elevated leading to a reporting limit for benzene that was above the ESL. Furthermore, sample SV-13 contained elevated concentrations of heptane, hexane and cyclohexane that are below screening levels but may mask the presence of other VOCs due to elevated reporting limits. These three samples located on the West Grand Block represent data gaps that will be further evaluated during the data gap assessment prior to implementation of this RAP.

In developing the proposed remediation plan, this RAP identified potential data gaps, as described above, with a plan for proposed data gap assessment prior to RAP implementation. Should results of the data gap assessment indicate areas of impacted soil above ESLs or HHRA screening levels for soil vapor, CV may elect to perform targeted excavation to remove the impacted soil as described in this RAP, if concentrations exceed residential ESLs. If data gap analysis soil vapor results exceed the Site-specific screening levels, CV will work with ACEH for implementation of a vapor barrier in the areas requiring vapor mitigation.

The following sections describe the excavation preparation and details of the proposed remedial action, should they be deemed necessary following results of data gap sampling.

4.2.2 Preliminary Activities

Upon approval of this plan, Stantec will prepare a RAP work plan. Upon approval of the RAP work plan, Stantec will obtain permits for the proposed work from the City of Oakland and ACEH, as appropriate. The selected excavation contractor will prepare a Site-specific Health and Safety Plan (HASP) in accordance with the requirements of 40 Code of Federal Regulation (CFR) 1910.120. The HASP will be provided to all field personnel and a copy will be maintained at the Site during all field activities.

The proposed excavation areas will be marked with white paint and a ticket notification will be made to Underground Service Alert (USA North). Proposed excavation areas will be evaluated by a private utility locator to confirm the absence of subsurface utilities or other obstructions.

4.2.3 Excavation Activities

Soils in the areas identified for remedial excavation will be removed via excavation of an area measuring approximately 10 feet by 10 feet, and centered at the locations of reported impacts. The proposed excavation depth is to 5 feet below grade. Dust monitoring will be conducted during earth moving activities.

4.2.4 Confirmation Sampling

After the initial removal of the 10 foot by 10 foot areas of impacted soil, confirmation sampling will be conducted to confirm that concentrations remaining in soil are less than the residential ESL. Soil samples will screened in the field using a photo ionization detector and/or flame ionization detector (PID/FID) to verify that all contaminated soil has been removed prior to collection of confirmation samples. The excavations will be left open pending receipt of

analytical results confirming the samples from the excavation limits are less than the ESL for the targeted COPC.

4.2.5 Base of Excavation

Confirmation sampling will be conducted at the base of the excavation. A minimum of 2 samples will be collected from the base of the excavation, in accordance with previously ACEH approved excavations at the Site. If results of the confirmation sampling indicate residual impacts above the ESL, additional excavation will be conducted to deepen the excavation in 6-inch increments and additional samples collected, until results indicate residual concentrations are below ESLs.

4.2.6 Lateral Limits of Excavation

Confirmation sampling will be conducted along the sidewalls of the excavation, at a rate of 1 sample per 10 feet horizontally. A minimum of 4 samples discrete soil samples will be collected from the sidewalls of each excavation, in accordance with previously ACEH approved excavations at the Site. If results of the confirmation sampling indicate residual impacts above the ESL, additional excavation will be conducted to open the excavation an additional 2 to 5 feet (dependent on field readings taken during excavation) in the direction of the soil impacts and additional samples collected from the sidewalls, until results indicate residual concentrations are below ESLs.

4.2.7 Soil Stockpiling

Excavated soil will be stockpiled or loaded directly into trucks for off-site disposal. Stockpiled soils will be placed on plastic or pavement and covered at the end of each work day. The method of covering will be determined based on the anticipated time that the stockpiles will be in place, weather conditions, and other practical factors such as the size of the stockpiles. Storm water management practices shall be consistent with all applicable rules and regulations.

4.2.8 Off-site Soil Disposal

The excavated soil will be disposed of off-Site at an approved landfill. The soil shall be profiled for constituents as requested by the appropriate receiving landfill facility (e.g., hazardous, non-hazardous, or recycling).

4.2.9 Imported Fill Material

The excavated areas will be backfilled with imported fill material. The imported fill material will meet the minimum requirements for soil sampling and analysis designated by the DTSC to avoid the placement of chemically-impacted soil on site; the selected fill-source will be pre-approved by ACEH for use at the Site. The backfill material will be placed in lifts no greater than 8 inches thick and compacted per City of Oakland requirements and the project geotechnical consultant's recommendations.

4.2.10 Dust Control

During soil excavation activities, dust control measures will be implemented to minimize dust generation. All excavation work will be performed in accordance with the Occupational Safety and Health Administration (OSHA) and Cal/OSHA regulations. During excavation activities, dust control measures, such as application of water, will be used if necessary to minimize generation of airborne dust. Basic dust control measures for construction related projects are outlined by the Bay Area Air Quality Management District (BAAQMD) in Chapter 8 of their 2011California Environmental Quality Act (CEQA) guidelines.

4.2.11 Dust Monitoring

During remediation activities, dust control measure will be implemented, per VTPM 8551-8555, Exhibit C, Conditions of Approval, Section 15, *Dust Control Measures* (Oakland City Council, 2005). These measures include covering soil stockpiles, watering construction areas, and street sweeping. Additionally, the contractor will continuously monitor airborne dust at the upwind and downwind Site perimeters during all potential dust-generating activities (i.e., operation of heavy equipment, excavation, stockpiling, and loading) using direct-reading instruments (e.g., Mini-Ram pDR 1000™) for measurement of total suspended particulate matter. Electronic data logs of real-time measurement will be used to determine the maximum and average dust concentrations at the upwind and downwind perimeter monitoring locations. If the instantaneous reading of dust generated by site operations exceeds 50 micrograms per cubic meter ($\mu g/m^3$), corrective actions will be taken to mitigate generation of dust.

4.2.12 Soil Transportation

Excavated soil will be transported off-Site by a California-state registered hazardous waste hauler, as appropriate. Typical trucks can transport approximately 10 to 20 cubic yards of excavated soil. Trucks will be properly placarded and the appropriate paperwork will accompany all waste shipments. All trucks transporting soil will be covered or maintain at least two feet of freeboard. Wheel washing of truck tires will be implemented prior to leaving the Site if necessary. Loading of trucks will be managed to eliminate the release of material onto the ground, and trucks will be inspected to remove any soil adhering to tires or other surfaces.

4.3 TASK 3: VAPOR MITIGATION SYSTEM BASIS OF DESIGN

Based on the data collected to date, the completed HHRA concludes that vapor intrusion does not represent an unacceptable health risk for future residential occupants of the Site. Therefore, vapor barriers are not anticipated for the planned buildings. Should soil vapor samples collected during the data gap assessment exceed the Site-specific HHRA screening levels then CV will evaluate the need for a vapor barrier. This RAP includes the basis of design for a passive vapor barrier as a contingency measure, but assumes that no barrier will be required for the Site based on data collected to date.

A typical design for a vapor barrier system with passive venting is included in Appendix G. This would be used as the *basis of design* for a vapor barrier systems should additional sampling indicate one is warranted. Two design options are provided in Appendix G. The option selected will be determined by the geotechnical engineer and the permit department for the City of Oakland. The design differences are based on the need for a sand layer above the barrier and below the concrete slab should that be deemed necessary for building construction. In either case, the barrier is a multi-layer system with passive vent piping below the barrier, and is designed to protect the overlying building from vapor intrusion from potential volatile organic compounds in the subsurface.

Should the need for protection be determined by future assessment data, a complete design will be developed for the affected planned Site structures. That design will include the required plan sheets with specific design elements sufficient for plan check and approval by the City and County. Included in all vapor barrier design and placement are the required inspection procedures to be used after installation to verify all under-laments and piping penetration are properly placed and sealed to verify future performance as required by the building permit.

4.4 TASK 4: COMPLETION REPORT

Following completion of the additional soil and soil vapor assessment outlined in Section 4.1 above, collected data will be compared to the Water Board ESLs, and the revised HHRA Site-specific screening levels. Based on the results of that comparison, if necessary, remedial measures and/or human health risk mitigation measures will be completed as discussed in Sections 4.2 and 4.3 above. CV will communicate with ACEH during the completion of the upcoming assessment task and screening of collected data, and will seek concurrence from ACEH prior to performing any remedial action or human health mitigation, if necessary.

A completion report will be prepared to document the findings of the additional soil and soil vapor assessment, as well as any remedial action completed.

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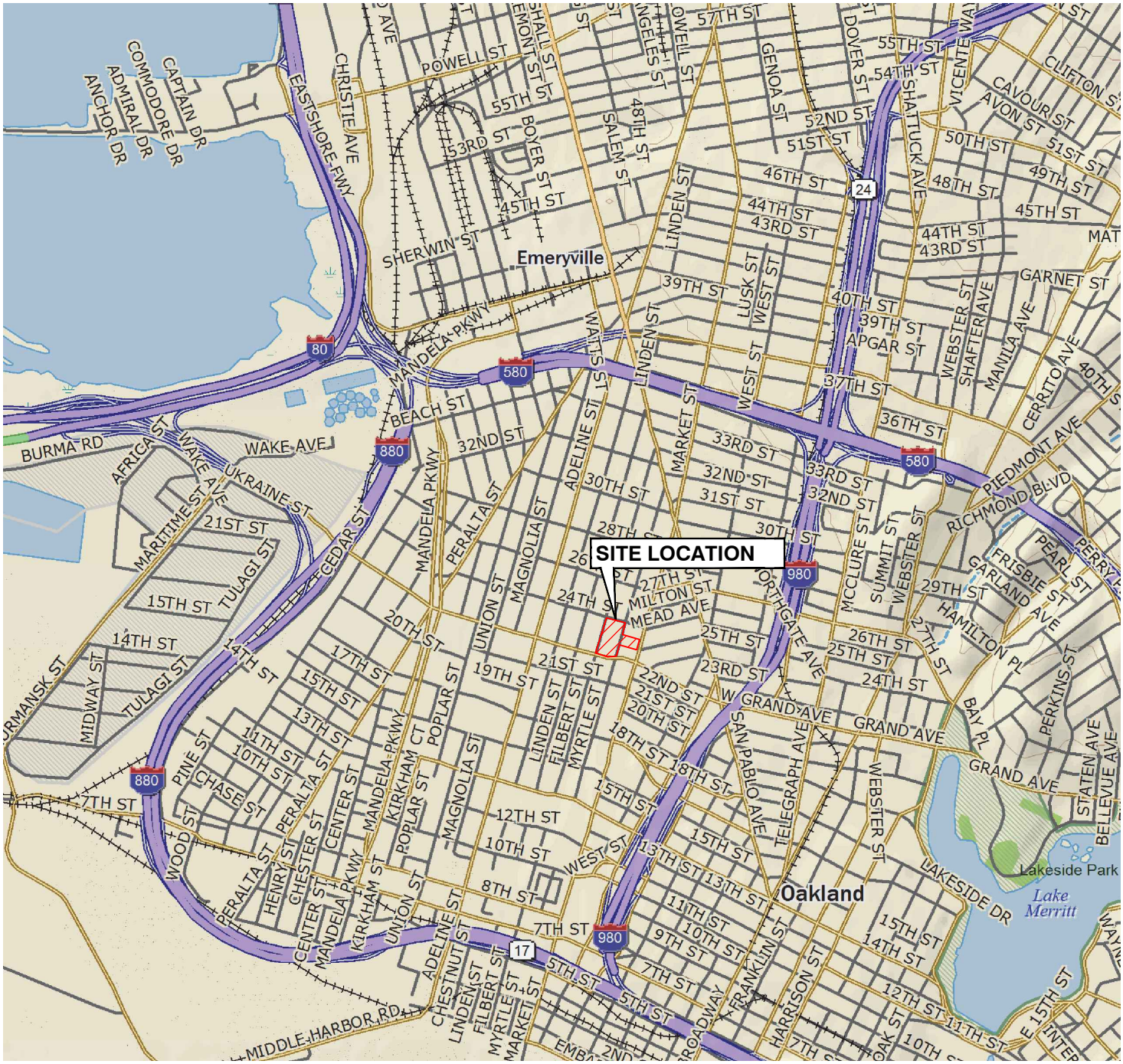
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FIGURES



North



CALIFORNIA

1 1/2 0 1
SCALE (MILES)

1000 0 1000 2000 3000 4000 5000 6000 7000
SCALE (FEET)

REFERENCE: USGS 7.5 MINUTE QUADRANGLE, OAKLAND WEST, CALIFORNIA

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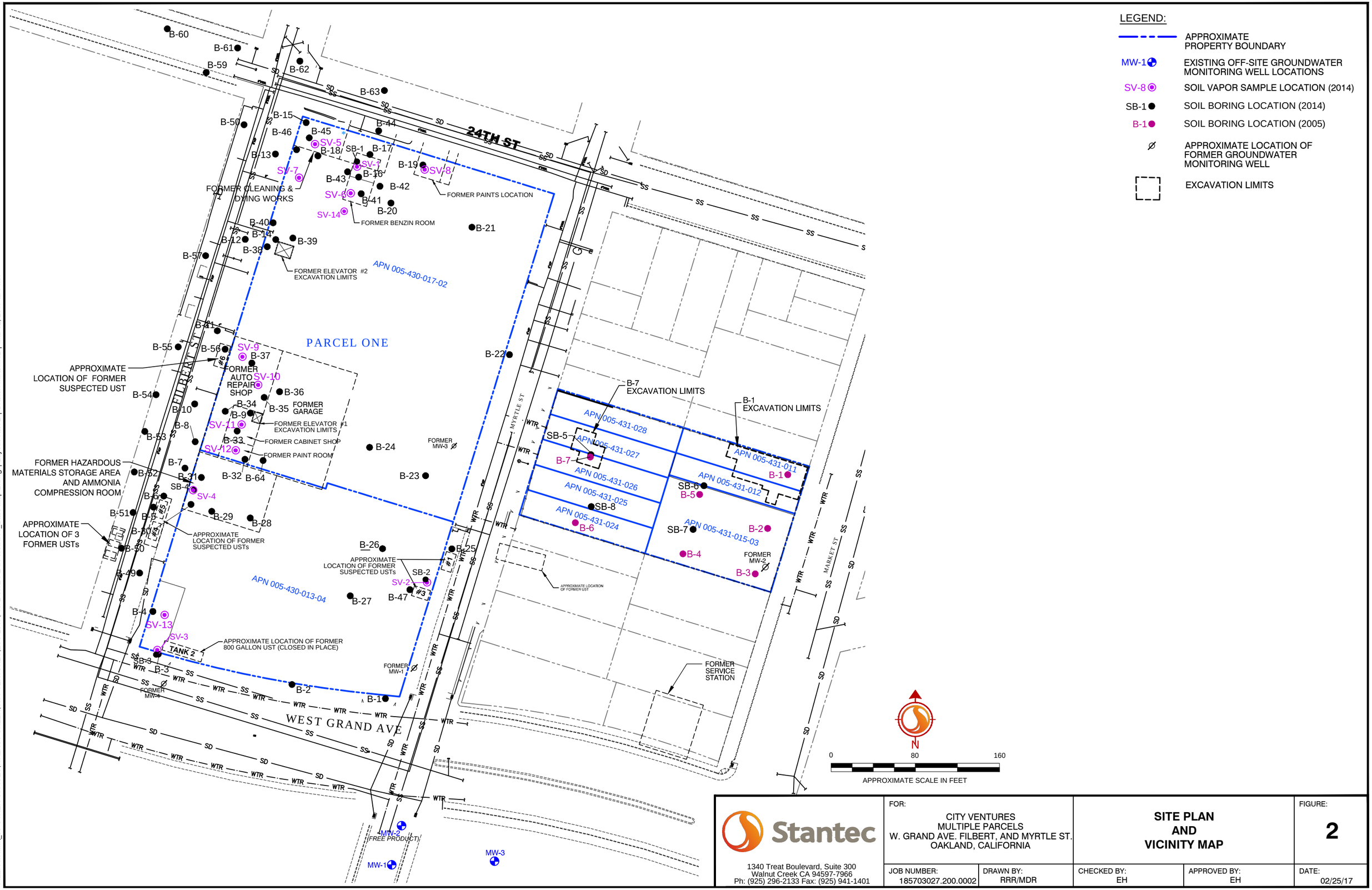
FOR:
CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

SITE LOCATION MAP

FIGURE: **1**

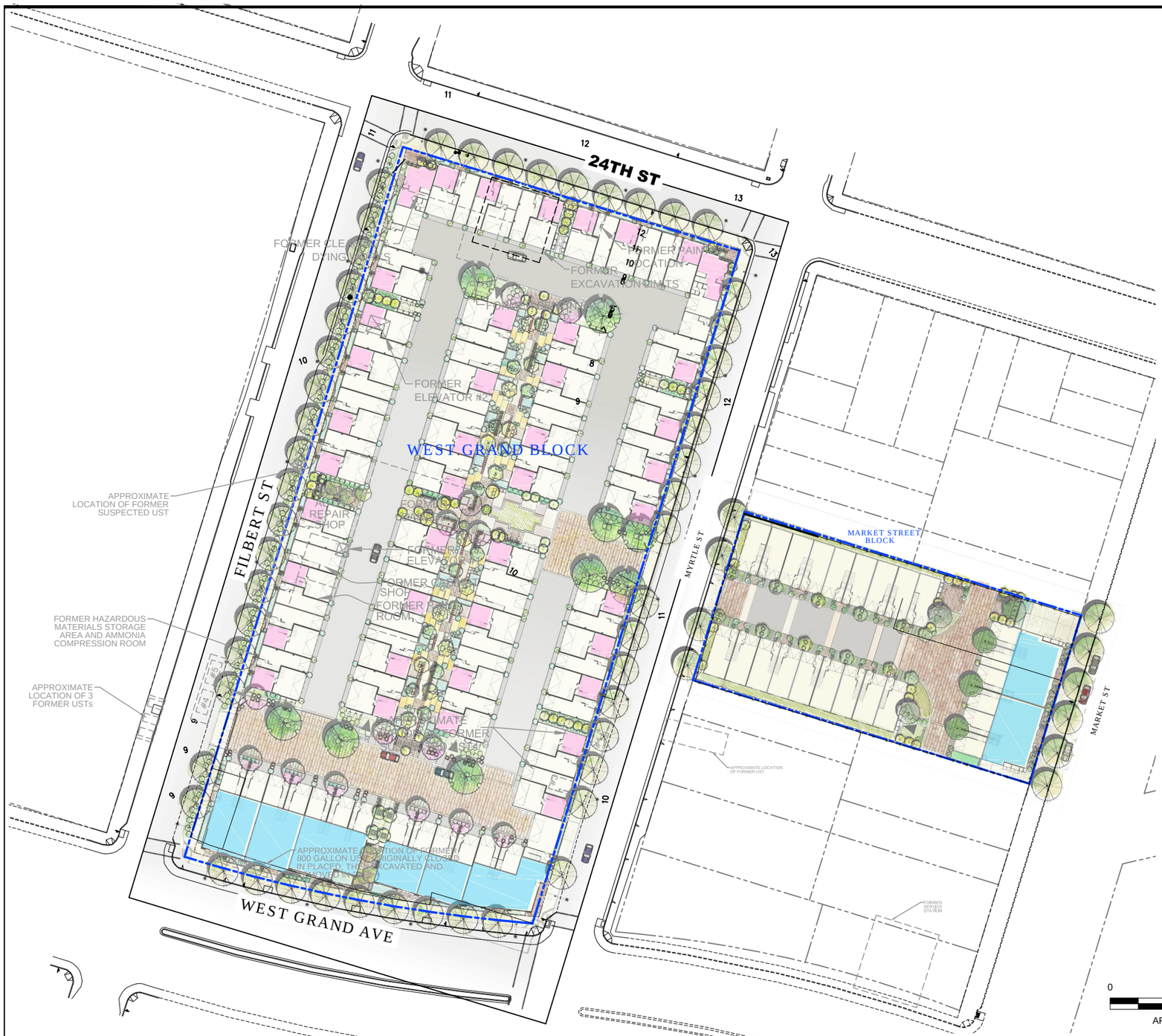
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Stantec 1340 Treat Boulevard, Suite 300 Walnut Creek CA 94597-7966 Ph: (925) 296-2133 Fax: (925) 941-1401	FOR: CITY VENTURES MULTIPLE PARCELS W. GRAND AVE. FILBERT, AND MYRTLE ST. OAKLAND, CALIFORNIA	**SITE PLAN AND VICINITY MAP**		FIGURE: **2**
	JOB NUMBER: 185703027.200.0002	DRAWN BY: RRR/MDR	CHECKED BY: EH	APPROVED BY: EH	DATE: 02/25/17

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LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE

N

0 80 160

APPROXIMATE SCALE IN FEET

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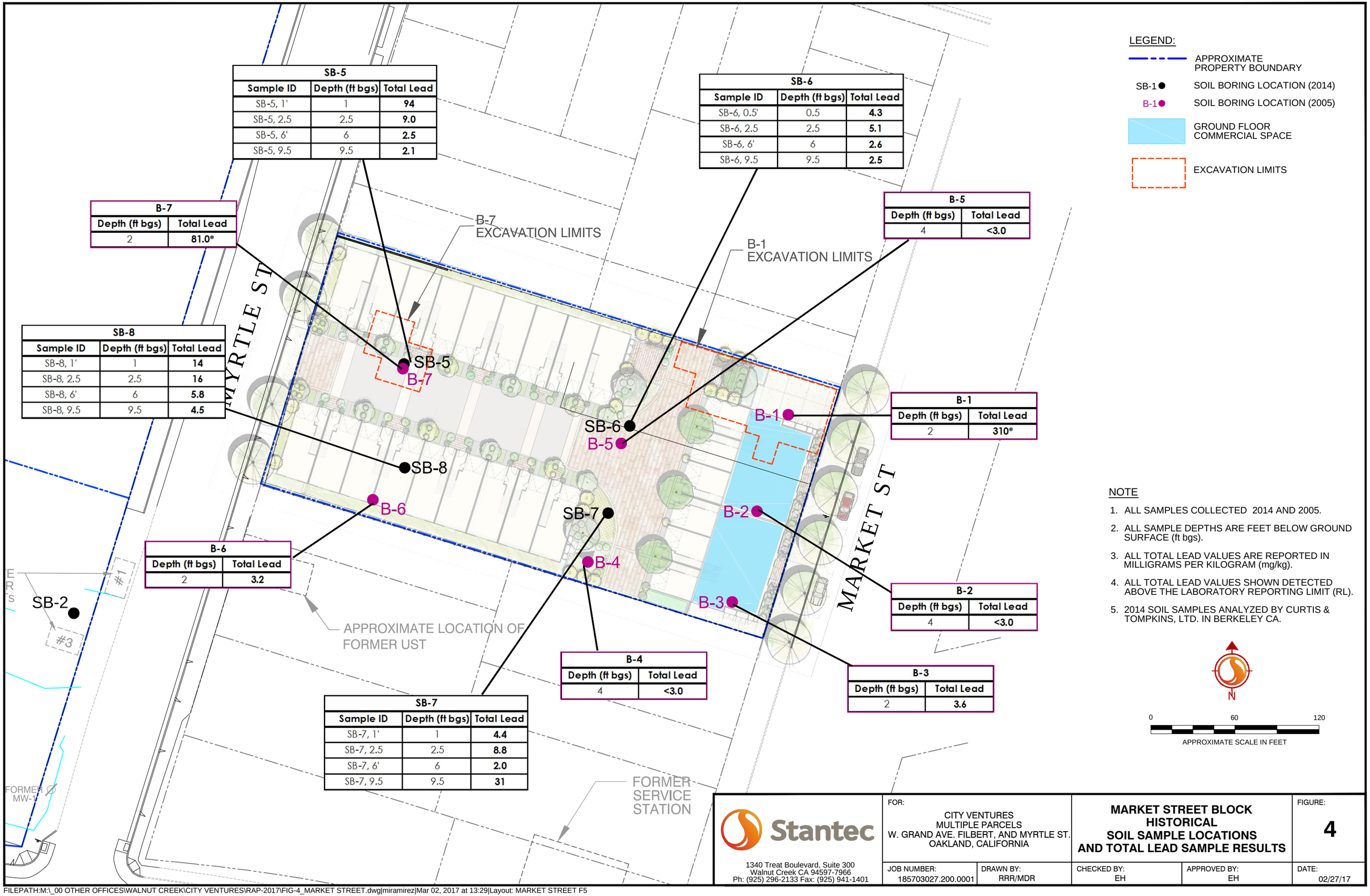
FOR: CITY VENTURES
MULTIPLE PARCELS
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SITE DEVELOPMENT PLAN

FIGURE: **3**

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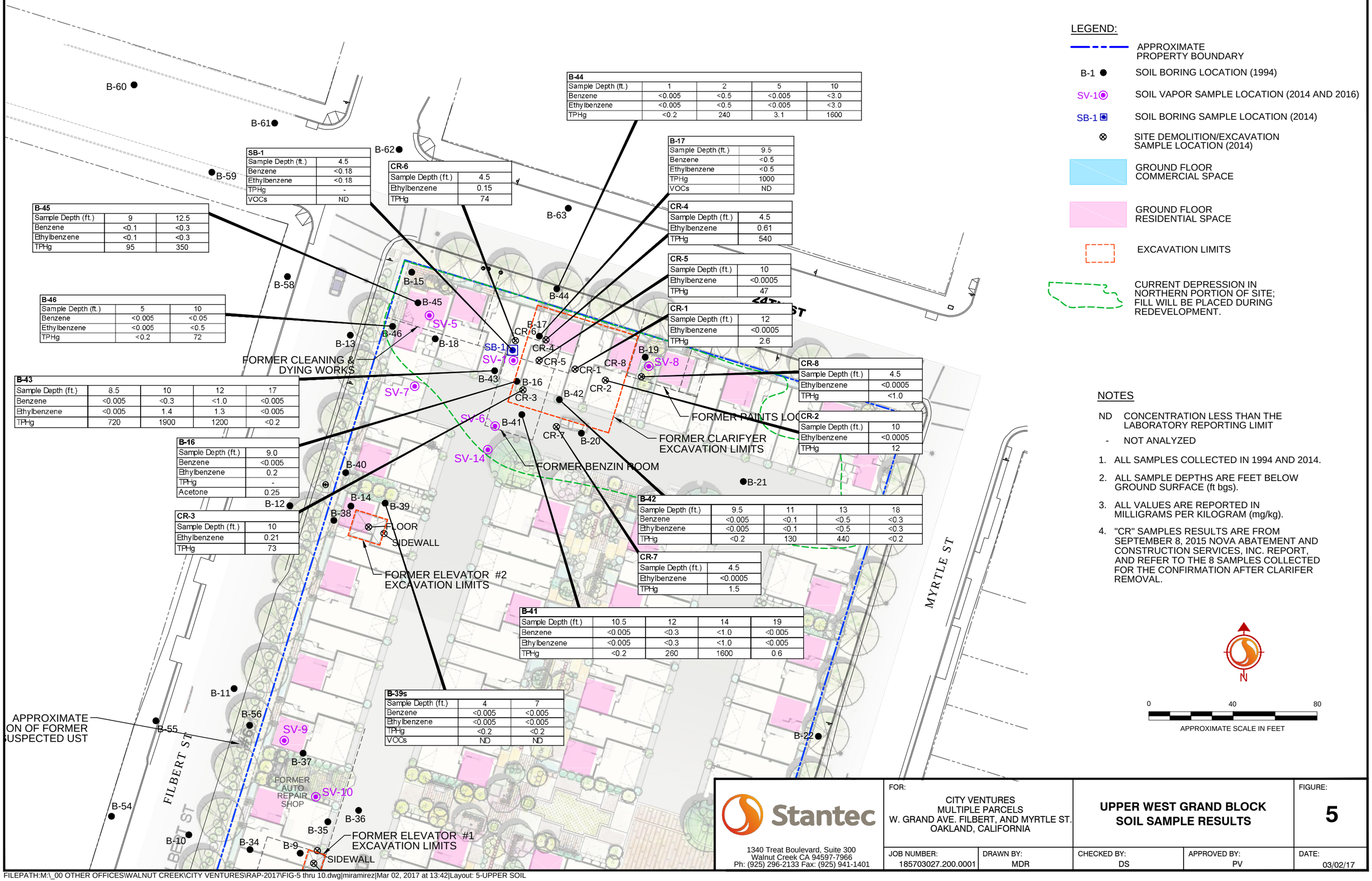
FOR:
CITY VENTURES
MULTIPLE PARCELS
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OAKLAND, CALIFORNIA

MARKET STREET BLOCK HISTORICAL SOIL SAMPLE LOCATIONS AND TOTAL LEAD SAMPLE RESULTS

FIGURE: 4

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SB-1	
Sample Depth (ft.)	4.5
Benzene	<0.18
Ethylbenzene	<0.18
TPHg	-
VOCs	ND

CR-6	
Sample Depth (ft.)	4.5
Ethylbenzene	0.15
TPHg	74

B-44				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.5	<0.005	<3.0
Ethylbenzene	<0.005	<0.5	<0.005	<3.0
TPHg	<0.2	240	3.1	1600

B-17	
Sample Depth (ft.)	9.5
Benzene	<0.5
Ethylbenzene	<0.5
TPHg	1000
VOCs	ND

B-45		
Sample Depth (ft.)	9	12.5
Benzene	<0.1	<0.3
Ethylbenzene	<0.1	<0.3
TPHg	95	350

CR-4	
Sample Depth (ft.)	4.5
Ethylbenzene	0.61
TPHg	540

CR-5	
Sample Depth (ft.)	10
Ethylbenzene	<0.0005
TPHg	47

B-46		
Sample Depth (ft.)	5	10
Benzene	<0.005	<0.05
Ethylbenzene	<0.005	<0.5
TPHg	<0.2	72

CR-1	
Sample Depth (ft.)	12
Ethylbenzene	<0.0005
TPHg	2.6

CR-8	
Sample Depth (ft.)	4.5
Ethylbenzene	<0.0005
TPHg	<1.0

B-43				
Sample Depth (ft.)	8.5	10	12	17
Benzene	<0.005	<0.3	<1.0	<0.005
Ethylbenzene	<0.005	1.4	1.3	<0.005
TPHg	720	1900	1200	<0.2

CR-2	
Sample Depth (ft.)	10
Ethylbenzene	<0.0005
TPHg	12

B-16	
Sample Depth (ft.)	9.0
Benzene	<0.005
Ethylbenzene	0.2
TPHg	-
Acetone	0.25

CR-3	
Sample Depth (ft.)	10
Ethylbenzene	0.21
TPHg	73

B-42				
Sample Depth (ft.)	9.5	11	13	18
Benzene	<0.005	<0.1	<0.5	<0.3
Ethylbenzene	<0.005	<0.1	<0.5	<0.3
TPHg	<0.2	130	440	<0.2

CR-7	
Sample Depth (ft.)	4.5
Ethylbenzene	<0.0005
TPHg	1.5

B-41				
Sample Depth (ft.)	10.5	12	14	19
Benzene	<0.005	<0.3	<1.0	<0.005
Ethylbenzene	<0.005	<0.3	<1.0	<0.005
TPHg	<0.2	260	1600	0.6

B-39s		
Sample Depth (ft.)	4	7
Benzene	<0.005	<0.005
Ethylbenzene	<0.005	<0.005
TPHg	<0.2	<0.2
VOCs	ND	ND

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 ● SOIL BORING LOCATION (1994)
- SV-1 ◉ SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SB-1 ◘ SOIL BORING SAMPLE LOCATION (2014)
- ⊗ SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE
- EXCAVATION LIMITS
- CURRENT DEPRESSION IN NORTHERN PORTION OF SITE; FILL WILL BE PLACED DURING REDEVELOPMENT.

NOTES

ND CONCENTRATION LESS THAN THE LABORATORY REPORTING LIMIT

\- NOT ANALYZED

1. ALL SAMPLES COLLECTED IN 1994 AND 2014.
2. ALL SAMPLE DEPTHS ARE FEET BELOW GROUND SURFACE (ft bgs).
3. ALL VALUES ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg).
4. "CR" SAMPLES RESULTS ARE FROM SEPTEMBER 8, 2015 NOVA ABATEMENT AND CONSTRUCTION SERVICES, INC. REPORT, AND REFER TO THE 8 SAMPLES COLLECTED FOR THE CONFIRMATION AFTER CLARIFER REMOVAL.

N

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APPROXIMATE SCALE IN FEET

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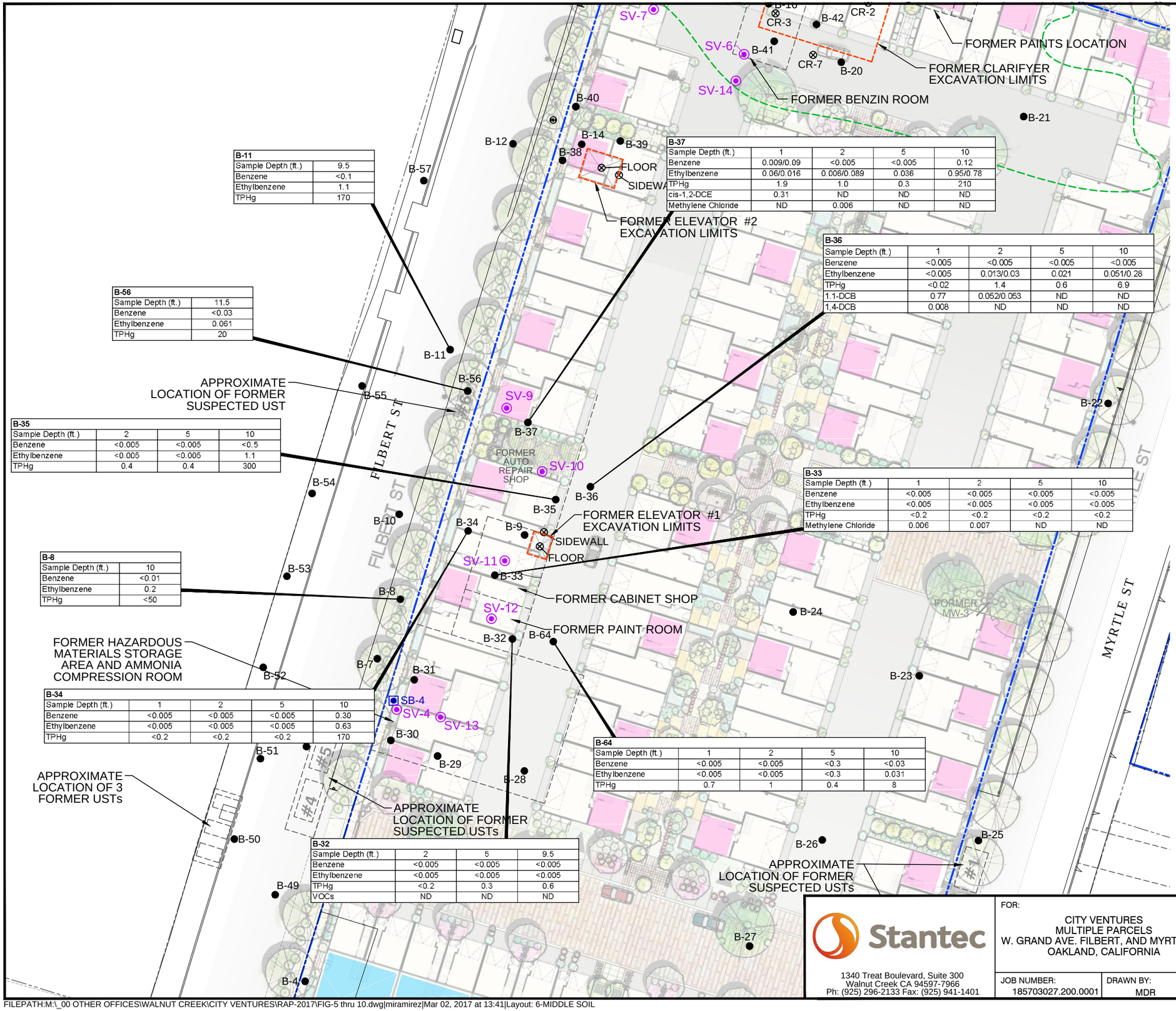
FOR: CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

UPPER WEST GRAND BLOCK SOIL SAMPLE RESULTS

FIGURE: **5**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\RAP-2017\FIG-5 thru 10.dwg|miramirez|Mar 02, 2017 at 13:42|Layout: 5-UPPER SOIL



B-11	
Sample Depth (ft.)	9.5
Benzene	<0.1
Ethylbenzene	1.1
TPHg	170

B-37				
Sample Depth (ft.)	1	2	5	10
Benzene	0.009/0.09	<0.005	<0.005	0.12
Ethylbenzene	0.06/0.016	0.006/0.089	0.036	0.95/0.78
TPHg	1.9	1.0	0.3	210
cis-1,2-DCE	0.31	ND	ND	ND
Methylene Chloride	ND	0.006	ND	ND

B-36				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	0.013/0.03	0.021	0.051/0.28
TPHg	<0.02	1.4	0.6	6.9
1,1-DCB	0.77	0.052/0.053	ND	ND
1,4-DCB	0.008	ND	ND	ND

B-56	
Sample Depth (ft.)	11.5
Benzene	<0.03
Ethylbenzene	0.061
TPHg	20

B-35			
Sample Depth (ft.)	2	5	10
Benzene	<0.005	<0.005	<0.5
Ethylbenzene	<0.005	<0.005	1.1
TPHg	0.4	0.4	300

B-33				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	<0.005	<0.005	<0.005
TPHg	<0.2	<0.2	<0.2	<0.2
Methylene Chloride	0.006	0.007	ND	ND

B-8	
Sample Depth (ft.)	10
Benzene	<0.01
Ethylbenzene	0.2
TPHg	<50

B-34				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	0.30
Ethylbenzene	<0.005	<0.005	<0.005	0.63
TPHg	<0.2	<0.2	<0.2	170

B-64				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.3	<0.03
Ethylbenzene	<0.005	<0.005	<0.3	0.031
TPHg	0.7	1	0.4	8

B-32			
Sample Depth (ft.)	2	5	9.5
Benzene	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	<0.005	<0.005
TPHg	<0.2	0.3	0.6
VOCs	ND	ND	ND

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 SOIL BORING LOCATION (1994)
- SV-1 SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- APPROXIMATE LOCATION OF FORMER GROUNDWATER MONITORING WELL
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE
- EXCAVATION LIMITS
- CURRENT DEPRESSION IN NORTHERN PORTION OF SITE; FILL WILL BE PLACED DURING REDEVELOPMENT.

NOTES

ND CONCENTRATION LESS THAN THE LABORATORY REPORTING LIMIT

\- NOT ANALYZED

1. ALL SAMPLES COLLECTED IN 1994 AND 2014.
2. ALL SAMPLE DEPTHS ARE FEET BELOW GROUND SURFACE (ft bgs).
3. ALL VALUES ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg).

N

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APPROXIMATE SCALE IN FEET

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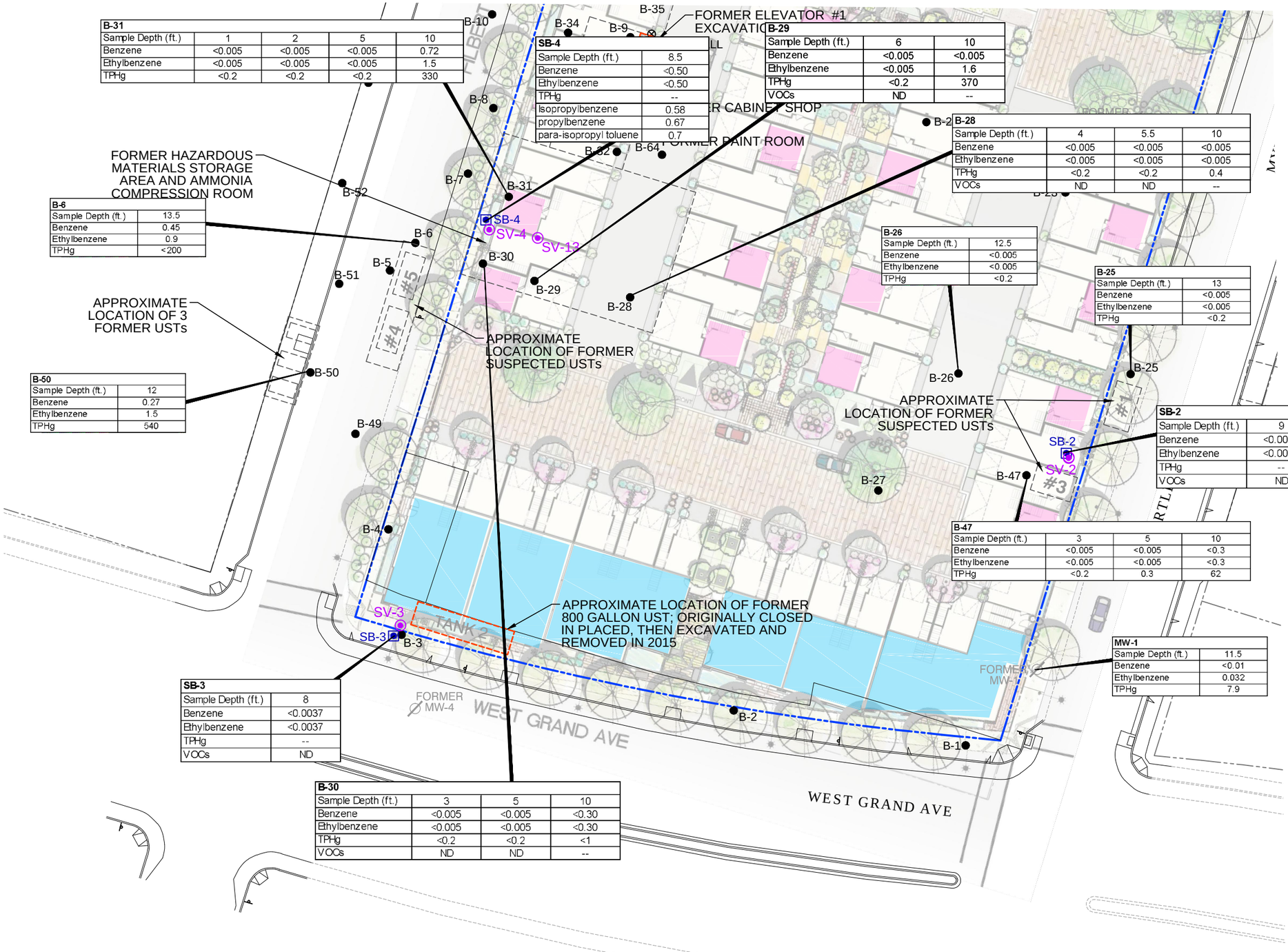
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CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

MIDDLE WEST GRAND BLOCK SOIL SAMPLE RESULTS

FIGURE: **6**

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185703027.200.0001	MDR	DS	PV	03/02/17

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\RAP-2017\FIG-5 thru 10.dwg|miramirez|Mar 02, 2017 at 13:41|Layout: 6-MIDDLE SOIL



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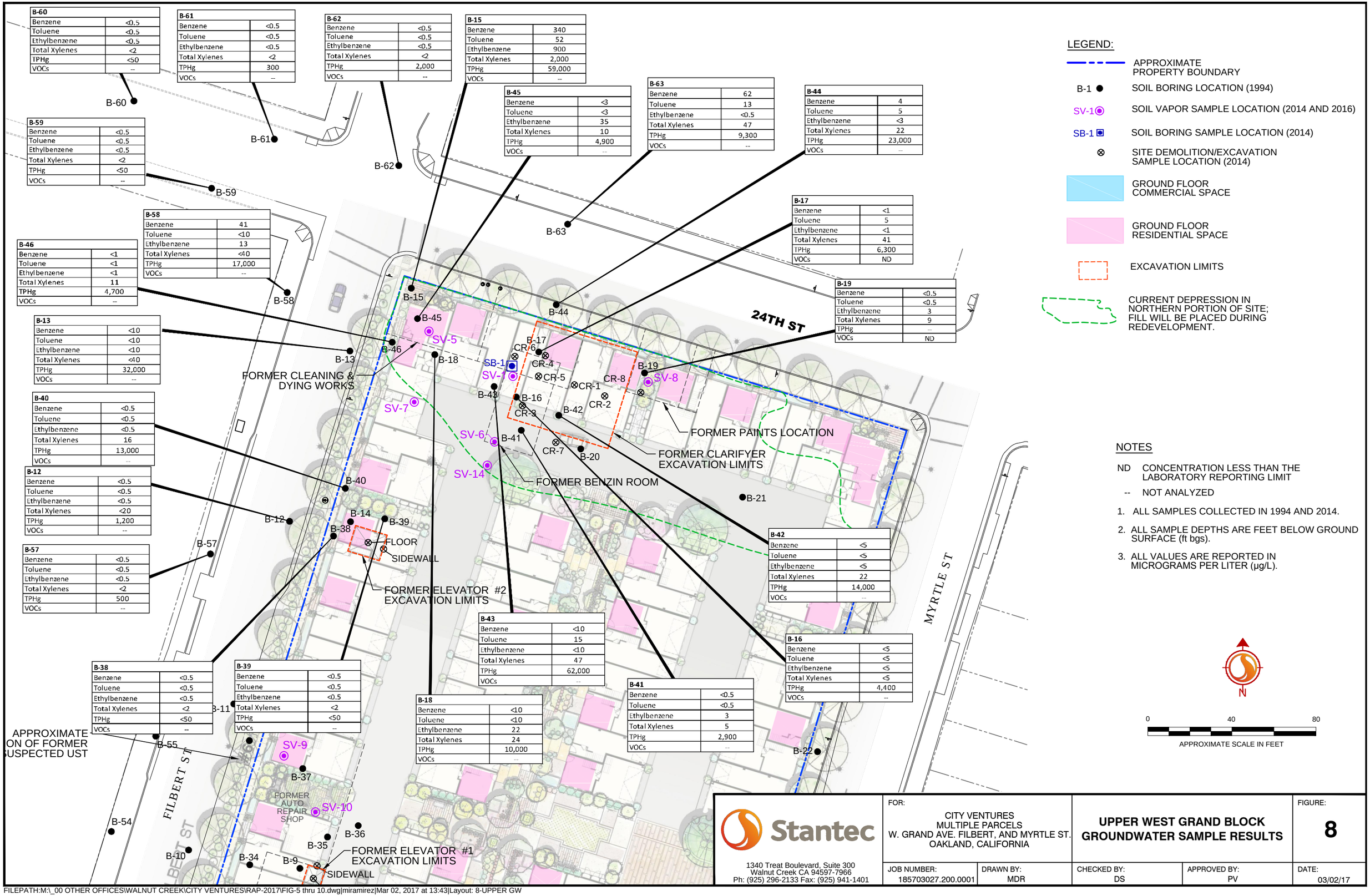
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MULTIPLE PARCELS
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LOWER WEST GRAND BLOCK
SOIL SAMPLE RESULTS

FIGURE: **7**

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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\RAP-2017\FIG-5 thru 10.dwg|miramirez|Mar 02, 2017 at 13:37|Layout: 7- LOWER SOIL



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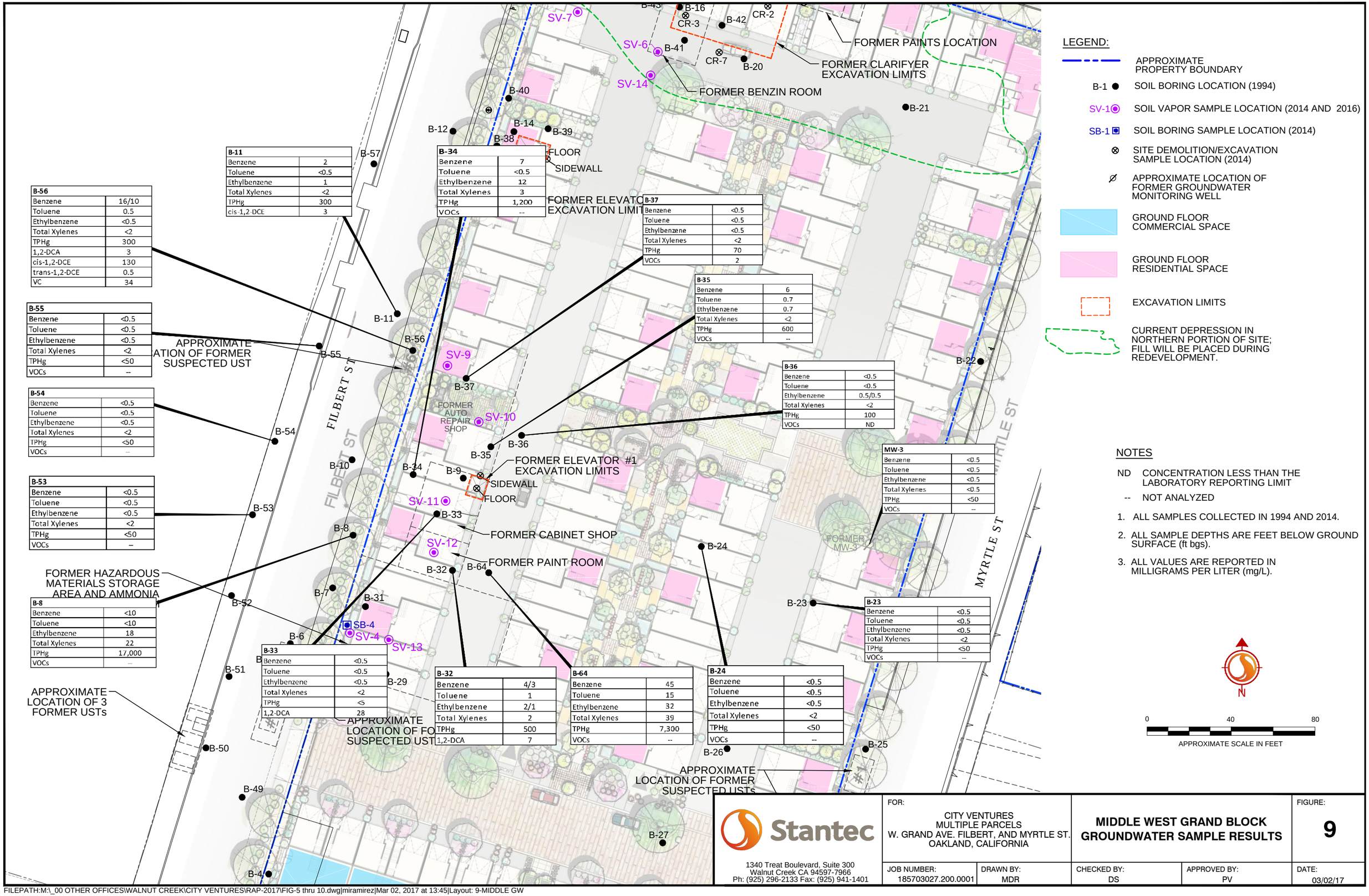
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MULTIPLE PARCELS
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UPPER WEST GRAND BLOCK GROUNDWATER SAMPLE RESULTS

FIGURE: **8**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185703027.200.0001	MDR	DS	PV	03/02/17

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\RAP-2017\FIG-5 thru 10.dwg|miramirez|Mar 02, 2017 at 13:43|Layout: 8-UPPER GW



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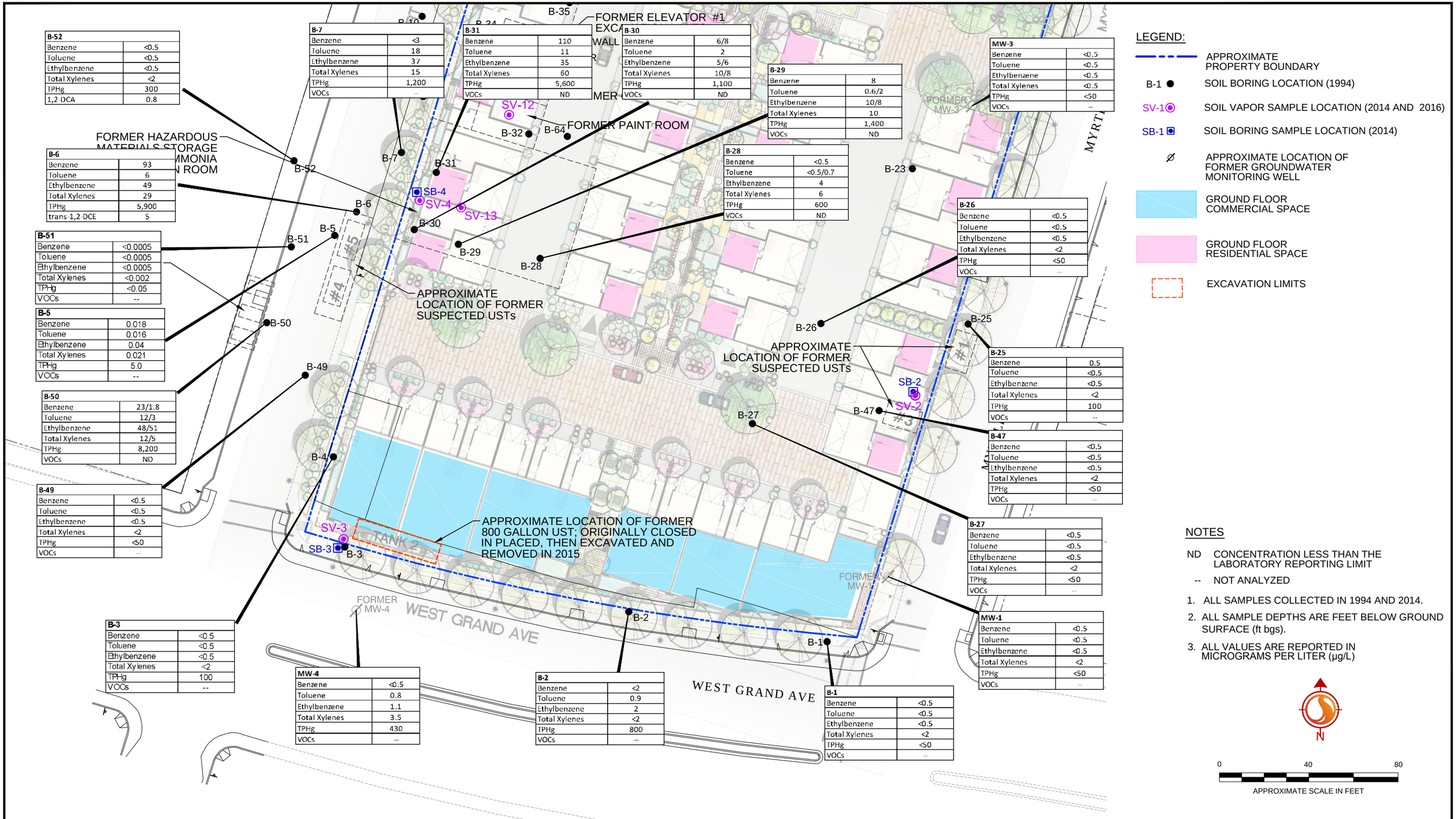
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MIDDLE WEST GRAND BLOCK GROUNDWATER SAMPLE RESULTS

FIGURE: 9

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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\RAP-2017\FIG-5 thru 10.dwg|miramirez|Mar 02, 2017 at 13:45|Layout: 9-MIDDLE GW



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LOWER WEST GRAND BLOCK GROUNDWATER SAMPLE RESULTS

FIGURE: 10

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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\RAP-2017\FIG-5 thru 10.dwg|miramirez|Mar 02, 2017 at 13:47|Layout: 10- LOWER GW



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 SOIL BORING LOCATION (1994)
- SV-1 SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SB-1 SOIL BORING SAMPLE LOCATION (2014)
- SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- APPROXIMATE LOCATION OF FORMER GROUNDWATER MONITORING WELL
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- GROUND FLOOR RESIDENTIAL SPACE
- EXCAVATION LIMITS
- CURRENT DEPRESSION IN NORTHERN PORTION OF SITE; FILL WILL BE PLACED DURING REDEVELOPMENT.

NOTES

1. SOIL AND GROUNDWATER SAMPLE RESULTS FOR UPPER SECTION ARE SHOWN ON FIGURES 6 AND 9 RESPECTIVELY.
2. SOIL AND GROUNDWATER SAMPLE RESULTS FOR MIDDLE SECTION ARE SHOWN ON FIGURES 7 AND 10 RESPECTIVELY.
3. SOIL AND GROUNDWATER SAMPLE RESULTS FOR LOWER SECTION ARE SHOWN ON FIGURES 8 AND 11 RESPECTIVELY.

N

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FOR:
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SOIL VAPOR SAMPLE LOCATIONS

FIGURE: **11**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\RAP-2017\FIG-4 AND 15.dwg|miramirez|Mar 02, 2017 at 13:52|Layout: F4



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 SOIL BORING LOCATION (1994)
- SV-1 SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SB-1 SOIL BORING SAMPLE LOCATION (2014)
- SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- APPROXIMATE LOCATION OF FORMER GROUNDWATER MONITORING WELL
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE
- EXCAVATION LIMITS
- CURRENT DEPRESSION IN NORTHERN PORTION OF SITE; FILL WILL BE PLACED DURING REDEVELOPMENT.
- PROPOSED SOIL SAMPLE LOCATION
- PROPOSED SOIL VAPOR LOCATION

N

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APPROXIMATE SCALE IN FEET

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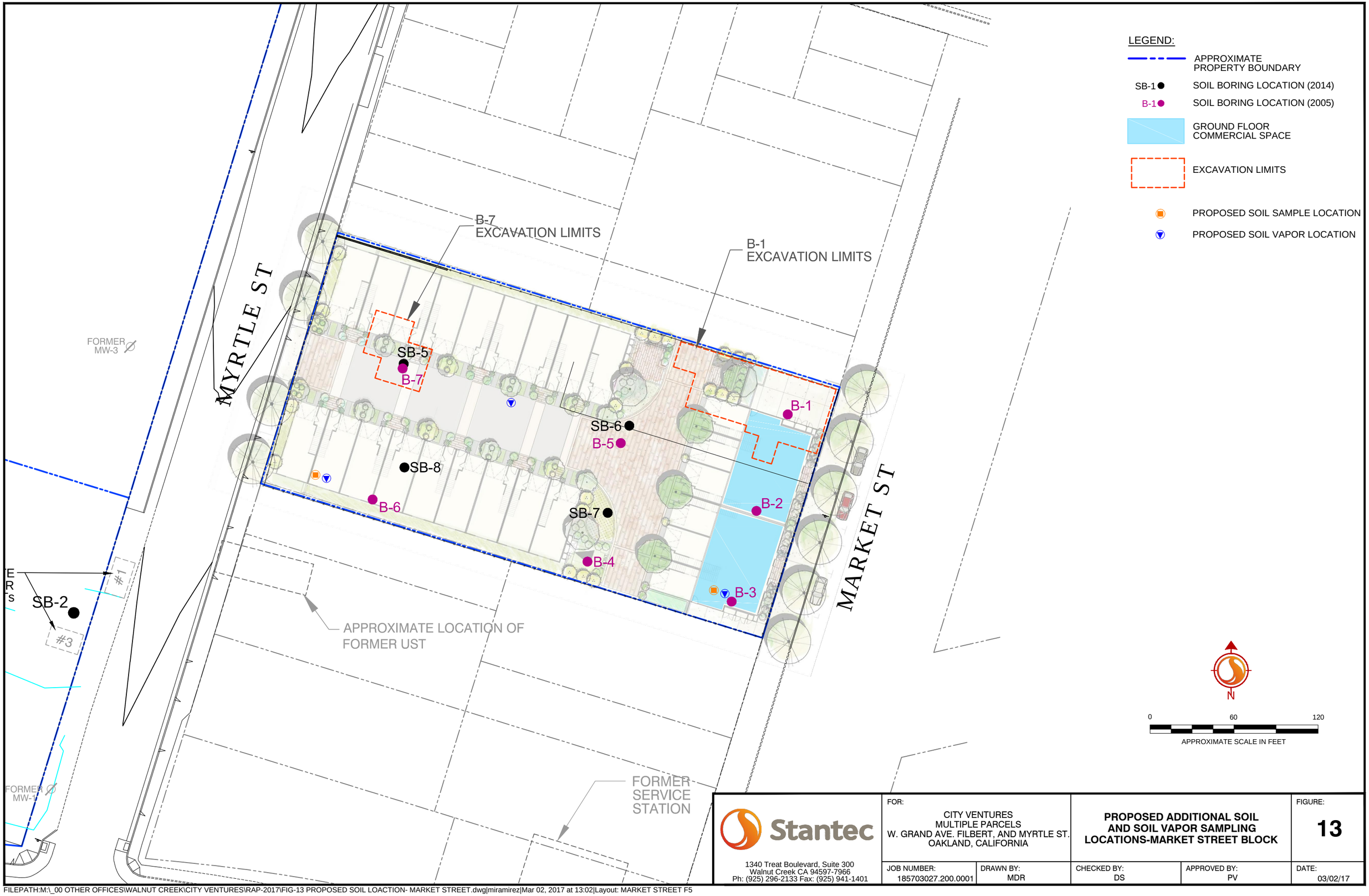
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PROPOSED ADDITIONAL SOIL AND SOIL VAPOR SAMPLING LOCATIONS WEST GRAND BLOCK

FIGURE: **12**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\RAP-2017\FIG-12 PROPOSED WEST GRAND BLOCK.dwg|miramirez|Mar 02, 2017 at 14:14|Layout: F4



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PROPOSED ADDITIONAL SOIL AND SOIL VAPOR SAMPLING LOCATIONS-MARKET STREET BLOCK

FIGURE: **13**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\RAP-2017\FIG-13 PROPOSED SOIL LOACTION- MARKET STREET.dwg|miramirez|Mar 02, 2017 at 13:02|Layout: MARKET STREET F5

TABLES

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
Tanks 1 and 3 - Suspected Former USTs in Southeast Yard (West of Myrtle Street)														
Phase I Investigation														
B-25-13	(20,26)	13	18-Jul-94	<0.005	<0.005	<0.005	<0.005	<0.2	--	--	--	--	--	*(20,26) Pb = ND; TPHd = ND*
B-26-12.5	(20)	12.5	18-Jul-94	<0.005	<0.005	<0.005	<0.005/<0.02	<0.2	--	--	--	--	--	*(20) Pb = ND*
Phase II Investigation														
B-47-3		3	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-47-5		5	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-47-10		10	15-Nov-94	<0.3	<0.3	<0.3	<0.3	62	1000	--	--	--	--	
2014 Investigation														
SB-2	(23)	9	28-May-14	<0.0042	<0.0042	<0.0042	<0.0084	--	--	--	--	--	ND	(23) PCB = ND
		Maximum Concentration		<0.3	<0.3	<0.3	<0.3	62	1000	--	--	--	--	
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	---	---	---	---	
Tank 2 - Former UST at Corner of West Grand Avenue and Filbert Street at Loading Dock														
1996 Well Install														
MW-3-5.5'		5.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0						
MW-3-10'		10	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0						
MW-4-5.0'		5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0						
MW-4-10.5'		10.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0						
2014 Investigation														
SB-3		8	28-May-14	<0.0037	<0.0037	<0.0037	<0.0074	--	--	--	--	--	ND	
		Maximum Concentration		<0.0037	<0.0037	<0.0037	<0.0074	--	--	--	--	--	ND	
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	---	---	---	---	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
Tanks 4 and 5 - Former Heating Oil USTs														
Phase I Investigation														
B-5-9.5		9.5	20-Jul-94	--	--	--	--	--	--	37	<10	--	--	
B-6-13.5	(2,5,9,20,21)	13.5	19-Jul-94	0.45	0.58	0.9	0.28	<200	--	140	120	--	--	*(20,21) Pb = ND; TPHd = 2 mg/kg*
		Maximum Concentration		0.45	0.58	0.9	0.28	<200	--	140	120	--	--	
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	5100	---	---	---	
Tank 6 - Suspect UST on Filbert Outside Former Auto Repair Shop														
Phase II Investigation														
B-56-11.5		11.5	8-Nov-94	<0.03	<0.03	0.061	<0.03	20	3	--	--	--	--	
		Maximum Concentration		<0.03	<0.03	0.061	<0.03	20	3	--	--	--	--	--
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	5100	---	---	---	
Western Area - Former Engine Room and Hazardous Materials Storage Area, Former Auto Repair Shop, Cabinet Shop, Paint Room and Garage														
B-7-11		11	21-Jul-94	--	--	--	--	--	--	<10	<1	--	--	
B-8-10	(3,5,22)	10	19-Jul-94	<0.01	0.066	0.2	0.21	<50	--	--	--	--	--	*(22) TPHd=ND; Pb=ND*
B-9-10	(23)	10	19-Jul-94	--	--	--	--	--	--	4400	4400	--	--	*(23) PCB = ND*
B-11-9.5	(1)	9.5	20-Jul-94	<0.1	0.52	1.1	1.7	170	--	--	--	--	--	
Phase II Investigation														
B-28-4		4	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND	
B-28-5.5		5.5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND	
B-28-10		10	18-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	--	--	--	--	
B-29-6		6	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	(19)	ND	*(19) benzo(b)fluoranthene=0.33 mg/kg; fluoranthene=0.75 mg/kg; pyrene=0.41 mg/kg*
B-29-10		10	18-Nov-94	<0.005	<0.005	1.6	<0.005	370	120	--	--	--	--	
B-39s-4	(18)	4	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	ND	
B-39s-7	(18)	7	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	ND	
B-30-3		3	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND	
B-30-5		5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND	
B-30-10		10	18-Nov-94	<0.30	<0.30	<0.30	<0.30	<1	<1	--	--	--	--	
B-31-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	40	<30	--	--	
B-31-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	30	<30	--	--	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
B-31-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	--	
B-31-10		10	11-Nov-94	0.72	0.79	1.5	0.74	330	10	40	<30	--	--	
B-32-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	53	46	--	ND	
B-32-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.3	<1	<30	<30	ND	ND	
B-32-9.5		9.5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	<1	<30	<30	--	ND	
B-33-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(12)	*(12) methylene chloride = 0.006 mg/kg*
B-33-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	(13)	*(13) methylene chloride = 0.007 mg/kg*
B-33-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-33-10		10	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-34-1		1	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	70	40	--	--	
B-34-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-10		10	10-Nov-94	<0.30	0.31	0.63	<0.30	170	82	<30	<30	--	--	
B-35-2		2	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-10		10	14-Nov-94	<0.5	<0.5	1.1	<0.5	300	51	790	690	--	--	
B-36-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(14)	*(14) 1,1-DCB = 0.77 mg/kg; 1,4-DCB = 0.008 mg/kg*
B-36-2		2	14-Nov-94	<0.005	<0.005	0.013/0.03	<0.005	1.4	<1	<30	<30	--	(15)	*(15) 1,1-DCB = 0.052/0.053 mg/kg*
B-36-5		5	14-Nov-94	<0.005	<0.005	0.021	<0.005	0.6	<1	<30	<30	--	ND	
B-36-10		10	14-Nov-94	<0.005	<0.005	0.051/0.28	0.018/0.031	6.9	5	<30	<30	--	ND	
B-37-1		1	14-Nov-94	0.009/0.09	0.005/0.033	0.06/0.016	0.007/0.02	1.9	<1	160	120	--	(16)	*(16) cis-1,2-DCE = 0.31 mg/kg*
B-37-2		2	14-Nov-94	<0.005	<0.005	0.006/0.089	0.006	1.0	1	40	<30	--	(17)	*(17) methylene chloride = 0.006 mg/kg*
B-37-5		5	14-Nov-94	<0.005	<0.005	0.036	<0.005	0.3	<1	<10	<10	ND	ND	
B-37-10		10	14-Nov-94	0.12	0.61	0.95/0.78	<0.3	210	13	40	<30	--	ND	
B-49-8		8	7-Nov-94	--	--	--	--	--	--	30	<30	--	--	
B-50-12		12	7-Nov-94	0.27	1.7	1.5	<0.050	540	<50	--	--	--	--	
B-56-11.5		11.5	8-Nov-94	<0.03	<0.03	0.061	<0.03	20	3	--	--	--	--	
B-64-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.7	<1	<30	<30	--	--	
B-64-2		2	14-Nov-94	<0.005	<0.005	<0.005	0.006	1.0	<1	<30	<30	--	--	
B-64-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-64-10		10	14-Nov-94	<0.03	<0.03	0.031	<0.03	8	410	480	350	--	--	
2014 Investigation														
SB-4	(23)	8.5	28-May-14	<0.50	<0.50	<0.50	<1.0	--	--	--	--	(29)	(30)	*(23) PCB = ND; (29) Naphthalene = 0.072 mg/kg; (30)Isopropylbenzene 580 ug/kg; propylbenzene 670 ug/kg; para-isopropyl toluene 700 ug/kg*
Maximum Concentration				0.72	1.7	1.6	1.7	540	410	4400	4400	(19,29)	(13,14,16)	
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600	11,000	---	---	---	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
Northwest Area - Former Cleaning and Dyeing Works and Benzin Area														
Phase I Investigation														
B-16-9	(4,8,25)	9.0	21-Jul-94	<0.005	<0.005	0.2	0.17	--	--	--	--	--	(6)	*(6,25) Acetone=0.25 mg/kg; benzin = 2,500 mg/kg*
B-17-9.5	(1,7,10,11,20,24)	9.5	22-Jul-94	<0.5	<0.5	<0.5	2.4	1000	--	--	--	--	ND	*(20,24) Pb = ND; TPHd = 1,300 mg/kg; TPHbenzin = <1,000 mg/kg*
Phase II Investigation (sample depths corrected using site's natural grade for borings located in loading dock area)														
B-41-1.5		10.5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	8	--	--	--	--	
B-41-3		19	11-Nov-94	<0.3	<0.3	<0.3	0.37	260	330	--	--	--	--	
B-41-5		12	11-Nov-94	<1.0	<1.0	<1.0	<1.0	1600	320	--	--	--	--	
B-41-10		14	11-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	18	--	--	--	--	
B-42-1.5		9.5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-42-3		11	11-Nov-94	<0.1	<0.1	<0.1	0.14	130	7	--	--	--	--	
B-42-5		13	11-Nov-94	<0.5	<0.5	<0.5	<0.5	440	460	--	--	--	--	
B-42-10		18	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	28	--	--	--	--	
B-43-1.5		8.5	11-Nov-94	<0.005	<0.005	<0.005	1.1	720	82	--	--	--	--	
B-43-3		10	11-Nov-94	<0.3	<0.3	1.4	4.4	1900	1100	--	--	--	--	
B-43-5		12	11-Nov-94	<1.0	<1.0	1.3	7.2	1200	550	--	--	--	--	
B-43-10		17	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	12	--	--	--	--	
B-44-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-44-2		2	14-Nov-94	<0.5	<0.5	<0.5	<0.5	240	49	--	--	--	--	
B-44-5		5	14-Nov-94	<0.005	<0.005	<0.005	0.01	3.1	17	--	--	--	--	
B-44-10		10	14-Nov-94	<3.0	<3.0	<3.0	<3.0	1600	850	--	--	--	--	
B-45-6		9	10-Nov-94	<0.1	<0.1	<0.1	0.15	95	16	--	--	--	--	
B-45-9.5		12.5	10-Nov-94	<0.3	<0.3	<0.3	0.98	350	32	--	--	--	--	
B-46-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-46-10		10	11-Nov-94	<0.05	<0.05	<0.05	0.31	72	67	--	--	--	--	
2014 Investigation														
SB-1		4.5	30-May-14	<0.18	<0.18	<0.18	<0.36	--	--	--	--	--	ND	
Maximum Concentration				<3.0	<3.0	1.4	7.2	1900	1100	--	--	--	(6,25)	*(6,25) Acetone=0.25 mg/kg; benzin = 2,500 mg/kg; TPHd = 1,300 mg/kg;*
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600	---	---	---	---	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
Elevator Sump #1														
Phase I Investigation														
B-9-10	(23)	10	19-Jul-94	--	--	--	--	--	--	4400	4400	--	--	
Phase II Investigation														
B-33-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(12)	*Methylene Chloride = 0.006 mg/kg*
B-33-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	(13)	*Methylene Chloride = 0.007 mg/kg*
B-33-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-33-10		10	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-34-1		1	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	70	40	--	--	
B-34-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-10		10	10-Nov-94	<0.3	0.31	0.63	<0.3	170	82	<30	<30	--	--	
B-35-2		2	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-10		10	14-Nov-94	<0.5	<0.5	1.1	<0.5	300	51	790	690	--	--	
2015 Vault Removal														
Floor		7	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho = 100 mg/kg*
Sidewall 1		11	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho = ND <5.0 mg/kg*
Sidewall 2		13	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho = 19 mg/kg*
		Maximum Concentration		<0.3	0.31	1.1	<0.3	300	82	4400	4400	--	(13)	Methylene Chloride = 0.007 mg/kg
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	11,000	---	---	---	
Elevator Sump #2														
Phase I Investigation														
B-14-9.5	(23)	9.5	19-Jul-94	--	--	--	--	--	--	630	610	--	--	
Phase II Investigation														
B-38-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-38-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-38-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-0.5		0.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-1.5		1.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-5		5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-10		10	10-Nov-94	--	--	--	--	--	--	470	400	--	--	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
B-40-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-2		2	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
2015 Vault Removal														
Sidewall	(31)	7	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(31) TPHho=ND<5.0 mg/kg; TPHd=ND<1.0mg/kg*
Floor	(32)	11	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(32) TPHho=29 mg/kg; TPHd=3.6mg/kg*
Floor 2	(33)	13	30-Jan-15	--	--	--	--	--	--	--	--	--	--	*(33) TPHho=99 mg/kg*
Maximum Concentration				--	--	--	--	--	--	630	610	--	--	TPHho=29; TPHd=3.6
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600	11,000	---	---	---	TPHho=100 mg/kg; TPHd=100 mg/kg
Clarifier Removal completed during 2015 Site Demolition														
Sidewall/Floor (EX-1)		12	17-Jul-15	<0.050	<0.0050	<0.0050	<0.0050	2.6	--	--	--	--	ND	*Non-detect for all VOC analytes*
Floor 2 (EX-2)		10	3-Jul-15	<0.050	<0.0050	<0.0050	<0.0050	12	--	--	--	--	--	*LAB QUALIFIER - H*
East Limit Confirmation		4.5	19-Aug-15	<0.050	<0.0050	<0.0050	<0.0050	<1.0	--	--	--	--	--	
South Limit Confirmation		4.5	19-Aug-15	<0.050	<0.0050	<0.0050	<0.0050	1.5	--	--	--	--	--	
West Limit Confirmation*		4.5	19-Aug-15	<0.20	<0.20	0.61	0.93	540	--	--	--	--	--	
West Excavation Floor (EX-3)		10	19-Aug-15	<0.050	<0.050	0.21	0.24	73	--	--	--	--	--	
West Limit tConfirmation2		4.5	21-Aug-15	<0.0050	<0.0050	0.15	0.16	74	--	--	--	--	--	
West Floor (EX-4)		10	21-Aug-15	<0.0050	<0.0050	0.35	0.25	47	--	--	--	--	--	
Maximum Concentration				--	--	--	--	540	--	--	--	--	--	
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600		---	---	---	TPHho=100 mg/kg; TPHd=100 mg/kg
Off-Site, Upgradient Wells Installed by McCulley Frick and Gillman, Inc.														
MW-1-4-1	(27)	11.5	3-Oct-94	<0.01	<0.01	0.032	0.079	7.9	--	--	--	--	--	*(27) TPHd = 3.8 mg/kg; TPHmo = 14 mg/kg*
MW-2-3-2	(28)	14	3-Oct-94	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*(28) TPHd = ND; TPHmo = ND*
Maximum Concentration				<0.01	<0.01	0.032	0.079	7.9	--	--	--	--	--	*(27) TPHd = 3.8 mg/kg; TPHmo = 14 mg/kg*
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600		---	---	---	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments

Notes: Data compiled from Table 1, "Soil and Groundwater Investigation Report", Levine and Fricke, January 17, 1995

All compounds scanned are not included in the table. See notes for specific compounds. Phase I laboratory data sheets were not available for detection limits.

-- = not analyzed
ND = not detected above laboratory detection limits
*Soil subsequently removed in this location.
Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020
TPHg- total petroleum hydrocarbons as gasoline by EPA Method 5030
TPHms - total petroleum hydrocarbons as mineral spirits by EPA Method 5030; Also TPH-Stoddard Solvent
Oil and Grease by Standard Method 5520 E
NPH - nonpolar hydrocarbons by Standard Method 5520 F
SVOCs - semivolatile organic compounds by EPA Method 8270
VOCs - volatile organic compounds by EPA Method 8240
Environmental Screening Level (ESL) - California Water Boards 2016 Residential Shallow Soil Direct Contact ESL (SF Bay RWQCB, February 2016)

(a) ESL screening levels for shallow soil (<3 meters) and deep soil (>3 meters)
(1) The gasoline analysis showed a pattern not typical of gasoline.
(2) Reported limit elevated for gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(3) Reported limit elevated for benzene and gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(4) Sample contains nontarget compounds in 8240 analysis.
(5) Mineral spirits range hydrocarbons detected also.
(6) Acetone = 0.250 mg/kg.
(7) Reporting limit elevated for BTEX due to a dilution.
(8) Result for benzin in in the benzin and gasoline range but the pattern is not typical of either compound.
(9) The gasoline results shows a pattern not typical for gasoline. There may be a mixture.
(10) Results for diesel are in the mineral spirits range.
(11) Oil range hydrocarbons were also detected.
(12) Methylene chloride = 0.006 mg/kg.
(13) Methylene chloride = 0.007 mg/kg.
(14) 1,1-Dichlorobenzene = 0.770 mg/kg, 1,4-Dichlorobenzene = 0.008 mg/kg.
(15) 1,1-Dichlorobenzene = 0.052 and 0.053 mg/kg.
(16) Cis-1,2-dichloroethene = 0.310 mg/kg.
(17) Methylene chloride was = 0.006 mg/kg.
(18) Boring was terminated after reaching a 7-foot depth.
(19) Benzo(b)fluoranthene = 0.330 mg/kg; fluoranthene = 0.750 mg/kg; pyrene = 0.410 mg/kg.
(20) The sample was analyzed for organic lead. Pb = ND
(21) The sample was analyzed for TPH as diesel. TPHd = 2 mg/kg

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments

(22) The sample was analyzed for TPH as diesel and organic lead. TPHd = ND; Pb = ND.
(23) The sample was analyzed for PCBs by EPA Method 8080. PCB = ND
(24) The sample was analyzed for TPH as benzin and diesel. TPH as benzin = <1,000 mg/kg; TPH as diesel = 1,300 mg/kg.
(25) The sample was analyzed for TPH as benzin. Benzin = 2,100 mg/kg.
(26) The sample was analyzed for TPH as diesel. TPHd = ND
(27) The sample was analyzed for TPH as diesel and motor oil. TPHd = 3.8 mg/kg ; TPHmo = 14 mg/kg.
(28) The sample was analyzed for TPH as diesel and motor oil. TPHd = ND; TPHmo = ND.
(29) The sample was analyzed for PAHs by EPA Method 8270C-SIM. Naphthalene was only PAH = 0.072 mg/kg.B69
(30) Isopropylbenzene = 580 ug/kg; propylbenzene = 670 ug/kg; para-isopropyl toluene = 700 ug/kg.
(31) The sample was analyzed for TPH as hydraulic oil and diesel. TPHho = ND <5.0 mg/kg; TPHd = ND <1.0 mg/kg
(32) The sample was analyzed for TPH as hydraulic oil and diesel. TPHho = 29 mg/kg; TPHd = 3.6 mg/kg
(33) The sample was analyzed for TPH as hydraulic oil. TPHho = 99 mg/kg

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
Tanks 1 and 3 - Suspected Former USTs in Southeast Yard (West of Myrtle Street)																
Phase I Investigation																
B-22		18-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--	
B-23		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--	
B-24		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--	
B-25		19-Jul-94	0.5	<0.5	<0.5	<2	100	<50	--	--	--	<2	--	--	--	
B-26		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	--	--	--	
B-27		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--	
Phase II Investigation																
B-47		15-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
MW-3		14-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	--	--	--	--	--	--	--	
MW-3		25-Apr-96	<0.5	<0.5	<0.5	<0.5	<50	<1.0	--	--	--	--	--	--	--	
Maximum Concentration			0.5	<0.5	<0.5	<2	100	<50	<50	--	--	<2	<50,000	--	--	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Tank 2 - Former UST at Corner of West Grand Avenue and Filbert Street at Loading Dock																
Phase I Investigation																
B-3		20-Jul-94	--	--	--	--	--	<50	--	--	--	--	<50,000	--	--	
B-4	2	20-Jul-94	<0.5	<0.5	<0.5	<2	<50	<50	--	--	--	--	<50,000	--	--	
MW-4		14-Mar-96	<0.005	<0.005	<0.005	<0.005	200	<1.0	--	--	--	--	--	--	--	
MW-4		25-Apr-96	<0.5	0.80	1.1	3.5	430	100	--	--	--	--	--	--	--	
Maximum Concentration			<0.5	0.80	1.1	3.5	430	100	--	--	--	--	<50,000	--	--	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Tanks 4 and 5 - Former Heating Oil USTs																
Phase I Investigation																
B-5	2	20-Jul-94	18	16	5	21	5,000	--	--	<1,000	<1,000	--	<50,000	--	--	
B-6	2,4, 16	19-Jul-94	93	6	49	29	5,900	<50	--	<1,000	<1,000	<2	--	ND	(3)	*(3) trans-1,2-DCE = 5 ug/L*
Maximum Concentration			93	16	49	29	5900	<50	--	<1,000	<1,000	<2	<50,000	ND	(3)	*(3) trans-1,2-DCE = 5 ug/L*
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
Tank 6 - Suspect UST on Filbert Outside Former Auto Repair Shop																
Phase II Investigation																
B-56		8-Nov-94	16/10	<0.5	<0.5	<2	300	--	100	<1,000	<1,000	--	--	--	(23)	*(23) 1,2-DCA=3 ug/L; cis-1,2-DCE=130 ug/L; trans-1,2-DCE=0.5 ug/L; VC=34 ug/L.*
Maximum Concentration			16	<0.5	<0.5	<2	300	--	100	<1,000	<1,000	--	--	--	(23)	*trans-1,2-DCE=0.5 ug/L; VC=34 ug/L.*
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Western Area - Former Engine Room and Hazardous Materials Storage Area, Former Auto Repair Shop, Cabinet Shop, Paint Room and Garage																
Phase I Investigation																
B-7	2,7	21-Jul-94	<3	<18	37	15	1,200	--	--	<1,000	<1,000	--	<50,000	--	--	
B-8	1,2	20-Jul-94	<10	<10	18	22	17,000	--	--	8,000	<1,000	--	<50,000	--	--	
B-9	24	19-Jul-94	--	--	--	--	--	--	--	270,000	230,000	--	--	--	--	
B-11		21-Jul-94	<2	<0.5	1	<2	300	--	--	<1,000	<1,000	<200	<50,000	(5)	(6)	*(5,6) bis(2-ehtylhexyl)phthalate = 270 ug/L; cis-1,2-DCE=3 ug/L;*
B-12	2,8,10	21-Jul-94	<5	<5	<5	<20	1,200	--	--	--	--	--	<50,000	--	--	
Phase II Investigation																
B-28		18-Nov-94	<5	<0.5/0.7	4	6	600	--	530	<1,000	<1,000	--	--	ND	ND	
B-29		18-Nov-94	0.8	0.6/2	10/8	10	1,400	--	1,200	<1,000	<1,000	--	--	ND	ND	
B-30		18-Nov-94	6/8	2	5/6	10/8	1,100	--	590	<1,000	<1,000	--	--	ND	ND	
B-31		18-Nov-94	110	11	35	60	5,600	--	4,500	<1,000	<1,000	--	--	(17)	ND	*(17) 2-methylnaphthalene = 18 ug/L;*
B-32		11-Nov-94	4/3	1	2/1	2	500	--	<50	<1,000	<1,000	--	--	ND	(18)	*(18) 1,2-DCA = 7 ug/L*
B-33		11-Nov-94	<0.5	<0.5	<0.5	<2	<0.05	--	<50	<1,000	<1,000	--	--	--	(19)	*(19) 1,2-DCA = 28 ug/L*
B-34		10-Nov-94	7	<0.5	12	3	1,200	--	<50	<1,000	<1,000	--	--	--	--	
B-35		14-Nov-94	7	0.7	0.7	<2	600	--	200	<1,000	<1,000	--	--	--	--	
B-36		14-Nov-94	<0.5	<0.5	<0.5	<2	100	--	<50	<1,000	<1,000	--	--	--	ND	
B-37		14-Nov-94	<0.5	<0.5	<0.5	<2	70	--	<50	<1,000	<1,000	--	--	ND	(20)	*(20) 1,2-DCA = 2 ug/L*
B-49		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-50		7-Nov-94	23/18	12/3	48/51	12/5	8,200	--	<3,000	<1,000	<1,000	--	--	--	ND	
B-51		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-52		7-Nov-94	<0.5	<0.5	<0.5	<2	300	--	70	--	--	--	--	--	(21)	*(21) 1,2-DCA = 0.8 ug/L*
B-53		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-54		8-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	(22)	*(22) 1,2-DCA = 0.6 ug/L*
B-55		8-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-56		8-Nov-94	16/10	<0.5	<0.5	<2	300	--	100	<1,000	<1,000	--	--	--	(23)	*(23) 1,2-DCA=3 ug/L; cis-1,2-DCE=130 ug/L; trans-1,2-DCE=0.5 ug/L; VC=34 ug/L.*

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
B-57		8-Nov-94	<0.5	<0.5	<0.5	<2	500	--	1,600	--	--	--	--	--	--	
B-64		14-Nov-94	45	15	32	39	7,300	--	12,000	8,000	6,000	--	--	--	--	
Maximum Concentration			110	15	37	60	17000	--	12,000	270,000	230,000	<200	<50,000	(5, 17)	(6,19,23)	*see values in comments above for SVOCs and VOCs*
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Former Cleaning and Dyeing Works and Benzin Area																
Phase I Investigation																
B-13	2,9,10	21-Jul-94	<10	<10	<10	<40	32,000	--	--	8,000	1,000	--	<50,000	--	--	
B-15	2	21-Jul-94	340	52	900	2,000	59,000	--	--	170,000	15,000	--	<50,000	--	--	
B-16	2,9,10,12,13,25	22-Jul-94	<5	<5	<5	<5	4,400	--	--	--	--	--	--	--	ND	*(25) TPHbenzin = ND*
B-17	1,10,12,14,15,25	22-Jul-94	<1	<5	<1	41	6,300	3,800	--	--	--	<200	--	--	ND	*(25) TPHbenzin = ND*
B-18	1,2,10	22-Jul-94	<10	<10	22	24	10,000	--	--	--	--	--	<50,000	--	(11)	*(11) ethylbenzene = 0.021 mg/L*
B-19	26	22-Jul-94	<0.5	<0.5	3	9	--	--	--	--	--	--	--	ND	ND	*(26) TPHbenzin = 1.7 mg/kg (stet).*
B-20		22-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--	
B-21		22-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--	
Phase II Investigation																
B-41		11-Nov-94	<0.5	<0.5	3	5	2,900	--	16,000	--	--	--	--	--	--	
B-42		11-Nov-94	<5	<5	<5	22	14,000	--	44,000	--	--	--	--	--	--	
B-43		11-Nov-94	<10	15	<10	47	62,000	--	270,000	--	--	--	--	--	--	
B-44		14-Nov-94	4	5	<3	22	23,000	--	93,000	--	--	--	--	--	--	
B-45		11-Nov-94	<3	<3	35	10	4,900	--	41,000	--	--	--	--	--	--	
B-46		11-Nov-94	<1	<1	<1	11	4,700	--	5,100	--	--	--	--	--	--	
B-58		8-Nov-94	41	<10	13	<40	17,000	--	6,300	--	--	--	--	--	--	
B-59		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-60		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-61		10-Nov-94	<0.5	<0.5	<0.5	<2	300	--	70	--	--	--	--	--	--	
B-62		10-Nov-94	<0.5	<0.5	<0.5	<2	2000.0	--	200	--	--	--	--	--	--	
B-63		10-Nov-94	62	13	<0.5	47	9,300	--	5,000	--	--	--	--	--	--	
Maximum Concentration			340	52	900	2,000	62,000	3,800	270,000	170,000	15,000	<0.2	<50,000	ND	---	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
Elevator Sumps #1 and #2																
Phase I Investigation																
B-9	24	19-Jul-94	--	--	--	--	--	--	--	270,000	230,000	--	--	--	--	*(24) PCBs = ND*
B-10		19-Jul-94	--	--	--	--	--	--	--	<1,000	<1,000	--	<50,000	--	--	
B-13	2,9,10	21-Jul-94	<10	<10	<10	<40	32,000	--	--	8,000	1,000	--	<50,000	--	--	
B-14	24	20-Jul-94	--	--	--	--	--	--	--	2,000	1,000	--	--	--	--	*(24) PCBs = ND*
Phase II Investigation																
B-33		11-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	(19)	*(19) 1,2-DCA = 0.028 mg/L*
B-34		10-Nov-94	7	<0.5	12	3	1,200	--	<50	<1,000	<1,000	--	--	--	--	
B-35		14-Nov-94	6	0.7	0.7	<2	600	--	200	<1,000	<1,000	--	--	--	--	
B-38		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-39		11-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-40		10-Nov-94	<0.5	<0.5	<0.5	16	13,000	--	31,000	15,000	2,000	--	--	--	--	
Maximum Concentration			7	0.7	12	16	32,000	--	31,000	270,000	230,000	--	<50,000	--	(19)	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Other Areas of Investigation																
B-1		20-Jul-94	<0.5	<0.5	<0.5	<2	<50	<50	--	--	--	--	<50,000	--	--	
B-2	2	20-Jul-94	<2	0.9	2	<2	800	--	--	--	--	--	<50,000	--	--	
Maximum Concentration			<2	0.9	2	<2	800	<0.05	--	--	--	--	<50,000	--	--	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
Southeast Area - Corner of West Grand Avenue and Myrtle Street																
B-1		20-Jul-94	<0.5	<0.5	<0.5	<2	<50	<50	--	--	--	--	<50,000	--	--	
B-2	2	20-Jul-94	2	0.9	2	<2	800	--	--	--	--	--	<50,000	--	--	
MW-1	27,28	3-Oct-94	<0.5	<0.5	<0.5	<0.5	16	84	--	--	--	--	--	--	--	*(28) TPHmo = ND*
MW-2	27,28	3-Oct-94	7.5	<2.5	<2.5	<2.5	1,100	730	--	--	--	--	--	--	--	*(28) TPHmo = ND*
Maximum Concentration			7.5	0.9	2	<2.5	1100	730	--	--	--	--	<50,000	--	--	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	

Notes: Data compiled from Table 2, "Soil and Groundwater Investigation Report", Levine and Fricke, January 17, 1995

All compounds scanned are not included in the table. See notes for specific compounds. Phase I laboratory data sheets were not available for detection limits.
Screening Level - California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016)
(a) California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016) Table GW-3 Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion - Residential (Shallow Groundwater-Sand Scenario)
---: screening level not established
-- = not analyzed
ND = not detected above laboratory reporting limits

Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020
TPHg- total petroleum hydrocarbons as gasoline by EPA Method 5030
TPHd- total petroleum hydrocarbons as gasoline by EPA Method 3510
TPHms - total petroleum hydrocarbons as mineral spirits by GC-FID; Also TPH-Stoddard Solvent
Oil and Grease by Standard Method 5520 E
NPH - nonpolar hydrocarbons by Standard Method 5520 E
Organic lead by DHS
SVOCs - semivolatile organic compounds by EPA Method 8270
VOCs - volatile organic compounds by EPA Method 8240
Ethylene glycol by Modified EPA Method 8015

(1) Reporting limit elevated for benzene and toluene due to high levels of target compounds. Sample run at dilution.
(2) Pattern not typical of gasoline.
(3) Trans-1,2-dichlorethene detected at 0.005 mg/L.
(4) Sample contains nontarget compounds.
(5) Bis(2-ethylhexyl)phthalate = 0.270 mg/L; no other SVOCs detected.
(6) Cis-1,2-dichloroethene = 0.003 mg/L; no other SVOCs detected.
(7) Reporting limit elevated for benzene due to dilution.
(8) Reporting limit for BTEX elevated due to dilution.
(9) Reporting limit for BTEX elevated due to dilution.
(10) Light sheen of fuel on surface which resulted in nonmatching runs.
(11) Ethylbenzene = 0.021 mg/L.
(12) Reporting limit elevated for benzin due to a hydrocarbon interference.
(13) Gasoline and benzin result from VOA with headspace.
(14) Reporting limit for benzene and ethylbenzene elevated due to dilution.
(15) Results for diesel are in the mineral spirits range.
(16) Hydrocarbons in mineral spirits range also detected in TPHg analysis.
(17) 2-Methylnaphthalene = 0.018 mg/L; naphthalene = 0.011 mg/L
(18) 1,2-Dichloroethane = 0.0007 mg/L

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments

'19) 1,2-Dichloroethane = 0.028 mg/L
'20) 1,2-Dichloroethane = 0.002 mg/L
'21) 1,2-Dichloroethane = 0.0008 mg/L
'22) 1,2-Dichloroethane = 0.0006 mg/L
'23) 1,2-Dichloroethane = 0.003 mg/L; cis-1/2-dichloroehene = 0.13 mg/L; trans-1,2-dichloroethene = 0.0005 mg/L; vinyl chloride = 0.034 mg/L.
'24) PCBs by EPA Method 8080 = ND
'25) Sample analyzed for TPH as benzin = ND
'26) Sample analyzed for TPH as benzin = 1.7 mg/kg (stet)
'27) Lab noted sample contained weathered gasoline in the C6 to C12 range.
'28) Sample analyzed for TPHmo = ND

TABLE 3
Soil Vapor Analytical Results Summary
City Ventures - Oakland 2

Sample Location and ID	Sample Date	Sample Depth (ft. bgs)	Volatile Organic Compounds (EPA Method 8260) (µg/m3)													ASTM D1946 (ppmv)	
			Freon 12	Freon 11	Benzene	Ethylbenzene	m,p-Xylene	o-Xylene	1,1,2,2-Tetrachloroethane	cis-1,2-DCE	Vinyl Chloride	n-Hexane	Cyclohexane	n-Heptane	Other VOCs	Methane*	O_2*
SV-1	5/30/2014	5	**19,000**	ND<100	ND<32	ND<26	ND<200	ND<100	ND<100	ND<26	ND<26	--	--	--	ND<80-200	--	--
SV-2	5/30/2014	5	**140**	ND<100	ND<32	ND<26	ND<200	ND<100	ND<100	ND<26	ND<26	--	--	--	ND<80-200	--	--
SV-3	5/30/2014	5	ND<100	ND<100	ND<32	ND<26	ND<200	ND<100	ND<100	ND<26	ND<26	--	--	--	ND<80-200	--	--
SV-4	5/30/2014	5	**110**	ND<100	**75**	ND<26	ND<200	ND<100	ND<100	ND<26	ND<26	--	--	--	ND<80-200	--	--
SV-5	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	**53,000**	**22,000**
SV-6	9/26/2016	5	**30,000**	**3,400**	ND<35	ND<20	**420**	**140**	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-7	9/26/2016	5	**2,100**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	**2,900**	**14,000**
SV-8	9/26/2016	5	**1,800**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-9	9/26/2016	5	**2,600**	**210**	ND<35	ND<20	ND<200	ND<100	**37**	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-10	9/26/2016	5	ND<100	ND<100	**60**	ND<20	**410**	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-11	9/26/2016	5	**930**	ND<100	ND<35	ND<20	**420**	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-12	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-13**	9/26/2016	5	**19,000**	ND<3,400	ND<1,900	ND<2,600	ND<2,600	ND<2,600	ND<4,100	ND<2,400	ND<1,500	**220,000**	**220,000**	**47,000**	ND < 1,200-13,000	--	--
SV-14	9/26/2016	5	**76,000**	**1,700**	**78**	**180**	**890**	**270**	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--

Notes:

All reported concentrations from soil vapor samples collected to date are below Site Specific Screening levels (see HHRA).

µg/m^3: micrograms per cubic meter

ppmv = parts per million by vapor

VOCs = volatile organic carbons

ft. bgs: feet below ground surface

Freon 12 = Dichlorodifluoromethane

Freon 11 = Trichlorofluoromethane

All samples collected September 26, 2016.

Soil vapor samples analyzed by TEG on-site mobile laboratory except where indicated as analyzed by Curtis & Tompkins, Ltd. In Berkeley, CA

* Analyzed by Curtis & Tompkins, Ltd in Berkeley, CA

** = Analyzed by Curtis & Tompkins, Ltd in Berkeley, CA using EPA Method TO-15.

Bold cells indicate constituent detected above the laboratory reporting limit (RL)

ND = Not detected at reporting limit as indicated

--- = not analyzed

NA = Not available

TABLE 4
Analytical Results for Soil Samples - Market Street Block
2240 Filbert Street, Oakland California

Sample Location	Sample ID	Sample Date	Sample Depth (ft. bgs)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	Lead (mg/kg)
B-1	B-1	2/8/2005	2.0	--	--	--	--	--	--	310
	B-1	2/8/2005	13.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
	B-1	2/8/2005	21.5	ND<2.0	ND<0.02	ND<0.02	ND<0.02	ND<0.04	ND<0.08	--
B-2	B-2	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0
	B-2	2/8/2005	12.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
B-3	B-3	2/8/2005	4.0	--	--	--	--	--	--	3.6
	B-3	2/8/2005	11.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
	B-3	2/8/2005	13.0	310	ND<0.02	0.13	0.16	2.4	0.096	--
B-4	B-4	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0
	B-4	2/8/2005	12.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
	B-4	2/8/2005	13.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
B-5	B-5	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0
	B-5	2/8/2005	11.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
B-6	B-6	2/8/2005	2.0	--	--	--	--	--	--	3.2
B-7	B-7	2/8/2005	2.0	--	--	--	--	--	--	81
SB-5	SB-5, 1'	5/30/2014	1.0	--	--	--	--	--	--	94
SB-5	SB-5, 2.5	5/30/2014	2.5	--	--	--	--	--	--	9
SB-5	SB-5, 6'	5/30/2014	6.0	--	--	--	--	--	--	2.5
SB-5	SB-5, 9.5	5/30/2014	9.5	--	--	--	--	--	--	2.1
SB-6	SB-6, 0.5'	5/30/2014	0.5	--	--	--	--	--	--	4.3
SB-6	SB-6, 2.5	5/30/2014	2.5	--	--	--	--	--	--	5.1
SB-6	SB-6, 6'	5/30/2014	6.0	--	--	--	--	--	--	2.6
SB-6	SB-6, 9.5	5/30/2014	9.5	--	--	--	--	--	--	2.5
SB-7	SB-7, 1'	5/30/2014	1.0	--	--	--	--	--	--	4.4
SB-7	SB-7, 2.5	5/30/2014	2.5	--	--	--	--	--	--	8.8
SB-7	SB-7, 6'	5/30/2014	6.0	--	--	--	--	--	--	2
SB-7	SB-7, 9.5	5/30/2014	9.5	--	--	--	--	--	--	31
SB-8	SB-8, 1'	5/30/2014	1.0	--	--	--	--	--	--	14
SB-8	SB-8, 2.5	5/30/2014	2.5	--	--	--	--	--	--	16
SB-8	SB-8, 6'	5/30/2014	6.0	--	--	--	--	--	--	5.8
SB-8	SB-8, 9.5	5/30/2014	9.5	--	--	--	--	--	--	4.5
	Maximum Concentration			310	ND<0.02	0.13	0.16	2.4	0.096	310
	Screening Level			740/2,700(1)	0.230	970	5.1	560	42	80

Notes:

February 2004 data compiled from Table 1, "Report of Phase II Environmental Site Assessment", GRIBI Associates, March 18, 2005
Environmental Screening Level (ESL) - California Water Boards 2016 Residential Shallow Soil Direct Contact ESL (SF Bay RWQCB, February 2016)
(1) - ESL screening levels for shallow soil (<3 meters) and deep soil (>3 meters)
MTBE: methyl-tertiary-butyl ether
mg/kg - micrograms per kilogram
ft. bgs - feet below ground surface
-- not analyzed
ND - not detected above laboratory reporting limits listed
Benzene, toluene, ethylbenzene, total xylenes and MTBE by EPA Method 8020
TPHg- total petroleum hydrocarbons as gasoline by EPA Method 8015M
Lead - total lead by EPA Method 6010B

TABLE 5

Analytical Results for Groundwater Grab Samples - Market Street Block

2240 Filbert Street, Oakland California

Sample Location	ID	Sample Depth (ft. bgs)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	MTBE (ug/L)
B-1	B-1-W	11.2	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<4.0
B-2	B-2-W	9.8	30,000	52	240	37	430	ND<4.0
B-3	B-3-W	9.6	110,000	ND<10	120	140	910	44
B-4	B-4-W	9.9	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<4.0
B-5	B-5-W	10.8	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<4.0
	Maximum Concentration		110,000	52	240	140	910	44
	Screening Level		100	1.0	40	13	20	5.0

Notes:

Samples collected February 28, 2005

Data compiled from Table 1, "Report of Phase II Environmental Site Assessment", GRIBI Associates, March 18, 2005

Screening Level - California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016)

MTBE: methyl-tertiary-butyl ether

ug/L - micrograms per liter

ft. bgs - feet below ground surface

ND - not detected above laboratory reporting limits listed

Benzene, toluene, ethylbenzene, total xylenes and MTBE by EPA Method 8020

TPHg- total petroleum hydrocarbons as gasoline by EPA Method 8015M

APPENDIX A
Final Environmental Site Summary

Final Environmental Site Summary

2240 Filbert Street
Oakland, California
Stantec PN: 185703027



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March 1, 2017

Limitations and Certifications

This report was prepared in accordance with the scope of work outlined in Stantec's Master Services Agreement with City Ventures and with generally accepted professional engineering and environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of City Ventures for the express purpose stated above. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Stantec. To the extent that this report is based on information provided to Stantec by third parties, Stantec may have made efforts to verify this third party information, but Stantec cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties, expressed or implied are made by Stantec.

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Information, conclusions, and recommendations provided by Stantec in this document have been prepared under the supervision of and reviewed by the licensed professional whose signature appears below.

Licensed Approver:

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Abbreviations and Acronyms

ACEH	Alameda County Environmental Health
APN	Assessor Parcel Number
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CV	City Ventures
DCA	dichloroethane
DTSC	Department of Toxic Substance Control
ESA	Environmental Site Assessment
ESL	Environmental Screening Level
Gribi	Gribi Associates
i.e.,	id est, meaning "that is" (Latin)
LOP	Local Oversight Program
LRL	laboratory reporting limit
LTCP	Low Threat Closure Policy
MFG	McCulley, Frick & Gilman, Inc.
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MTBE	methyl tertiary-butyl ether
NOVA	NOVA Abatement and Construction Services
PCB	polychlorinated biphenyl
PID	photoionization detector
ppb	parts per billion
RSL	Regional Screening Level
RWQCB	Regional Water Quality Control Board
SMP	Soil Management Plan
Stantec	Stantec Consulting Services Inc.
SWRCB	State Water Resources Control Board
TMC	T. Makdissy Consulting, Inc.
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHms	total petroleum hydrocarbons as mineral spirits
TPHog	total petroleum hydrocarbons as oil and grease
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
USCS	Unified Soil Classification System
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

1.0 INTRODUCTION / EXECUTIVE SUMMARY

This Final Environmental Site Summary report (Report) was prepared by Stantec Consulting Services Inc. (Stantec), for City Ventures (CV) for the real property located at 2240 Filbert Street in Oakland, California (the "Site", Figure 1). Previously, the Site was granted closure in 1997 as Alameda County Environmental Health (ACEH) Local Oversight Program (LOP) Case File RO0002722 for commercial/industrial use. The closure letter stipulated that ACEH should be notified if a change in Site use is contemplated. This report serves to notify ACEH of the change in the use of the Site – from commercial/industrial use to residential use (see Case File RO0003157), and to summarize the information collected at the Site to demonstrate that the Site meets the appropriate regulatory criteria for residential development.

This document also serves as an update to the *Environmental Site Summary* (ESS) that was developed in March of 2015 and the subsequent *Amended* ESS prepared in December of 2015 and *Revised* ESS prepared in July of 2016.

This document is being submitted with a *Remedial Action Plan*, created to capture current Site conditions and present plans for proposed further assessment based on a data gap analysis and potential remedial actions for the Site.

Additionally, lead-impacted soil at the Market Street Site was addressed in accordance with the *Interim Remedial Action Plan* (IRAP; Stantec 2015) through limited excavation and off-site disposal, as detailed in the *Excavation Summary Report (Stantec, 2017a)* submitted concurrently with this report as an appendix to the RAP.

Lastly, Stantec completed a *Human Health Risk Assessment* (HHRA; Stantec 2017b) using current Site data. The HHRA is being submitted concurrently with this Report as an appendix to the RAP.

The data collected to date, presented herein and evaluated in the HHRA does not pose an unacceptable risk to human health assuming residential use of the Site. The ACEH has requested additional sampling to address potential data gaps. The RAP proposes further assessment that addresses these data gaps. Should the additional data generated by the data gap investigation all fall below the HHRA Site specific screening levels, CV plans to request no further action status for the Site and approval for redevelopment under residential use. Should concentrations be observed that exceed the Site specific screening levels, CV will excavated impacted soils in accordance with the proposed RAP, collect confirmation samples and request concurrence from ACE for no further action status and approval for redevelopment.

1.1 PURPOSE

ACEH's closure letter for Case File RO0002722, dated January 20, 1997, included the contingency that if the use of the Site changed from commercial/industrial use, ACEH and the City of Oakland Public Works would need to be notified.

CV is in the process of redeveloping the property for multi-unit residential housing. Accordingly, CV has notified ACEH of the proposed change in the use of the Site from commercial/industrial to residential. This report also includes a summary of Phase II assessments that were completed at the Site in 2014 and 2016 in order to confirm that the Site meets current regulatory requirements for unrestricted use.

1.2 SCREENING LEVELS

The analytical results of the recent and historical investigations were compared to applicable environmental screening levels for soil, groundwater and soil vapor as outlined below.

1.2.1 Soil and Groundwater Screening Levels

San Francisco Bay Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs) for residential scenario were used as screening criteria for detected chemical constituents in soil and groundwater (Tables 1 through Table 5). ESLs are conservative long-term screening levels that correspond to risk levels deemed acceptable by the scientific and regulatory community - specifically, an individual lifetime excess cancer risk of one-in-one million (*i.e.*, 1×10^{-6}) and a non-cancer hazard quotient of less than 1.0. The ESLs are considered as providing long-term protections of human health and the environment. The comparison of detected concentrations to ESLs was applied in order to determine where remediation efforts were necessary for the Site to achieve regulatory closure to an unrestricted use standard.

For those chemical compounds detected at the Site for which no ESLs have been established, Stantec compared the detected concentrations to the May 2016 United States Environmental Protection Agency (U.S. EPA) Regional Screening Levels (RSLs). Similar to the ESLs, RSLs are conservative long-term screening levels that correspond to an acceptable risk level (*i.e.*, cancer risk of 1×10^{-6} and non-cancer hazard quotient of less than 1.0).

There are no ESLs or RSLs established for total petroleum hydrocarbons (TPH) as mineral spirits (TPHms), however mineral spirits are typically considered in the same TPH range as Stoddard solvent. In electronic correspondence dated October 20, 2015, ACEH confirmed that it is appropriate to apply a screening level of 100 milligrams per kilogram (mg/kg) for TPHms at the Site for groundwater (Table 2). ESLs for direct contact to shallow residential soils were used as soil screening levels for constituents of concern across the Site (Table 1). Stantec elected to use the same direct contact to shallow residential soil ESLs for TPHms in soils.

Concentrations of constituents below their respective ESLs or RSLs should be considered to pose no significant risk. Concentrations or laboratory reporting limits of constituents above their respective ESLs or RSLs do not necessarily indicate a risk is present, but rather suggest that further evaluation may be warranted.

1.2.2 Soil Vapor Screening Levels

Site-soil vapor screening levels were calculated for the Site as part of the HHRA. Screening levels were based on the Tier 1 ESLs for sub-slab/soil gas (RWQCB, February 2016). If there was no screening level provided for an analyte in the ESL lookup table, typically, a US EPA residential indoor air RSL divided by a Water Board recommended attenuation factor of 0.002 was applied and presented. For Freon 11 or Trichlorofluoromethane a Department of Toxic Substance Control (DTSC) HERO Note 3 indoor air screening level of 1,300 ug/m3 (Cal-EPA 2016) was divided by the Water Board recommended attenuation factor of 0.002 to generate a screening level of 650,000 ug/m3 (Table 3). The following potentially-exposed populations and potentially-complete exposure pathways were quantified in the HHRA:

- Onsite Commercial (retail) workers:
  - Inhalation of VOCs originating in subsurface which are transported to indoor air.
- Onsite construction/utility workers:
  - Incidental ingestion of surface soil;
  - Dermal contact with surface soil; and,
  - Inhalation of VOCs and particulates released from soil.
- Onsite residents.
  - Inhalation of VOCs originating in subsurface and transported to indoor air.

Concentrations of constituents below their respective soil vapor screening levels are considered to pose no significant risk. Concentrations of constituents above their respective screening level do not necessarily indicate a risk is present, but rather suggest that further evaluation may be warranted.

Results of that HHRA are provided under separate cover.

2.0 BACKGROUND

2.1 SITE NAME AND LOCATION

The Site is comprised of multiple parcels located between West Grand Avenue, 24th Street, Filbert Street, and Market Street in the City of Oakland, County of Alameda, California (see Figure 2). For purposes of this report, the area of the former Safeway Ice Cream Plant, between West Grand Avenue, Filbert Street, 24th Street, and Myrtle Street, will be referred to as the "**West Grand Block**" (see Figure 2). The area of the former parking lot property, located between Myrtle Street and Market Street, will be referred to as the "**Market Street Block**" (see Figures 2 and 3). The term "Site" is used to refer to both the West Grand Block and the Market Street Block.

The Assessor Parcel Numbers (APNs) for the West Grand Block consist of the following:

- 005-430-017-02 (2338 Filbert Street); and
- 005-430-013-04 (2210 Filbert Street).

The APNs for the Market Street Block consist of the following:

- 005-431-024 (Myrtle Street), -025 (2242 Myrtle Street), -026 (Myrtle Street),-027 (Myrtle Street), and -028 (2310 Myrtle Street);
- 005-431-015-03 (2303 Market Street); and
- 005-431-011 (2317 Market Street) and -012 (2315 Market Street).

2.2 FORMER PROPERTY USE

2.2.1 West Grand Block

The West Grand Block was occupied by residential structures until approximately 1950 when the Union Ice Company plant was built on the south side. Additional businesses, including an automobile repair shop, a cabinet shop, and a cleaning and dyeing works company, occupied the Site until the late 1950s. The Safeway Ice Cream Plant operated at the Site from 1960s until 1994.

The building was converted into multi-tenant space in 1994 when the plant closed. Former tenants included food storage companies, an import car service, and an auto repair facility. The building was vacated in mid-2011.

Historic files for the West Grand Block indicate the presence of former underground storage tanks (USTs). Further information regarding the USTs is provided in Section 2.8.

2.2.2 Market Street Block

The Market Street Block has been used either as residential or as a parking lot for the former Safeway Ice Cream Plant, with no significant industrial or commercial use, since at least the early 1900s (Gribi, 2005).

2.3 CURRENT PROPERTY USE

The former Safeway Ice Cream Factory building on the West Grand Block has been demolished. The asphalt parking lot on the Market Street Block is secured by a locked gate and is not in use. As discussed later in this document, the Market Street Block was remediated in 2016 for lead in soil. Historically, the Site was occupied by residential buildings until approximately 1950, after which time the Site was used solely for commercial/industrial purposes.

2.4 PROPOSED PROPERTY USE

CV has proposed to develop the Site with a mixed–use, high density residential and commercial development (*i.e.*, unrestricted use). The development plan is illustrated in Figure 3.

Residential properties have been designed with a parking garage on the ground floor and with the primary living areas on the second and third floors. Approximately half of the units in the West Grand Block will also have living areas on the ground floor as shown on Figure 3. Commercial spaces will be located on the ground floor along West Grand Avenue and along Market Street.

2.5 SITE TOPOGRAPHY

The Site is at an elevation of approximately 16 feet above mean sea level and the regional topographic gradient is to the general west/northwest. Some areas of the West Grand Block (the former loading dock areas on the east side and north end of the Site along Myrtle Street and 24th Street, respectively) were at one time topographically approximately 8 feet below grade and still remain below sidewalk grade. Prior to development, this area will be filled, and the site will be effectively flat.

In the past year the top 2 to 3 feet of portions of the West Grand Block have been sub-excavated and re-compacted in place. No soil has been imported to the site, and no on-site soil has been moved laterally across the West Grand Block.

2.6 SITE VICINITY

The Site is located in a mixed use light industrial and residential area of West Oakland. The Site is bounded to the north by 24th Street followed by a vacant light industrial structure, churches, and residences; to the east by Myrtle and Market Streets beyond which are residences, auto body shops, and a restaurant; to the west by Filbert Street beyond which are light industrial buildings

and residences; and to the south by West Grand Avenue followed by a vacant light industrial building, residences, and a multi-tenant commercial structure.

2.7 GEOLOGY AND HYDROGEOLOGY

Subsurface conditions beneath the Site consist of coarse gravel fill to a depth of up to one foot below ground surface (bgs); dense clay between approximately 1 and 9 feet bgs; well graded sand with gravel and clay between approximately 9 and 13 feet bgs; and clay between approximately 13 and 19 feet bgs (IT 1996a).

The depth-to-groundwater is approximately 9 to 11 feet bgs with a west/southwest flow direction at the Site (IT 1996b). Based on limited monitoring events at properties adjacent to and in the vicinity of the Site, more recently groundwater has been documented to flow in the west to northwesterly direction (Cornerstone, 2016).

2.8 CITY, COUNTY AND STATE RECORDS REVIEW

City of Oakland, Alameda County, and State of California RWQCB files pertaining to the Site were reviewed by Stantec as part of a Phase I Environmental Site Assessment (ESA; Stantec 2014). Findings of file review are summarized below.

2.8.1 Alameda County Department of Environmental Health Local Oversight Program (LOP)

A review of historical documents relating to the West Grand Block indicated the historical presence of six former USTs (Tanks 1 through 6). The locations of Tanks 1 through 6 are shown on Figure 2. Additional information regarding the USTs at the West Grand Block is included in Section 3.2.

The USTs are briefly described below and further information in presented in Section 3.0:

- Tank 1 – a 10,000-gallon gasoline UST and associated dispenser, product lines, and fill ports were closed in-place and are located beneath the sidewalk on the west side of Myrtle Street;
- Tank 2 – an 800-gallon gasoline UST was closed in-place in April of 1996 due to its location under a loading dock on the corner of Filbert Street and West Grand Avenue. The UST was later removed as part of building demolition in June of 2015;
- Tank 3 – a former 1,000-gallon UST of unknown content, which is believed to have been removed, was located adjacent to Myrtle Street approximately 45 feet south of Tank 1;
- Tanks 4 and 5 – two 10,000-gallon fuel oil USTs located beneath Filbert Street adjacent to the West Grand Block; and,

- Tank 6 – a UST of unknown size or contents was possibly located outside the former auto repair shop beneath the sidewalk of Filbert Street.

A summary of the environmental investigations and remedial action documents reviewed as part of the LOP Case File RO0002722 is included in Section 3.0.

The LOP issued the *Final Case Closure Letter*, dated January 30, 1997, for the former Safeway Ice Cream Plant (*aka* West Grand Refrigeration Facility). The letter stated that no further action was required regarding subsurface conditions, the USTs and/or associated monitoring wells. However, the LOP stated that if there was a change in land use from industrial/commercial, the owner must notify the LOP and the City of Oakland Department of Public Works. This report serves to provide that required notification.

2.8.2 California Regional Water Quality Control Board

Stantec reviewed available files for the Site on the California RWQCB GeoTracker website (https://geotracker.waterboards.ca.gov). According to the GeoTracker website, Grand Avenue Refrigerated Store received case closure on January 30, 1997, from the Alameda County LOP (Case #RO00002722). No additional information for the Site was available on GeoTracker.

2.8.3 City of Oakland Building Department

Stantec submitted a request to the City of Oakland Building Department to review any available files. The City of Oakland Building Department responded that it had no records pertaining to the Site prior to 1996. The documents held by the City since 1996 have been reviewed and do not indicate any additional environmental concerns.

2.9 KNOWN OR SUSPECTED HAZARDOUS MATERIALS

The following is a summary of known or suspected hazardous materials used at the Site based on a review of historical records completed as part of Stantec's 2014 Phase 1 ESA.

- Two former tenants (California Auto Repair and Steve Miller Import Car Service) used small quantities of hazardous substances such as engine oil, lubricants, coolant, and other automotive fluids.

- California Auto Repair had two paint spray booths. Several unlabeled 55-gallon drums were noted on the southeast side of the Site. Due to the absence of any violations regarding the storage or use of hazardous substances, however, the former tenants do not represent an environmental concern to the Site.

- California Auto Repair was listed at the address of 2210 Filbert Street in the HAZNET database. According to the HAZNET database listing, approximately 0.37 tons of unspecified solvent mixture was properly disposed of off-site in 2003 and 0.15 tons of unspecified solvent mixture was properly disposed of off-site in 2004. No violations or other

information were associated with California Auto Repair.

- The Safeway Outlet / Safeway Stores Incorporated / Grand Ave Refrigerated Store / Safeway Oakland Ice Cream Plant was listed at the address of 2240 Filbert Street in the CHMIRS, FINDS, HIST CORTESE, CA FID UST, SLIC, Alameda County CS, HIST UST, SWEEPS UST, EMI, EDR US Hist Auto Stat, HAZNET, and ERNS databases:

    - According to the CHMIRS listing, a small vapor release of ammonia was reported on October 24, 1993 due to a valve failure. This historic release does not represent an environmental concern.

    - According to the HAZNET listing, small amounts of off-specification, aged or surplus organics; waste oil and mixed oil; and aqueous solution with total organic residues of 10 percent or more were disposed of off-site in 1994.

3.0 SITE INVESTIGATION SUMMARY

The following sections summarize historical and recent environmental investigations at the Site, and compare cumulative soil and groundwater analytical data to the environmental screening levels referenced in Section 1.2.

Historical investigations related to the West Grand Block are summarized in Sections 3.1 through 3.4. Historical investigations related to the Market Street Block are summarized in Section 3.5. Investigations conducted since 2014 are summarized in Sections 3.6 through 3.13. Tables 1 and 2 present the analytical results for the West Grand Block soil and groundwater samples, respectively. The analytical results for the Market Street Block soil and groundwater samples are presented in Tables 3 and 4, respectively.

Based on the subsurface investigations completed to date, the only potential exposure scenarios in a residential land use scenario is direct contact to construction workers with impacted soils (which contain petroleum hydrocarbons on the West Grand Block, and lead on the Market Street Block) and the potential for vapor intrusion to indoor air into residential and commercial spaces.

As discussed herein, CV proposes eliminating the direct contact pathway by documenting the presence of clean soil in the upper 5 feet of soil or emplacing 5-feet of clean fill in currently low lying areas to form a bioattenuation zone on the West Grand Block. CV will accomplish this by excavating the upper five feet of soil in designated areas of the West Grand Block identified by the data gap investigation and placing clean, imported fill in its place (as discussed in Section 3.2.5). Lead concentrations above risk-based screening criteria on the Market Street Block have been excavated and disposed of to a licensed landfill, in accordance with the approved IRAP (Stantec, 2017a).

Figure 4 presents the soil and groundwater sample locations within the West Grand Block relative to historical land use and proposed development. Figure 5 presents the 2005 and 2014 soil sample locations for the Market Street Block with the results for total lead.

To facilitate the presentation of data, the West Grand Block has been divided into approximate thirds, and analytical results of soil and groundwater investigations on the West Grand Block have been presented in three sections:

(1) Upper (northern portion along 24th Street);
(2) Middle; and
(3) Lower (southern portion along West Grand Avenue).

The demarcation of the three sections is also illustrated on Figure 4. Figures 6 through 8 present soil sample results in the Upper, Middle, and Lower section of the West Grand Block, respectively; and Figures 9 through 11 present the groundwater analytical results on the Upper, Middle and Lower sections of the West Grand Block, respectively.

The soil and groundwater results for the West Grand Block presented in Figures 6 through 11 are those which represent potential source compounds for vapor intrusion, such as volatile compounds associated with petroleum hydrocarbons and other volatile organics that may have been used at the site (i.e. benzene, ethylbenzene, TPHg, and detected volatile organic compounds [VOCs]).

Figure 12 denotes the locations of the cross sections constructed for the Grand Avenue Block; Figures 13 and 14 are the cross sections representing the lithological profile of the Site.

3.1 MARCH 1994 ENVIRONMENTAL SITE ASSESSMENT

In March 1994, McCulley, Frick & Gilman, Inc. (MFG) completed an ESA (MFG 1994) to evaluate soil and groundwater quality on the West Grand Block. MFG then conducted a geophysical survey in June 1994 to further assess the possible presence of USTs at the Site. That survey identified one UST and indicated two areas that were likely previous UST locations (Levine-Fricke 1995).

3.2 1994 SITE INVESTIGATION (PHASE I AND PHASE II)

In July 1994, Levine-Fricke conducted an initial subsurface investigation which included the advancement of 27 borings across the West Grand Block. This report is referenced and summarized in Levine-Fricke's document entitled, "*Soil and Ground-Water Investigation Report,*" dated January 17, 1995; however, a complete copy of the July 1994 report was not available for Stantec's review. According to the summary, soil samples were collected from 11 of the soil borings and grab groundwater samples were collected from all 27 borings advanced in July 1994. The borings were advanced in order to evaluate the potential impact from the six suspected USTs and assess any other potential areas of impact.

In November 1994, Levine-Fricke conducted an additional soil and groundwater investigation to further characterize three areas of interest and delineate the limits of affected shallow groundwater. Thirty-six soil borings were advanced between 15 and 26 feet bgs. Grab groundwater samples were collected from the soil borings and soil samples were analyzed from 23 of the soil borings.

Copies of the Levine Fricke Phase II Report tables and figures with results from the July and November1994 investigations are included for reference in Appendix A and summarized in this section.

3.2.1 Tank 1 and Tank 3 Investigation

Seven borings (SB-22, SB-23, SB-24, SB-25, SB-26, SB-27, and SB-47), were located in the vicinity of the 10,000-gallon UST (Tank 1) and the suspected 1,000-gallon UST (Tank 3) on the west side of Myrtle Street (Figure 2). Soil samples were collected from three of the borings and grab groundwater samples were collected from all seven borings.

3.2.1.1 Soil Samples

Five soil samples were collected from the following borings and depths: B-25 at 13 feet bgs, B-26 at 12.5 feet bgs, and B-47 at 3-,5-, and 10 feet bgs. All five samples were analyzed for TPH as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX). Two samples (B-25@13' and B-26@12.5') were analyzed for lead and one sample (B-26@12.5') was also analyzed for TPH as diesel (TPHd). The three samples from B-47 were additionally analyzed for TPHms.

The soil sample analytical results are presented in Table 1 and summarized below, and chemical data for volatile constituents are presented on Figure 8:

- BTEX, TPHd, and lead were not detected in any of the soil samples;
- TPHg was detected in only one (B-47@10') of the 5 samples at a concentration of 62 mg/kg; and
- TPHms was detected in B-47@10' at a concentration of 1,000 mg/kg.

Screening Level Evaluation

The screening level for TPHg of 100 mg/kg was not exceeded. The only detected petroleum hydrocarbon constituents in soil which exceeded the residential screening levels was TPHms, the reported concentration of which (1,000 mg/kg) exceeded the ESL of 100 mg/kg.

3.2.1.2 Groundwater Samples

Groundwater samples were collected at all seven locations. The analysis performed for each sample is listed below:

- B-22 – ethylene glycol;
- B-23 – BTEX, TPHg, and ethylene glycol;
- B-24 - BTEX, TPHg, and ethylene glycol;
- B-25 – BTEX, TPHg, TPHd, and organic lead;
- B-26 - BTEX and TPHg;
- B-27 - BTEX, TPHg, and ethylene glycol; and
- B-47 - BTEX, TPHg, and TPHms.

The groundwater sample results are presented in Table 2 and summarized below, and chemical data for volatile constituents are presented on Figure 11:

- The grab groundwater sample collected from the boring SB-25, adjacent to Tank 1, contained 100 micrograms per liter (µg/L) of TPHg and 0.5 µg/L of benzene;
- All other results for BTEX, TPHg, TPHd, and TPHms were below laboratory reporting limits (LRLs) (i.e., the results were "non-detect"); and

- Ethylene glycol and lead were non-detect in all samples analyzed.

Screening Level Evaluation

Reported concentrations of petroleum hydrocarbon constituents (TPHd, BTEX, TPHd, and TPHms) in groundwater were all below residential groundwater screening levels.

3.2.2 Tank 2 Investigation

Groundwater samples were collected at two locations (B-3 and B-4) in the vicinity of Tank 2 at the corner of Filbert Street and West Grand Avenue in July 1994 (Figure 2). Soil samples from this area were not analyzed as part of the 1994 or 1995 investigations.

Groundwater samples were analyzed for TPHd and ethylene glycol. The sample from B-4 was also analyzed for BTEX and TPHg. Groundwater sample results are presented in Table 2 and summarized below, and chemical data for volatile constituents are presented on Figure 11;

- TPHd, BTEX, and ethylene glycol were not detected above LRLs; and
- TPHg was the only detected analyte at 100 µg /L in the sample from B-4.

Screening Level Evaluation

The single detection of TPHg at B-4 is below the residential groundwater screening level of 100 µg/L.

3.2.3 Tank 4 and Tank 5 Investigation

Two soil borings (B-5 and B-6) were advanced adjacent to the suspected former heating oil UST cavity (Tanks 4 and 5) along Filbert Street (Figure 2). The soil sample from B-5 was analyzed for TPH as oil and grease (TPHog) and non-polar hydrocarbons (NPH). The soil sample from B-6 was analyzed for BTEX, TPHg, TPHd, TPHog, NPH, and lead. Grab groundwater samples from these boreholes were analyzed for BTEX, TPHg, TPHog, and NPH. The sample from B-5 was also analyzed for ethylene glycol, and the sample from B-6 was additionally analyzed for organic lead, SVOCs, and VOCs. Analytical results for soil and groundwater are included in Tables 1 and 2, respectively, and summarized in the following tables. Chemical data for volatile constituents in soil and groundwater are presented on Figures 8 and 11, respectively.

Maximum analyte concentrations in soil are listed in Table 3.2.3a below:

Table 3.2.3a– Tanks 4 and 5 Maximum Detected Concentrations in Soil

Analyte	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TPHog (mg/kg)	TPHg (mg/kg)	TPHd (mg/kg)
Maximum Concentration	0.45	0.58	0.90	0.28	140	<200	2
ESL	0.23	970	5.1	560	5,100	740	230

Maximum analyte concentrations in groundwater are listed in Table 3.2.3b below:

Table 3.2.3b – Tanks 4 and 5 Maximum Detected Concentrations in Groundwater

Analyte	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPHg (µg/L)	TPHd (µg/L)	trans-1,2-DCE (µg/L)
Maximum Concentration	93	16	49	29	5,900	<50	5.0
ESL	1.0	40	30	20	100	100	10

Screening Level Comparison

TPHg was not detected above the LRL in soil samples. The detections of toluene, ethylbenzene, xylenes, and TPHd in soil were below residential soil screening levels. The benzene concentration of 0.45 mg/kg reported from B-6 at 13.5 ft bgs exceeded the ESL of 0.044 mg/kg. There is no RSL or ESL established for TPHog.

Reported concentrations of TPHg, benzene, ethylbenzene, and xylenes in groundwater during the 1994 investigation exceeded groundwater screening levels.

3.2.4 Suspected Tank 6 Investigation

One soil boring, B-56, was advanced for collection of a soil and groundwater sample at the location of the suspected former UST (Tank 6) along Filbert Street in November 1994 (Figure 2). One soil sample, from a depth of 11.5 feet bgs (B-56@11.5) was analyzed for BTEX, TPHg, and TPHms. The grab groundwater sample was analyzed for BTEX, TPHg, TPHms, oil and grease, hydrocarbons, and VOCs.

The analytical results for soil and groundwater are presented in Tables 1 and 2, respectively, and summarized below. Chemical data for volatile constituents in soil and groundwater are presented on Figures 8 and 11, respectively:

- The soil sample reported ethylbenzene at 0.061 mg/kg, TPHg at 20 mg/kg and TPHms at 3 mg/kg;
- The grab groundwater sample reported 300 µg/L of TPHg and 100 µg/L of TPHms; and
- VOCs detected in the groundwater sample were benzene, toluene, 1,2-dichloroethane (1,2-DCA), *cis*-1,2-dichlorethene (*cis*-1,2-DCE), *trans*-1,2-dichloroethene (*trans*-1,2-DCE), and vinyl chloride.

The analyte concentrations in groundwater are listed in Table 3.2.4 below:

Table 3.2.4 – Suspected Tank 6 Groundwater Sample Detected Concentrations

Analyte	Benzene (µg/L)	Toluene (µg/L)	TPHg (µg/L)	TPHms (µg/L)	1,2-DCA (µg/L)	*cis*-1,2-DCE (µg/L)	*trans*-1,2-DCE (µg/L)	Vinyl Chloride (µg/L)
Reported Concentration	16	0.5	300	100	3.0	130	0.5	34
ESL	1.0	40	100	100	0.5	6.0	10	0.061
Groundwater to Indoor Air ESL[(a)]	27	95,000	--	--	100	3,100	14,000	1.8

-- : Screening level not established

(a) California Water Boards 2013, Table E-1, Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion, residential land use, fine to coarse soil mix.

Screening Level Comparison

Reported concentrations of benzene, toluene, 1,2-DCA, and *cis*-1,2-DCE exceed the direct-contact groundwater screening level, but are below the screening level for potential intrusion of volatile chemicals into indoor air (vapor intrusion). The reported concentration of TPHg in groundwater exceeded the groundwater screening level.

The reported concentration of vinyl chloride (34 µg/L) exceeded the vapor intrusion screening level of 1.8 µg/L. Based on review of historical data, vinyl chloride was detected in only one of 16 grab groundwater samples collected from the West Grand Block in 1994 (Table A-1 in Appendix A). Although the vinyl chloride concentration reported in 1994 exceeded the residential ESL, the singular detection suggests that its presence was limited in extent. Three other groundwater samples collected within 50 feet of B-56 (B-55, B-11, and B-37) reported no detections of vinyl chloride (Figure 10). There is no documented source for the presence of vinyl chloride.

3.2.5 Other Areas of Interest

Based on the results of the 1994 investigations, three additional areas of interest were identified within the West Grand Block. These areas are illustrated on Figure 2. Results of the investigation indicated that soil beneath portions of the West Grand Block had been affected by petroleum hydrocarbons. Soil chemical data are summarized in Table 1, and concentrations of volatile constituents in soil are illustrated on Figures 6 through 8. Maximum concentrations in soil associated with the areas of interest are summarized below:

- Northwest area of Upper West Grand Block – soil samples collected from beneath the former cleaning and dyeing works and former benzin room reported maximum concentrations in soil of 1,900 mg/kg TPHg, 1,100 mg/kg TPHms, 1,300 mg/kg TPHd, 1.4 mg/kg ethylbenzene, and 7.2 mg/kg total xylenes. These maximum concentrations were detected at depths of approximately 10 to 12 feet below street grade (see Section 3.13 for 2015 site demolition, clarifier removal and excavation details). This area now contains approximately 8 feet of clean fill that was emplaced during historical West Grand development and demolition activities, and further assessment is planned for the area of B-44 where elevated detections were reported in samples collected in shallow soil;

- Western area of Middle West Grand Block – soil samples collected from beneath the former auto repair shop/garage/hazardous materials storage room reported maximum concentrations in soil of 0.72 mg/kg of benzene, 1.7 mg/kg of toluene, 1.6 mg/kg of ethylbenzene, 1.7 mg/kg of total xylenes, 540 mg/kg of TPHg and 410 mg/kg of TPHms, 4,400 mg/k of TPHog and NPH in addition to low SVOC and VOC detections (Table 1) detected at approximately 10 feet bgs. Further assessment is planned for the area of B-37 where elevated detections were reported in samples collected in shallow soil; and

- Elevator Sump #1 within the Middle West Grand Block – soil samples collected from the area adjacent to the elevator sumps reported 0.31 mg/kg of toluene, 1.1 mg/kg of ethylbenzene, 300 mg/kg of TPHg, 82 mg/kg of TPHms, and 4,400 mg/kg of oil and grease and was detected at approximately 10 feet bgs. As described in the RAP, and further assessment is planned for to further assess shallow soil at the Site.

Maximum analyte concentrations in soil are listed in Table 3.2.5a below:

- **Table 3.2.5a– Other Areas of Interest Maximum Detected Concentrations in Soil**

Analyte	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TPHog (mg/kg)	TPHg (mg/kg)	TPHms (mg/kg)
Maximum Concentration	0.72	1.7	1.6	1.7	4,400	1,900	1,100
ESL	0.23	970	5.1	560	5,100	740	160

Constituents reported in groundwater beneath these additional areas of interest are summarized below, and volatile constituents in groundwater are presented on Figures 9 and 10:

- Maximum concentrations from the November 1994 grab groundwater samples were 59 milligrams per liter (mg/L) of TPHg (analysis pattern not typical of gasoline) and 270 mg/L of TPHms from the northwest portion of the West Grand Block and 93 µg/L of benzene from the western portions of the West Grand Block;

- Free-phase fuel product was encountered in several borings located in the northwestern portion of the West Grand Block;

- Elevated concentrations of oil and grease and non-polar hydrocarbons were detected in grab groundwater samples collected adjacent and down gradient of the elevators; and,

- Shallow groundwater beneath the Site did not appear to be significantly affected by VOCs or semi-volatile organic compounds (Table 2); however, the gasoline additive 1,2-DCA was detected in eight samples from the western portion of the Site.

Maximum analyte concentrations in groundwater are listed in Table 3.2.5b below:

Table 3.2.5b – Other Areas of Interest Maximum Detected Concentrations in Groundwater

Analyte	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPHg (µg/L)	TPHog (µg/L)	TPHms (µg/L)	1.2-DCA (µg/L)
Maximum Concentration	93	0.018	900		59,000	270	270,000	28
ESL	1.0	40	30	20	100	100	100	0.5
Groundwater to Indoor Air ESL[(a)]	27	95,000	310	37,000	--	--	--	100

--: Screening level not established

Screening Level Comparison

Soil and groundwater screening levels for benzene, TPHg and TPHms were exceeded in the northwest area and western area and further investigated as described in Section 3.6. Further investigation of the detections of TPHog in the elevator sump area are detailed in Sections 3.9 and 3.10.

3.2.6 Monitoring Well Installation

Based on the soil and groundwater analytical results, Levine-Fricke recommended additional evaluation of surface soil in the northwestern portion of the Site and the installation of groundwater monitoring wells.

In September 1994, MFG installed two off-site up gradient groundwater monitoring wells (MW-1 and MW-2) to evaluate the potential presence of petroleum hydrocarbons in shallow groundwater from possible releases from off-site USTs. The locations of the monitoring wells are shown on Figure 2.

3.3 1996 GROUNDWATER INVESTIGATION

Two additional groundwater monitoring wells (MW-3 and MW-4) were installed in April 1996. MW-3 was located along Myrtle street approximately mid-way between West Grand Avenue and 24th Street and MW-4 was located at the corner of West Grande Avenue and Filbert Street (see Figure 2). According to the Groundwater Sampling Report, prepared by IT Corporation dated September 1996, maximum concentrations reported in groundwater during initial sampling consisted of the following:

- Benzene at 10 parts per billion (ppb); and
- TPHg at 840 ppb.

Also note that TPHd was not detected above the LRL (*i.e.*, results were "non-detect"). Based on the results of the groundwater monitoring report, the LOP issued a conditional case closure and directed the decommissioning of the groundwater monitoring wells on-site. On January 8, 1997, IT Corporation decommissioned the four groundwater monitoring wells on the Site via over-drilling.

3.4 1997 CASE CLOSURE

The LOP issued a, "*Final Case Closure Letter,*" dated January 30, 1997, for the former Safeway Ice Cream Plant (aka West Grand Refrigeration Facility) which stated no further action was required regarding the subsurface investigation, the USTs and/or associated monitoring wells. However, the LOP stated that if there was a change in land use from industrial/commercial, the owner must notify the LOP and the City of Oakland Department of Public Works.

3.5 2005 MARKET STREET BLOCK SOIL INVESTIGATION

A Phase II ESA report prepared by Gribi Associates (Gribi) dated March 18, 2005, presented results of a soil investigation conducted on the Market Street Block (Figure 2). A total of seven soil borings were advanced to evaluate the presence of petroleum hydrocarbons and lead in soil, and grab groundwater samples were collected from five of the soil borings. The sample locations, depths, and results for soil and groundwater are presented on Tables 3 and 4, respectively. A copy of the Gribi Phase II ESA is included in Appendix B. Market Street Block boring locations are shown on Figure 5.

3.5.1 Petroleum Hydrocarbon Investigation

Soil samples analyzed for TPHg and BTEX were collected at depths ranging from 11.5 to 21.5 feet below grade. TPHg and petroleum constituents were detected in only one sample (B-3 at 13'). Analytical data are presented in Table 3 and summarized in Table 3.5.1a below:

Table 3.5.1a – Market Street Block Maximum Detections of Petroleum Hydrocarbons in Soil

Analyte	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TPHg (mg/kg)	MTBE (mg/kg)
Maximum Concentration	<0.02	0.13	0.16	2.4	310	0.096
ESL	0.23	970	5.1	560	2,700 [1]	42

1 – TPHg ESL of 500 mg/kg corresponds to ESL for deep soil (<3 meters), as referenced concentration was from 13 ft bgs

Grab groundwater samples were collected between 9.6 and 11.2 feet below grade in five borings. TPHg and petroleum constituents were detected in two of the five borings. Analytical data are presented in Table 4 and the maximum concentrations are summarized in Table 3.5.1b below:

Table 3.5.1b – Market Street Block Maximum Detections of Petroleum Hydrocarbons in Groundwater

Analyte	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPHg (µg/L)
Maximum Concentration	52	240	140	910	44	110,000 (a)
ESL	1.0	40	30	20	5	100
Groundwater to Indoor Air ESL(b)	27	95,000	310	37,000	9,900	--

-- : Screening level not established

(a) Value could not be confirmed, laboratory report not available.

(b) California Water Boards 2013, Table E-1, Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion, residential land use, fine to coarse soil mix.

Screening Level Comparison

Concentrations of petroleum hydrocarbons and fuel-related compounds reported during the 2005 investigation exceed residential groundwater screening levels, and one reported concentration of soil slightly exceeds the screening level. Concentrations of fuel hydrocarbons reported in soil appear to have been from a saturated soil sample, as the sample interval was reported to be 13 ft bgs, and groundwater was sampled in borehole B-3 at 9.6 ft bgs (see Table 4). Therefore, hydrocarbons reported in soil may be sourced from groundwater. The location of boreholes B-2 and B-3 along the eastern margin of the Market Street Block suggest that petroleum hydrocarbons reported in groundwater in 2005 may have originated from one or more offsite, upgradient sources.

3.5.2 Soil Lead Investigation

During the 2005 investigation, soil samples were collected at depths of either 2 or 4 feet below ground surface at seven locations (B-1 through B-7) on the Market Street Block and analyzed for total lead (see Table 3 and Figure 5). Lead was reported in four of seven soil samples at concentrations ranging from 3.2 mg/kg to 310 mg/kg.

Screening Level Comparison

The lead concentrations detected at two locations (B-1 [310 mg/kg] and B-7 [81 mg/kg]) exceed the residential soil ESL of 80 mg/kg. This issue was addressed with a limited excavation in accordance with the Interim Remedial Action Plan (Stantec, 2015) which was approved by ACEH. As discussed in Section 3.14, excavation and confirmation sampling was conducted in 2016 to remove the reported lead-impacts in the vicinity of B-1 and B-7; results are presented under separate cover in the *Excavation Summary Report*.

3.6 2014 SOIL AND SOIL VAPOR INVESTIGATION

Based on review of historical data, Stantec conducted a soil and soil vapor investigation in May 2014 to further evaluate potential chemical impacts associated with known and suspected USTs

and areas of interest on the West Grand Block, and the potential extent of lead-impacted soil on the Market Street Block. The purpose of the investigation was to determine whether further remediation was necessary to render the Site suitable for residential development pursuant to conservative, human health-protective regulatory standards.

Soil and soil vapor samples were collected from four locations on the West Grand Block, and soil borings were advanced at four locations on the Market Street Block for collection of soil samples (Figure 2). Soil and soil vapor samples collected from West Grand Block were analyzed for PCBs and VOCs, respectively. In the Market Street Block, four samples were collected at depths between 0.5 and 9.5 feet bgs at each of the four locations and analyzed for total lead. Analytical results and summary data tables from the 2014 investigation are included in Appendix C.

3.6.1 West Grand Block Soil Vapor Investigation

Borings were advanced in each of the following four areas to evaluate areas of potential concern for vapor intrusion as identified in the 1994 investigation. At each of the four sample locations a sample was collected for soil (SB) and for soil vapor (SV). The four sample locations selected within the West Grand Block were:

- Northwest area – the former cleaning and dyeing works and former benzin room (samples SB-1 and SV-1);
- Tank 1 and Tank 3 – the suspected former USTs along Myrtle Street (sample SV-2 and SB-2);
- Tank 2 – the former 800-gallon UST closed in-place on the corner of West Grand Avenue and Filbert Street (sample SV-3 and SB-3); and,
- Western area – the former hazardous materials storage area and suspected Tanks 4, 5, and 6 (sample SV-4 and SB-4).

Sampling and Analysis

Temporary soil vapor probes were installed at four locations (SV-1, SV-2, SV-3, and SV-4) by TEG of Northern California (see Figure 2). Soil gas samples were collected using a low-dead volume soil vapor sampling system that utilizes soil vapor probes constructed of a 1 inch outside-diameter chrome-moly steel, equipped with a steel drop off tip. The soil vapor probes were driven into the ground by the Stratoprobe and once inserted to a depth of 5 feet bgs, the probe was retracted slightly to open the tip and expose the vapor sampling port. Soil vapor was extracted through the Nylaflow® tubing using a small calibrated syringe connected via an on/off valve.

After the initial three volumes of soil gas were discarded to flush the sample tubing and fill it with *in situ* soil vapor, a syringe was used to collect and transfer 20cc of soil gas to an on-site mobile

lab for analysis. Soil gas samples were collected from the four locations and submitted to the on-site California-certified mobile lab (TEG) for immediate analysis of VOCs by EPA Method 8260.

Soil Vapor Results

Soil vapor analytical results are included in Appendix C and summarized in Table 3. Dichlorodifluoromethane (Freon-12) was the only VOC detected in the soil vapor samples during the 2014 investigation. Freon-12 was detected at three of the four locations (SV-1, SV-2, and SV-4) at concentrations ranging from 110 micrograms per cubic meter (µg/m^3) in SV-4 to 19,000 µg/m^3 in SV-1. The compound 1,1-difluoroethane was used as a leak check compound during sampling and was not detected above the LRL in any of the samples. Soil vapor sample results are summarized in Table 3, and a comparison of reported values to Site-specific screening levels is provided in the HHRA. Upon request from Stantec, TEG re-evaluated the reporting limits for the soil vapor samples and indicated the presence of benzene at an approximate concentration of 75 µg/m^3 in SV-4 (see letter from TEG in Appendix C) which is below the Site-specific screening level developed in the HHRA of 120 µg/m^3.

3.6.2 West Grand Block Soil Investigation

Sample Collection and Analysis

Soil borings were advanced at four locations (SB-1, SB-2, SB-3, and SB-4) in the West Grand Block (Table 1; Figure 2), and one sample from each borehole was selected for chemical analysis based on field observations. Samples for VOC analysis were collected using EPA 5035-compliant containers. Samples from SB-2 and SB-4 were additionally analyzed for PCBs, and the sample from SB-4 was additionally analyzed for semivolatile organic compounds (SVOCs). Each soil boring was advanced with a continuous core to a total depth of approximately 10 feet bgs. A single soil sample was selected from each boring location based on field evidence of odor, staining, or elevated photoionization detector (PID) readings. Soils encountered were logged according to the Unified Soil Classification System (USCS). Recovered soils were examined for staining or the evidence of chemical impact and screened for organic vapors using a PID. Field observations were recorded on the borehole logs. Upon completion, each soil boring was backfilled to the surface with neat cement grout.

Samples retained for analysis were labeled to indicate job number, boring number, sample depth, sample number, time and date collected, and then stored in a cooler containing ice. Soil samples were delivered Curtis and Tompkins Laboratory in Berkeley California, a California-certified environmental laboratory under chain-of-custody documentation.

Each of the four soil samples were collected directly from the soil core in Terra Core preservation vials in accordance with the U.S. EPA 5035 preparation method and analyzed for VOCs by EPA Method 8260B. The samples from borings SB-2 and SB-4 were also analyzed for PCBs by EPA Method 8082A and the sample from SB-4 was additionally analyze for SVOCs by EPA Method 8270C-SIM.

Soil Sample Results

Soil sample results are listed in Table 1 and the laboratory report is included in Appendix C. Analytical results for VOCs below LRLs with the exception of the soil sample from boring SB-4 collected from the western area. No PCBs were detected above the LRL in samples SB-2 and SB-4. Concentrations of detected VOCs are summarized in Table 3.6.2 below, and presented on Figure 8.

Table 3.6.2 – Soil Sample Detected VOC Results – West Grand Block

Sample Location	Sample Name	Sample Depth (feet bgs)	Cumene (mg/kg)	Propylbenzene (mg/kg)	4-Cymene (mg/kg)	Naphthalene (mg/kg)
SB-1	SB-1, 4.5'	4.5	ND	ND	ND	ND
SB-2	SB-2, 9'	9.0	ND	ND	ND	ND
SB-3	SB-3, 8'	8.0	ND	ND	ND	ND
SB-4	SB-4, 8.5	8.5	0.580	0.670	0.700	0.072
		ESL	--	--	--	*0.12*
		RSL (May 2016)	*1,900*	*3,800*	--	*3.8*

Note: All other VOC and PCB results were below than LRLs.
bgs = below ground surface.
ND = Not detected above the LRL.
-- = Screening level not established

Screening Level Comparison

The concentration of naphthalene reported for SB-4 (0.072 mg/kg) was significantly less than the ESL (1.2 mg/kg) and the RSL (3.8 mg/kg). The detections of cumene and propylbenzene reported in SB-1 were also well below the RSL. Screening levels for 4-cymene have not been established by the San Francisco Bay RWQCB or the EPA Region 9, but the detected concentrations were very low.

3.6.3 Market Street Block Soil Investigation

Soil samples were collected in the Market Street Block to further evaluate the presence of lead in soil reported in the 2005 investigation (Section 3.5).

Soil Sample Collection and Analysis

Four soil borings (SB-5, SB-6, SB-7, and SB-8) were advanced and continuously cored to a total depth of approximately 10 feet bgs in the Market Street Block (see Figure 5). Soil samples were collected for analysis from four depth intervals at each boring location (0-1 feet bgs, 2-3 feet bgs, 6-7 feet bgs, and 9-10 feet bgs). A Stantec geologist logged the soils encountered from the continuous core to total depth according to the USCS and maintained a soil boring log of these

descriptions. Odor or staining was noted on the logs, if present, and soils were screened for organic vapors using a PID. Upon completion, each soil boring was backfilled with grout.

Samples retained for analysis were labeled to indicate job number, boring number, sample depth, sample number, time, and the date collected. Samples were then stored in a cooler containing ice. Soil samples were delivered to Curtis and Tompkins under chain-of-custody documentation for analysis of total lead by EPA Method 6010.

Soil Sample Results

Soil sample results are presented in Table 3. Total lead was detected in each of the 16 samples analyzed at concentrations ranging from 2.1 mg/kg (SB-5, 9') to 94 mg/kg (SB-5, 1'). The soil sample results for total lead are summarized in Table 3.6.3 below and shown with the 1995 total lead data on Figure 5. A copy of the laboratory analytical report is included in Appendix C.

Table 3.6.3 – Soil Sample Total Lead Results – Market Street Block

Sample Location	Sample Name	Sample Depth (feet bgs)	Total Lead (mg/kg)
SB-5	SB-5, 1'	1	94
	SB-5, 2.5	2.5	9.0
	SB-5, 6'	6.0	2.5
	SB-5, 9.5	9.5	2.1
SB-6	SB-6, 0.5'	0.5	4.3
	SB-6, 2.5	2.5	5.1
	SB-6, 6'	6.0	2.6
	SB-6, 9.5	9.5	2.5
SB-7	SB-7, 1'	1.0	4.4
	SB-7, 2.5	2.5	8.8
	SB-7, 6'	6.0	2.0
	SB-7, 9.5	9.5	31
SB-8	SB-8, 1'	1.0	14
	SB-8, 2.5	2.5	16
	SB-8, 6'	6.0	5.8
	SB-8, 9.5	9.5	4.5
		ESL	*80*

bgs = below ground surface.

The RWQCB ESL for lead in residential shallow soils (less than 3 meters depth) is 80 mg/kg. All of the reported concentrations were below the ESL, with the exception of the sample from

SB-5 which contained a lead concentration of 94 mg/kg at a depth of 1 foot bgs. The results indicate the extent of impact was limited in extent. As discussed in Section 3.14, excavation and confirmation sampling was conducted in 2016 to remove the reported lead-impacts in the vicinity of SB-5 (and the 2005 detections at B-1 and B-7); results are presented under separate cover in the *Excavation Summary Report*.

3.7 2014 GEOPHYSICAL SUBSURFACE INVESTIGATION

NOVA Abatement and Construction Services (NOVA) is the contractor overseeing the West Grand Block building demolition. Subtronic Corporation was contracted by NOVA in June 2014 to conduct a ground penetrating radar survey to attempt to determine whether any former USTs remained present at the Site.

NOVA representative Steve Schwartz reported that the initial survey and subsequent analysis of the waveforms provided by the geophysical equipment indicated that a UST may still remain on Filbert Street at a depth of approximately 2-2.5 feet bgs. Two locations within the suspected area were subsequently investigated by probing with a 5-foot steel rod. The probes verified that no obstructions were present at the depth of the anomaly and returned with a film of clean, fine sand, indicative of imported fill. The Subtronic report, provided by NOVA, is included in Appendix D.

Accordingly, based on the results of the recent geophysical subsurface investigation, Stantec concludes that no USTs are likely to be present at the Site. Stantec recommends no further investigation regarding this issue.

3.8 2014 DUE DILIGENCE GEOTECHNICAL EVALUATION

CV contracted T. Makdissy Consulting, Inc. (TMC) to perform a due diligence geotechnical evaluation as part of the property acquisition process. In May 2014, two borings were advanced to a depth of 50 feet and one boring was advanced to a depth of 20 feet as part of the geotechnical evaluation.

The TMC report described the subsurface conditions as a firm to stiff low plasticity clays to the depths explored, with variable interbeds and layers of sandy gravel, medium dense sand, loose to medium dense clayey sand, and dense sand. The sandy and gravelly layers ranged in thickness from 2 to 5 feet. Groundwater was reportedly encountered at depths of 9, 19, and 13 feet below grade during the investigation.

3.9 2015 FREIGHT ELEVATOR #2 VAULT SOIL REMOVAL

On February 3, 2015, CV was notified by NOVA that during the site demolition and removal activities, the north freight elevator shaft (Elevator #2) beneath the concrete flooring was encountered and removed. The piston and encasements extended to approximately 9 feet bgs.

NOVA reported that after removal of the cylinder, it was apparent that the soils surrounding the cylinder had been impacted with some form of hydraulic oil. NOVA performed excavation of the impacted soils to a depth of 11 feet below ground surface. Based on the analytical results for the floor sample, an additional two feet of soil were removed from the bottom of the excavation, whereon analytical testing results provided confirmation that the extent of impacted soil had removed. A copy of NOVA's report documenting the removal of the freight elevator is included in Appendix E and the analytical results are summarized in Table 3.9 below.

Table 3.9 – Soil Sample Results – Elevator #2 Removal

Sample Identification	**Sample Depth** (feet bgs)	**TPH as Hydraulic Oil** (mg/kg)	**TPH as Diesel** (mg/kg)
Sidewall	7	ND<5.0	ND<1.0
Floor	11	29	3.6
Floor 2	13	ND<5.0	NA
	ESL	*100*	*100*

bgs = below ground surface.
ND = not detected above the LRL.
NA = not analyzed

Screening Level Comparison

Analytical results show that TPH as hydraulic oil (TPHho) is below the LRL (*i.e. non-detect)* at the final excavation limit of 13 feet below grade.

3.10 2015 FREIGHT ELEVATOR #1 VAULT SOIL REMOVAL

On March 1, 2015, CV was notified by NOVA that during the site demolition and removal activities, the south freight elevator shaft (Elevator #1) beneath the concrete flooring was encountered and removed. The piston and encasements extended to approximately 9 feet bgs.

NOVA reported that after removal of the cylinder, it was apparent that the soils surrounding the cylinder had been impacted with some form of hydraulic oil. NOVA performed excavation of the impacted soils to a depth of 11 feet below ground surface. Based on the analytical results for the floor sample, an additional two feet of soil were removed from the bottom of the excavation. A final bottom sample could not be collected because of infiltrating groundwater and the excavation was immediately backfilled with clean fill. A copy of NOVA's report documenting the removal of the freight elevator is included in Appendix G and the analytical results are summarized in Table 3.10 below.

Table 3.10 – Soil Sample Results – Elevator #1 Removal

Sample Identification	**Sample Depth** (feet bgs)	**TPH as Hydraulic Oil** (mg/kg)
Sidewall	7	ND
Sidewall	7	19
Floor	11	100
	ESL	*100*

bgs = below ground surface.
ND = not detected above the LRL.
NA = not analyzed

Screening Level Comparison

TPHho was detected at a concentration of 100 mg/kg at a depth of 11 feet bgs (the limit of excavation), a concentration which does not exceed the ESL of 100 mg/kg.

3.11 2015 UNDERGROUND STORAGE TANK 2 REMOVAL

On July 15, 2015, CV was notified by NOVA that the underground storage tank at the corner of Filbert and West Grand (Tank 2) was removed as part of the site demolition activities. Tank 2 had been abandoned in place in 1984, as discussed in Section 2.7.1. The tank was confirmed to be filled with concrete and was removed without incident. NOVA reported that no holes were observed in the metal tank skin and no odors or soil issues were encountered during the removal. A copy of NOVA's removal report is included in Appendix F.

3.12 2015 DUE DILIGENCE GEOTECHNICAL EVALUATION

CV contracted Quantum Geotechnical (Quantum) to perform a due diligence geotechnical evaluation as part of the property acquisition. In May 2014 and August 2015 six borings were advanced to depths ranging from 21.5 to 51.5 below ground surface. Five cone penetrometer tests were advanced to a depth of 40 feet in August 2015. A draft Geotechnical Investigation Report (Geotechnical Report) was prepared by Quantum and submitted to CV in September 2015.

The Geotechnical Report described subsurface conditions consisting of a surface layer of sandy and clayey soil fill ranging in thickness from 2 to 6 feet over predominantly firm to stiff silty clay with variable sequences and interbeds of loose to medium dense and dense to very dense sands and gravels (Quantum, 2015). Groundwater was encountered in all borings at depths

ranging from 9 to 19 feet below grade. The draft Geotechnical Report, including a map showing boring locations and boring logs, is included as Appendix H.

3.13 2015 CLARIFIER REMOVAL

During removal of the concrete slab located within the Upper portion of the West Grand Block, NOVA encountered a suspected clarifier near the corner of Filbert and 24th Streets. The location of the clarifier generally corresponds with the location of the former "Benzin Room" as identified in the Phase II report (Levine-Fricke, 1995). NOVA reports that soils in the vicinity of the suspected clarifier were discolored and had a strong petroleum odor. NOVA excavated the discolored and odorous soil and sampled the limits of the excavated area to confirm removal of the impacted soil.

The excavation of the area was conducted in four parts (Excavation #1, #2, #3, and #4) between July 16, 2015 and August 19, 2015. The final excavation limit was approximately 50 feet by 45 feet laterally with depth ranging from 10 to 12 feet below grade.

The initial excavation limit samples were analyzed for VOCs, TPHg, BTEX, methyl tertiary butyl ether (MTBE) and leaking underground fuel tank (LUFT) metals (cadmium, chromium, lead, nickel, and zinc). The analytical results are summarized below:

- VOCs, BTEX, and MTBE were below LRLs;
- LUFT metals concentrations were less than screening levels; and
- TPHg was reported in the Excavation #1 (EX-1) floor/sidewall sample at a concentration of 2.6 mg/kg.

The composite sample collected from the soil removed from Excavation #1 (Stockpile sample) was analyzed for VOCs, TPHg, BTEX, MTBE and LUFT Metals. The Stockpile sample reported detections of TPHg, ethylbenzene, and xylenes at concentrations of 420 mg/kg, 1.8 mg/kg, and 0.62 mg/kg, respectively. LUFT metals concentrations were less than screening levels and n-butyl benzene and sec-butyl benzene were the only VOCs detected, at concentrations of 0.40 mg/kg, and 0.38 mg/kg, respectively. Based on the results for the Excavation #1 and the Stockpile sample, subsequent samples were analyzed for TPHg and BTEX only.

After removal of additional pavement in the area, further excavations were performed (Excavations #2, #3, and #4).

Excavation limit confirmation samples were collected at the lateral limits on three of the four sides of the final excavation. Shallow trenches were dug adjacent to the sidewall and samples from the trench were analyzed for VOCs and TPH. A sample could not be collected along the north edge of the excavation due to stability concerns for the adjacent sidewalk. The northern edge of the excavation was the 24th Street property boundary. The field observation of the northern excavation boundary was based on the absence of green soil and soil odors. These

boundary conditions were also used on the other three sides where the absence of impacted soil was confirmed with laboratory analytical results.

A copy of NOVA's report documenting the removal of the petroleum impacted soils is included in Appendix I and petroleum hydrocarbon analytical results are summarized in Table 3.12 below. These results indicate that hydrocarbon-impacted soil in the area of the former benzin room was excavated during site demolition activities, and remaining native soil is not impacted.

Table 3.12 – Soil Sample Results –Clarifier Removal

Sample Identification	**Sample Depth** (feet bgs)	**TPHg** (mg/kg)	**Benzene** (mg/kg)	**Toluene** (mg/kg)	**Ethylbenzene** (mg/kg)	**Xylenes** (mg/kg)
Stockpile	---	*420*	*<0.005*	*<0.005*	*1.8*	*0.62*
Sidewall/Floor (EX-1)	12	2.6	<0.005	<0.005	<0.005	<0.005
Excavation Floor #2 (EX-2)	10	12	<0.005	<0.005	<0.005	<0.005
East Limit Confirmation	4.5	ND	<0.005	<0.005	<0.005	<0.005
South Limit Confirmation	4.5	1.5	<0.005	<0.005	<0.005	<0.005
West Limit Confirmation	4.5	540	<0.005	<0.005	0.61	0.93
West Excavation Floor (EX=3)	10	73	<0.005	<0.005	0.21	0.24
West Limit Confirmation #2	4.5	74	<0.005	<0.005	0.15	0.16
West Floor (EX-4)	10	47	<0.005	<0.005	0.35	0.28
	ESL	100	0.23	970	5.1	560

bgs = below ground surface.
--- = not applicable
ND = not detected above the LRL.

Screening Level Comparison

The concentrations of TPHg and BTEX reported in soil left in place following the final excavation were below their respective screening levels.

Soil Management

All soils excavated during demolition were profiled as non-hazardous waste and transported to the Potrero Hill Landfill for disposal under a bill-of-lading by NOVA.

The City of Oakland required that the site sub-grade be flush or below the surrounding sidewalk profile. Post-demolition, the Lower section of the West Grand Block was approximately four feet above the sidewalk at the West Grand Avenue and four to five feet below the adjacent sidewalk at 24th Street. Soils were graded northward within the West Grand Black, from West Grand Avenue toward 24th Street. Those soils were pushed north to reduce the slopes of the excavation and partially fill parts of the excavation following the removal of petroleum-

impacted soils in the vicinity of the former clarifier. However, due to the extent and depth of the final excavation, 26 loads of clean import fill were procured and transported to the site from Potrero Landfill. The Potrero Landfill is a source of native soil located near Suisun City, California.

In order to provide additional documentation of the clean fill profile, a composite sample was collected by NOVA from the import soil. The sample was analyzed for TPHd, TPHg, BTEX, MTBE and California Title-22 Metals (CAM-17). TPHd, TPHg, BTEX, and MTBE results were below LRLs. The CAM-17 results were below Tier 1 ESL residential screening levels. A copy of the analytical report for the import fill analysis is included as Appendix J.

3.14 2016 SOIL VAPOR INVESTIGATION

An additional soil vapor investigation was conducted on September 26, 2016 to further characterize soil vapor and ascertain whether concentrations of residual VOCs in the subsurface may pose a vapor-intrusion risk. Soil vapor samples were collected from ten locations across the Site. The samples were collected from the West Grand Block portion of the Site. Samples were collected from locations where previous investigations indicated potential impacts remain. Soil vapor results from the 2016 assessment are summarized in Table 3. As shown on Table 3, exceedances of screening levels were reported for Freon 12 (SV-14), benzene (SV-4, SV-10, and SV-14), and 1,1,2,2-Tetrachloroethane (SV-9). Figure 4 shows soil vapor sampling locations at the West Grand Block. Further soil vapor assessment is planned for the Site as part of the remedial action plan for the Site (provided under separate cover).

Elevated hexane, cyclohexane and heptane in SV-13 raised concerns from ACEH regarding the potential that other contaminants with lower ESLs were masked by elevated reporting limits. As part of the data gap evaluation Stantec has proposed screening soils in the area of SV-13 for VOCs and where concentrations exceed screening levels, excavate impacted soils.

3.15 2016 MARKET STREET SOIL REMOVAL

In accordance with the agency approved IRAP, soil excavation was conducted in 2 areas at the Market Street Site. The soil removed was around previously detected lead concentrations reported in the samples from B-1, SB-5, and B-7. Lead-impacted soil found above screening levels (980 mg/kg) was removed from the Site and properly disposed of at a licensed disposal facility capable of handling the generated waste soil. Details of the excavation activities are submitted in the *Excavation Summary Report*, submitted with the RAP under separate cover.

4.0 SUMMARY AND RECOMMENDATIONS

4.1 WEST GRAND BLOCK SUMMARY

No new environmental issues have been identified since issuance of the 1997 Case Closure Letter. Soil and groundwater data collected prior to 1998 indicated the presence of petroleum hydrocarbons (TPHg) in soil above screening levels in the Northwest area. However, concentrations of petroleum hydrocarbon constituents in groundwater were below the RWQCB UST Low Threat Closure criteria (SWRCB, 2012). Comparison of groundwater chemical data to residential groundwater ESLs indicates several areas with minor exceedances of the screening criteria, primarily for benzene in historical groundwater samples, and TPHg in recent and historical samples. Overall, concentrations of volatile compounds in the groundwater are very low, however.

VOCs have been detected only sporadically in soil and groundwater beneath the West Grand Block. VOCs in soil are generally confined to the western area (former auto repair shop, cabinet shop, etc.), and VOCs have been reported in groundwater in multiple areas. Concentrations of VOCs in soil and groundwater, however, are generally low, and are below screening criteria protective of vapor intrusion for residential use. The exception is a detection of vinyl chloride which was detected in groundwater from B-56 at 34 µg/L, in 1994 on the western side of the West Grand Block. This concentration exceeded the vapor intrusion ESL from groundwater for residential use of 1.8 µg/l. However, groundwater chemical data from nearby locations reported no vinyl chloride above LRLs, suggesting the presence of vinyl chloride in groundwater in 1994 was anomalous and/or limited in extent. Characterization of soil gas at select locations beneath the West Grand Block has indicated no presence of vinyl chloride although the detection limits were elevated above ESLs, nor was vinyl chloride reported in historical or recent soil samples.

With respect to the lateral extent, no vinyl chloride was detected in the three groundwater samples collected within 50 feet of the sample that showed the vinyl chloride detection. At the 16 VOC groundwater sample locations across the western and northwest areas of the West Grand Block, vinyl chloride was only detected in B-57, which indicates a very limited extent of the presence of vinyl chloride. In addition, the 2014 and 2016 soil vapor survey conducted in the vicinity reported no detections of vinyl chloride. Based on the singular detection of vinyl chloride and its limited extent, Stantec recommends no further investigation regarding this issue. Additional soil vapor samples will be collected and analyzed by a fixed lab to achieve lower detection limits and document that VC is not detected in soil vapor.

Two areas of concern were identified based on benzene and cis-1,2-dichloroethene concentrations reported in a shallow soil sample from boring B-37 and TPHg reported in a shallow soil sample at boring B-44. Additional assessment is planned for these areas (see Section 4 of the RAP).

4.2 MARKET STREET BLOCK SUMMARY

Analytical data from the Market Street Block indicates limited impacts from petroleum hydrocarbons and lead.

- One soil sample, collected in 2005 from 13 feet below grade, reported total xylenes and MTBE at concentrations slightly above the ESL. Sampling information suggest this sample was collected from below-first encountered water, and reported concentrations are likely associated with impacted groundwater;

- Two grab groundwater samples collected from beneath the Market Street Block reported concentrations of fuel hydrocarbons above ESLs. The location of the samples adjacent to the eastern site boundary, along with the lack of appreciable soil impacts, suggest impacted groundwater may be migrating beneath the site from an offsite, upgradient source;

- Lead concentrations in two of seven soil samples collected in 2005 exceeded the ESL of 80 mg/kg with concentrations of 81 mg/kg and 310 mg/kg; and,

- Lead concentrations in fifteen of the sixteen soil samples collected in 2014 were below the ESL of 80 mg/kg. The single 2014 soil sample that showed lead above the ESL, with a concentration of 94 mg/kg, was at a depth of 1-foot below grade, and the sample collected at a depth of 2.5-feet in the same boring was an order of magnitude lower, confirming that the extent of lead impacted soil is localized.

The potential risk to future residential receptors due to lead in soil on the Market Street Block was mitigated through limited excavation of surface soils, in accordance with the IRAP (Stantec, 2015) for the site; results of the Market Street Block excavation are presented in the *Excavation Summary Report*.

4.3 RECOMMENDATIONS

This Report documents activities completed through September of 2016. Based on the results of this Report, and the subsequent remedial excavation activities at the Market Street Block, the subsequent completion of an HHRA, and the pending further assessment discussed in the *Remedial Action Plan,* this Report is considered final.

CV is in the process of redeveloping the property for multi-unit residential housing. The data collected to date, presented herein and evaluated in the HHRA does not pose an unacceptable risk to human health assuming residential use of the Site. The ACEH has requested additional sampling to address potential data gaps. The RAP proposes further assessment that addresses these data gaps. Should the additional data generated by the data gap investigation all fall below the HHRA Site specific screening levels, CV plans to request no further action status for the Site and approval for redevelopment under residential use. Should concentrations be observed that exceed the Site specific screening levels, CV will excavate

impacted soils in accordance with the proposed RAP, collect confirmation samples and request concurrence from ACEH for no further action status and approval for the planned redevelopment.

5.0 REFERENCES

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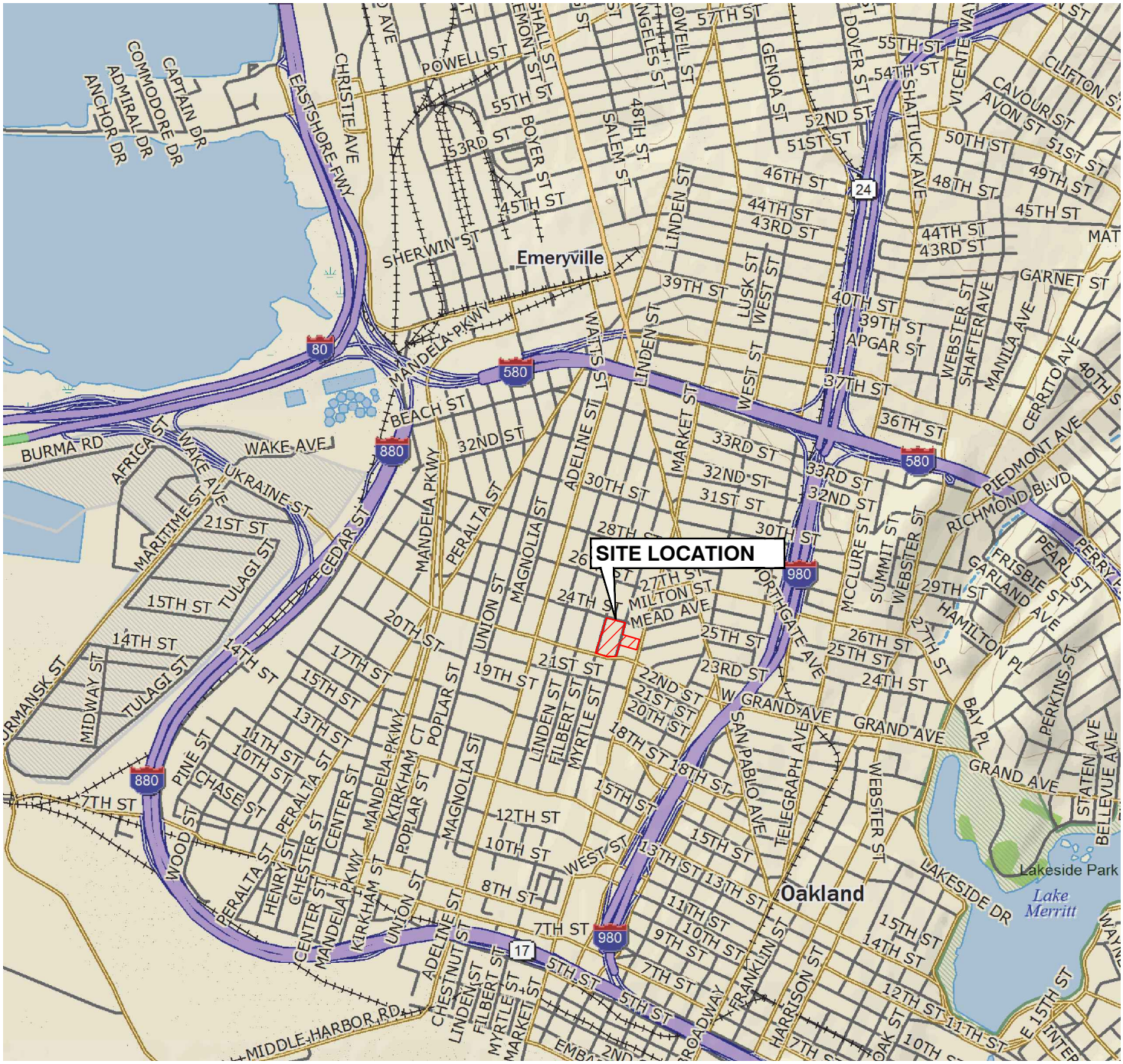
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FIGURES



North



CALIFORNIA

1 1/2 0 1
SCALE (MILES)

1000 0 1000 2000 3000 4000 5000 6000 7000
SCALE (FEET)

REFERENCE: USGS 7.5 MINUTE QUADRANGLE, OAKLAND WEST, CALIFORNIA

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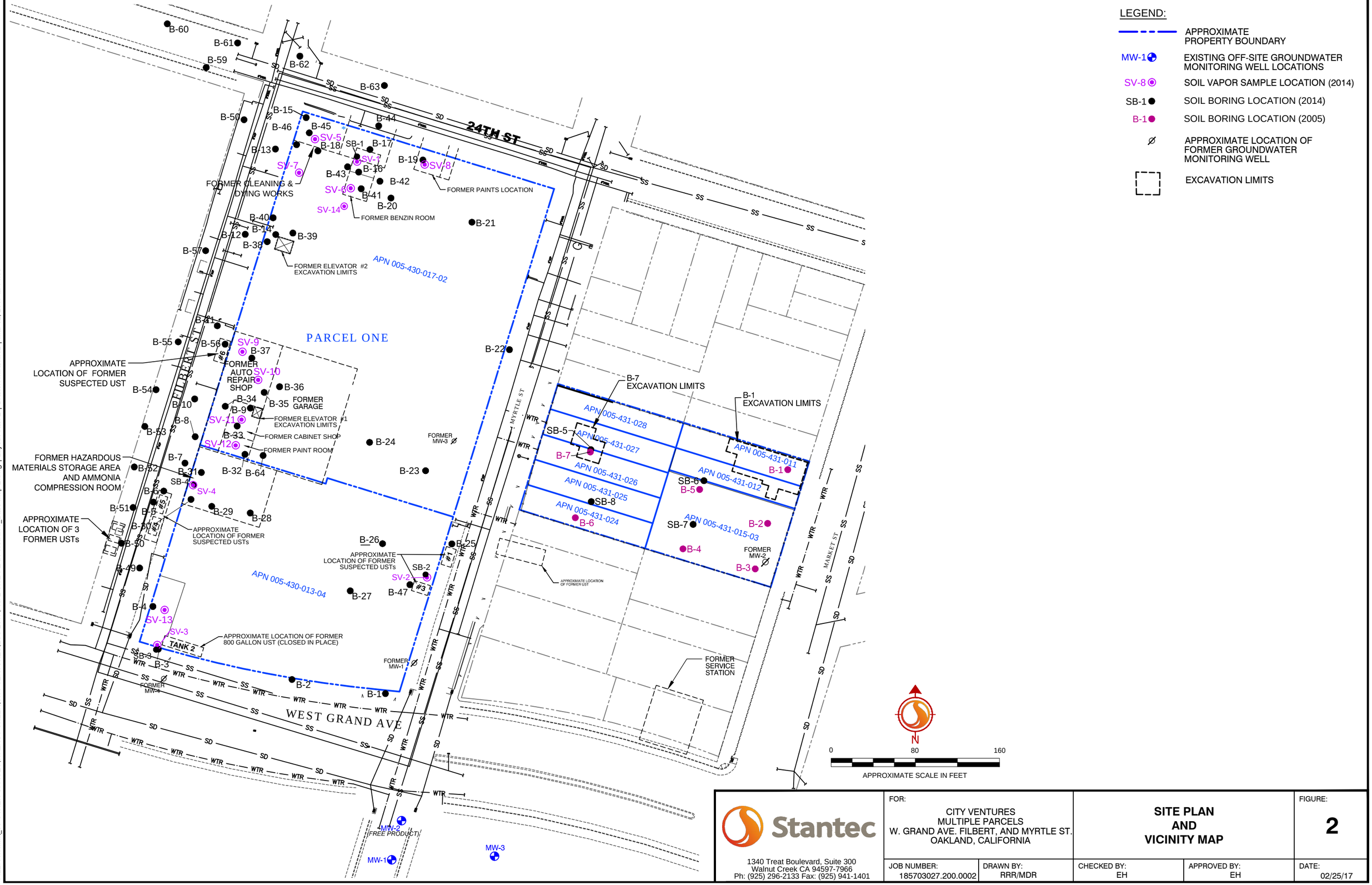
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CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

SITE LOCATION MAP

FIGURE: **1**

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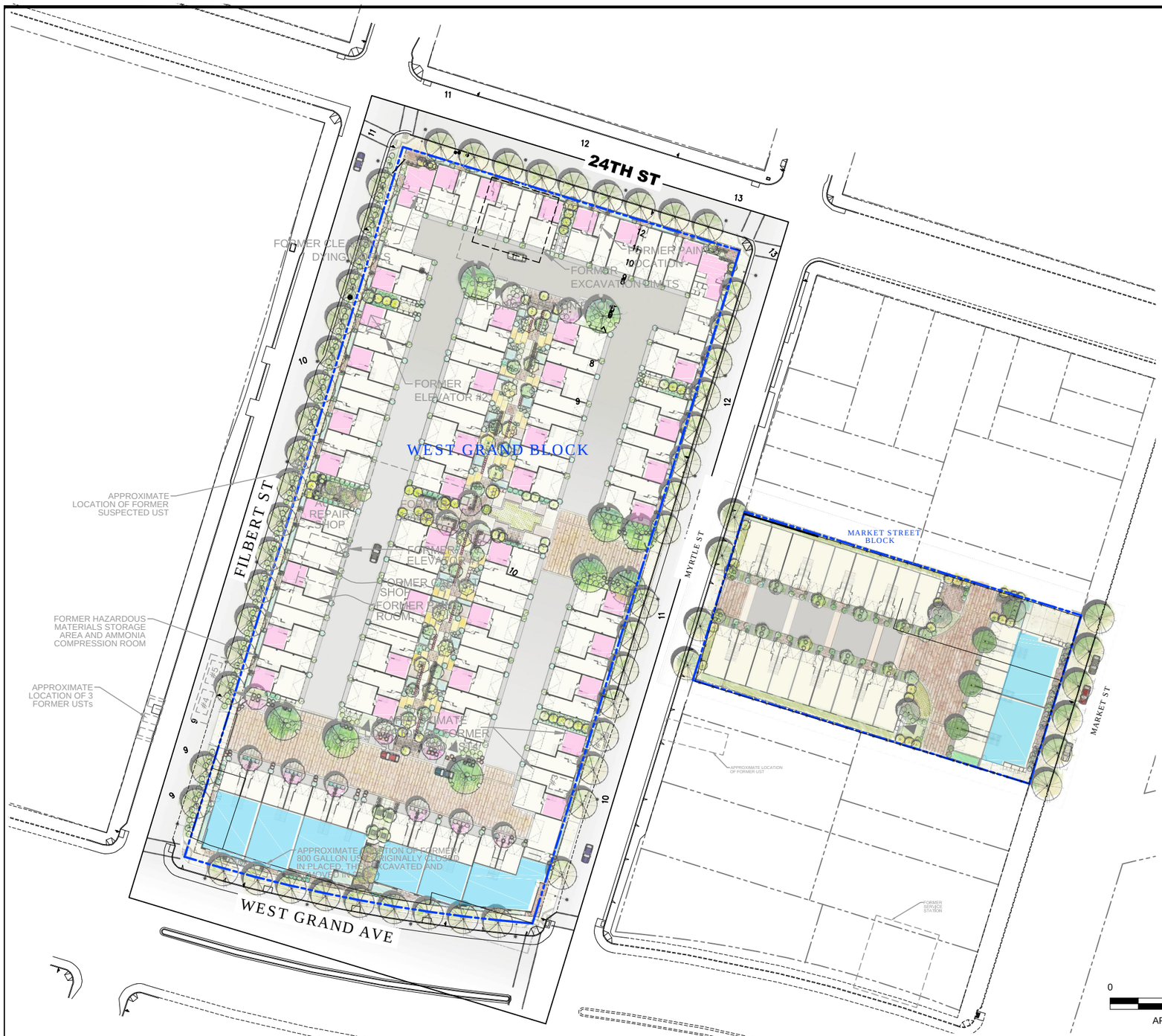
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SITE PLAN AND VICINITY MAP

FIGURE: **2**

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LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE

N

0 80 160

APPROXIMATE SCALE IN FEET

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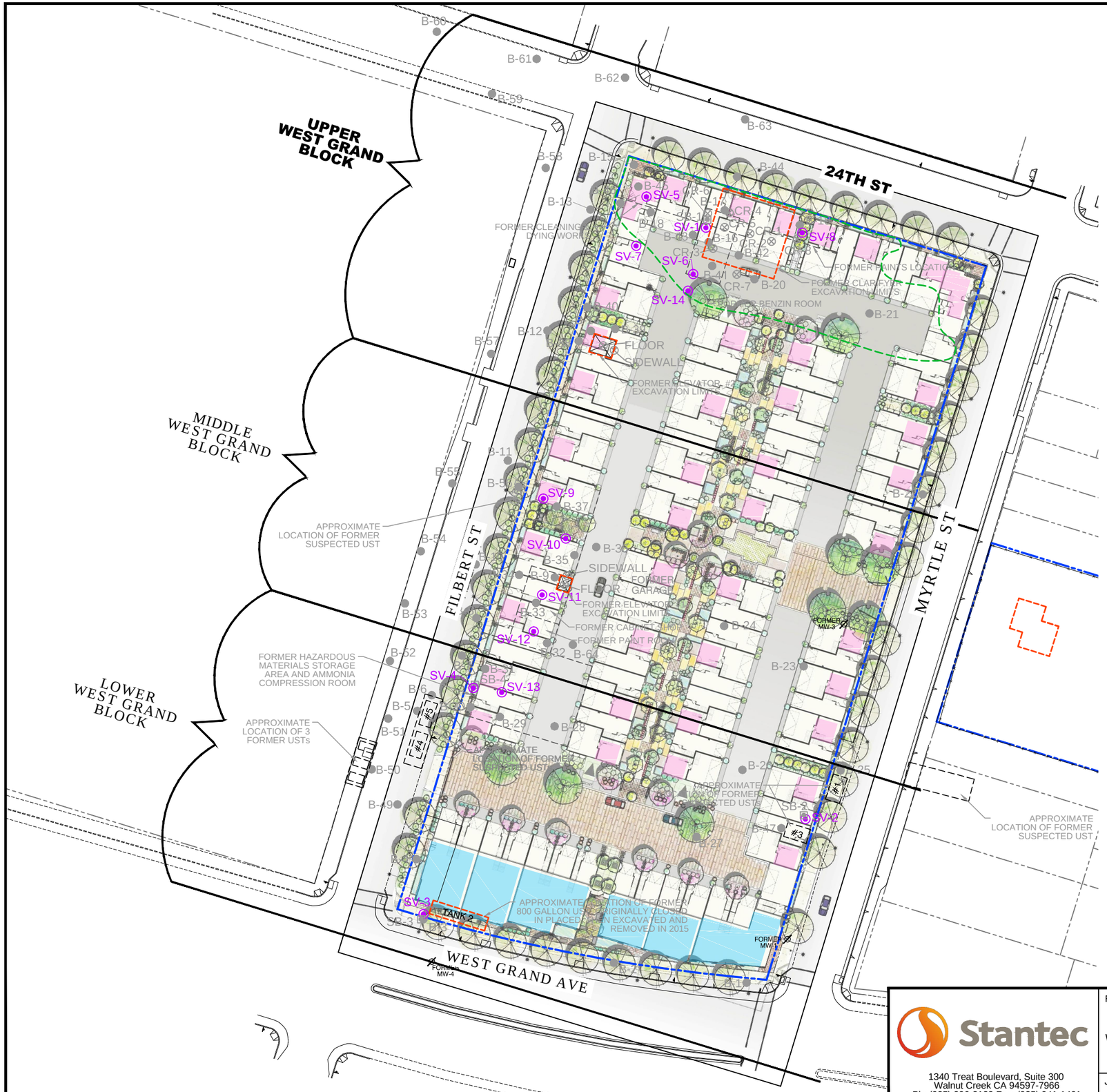
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SITE DEVELOPMENT PLAN

FIGURE: **3**

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LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 ● SOIL BORING LOCATION (1994)
- SV-1 ◉ SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SB-1 ▣ SOIL BORING SAMPLE LOCATION (2014)
- ⊗ SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- ⌀ APPROXIMATE LOCATION OF FORMER GROUNDWATER MONITORING WELL
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE
- EXCAVATION LIMITS
- CURRENT DEPRESSION IN NORTHERN PORTION OF SITE; FILL WILL BE PLACED DURING REDEVELOPMENT.

NOTES

1. SOIL AND GROUNDWATER SAMPLE RESULTS FOR UPPER SECTION ARE SHOWN ON FIGURES 6 AND 9 RESPECTIVELY.
2. SOIL AND GROUNDWATER SAMPLE RESULTS FOR MIDDLE SECTION ARE SHOWN ON FIGURES 7 AND 10 RESPECTIVELY.
3. SOIL AND GROUNDWATER SAMPLE RESULTS FOR LOWER SECTION ARE SHOWN ON FIGURES 8 AND 11 RESPECTIVELY.

N

0 70 140

APPROXIMATE SCALE IN FEET

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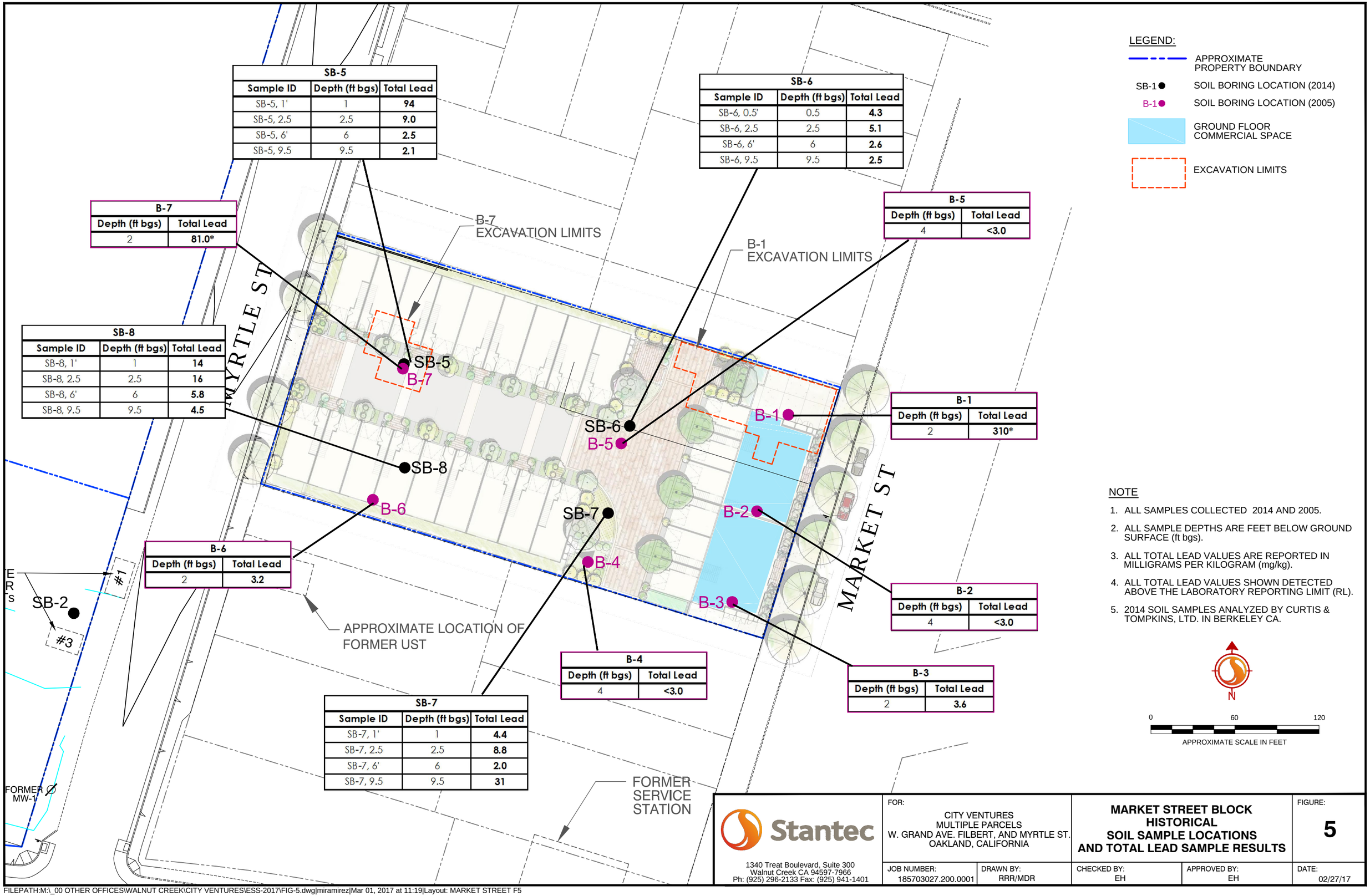
FOR:
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MULTIPLE PARCELS
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SAMPLE LOCATIONS
WEST GRAND BLOCK

FIGURE: **4**

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185703027.200.0001	RRR/MDR	EH	EH	09/07/15

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-4 AND 15.dwg|miramirez|Mar 01, 2017 at 10:45|Layout: F4



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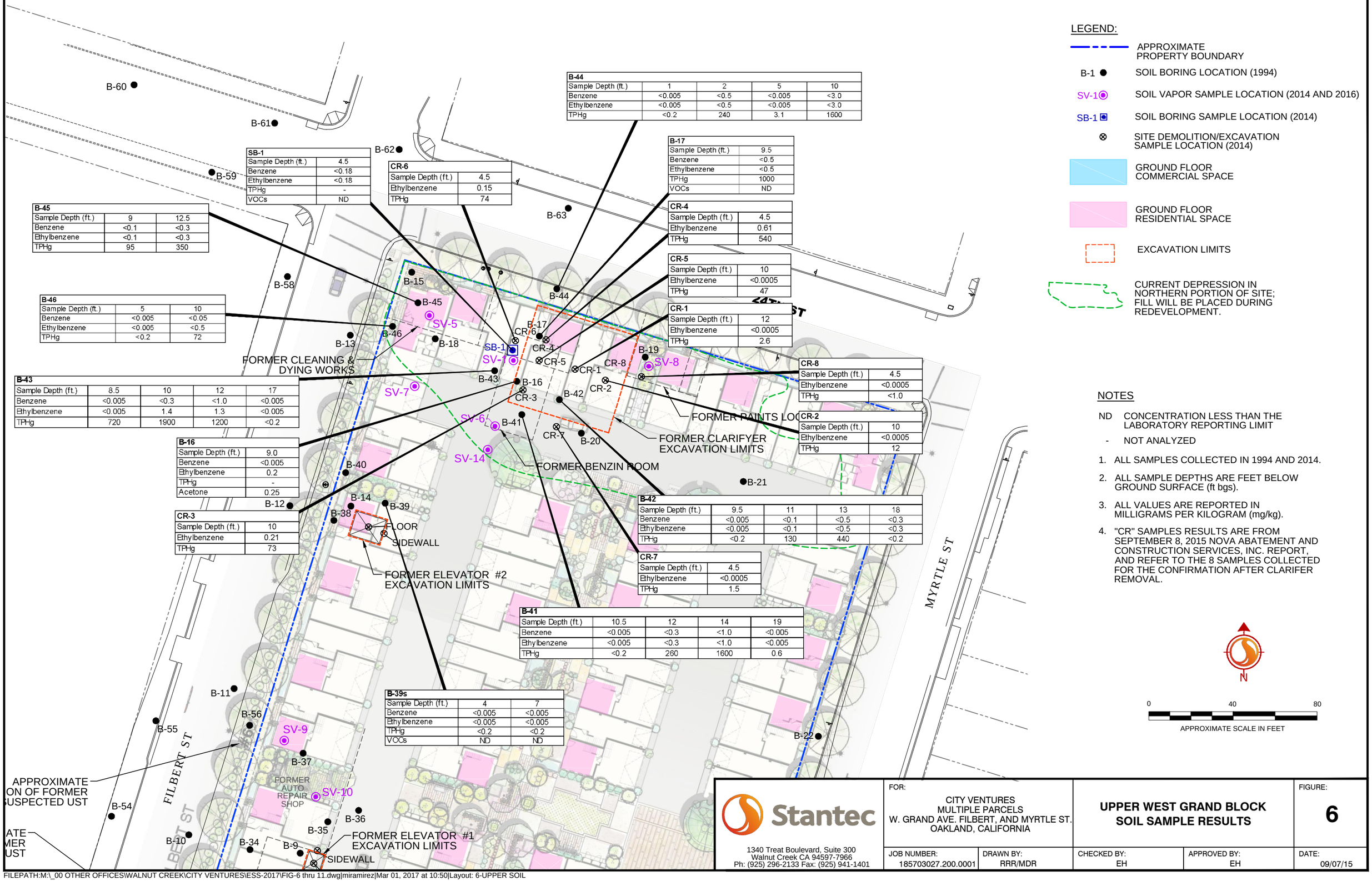
FOR:
CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

MARKET STREET BLOCK HISTORICAL SOIL SAMPLE LOCATIONS AND TOTAL LEAD SAMPLE RESULTS

FIGURE: **5**

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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-5.dwg|miramirez|Mar 01, 2017 at 11:19|Layout: MARKET STREET F5



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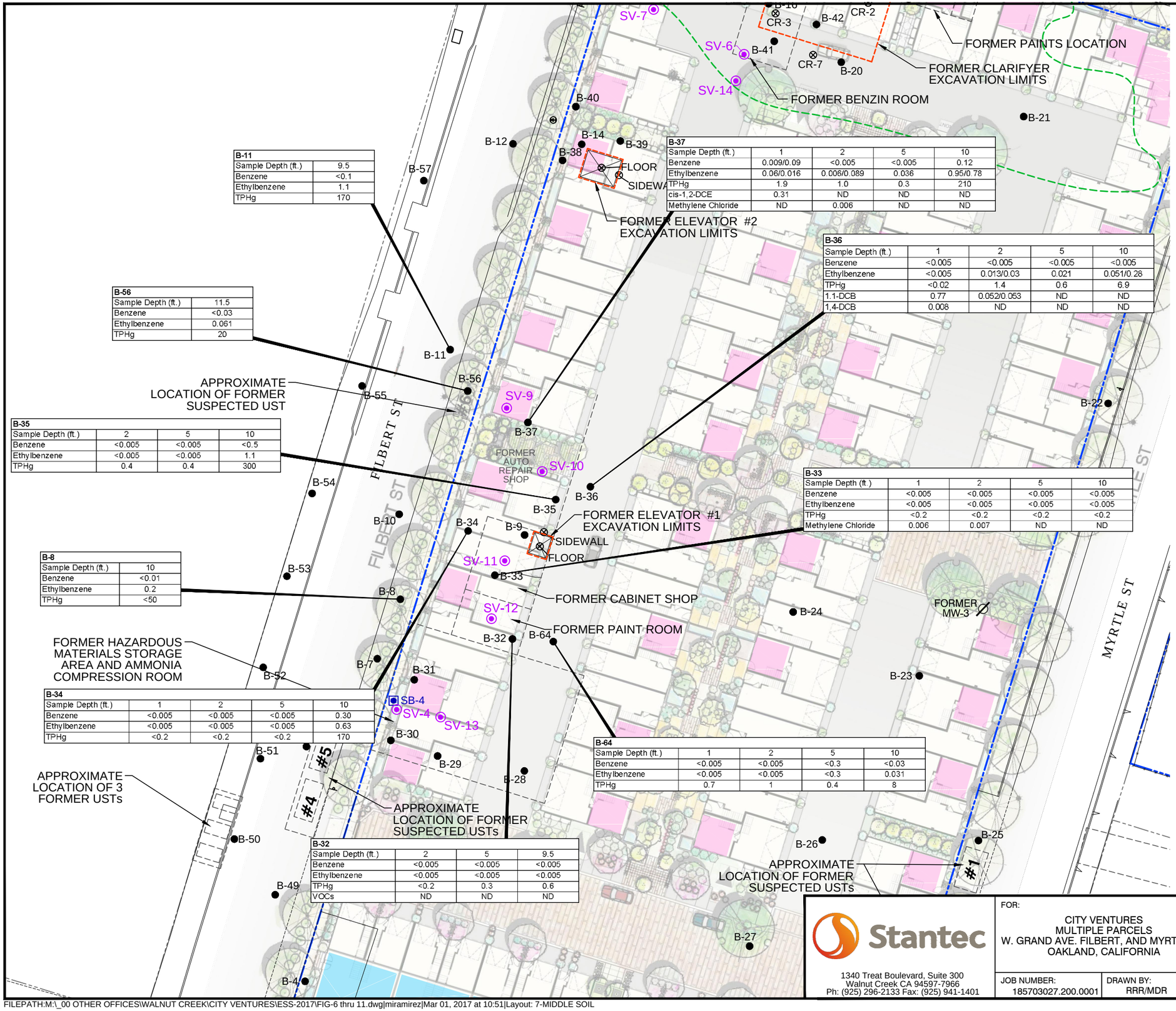
FOR:
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MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

UPPER WEST GRAND BLOCK SOIL SAMPLE RESULTS

FIGURE: **6**

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185703027.200.0001	RRR/MDR	EH	EH	09/07/15

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-6 thru 11.dwg|miramirez|Mar 01, 2017 at 10:50|Layout: 6-UPPER SOIL



B-11	
Sample Depth (ft.)	9.5
Benzene	<0.1
Ethylbenzene	1.1
TPHg	170

B-37				
Sample Depth (ft.)	1	2	5	10
Benzene	0.009/0.09	<0.005	<0.005	0.12
Ethylbenzene	0.06/0.016	0.006/0.089	0.036	0.95/0.78
TPHg	1.9	1.0	0.3	210
cis-1,2-DCE	0.31	ND	ND	ND
Methylene Chloride	ND	0.006	ND	ND

B-36				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	0.013/0.03	0.021	0.051/0.28
TPHg	<0.02	1.4	0.6	6.9
1,1-DCB	0.77	0.052/0.053	ND	ND
1,4-DCB	0.008	ND	ND	ND

B-56	
Sample Depth (ft.)	11.5
Benzene	<0.03
Ethylbenzene	0.061
TPHg	20

B-35			
Sample Depth (ft.)	2	5	10
Benzene	<0.005	<0.005	<0.5
Ethylbenzene	<0.005	<0.005	1.1
TPHg	0.4	0.4	300

B-33				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	<0.005	<0.005	<0.005
TPHg	<0.2	<0.2	<0.2	<0.2
Methylene Chloride	0.006	0.007	ND	ND

B-8	
Sample Depth (ft.)	10
Benzene	<0.01
Ethylbenzene	0.2
TPHg	<50

B-34				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	0.30
Ethylbenzene	<0.005	<0.005	<0.005	0.63
TPHg	<0.2	<0.2	<0.2	170

B-64				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.3	<0.03
Ethylbenzene	<0.005	<0.005	<0.3	0.031
TPHg	0.7	1	0.4	8

B-32			
Sample Depth (ft.)	2	5	9.5
Benzene	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	<0.005	<0.005
TPHg	<0.2	0.3	0.6
VOCs	ND	ND	ND

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 ● SOIL BORING LOCATION (1994)
- SV-1 ◉ SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- ⊗ SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- ⌀ APPROXIMATE LOCATION OF FORMER GROUNDWATER MONITORING WELL
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE
- EXCAVATION LIMITS
- CURRENT DEPRESSION IN NORTHERN PORTION OF SITE; FILL WILL BE PLACED DURING REDEVELOPMENT.

NOTES

ND CONCENTRATION LESS THAN THE LABORATORY REPORTING LIMIT

\- NOT ANALYZED

1. ALL SAMPLES COLLECTED IN 1994 AND 2014.
2. ALL SAMPLE DEPTHS ARE FEET BELOW GROUND SURFACE (ft bgs).
3. ALL VALUES ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg).

N

0 40 80

APPROXIMATE SCALE IN FEET

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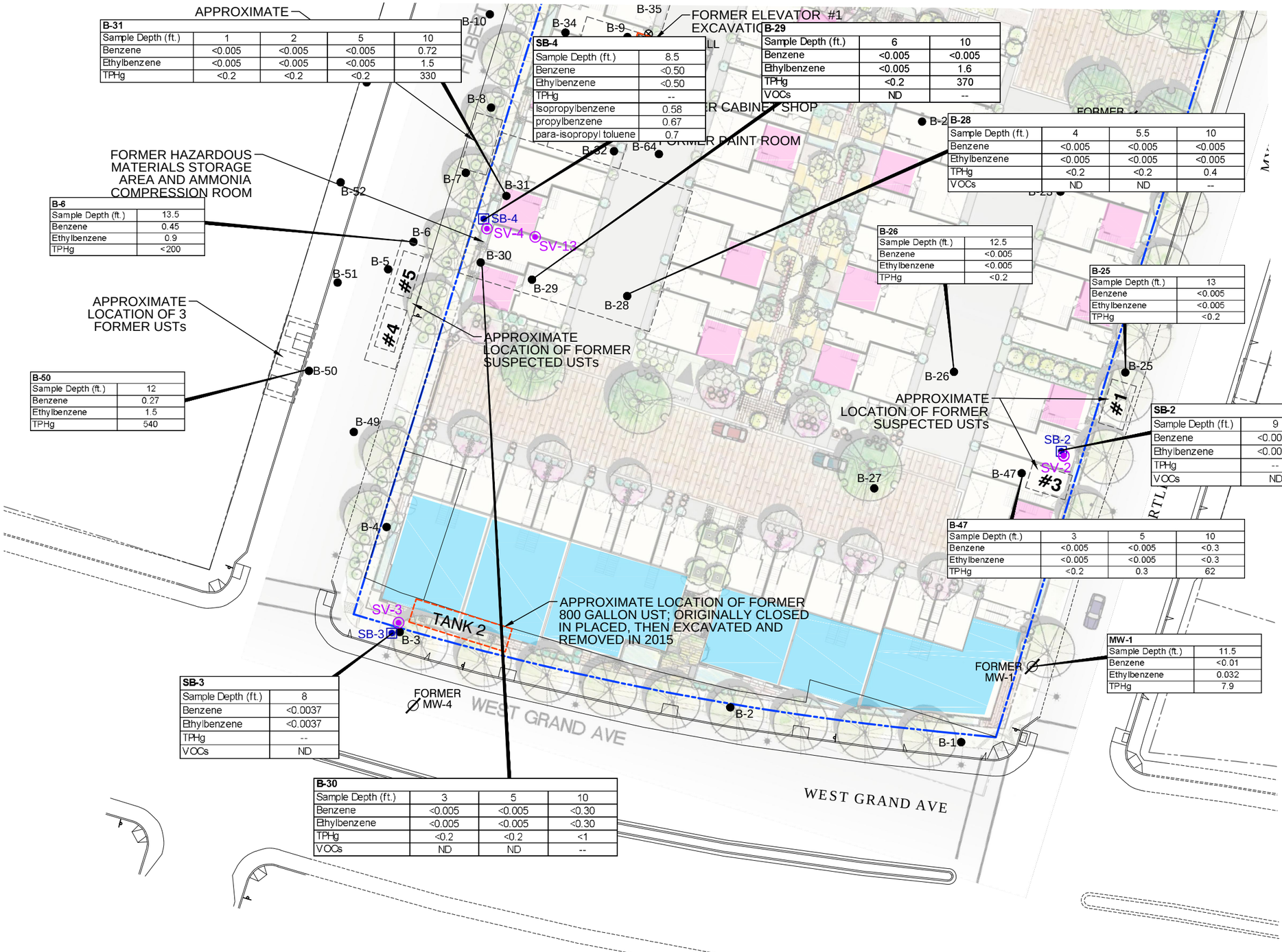
FOR:
CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
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MIDDLE WEST GRAND BLOCK SOIL SAMPLE RESULTS

FIGURE: 7

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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-6 thru 11.dwg|miramirez|Mar 01, 2017 at 10:51|Layout: 7-MIDDLE SOIL



B-31				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	0.72
Ethylbenzene	<0.005	<0.005	<0.005	1.5
TPHg	<0.2	<0.2	<0.2	330

SB-4	
Sample Depth (ft.)	8.5
Benzene	<0.50
Ethylbenzene	<0.50
TPHg	--
Isopropylbenzene	0.58
propylbenzene	0.67
para-isopropyl toluene	0.7

B-29		
Sample Depth (ft.)	6	10
Benzene	<0.005	<0.005
Ethylbenzene	<0.005	1.6
TPHg	<0.2	370
VOCs	ND	--

B-28			
Sample Depth (ft.)	4	5.5	10
Benzene	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	<0.005	<0.005
TPHg	<0.2	<0.2	0.4
VOCs	ND	ND	--

B-6	
Sample Depth (ft.)	13.5
Benzene	0.45
Ethylbenzene	0.9
TPHg	<200

B-26	
Sample Depth (ft.)	12.5
Benzene	<0.005
Ethylbenzene	<0.005
TPHg	<0.2

B-25	
Sample Depth (ft.)	13
Benzene	<0.005
Ethylbenzene	<0.005
TPHg	<0.2

B-50	
Sample Depth (ft.)	12
Benzene	0.27
Ethylbenzene	1.5
TPHg	540

SB-2	
Sample Depth (ft.)	9
Benzene	<0.0042
Ethylbenzene	<0.0042
TPHg	--
VOCs	ND

B-47			
Sample Depth (ft.)	3	5	10
Benzene	<0.005	<0.005	<0.3
Ethylbenzene	<0.005	<0.005	<0.3
TPHg	<0.2	0.3	62

MW-1	
Sample Depth (ft.)	11.5
Benzene	<0.01
Ethylbenzene	0.032
TPHg	7.9

SB-3	
Sample Depth (ft.)	8
Benzene	<0.0037
Ethylbenzene	<0.0037
TPHg	--
VOCs	ND

B-30			
Sample Depth (ft.)	3	5	10
Benzene	<0.005	<0.005	<0.30
Ethylbenzene	<0.005	<0.005	<0.30
TPHg	<0.2	<0.2	<1
VOCs	ND	ND	--

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 SOIL BORING LOCATION (1994)
- SV-1 SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SB-1 SOIL BORING SAMPLE LOCATION (2014)
- APPROXIMATE LOCATION OF FORMER GROUNDWATER MONITORING WELL
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE
- EXCAVATION LIMITS

NOTES

ND CONCENTRATION LESS THAN THE LABORATORY REPORTING LIMIT

-- NOT ANALYZED

1. ALL SAMPLES COLLECTED IN 1994 AND 2014.
2. ALL SAMPLE DEPTHS ARE FEET BELOW GROUND SURFACE (ft bgs).
3. ALL VALUES ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg).

N

0 40 80

APPROXIMATE SCALE IN FEET

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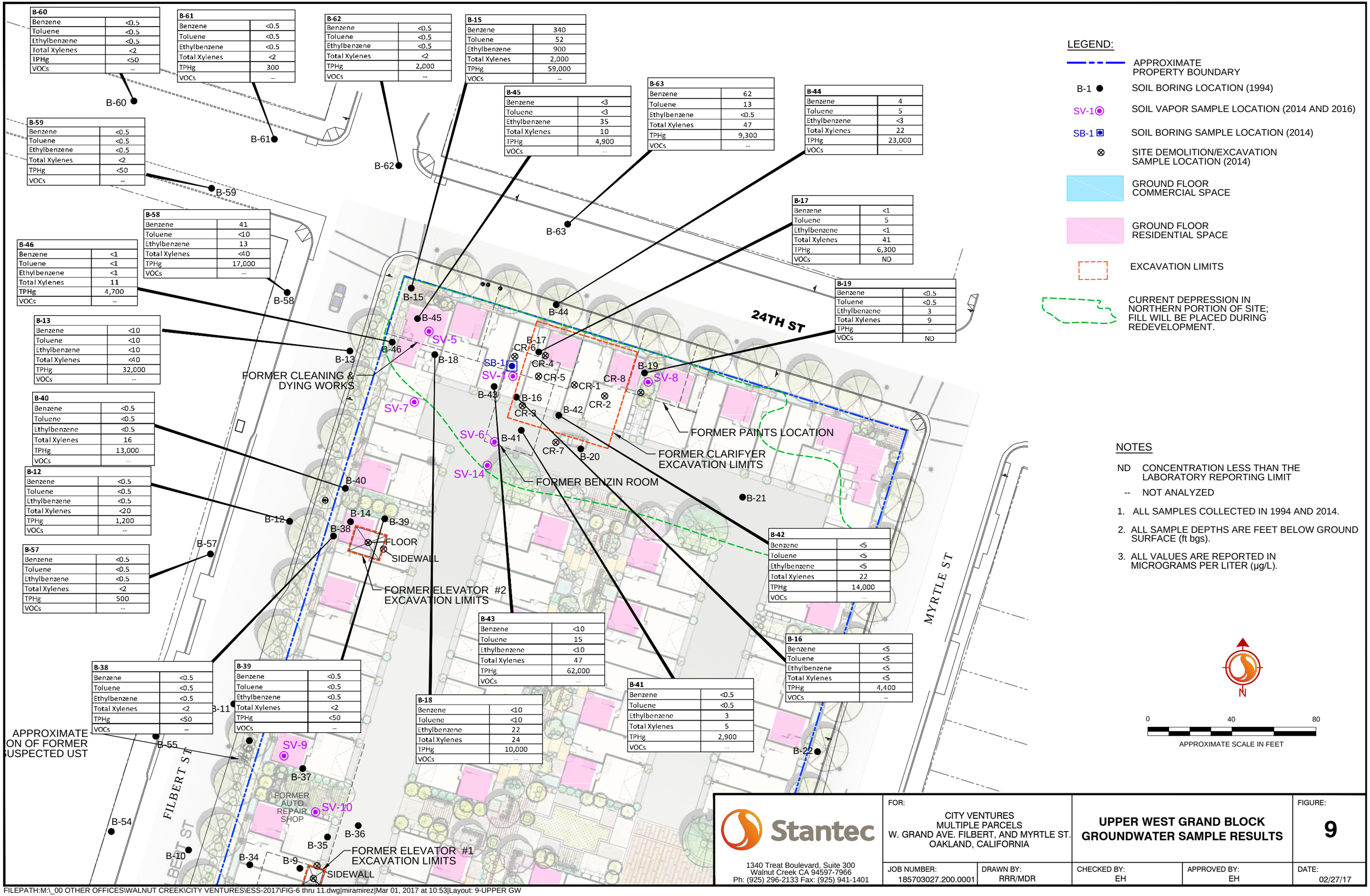
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LOWER WEST GRAND BLOCK SOIL SAMPLE RESULTS

FIGURE: **8**

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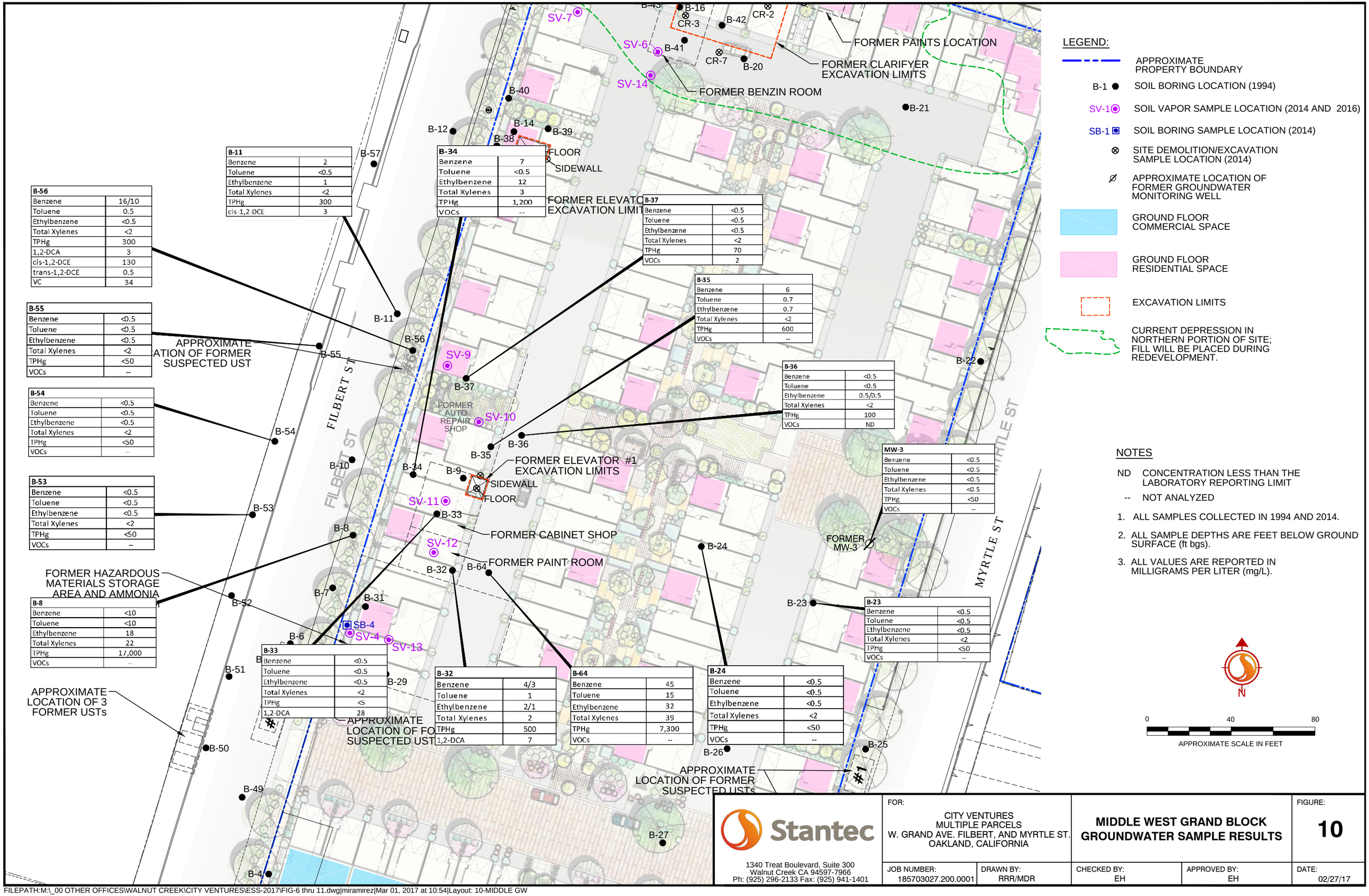
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UPPER WEST GRAND BLOCK GROUNDWATER SAMPLE RESULTS

FIGURE: 9

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185703027.200.0001	RRR/MDR	EH	EH	02/27/17

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-6 thru 11.dwg|miramirez|Mar 01, 2017 at 10:53|Layout: 9-UPPER GW



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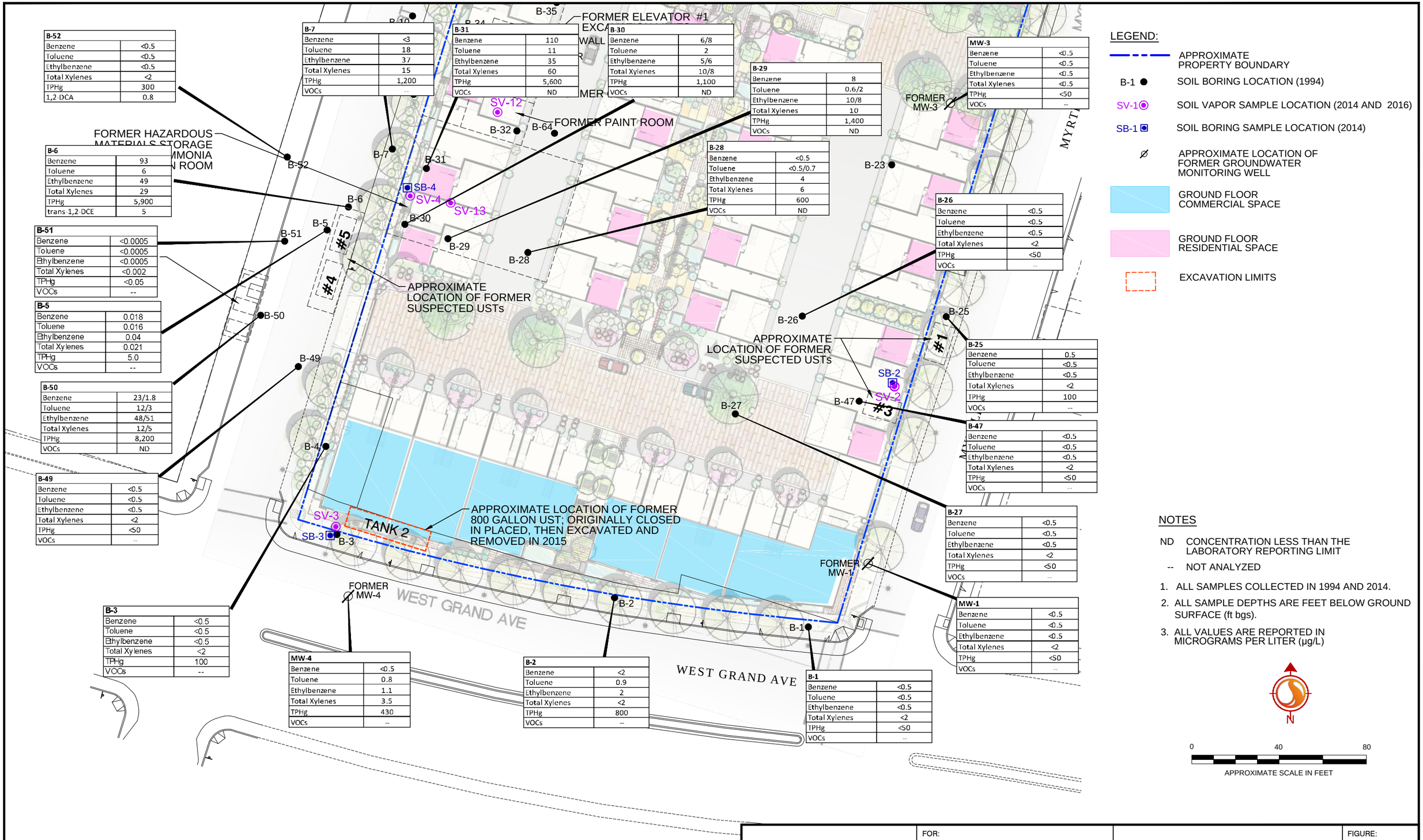
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MIDDLE WEST GRAND BLOCK GROUNDWATER SAMPLE RESULTS

FIGURE: 10

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185703027.200.0001	RRR/MDR	EH	EH	02/27/17

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-6 thru 11.dwg|miramirez|Mar 01, 2017 at 10:54|Layout: 10-MIDDLE GW



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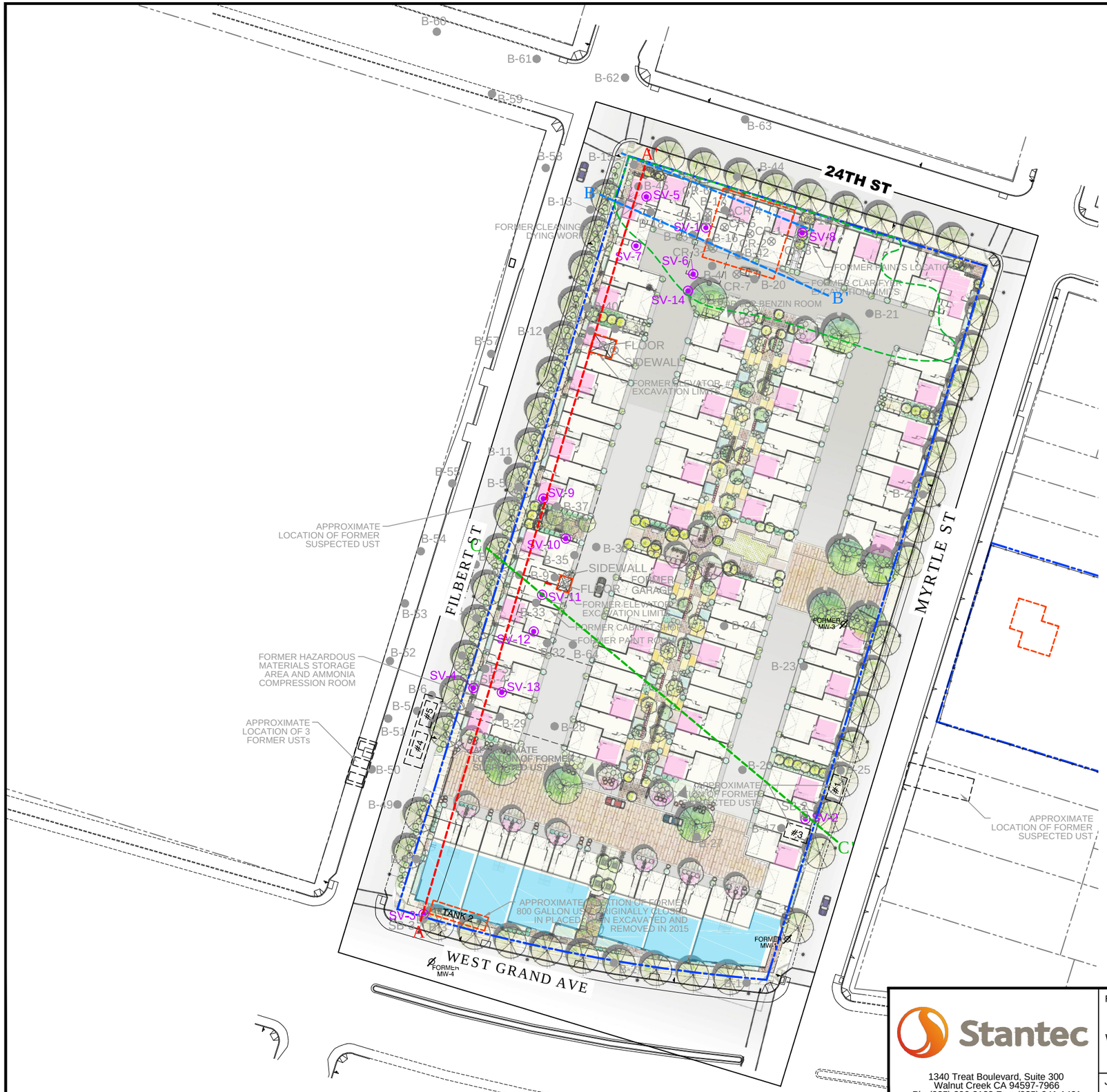
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LOWER WEST GRAND BLOCK GROUNDWATER SAMPLE RESULTS

FIGURE: **11**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-6 thru 11.dwg|miramirez|Mar 01, 2017 at 10:55|Layout: 11- LOWER GW



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 SOIL BORING LOCATION (1994)
- SV-1 SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SB-1 SOIL BORING SAMPLE LOCATION (2014)
- SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- APPROXIMATE LOCATION OF FORMER GROUNDWATER MONITORING WELL
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE
- EXCAVATION LIMITS
- CURRENT DEPRESSION IN NORTHERN PORTION OF SITE; FILL WILL BE PLACED DURING REDEVELOPMENT.
- B — B' GEOLOGIC SECTION LINE

NOTES

1. SOIL AND GROUNDWATER SAMPLE RESULTS FOR UPPER SECTION ARE SHOWN ON FIGURES 6 AND 9 RESPECTIVELY.
2. SOIL AND GROUNDWATER SAMPLE RESULTS FOR MIDDLE SECTION ARE SHOWN ON FIGURES 7 AND 10 RESPECTIVELY.
3. SOIL AND GROUNDWATER SAMPLE RESULTS FOR LOWER SECTION ARE SHOWN ON FIGURES 8 AND 11 RESPECTIVELY.

N

0 70 140

APPROXIMATE SCALE IN FEET

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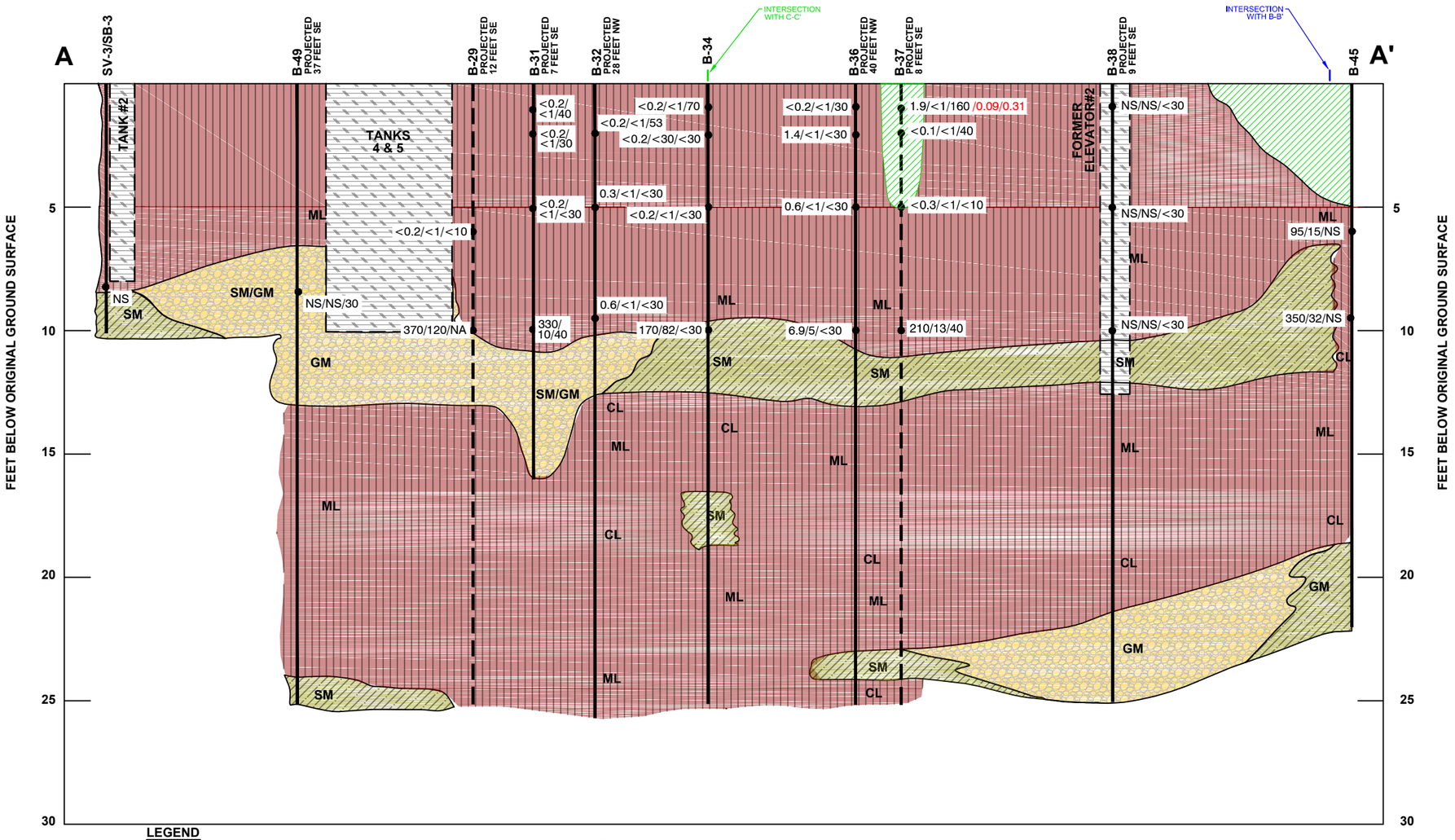
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CROSS SECTION LOCATIONS

FIGURE: **12**

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185703027.200.0001	RRR/MDR	EH	EH	09/07/15

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-4 AND 15.dwg|miramirez|Mar 01, 2017 at 10:59|Layout: F12



LEGEND

- FILL
- SILTS AND CLAYS (ML/CL)
- SAND AND SILTY/CLAYEY SAND (SM, SC)
- SILTY/CLAYEY SAND AND GRAVEL (GM, GC)
- TO BE DETERMINED; FILL SHOWN AT B-37 TO 5-FEET BELOW GROUND SURFACE; MAY BE COMPLETED DURING PROPERTY DEVELOPMENT AS INDICATED IN THE REMEDIAL ACTION PLAN.

B-29 — BORING PROJECTED; LITHOLOGY NOT USED ON CROSS-SECTION

- **SAMPLE LOCATION**
  <0.20/<0.0050/<0.0050 (TPHg/TPHms/TOG)
  0.09/0.31 (BENZENE/cis-1,2-DICHLOROETHENE)

TPHg = TOTAL PETROLEUM HYDROCARBON AS GASOLINE
TPHms = TOTAL PETROLEUM HYDROCARBON AS MINERAL SPIRITS
TOG = TOTAL OIL AND GREASE
NS = NOT SAMPLED
ml/Kg = MILLIGRAMS PER KILOGRAM

0 50 100
HORIZONTAL SCALE IN FEET

(VERTICAL = 1" = 5')

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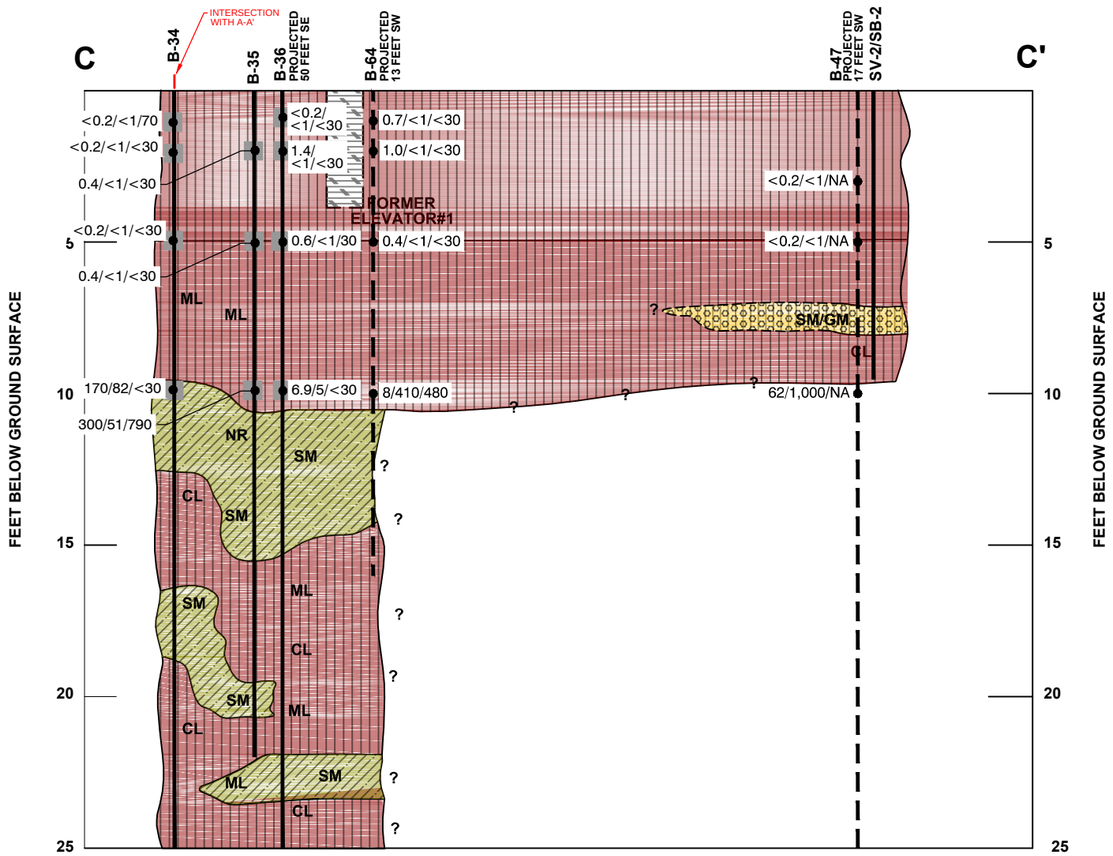
FOR:
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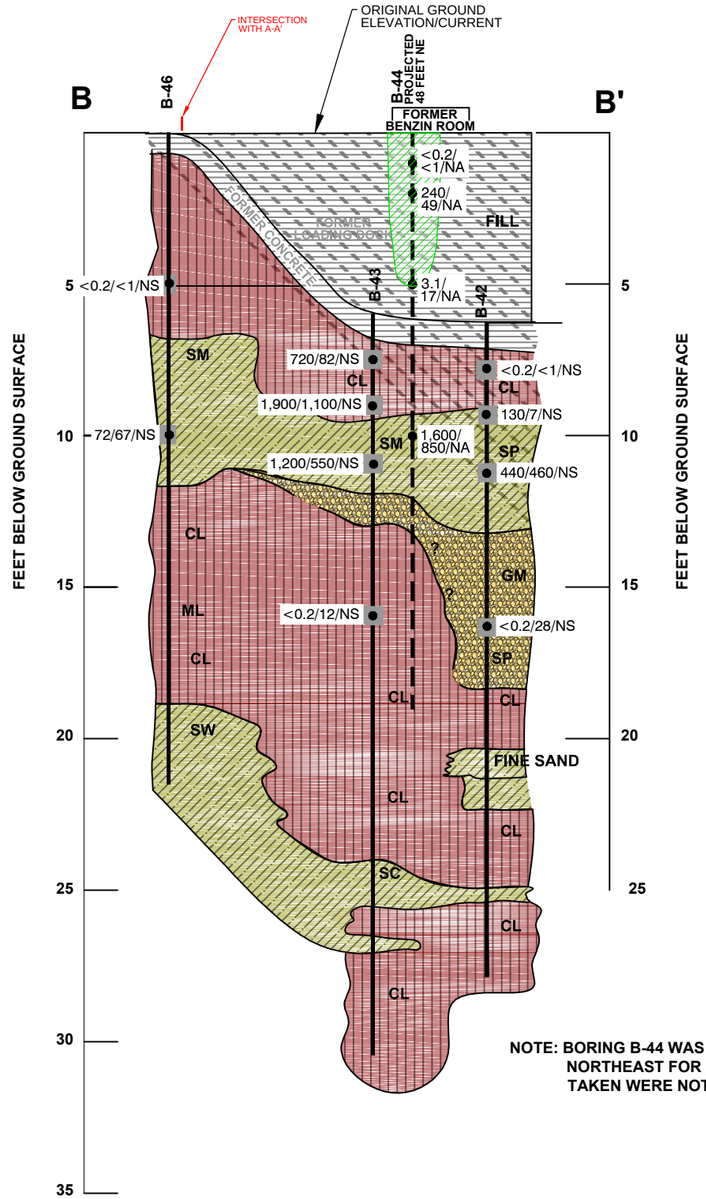
CROSS SECTION A-A'

FIGURE: **13**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-13_CROSS SECTION A-A'.dwg|miramirez|Mar 01, 2017 at 11:01|Layout: A-A





NOTE: BORING B-44 WAS PROJECTED 48 FEET NORTHEAST FOR CLARITY AND SAMPLES TAKEN WERE NOT WITHIN THE FILL AREA

LEGEND

- FILL
- SILTS AND CLAYS (ML/CL)
- SAND AND SILTY/CLAYEY SAND (SM, SC)
- SILTY/CLAYEY SAND AND GRAVEL (GM, GC)
- TO BE DETERMINED; FILL SHOWN AT B-44 TO 5-FEET BELOW GROUND SURFACE; MAY BE COMPLETED DURING PROPERTY DEVELOPMENT AS INDICATED IN THE REMEDIAL ACTION PLAN.
- SAMPLE LOCATION
  <0.20/<0.0050/<0.0050 (TPHg/TPHms/TOG)

B-64 BORING PROJECTED, LITHOLOGY NOT USED ON CROSS-SECTION

TPHg = TOTAL PETROLEUM HYDROCARBON AS GASOLINE
TPHms = TOTAL PETROLEUM HYDROCARBON AS MINERAL SPIRITS
TOG = TOTAL OIL AND GREASE
NS = NOT SAMPLED
ml/Kg = MILLIGRAMS PER KILOGRAM

0 50 100
HORIZONTAL SCALE IN FEET

(VERTICAL = 1" = 5')

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FOR: CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

CROSS SECTIONS B-B' AND C-C'

FIGURE: **14**

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FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\ESS-2017\FIG-14_CROSS SECTION B-B' AND C-C'.dwg|miramirez|Mar 01, 2017 at 11:03|Layout: B_C

TABLES

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
Tanks 1 and 3 - Suspected Former USTs in Southeast Yard (West of Myrtle Street)														
Phase I Investigation														
B-25-13	(20,26)	13	18-Jul-94	<0.005	<0.005	<0.005	<0.005	<0.2	--	--	--	--	--	*(20,26) Pb = ND; TPHd = ND*
B-26-12.5	(20)	12.5	18-Jul-94	<0.005	<0.005	<0.005	<0.005/<0.02	<0.2	--	--	--	--	--	*(20) Pb = ND*
Phase II Investigation														
B-47-3		3	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-47-5		5	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-47-10		10	15-Nov-94	<0.3	<0.3	<0.3	<0.3	62	1000	--	--	--	--	
2014 Investigation														
SB-2	(23)	9	28-May-14	<0.0042	<0.0042	<0.0042	<0.0084	--	--	--	--	--	ND	(23) PCB = ND
		Maximum Concentration		<0.3	<0.3	<0.3	<0.3	62	1000	--	--	--	--	
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	---	---	---	---	
Tank 2 - Former UST at Corner of West Grand Avenue and Filbert Street at Loading Dock														
1996 Well Install														
MW-3-5.5'		5.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0						
MW-3-10'		10	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0						
MW-4-5.0'		5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0						
MW-4-10.5'		10.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0						
2014 Investigation														
SB-3		8	28-May-14	<0.0037	<0.0037	<0.0037	<0.0074	--	--	--	--	--	ND	
		Maximum Concentration		<0.0037	<0.0037	<0.0037	<0.0074	--	--	--	--	--	ND	
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	---	---	---	---	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
Tanks 4 and 5 - Former Heating Oil USTs														
Phase I Investigation														
B-5-9.5		9.5	20-Jul-94	--	--	--	--	--	--	37	<10	--	--	
B-6-13.5	(2,5,9,20,21)	13.5	19-Jul-94	0.45	0.58	0.9	0.28	<200	--	140	120	--	--	*(20,21) Pb = ND; TPHd = 2 mg/kg*
		Maximum Concentration		0.45	0.58	0.9	0.28	<200	--	140	120	--	--	
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	5100	---	---	---	
Tank 6 - Suspect UST on Filbert Outside Former Auto Repair Shop														
Phase II Investigation														
B-56-11.5		11.5	8-Nov-94	<0.03	<0.03	0.061	<0.03	20	3	--	--	--	--	
		Maximum Concentration		<0.03	<0.03	0.061	<0.03	20	3	--	--	--	--	--
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	---	---	---	---	
Western Area - Former Engine Room and Hazardous Materials Storage Area, Former Auto Repair Shop, Cabinet Shop, Paint Room and Garage														
B-7-11		11	21-Jul-94	--	--	--	--	--	--	<10	<1	--	--	
B-8-10	(3,5,22)	10	19-Jul-94	<0.01	0.066	0.2	0.21	<50	--	--	--	--	--	*(22) TPHd=ND; Pb=ND*
B-9-10	(23)	10	19-Jul-94	--	--	--	--	--	--	4400	4400	--	--	*(23) PCB = ND*
B-11-9.5	(1)	9.5	20-Jul-94	<0.1	0.52	1.1	1.7	170	--	--	--	--	--	
Phase II Investigation														
B-28-4		4	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND	
B-28-5.5		5.5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND	
B-28-10		10	18-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	--	--	--	--	
B-29-6		6	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	(19)	ND	*(19) benzo(b)fluoranthene=0.33 mg/kg; fluoranthene=0.75 mg/kg; pyrene=0.41 mg/kg*
B-29-10		10	18-Nov-94	<0.005	<0.005	1.6	<0.005	370	120	--	--	--	--	
B-39s-4	(18)	4	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	ND	
B-39s-7	(18)	7	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	ND	
B-30-3		3	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND	
B-30-5		5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND	
B-30-10		10	18-Nov-94	<0.30	<0.30	<0.30	<0.30	<1	<1	--	--	--	--	
B-31-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	40	<30	--	--	
B-31-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	30	<30	--	--	
B-31-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	--	
B-31-10		10	11-Nov-94	0.72	0.79	1.5	0.74	330	10	40	<30	--	--	
B-32-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	53	46	--	ND	
B-32-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.3	<1	<30	<30	ND	ND	
B-32-9.5		9.5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	<1	<30	<30	--	ND	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
B-33-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(12)	*(12) methylene chloride = 0.006 mg/kg*
B-33-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	(13)	*(13) methylene chloride = 0.007 mg/kg*
B-33-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-33-10		10	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-34-1		1	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	70	40	--	--	
B-34-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-10		10	10-Nov-94	<0.30	0.31	0.63	<0.30	170	82	<30	<30	--	--	
B-35-2		2	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-10		10	14-Nov-94	<0.5	<0.5	1.1	<0.5	300	51	790	690	--	--	
B-36-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(14)	*(14) 1,1-DCB = 0.77 mg/kg; 1,4-DCB = 0.008 mg/kg*
B-36-2		2	14-Nov-94	<0.005	<0.005	0.013/0.03	<0.005	1.4	<1	<30	<30	--	(15)	*(15) 1,1-DCB = 0.052/0.053 mg/kg*
B-36-5		5	14-Nov-94	<0.005	<0.005	0.021	<0.005	0.6	<1	<30	<30	--	ND	
B-36-10		10	14-Nov-94	<0.005	<0.005	0.051/0.28	0.018/0.031	6.9	5	<30	<30	--	ND	
B-37-1		1	14-Nov-94	0.009/0.09	0.005/0.033	0.06/0.016	0.007/0.02	1.9	<1	160	120	--	(16)	*(16) cis-1,2-DCE = 0.31 mg/kg*
B-37-2		2	14-Nov-94	<0.005	<0.005	0.006/0.089	0.006	1.0	1	40	<30	--	(17)	*(17) methylene chloride = 0.006 mg/kg*
B-37-5		5	14-Nov-94	<0.005	<0.005	0.036	<0.005	0.3	<1	<10	<10	ND	ND	
B-37-10		10	14-Nov-94	0.12	0.61	0.95/0.78	<0.3	210	13	40	<30	--	ND	
B-49-8		8	7-Nov-94	--	--	--	--	--	--	30	<30	--	--	
B-50-12		12	7-Nov-94	0.27	1.7	1.5	<0.050	540	<50	--	--	--	--	
B-56-11.5		11.5	8-Nov-94	<0.03	<0.03	0.061	<0.03	20	3	--	--	--	--	
B-64-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.7	<1	<30	<30	--	--	
B-64-2		2	14-Nov-94	<0.005	<0.005	<0.005	0.006	1.0	<1	<30	<30	--	--	
B-64-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-64-10		10	14-Nov-94	<0.03	<0.03	0.031	<0.03	8	410	480	350	--	--	
2014 Investigation														
SB-4	(23)	8.5	28-May-14	<0.50	<0.50	<0.50	<1.0	--	--	--	--	(29)	(30)	*(23) PCB = ND; (29) Naphthalene = 0.072 mg/kg; (30)Isopropylbenzene 580 ug/kg; propylbenzene 670 ug/kg; para-isopropyl toluene 700 ug/kg*
Maximum Concentration				0.72	1.7	1.6	1.7	540	410	4400	4400	(19,29)	(13,14,16)	
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600	11,000	---	---	---	
Northwest Area - Former Cleaning and Dyeing Works and Benzin Area														
Phase I Investigation														
B-16-9	(4,8,25)	9.0	21-Jul-94	<0.005	<0.005	0.2	0.17	--	--	--	--	--	(6)	*(6,25) Acetone=0.25 mg/kg; benzin = 2,500 mg/kg*
B-17-9.5	(1,7,10,11,20,24)	9.5	22-Jul-94	<0.5	<0.5	<0.5	2.4	1000	--	--	--	--	ND	*(20,24) Pb = ND; TPHd = 1,300 mg/kg; TPHbenzin = <1,000 mg/kg*
Phase II Investigation (sample depths corrected using site's natural grade for borings located in loading dock area)														
B-41-1.5		10.5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	8	--	--	--	--	
B-41-3		19	11-Nov-94	<0.3	<0.3	<0.3	0.37	260	330	--	--	--	--	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
B-41-5		12	11-Nov-94	<1.0	<1.0	<1.0	<1.0	1600	320	--	--	--	--	
B-41-10		14	11-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	18	--	--	--	--	
B-42-1.5		9.5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-42-3		11	11-Nov-94	<0.1	<0.1	<0.1	0.14	130	7	--	--	--	--	
B-42-5		13	11-Nov-94	<0.5	<0.5	<0.5	<0.5	440	460	--	--	--	--	
B-42-10		18	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	28	--	--	--	--	
B-43-1.5		8.5	11-Nov-94	<0.005	<0.005	<0.005	1.1	720	82	--	--	--	--	
B-43-3		10	11-Nov-94	<0.3	<0.3	1.4	4.4	1900	1100	--	--	--	--	
B-43-5		12	11-Nov-94	<1.0	<1.0	1.3	7.2	1200	550	--	--	--	--	
B-43-10		17	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	12	--	--	--	--	
B-44-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-44-2		2	14-Nov-94	<0.5	<0.5	<0.5	<0.5	240	49	--	--	--	--	
B-44-5		5	14-Nov-94	<0.005	<0.005	<0.005	0.01	3.1	17	--	--	--	--	
B-44-10		10	14-Nov-94	<3.0	<3.0	<3.0	<3.0	1600	850	--	--	--	--	
B-45-6		9	10-Nov-94	<0.1	<0.1	<0.1	0.15	95	16	--	--	--	--	
B-45-9.5		12.5	10-Nov-94	<0.3	<0.3	<0.3	0.98	350	32	--	--	--	--	
B-46-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-46-10		10	11-Nov-94	<0.05	<0.05	<0.05	0.31	72	67	--	--	--	--	
2014 Investigation														
SB-1		4.5	28-May-14	<0.18	<0.18	<0.18	<0.36	--	--	--	--	--	ND	
Maximum Concentration				<3.0	<3.0	1.4	7.2	1900	1100	--	--	--	(6,25)	*(6,25) Acetone=0.25 mg/kg; benzin = 2,500 mg/kg; TPHd = 1,300 mg/kg;*
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600	---	---	---	---	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
Elevator Sump #1														
Phase I Investigation														
B-9-10	(23)	10	19-Jul-94	--	--	--	--	--	--	4400	4400	--	--	
Phase II Investigation														
B-33-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(12)	*Methylene Chloride = 0.006 mg/kg*
B-33-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	(13)	*Methylene Chloride = 0.007 mg/kg*
B-33-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-33-10		10	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-34-1		1	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	70	40	--	--	
B-34-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-10		10	10-Nov-94	<0.3	0.31	0.63	<0.3	170	82	<30	<30	--	--	
B-35-2		2	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-10		10	14-Nov-94	<0.5	<0.5	1.1	<0.5	300	51	790	690	--	--	
2015 Vault Removal														
Floor		7	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho = 100 mg/kg*
Sidewall 1		11	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho = ND <5.0 mg/kg*
Sidewall 2		13	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho = 19 mg/kg*
		Maximum Concentration		<0.3	0.31	1.1	<0.3	300	82	4400	4400	--	(13)	Methylene Chloride = 0.007 mg/kg
		ESL Screening Level		0.23	970	5.1	560	740/2,700(a)	160/600	11,000	---	---	---	
Elevator Sump #2														
Phase I Investigation														
B-14-9.5	(23)	9.5	19-Jul-94	--	--	--	--	--	--	630	610	--	--	
Phase II Investigation														
B-38-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-38-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-38-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-0.5		0.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-1.5		1.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-5		5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-10		10	10-Nov-94	--	--	--	--	--	--	470	400	--	--	
B-40-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-2		2	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
2015 Vault Removal														
Sidewall	(31)	7	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(31) TPHho=ND<5.0 mg/kg; TPHd=ND<1.0mg/kg*
Floor	(32)	11	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(32) TPHho=29 mg/kg; TPHd=3.6mg/kg*
Floor 2	(33)	13	30-Jan-15	--	--	--	--	--	--	--	--	--	--	*(33) TPHho=99 mg/kg*
Maximum Concentration				--	--	--	--	--	--	630	610	--	--	TPHho=29; TPHd=3.6
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600	11,000	---	---	---	TPHho=100 mg/kg; TPHd=100 mg/kg
Clarifier Removal completed during 2015 Site Demolition														
Sidewall/Floor (EX-1)		12	17-Jul-15	<0.050	<0.0050	<0.0050	<0.0050	2.6	--	--	--	--	ND	*Non-detect for all VOC analytes*
Floor 2 (EX-2)		10	3-Jul-15	<0.050	<0.0050	<0.0050	<0.0050	12	--	--	--	--	--	*LAB QUALIFIER - H*
East Limit Confirmation		4.5	19-Aug-15	<0.050	<0.0050	<0.0050	<0.0050	<1.0	--	--	--	--	--	
South Limit Confirmation		4.5	19-Aug-15	<0.050	<0.0050	<0.0050	<0.0050	1.5	--	--	--	--	--	
West Limit Confirmation*		4.5	19-Aug-15	<0.20	<0.20	0.61	0.93	540	--	--	--	--	--	
West Excavation Floor (EX-3)		10	19-Aug-15	<0.050	<0.050	0.21	0.24	73	--	--	--	--	--	
West Limit tConfirmation2		4.5	21-Aug-15	<0.0050	<0.0050	0.15	0.16	74	--	--	--	--	--	
West Floor (EX-4)		10	21-Aug-15	<0.0050	<0.0050	0.35	0.25	47	--	--	--	--	--	
Maximum Concentration				--	--	--	--	540	--	--	--	--	--	
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600		---	---	---	TPHho=100 mg/kg; TPHd=100 mg/kg
Off-Site, Upgradient Wells Installed by McCulley Frick and Gillman, Inc.														
MW-1-4-1	(27)	11.5	3-Oct-94	<0.01	<0.01	0.032	0.079	7.9	--	--	--	--	--	*(27) TPHd = 3.8 mg/kg; TPHmo = 14 mg/kg*
MW-2-3-2	(28)	14	3-Oct-94	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*(28) TPHd = ND; TPHmo = ND*
Maximum Concentration				<0.01	<0.01	0.032	0.079	7.9	--	--	--	--	--	*(27) TPHd = 3.8 mg/kg; TPHmo = 14 mg/kg*
ESL Screening Level				0.23	970	5.1	560	740/2,700(a)	160/600		---	---	---	

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments

Notes: Data compiled from Table 1, "Soil and Groundwater Investigation Report", Levine and Fricke, January 17, 1995

All compounds scanned are not included in the table. See notes for specific compounds. Phase I laboratory data sheets were not available for detection limits.

-- = not analyzed
ND = not detected above laboratory detection limits
*Soil subsequently removed in this location.
Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020
TPHg- total petroleum hydrocarbons as gasoline by EPA Method 5030
TPHms - total petroleum hydrocarbons as mineral spirits by EPA Method 5030; Also TPH-Stoddard Solvent
Oil and Grease by Standard Method 5520 E
NPH - nonpolar hydrocarbons by Standard Method 5520 F
SVOCs - semivolatile organic compounds by EPA Method 8270
VOCs - volatile organic compounds by EPA Method 8240
Environmental Screening Level (ESL) - California Water Boards 2016 Residential Shallow Soil Direct Contact ESL (SF Bay RWQCB, February 2016)

(a) ESL screening levels for shallow soil (<3 meters) and deep soil (>3 meters)
(1) The gasoline analysis showed a pattern not typical of gasoline.
(2) Reported limit elevated for gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(3) Reported limit elevated for benzene and gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(4) Sample contains nontarget compounds in 8240 analysis.
(5) Mineral spirits range hydrocarbons detected also.
(6) Acetone = 0.250 mg/kg.
(7) Reporting limit elevated for BTEX due to a dilution.
(8) Result for benzin in in the benzin and gasoline range but the pattern is not typical of either compound.
(9) The gasoline results shows a pattern not typical for gasoline. There may be a mixture.
(10) Results for diesel are in the mineral spirits range.
(11) Oil range hydrocarbons were also detected.
(12) Methylene chloride = 0.006 mg/kg.
(13) Methylene chloride = 0.007 mg/kg.
(14) 1,1-Dichlorobenzene = 0.770 mg/kg, 1,4-Dichlorobenzene = 0.008 mg/kg.
(15) 1,1-Dichlorobenzene = 0.052 and 0.053 mg/kg.
(16) Cis-1,2-dichloroethene = 0.310 mg/kg.
(17) Methylene chloride was = 0.006 mg/kg.
(18) Boring was terminated after reaching a 7-foot depth.
(19) Benzo(b)fluoranthene = 0.330 mg/kg; fluoranthene = 0.750 mg/kg; pyrene = 0.410 mg/kg.
(20) The sample was analyzed for organic lead. Pb = ND
(21) The sample was analyzed for TPH as diesel. TPHd = 2 mg/kg
(22) The sample was analyzed for TPH as diesel and organic lead. TPHd = ND; Pb = ND.
(23) The sample was analyzed for PCBs by EPA Method 8080. PCB = ND
(24) The sample was analyzed for TPH as benzin and diesel. TPH as benzin = <1,000 mg/kg; TPH as diesel = 1,300 mg/kg.
(25) The sample was analyzed for TPH as benzin. Benzin = 2,100 mg/kg.

TABLE 1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments

(26) The sample was analyzed for TPH as diesel. TPHd = ND
(27) The sample was analyzed for TPH as diesel and motor oil. TPHd = 3.8 mg/kg ; TPHmo = 14 mg/kg.
(28) The sample was analyzed for TPH as diesel and motor oil. TPHd = ND; TPHmo = ND.
(29) The sample was analyzed for PAHs by EPA Method 8270C-SIM. Naphthalene was only PAH = 0.072 mg/kg.B69
(30) Isopropylbenzene = 580 ug/kg; propylbenzene = 670 ug/kg; para-isopropyl toluene = 700 ug/kg.
(31) The sample was analyzed for TPH as hydraulic oil and diesel. TPHho = ND <5.0 mg/kg; TPHd = ND <1.0 mg/kg
(32) The sample was analyzed for TPH as hydraulic oil and diesel. TPHho = 29 mg/kg; TPHd = 3.6 mg/kg
(33) The sample was analyzed for TPH as hydraulic oil. TPHho = 99 mg/kg

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
Tanks 1 and 3 - Suspected Former USTs in Southeast Yard (West of Myrtle Street)																
Phase I Investigation																
B-22		18-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--	
B-23		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--	
B-24		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--	
B-25		19-Jul-94	0.5	<0.5	<0.5	<2	100	<50	--	--	--	<2	--	--	--	
B-26		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	--	--	--	
B-27		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--	
Phase II Investigation																
B-47		15-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
MW-3		14-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	--	--	--	--	--	--	--	
MW-3		25-Apr-96	<0.5	<0.5	<0.5	<0.5	<50	<1.0	--	--	--	--	--	--	--	
Maximum Concentration			0.5	<0.5	<0.5	<2	100	<50	<50	--	--	<2	<50,000	--	--	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Tank 2 - Former UST at Corner of West Grand Avenue and Filbert Street at Loading Dock																
Phase I Investigation																
B-3		20-Jul-94	--	--	--	--	--	<50	--	--	--	--	<50,000	--	--	
B-4	2	20-Jul-94	<0.5	<0.5	<0.5	<2	<50	<50	--	--	--	--	<50,000	--	--	
MW-4		14-Mar-96	<0.005	<0.005	<0.005	<0.005	200	<1.0	--	--	--	--	--	--	--	
MW-4		25-Apr-96	<0.5	0.80	1.1	3.5	430	100	--	--	--	--	--	--	--	
Maximum Concentration			<0.5	0.80	1.1	3.5	430	100	--	--	--	--	<50,000	--	--	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Tanks 4 and 5 - Former Heating Oil USTs																
Phase I Investigation																
B-5	2	20-Jul-94	18	16	5	21	5,000	--	--	<1,000	<1,000	--	<50,000	--	--	
B-6	2,4, 16	19-Jul-94	93	6	49	29	5,900	<50	--	<1,000	<1,000	<2	--	ND	(3)	*(3) trans-1,2-DCE = 5 ug/L*
Maximum Concentration			93	16	49	29	5900	<50	--	<1,000	<1,000	<2	<50,000	ND	(3)	*(3) trans-1,2-DCE = 5 ug/L*
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
Tank 6 - Suspect UST on Filbert Outside Former Auto Repair Shop																
Phase II Investigation																
B-56		8-Nov-94	16/10	<0.5	<0.5	<2	300	--	100	<1,000	<1,000	--	--	--	(23)	*(23) 1,2-DCA=3 ug/L; cis-1,2-DCE=130 ug/L; trans-1,2-DCE=0.5 ug/L; VC=34 ug/L.*
Maximum Concentration			16	<0.5	<0.5	<2	300	--	100	<1,000	<1,000	--	--	--	(23)	*trans-1,2-DCE=0.5 ug/L; VC=34 ug/L.*
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Western Area - Former Engine Room and Hazardous Materials Storage Area, Former Auto Repair Shop, Cabinet Shop, Paint Room and Garage																
Phase I Investigation																
B-7	2,7	21-Jul-94	<3	<18	37	15	1,200	--	--	<1,000	<1,000	--	<50,000	--	--	
B-8	1,2	20-Jul-94	<10	<10	18	22	17,000	--	--	8,000	<1,000	--	<50,000	--	--	
B-9	24	19-Jul-94	--	--	--	--	--	--	--	270,000	230,000	--	--	--	--	
B-11		21-Jul-94	<2	<0.5	1	<2	300	--	--	<1,000	<1,000	<200	<50,000	(5)	(6)	*(5,6) bis(2-ehtylhexyl)phthalate = 270 ug/L; cis-1,2-DCE=3 ug/L;*
B-12	2,8,10	21-Jul-94	<5	<5	<5	<20	1,200	--	--	--	--	--	<50,000	--	--	
Phase II Investigation																
B-28		18-Nov-94	<5	<0.5/0.7	4	6	600	--	530	<1,000	<1,000	--	--	ND	ND	
B-29		18-Nov-94	0.8	0.6/2	10/8	10	1,400	--	1,200	<1,000	<1,000	--	--	ND	ND	
B-30		18-Nov-94	6/8	2	5/6	10/8	1,100	--	590	<1,000	<1,000	--	--	ND	ND	
B-31		18-Nov-94	110	11	35	60	5,600	--	4,500	<1,000	<1,000	--	--	(17)	ND	*(17) 2-methylnaphthalene = 18 ug/L;*
B-32		11-Nov-94	4/3	1	2/1	2	500	--	<50	<1,000	<1,000	--	--	ND	(18)	*(18) 1,2-DCA = 7 ug/L*
B-33		11-Nov-94	<0.5	<0.5	<0.5	<2	<0.05	--	<50	<1,000	<1,000	--	--	--	(19)	*(19) 1,2-DCA = 28 ug/L*
B-34		10-Nov-94	7	<0.5	12	3	1,200	--	<50	<1,000	<1,000	--	--	--	--	
B-35		14-Nov-94	7	0.7	0.7	<2	600	--	200	<1,000	<1,000	--	--	--	--	
B-36		14-Nov-94	<0.5	<0.5	<0.5	<2	100	--	<50	<1,000	<1,000	--	--	--	ND	
B-37		14-Nov-94	<0.5	<0.5	<0.5	<2	70	--	<50	<1,000	<1,000	--	--	ND	(20)	*(20) 1,2-DCA = 2 ug/L*
B-49		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-50		7-Nov-94	23/18	12/3	48/51	12/5	8,200	--	<3,000	<1,000	<1,000	--	--	--	ND	
B-51		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-52		7-Nov-94	<0.5	<0.5	<0.5	<2	300	--	70	--	--	--	--	--	(21)	*(21) 1,2-DCA = 0.8 ug/L*
B-53		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-54		8-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	(22)	*(22) 1,2-DCA = 0.6 ug/L*
B-55		8-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-56		8-Nov-94	16/10	<0.5	<0.5	<2	300	--	100	<1,000	<1,000	--	--	--	(23)	*(23) 1,2-DCA=3 ug/L; cis-1,2-DCE=130 ug/L; trans-1,2-DCE=0.5 ug/L; VC=34 ug/L.*

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
B-57		8-Nov-94	<0.5	<0.5	<0.5	<2	500	--	1,600	--	--	--	--	--	--	
B-64		14-Nov-94	45	15	32	39	7,300	--	12,000	8,000	6,000	--	--	--	--	
Maximum Concentration			110	15	37	60	17000	--	12,000	270,000	230,000	<200	<50,000	(5, 17)	(6,19,23)	*see values in comments above for SVOCs and VOCs*
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Former Cleaning and Dyeing Works and Benzin Area																
Phase I Investigation																
B-13	2,9,10	21-Jul-94	<10	<10	<10	<40	32,000	--	--	8,000	1,000	--	<50,000	--	--	
B-15	2	21-Jul-94	340	52	900	2,000	59,000	--	--	170,000	15,000	--	<50,000	--	--	
B-16	2,9,10,12,13,25	22-Jul-94	<5	<5	<5	<5	4,400	--	--	--	--	--	--	--	ND	*(25) TPHbenzin = ND*
B-17	1,10,12,14,15,25	22-Jul-94	<1	<5	<1	41	6,300	3,800	--	--	--	<200	--	--	ND	*(25) TPHbenzin = ND*
B-18	1,2,10	22-Jul-94	<10	<10	22	24	10,000	--	--	--	--	--	<50,000	--	(11)	*(11) ethylbenzene = 0.021 mg/L*
B-19	26	22-Jul-94	<0.5	<0.5	3	9	--	--	--	--	--	--	--	ND	ND	*(26) TPHbenzin = 1.7 mg/kg (stet).*
B-20		22-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--	
B-21		22-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--	
Phase II Investigation																
B-41		11-Nov-94	<0.5	<0.5	3	5	2,900	--	16,000	--	--	--	--	--	--	
B-42		11-Nov-94	<5	<5	<5	22	14,000	--	44,000	--	--	--	--	--	--	
B-43		11-Nov-94	<10	15	<10	47	62,000	--	270,000	--	--	--	--	--	--	
B-44		14-Nov-94	4	5	<3	22	23,000	--	93,000	--	--	--	--	--	--	
B-45		11-Nov-94	<3	<3	35	10	4,900	--	41,000	--	--	--	--	--	--	
B-46		11-Nov-94	<1	<1	<1	11	4,700	--	5,100	--	--	--	--	--	--	
B-58		8-Nov-94	41	<10	13	<40	17,000	--	6,300	--	--	--	--	--	--	
B-59		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-60		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-61		10-Nov-94	<0.5	<0.5	<0.5	<2	300	--	70	--	--	--	--	--	--	
B-62		10-Nov-94	<0.5	<0.5	<0.5	<2	2000.0	--	200	--	--	--	--	--	--	
B-63		10-Nov-94	62	13	<0.5	47	9,300	--	5,000	--	--	--	--	--	--	
Maximum Concentration			340	52	900	2,000	62,000	3,800	270,000	170,000	15,000	<0.2	<50,000	ND	---	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
Elevator Sumps #1 and #2																
Phase I Investigation																
B-9	24	19-Jul-94	--	--	--	--	--	--	--	270,000	230,000	--	--	--	--	*(24) PCBs = ND*
B-10		19-Jul-94	--	--	--	--	--	--	--	<1,000	<1,000	--	<50,000	--	--	
B-13	2,9,10	21-Jul-94	<10	<10	<10	<40	32,000	--	--	8,000	1,000	--	<50,000	--	--	
B-14	24	20-Jul-94	--	--	--	--	--	--	--	2,000	1,000	--	--	--	--	*(24) PCBs = ND*
Phase II Investigation																
B-33		11-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	(19)	*(19) 1,2-DCA = 0.028 mg/L*
B-34		10-Nov-94	7	<0.5	12	3	1,200	--	<50	<1,000	<1,000	--	--	--	--	
B-35		14-Nov-94	6	0.7	0.7	<2	600	--	200	<1,000	<1,000	--	--	--	--	
B-38		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-39		11-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-40		10-Nov-94	<0.5	<0.5	<0.5	16	13,000	--	31,000	15,000	2,000	--	--	--	--	
Maximum Concentration			7	0.7	12	16	32,000	--	31,000	270,000	230,000	--	<50,000	--	(19)	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	
Other Areas of Investigation																
B-1		20-Jul-94	<0.5	<0.5	<0.5	<2	<50	<50	--	--	--	--	<50,000	--	--	
B-2	2	20-Jul-94	<2	0.9	2	<2	800	--	--	--	--	--	<50,000	--	--	
Maximum Concentration			<2	0.9	2	<2	800	<0.05	--	--	--	--	<50,000	--	--	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[a]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
Southeast Area - Corner of West Grand Avenue and Myrtle Street																
B-1		20-Jul-94	<0.5	<0.5	<0.5	<2	<50	<50	--	--	--	--	<50,000	--	--	
B-2	2	20-Jul-94	2	0.9	2	<2	800	--	--	--	--	--	<50,000	--	--	
MW-1	27,28	3-Oct-94	<0.5	<0.5	<0.5	<0.5	16	84	--	--	--	--	--	--	--	*(28) TPHmo = ND*
MW-2	27,28	3-Oct-94	7.5	<2.5	<2.5	<2.5	1,100	730	--	--	--	--	--	--	--	*(28) TPHmo = ND*
Maximum Concentration			7.5	0.9	2	<2.5	1100	730	--	--	--	--	<50,000	--	--	
Screening Level			1	40	30	20	100	100	100	5,000	---	2.5	---	---	---	
Groundwater to Indoor Air[(a)]			1.1	3,600	13	1,300	---	---	---	---	---	---	---	---	---	

Notes: Data compiled from Table 2, "Soil and Groundwater Investigation Report", Levine and Fricke, January 17, 1995

All compounds scanned are not included in the table. See notes for specific compounds. Phase I laboratory data sheets were not available for detection limits.
Screening Level - California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016)
(a) California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016) Table GW-3 Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion - Residential (Shallow Groundwater-Sand Scenario)
---: screening level not established
-- = not analyzed
ND = not detected above laboratory reporting limits

Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020
TPHg- total petroleum hydrocarbons as gasoline by EPA Method 5030
TPHd- total petroleum hydrocarbons as gasoline by EPA Method 3510
TPHms - total petroleum hydrocarbons as mineral spirits by GC-FID; Also TPH-Stoddard Solvent
Oil and Grease by Standard Method 5520 E
NPH - nonpolar hydrocarbons by Standard Method 5520 E
Organic lead by DHS
SVOCs - semivolatile organic compounds by EPA Method 8270
VOCs - volatile organic compounds by EPA Method 8240
Ethylene glycol by Modified EPA Method 8015

(1) Reporting limit elevated for benzene and toluene due to high levels of target compounds. Sample run at dilution.
(2) Pattern not typical of gasoline.
(3) Trans-1,2-dichlorethene detected at 0.005 mg/L.
(4) Sample contains nontarget compounds.
(5) Bis(2-ethylhexyl)phthalate = 0.270 mg/L; no other SVOCs detected.
(6) Cis-1,2-dichloroethene = 0.003 mg/L; no other SVOCs detected.
(7) Reporting limit elevated for benzene due to dilution.
(8) Reporting limit for BTEX elevated due to dilution.
(9) Reporting limit for BTEX elevated due to dilution.
(10) Light sheen of fuel on surface which resulted in nonmatching runs.
(11) Ethylbenzene = 0.021 mg/L.
(12) Reporting limit elevated for benzin due to a hydrocarbon interference.
(13) Gasoline and benzin result from VOA with headspace.
(14) Reporting limit for benzene and ethylbenzene elevated due to dilution.
(15) Results for diesel are in the mineral spirits range.
(16) Hydrocarbons in mineral spirits range also detected in TPHg analysis.
(17) 2-Methylnaphthalene = 0.018 mg/L; naphthalene = 0.011 mg/L
(18) 1,2-Dichloroethane = 0.0007 mg/L

TABLE 2
Analytical Results for Groundwater Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments

'19) 1,2-Dichloroethane = 0.028 mg/L
'20) 1,2-Dichloroethane = 0.002 mg/L
'21) 1,2-Dichloroethane = 0.0008 mg/L
'22) 1,2-Dichloroethane = 0.0006 mg/L
'23) 1,2-Dichloroethane = 0.003 mg/L; cis-1/2-dichloroehene = 0.13 mg/L; trans-1,2-dichloroethene = 0.0005 mg/L; vinyl chloride = 0.034 mg/L.
'24) PCBs by EPA Method 8080 = ND
'25) Sample analyzed for TPH as benzin = ND
'26) Sample analyzed for TPH as benzin = 1.7 mg/kg (stet)
'27) Lab noted sample contained weathered gasoline in the C6 to C12 range.
'28) Sample analyzed for TPHmo = ND

TABLE 3

Soil Vapor Analytical Results Summary

City Ventures - Oakland 2

Sample Location and ID	Sample Date	Sample Depth (ft. bgs)	Volatile Organic Compounds (EPA Method 8260) (µg/m3)													ASTM D1946 (ppmv)	
			Freon 12	Freon 11	Benzene	Ethylbenzene	m,p-Xylene	o-Xylene	1,1,2,2-Tetrachloroethane	cis-1,2-DCE	Vinyl Chloride	n-Hexane	Cyclohexane	n-Heptane	Other VOCs	Methane*	O_2*
SV-1	5/28/2014	5	**19,000**	ND<100	**40 J**	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-2	5/28/2014	5	**140**	ND<100	ND<32 J	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-2-Dup	5/28/2014	5	**120**	ND<100	ND<32 J	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-3	5/28/2014	5	ND<100	ND<100	ND<32 J	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-4	5/28/2014	5	**110**	ND<100	**75 J**	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-5	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	**53,000**	**22,000**
SV-6	9/26/2016	5	**30,000**	**3,400**	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-7	9/26/2016	5	**2,100**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	**2,900**	**14,000**
SV-8	9/26/2016	5	**1,800**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-9	9/26/2016	5	**2,600**	**210**	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-10	9/26/2016	5	ND<100	ND<100	**60**	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-11	9/26/2016	5	**930**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-12	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-12-Dup	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-13**	9/26/2016	5	**19,000**	ND<3,400	ND<1,900	ND<2,600	ND<2,600	ND<2,600	ND<4,100	ND<2,400	ND<1,500	**220,000**	**220,000**	**47,000**	ND < 1,200-13,000	--	--
SV-14	9/26/2016	5	**76,000**	**1,700**	**78**	**180**	**490**	**140**	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--

Notes:

All reported concentrations from soil vapor samples collected to date are below Site Specific Screening levels (see HHRA).

$\mu g/m^3$ = micrograms per cubic meter

ppmv = parts per million by volume

VOCs = volatile organic carbons

ft. bgs = feet below ground surface

Freon 12 = Dichlorodifluoromethane

Freon 11 = Trichlorofluoromethane

Soil vapor samples analyzed by TEG on-site mobile laboratory except where indicated as analyzed by Curtis & Tompkins, Ltd. In Berkeley, CA

* Analyzed by Curtis & Tompkins, Ltd in Berkeley, CA

** = Analyzed by Curtis & Tompkins, Ltd in Berkeley, CA using EPA Method TO-15.

Bold cells indicate constituent detected above the laboratory reporting limit (RL)

J = Estimated value. Analyte was detected in the sample above the method detection limit (MDL), but below the laboratory reporting limit (RL). MDL listed for ND samples (rather than RL).

ND = Not detected at reporting limit, as indicated

--- = not analyzed

NA = Not available

TABLE 4

Analytical Results for Soil Samples - Market Street Block

2240 Filbert Street, Oakland California

Sample Location	Sample ID	Sample Date	Sample Depth (ft. bgs)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	Lead (mg/kg)
B-1	B-1	2/8/2005	2.0	--	--	--	--	--	--	310
	B-1	2/8/2005	13.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
	B-1	2/8/2005	21.5	ND<2.0	ND<0.02	ND<0.02	ND<0.02	ND<0.04	ND<0.08	--
B-2	B-2	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0
	B-2	2/8/2005	12.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
B-3	B-3	2/8/2005	4.0	--	--	--	--	--	--	3.6
	B-3	2/8/2005	11.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
	B-3	2/8/2005	13.0	310	ND<0.02	0.13	0.16	2.4	0.096	--
B-4	B-4	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0
	B-4	2/8/2005	12.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
	B-4	2/8/2005	13.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
B-5	B-5	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0
	B-5	2/8/2005	11.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
B-6	B-6	2/8/2005	2.0	--	--	--	--	--	--	3.2
B-7	B-7	2/8/2005	2.0	--	--	--	--	--	--	81
SB-5	SB-5, 1'	5/28/2014	1.0	--	--	--	--	--	--	94
SB-5	SB-5, 2.5	5/28/2014	2.5	--	--	--	--	--	--	9.0
SB-5	SB-5, 6'	5/28/2014	6.0	--	--	--	--	--	--	2.5
SB-5	SB-5, 9.5	5/28/2014	9.5	--	--	--	--	--	--	2.1
SB-6	SB-6, 0.5'	5/28/2014	0.5	--	--	--	--	--	--	4.3
SB-6	SB-6, 2.5	5/28/2014	2.5	--	--	--	--	--	--	5.1
SB-6	SB-6, 6'	5/28/2014	6.0	--	--	--	--	--	--	2.6
SB-6	SB-6, 9.5	5/28/2014	9.5	--	--	--	--	--	--	2.5
SB-7	SB-7, 1'	5/28/2014	1.0	--	--	--	--	--	--	4.4
SB-7	SB-7, 2.5	5/28/2014	2.5	--	--	--	--	--	--	8.8
SB-7	SB-7, 6'	5/28/2014	6.0	--	--	--	--	--	--	2.0
SB-7	SB-7, 9.5	5/28/2014	9.5	--	--	--	--	--	--	31
SB-8	SB-8, 1'	5/28/2014	1.0	--	--	--	--	--	--	14
SB-8	SB-8, 2.5	5/28/2014	2.5	--	--	--	--	--	--	16
SB-8	SB-8, 6'	5/28/2014	6.0	--	--	--	--	--	--	5.8
SB-8	SB-8, 9.5	5/28/2014	9.5	--	--	--	--	--	--	4.5

TABLE 4

Analytical Results for Soil Samples - Market Street Block

2240 Filbert Street, Oakland California

Sample	Sample	Sample Date	Sample Depth	TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	Lead
		Maximum Concentration		310	ND<0.02	0.13	0.16	2.4	0.096	310
			Screening Level	740/2,700(1)	0.230	970	5.1	560	42	80

Notes:

February 2004 data compiled from Table 1, "Report of Phase II Environmental Site Assessment", GRIBI Associates, March 18, 2005

Data shown in this table repersents conditions prior to excavation at the Market Street Block

Environmental Screening Level (ESL) - California Water Boards 2016 Residential Shallow Soil Direct Contact ESL (SF Bay RWQCB, February 2016)

(1) - ESL screening levels for shallow soil (<3 meters) and deep soil (>3 meters)

MTBE: methyl-tertiary-butyl ether

mg/kg - micrograms per kilogram

ft. bgs - feet below ground surface

-- not analyzed

ND - not detected above laboratory reporting limits listed

Benzene, toluene, ethylbenzene, total xylenes and MTBE by EPA Method 8020

TPHg- total petroleum hydrocarbons as gasoline by EPA Method 8015M

Lead - total lead by EPA Method 6010B

TABLE 5

Analytical Results for Groundwater Grab Samples - Market Street Block

2240 Filbert Street, Oakland California

Sample Location	ID	Sample Depth (ft. bgs)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-Benzene (ug/L)	Total Xylenes (ug/L)	MTBE (ug/L)
B-1	B-1-W	11.2	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<4.0
B-2	B-2-W	9.8	30,000	52	240	37	430	ND<4.0
B-3	B-3-W	9.6	110,000	ND<10	120	140	910	44
B-4	B-4-W	9.9	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<4.0
B-5	B-5-W	10.8	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<4.0
	Maximum Concentration		110,000	52	240	140	910	44
	Screening Level		100	1.0	40	13	20	5.0

Notes:

Samples collected February 28, 2005

Data compiled from Table 1, "Report of Phase II Environmental Site Assessment", GRIBI Associates, March 18, 2005

Screening Level - California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016)

MTBE: methyl-tertiary-butyl ether

ug/L - micrograms per liter

ft. bgs - feet below ground surface

ND - not detected above laboratory reporting limits listed

Benzene, toluene, ethylbenzene, total xylenes and MTBE by EPA Method 8020

TPHg- total petroleum hydrocarbons as gasoline by EPA Method 8015M

APPENDIX A
Tables and Figures from January 1995 Levine-Fricke Report

TABLE A-1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
B-5-9.5		9.5	20-Jul-94	--	--	--	--	--	--	37	<10	--	--	
B-6-13.5	(2,5,9,20,21)	13.5	19-Jul-94	0.45	0.58	0.9	0.28	<200	--	140	120	--	--	*(20,21) Pb = ND; TPHd = 2 mg/kg*
B-7-11		11	21-Jul-94	--	--	--	--	--	--	<10	<1	--	--	
B-8-10	(3,5,22)	10	19-Jul-94	<0.01	0.066	0.2	0.21	<50	--	--	--	--	--	*(22) TPHd=ND; Pb=ND*
B-9-10	(23)	10	19-Jul-94	--	--	--	--	--	--	4400	4400	--	--	*(23) PCB = ND*
B-11-9.5	(1)	9.5	20-Jul-94	<0.1	0.52	1.1	1.7	170	--	--	--	--	--	
B-14-9.5	(23)	9.5	19-Jul-94	--	--	--	--	--	--	630	610	--	--	
B-16-9	(4,8,25)	9.0	21-Jul-94	<0.005	<0.005	0.2	0.17	--	--	--	--	--	(6)	*(6,25) Acetone=0.25 mg/kg; benzin = 2,500 mg/kg*
B-17-9.5	(1,7,10,11,20,24)	9.5	22-Jul-94	<0.5	<0.5	<0.5	2.4	1000	--	--	--	--	ND	*(20,24) Pb = ND; TPHd = 1,300 mg/kg; TPHbenzin = <1,000 mg/kg*
B-25-13	(20,26)	13	18-Jul-94	<0.005	<0.005	<0.005	<0.005	<0.2	--	--	--	--	--	*(20,26) Pb = ND; TPHd = ND*
B-26-12.5	(20)	12.5	18-Jul-94	<0.005	<0.005	<0.005	<0.005/<0.02	<0.2	--	--	--	--	--	*(20) Pb = ND*
B-28-4		4	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND	
B-28-5.5		5.5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND	
B-28-10		10	18-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	--	--	--	--	
B-29-6		6	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	(19)	ND	*(19) benzo(b)fluoranthene=0.33 mg/kg; fluoranthene=0.75 mg/kg; pyrene=0.41 mg/kg*
B-29-10		10	18-Nov-94	<0.005	<0.005	1.6	<0.005	370	120	--	--	--	--	
B-30-3		3	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND	
B-30-5		5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND	
B-30-10		10	18-Nov-94	<0.30	<0.30	<0.30	<0.30	<1	<1	--	--	--	--	
B-31-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	40	<30	--	--	
B-31-10		10	11-Nov-94	0.72	0.79	1.5	0.74	330	10	40	<30	--	--	
B-31-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	30	<30	--	--	
B-31-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	--	
B-32-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	53	46	--	ND	
B-32-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.3	<1	<30	<30	ND	ND	
B-32-9.5		9.5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	<1	<30	<30	--	ND	
B-33-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(12)	*(12) methylene chloride = 0.006 mg/kg*
B-33-10		10	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-33-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	(13)	*(13) methylene chloride = 0.007 mg/kg*
B-33-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-34-1		1	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	70	40	--	--	
B-34-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-10		10	10-Nov-94	<0.3	0.31	0.63	<0.3	170	82	<30	<30	--	--	
B-35-2		2	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-10		10	14-Nov-94	<0.5	<0.5	1.1	<0.5	300	51	790	690	--	--	

TABLE A-1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
B-36-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(14)	*(14) 1,1-DCB = 0.77 mg/kg; 1,4-DCB = 0.008 mg/kg*
B-36-2		2	14-Nov-94	<0.005	<0.005	0.013/0.03	<0.005	1.4	<1	<30	<30	--	(15)	*(14) 1,1-DCB = 0.052/0.053 mg/kg*
B-36-5		5	14-Nov-94	<0.005	<0.005	0.021	<0.005	0.6	<1	<30	<30	--	ND	
B-36-10		10	14-Nov-94	<0.005	<0.005	0.051/0.28	0.018/0.031	6.9	5	<30	<30	--	ND	
B-37-1		1	14-Nov-94	0.009/0.09	0.005/0.033	0.06/0.016	0.007/0.02	1.9	<1	160	120	--	(16)	*(16) cis-1,2-DCE = 0.31 mg/kg*
B-37-2		2	14-Nov-94	<0.005	<0.005	0.006/0.089	0.006	1.0	1	40	<30	--	(17)	*(17) methylene chloride = 0.006 mg/kg*
B-37-5		5	14-Nov-94	<0.005	<0.005	0.036	<0.005	0.3	<1	<10	<10	ND	ND	
B-37-10		10	14-Nov-94	0.12	0.61	0.95/0.78	<0.3	210	13	40	<30	--	ND	
B-38-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-38-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-38-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-0.5		0.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-1.5		1.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-5		5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-10		10	10-Nov-94	--	--	--	--	--	--	470	400	--	--	
B-39s-4	(18)	4	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	ND	
B-39s-7	(18)	7	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	ND	
B-40-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-2		2	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-41-1.5		10.5*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	8	--	--	--	--	
B-41-3		19*	11-Nov-94	<0.3	<0.3	<0.3	0.37	260	330	--	--	--	--	
B-41-5		12*	11-Nov-94	<1.0	<1.0	<1.0	<1.0	1600	320	--	--	--	--	
B-41-10		14*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	18	--	--	--	--	
B-42-1.5		9.5*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-42-3		11*	11-Nov-94	<0.1	<0.1	<0.1	0.14	130	7	--	--	--	--	
B-42-5		13*	11-Nov-94	<0.5	<0.5	<0.5	<0.5	440	460	--	--	--	--	
B-42-10		18*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	28	--	--	--	--	
B-43-1.5		8.5*	11-Nov-94	<0.005	<0.005	<0.005	1.1	720	82	--	--	--	--	
B-43-3		10*	11-Nov-94	<0.3	<0.3	1.4	4.4	1900	1100	--	--	--	--	
B-43-5		12*	11-Nov-94	<1.0	<1.0	1.3	7.2	1200	550	--	--	--	--	
B-43-10		17*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	12	--	--	--	--	
B-44-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-44-2		2	14-Nov-94	<0.5	<0.5	<0.5	<0.5	240	49	--	--	--	--	
B-44-5		5	14-Nov-94	<0.005	<0.005	<0.005	0.01	3.1	17	--	--	--	--	
B-44-10		10	14-Nov-94	<3.0	<3.0	<3.0	<3.0	1600	850	--	--	--	--	
B-45-6		9	10-Nov-94	<0.1	<0.1	<0.1	0.15	95	16	--	--	--	--	
B-45-9.5		12.5	10-Nov-94	<0.3	<0.3	<0.3	0.98	350	32	--	--	--	--	

TABLE A-1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
B-46-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-46-10		10	11-Nov-94	<0.05	<0.05	<0.05	0.31	72	67	--	--	--	--	
B-47-3		3	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-47-5		5	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-47-10		10	15-Nov-94	<0.3	<0.3	<0.3	<0.3	62	1000	--	--	--	--	
B-49-8		8	7-Nov-94	--	--	--	--	--	--	30	<30	--	--	
B-50-12		12	7-Nov-94	0.27	1.7	1.5	<0.050	540	<50	--	--	--	--	
B-56-11.5		11.5	8-Nov-94	<0.03	<0.03	0.061	<0.03	20	3	--	--	--	--	
B-64-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.7	<1	<30	<30	--	--	
B-64-2		2	14-Nov-94	<0.005	<0.005	<0.005	0.006	1.0	<1	<30	<30	--	--	
B-64-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-64-10		10	14-Nov-94	<0.03	<0.03	0.031	<0.03	8	410	480	350	--	--	
MW-1-4-1	(27)	11.5	3-Oct-94	<0.01	<0.01	0.032	0.079	7.9	--	--	--	--	--	*(27) TPHd = 3.8 mg/kg; TPHmo = 14 mg/kg*
MW-2-3-2	(28)	14	3-Oct-94	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*(28) TPHd = ND; TPHmo = ND*
MW-3-5.5'		5.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*
MW-3-10'		10	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*
MW-4-5.0'		5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*
MW-4-10.5'		10.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*
2014 Investigation														
SB-1, 4.5'	(29,30)	4.5	28-May-14	<0.180	<0.180	<0.180	<0.180	--	--	--	--	--	ND	*Naphthalene = ND; Freon 12 = ND*
SB-2, 9'	(29,30,31)	9	28-May-14	<0.0042	<0.0042	<0.0042	<0.0042	--	--	--	--	--	ND	*Naphthalene = ND; Freon 12 = ND; PCB = ND*
SB-3, 8'	(29,30)	8	28-May-14	<0.0037	<0.0037	<0.0037	<0.0037	--	--	--	--	--	ND	*Naphthalene = ND; Freon 12 = ND*
SB-4, 8.5	(30,31)	8.5	28-May-14	<0.50	<0.50	<0.50	<0.50					ND	(32)	*Isopropylbenzene=0.58 mg/kg; propylbenzene=0.67 mg/kg; para-isopropyl toluene=0.70 mg/kg; naphthalene-0.072 mg/kg; PCB = ND*
2015 Vault Removal														
Sidewall	(31)	7	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(31) TPHhp=ND<5.0 mg/kg; TPHd=ND<1.0 mg/kg*
Floor	(32)	11	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(32) TPHho=29 mg/kg; TPHd=3.6 mg/kg*
Floor 2	(33)	13	30-Jan-15	--	--	--	--	--	--	--	--	--	--	*(33) TPHho=ND<5.0 mg/kg*
Sidewall 1		11	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho=ND<5.0 mg/kg*
Sidewall 2		13	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho=19 mg/kg*
Floor		7	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho=100 mg/kg*
Clarifier Removal completed during 2015 Site Demolition														
East Limit Confirmation		4.5	19-Aug-15	--	--	<0.0005	<0.0005	<1.0						*Cd<0.25 mg/kg; Cr<0.42 mg/kg; Pb<5.7 mg/kg; Ni<46 mg/kg; Zn<42 mg/kg*
South Limit Confirmation		4.5	19-Aug-15	--	--	<0.0005	<0.0005	1.5						
West Limit Confirmation		4.5	19-Aug-15	--	--	0.61	0.93	540						
Sidewall/Floor (EX-1)		12	17-Jul-15	--	--	<0.0005	<0.0005	2.6						
Floor 2 (EX-2)		10	3-Aug-15	--	--	<0.0005	<0.0005	12						

TABLE A-1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments
West Excavation Floor (EX-3)		10	19-Aug-15	--	--	0.21	0.24	73						
West Limit Confirmation 2		4.5	21-Aug-15	--	--	0.15	0.16	74						
West Floor (EX-4)		10	19-Aug-15	--	--	<0.0005	0.25	47						
Maximum Concentration				0.72	1.7	1.6	7.2	1900	1100	4400	4400	--	--	
Screening Level[1]				0.044	2.9	1.4	2.3	100	100	5100	--	--	--	

Notes: Data compiled from Table 1, "Soil and Groundwater Investigation Report", Levine and Fricke, January 17, 1995
All compounds scanned are not included in the table. See notes for specific compounds. Phase I laboratory data sheets were not available for detection limits.

1. California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016)
---: screening level not established
-- = not analyzed
ND = not detected above laboratory detection limits
* = sample depths corrected using site's natural grade for borings located in loading dock areas
Red font indicates that the area where these samples were collected was subsequently excavated.
Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020
TPHg- total petroleum hydrocarbons as gasoline by EPA Method 5030
TPHms - total petroleum hydrocarbons as mineral spirits by EPA Method 5030; Also TPH-Stoddard Solvent
Oil and Grease by Standard Method 5520 E
NPH - nonpolar hydrocarbons by Standard Method 5520 F
SVOCs - semivolatile organic compounds by EPA Method 8270
VOCs - volatile organic compounds by EPA Method 8240

(1) The gasoline analysis showed a pattern not typical of gasoline.
(2) Reported limit elevated for gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(3) Reported limit elevated for benzene and gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(4) Sample contains nontarget compounds in 8240 analysis.
(5) Mineral spirits range hydrocarbons detected also.
(6) Acetone detected at 0.250 mg/kg.
(7) Reporting limit elevated for BTEX due to a dilution.
(8) Result for benzin in in the benzin and gasoline range but the pattern is not typical of either compound.
(9) The gasoline results shows a pattern not typical for gasoline. There may be a mixture.
(10) Results for diesel are in the mineral spirits range.
(11) Oil range hydrocarbons were also detected.
(12) Methylene chloride detected at 0.006 mg/kg.
(13) Methylene chloride detected at 0.007 mg/kg.
(14) 1,1-Dichlorobenzene detected at 0.770 mg/kg, 1,4-Dichlorobenzene detected at 0.008 mg/kg.
(15) 1,1-Dichlorobenzene detected at 0.052 and 0.053 mg/kg.
(16) Cis-1,2-dichloroethene detected at 0.310 mg/kg.

TABLE A-1
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	Comments

(17) Methylene chloride was detected at 0.006 mg/kg.
(18) Boring was terminated after reaching a 7-foot depth.
(19) Benzo(b)fluoranthene detected at 0.330 mg/kg; fluoranthene detected at 0.750 mg/kg; pyrene detected at 0.410 mg/kg.
(20) The sample was analyzed for organic lead. Pb = ND
(21) The sample was analyzed for TPH as diesel. TPHd = 2 mg/kg
(22) The sample was analyzed for TPH as diesel and organic lead. TPHd = ND; Pb = ND.
(23) The sample was analyzed for PCBs by EPA Method 8080. PCB = ND
(24) The sample was analyzed for TPH as benzin and diesel. TPH as benzin = <1,000 mg/kg; TPH as diesel = 1,300 mg/kg.
(25) The sample was analyzed for TPH as benzin. Benzin = 2,100 mg/kg.
(26) The sample was analyzed for TPH as diesel. TPHd = ND
(27) The sample was analyzed for TPH as diesel and motor oil. TPHd = 3.8 mg/kg ; TPHmo = 14 mg/kg.
(28) The sample was analyzed for TPH as diesel and motor oil. TPHd = ND; TPHmo = ND.
(29) Naphthalene = ND
(30) Freon 12 = ND
(31) PCB = ND
(32) Isopropylbenzene=0.58 mg/kg; propylbenzene=0.67 mg/kg; para-isopropyl toluene=0.70 mg/kg; naphthalene-0.072 mg/kg.
(33) The sample was analyzed for TPH as hydraulic oil. TPHho=ND<5.0 mg/kg.

TABLE A-2
Analytical Results for Groundwater Grab Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Total Xylenes (µg/L)	TPHg (µg/L)	TPHd (µg/L)	TPHms (µg/L)	Oil & Grease (µg/L)	Hydrocarbons (µg/L)	Organic Lead (µg/L)	Ethylene Glycol (µg/L)	SVOCs (µg/L)	VOCs (µg/L)	Comments
B-1		20-Jul-94	<0.5	<0.5	<0.5	<2	<50	<50	--	--	--	--	<50,000	--	--	
B-2	2	20-Jul-94	2	0.9	2	<2	800	--	--	--	--	--	<50,000	--	--	
B-3		20-Jul-94	--	--	--	--	--	<50	--	--	--	--	<50,000	--	--	
B-4	2	20-Jul-94	<0.5	<0.5	<0.5	<2	100	<50	--	--	--	--	<50,000	--	--	
B-5	2	20-Jul-94	18	16	40	21	5,000	--	--	<1,000	<1,000	--	<50,000	--	--	
B-6	2,4, 16	19-Jul-94	93	6	49	29	5,900	<50	--	<1,000	<1,000	<200	--	ND	(3)	*(3) trans-1,2-DCE = 5 µg/L*
B-7	2,7	21-Jul-94	<3	18	37	15	1,200	--	--	<1,000	<1,000	--	<50,000	--	--	
B-8	1,2	20-Jul-94	<10	<10	18	22	17,000	--	--	8,000	<1,000	--	<50,000	--	--	
B-9	24	19-Jul-94	--	--	--	--	--	--	--	270,000	230,000	--	--	--	--	*(24) PCBs = ND*
B-10		19-Jul-94	--	--	--	--	--	--	--	<1,000	<1,000	--	<50,000	--	--	
B-11		21-Jul-94	2	<0.5	1	<2	300	--	--	<1,000	<1,000	<200	<50,000	(5)	(6)	*(5) bis(2-ehtylhexyl)phthalate = 270 µg/L; (6) cis-1,2-DCE=3 µg/L;*
B-12	2,8,10	21-Jul-94	<5	<5	<5	<20	1,200	--	--	--	--	--	<50,000	--	--	
B-13	2,9,10	21-Jul-94	<10	<10	<10	<40	32,000	--	--	8,000	1,000	--	<50,000	--	--	
B-14	24	20-Jul-94	--	--	--	--	--	--	--	2,000	1,000	--	--	--	--	*(24) PCBs = ND*
B-15	2	21-Jul-94	340	52	90	2,000	59,000	--	--	170,000	15,000	--	<50,000	--	--	
B-16	2,9,10,12,13,25	22-Jul-94	<5	<5	<5	<5	4,400	--	--	--	--	--	--	--	ND	*(25) TPHbenzin = ND*
B-17	1,10,12,14,15,25	22-Jul-94	<1	5	<1	41	6,300	3,800	--	--	--	<200	--	--	ND	*(25) TPHbenzin = ND*
B-18	1,2,10	22-Jul-94	<10	<10	220	24	10,000	--	--	--	--	--	<50,000	--	(11)	*(11) ethylbenzene = 21 µg/L*
B-19	26	22-Jul-94	<0.5	<0.5	3	9	--	--	--	--	--	--	--	ND	ND	*(26) TPHbenzin = 1.7 mg/kg (stet).*
B-20		22-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--	
B-21		22-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--	
B-22		18-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--	
B-23		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--	
B-24		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--	
B-25		19-Jul-94	0.5	<0.5	<0.5	<2	100	<50	--	--	--	<200	--	--	--	
B-26		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	--	--	--	
B-27		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--	
B-28		18-Nov-94	<5	<0.5/0.7	4	6	600	--	530	<1,000	<1,000	--	--	ND	ND	
B-29		18-Nov-94	0.8	0.6/0.2	10/8	10	1,400	--	1,200	<1,000	<1,000	--	--	ND	ND	
B-30		18-Nov-94	6/8	2	5/6	10/8	1,100	--	590	<1,000	<1,000	--	--	ND	ND	
B-31		18-Nov-94	110	11	35	60	5,600	--	4,500	<1,000	<1,000	--	--	(17)	ND	*(17) 2-methylnaphthalene = 18 µg/L; naphthalene = 11 µg/L.*
B-32		11-Nov-94	4/3	1	2/1	2	500	--	<50	<1,000	<1,000	--	--	ND	(18)	*(18) 1,2-DCA = 7 µg/L*
B-33		11-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	(19)	*(19) 1,2-DCA = 28 µg/L*
B-34		10-Nov-94	7	<0.5	12	3	1,200	--	<50	<1,000	<1,000	--	--	--	--	
B-35		14-Nov-94	6	0.7	0.7	<2	600	--	200	<1,000	<1,000	--	--	--	--	
B-36		14-Nov-94	<0.5	<0.5	0.5/0.5	<2	100	--	<50	<1,000	<1,000	--	--	--	ND	
B-37		14-Nov-94	<0.5	<0.5	<0.5	<2	70	--	<50	<1,000	<1,000	--	--	ND	(20)	*(20) 1,2-DCA = 2 µg/L*

TABLE A-2
Analytical Results for Groundwater Grab Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample	Analytical	Sample	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
B-38		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-39		11-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-40		10-Nov-94	<0.5	<0.5	<0.5	16	13,000	--	31,000	15,000	2,000	--	--	--	--	
B-41		11-Nov-94	<0.5	<0.5	3	5	2,900	--	16,000	--	--	--	--	--	--	
B-42		11-Nov-94	<5	<5	<5	22	14,000	--	44,000	--	--	--	--	--	--	
B-43		11-Nov-94	<10	15	<10	47	62,000	--	270,000	--	--	--	--	--	--	
B-44		14-Nov-94	4	5	<3	22	23,000	--	93,000	--	--	--	--	--	--	
B-45		11-Nov-94	<3	<3	35	10	4,900	--	41,000	--	--	--	--	--	--	
B-46		11-Nov-94	<1	<1	<1	11	4,700	--	5,100	--	--	--	--	--	--	
B-47		15-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-49		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-50		7-Nov-94	23/18	12/3	48/51	12/5	8,200	--	<3,000	<1,000	<1,000	--	--	--	ND	
B-51		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--	
B-52		7-Nov-94	<0.5	<0.5	<0.5	<2	300	--	70	--	--	--	--	--	(21)	*(21) 1,2-DCA = 0.0008 µg/L*
B-53		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-54		8-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	(22)	*(22) 1,2-DCA = 0.0006 µg/L*
B-55		8-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-56		8-Nov-94	16/10	0.5	<0.5	<2	300	--	100	<1,000	<1,000	--	--	--	(23)	*(23) 1,2-DCA=3 µg/L; cis-1,2-DCE=130 µg/L; trans-1,2-DCE=0.5 µg/L; VC=34 µg/L.*
B-57		8-Nov-94	<0.5	<0.5	<0.5	<2	500	--	1,600	--	--	--	--	--	--	
B-58		8-Nov-94	41	<10	13	<4	17,000	--	6,300	--	--	--	--	--	--	
B-59		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-60		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--	
B-61		10-Nov-94	<0.5	<0.5	<0.5	<2	300	--	70	--	--	--	--	--	--	
B-62		10-Nov-94	<0.5	<0.5	<0.5	<2	2,000	--	200	--	--	--	--	--	--	
B-63		10-Nov-94	62	13	<0.5	47	9,300	--	5,000	--	--	--	--	--	--	
B-64		14-Nov-94	45	15	32	39	7,300	--	12,000	8,000	6,000	--	--	--	--	

TABLE A-2
Analytical Results for Groundwater Grab Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample	Analytical	Sample	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments
MW-1	27,28	3-Oct-94	<0.5	<0.5	<0.5	<0.5	16	84	--	--	--	--	--	--	--	*(28) TPHmo = ND*
MW-1		25-Apr-96	<0.5	<0.5	<0.5	<0.5	<50	<50	--	--	--	--	--	--	--	
MW-2	27,28	3-Oct-94	7.5	<2.5	<2.5	<2.5	1,100	730	--	--	--	--	--	--	--	*(28) TPHmo = ND*
MW-2		25-Apr-96	9	3.3	3.7	5.1	2,400	1,100	--	--	--	--	--	--	--	
MW-3		14-Mar-96	<0.5	<0.5	<0.5	<0.5	<50	<50	--	--	--	--	--	--	--	
MW-3		25-Apr-96	<0.5	<0.5	<0.5	<0.5	<1	<1	--	--	--	--	--	--	--	
MW-4		14-Mar-96	<0.5	<0.5	<0.5	<0.5	200	<1	--	--	--	--	--	--	--	
MW-4		25-Apr-96	<0.5	0.8	1.1	3.5	430	100	--	--	--	--	--	--	--	
Maximum Concentration			340	52	220.00	2000	62000	3800	270000	270000	230000	<200	<50,000	--	--	
Screening Level			1	40	13	20	100	100	100	---	---	2.5	---	---	---	
Groundwater to Indoor Air[(a)]			1.1	3600	13	1300	---	---	---	---	---	---	---	---	---	

Notes: Data compiled from Table 2, "Soil and Groundwater Investigation Report", Levine and Fricke, January 17, 1995

All compounds scanned are not included in the table. See notes for specific compounds. Phase I laboratory data sheets were not available for detection limits.

Screening Level - California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016)

---: screening level not established
-- = not analyzed
ND = not detected above laboratory reporting limits
Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020
TPHg- total petroleum hydrocarbons as gasoline by EPA Method 5030
TPHd- total petroleum hydrocarbons as gasoline by EPA Method 3510
TPHms - total petroleum hydrocarbons as mineral spirits by GC-FID; Also TPH-Stoddard Solvent
Oil and Grease by Standard Method 5520 E
NPH - nonpolar hydrocarbons by Standard Method 5520 E
Organic lead by DHS
SVOCs - semivolatile organic compounds by EPA Method 8270
VOCs - volatile organic compounds by EPA Method 8240
Ethylene glycol by Modified EPA Method 8015

(1) Reporting limit elevated for benzene and toluene due to high levels of target compounds. Sample run at dilution.
(2) Pattern not typical of gasoline.
(3) Trans-1,2-dichlorethene detected at 5 µg/L.
(4) Sample contains nontarget compounds.
(5) Bis(2-ethylhexyl)phthalate = 270 µg/L; no other SVOCs detected.
(6) Cis-1,2-dichloroethene = 3 µg/L; no other SVOCs detected.
(7) Reporting limit elevated for benzene due to dilution.
(8) Reporting limit for BTEX elevated due to dilution.
(9) Reporting limit for BTEX elevated due to dilution.
(10) Light sheen of fuel on surface which resulted in nonmatching runs.
(11) Ethylbenzene = 21 µg/L.

TABLE A-2
Analytical Results for Groundwater Grab Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

	Sample	Analytical	Sample	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs	Comments

(12) Reporting limit elevated for benzin due to a hydrocarbon interference.
(13) Gasoline and benzin result from VOA with headspace.
(14) Reporting limit for benzene and ethylbenzene elevated due to dilution.
(15) Results for diesel are in the mineral spirits range.
(16) Hydrocarbons in mineral spirits range also detected in TPHg analysis.
(17) 2-Methylnaphthalene = 18 µg/LL; naphthalene = 11 µg/L.
(18) 1,2-Dichloroethane = 7 µg/L.
(19) 1,2-Dichloroethane = 28 µg/L.
(20) 1,2-Dichloroethane = 2 µg/L.
(21) 1,2-Dichloroethane = 0.8 µg/L.
(22) 1,2-Dichloroethane = 0.6 µg/L.
(23) 1,2-Dichloroethane = 3 µg/L; cis-1/2-dichloroehene = 130 µg/L; trans-1,2-dichloroethene = 0.5 µg/L; vinyl chloride = 34 µg/L.
(24) PCBs by EPA Method 8080 = ND
(25) Sample analyzed for TPH as benzin = ND
(26) Sample analyzed for TPH as benzin = 1.7 mg/kg (stet)
(27) Lab noted sample contained weathered gasoline in the C6 to C12 range.
(28) Sample analyzed for TPHmo = ND

TABLE 1
HISTORICAL ANALYTICAL RESULTS FOR SOIL SAMPLES
2240 FILBERT STREET, OAKLAND, CALIFORNIA
(all results in milligrams per kilogram [mg/kg])

Sample ID	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs
SUSPECTED FORMER UST LOCATIONS OUTSIDE AUTO REPAIR SHOP, ADJACENT TO FORMER LANGENDORF FACILITY, AND ALONG FILBERT STREET												
Phase I Investigation												
B-5-9.5	9.5	20-Jul-94	---	---	---	---	---	---	37	<10	---	---
B-6-13.5 (2,5,9,20,21)	13.5	19-Jul-94	0.45	0.58	0.9	0.28	<200	---	140	120	---	---
B-11-9.5 (1)	9.5	20-Jul-94	<0.1	0.52	1.1	1.7	170	---	---	---	---	---
Phase II Investigation												
B-49-8	8.0	07-Nov-94	---	---	---	---	---	---	30	<30	---	---
B-50-12	12.0	07-Nov-94	0.270	1.7	1.5	<0.050	540	<50	---	---	---	---
B-56-11.5	11.5	08-Nov-94	<0.030	<0.030	0.061	<0.030	20	3	---	---	---	---
EXISTING ELEVATOR SUMPS												
Phase I Investigation												
B-9-10 (23)	10.0	19-Jul-94	---	---	---	---	---	---	4400	4400	---	---
B-14-9.5 (23)	9.5	19-Jul-94	---	---	---	---	---	---	630	610	---	---
Phase II Investigation												
B-33-1	1.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	---	(12)
B-33-2	2.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	---	(13)
B-33-5	5.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	---	ND
B-33-10	10.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	---	ND
B-34-1	1.0	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	70	40	---	---
B-34-2	2.0	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	---	---
B-34-5	5.0	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	---	---
B-34-10	10.0	10-Nov-94	<0.300	0.310	0.630	<0.300	170	82	<30	<30	---	---
B-35-2	2.0	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	---	---
B-35-5	5.0	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	---	---
B-35-10	10.0	14-Nov-94	<0.5	<0.5	1.1	<0.5	300	51	790	690	---	---
B-38-1	1.0	09-Nov-94	---	---	---	---	---	---	<30	<30	---	---
B-38-5	5.0	09-Nov-94	---	---	---	---	---	---	<30	<30	---	---
B-38-10	10.0	09-Nov-94	---	---	---	---	---	---	<30	<30	---	---
B-39-0.5	0.5	10-Nov-94	---	---	---	---	---	---	<30	<30	---	---
B-39-1.5	1.5	10-Nov-94	---	---	---	---	---	---	<30	<30	---	---
B-39-5.0	5.0	10-Nov-94	---	---	---	---	---	---	<30	<30	---	---
B-39-10.0	10.0	10-Nov-94	---	---	---	---	---	---	470	400	---	---
B-40-1	1.0	09-Nov-94	---	---	---	---	---	---	<30	<30	---	---
B-40-2	2.0	09-Nov-94	---	---	---	---	---	---	<30	<30	---	---
B-40-5	5.0	09-Nov-94	---	---	---	---	---	---	<30	<30	---	---
B-40-10	10.0	09-Nov-94	---	---	---	---	---	---	<30	<30	---	---

TABLE 1
HISTORICAL ANALYTICAL RESULTS FOR SOIL SAMPLES
2240 FILBERT STREET, OAKLAND, CALIFORNIA
(all results in milligrams per kilogram [mg/kg])

Sample ID	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHms Oil & Grease		NPH	SVOCs	VOCs
FORMER CLEANING AND DYEING WORKS AND BENZIN AREA												
Phase I Investigation												
B-16-9 (4,8,25)	9.0	21-Jul-94	<0.005	<0.005	0.2	0.17	---	---	---	---	---	(6)
B-17-9.5 (1,7,10,11,20,24)	9.5	22-Jul-94	<0.5	<0.5	<0.5	2.4	1000	---	---	---	---	ND
Phase II Investigation (sample depths corrected using site's natural grade for borings located in loading dock areas)												
B-41-1.5	10.5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	8	---	---	---	---
B-41-3	19.0	11-Nov-94	<0.300	<0.300	<0.300	0.370	260	330	---	---	---	---
B-41-5	12.0	11-Nov-94	<1.000	<1.000	<1.000	<1.000	1600	320	---	---	---	---
B-41-10	14.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	18	---	---	---	---
B-42-1.5	9.5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	---	---	---	---
B-42-3	11.0	11-Nov-94	<0.100	<0.100	<0.100	0.140	130	7	---	---	---	---
B-42-5	13.0	11-Nov-94	<0.500	<0.500	<0.500	<0.500	440	460	---	---	---	---
B-42-10	18.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	28	---	---	---	---
B-43-1.5	8.5	11-Nov-94	<0.005	<0.005	<0.005	1.100	720	82	---	---	---	---
B-43-3	10.0	11-Nov-94	<0.300	<0.300	1.400	4.400	1900	1100	---	---	---	---
B-43-5	12.0	11-Nov-94	<1.000	<1.000	1.300	7.200	1200	550	---	---	---	---
B-43-10	17.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	12	---	---	---	---
B-44-1	1.0	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	---	---	---	---
B-44-2	2.0	14-Nov-94	<0.5	<0.5	<0.5	<0.5	240	49	---	---	---	---
B-44-5	5.0	14-Nov-94	<0.005	<0.005	<0.005	0.010	3.1	17	---	---	---	---
B-44-10	10.0	14-Nov-94	<3.0	<3.0	<3.0	<3.0	1600	850	---	---	---	---
B-45-6	9.0	10-Nov-94	<0.100	<0.100	<0.100	0.150	95	16	---	---	---	---
B-45-9.5	12.5	10-Nov-94	<0.300	<0.300	<0.300	0.980	350	32	---	---	---	---
B-46-5	5.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	---	---	---	---
B-46-10	10.0	11-Nov-94	<0.050	<0.050	<0.050	0.310	72	67	---	---	---	---
SUSPECTED FORMER UST IN SOUTHEAST YARD (WEST OF MYRTLE STREET)												
Phase I Investigation												
B-25-13 (20,26)	13.0	18-Jul-94	<0.005	<0.005	<0.005	<0.005	<0.2	---	---	---	---	---
B-26-12.5 (20)	12.5	18-Jul-94	<0.005	<0.005	<0.005	<0.005/<0.020	<0.2	---	---	---	---	---
Phase II Investigation												
B-47-3	3.0	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	---	---	---	---
B-47-5	5.0	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	---	---	---	---
B-47-10	10.0	15-Nov-94	<0.3	<0.3	<0.3	<0.3	62	1000	---	---	---	---

TABLE 1
HISTORICAL ANALYTICAL RESULTS FOR SOIL SAMPLES
2240 FILBERT STREET, OAKLAND, CALIFORNIA
(all results in milligrams per kilogram [mg/kg])

Sample ID	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs
FORMER ENGINE ROOM AND HAZARDOUS MATERIALS STORAGE AREA												
Phase I Investigation												
B-5-9.5	9.5	20-Jul-94	---	---	---	---	---	---	37	<10	---	---
B-6-13.5 (2,5,9, 20, 21)	13.5	19-Jul-94	0.45	0.58	0.9	0.28	<200	---	140	120	---	---
B-7-11	11.0	21-Jul-94	---	---	---	---	---	---	<10	<1	---	---
Phase II Investigation												
B-28-4	4.0	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	---	---	---	ND
B-28-5.5	5.5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND
B-28-10	10.0	18-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	---	---	---	---
B-29-6	6.0	18-Jul-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	(19)	ND
B-29-10	10.0	18-Jul-94	<0.005	<0.005	1.600	<0.005	370	120	---	---	---	---
B-30$-4 (18)	4.0	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	ND
B-30$-7 (18)	7.0	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	---	ND
B-30-3	3.0	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	---	---	---	ND
B-30-5	5.0	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND
B-30-10	10.0	18-Nov-94	<0.030	<0.030	<0.030	<0.030	<1	<1	---	---	---	---
B-31-1	1.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	40	<30	---	---
B-31-2	2.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	30	<30	---	---
B-31-5	5.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	---
B-31-10	10.0	11-Nov-94	0.720	0.790	1.500	0.740	330	10	40	<30	---	---
FORMER AUTO REPAIR SHOP, CABINET SHOP, PAINT ROOM, AND GARAGE												
Phase I Investigation												
B-8-10 (3,5,22)	10.0	19-Jul-94	<0.01	0.066	0.2	0.21	<50	---	---	---	---	---
B-9-10 (23)	10.0	19-Jul-94	---	---	---	---	---	---	4400	4400	---	---
Phase II Investigation												
B-32-2	2.0	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	53	46	---	ND
B-32-5	5.0	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.3	<1	<30	<30	ND	ND
B-32-9.5	9.5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	<1	<30	<30	---	ND
B-33-1	1.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	---	(12)
B-33-2	2.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	---	(13)
B-33-5	5.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	---	ND
B-33-10	10.0	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	---	ND
B-34-1	1.0	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	70	40	---	---
B-34-2	2.0	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	---	---
B-34-5	5.0	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	---	---
B-34-10	10.0	10-Nov-94	<0.300	0.310	0.630	<0.300	170	82	<30	<30	---	---
B-35-2	2.0	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	---	---
B-35-5	5.0	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	---	---
B-35-10	10.0	14-Nov-94	<0.5	<0.5	1.1	<0.5	300	51	790	690	---	---

TABLE 1
HISTORICAL ANALYTICAL RESULTS FOR SOIL SAMPLES
2240 FILBERT STREET, OAKLAND, CALIFORNIA
(all results in milligrams per kilogram [mg/kg])

Sample ID	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs
B-36-1	1.0	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	---	(14)
B-36-2	2.0	14-Nov-94	<0.005	<0.005	0.013/0.030	<0.005	1.4	<1	<30	<30	---	(15)
B-36-5	5.0	14-Nov-94	<0.005	<0.005	0.021	<0.005	0.6	<1	<30	<30	---	ND
B-36-10	10.0	14-Nov-94	<0.005	<0.005	0.051/0.280	0.018/0.031	6.9	5	<30	<30	---	ND
B-37-1	1.0	14-Nov-94	0.009/0.090	0.005/0.033	0.006/0.016	0.007/0.020	1.9	<1	160	120	---	(16)
B-37-2	2.0	14-Nov-94	<0.005	<0.005	0.006/0.089	0.006	1.0	1	40	<30	---	(17)
B-37-5	5.0	14-Nov-94	<0.005	<0.005	0.036	<0.005	0.3	<1	<10	<10	ND	ND
B-37-10	10.0	14-Nov-94	0.120	0.610	0.950/0.780	<0.300	210	13	40	<30	---	ND
B-56-11.5	11.5	08-Nov-94	<0.030	<0.030	0.061	<0.030	20	3	---	---	---	---
B-64-1	1.0	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.7	<1	<30	<30	---	---
B-64-2	2.0	14-Nov-94	<0.005	<0.005	<0.005	0.006	1.0	<1	<30	<30	---	---
B-64-5	5.0	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	---	---
B-64-10	10.0	14-Nov-94	<0.030	<0.030	0.031	<0.030	8	410	480	350	---	---
OFF-SITE, UPGRADIENT WELLS INSTALLED BY MCCULLEY, FRICK, AND GILMAN INC.												
MW-1-4-1 (27)	11.5	03-Oct-94	<0.01	<0.01	0.032	0.079	7.9	---	---	---	---	---
MW-2-3-2 (28)	14.0	03-Oct-94	<0.005	<0.005	<0.005	<0.005	<1.0	---	---	---	---	---

Data entered by DLM/15 Dec 94 Data proofed by SXS QA/QC by SXS

NOTES:

All compounds scanned are not included in table. Please see notes for specific compounds detected and laboratory data sheets for detection limits.

--- = not analyzed
ND = not detected above laboratory detection limits

Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8020.
TPHg - total petroleum hydrocarbons as gasoline by EPA Method 5030.
TPHms - total petroleum hydrocarbons as mineral spirits by EPA Method 5030.
Oil and grease by Standard Method 5520 E.
NPH - nonpolar hydrocarbons by Standard Method 5520 F.
SVOCs - semivolatile organic compounds by EPA Method 8270.
VOCs - volatile organic compounds by EPA Method 8240.

(1) The gasoline analysis showed a pattern not typical of gasoline.
(2) Reporting limit elevated for gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(3) Reporting limit elevated for benzene and gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(4) Sample contains nontarget compounds in 8240 analysis.
(5) Mineral spirits range hydrocarbons detected also.
(6) Acetone detected at 0.250 mg/kg.
(7) Reporting limit elevated for BTEX due to a dilution.
(8) Result for benzin is in the benzin and gasoline range but the pattern is not typical of either compound.
(9) The gasoline result shows a pattern not typical of gasoline. There may be a mixture.
(10) Results for diesel are in the mineral spirits range.
(11) Oil range hydrocarbons were also detected.
(12) Methylene chloride detected at 0.006 mg/kg.

TABLE 1
HISTORICAL ANALYTICAL RESULTS FOR SOIL SAMPLES
2240 FILBERT STREET, OAKLAND, CALIFORNIA
(all results in milligrams per kilogram [mg/kg])

Sample ID	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHms Oil & Grease	NPH	SVOCs	VOCs

(13) Methylene chloride detected at 0.007 mg/kg.
(14) 1,2-Dichlorobenzene detected at 0.770 mg/kg, 1,4-Dichlorobenzene detected at 0.008 mg/kg.
(15) 1,2-Dichlorobenzene detected at 0.052 and 0.053 mg/kg.
(16) Cis-1,2-dichloroethene detected at 0.310 mg/kg.
(17) Methylene chloride detected at 0.006 mg/kg.
(18) Boring was terminated after reaching a 7-foot depth.
(19) Benzo(b)fluoranthene detected at 0.330 mg/kg; Fluoranthene detected at 0.750 mg/kg; Pyrene detected at 0.410 mg/kg.
(20) The sample was analyzed for organic lead. This compound was not reported above laboratory detection limits.
(21) The sample was analyzed for TPH as diesel. TPHd was detected at a concentration of 2 mg/kg.
(22) The sample was analyzed for TPH as diesel and organic lead. These compounds were not reported above laboratory detection limits.
(23) The sample was analyzed for PCBs by EPA Method 8080. None of these compounds were reported above laboratory detection limits.
(24) The sample was analyzed for TPH as benzin and diesel. TPH as benzin was reported as a concentration less than 1,000 mg/kg and TPH as diesel was reported at a concentration of 1,300 mg/kg.
(25) The sample was analyzed for TPH as benzin. Results indicate that this compound was present at a concentration of 2,100 mg/kg.
(26) The sample was analyzed for TPH as diesel. This compound was not reported above laboratory detection limits.
(27) The sample was analyzed for TPH as diesel and motor oil. TPH as diesel and motor oil were reported at concentrations of 3.8 mg/kg and 14 mg/kg, respectively.
(28) The sample was analyzed for TPH as diesel and motor oil. These compounds were not detected above laboratory detection limits.

TABLE 2
HISTORICAL ANALYTICAL RESULTS FOR GROUND-WATER GRAB SAMPLES
2240 FILBERT STREET, OAKLAND, CALIFORNIA
(all results in milligrams per liter [mg/l])

Sample ID	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydro-carbons	Organic Lead	SVOCs	VOCs	Ethylene Glycol
FORMER SUSPECTED UST NEAR THE SOUTHWEST LOADING DOCK AND ALONG WEST GRAND STREET														
Phase I Investigation														
B-1	20-Jul-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	<0.05	---	---	---	---	---	---	<50
B-2 (2)	20-Jul-94	0.002	0.0009	0.002	<0.002	0.8	---	---	---	---	---	---	---	<50
B-3	20-Jul-94	---	---	---	---	---	<0.05	---	---	---	---	---	---	<50
B-4 (2)	20-Jul-94	<0.0005	<0.0005	<0.0005	<0.002	0.1	<0.05	---	---	---	---	---	---	<50
SUSPECTED FORMER UST LOCATIONS OUTSIDE THE HAZARDOUS MATERIALS STORAGE AREA AND AUTO REPAIR SHOP, ADJACENT TO FORMER LANGENDORF FACILITY, AND ALONG FILBERT STREET														
Phase I Investigation														
B-5 (2)	20-Jul-94	0.018	0.016	0.04	0.021	5.0	---	---	<1	<1	---	---	---	<50
B-6 (2,4,16)	19-Jul-94	0.093	0.006	0.049	0.029	5.9	<0.05	---	<1	<1	<0.2	ND	(3)	---
B-11	21-Jul-94	0.002	<0.0005	0.001	<0.002	0.3	---	---	<1	<1	<0.2	(5)	(6)	<50
B-12 (2,8,10)	21-Jul-94	<0.005	<0.005	<0.005	<0.02	1.2	---	---	---	---	---	---	---	<50
Phase II Investigation														
B-49	07-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	<1	<1	---	---	---	---
B-50	07-Nov-94	0.023/0.018	0.012/0.003	0.048/0.051	0.012/0.005	8.2	---	<3	<1	<1	---	---	ND	---
B-51	07-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	<1	<1	---	---	---	---
B-52	07-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	0.3	---	0.07	---	---	---	---	(21)	---
B-53	07-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	---	---	---	---	---	---
B-54	08-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	---	---	---	---	(22)	---
B-55	08-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	---	---	---	---	---	---
B-56	08-Nov-94	0.016/0.010	0.0005	<0.0005	<0.002	0.3	---	0.1	<1	<1	---	---	(23)	---
B-57	08-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	0.5	---	1.6	---	---	---	---	---	---
FORMER ENGINE ROOM AND HAZARDOUS MATERIALS STORAGE AREA														
Phase I Investigation														
B-5 (2)	20-Jul-94	0.018	0.016	0.04	0.021	5.0	---	---	<1	<1	---	---	---	<50
B-6 (2,4,16)	19-Jul-94	0.093	0.006	0.049	0.029	5.9	<0.05	---	<1	<1	<0.2	ND	(3)	---
B-7 (2,7)	21-Jul-94	<0.003	0.018	0.037	0.015	1.2	---	---	<1	<1	---	---	---	<50
B-8 (1,2)	20-Jul-94	<0.01	<0.01	0.018	0.022	17	---	---	8	<1	---	---	---	<50
Phase II Investigation														
B-28	18-Nov-94	<0.0005	<0.0005/0.0007	0.004	0.006	0.6	---	0.53	<1	<1	---	ND	ND	---
B-29	18-Nov-94	0.0008	0.0006/0.002	0.010/0.008	0.010	1.4	---	1.2	<1	<1	---	ND	ND	---
B-30	18-Nov-94	0.006/0.008	0.002	0.005/0.006	0.010/0.008	1.1	---	0.59	<1	<1	---	ND	ND	---
B-31	14-Nov-94	0.110	0.011	0.035	0.060	5.6	---	4.5	<1	<1	---	(17)	---	---

TABLE 2
HISTORICAL ANALYTICAL RESULTS FOR GROUND-WATER GRAB SAMPLES
2240 FILBERT STREET, OAKLAND, CALIFORNIA
(all results in milligrams per liter [mg/l])

Sample ID	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydro-carbons	Organic Lead	SVOCs	VOCs	Ethylene Glycol
EXISTING ELEVATOR SUMPS														
Phase I Investigation														
B-9 (24)	19-Jul-94	---	---	---	---	---	---	---	270	230	---	---	---	---
B-10	19-Jul-94	---	---	---	---	---	---	---	<1	<1	---	---	---	<50
B-13 (2,9,10)	21-Jul-94	<0.01	<0.01	<0.01	<0.04	32	---	---	8	1	---	---	---	<50
B-14 (24)	20-Jul-94	---	---	---	---	---	---	---	2	1	---	---	---	---
Phase II Investigation														
B-33	11-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	<1	<1	---	---	(19)	---
B-34	10-Nov-94	0.007	<0.0005	0.012	0.003	1.2	---	<0.05	<1	<1	---	---	---	---
B-35	14-Nov-94	0.006	0.0007	0.0007	<0.002	0.6	---	0.2	<1	<1	---	---	---	---
B-38	09-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	<1	<1	---	---	---	---
B-39	11-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	<1	<1	---	---	---	---
B-40	10-Nov-94	<0.0005	<0.0005	<0.0005	0.016	13	---	31	15	2	---	---	---	---
FORMER CLEANING AND DYEING WORKS AND BENZIN AREA														
Phase I Investigation														
B-13 (2,9,10)	21-Jul-94	<0.01	<0.01	<0.01	<0.04	32	---	---	8	1	---	---	---	<50
B-15 (2)	21-Jul-94	0.34	0.052	0.9	2	59	---	---	170	15	---	---	---	<50
B-16 (2,9,10,12,13,25)	22-Jul-94	<0.005	<0.005	<0.005	<0.005	4.4	---	---	---	---	---	---	ND	---
B-17 (1,10,12,14,15,25)	22-Jul-94	<0.001	0.005	<0.001	0.041	6.3	3.8	---	---	---	<0.2	---	ND	---
B-18 (1,2,10)	22-Jul-94	<0.01	<0.01	0.022	0.024	10	---	---	---	---	---	---	(11)	<50
B-19 (26)	22-Jul-94	<0.0005	<0.0005	0.003	0.009	---	---	---	---	---	---	ND	ND	---
B-20	22-Jul-94	---	---	---	---	---	---	---	---	---	---	---	---	<50
B-21	22-Jul-94	---	---	---	---	---	---	---	---	---	---	---	---	<50
Phase II Investigation														
B-41	11-Nov-94	<0.0005	<0.0005	0.003	0.005	2.9	---	16	---	---	---	---	---	---
B-42	11-Nov-94	<0.005	<0.005	<0.005	0.022	14	---	44	---	---	---	---	---	---
B-43	11-Nov-94	<0.010	0.015	<0.010	0.047	62	---	270	---	---	---	---	---	---
B-44	14-Nov-94	0.004	0.005	<0.003	0.022	23	---	93	---	---	---	---	---	---
B-45	11-Nov-94	<0.003	<0.003	0.035	0.010	4.9	---	41	---	---	---	---	---	---
B-46	11-Nov-94	<0.001	<0.001	<0.001	0.011	4.7	---	5.1	---	---	---	---	---	---
B-58	08-Nov-94	0.041	<0.010	0.013	<0.040	17.0	---	6.3	---	---	---	---	---	---
B-59	09-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	---	---	---	---	---	---
B-60	09-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	---	---	---	---	---	---
B-61	10-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	0.3	---	0.07	---	---	---	---	---	---
B-62	10-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	2.0	---	0.2	---	---	---	---	---	---
B-63	10-Nov-94	0.062	0.013	<0.0005	0.047	9.3	---	5	---	---	---	---	---	---

TABLE 2
HISTORICAL ANALYTICAL RESULTS FOR GROUND-WATER GRAB SAMPLES
2240 FILBERT STREET, OAKLAND, CALIFORNIA
(all results in milligrams per liter [mg/l])

Sample ID	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydro-carbons	Organic Lead	SVOCs	VOCs	Ethylene Glycol
SUSPECTED FORMER UST IN SOUTHEAST YARD (WEST OF MYRTLE STREET)														
Phase I Investigation														
B-22	18-Jul-94	---	---	---	---	---	---	---	---	---	---	---	---	<50
B-23	18-Jul-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	---	---	---	---	---	---	<50
B-24	18-Jul-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	---	---	---	---	---	---	<50
B-25	19-Jul-94	0.0005	<0.0005	<0.0005	<0.002	0.1	<0.05	---	---	---	<0.2	---	---	---
B-26	18-Jul-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	---	---	---	---	---	---	---
B-27	18-Jul-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	---	---	---	---	---	---	<50
Phase II Investigation														
B-47	15-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	---	---	---	---	---	---
FORMER AUTO REPAIR SHOP, FORMER CABINET SHOP, FORMER PAINT ROOM, AND FORMER GARAGE														
Phase I Investigation														
B-8 (1,2)	20-Jul-94	<0.01	<0.01	0.018	0.022	17	---	---	8	<1	---	---	---	<50
B-9 (24)	19-Jul-94	---	---	---	---	---	---	---	270	230	---	---	---	---
Phase II Investigation														
B-11	21-Jul-94	0.002	<0.0005	0.001	<0.002	0.3	---	---	<1	<1	<0.2	(5)	(6)	<50
B-12 (2,8,10)	21-Jul-94	<0.005	<0.005	<0.005	<0.02	1.2	---	---	---	---	---	---	---	<50
B-32	11-Nov-94	0.004/0.003	0.001	0.002/0.001	0.002	0.5	---	<0.05	<1	<1	---	ND	(18)	---
B-33	11-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	<0.05	---	<0.05	<1	<1	---	---	(19)	---
B-34	10-Nov-94	0.007	<0.0005	0.012	0.003	1.2	---	<0.05	<1	<1	---	---	---	---
B-35	14-Nov-94	0.006	0.0007	0.0007	<0.002	0.6	---	0.2	<1	<1	---	---	---	---
B-36	14-Nov-94	<0.0005	<0.0005	0.0005/0.0005	<0.002	0.1	---	<0.05	<1	<1	---	---	ND	---
B-37	14-Nov-94	<0.0005	<0.0005	<0.0005	<0.002	0.07	---	<0.05	<1	<1	---	ND	(20)	---
B-56	08-Nov-94	0.016/0.010	0.0005	<0.0005	<0.002	0.3	---	0.1	<1	<1	---	---	(23)	---
B-64	14-Nov-94	0.045	0.015	0.032	0.039	7.3	---	12	8	6	---	---	---	---
OFF-SITE, UPGRADIENT WELLS INSTALLED BY MCCULLEY, FRICK AND GILMAN, INC. (MFG; from MFG report dated November 8, 1994)														
MW-1 (27,28)	03-Oct-94	<0.0005	<0.0005	<0.0005	<0.0005	0.16	0.084	---	---	---	---	---	---	---
MW-2 (27,28)	03-Oct-94	0.0075	<0.0025	<0.0025	<0.0025	1.1	0.73	---	---	---	---	---	---	---

Data entered by DSM/15 Dec 94 Data proofed by SXS QA/QC by SXS

TABLE 2
HISTORICAL ANALYTICAL RESULTS FOR GROUND-WATER GRAB SAMPLES
2240 FILBERT STREET, OAKLAND, CALIFORNIA
(all results in milligrams per liter [mg/l])

Sample ID	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydro-carbons	Organic Lead	SVOCs	VOCs	Ethylene Glycol

NOTES:

All compounds scanned are not included in table. Please see notes for specific compounds detected and laboratory data sheets for detection limits.

--- = not analyzed
ND = not detected above laboratory detection limits

Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8020.
TPHg - total petroleum hydrocarbons as gasoline by EPA Method 5030.
TPHd - total petroleum hydrocarbons as diesel by EPA Method 3510.
TPHms - total petroleum hydrocarbons as mineral spirits by GC-FID.
Oil and grease by Standard Method 5520 E.
NPH - nonpolar hydrocarbons by Standard Method 5520 E.
Organic lead by DHS
SVOCs - semivolatile organic compounds by EPA Method 8270.
VOCs - volatile organic compounds by EPA Method 8240.
Ethylene glycol by Modified EPA Method 8015.

(1) Reporting limit elevated for benzene and toluene due to high levels of target compounds. Sample was run at a dilution.
(2) The gasoline analysis showed a pattern not typical of gasoline.
(3) Trans-1,2-dichloroethene detected at 0.005 mg/l.
(4) Sample contains nontarget compounds.
(5) Bis(2-ethylhexyl)phthalate detected at 0.270 mg/l. No other SVOCs detected.
(6) Cis-1,2-dichloroethene detected at 0.003 mg/l. No other VOCs detected.
(7) Reporting limit elevated for benzene due to a dilution. The results were reported from a bottle run with headspace due to a lack of VOAs for all analyses requested.
(8) Reporting limit elevated for BTEX due to a dilution. The results for gasoline was reported from a bottle run with headspace due to a lack of VOAs for all analyses requested.
(9) Reporting limit elevated for BTEX due to a dilution.
(10) Light sheen of fuel on the surface which resulted in many nonmatching runs.
(11) Ethylbenzene detected at 0.021 mg/l.
(12) Reporting limit elevated for benzin due to hydrocarbon interferences.
(13) The gasoline and benzin result was taken from a bottle run with headspace due to a lack of VOAs needed for all the analyses requested.
(14) Reporting limit elevated for benzene and ethylbenzene due to a dilution.
(15) Results for diesel are in the mineral spirits range.
(16) Hydrocarbons in mineral spirits range also detected in TPHg analysis.
(17) 2-Methylnaphthalene detected at 0.018 mg/l, naphthalene detected at 0.011 mg/l.
(18) 1,2-Dichloroethane detected at 0.0007 mg/l.
(19) 1,2-Dichloroethane detected at 0.028 mg/l.
(20) 1,2-Dichloroethane detected at 0.002 mg/l.
(21) 1,2-Dichloroethane detected at 0.0008 mg/l.
(22) 1,2-Dichloroethane detected at 0.0006 mg/l.
(23) 1,2-Dichloroethane detected at 0.003 mg/l, cis-1,2-dichloroethene detected at 0.130 mg/l, trans-1,2-dichloroethene detected at 0.0005 mg/l, and vinyl chloride detected at 0.034 mg/l.
(24) Sample analyzed for PCBs using EPA Method 8080; no compounds were detected.
(25) Sample analyzed for TPH as benzin. This compound was not reported above laboratory detection limits.
(26) Sample analyzed for TPH as benzin. This compound was detected at 1.7 mg/kg.
(27) The laboratory noted that the sample contained weathered gasoline in the carbon range C6 to C12.
(28) The sample was analyzed for TPH as motor oil; this compound was not detected.

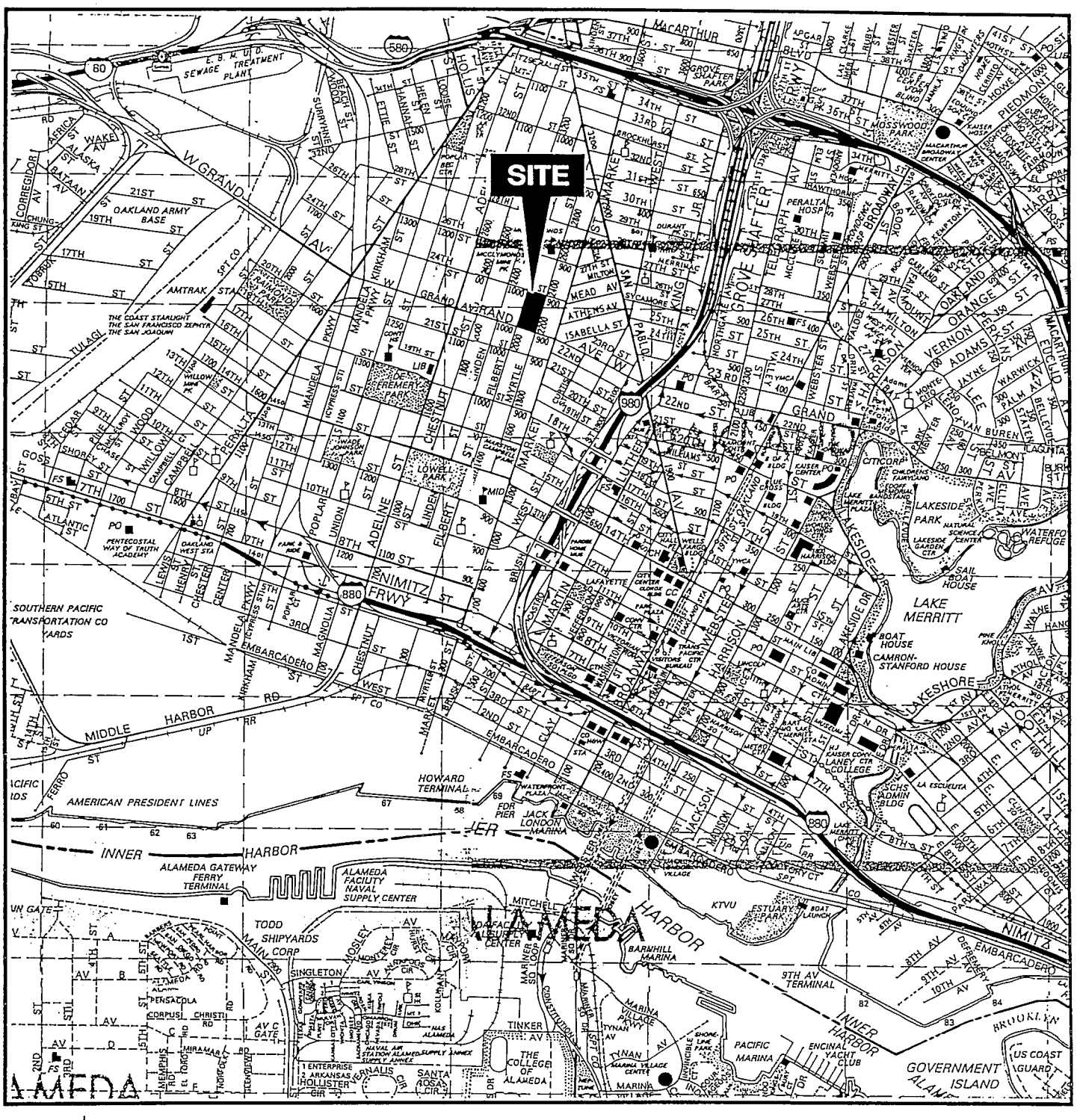
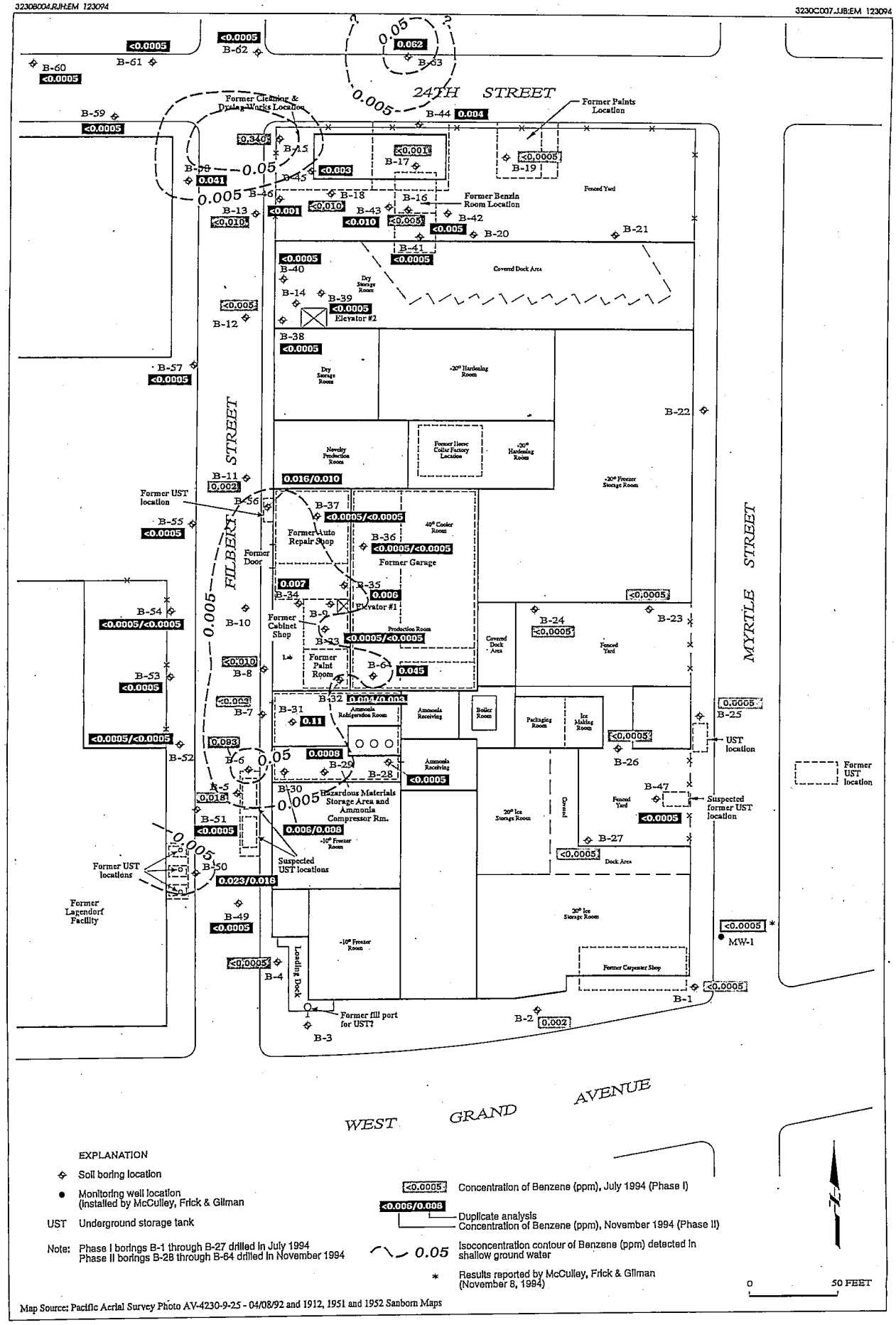


Figure 1: SITE LOCATION MAP

Project No. 3230.00-05

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94P255MAY94/082394RYL



EXPLANATION

- Soil boring location
- Monitoring well location (installed by McCulley, Frick & Gilman)

UST Underground storage tank

Note: Phase I borings B-1 through B-27 drilled in July 1994
Phase II borings B-28 through B-64 drilled in November 1994

<0.0005 Concentration of Benzene (ppm), July 1994 (Phase I)

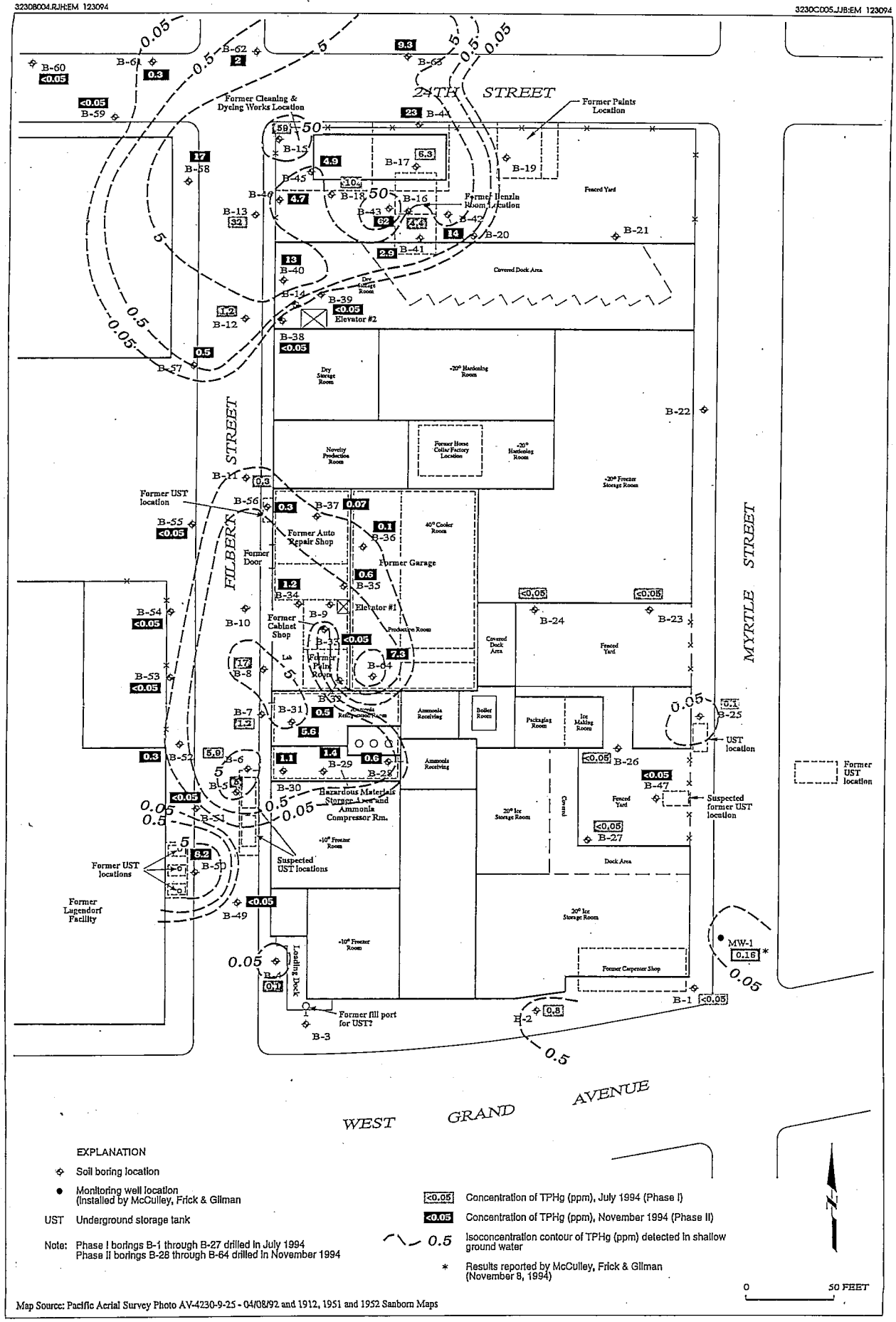
<0.0005/0.0008 Duplicate analysis
Concentration of Benzene (ppm), November 1994 (Phase II)

0.05 Isoconcentration contour of Benzene (ppm) detected in shallow ground water

* Results reported by McCulley, Frick & Gilman (November 8, 1994)

Map Source: Pacific Aerial Survey Photo AV-4230-9-25 - 04/08/92 and 1912, 1951 and 1952 Sanborn Maps

Figure 6 : BENZENE DETECTED IN SHALLOW GROUND WATER (ppm)



EXPLANATION

- Soil boring location
- Monitoring well location (installed by McCulley, Frick & Gilman)

UST Underground storage tank

Note: Phase I borings B-1 through B-27 drilled in July 1994
Phase II borings B-28 through B-64 drilled in November 1994

<0.05 Concentration of TPHg (ppm), July 1994 (Phase I)

<0.05 Concentration of TPHg (ppm), November 1994 (Phase II)

0.5 Isoconcentration contour of TPHg (ppm) detected in shallow ground water

* Results reported by McCulley, Frick & Gilman (November 8, 1994)

0 50 FEET

Map Source: Pacific Aerial Survey Photo AV-4230-9-25 - 04/08/92 and 1912, 1951 and 1952 Sanborn Maps

Figure 4 : TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPHg) DETECTED IN SHALLOW GROUND WATER (ppm)

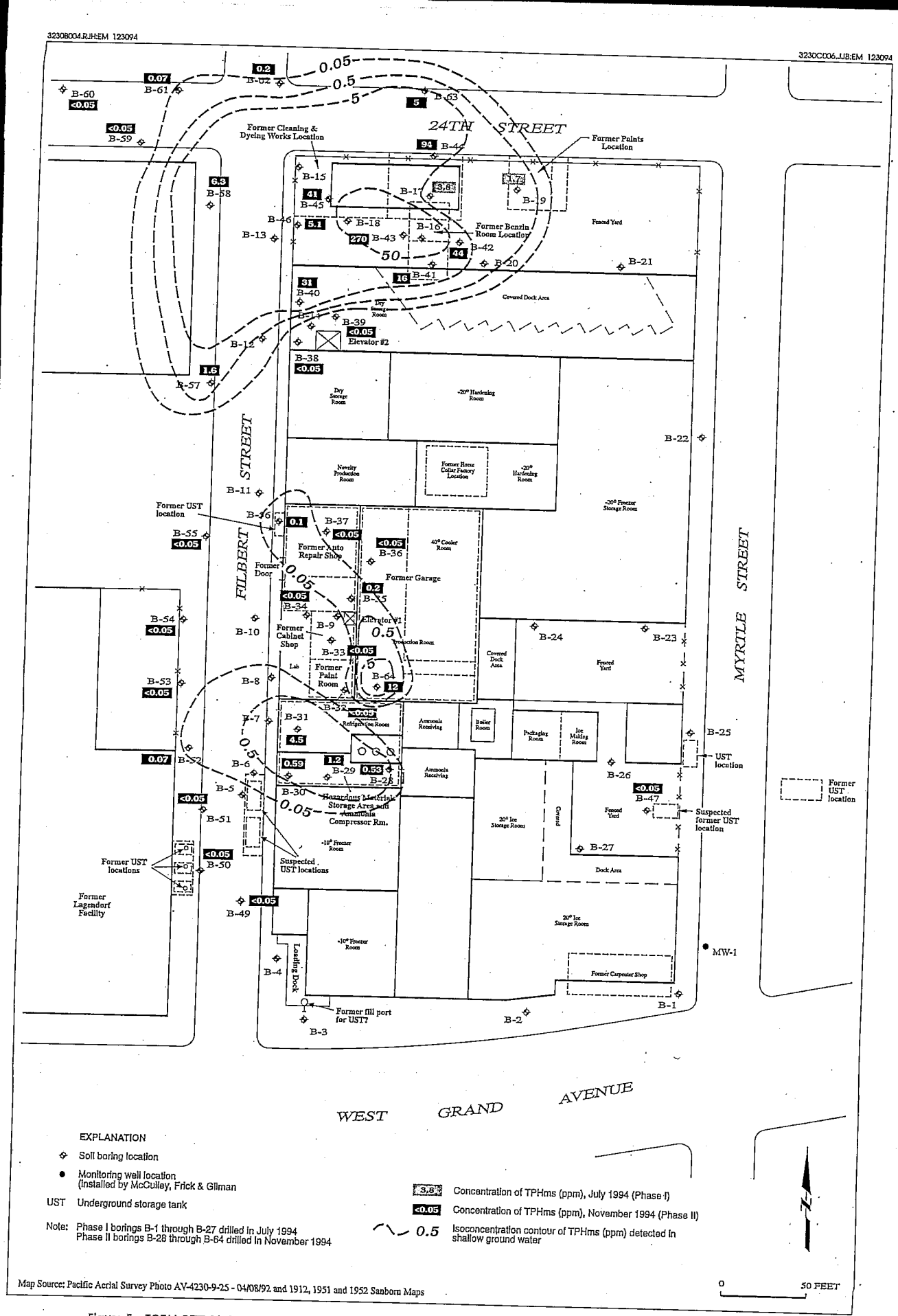


Figure 5 : TOTAL PETROLEUM HYDROCARBONS AS MINERAL SPIRITS (TPHms) DETECTED IN SHALLOW GROUND WATER (ppm)

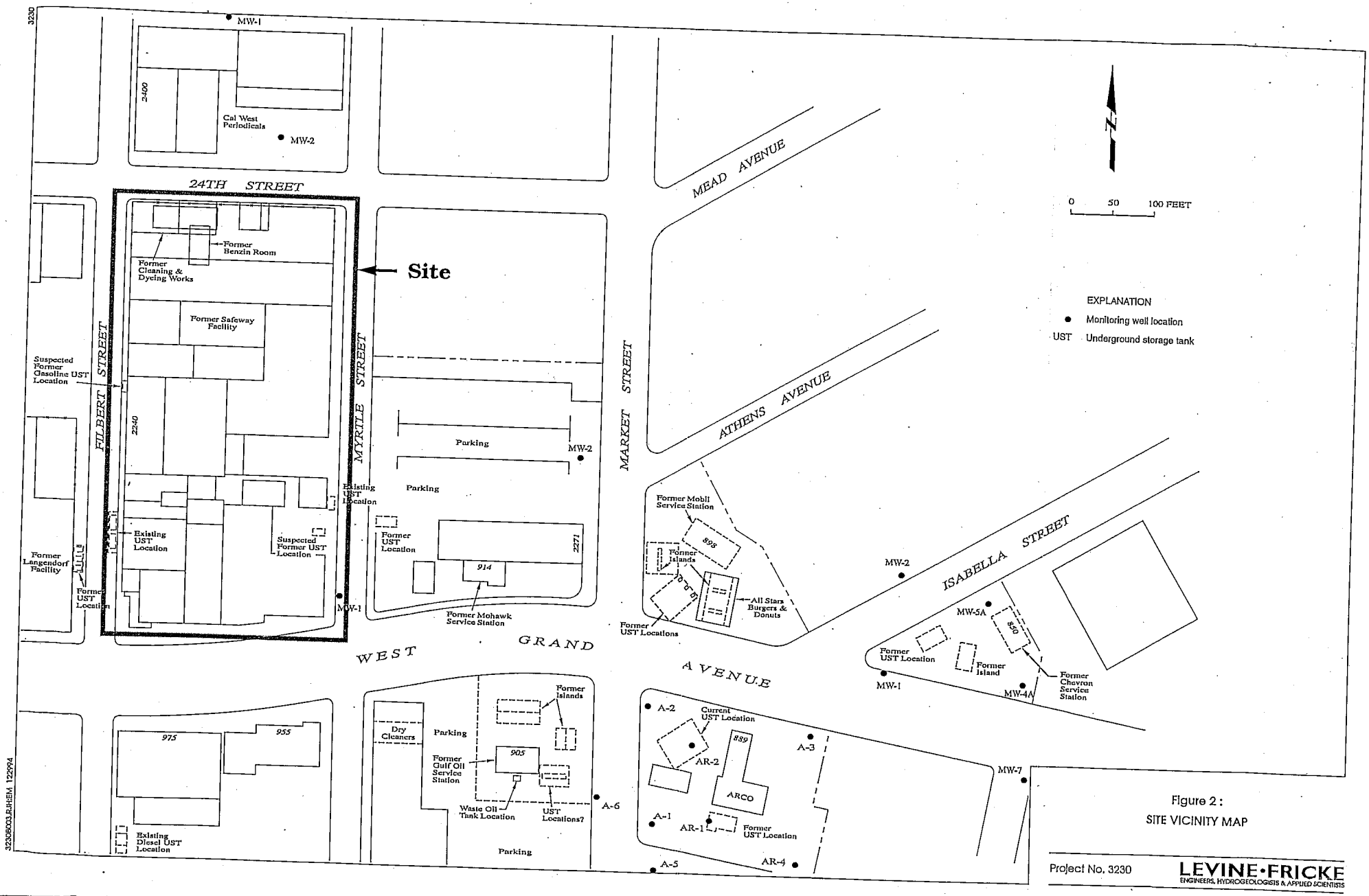


Figure 2 :
SITE VICINITY MAP

Project No. 3230

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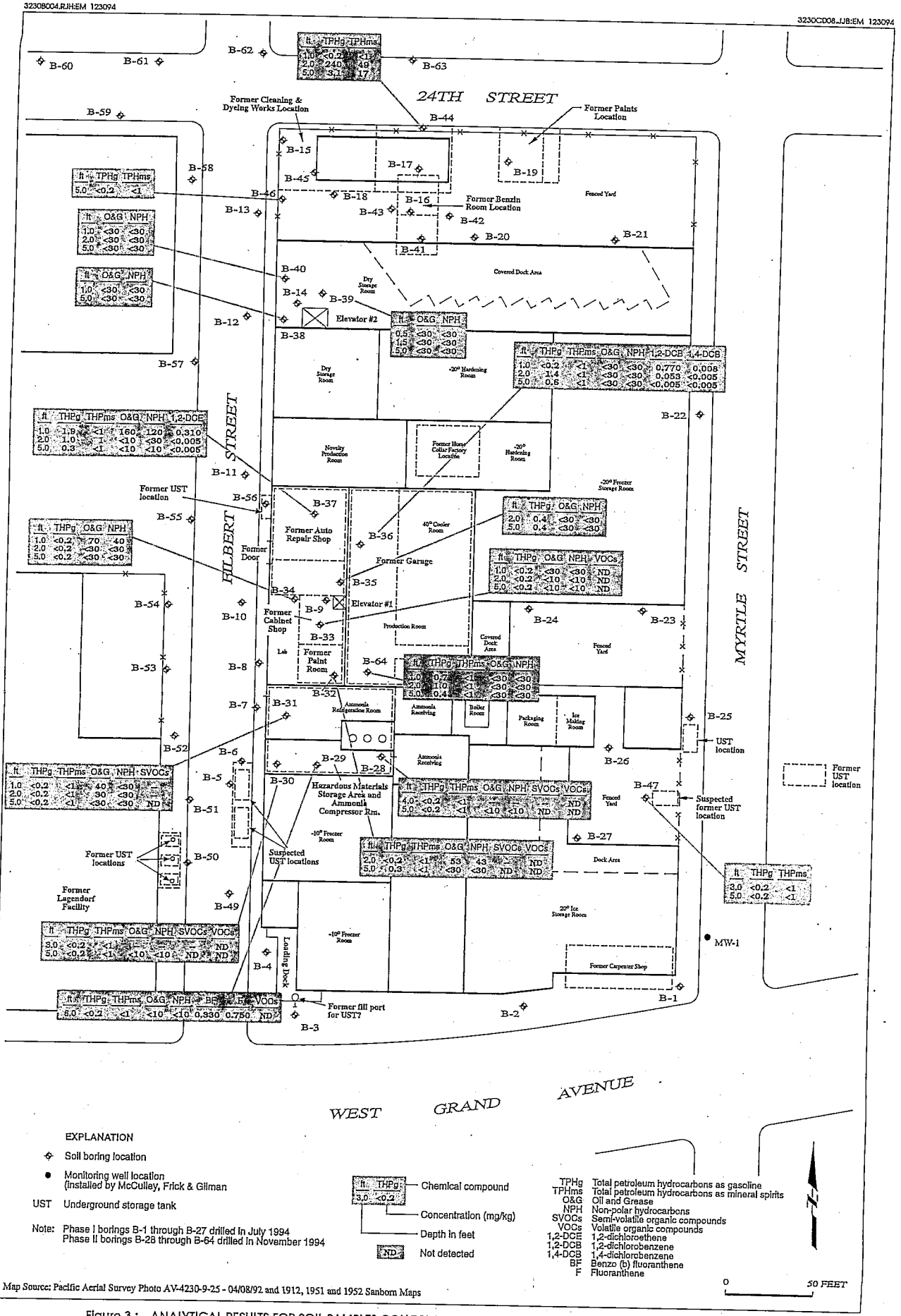


Figure 3 : ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM 0 TO 6 FEET BELOW GROUND SURFACE (mg/kg)
(results for benzene, toluene, ethylbenzene, and xylene are presented in Table 1)

APPENDIX B
2005 Phase II Environmental Site Assessment Report

REPORT OF PHASE II ENVIRONMENTAL SITE ASSESSMENT

2303-2317 Market Street and
2242-2310 Myrtle Street
Oakland, California

GA Project No. 274-01-01

Prepared for:

Mr. Seth Jacobsen
Epicurean International
30315 Union City Boulevard
Union City, CA 94587

Prepared by:

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1090 Adams Street, Suite K
Benicia, CA 94510
(707)748-7743

March 18, 2005

GRIBI Associates

Geological and Environmental Consulting Services

March 18, 2005 GA Project No. 274-01-01

Mr. Seth Jacobsen
Epicurean International
30315 Union City Boulevard
Union City, CA 94587

Subject: Report of Phase II Environmental Site Assessment
2303-2317 Market Street and 2242-2310 Myrtle Street
Oakland, California

Dear Mr. Jacobsen:

Gribi Associates is pleased to submit this report documenting a recently-completed Phase II Environmental Site Assessment (ESA) for the property located at 2303-2317 Market Street and 2242-2310 Myrtle Street in Oakland, California. Phase II ESA activities included: (1) Drilling and sampling of approximately seven soil borings on the site; and (2) Collecting soil and grab groundwater samples to assess overall hydrocarbon impacts and shallow lead impacts at the site. The goal of the Phase II ESA was to assess possible environmental conditions relative to residential land use regulatory standards.

Laboratory analytical results from this investigation show only two areas of the site with non-background detections of analytes. These are: (1) Gasoline-range hydrocarbons detected in the deepest soil sample, collected at 13 feet in depth, in boring B-3 and in the grab groundwater samples from borings B-2 and B-3, both located in the southeast corner of the site; and (2) A slightly elevated lead concentration (310 milligrams per kilogram) detected in the soil sample collected at two feet in depth in boring B-1, located in the northeast corner of the site. The gasoline-range hydrocarbons detected in the southeast corner of the site are below residential land use environmental screening levels (ESLs) and obviously originated from an upgradient source or sources, since the site has never been developed and the gasoline detections were encountered on the extreme upgradient (southeast) side of the site.

The 310-miligrams per kilogram lead detection at two feet in depth in boring B-1 exceeds the residential land use ESL for shallow soils (less than ten feet in depth) of 200 mg/kg. Since this slightly elevated lead detection occurred in only one of the seven soil samples analyzed, it would appear that this lead impact is limited in extent. It is also possible, in the absence of other confirmatory sampling in the same area, that the single elevated lead detection in boring B-1 could be a false positive and could have resulted from some unknown sampling or laboratory cross contamination.

We appreciate the opportunity to present this report for your review. Please call if you have any questions or require additional information.

Very truly yours,

James E. Gribi
Registered Geologist
California No. 5843

Matthew A. Rosman
Engineer

JEG/ct

C:\Documents and Settings\All Users\Documents\PROJECTS\Myrtle & Market St PHII\Burke_Myrtle Street_Phase II Report.wpd

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1.0 INTRODUCTION

This report documents a Phase II Environmental Site Assessment (ESA) conducted for the property located at 2242-2310 Myrtle Street in Oakland, California (see Figure 1 and Figure 2). Phase II ESA activities included the drilling and sampling of seven soil borings, B-1 through B-7, at the site. The goal of the Phase II activities was to assess environmental conditions relative to assess possible environmental conditions relative to residential land use regulatory standards.

1.1 Site Background

The site is a paved vacant lot located north of West Grand Avenue in a mixed commercial/residential area of Oakland. The site is bordered on the east and west by Market Street and Myrtle Street, respectively. Based on our preliminary review of Client-provided information, it appears that the subject property has been used as either residential or as parking for the former Safeway Ice Cream Plant, with no significant commercial or industrial use, since at least the early 1900s. A 1994 Phase I ESA conducted by MFG for the subject property and the west adjacent former Safeway Ice Cream Plant identified at least two possible upgradient (southeast) underground storage tank (UST) sites (Elliott & Elliott Co. at 2336 Market Street and Chevron Station, no address given). Two groundwater monitoring wells, MW-1 and MW-2, were installed in September 1994. Soil and groundwater samples from MW-1, located southwest from the subject site across Myrtle Street, showed low to nondetectable levels of gasoline to motor oil range hydrocarbons. Well MW-2 was located on the southeast side of the subject property. A soil sample collected at about 14 feet in depth from the MW-2 well boring showed no detectable hydrocarbon constituents. Groundwater samples collected from MW-2 in 1994 and 1996 showed concentrations of Total Petroleum Hydrocarbons as Gasoline (TPH-G) ranging from 840 micrograms per liter (ug/l) to 2,400 ug/l, and benzene concentrations ranging from 7.5 ug/l to 10 ug/l.

1.2 Scope of Work

Gribi Associates was contracted by Mr. Seth Jacobsen to conduct the following scope of work.

- **Task 1 Conduct prefield activities.**
- **Task 2 Conduct drilling and sampling activities.**
- **Task 3 Conduct laboratory analyses.**
- **Task 4 Prepare report of findings.**

These tasks were conducted in accordance with generally accepted sampling guidelines and protocols.

1.3 Limitations

The services provided under this contract as described in this report include professional opinions and judgments based on data collected. These services have been provided according to generally accepted environmental protocol. The opinions and conclusions contained in this report are typically based on information obtained from:

1. Observations and measurements made by our field staff.
2. Contacts and discussions with regulatory agencies and others.
3. Review of available hydrogeologic data.

2.0 DESCRIPTION OF FIELD ACTIVITIES

Soil boring and sampling activities were conducted on Friday, February 28, 2005 using direct push coring equipment. Grab groundwater samples were collected and the borings were sealed on the same day. All activities were conducted in accordance with applicable State and Federal guidelines and statutes.

2.1 Pre-Field Activities

Prior to beginning drilling activities, a soil boring permit was obtained from the Alameda County Public Works Agency. A copy of this permit is contained in Appendix A. Prior to beginning drilling activities, proposed soil boring locations were marked with white paint, and Underground Services Alert was notified more than 48 hours prior to drilling. Also, prior to beginning field activities, ForeSite conducted an underground utilities survey to attempt to locate any possible buried structures related to the former gas station and to clear proposed drilling locations. Also, prior to beginning field activities, a Site Safety Plan was issued to the drilling crew, and a tailgate safety meeting was conducted.

2.2 Location of Soil Borings

Locations of the seven borings, B-1 through B-7, are shown on Figure 2. Five of the seven borings, B-1 through B-5, were deep borings extending below the groundwater table for the purpose of determining and delineating a possible westward migrating gasoline hydrocarbon groundwater plume, extending onto the site from the southeast. Two of the borings, B-6 and B-7, were shallow borings for the purpose of assessing shallow soils for possible lead impacts.

2.3 Drilling and Sampling of Soil Borings

The seven investigative soil borings were drilled to depths ranging from four feet to 26 feet below grade by Gregg Drilling. Direct push hydraulically-driven soil coring equipment was used to drill deep borings B-1 through B-5; shallow borings B-6 and B-7 were drilled using hand auger equipment. Boring B-1 was drilled to a depth of approximately 26 feet below grade, borings B-2 through B-5 were drilled to a depth of approximately 16 feet below grade, and borings B-6 and B-7 were drilled to approximately four feet below surface grade. The direct push hydraulically-driven coring system allowed for the retrieval of almost continuous soil cores, which were contained in a clear plastic acetate tube, nested inside a stainless steel core barrel. After the core barrel was brought to the surface and exposed, the core was examined, logged, and field screened for hydrocarbons by a qualified geologist using sight and smell. Boring logs for deep borings B-1 through B-5 are contained in Appendix B. Following completion, the seven investigative borings were backfilled to match existing grade using bentonite and cement slurry.

Subsurface soils were sampled at approximately four-foot intervals starting at four feet in depth. After the sample and core barrel were raised to the surface, each sample was collected as follows: (1) The filled acetate tube was exposed for visual examination; (2) The selected sample interval was

collected by cutting the sample and acetate plastic tubing to the desired length (typically about six inches); (3) The ends of the selected sample were quickly wrapped with Teflon sheets or aluminum foil, capped with plastic end caps, labeled and wrapped tightly with tape; and (4) The sealed soil sample was labeled and immediately placed in cold storage for transport to the analytical laboratory under formal chain-of-custody. All coring and sampling equipment was thoroughly cleaned and decontaminated between each sample collection by triple rinsing first with water, then with dilute tri-sodium phosphate solution, and finally with distilled water.

Grab groundwater samples were collected from deep borings B-1 through B-5. Each of the grab groundwater samples was collected as follows: (1) 1-1/4-inch diameter well casing was placed in the boring; (2) using a decontaminated steel bailer, groundwater was collected and poured directly from the bailer into laboratory-supplied containers; and (3) each sample container was tightly sealed, labeled, and placed in cold storage for transport to the laboratory under formal chain-of-custody.

2.4 Laboratory Analysis of Soil and Groundwater Samples

A total of eight soil samples and five grab groundwater samples were analyzed for the following parameters.

USEPA 8015M Total Petroleum Hydrocarbons as Gasoline (TPH-G)
USEPA 8020 Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)
USEPA 8020 Methyl tert-Butyl Ether (MTBE)

In addition, a total of seven soil samples from were analyzed for the following parameter:

USEPA 6010B Lead

All analyses were conducted by SunStar Laboratories, Inc., a California-certified analytical laboratory, with standard turnaround on results.

3.0 RESULTS OF INVESTIGATION

3.1 General Subsurface Conditions

Soils encountered in the five deep borings consisted primarily of silts and clays to ten feet in depth, followed by clayey sands and gravels to 14 feet in depth, and silts and clays to total depth. Groundwater depths in the borings ranged from approximately 9.6 feet below grade in B-3 to 11.2 feet below grade in B-1.

No hydrocarbon odors were noted in soils from borings B-1, B-2, B-4, B-6, and B-7. Moderate hydrocarbon odors were noted in soils between approximately 12 feet and 14 feet in depth in boring B-3.

3.2 Results of Laboratory Analyses

Soil and grab groundwater analytical results are summarized in Table 1. The laboratory data report for soil and groundwater samples is contained in Appendix C.

Table 1
SUMMARY OF SOIL AND GROUNDWATER ANALYTICAL RESULTS
2303-2317 Market Street and 2242-2310 Myrtle Street

Sample ID	Sample Type	Sample Depth	Concentration (parts per million (ppm)) TPH-G	B	T	E	X	MTBE	Lead
B-1-2	Soil	2.0 ft	--	--	--	--	--	--	310
B-1-13.5	Soil	13.5 ft	<0.500	<0.0050	<0.0050	<0.0050	<0.010	<0.020	--
B-1-21.5	Soil	21.5	<2.0	<0.020	<0.020	<0.20	<0.040	<0.080	--
B-1-W	Water	(11.2 ft)	<0.050	<0.001	<0.001	<0.001	<0.002	<0.004	--
B-2-4	Soil	4.0 ft	--	--	--	--	--	--	<3.0
B-2-12	Soil	12.0 ft	<0.500	<0.0050	<0.0050	<0.0050	<0.010	<0.020	--
B-2-W	Water	(9.8 ft)	30	0.052	0.24	0.037	0.43	<0.0040	--
B-3-4	Soil	4.0 ft	--	--	--	--	--	--	3.6
B-3-11.5	Soil	11.5 ft	<0.500	<0.0050	<0.0050	<0.0050	<0.010	<0.020	--
B-3-13	Soil	13.0 ft	310	<0.020	0.13	0.16	2.4	0.096	--
B-3-W	Water	(9.6 ft)	110	<0.010	0.12	0.14	0.91	0.044	--
B-4-4	Soil	4.0 ft	--	--	--	--	--	--	< 3.0
B-4-12	Soil	12.0 ft	<0.500	<0.0050	<0.0050	<0.0050	<0.010	<0.020	--
B-4-13	Soil	13.0 ft	<0.500	<0.0050	<0.0050	<0.0050	<0.010	<0.020	--
B-4-W	Water	(9.9 ft)	<0.050	<0.0010	<0.0010	<0.0010	<0.0020	<0.0040	--
B-5-4	Soil	4.0 ft	--	--	--	--	--	--	<3.0
B-5-11.5	Soil	11.5 ft	<0.500	<0.0050	<0.0050	<0.0050	<0.010	<0.020	--
B-5	Water	(10.8 ft)	<0.050	<0.0010	<0.0010	<0.0010	<0.0020	<0.0040	--
B-6-2	Soil	2.0 ft	--	--	--	--	--	--	3.2
B-7--2	Soil	2.0 ft	--	--	--	--	--	--	81
Shallow Soil ESL-Residential[1]			100	0.18	180	4.7	45	2.0	200
Deep Soil ESL-Residential			400	0.18	180	4.7	45	2.0	200
Groundwater ESL-Residential			--	1.9	530	52	160	48	--

TPH-G = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
MTBE = Methyl-t-Butyl Ether
<0.50 = Not detected above the expressed value.
ESL = Soil and Groundwater Environmental Screening Levels for evaluation of potential impacts to indoor air (residential land use), as contained in *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, San Francisco Bay Regional Water Quality Control Board, Interim Final, July 2003, Appendix 1, Tables B-1, D-1, and E-1a.
1 = Soils above three meters (ten feet) in depth.

4.0 CONCLUSIONS

Laboratory analytical results from this investigation show only two areas of the site with non-background detections of analytes. These are: (1) Gasoline-range hydrocarbons detected in the deepest soil sample, collected at 13 feet in depth, in boring B-3 and in the grab groundwater samples from borings B-2 and B-3, both located in the southeast corner of the site; and (2) A slightly elevated

lead concentration (310 milligrams per kilogram) detected in the soil sample collected at two feet in depth in boring B-1, located in the northeast corner of the site. The gasoline-range hydrocarbons detected in the southeast corner of the site are below residential land use environmental screening levels (ESLs) and obviously originated from an upgradient source or sources, since the site has never been developed and the gasoline detections were encountered on the extreme upgradient (southeast) side of the site.

The 310-miligrams per kilogram lead detection at two feet in depth in boring B-1 exceeds the residential land use ESL for shallow soils (less than ten feet in depth) of 200 mg/kg. Since this slightly elevated lead detection occurred in only one of the seven soil samples analyzed, it would appear that this lead impact is limited in extent. It is also possible, in the absence of other confirmatory sampling in the same area, that the single elevated lead detection in boring B-1 could be a false positive and could have resulted from some unknown sampling or laboratory cross contamination.

5.0 RECOMMENDATIONS

The gasoline hydrocarbon impacts encountered in the southeast corner of the site do not extend significantly onto the site, do not exceed residential land use ESLs, and obviously originated from an upgradient offsite source or sources. Thus, we recommend no additional environmental investigations or remediation of these hydrocarbons as a condition of residential land use.

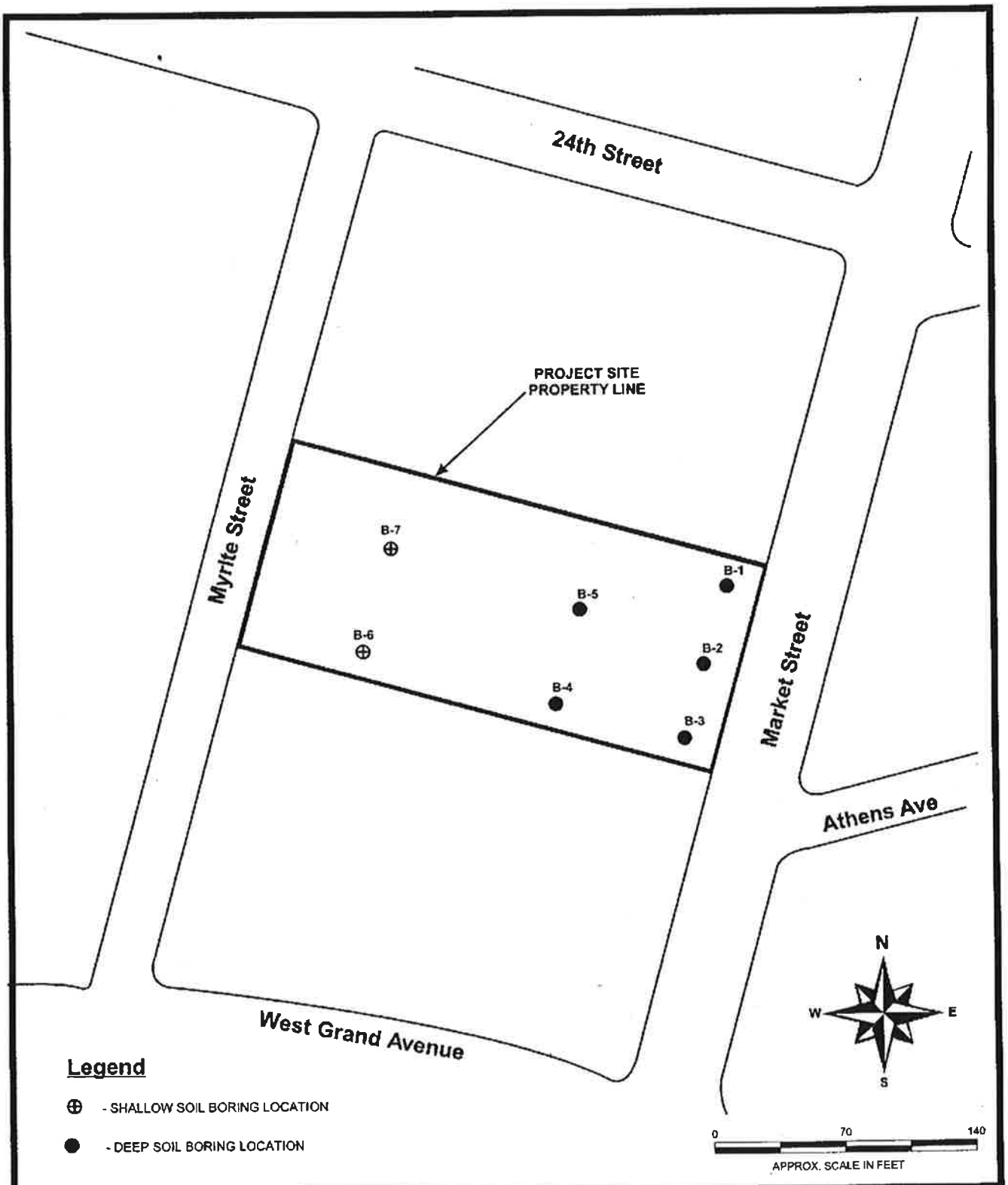
The single detection of lead above the residential ESL does not preclude residential land use, and, as indicated above, could actually be a false positive. Additional steps to address this single lead detection in boring B-1 would generally include: (1) Additional shallow soil sampling in the southeast corner of the site; and, (2) If sampling results warrant, limited excavation and offsite disposal of shallow soils in the southeast corner of the site.

APPENDIX A

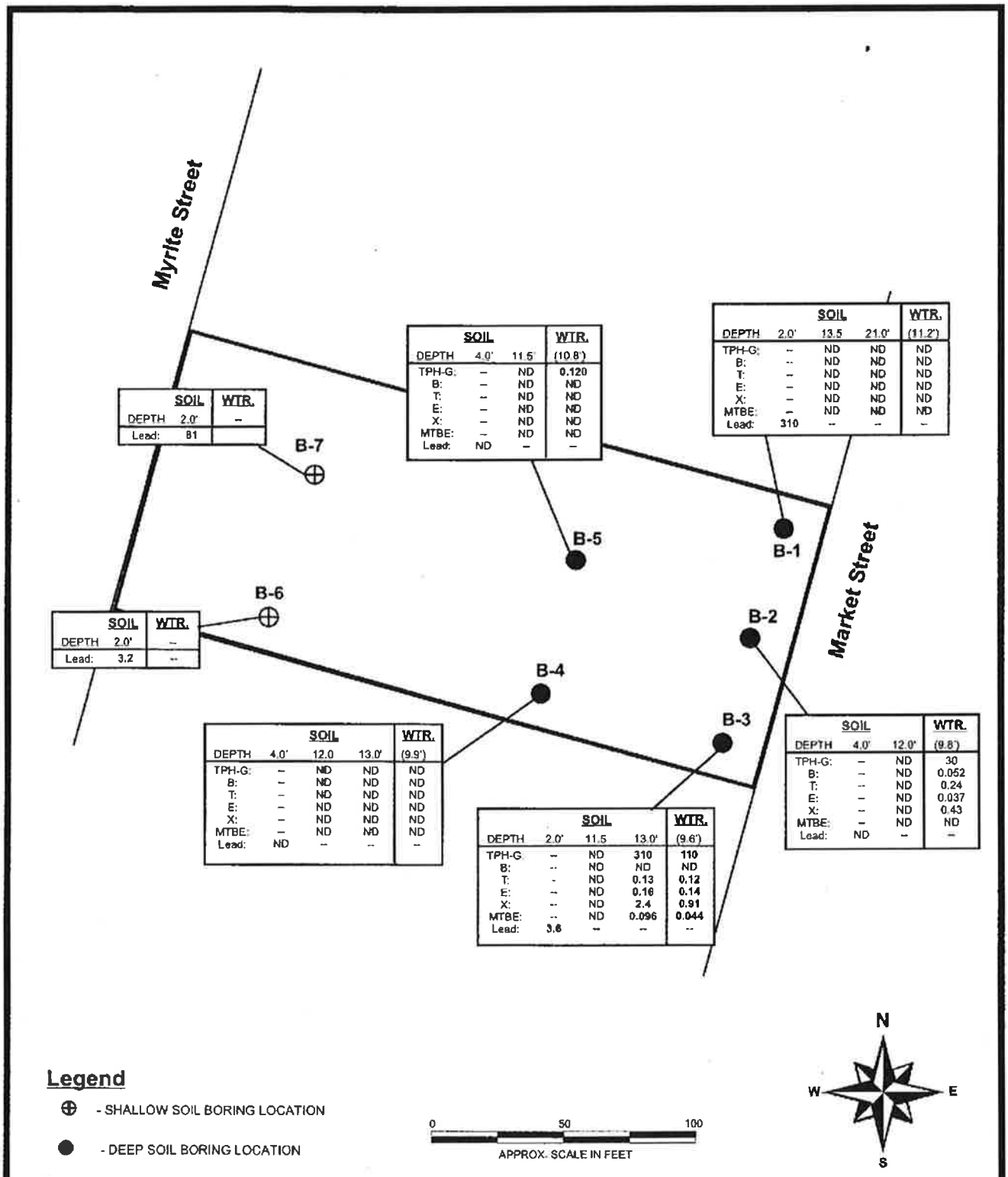
SOIL BORING PERMIT

APPENDIX C

LABORATORY DATA REPORT AND CHAIN OF CUSTODY RECORD



DESIGNED BY:	CHECKED BY: JEG	SITE PLAN	DATE: 03/17/2005	FIGURE: 2
DRAWN BY: MAR	SCALE:	2303-2317 MARKET STREET & 2242-2310 MYTLE STREET OAKLAND, CALIFORNIA	GRIBI Associates	
PROJECT NO: 277-01-01				



DESIGNED BY:	CHECKED BY: JEG	SOIL AND GROUNDWATER ANALYTICAL RESULTS	DATE: 03/17/2005	FIGURE: 3
DRAWN BY: MAR	SCALE:	2303-2317 MARKET STREET & 2242-2310 MYTLE STREET OAKLAND, CALIFORNIA	GRIBI Associates	
PROJECT NO: 277-01-01				

APPENDIX C
2014 Soil Sample and Soil Vapor Analytical Report

teg

7 September 2016

Mr. Angus McGrath
Stantec Consulting
1340 Treat Boulevard, Suite 300
Walnut Creek, CA 94597

SUBJECT: DATA REPORT - Stantec Consulting Project # 185702820
City Ventures - Oakland / 2240 Filbert Street, Oakland, California

TEG Project # 40528E

Mr. McGrath:

The MDLs, for the above referenced site, for the compounds listed below, in $\mu g/m^3$ of vapor, are:

26 - Vinyl Chloride
33 - Chloroform
33 - 1,2-DCA
32 - Benzene
26 - Ethylbenzene

After review of the chromatograms and quantitation reports from the above referenced project, the compound benzene was detected at soil vapor sample location SV-1 at estimated values of 45, 40, and 35 $\mu g/m^3$ of vapor for SV-1 samples collected after 1, 3, and 10 purge volumes, respectively. Benzene was detected in soil vapor sample SV-4 at an estimated value of 75 $\mu g/m^3$ of vapor. Benzene was not detected between the reporting limit of 80 $\mu g/m^3$ of vapor and the MDL of 32 $\mu g/m^3$ of vapor in soil vapor samples SV-2 and SV-3.

On this project, we collected data down to an estimated value of 30 $\mu g/m^3$ of vapor. 1,2 dichloroethane (1,2 DCA) and chloroform were not detected between the reporting limit of 100 $\mu g/m^3$ of vapor and the MDL of 33 $\mu g/m^3$ of vapor for any of the samples reported. Ethylbenzene and vinyl chloride were not detected between the reporting limit of 100 $\mu g/m^3$ of vapor and 30 $\mu g/m^3$ of vapor for any of the samples reported.

TEG appreciates the opportunity to have provided analytical services to Stantec Consulting on this project. If you have any further questions relating to these data or report, please do not hesitate to contact us.

Sincerely,

Mark Jerpbak
Director, TEG-Northern California

9 June 2014

Ms. Eva Hey
Stantec Consulting
1340 Treat Boulevard, Suite 300
Walnut Creek, CA 94597

SUBJECT: DATA REPORT - Stantec Consulting Project # 185702820
City Ventures - Oakland / 2240 Filbert Street, Oakland, California

TEG Project # 40528E

Ms. Hey:

Please find enclosed a data report for the samples analyzed from the above referenced project for Stantec Consulting. The samples were analyzed on site in TEG's mobile laboratory. TEG conducted a total of 7 analyses on 7 soil vapor samples.

-- 7 analyses on soil vapor for volatile organic hydrocarbons by EPA method 8260B.

The results of the analyses are summarized in the enclosed tables. Applicable detection limits and calibration data are included in the tables.

TEG appreciates the opportunity to have provided analytical services to Stantec Consulting on this project. If you have any further questions relating to these data or report, please do not hesitate to contact us.

Sincerely,

Mark Jerpbak
Director, TEG-Northern California

teg

Stantec Project # 185702820
City Ventures Oakland
2240 Filbert Street, Oakland, California

TEG Project #40528E

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER:		Probe Blank	SV-1	SV-1	SV-1	SV-2	SV-2 dup	SV-3	SV-4
SAMPLE DEPTH (feet):			5.0	5.0	5.0	5.0	5.0	5.0	5.0
PURGE VOLUME:			1	3	10	3	3	3	3
COLLECTION DATE:		5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14	5/28/14
COLLECTION TIME:		09:16	10:05	10:27	10:49	11:27	11:27	12:15	12:40
DILUTION FACTOR (VOCs):		1	1	1	1	1	1	1	1
	RL								
Dichlorodifluoromethane	100	nd	17000	19000	19000	140	120	nd	110
Vinyl Chloride	100	nd	nd	nd	nd	nd	nd	nd	nd
Chloroethane	100	nd	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	100	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	100	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloro-trifluoroethane	100	nd	nd	nd	nd	nd	nd	nd	nd
Methylene Chloride	100	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	100	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd	nd	nd
Chloroform	100	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	100	nd	nd	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	100	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	100	nd	nd	nd	nd	nd	nd	nd	nd
Benzene	80	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene	100	nd	nd	nd	nd	nd	nd	nd	nd
Toluene	200	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	100	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene	100	nd	nd	nd	nd	nd	nd	nd	nd
Ethylbenzene	100	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd	nd	nd
m,p-Xylene	200	nd	nd	nd	nd	nd	nd	nd	nd
o-Xylene	100	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Difluoroethane (leak check)	10000	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate Recovery (DBFM)		105%	106%	100%	92%	75%	93%	92%	96%
Surrogate Recovery (1,2-DCA-d4)		113%	103%	103%	100%	89%	106%	107%	109%
Surrogate Recovery (4-BFB)		107%	87%	81%	78%	109%	110%	111%	109%

'RL' Indicates reporting limit at a dilution factor of 1
'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab
Analyses performed by: Mr. Lane Sharon

Stantec Project # 185702820
City Ventures Oakland
2240 Filbert Street, Oakland, California

TEG Project #40528E

CALIBRATION DATA - Calibration Check Compounds

	Vinyl Chloride	1,1 DCE	Chloroform	1,2 DCP	Toluene	Ethylbenzene
Midpoint	10.0	10.0	10.0	10.0	10.0	10.0
Continuing Calibration - Midpoint						
5/28/14	9.3	8.1	8.8	9.1	9.1	8.9
	93%	81%	88%	91%	91%	89%

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 257399
ANALYTICAL REPORT

Stantec
1340 Treat Blvd.
Walnut Creek, CA 94597

Project : 185702820
Location : City Ventures-Oakland
Level : II

Sample ID	Lab ID
SB-1, 4.5'	257399-001
SB-2, 9'	257399-002
SB-3, 8'	257399-003
SB-4, 8.5'	257399-004
SB-5, 1'	257399-005
SB-5, 2.5'	257399-006
SB-5, 6'	257399-007
SB-5, 9.5'	257399-008
SB-6, 0.5'	257399-009
SB-6, 2.5'	257399-010
SB-6, 6'	257399-011
SB-6, 9.5'	257399-012
SB-7, 1'	257399-013
SB-7, 2.5'	257399-014
SB-7, 6'	257399-015
SB-7, 9.5'	257399-016
SB-8, 1'	257399-017
SB-8, 2.5'	257399-018
SB-8, 6'	257399-019
SB-8, 9.5'	257399-020

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 06/05/2014

Mike J. Dahlquist
Project Manager
mike.dahlquist@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**257399**
Client:	**Stantec**
Project:	**185702820**
Location:	**City Ventures-Oakland**
Request Date:	**05/29/14**
Samples Received:	**05/29/14**

This data package contains sample and QC results for twenty soil samples, requested for the above referenced project on 05/29/14. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):
High surrogate recovery was observed for bromofluorobenzene in SB-1, 4.5' (lab # 257399-001); no target analytes were detected in the sample. Low surrogate recovery was observed for trifluorotoluene in SB-4, 8.5' (lab # 257399-004). SB-1, 4.5' (lab # 257399-001) contains high hydrocarbons. SB-4, 8.5' (lab # 257399-004) was diluted due to high hydrocarbons. No other analytical problems were encountered.

Semivolatile Organics by GC/MS SIM (EPA 8270C-SIM):
High surrogate recovery was observed for nitrobenzene-d5 in SB-4, 8.5' (lab # 257399-004). No other analytical problems were encountered.

PCBs (EPA 8082):
All samples underwent sulfuric acid cleanup using EPA Method 3665A. All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. No analytical problems were encountered.

Metals (EPA 6010B):
No analytical problems were encountered.

257399

CHAIN OF CUSTODY RECORD

Stantec

Stantec Walnut Creek Office
1340 Treat Blvd., Suite 300
Walnut Creek, CA 94597
TEL:(916) 861-0400 FAX:(916)861-0430

Stantec Company Contact(s) for Invoice:
Project Manager: Eva Hey
email: eva.hey@stantec.com

Stantec Project # 185702820

DATE: 5-28-14

PAGE: 1 OF 2

Project Name: City Ventures - Oakland

Address: 2240 Filbert St., Oakland

Sampler(s) Printed Name: Charles Melancon

Sampler(s) Signature:

Laboratory: Curtis & Thompkins

Lab Use Only:

Turn-around Time (Business Days):

10 DAYS ☐ 5 DAYS ☒ 72 HR ☐ 48 HR ☐ 24 HR ☐ <24 HR ☐

☐ OTHER

Special Instructions or Notes:

Temperature Upon Receipt (C): 0.7

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MAT-RIX	No. of Cont.	Pre-serve	VOC's by 8260B	PCB's by 8082A	total Lead	PAH's	Laboratory Notes
1	SB-1, 4.5'	5-28-14	1120	S	3	Y	X				
2	SB-2, 9'		1150		4		X	X			
3	SB-3, 8'		1310		3		X				
4	SB-4, 8.5'		1020		4	↓	X	X		X	
5	SB-5, 1'		1340		1	ice			X		
6	SB-5, 2.5'		1345		1						
7	SB-5, 6'		1350		1						
8	SB-5, 9.5'		1355		1						
9	SB-6, 0.5'		1405		1						
10	SB-6, 2.5'		1410		1						
11	SB-6, 6'		1415		1						
12	SB-6, 9.5'	↓	1420	↓	1	↓			↓		

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:
	5-28-14	1800		5/29/14 1253
Relinquished by: (Signature)	Date: 5/29/14	Time: 1720	Received by: (Signature) Mikelle	Time: 5/29/14 1730
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:

MTA at cold RC

257399

CHAIN OF CUSTODY RECORD

Stantec

Stantec Walnut Creek Office
1340 Treat Blvd., Suite 300
Walnut Creek, CA 94597
TEL:(916) 861-0400 FAX:(916)861-0430

Stantec Company Contact(s) for Invoice:
Project Manager: Eva Hey
email: eva.hey@stantec.com

Stantec Project # 185702820

DATE: 5-28-14

PAGE: 2 OF 2

Project Name: City Ventures - Oakland

Address: 2240 Filbert St., Oakland

Sampler(s) Printed Name: Charles Melancon

Sampler(s) Signature:

Laboratory:

Lab Use Only:

Turn-around Time (Business Days):

10 DAYS ☐ 5 DAYS ☒ 72 HR ☐ 48 HR ☐ 24 HR ☐ <24 HR ☐

☐ OTHER

Special Instructions or Notes:

Temperature Upon Receipt (C): 0.7

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	No. of Cont.	Preserve	VOC's by 8260B	PCB's by 8082A	total Lead	Laboratory Notes
13	SB-7, 1'	5-28-14	1435	S	1	ice			X	
14	SB-7, 2.5'		1440		1					
15	SB-7, 6'		1445		1					
16	SB-7, 9.5'		1450		1					
17	SB-8, 1'		1500		1					
18	SB-8, 2.5'		1505		1					
19	SB-8, 6'		1510		1					
20	SB-8, 9.5'		1515		1					

	Date:	Time:		Time:
Relinquished by: (Signature)	5-28-14	1800	Received by: (Signature)	5/29/14 1253
Relinquished by: (Signature)	5/29/14	1720	Received by: (Signature) Mitelle	5/29/14 1720
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Time:

Mitel ok 12c

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 257399 Date Received 5/29/14 Number of coolers 1
Client Stantec Project 185702820

Date Opened 5/29/14 By (print) MC (sign)
Date Logged in ↓ By (print) ↓ (sign)

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
Shipping info

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
How many Name Date
2B. Were custody seals intact upon arrival? YES NO (N/A)
3. Were custody papers dry and intact when received? (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe)

☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 0.7

☐ Samples received on ice & cold without a temperature blank; temp taken with IR gun

☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? (YES) NO
If YES, what time were they transferred to freezer? 1730
9. Did all bottles arrive unbroken/unopened? (YES) NO
10. Are there any missing / extra samples? YES (NO)
11. Are samples in the appropriate containers for indicated tests? (YES) NO
12. Are sample labels present, in good condition and complete? (YES) NO
13. Do the sample labels agree with custody papers? (YES) NO
14. Was sufficient amount of sample sent for tests requested? (YES) NO
15. Are the samples appropriately preserved? (YES) NO N/A
16. Did you check preservatives for all bottles for each sample? YES NO (N/A)
17. Did you document your preservative check? YES NO (N/A)
18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? (YES) NO N/A
20. Are bubbles > 6mm absent in VOA samples? YES NO (N/A)
21. Was the client contacted concerning this sample delivery? YES (NO)
If YES, Who was called? By Date:

COMMENTS

Rev 10, 10/11

Curtis & Tompkins, Ltd.

Detections Summary for 257399

Client : Stantec
Project : 185702820
Location : City Ventures-Oakland

Client Sample ID : SB-1, 4.5' Laboratory Sample ID : 257399-001

No Detections

Client Sample ID : SB-2, 9' Laboratory Sample ID : 257399-002

No Detections

Client Sample ID : SB-3, 8' Laboratory Sample ID : 257399-003

No Detections

Client Sample ID : SB-4, 8.5' Laboratory Sample ID : 257399-004

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Isopropylbenzene	580		500	12	ug/Kg	As Recd	100.0	EPA 8260B	EPA 5035
Propylbenzene	670		500	14	ug/Kg	As Recd	100.0	EPA 8260B	EPA 5035
para-Isopropyl Toluene	700		500	15	ug/Kg	As Recd	100.0	EPA 8260B	EPA 5035
Naphthalene	72		5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B

Client Sample ID : SB-5, 1' Laboratory Sample ID : 257399-005

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	94		0.23	0.064	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-5, 2.5' Laboratory Sample ID : 257399-006

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	9.0		0.23	0.065	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-5, 6' Laboratory Sample ID : 257399-007

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	2.5		0.27	0.075	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-5, 9.5' Laboratory Sample ID : 257399-008

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	2.1		0.25	0.068	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-6, 0.5' Laboratory Sample ID : 257399-009

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	4.3		0.26	0.073	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-6, 2.5' Laboratory Sample ID : 257399-010

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	5.1		0.26	0.073	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-6, 6' Laboratory Sample ID : 257399-011

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	2.6		0.26	0.073	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-6, 9.5' Laboratory Sample ID : 257399-012

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	2.5		0.24	0.066	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-7, 1' Laboratory Sample ID : 257399-013

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	4.4		0.26	0.073	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-7, 2.5' Laboratory Sample ID : 257399-014

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	8.8		0.27	0.074	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-7, 6' Laboratory Sample ID : 257399-015

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	2.0		0.24	0.066	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-7, 9.5' Laboratory Sample ID : 257399-016

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	31		0.25	0.069	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-8, 1' Laboratory Sample ID : 257399-017

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	14		0.24	0.066	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Curtis & Tompkins, Ltd.

Client Sample ID : SB-8, 2.5' Laboratory Sample ID : 257399-018

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	16		0.27	0.074	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-8, 6' Laboratory Sample ID : 257399-019

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	5.8		0.24	0.067	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : SB-8, 9.5' Laboratory Sample ID : 257399-020

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Lead	4.5		0.23	0.065	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Field ID:	SB-1, 4.5'	Dil'n Fac:	36.68
Lab ID:	257399-001	Batch#:	211752
Matrix:	Soil	Sampled:	05/28/14
Units:	ug/Kg	Received:	05/29/14
Basis:	as received	Analyzed:	06/03/14

Analyte	Result	RL
Freon 12	ND	370
Chloromethane	ND	370
Vinyl Chloride	ND	370
Bromomethane	ND	370
Chloroethane	ND	370
Trichlorofluoromethane	ND	180
Acetone	ND	730
Freon 113	ND	180
1,1-Dichloroethene	ND	180
Methylene Chloride	ND	730
Carbon Disulfide	ND	180
MTBE	ND	180
trans-1,2-Dichloroethene	ND	180
Vinyl Acetate	ND	1,800
1,1-Dichloroethane	ND	180
2-Butanone	ND	370
cis-1,2-Dichloroethene	ND	180
2,2-Dichloropropane	ND	180
Chloroform	ND	180
Bromochloromethane	ND	180
1,1,1-Trichloroethane	ND	180
1,1-Dichloropropene	ND	180
Carbon Tetrachloride	ND	180
1,2-Dichloroethane	ND	180
Benzene	ND	180
Trichloroethene	ND	180
1,2-Dichloropropane	ND	180
Bromodichloromethane	ND	180
Dibromomethane	ND	180
4-Methyl-2-Pentanone	ND	370
cis-1,3-Dichloropropene	ND	180
Toluene	ND	180
trans-1,3-Dichloropropene	ND	180
1,1,2-Trichloroethane	ND	180
2-Hexanone	ND	370
1,3-Dichloropropane	ND	180
Tetrachloroethene	ND	180
Dibromochloromethane	ND	180
1,2-Dibromoethane	ND	180
Chlorobenzene	ND	180
1,1,1,2-Tetrachloroethane	ND	180
Ethylbenzene	ND	180
m,p-Xylenes	ND	180
o-Xylene	ND	180
Styrene	ND	180
Bromoform	ND	180
Isopropylbenzene	ND	180
1,1,2,2-Tetrachloroethane	ND	180
1,2,3-Trichloropropane	ND	180
Propylbenzene	ND	180
Bromobenzene	ND	180
1,3,5-Trimethylbenzene	ND	180
2-Chlorotoluene	ND	180

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Field ID:	SB-1, 4.5'	Diln Fac:	36.68
Lab ID:	257399-001	Batch#:	211752
Matrix:	Soil	Sampled:	05/28/14
Units:	ug/Kg	Received:	05/29/14
Basis:	as received	Analyzed:	06/03/14

Analyte	Result	RL
4-Chlorotoluene	ND	180
tert-Butylbenzene	ND	180
1,2,4-Trimethylbenzene	ND	180
sec-Butylbenzene	ND	180
para-Isopropyl Toluene	ND	180
1,3-Dichlorobenzene	ND	180
1,4-Dichlorobenzene	ND	180
n-Butylbenzene	ND	180
1,2-Dichlorobenzene	ND	180
1,2-Dibromo-3-Chloropropane	ND	180
1,2,4-Trichlorobenzene	ND	180
Hexachlorobutadiene	ND	180
Naphthalene	ND	180
1,2,3-Trichlorobenzene	ND	180

Surrogate	%REC	Limits
Dibromofluoromethane	105	76-128
1,2-Dichloroethane-d4	119	80-137
Toluene-d8	92	80-120
Bromofluorobenzene	139 *	79-128

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Field ID:	SB-2, 9'	Diln Fac:	0.8319
Lab ID:	257399-002	Batch#:	211752
Matrix:	Soil	Sampled:	05/28/14
Units:	ug/Kg	Received:	05/29/14
Basis:	as received	Analyzed:	06/03/14

Analyte	Result	RL
Freon 12	ND	8.3
Chloromethane	ND	8.3
Vinyl Chloride	ND	8.3
Bromomethane	ND	8.3
Chloroethane	ND	8.3
Trichlorofluoromethane	ND	4.2
Acetone	ND	17
Freon 113	ND	4.2
1,1-Dichloroethene	ND	4.2
Methylene Chloride	ND	17
Carbon Disulfide	ND	4.2
MTBE	ND	4.2
trans-1,2-Dichloroethene	ND	4.2
Vinyl Acetate	ND	42
1,1-Dichloroethane	ND	4.2
2-Butanone	ND	8.3
cis-1,2-Dichloroethene	ND	4.2
2,2-Dichloropropane	ND	4.2
Chloroform	ND	4.2
Bromochloromethane	ND	4.2
1,1,1-Trichloroethane	ND	4.2
1,1-Dichloropropene	ND	4.2
Carbon Tetrachloride	ND	4.2
1,2-Dichloroethane	ND	4.2
Benzene	ND	4.2
Trichloroethene	ND	4.2
1,2-Dichloropropane	ND	4.2
Bromodichloromethane	ND	4.2
Dibromomethane	ND	4.2
4-Methyl-2-Pentanone	ND	8.3
cis-1,3-Dichloropropene	ND	4.2
Toluene	ND	4.2
trans-1,3-Dichloropropene	ND	4.2
1,1,2-Trichloroethane	ND	4.2
2-Hexanone	ND	8.3
1,3-Dichloropropane	ND	4.2
Tetrachloroethene	ND	4.2

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Field ID:	SB-2, 9'	Diln Fac:	0.8319
Lab ID:	257399-002	Batch#:	211752
Matrix:	Soil	Sampled:	05/28/14
Units:	ug/Kg	Received:	05/29/14
Basis:	as received	Analyzed:	06/03/14

Analyte	Result	RL
Dibromochloromethane	ND	4.2
1,2-Dibromoethane	ND	4.2
Chlorobenzene	ND	4.2
1,1,1,2-Tetrachloroethane	ND	4.2
Ethylbenzene	ND	4.2
m,p-Xylenes	ND	4.2
o-Xylene	ND	4.2
Styrene	ND	4.2
Bromoform	ND	4.2
Isopropylbenzene	ND	4.2
1,1,2,2-Tetrachloroethane	ND	4.2
1,2,3-Trichloropropane	ND	4.2
Propylbenzene	ND	4.2
Bromobenzene	ND	4.2
1,3,5-Trimethylbenzene	ND	4.2
2-Chlorotoluene	ND	4.2
4-Chlorotoluene	ND	4.2
tert-Butylbenzene	ND	4.2
1,2,4-Trimethylbenzene	ND	4.2
sec-Butylbenzene	ND	4.2
para-Isopropyl Toluene	ND	4.2
1,3-Dichlorobenzene	ND	4.2
1,4-Dichlorobenzene	ND	4.2
n-Butylbenzene	ND	4.2
1,2-Dichlorobenzene	ND	4.2
1,2-Dibromo-3-Chloropropane	ND	4.2
1,2,4-Trichlorobenzene	ND	4.2
Hexachlorobutadiene	ND	4.2
Naphthalene	ND	4.2
1,2,3-Trichlorobenzene	ND	4.2

Surrogate	%REC	Limits
Dibromofluoromethane	111	76-128
1,2-Dichloroethane-d4	121	80-137
Toluene-d8	95	80-120
Bromofluorobenzene	92	79-128

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Field ID:	SB-3, 8'	Diln Fac:	0.7496
Lab ID:	257399-003	Batch#:	211752
Matrix:	Soil	Sampled:	05/28/14
Units:	ug/Kg	Received:	05/29/14
Basis:	as received	Analyzed:	06/03/14

Analyte	Result	RL
Freon 12	ND	7.5
Chloromethane	ND	7.5
Vinyl Chloride	ND	7.5
Bromomethane	ND	7.5
Chloroethane	ND	7.5
Trichlorofluoromethane	ND	3.7
Acetone	ND	15
Freon 113	ND	3.7
1,1-Dichloroethene	ND	3.7
Methylene Chloride	ND	15
Carbon Disulfide	ND	3.7
MTBE	ND	3.7
trans-1,2-Dichloroethene	ND	3.7
Vinyl Acetate	ND	37
1,1-Dichloroethane	ND	3.7
2-Butanone	ND	7.5
cis-1,2-Dichloroethene	ND	3.7
2,2-Dichloropropane	ND	3.7
Chloroform	ND	3.7
Bromochloromethane	ND	3.7
1,1,1-Trichloroethane	ND	3.7
1,1-Dichloropropene	ND	3.7
Carbon Tetrachloride	ND	3.7
1,2-Dichloroethane	ND	3.7
Benzene	ND	3.7
Trichloroethene	ND	3.7
1,2-Dichloropropane	ND	3.7
Bromodichloromethane	ND	3.7
Dibromomethane	ND	3.7
4-Methyl-2-Pentanone	ND	7.5
cis-1,3-Dichloropropene	ND	3.7
Toluene	ND	3.7
trans-1,3-Dichloropropene	ND	3.7
1,1,2-Trichloroethane	ND	3.7
2-Hexanone	ND	7.5
1,3-Dichloropropane	ND	3.7
Tetrachloroethene	ND	3.7

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Field ID:	SB-3, 8'	Diln Fac:	0.7496
Lab ID:	257399-003	Batch#:	211752
Matrix:	Soil	Sampled:	05/28/14
Units:	ug/Kg	Received:	05/29/14
Basis:	as received	Analyzed:	06/03/14

Analyte	Result	RL
Dibromochloromethane	ND	3.7
1,2-Dibromoethane	ND	3.7
Chlorobenzene	ND	3.7
1,1,1,2-Tetrachloroethane	ND	3.7
Ethylbenzene	ND	3.7
m,p-Xylenes	ND	3.7
o-Xylene	ND	3.7
Styrene	ND	3.7
Bromoform	ND	3.7
Isopropylbenzene	ND	3.7
1,1,2,2-Tetrachloroethane	ND	3.7
1,2,3-Trichloropropane	ND	3.7
Propylbenzene	ND	3.7
Bromobenzene	ND	3.7
1,3,5-Trimethylbenzene	ND	3.7
2-Chlorotoluene	ND	3.7
4-Chlorotoluene	ND	3.7
tert-Butylbenzene	ND	3.7
1,2,4-Trimethylbenzene	ND	3.7
sec-Butylbenzene	ND	3.7
para-Isopropyl Toluene	ND	3.7
1,3-Dichlorobenzene	ND	3.7
1,4-Dichlorobenzene	ND	3.7
n-Butylbenzene	ND	3.7
1,2-Dichlorobenzene	ND	3.7
1,2-Dibromo-3-Chloropropane	ND	3.7
1,2,4-Trichlorobenzene	ND	3.7
Hexachlorobutadiene	ND	3.7
Naphthalene	ND	3.7
1,2,3-Trichlorobenzene	ND	3.7

Surrogate	%REC	Limits
Dibromofluoromethane	114	76-128
1,2-Dichloroethane-d4	126	80-137
Toluene-d8	96	80-120
Bromofluorobenzene	92	79-128

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Field ID:	SB-4, 8.5'	Dil'n Fac:	100.0
Lab ID:	257399-004	Batch#:	211795
Matrix:	Soil	Sampled:	05/28/14
Units:	ug/Kg	Received:	05/29/14
Basis:	as received	Analyzed:	06/04/14

Analyte	Result	RL
Freon 12	ND	1,000
Chloromethane	ND	1,000
Vinyl Chloride	ND	1,000
Bromomethane	ND	1,000
Chloroethane	ND	1,000
Trichlorofluoromethane	ND	500
Acetone	ND	2,000
Freon 113	ND	500
1,1-Dichloroethene	ND	500
Methylene Chloride	ND	2,000
Carbon Disulfide	ND	500
MTBE	ND	500
trans-1,2-Dichloroethene	ND	500
Vinyl Acetate	ND	5,000
1,1-Dichloroethane	ND	500
2-Butanone	ND	1,000
cis-1,2-Dichloroethene	ND	500
2,2-Dichloropropane	ND	500
Chloroform	ND	500
Bromochloromethane	ND	500
1,1,1-Trichloroethane	ND	500
1,1-Dichloropropene	ND	500
Carbon Tetrachloride	ND	500
1,2-Dichloroethane	ND	500
Benzene	ND	500
Trichloroethene	ND	500
1,2-Dichloropropane	ND	500
Bromodichloromethane	ND	500
Dibromomethane	ND	500
4-Methyl-2-Pentanone	ND	1,000
cis-1,3-Dichloropropene	ND	500
Toluene	ND	500
trans-1,3-Dichloropropene	ND	500
1,1,2-Trichloroethane	ND	500
2-Hexanone	ND	1,000
1,3-Dichloropropane	ND	500
Tetrachloroethene	ND	500
Dibromochloromethane	ND	500
1,2-Dibromoethane	ND	500
Chlorobenzene	ND	500
1,1,1,2-Tetrachloroethane	ND	500
Ethylbenzene	ND	500
m,p-Xylenes	ND	500
o-Xylene	ND	500
Styrene	ND	500
Bromoform	ND	500
Isopropylbenzene	580	500
1,1,2,2-Tetrachloroethane	ND	500
1,2,3-Trichloropropane	ND	500
Propylbenzene	670	500
Bromobenzene	ND	500
1,3,5-Trimethylbenzene	ND	500
2-Chlorotoluene	ND	500

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Field ID:	SB-4, 8.5'	Dil'n Fac:	100.0
Lab ID:	257399-004	Batch#:	211795
Matrix:	Soil	Sampled:	05/28/14
Units:	ug/Kg	Received:	05/29/14
Basis:	as received	Analyzed:	06/04/14

Analyte	Result	RL
4-Chlorotoluene	ND	500
tert-Butylbenzene	ND	500
1,2,4-Trimethylbenzene	ND	500
sec-Butylbenzene	ND	500
para-Isopropyl Toluene	700	500
1,3-Dichlorobenzene	ND	500
1,4-Dichlorobenzene	ND	500
n-Butylbenzene	ND	500
1,2-Dichlorobenzene	ND	500
1,2-Dibromo-3-Chloropropane	ND	500
1,2,4-Trichlorobenzene	ND	500
Hexachlorobutadiene	ND	500
Naphthalene	ND	500
1,2,3-Trichlorobenzene	ND	500

Surrogate	%REC	Limits
Dibromofluoromethane	92	76-128
1,2-Dichloroethane-d4	110	80-137
Toluene-d8	95	80-120
Bromofluorobenzene	105	79-128
Trifluorotoluene (MeOH)	0 *	50-137

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC742974	Batch#:	211752
Matrix:	Soil	Analyzed:	06/03/14
Units:	ug/Kg		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	23.79	95	68-135
Benzene	25.00	24.76	99	80-127
Trichloroethene	25.00	26.69	107	77-129
Toluene	25.00	25.10	100	79-125
Chlorobenzene	25.00	27.46	110	78-120

Surrogate	%REC	Limits
Dibromofluoromethane	103	76-128
1,2-Dichloroethane-d4	117	80-137
Toluene-d8	97	80-120
Bromofluorobenzene	93	79-128

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC742975	Batch#:	211752
Matrix:	Soil	Analyzed:	06/03/14
Units:	ug/Kg		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC742975	Batch#:	211752
Matrix:	Soil	Analyzed:	06/03/14
Units:	ug/Kg		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	107	76-128
1,2-Dichloroethane-d4	117	80-137
Toluene-d8	98	80-120
Bromofluorobenzene	91	79-128

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5030B
Project#:	185702820	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	211752
MSS Lab ID:	257572-001	Sampled:	06/02/14
Matrix:	Soil	Received:	06/03/14
Units:	ug/Kg	Analyzed:	06/03/14
Basis:	as received		

Type: MS Diln Fac: 0.9597
Lab ID: QC743001

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.5734	47.98	42.93	89	46-138
Benzene	<0.6681	47.98	44.37	92	51-125
Trichloroethene	<0.6959	47.98	46.71	97	41-146
Toluene	<0.7318	47.98	43.95	92	45-123
Chlorobenzene	<0.5999	47.98	46.01	96	39-120

Surrogate	%REC	Limits
Dibromofluoromethane	108	76-128
1,2-Dichloroethane-d4	125	80-137
Toluene-d8	97	80-120
Bromofluorobenzene	94	79-128

Type: MSD Diln Fac: 0.9579
Lab ID: QC743002

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	47.89	43.60	91	46-138	2	51
Benzene	47.89	43.49	91	51-125	2	46
Trichloroethene	47.89	46.36	97	41-146	1	55
Toluene	47.89	42.84	89	45-123	2	59
Chlorobenzene	47.89	43.39	91	39-120	6	54

Surrogate	%REC	Limits
Dibromofluoromethane	104	76-128
1,2-Dichloroethane-d4	124	80-137
Toluene-d8	97	80-120
Bromofluorobenzene	95	79-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC743174	Batch#:	211795
Matrix:	Soil	Analyzed:	06/04/14
Units:	ug/Kg		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	23.99	96	68-135
Benzene	25.00	24.66	99	80-127
Trichloroethene	25.00	27.03	108	77-129
Toluene	25.00	25.06	100	79-125
Chlorobenzene	25.00	27.94	112	78-120

Surrogate	%REC	Limits
Dibromofluoromethane	100	76-128
1,2-Dichloroethane-d4	120	80-137
Toluene-d8	95	80-120
Bromofluorobenzene	90	79-128

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC743175	Batch#:	211795
Matrix:	Soil	Analyzed:	06/04/14
Units:	ug/Kg		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 5035
Project#:	185702820	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC743175	Batch#:	211795
Matrix:	Soil	Analyzed:	06/04/14
Units:	ug/Kg		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	103	76-128
1,2-Dichloroethane-d4	117	80-137
Toluene-d8	96	80-120
Bromofluorobenzene	89	79-128

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Semivolatile Organics by GC/MS SIM

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 3550B
Project#:	185702820	Analysis:	EPA 8270C-SIM
Field ID:	SB-4, 8.5'	Batch#:	211722
Lab ID:	257399-004	Sampled:	05/28/14
Matrix:	Soil	Received:	05/29/14
Units:	ug/Kg	Prepared:	06/02/14
Basis:	as received	Analyzed:	06/03/14
Diln Fac:	1.000		

Analyte	Result	RL
Naphthalene	72	5.0
Acenaphthylene	ND	5.0
Acenaphthene	ND	5.0
Fluorene	ND	5.0
Phenanthrene	ND	5.0
Anthracene	ND	5.0
Fluoranthene	ND	5.0
Pyrene	ND	5.0
Benzo(a)anthracene	ND	5.0
Chrysene	ND	5.0
Benzo(b)fluoranthene	ND	5.0
Benzo(k)fluoranthene	ND	5.0
Benzo(a)pyrene	ND	5.0
Indeno(1,2,3-cd)pyrene	ND	5.0
Dibenz(a,h)anthracene	ND	5.0
Benzo(g,h,i)perylene	ND	5.0

Surrogate	%REC	Limits
Nitrobenzene-d5	464 *	46-120
2-Fluorobiphenyl	75	52-120
Terphenyl-d14	87	54-132

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 3550B
Project#:	185702820	Analysis:	EPA 8270C-SIM
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC742859	Batch#:	211722
Matrix:	Soil	Prepared:	06/02/14
Units:	ug/Kg	Analyzed:	06/03/14

Analyte	Result	RL
Naphthalene	ND	5.0
Acenaphthylene	ND	5.0
Acenaphthene	ND	5.0
Fluorene	ND	5.0
Phenanthrene	ND	5.0
Anthracene	ND	5.0
Fluoranthene	ND	5.0
Pyrene	ND	5.0
Benzo(a)anthracene	ND	5.0
Chrysene	ND	5.0
Benzo(b)fluoranthene	ND	5.0
Benzo(k)fluoranthene	ND	5.0
Benzo(a)pyrene	ND	5.0
Indeno(1,2,3-cd)pyrene	ND	5.0
Dibenz(a,h)anthracene	ND	5.0
Benzo(g,h,i)perylene	ND	5.0

Surrogate	%REC	Limits
Nitrobenzene-d5	83	46-120
2-Fluorobiphenyl	81	52-120
Terphenyl-d14	85	54-132

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 3550B
Project#:	185702820	Analysis:	EPA 8270C-SIM
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC742860	Batch#:	211722
Matrix:	Soil	Prepared:	06/02/14
Units:	ug/Kg	Analyzed:	06/03/14

Analyte	Spiked	Result	%REC	Limits
Acenaphthene	33.72	27.56	82	43-120
Pyrene	33.72	28.65	85	39-120

Surrogate	%REC	Limits
Nitrobenzene-d5	93	46-120
2-Fluorobiphenyl	90	52-120
Terphenyl-d14	86	54-132

Curtis & Tompkins, Ltd.

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 3550B
Project#:	185702820	Analysis:	EPA 8270C-SIM
Field ID:	ZZZZZZZZZZ	Batch#:	211722
MSS Lab ID:	257544-001	Sampled:	06/02/14
Matrix:	Soil	Received:	06/02/14
Units:	ug/Kg	Prepared:	06/02/14
Basis:	as received	Analyzed:	06/03/14
Diln Fac:	1.000		

Type: MS Lab ID: QC742861

Analyte	MSS Result	Spiked	Result	%REC	Limits
Acenaphthene	14.80	33.30	43.45	86	47-120
Pyrene	56.41	33.30	103.1	140	21-143

Surrogate	%REC	Limits
Nitrobenzene-d5	89	46-120
2-Fluorobiphenyl	85	52-120
Terphenyl-d14	99	54-132

Type: MSD Lab ID: QC742862

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Acenaphthene	33.39	38.62	71	47-120	12	54
Pyrene	33.39	84.92	85	21-143	19	67

Surrogate	%REC	Limits
Nitrobenzene-d5	76	46-120
2-Fluorobiphenyl	73	52-120
Terphenyl-d14	88	54-132

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 3550B
Project#:	185702820	Analysis:	EPA 8082
Matrix:	Soil	Batch#:	211586
Units:	ug/Kg	Sampled:	05/28/14
Basis:	as received	Received:	05/29/14
Diln Fac:	1.000	Prepared:	05/29/14

Field ID: SB-2, 9' Lab ID: 257399-002
Type: SAMPLE Analyzed: 05/30/14

Analyte	Result	RL
Aroclor-1016	ND	9.6
Aroclor-1221	ND	19
Aroclor-1232	ND	9.6
Aroclor-1242	ND	9.6
Aroclor-1248	ND	9.6
Aroclor-1254	ND	9.6
Aroclor-1260	ND	9.6

Surrogate	%REC	Limits
TCMX	89	60-140
Decachlorobiphenyl	80	36-133

Field ID: SB-4, 8.5' Lab ID: 257399-004
Type: SAMPLE Analyzed: 05/30/14

Analyte	Result	RL
Aroclor-1016	ND	9.6
Aroclor-1221	ND	19
Aroclor-1232	ND	9.6
Aroclor-1242	ND	9.6
Aroclor-1248	ND	9.6
Aroclor-1254	ND	9.6
Aroclor-1260	ND	9.6

Surrogate	%REC	Limits
TCMX	93	60-140
Decachlorobiphenyl	77	36-133

Type: BLANK Analyzed: 05/29/14
Lab ID: QC742297

Analyte	Result	RL
Aroclor-1016	ND	9.5
Aroclor-1221	ND	19
Aroclor-1232	ND	9.5
Aroclor-1242	ND	9.5
Aroclor-1248	ND	9.5
Aroclor-1254	ND	9.5
Aroclor-1260	ND	9.5

Surrogate	%REC	Limits
TCMX	102	60-140
Decachlorobiphenyl	58	36-133

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 3550B
Project#:	185702820	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC742298	Batch#:	211586
Matrix:	Soil	Prepared:	05/29/14
Units:	ug/Kg	Analyzed:	05/29/14

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	165.7	193.3	117	58-144
Aroclor-1260	165.7	193.9	117	55-146

Surrogate	%REC	Limits
TCMX	121	60-140
Decachlorobiphenyl	77	36-133

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 3550B
Project#:	185702820	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	211586
MSS Lab ID:	257339-001	Sampled:	05/28/14
Matrix:	Soil	Received:	05/28/14
Units:	ug/Kg	Prepared:	05/29/14
Basis:	as received	Analyzed:	05/30/14
Diln Fac:	1.000		

Type: MS Lab ID: QC742299

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.382	166.1	171.2	103	51-155
Aroclor-1260	<1.558	166.1	158.1	95	38-155

Surrogate	%REC	Limits
TCMX	105	60-140
Decachlorobiphenyl	60	36-133

Type: MSD Lab ID: QC742300

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	166.9	157.6	94	51-155	9	38
Aroclor-1260	166.9	150.7	90	38-155	5	55

Surrogate	%REC	Limits
TCMX	85	60-140
Decachlorobiphenyl	52	36-133

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Lead

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 3050B
Project#:	185702820	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	211811
Matrix:	Soil	Sampled:	05/28/14
Units:	mg/Kg	Received:	05/29/14
Basis:	as received	Prepared:	06/04/14
Diln Fac:	1.000	Analyzed:	06/04/14

Field ID	Type	Lab ID	Result	RL
SB-5, 1'	SAMPLE	257399-005	94	0.23
SB-5, 2.5'	SAMPLE	257399-006	9.0	0.23
SB-5, 6'	SAMPLE	257399-007	2.5	0.27
SB-5, 9.5'	SAMPLE	257399-008	2.1	0.25
SB-6, 0.5'	SAMPLE	257399-009	4.3	0.26
SB-6, 2.5'	SAMPLE	257399-010	5.1	0.26
SB-6, 6'	SAMPLE	257399-011	2.6	0.26
SB-6, 9.5'	SAMPLE	257399-012	2.5	0.24
SB-7, 1'	SAMPLE	257399-013	4.4	0.26
SB-7, 2.5'	SAMPLE	257399-014	8.8	0.27
SB-7, 6'	SAMPLE	257399-015	2.0	0.24
SB-7, 9.5'	SAMPLE	257399-016	31	0.25
SB-8, 1'	SAMPLE	257399-017	14	0.24
SB-8, 2.5'	SAMPLE	257399-018	16	0.27
SB-8, 6'	SAMPLE	257399-019	5.8	0.24
SB-8, 9.5'	SAMPLE	257399-020	4.5	0.23
	BLANK	QC743241	ND	0.25

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Lead

Lab #:	257399	Location:	City Ventures-Oakland
Client:	Stantec	Prep:	EPA 3050B
Project#:	185702820	Analysis:	EPA 6010B
Analyte:	Lead	Diln Fac:	1.000
Field ID:	SB-5, 1'	Batch#:	211811
MSS Lab ID:	257399-005	Sampled:	05/28/14
Matrix:	Soil	Received:	05/29/14
Units:	mg/Kg	Prepared:	06/04/14
Basis:	as received	Analyzed:	06/04/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC743242		100.0	91.53	92	80-120		
BSD	QC743243		100.0	93.86	94	80-120	3	20
MS	QC743244	93.90	104.2	178.4	81	52-122		
MSD	QC743245		103.1	185.8	89	52-122	5	49

RPD= Relative Percent Difference

APPENDIX D
Subtronic Ground Penetrating Radar Report

subtronic corp

NULCA - NASSCC - APWA - AWWA - Members

5031 Blum Road
Martinez, California 94553
Telephone (925) 228-8771
Fax No. (925) 228-8737
www.subtronic.com

GEOPHYSICAL SUBSURFACE INVESTIGATION

2240 FILBERT ST., OAKLAND CA

For

NOVA ABATEMENT & CONSTRUCTION SERVICES, INC.

June 5, 2014

Objective:

The objective of the subsurface investigation was to determine the presence and location of underground storage tanks. The property is located at 2240 Filbert Street, in Oakland, California.

Site Description:

The areas of concern were indicated by Steve Schwartz of Nova Abatement & Construction Services, Inc.. The areas of concern were typically concrete paved and sometimes reinforced with rebar. The areas surveyed were located on the sidewalk of Filbert and Myrtle streets.

Survey Methodology:

A visual inspection is conducted around the suspect area. Underground utilities, vaults, boxes, exposed piping, topographic mounds and depressions are noted. Exposed piping or risers found on the site are energized, traced out and the surface location is spray painted on the ground. Areas clear enough of above ground metal are scanned in two perpendicular directions with both the Schondstedt and the Split Box locator. Utilities and large buried metallic anomalies detected by the locator are marked on the ground. Radar data is scanned over the suspect areas and anomalies to determine if the UST has been removed or is still in the ground.

Geophysical Equipment

The specialized equipment used at the site includes a TW-6 M-Scope, Schondstedt GA-72-C and the GSSI system 3000 ground penetrating radar (GPR) with a 400 MHz antenna.

TW-6 M-Scope

The Fisher TW-6 M-Scope is a split box inductive locator and metal detector mounted on a four-foot rod. The split box locator can detect metal lines “inductively”. The M-Scope is also used to detect buried metallic objects such as manhole covers, underground storage tanks, etc…

Schondstedt GA-72-CD
The Schondstedt is a hand held magnetic gradiometer which detects the magnetic field caused by ferromagnetic objects. The schondstedt produces an audible signal when it can detect a variation in the magnetic field strength between the two sensors 14 in apart. In an area of little magnetic debris it can detect metallic objects up to 10 feet deep.

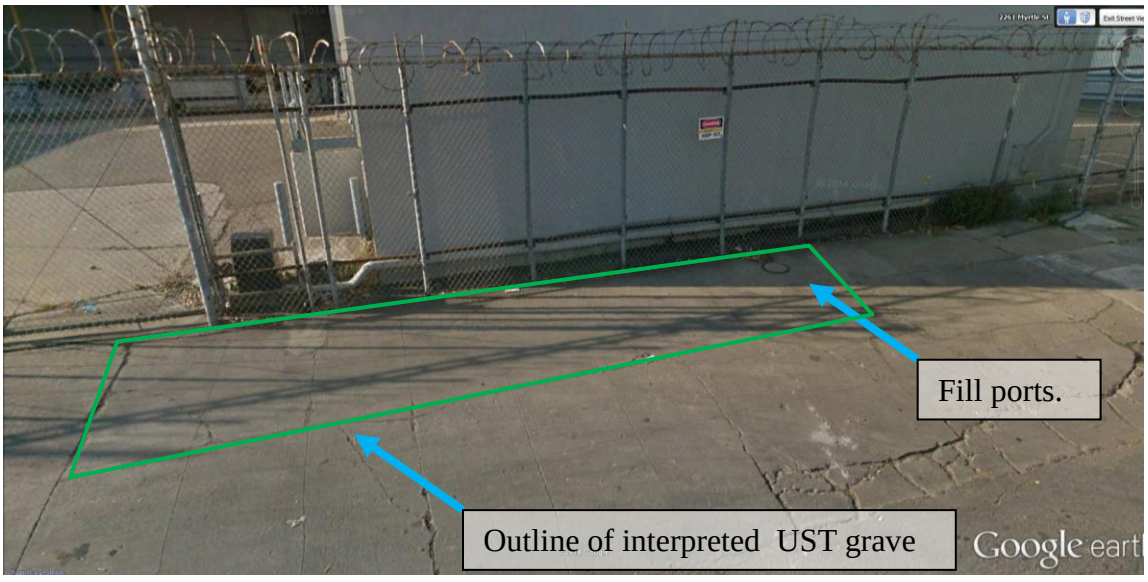
GSSI SIR-3000
A ground penetrating radar (GPR) system graphically records subsurface structures. Both geological and man made structures are recorded by the introduction of a pulse of electromagnetic energy into the ground. Reflected pulses received by the antenna are then processed for measurable contrast in electrical properties. The result is a visual pseudo-cross-sectional profile.

Primary applications of the GPR are detecting underground storage tanks, foundations, buried drums, previously excavated areas and voids.

The GPR depth penetration is severely limited by clay-rich soil. Radar waves can penetrate deeper in sandy and gravelly soils.

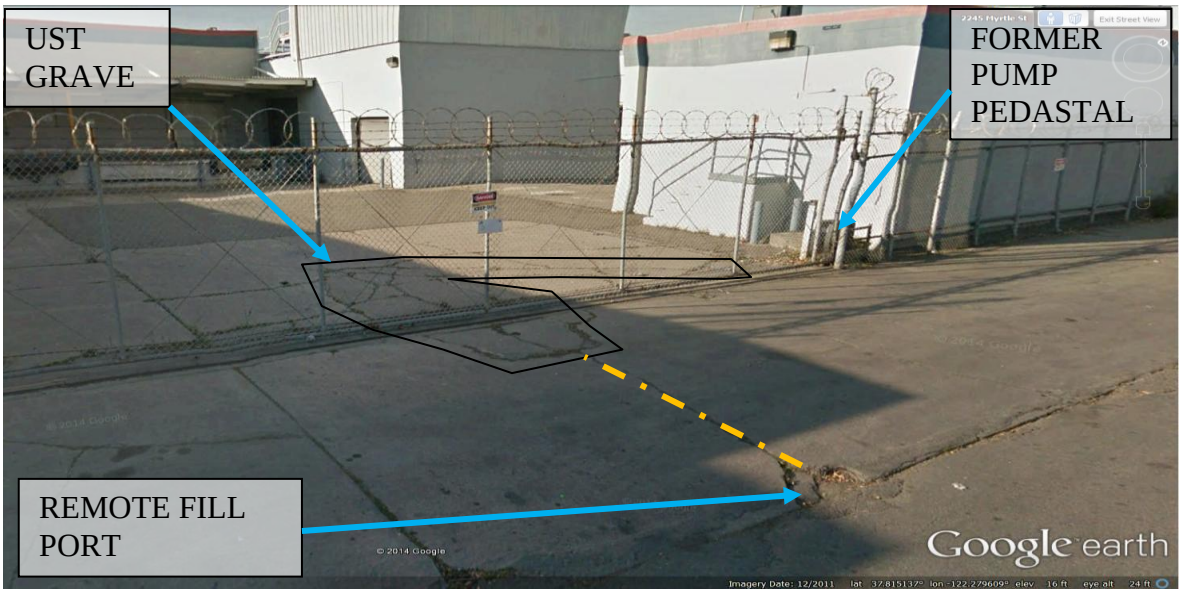
Survey Results:

Myrtle Street Sidewalk:
In the figure below there are two UST type fill ports. The fill ports were filled with concrete and thus were not accessible to be traced out with a pipe locator. Long radargrams across the site show changes in the soil type where jagged cuts in the concrete were observed. From this information it is interpreted that a UST approximately 20 feet long and 4 feet wide was removed from this location.



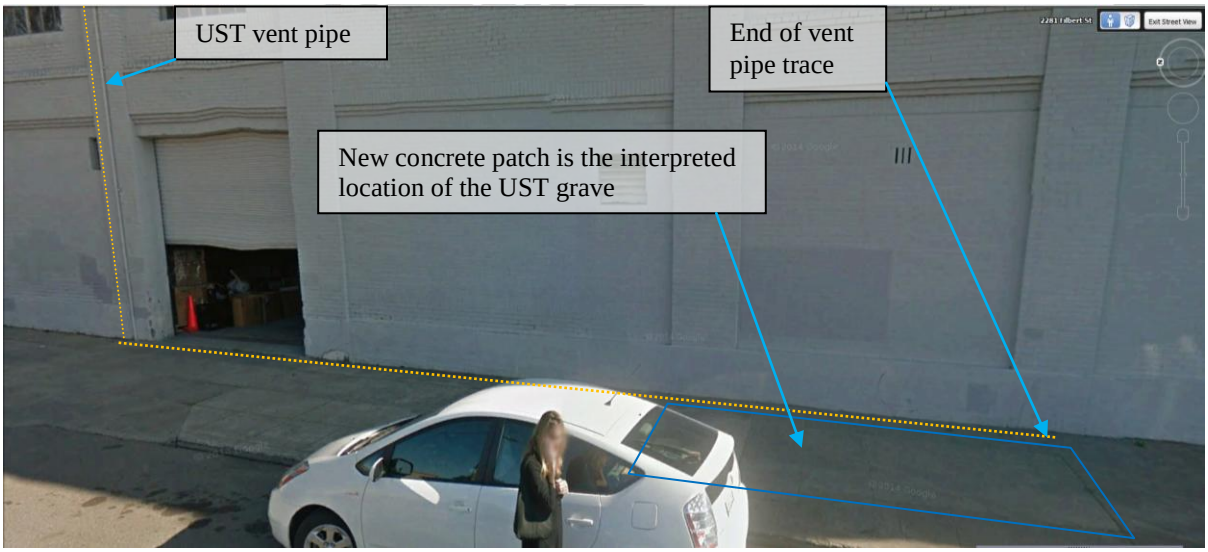
In the picture below is a jagged outline of an interpreted UST excavation which included fuel lines up to a fuel pump pedestal. A remote fill port in the street was energized and a traced to edge of the small UST excavation outline. Scan with radar did not show a

UST type anomaly. Metal detection could not be used in the area due to the reinforced concrete.

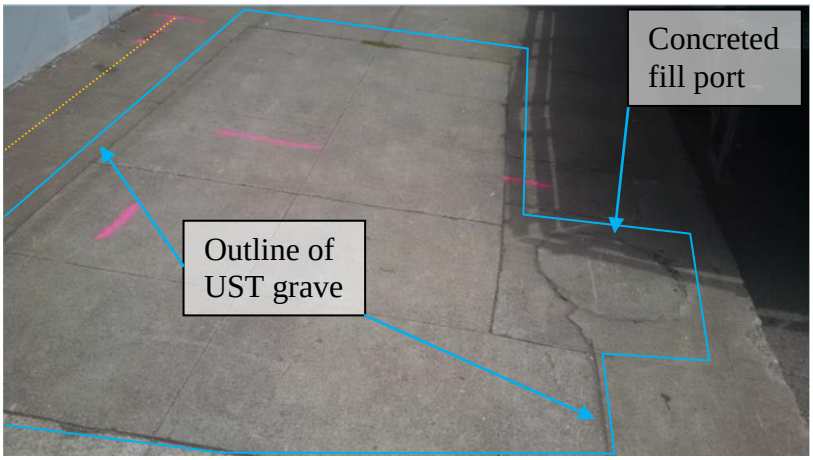


Filbert Street Sidewalk:

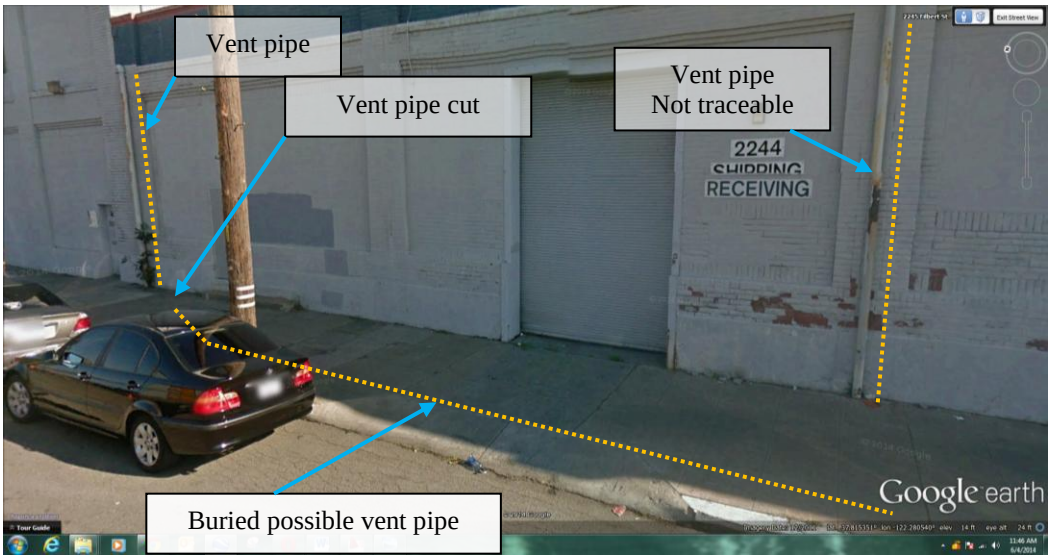
In the figure below, there was a UST vent pipe found adjacent to the roll up door. The vent pipe traced southward to the edge of a new concrete patch in the sidewalk. A circular concrete patch (seen in the photograph below) is interpreted to the location of the fill port. The concrete patch measures 8 feet wide by 14 feet long which would suggest that a 1000 gallon tank was buried at this location. No UST type anomalies were detected on the radargrams. No metal detectors could be used in this area due to the parked cars at the time of the survey.

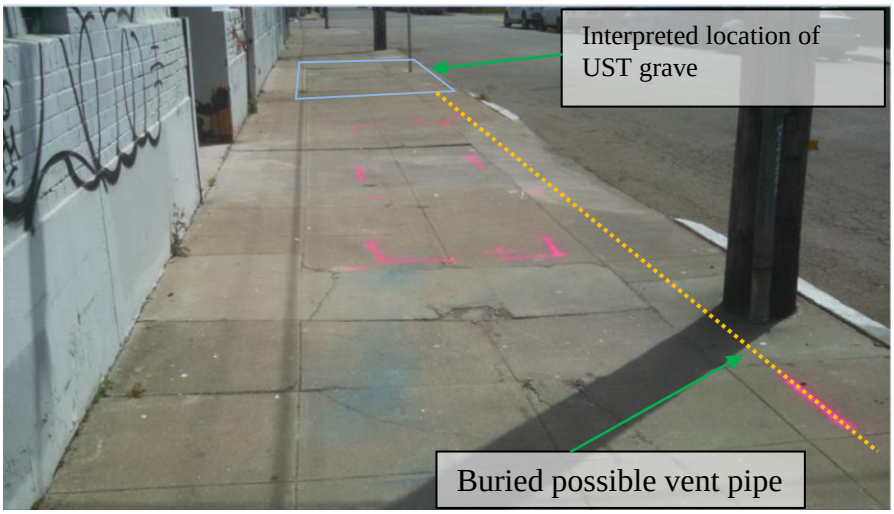


The figure below is a close up photograph of the above photograph.

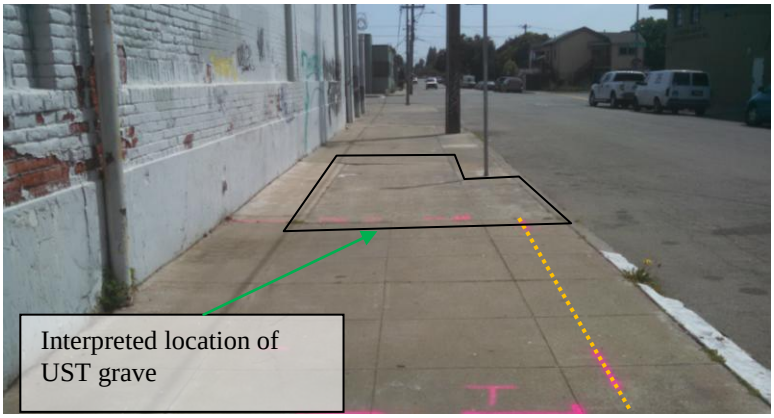


Two four inch diameter vent pipes were found further south along the sidewalk. Both of the pipes were energized but could not be traced. A pipe was found leading to the vent pipe pictured behind the black car. The pipe trace ends 3 feet before the vent suggesting that it may have been cut prior to a utility vault installation. The pipe trace continues southward to a new concrete patch seen in the photograph below.

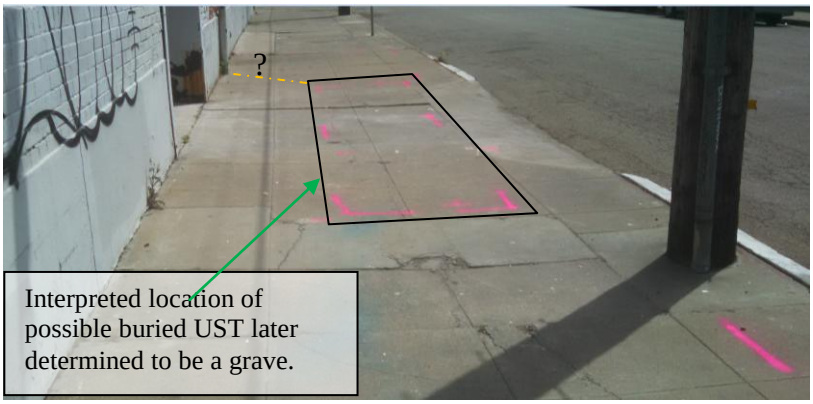




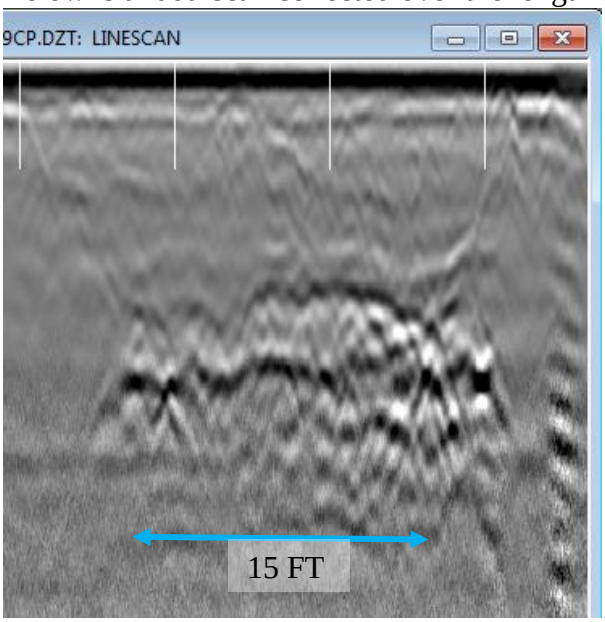
The photograph below is a close up image of the new asphalt patch. The concrete patch measures 8 feet wide by 14 feet long which would suggest that a 1000 gallon tank was buried at this location.



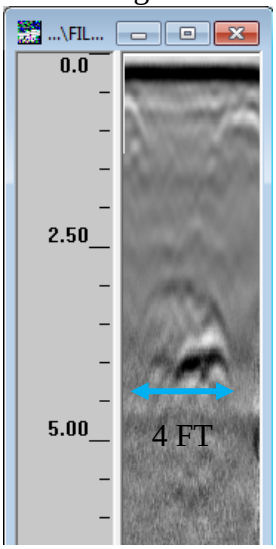
Three vent pipes were found on Filbert street, suggesting that a third UST needs to found. From radar scans across the length of the sidewalk a UST type anomaly was seen on the radargrams. From the scans we interpret that a UST maybe buried at the location shown in the photograph below (see radargrams following this photograph and the geophysical site map showing the results for the whole site).



Below is a radarscan collected over the length of the potential UST.



This radargram was scanned across the width of the potential UST.



Below is an image summarising the UST grave locations.



Conclusions for Myrtle Street:

Based on visual inspection and radar data, we interpret that two USTs and fuel lines were removed. The smaller UST maybe a 500 gallon. The larger tank is estimated to be a 1000 gallon UST, 15 feet long, 4 feet wide. The remote fill and the associated piping for the smaller UST was left in the ground. It appears that the company that removed the tanks on Myrtle street used a jack hammer to break up the concrete.

Conclusions for Filbert Street:

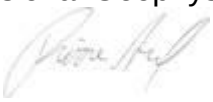
Based on visual observations three vent pipes were observed on Filbert street. The northern most vent pipe traces to a new patch in the concrete and is interpreted to be cut and or removed. The second vent pipe connected to a UST that was removed from the southernmost concrete patch. Note: the concrete patches on Filbert street were cut with a concrete saw. The southernmost vent pipe appeared to connect to a possible

UST that was investigated further with a follow up visit on 6/9/2014. Two holes were drilled above the location of the anomaly viewed on the radargram. A steel probe was pushed into clean sand a distance of five feet in each of the holes. This indicates the tank was removed and the grave backfilled with sand. The anomalies viewed may have caused by cut conduit or pipe left in the grave.

Limitations

The subsurface geology, object size and composition, burial depth, affect the size and shape of geophysical anomalies, which may impede their detection.
The limits of discernment of this magnetic survey are the detection of objects within five feet of metal fences, buildings, vehicles and other identified metal objects.

Report prepared by :
Pierre Armand
Professional Geophysicist #1021



Subtronic Corporation

APPENDIX E
NOVA Freight Elevator #2 Removal Report

Nova
Abatement & Construction Services, Inc.

Asbestos

Lead Paint

Mold

Specialty Construction

Tenant Improvement

Commercial & Residential Restoration

Insurance Claim Work

3051 Research Dr.
Richmond, CA
94806

CA.Lic.No.
793297
A, B, C-2, ASB, HIC

4 February 2015

Mrs. Molly Maybrun
Director, Special Projects
City Ventures
444 Spear Street, Suite 200
San Francisco CA 94117

East Freight Elevator Piston/Cylinder
Ice Cream Plant Demolition
2240 Filbert, Oakland

Dear Mrs. Maybrun:

During the course of site demolition and removal activities the north freight elevator shaft beneath the concrete flooring was encountered and removed (Figure 1). The metal cylindrical shaft was approximately 18-inches in diameter and encased in hydraulic oil. The shaft was encased in a second metal tube and further contained in a 4 foot by 4 foot concrete vault (Figure 2). The piston and encasements extended to approximately 9 feet below ground surface (bgs).

Upon removal of the cylinder it was apparent that the soils surrounding the cylinder housing had been impacted with some form of hydraulic oil associated with the operation of the elevator. The 20-30 gallon hydraulic oil tank was located in an adjacent above ground elevator mechanical room. It was not contained in an underground storage tank.

We excavated and separated the soils in this immediate area. We excavated approximately 2-3 feet on all sides and approximately 2 feet past the bottom of the shaft.

Following removal of the piston and approximately another 2 feet around the casing, we procured a side wall and excavation floor soil sample. The sidewall sample was taken at approximately 7 feet bgs. The first floor excavation sample was obtained in the middle of the excavation at approximately 11 feet bgs. The soil samples were submitted to McCampbell Analytical Inc (McCampbell), a State certified laboratory for analysis.

As the suspected nature of the impact was significantly aged/weathered hydraulic oil. McCampbell staff suggested that the sample was analyzed for both hydraulic oil (HO) and total petroleum hydrocarbons as diesel (TPH-d) by EPA Method 8015 (Attachment 1). Residual diesel fuel was not a suspected contaminate of concern.

The sidewall sample (ICP-Sidewall) contained no analyzed constituents above the method detection limits (MDLs).

The first floor sample (ICP Floor) contained 3.9 parts per million (ppm) and 29 parts per million TPH-d and HO, respectively. Due to the suspected age of the elevator, the excavation floor sample was further analyzed for polychlorinated biphenyls (PCBs). The sample did not contain PCBs above the MDL.

On 30 January 2015, an additional 2 feet of soil was removed and the floor was re-sampled at a depth of approximately 13 feet below ground surface. The Chain-of-Custody states that the confirmation sample (ICP-Floor 2) was to be analyzed for Hydraulic Oil. The laboratory again sampled for THP-d as well. Both HO and TPH-d were below the method detection limits.

The stockpile will be sampled, profiled and transported for disposal as appropriate.

The final sidewall and floor sample of the excavation was non-detect for HO, TPH-d and PCBs. The City of Oakland Fire Department is the Lead Agency for underground tanks in the City of Oakland. There is no notification process for elevator cylinders. As the final results indicate that the impacted material was removed and isolated to within three feet of the casing sides and within 2 feet of the bottom of the cylinder, it is our understanding that no additional work or notifications are required.

The results for the confirmation sampling activities are depicted in Table 1. Laboratory Analytical reports are included in Attachment 1.

We can be reached for comment or questions at 510.669.0256.

Sincerely,

Stephen Schwartz
Project Manager

TABLE 1
Ice Cream Plant (ICP) Confirmation Samples

Sample Identification	Depth Below Ground Surface	Hydraulic Oil	TPH-Diesel	PCBs
ICP - Sidewall	7ft	ND	ND	NA
ICP Floor	11ft	29	3.6	ND
ICP Floor 2	13ft	ND	ND	NA

NA - Not Analyzed
ND - Analyte Below Method detection Limits
Units - mg/Kg (equivalent to parts per million)

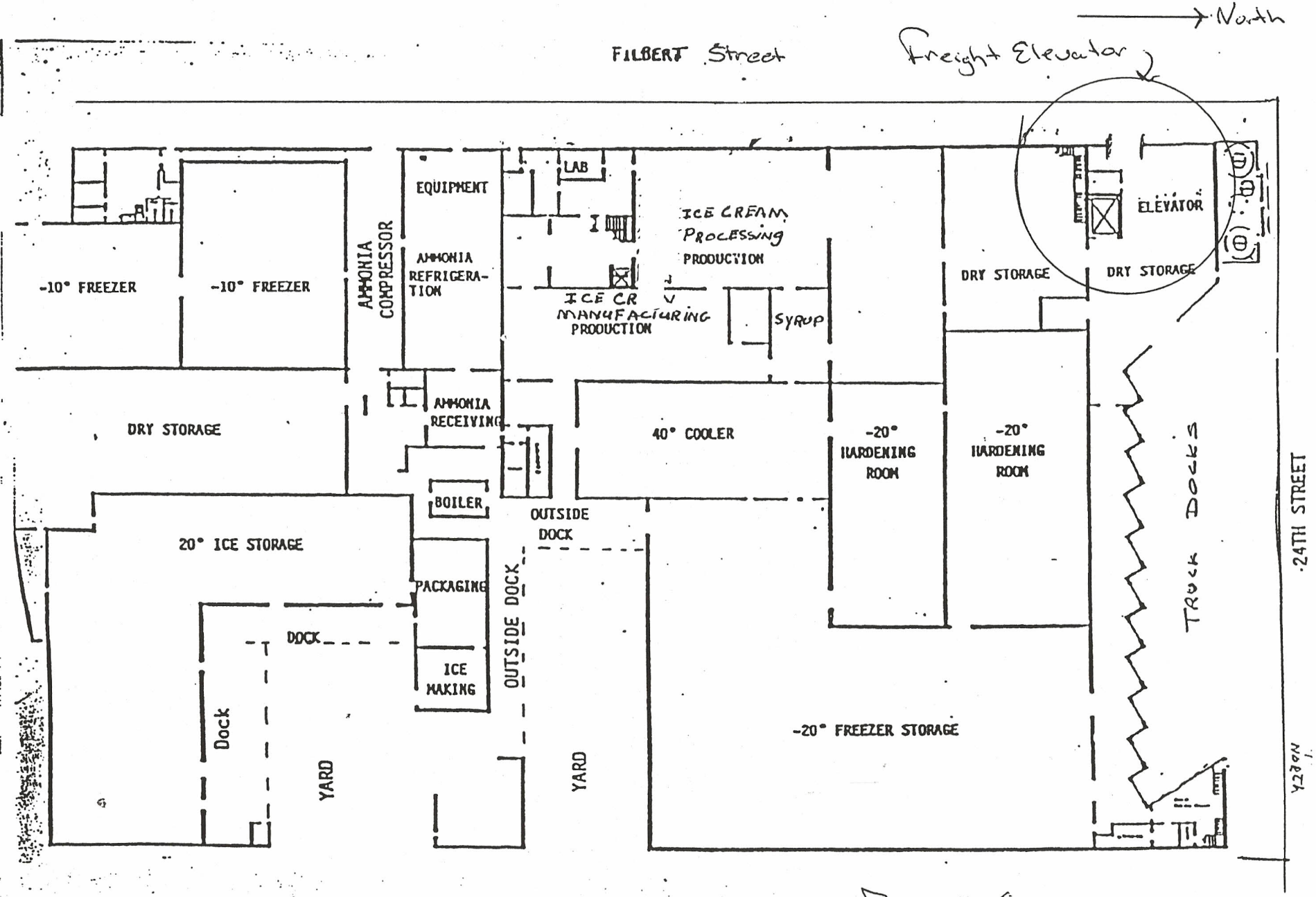
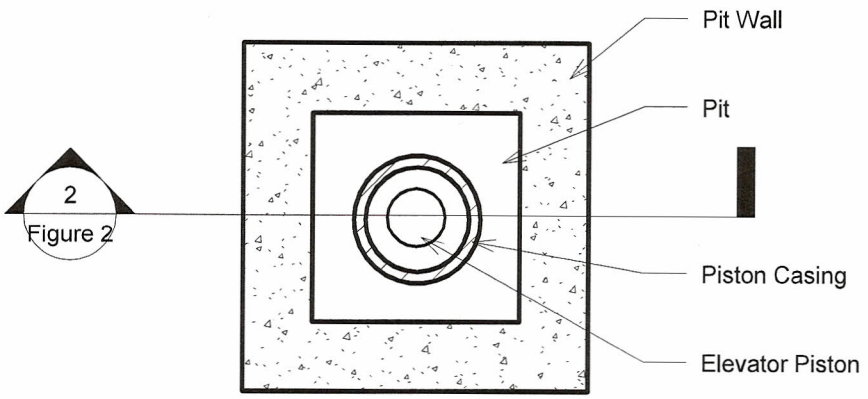


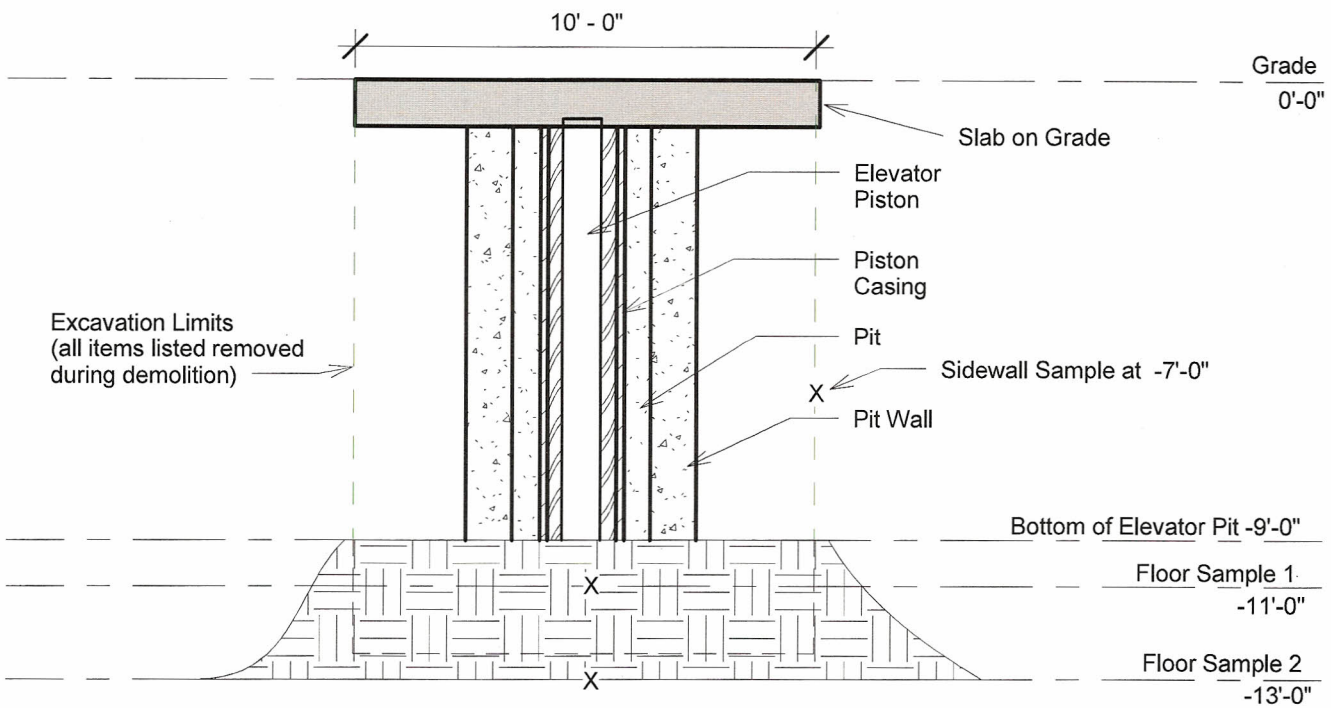
Figure 1

Freight Elevator location Map.



Elevator Pit Floor Plan

3/8" = 1'-0"



2 Section 1

1/4" = 1'-0"

X -Soil Sample Location

Nova Abatement & Construction Services, Inc. 3051 Research Drive Richmond, CA 94806 Phone 510-812-6469	**ICP Demolition**	Freight Elevator Piston Removal and Soil Sample Location Map Project number: Project Number Date: 2/3/15 Drawn by: Author Checked by: Steve Schwartz Figure 2 Scale: As indicated

2/5/2015 4:04:13 PM

ATTACHMENT 1

LABORATORY ANALYTICAL REPORTS

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1501827

Report Created for: Nova Abatement & Construction Services, Inc.
3051 Research Drive
Richmond, CA 94806

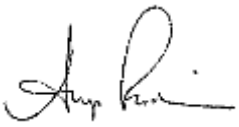
Project Contact: Steve Schwartz
Project P.O.:
Project Name: ICP

Project Received: 01/28/2015

Analytical Report reviewed & approved for release on 01/29/2015 by:

Question about your data?

Click here to email McCampbell



Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

ACCREDITED IN ACCORDANCE WITH nelac

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Nova Abatement & Construction Services, Inc.
Project: ICP
WorkOrder: 1501827

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
TEQ	Toxicity Equivalence

Analytical Qualifiers

e2	diesel range compounds are significant; no recognizable pattern
e7	oil range compounds are significant

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1501827
Project:	ICP	**Extraction Method:**	SW3550B
Date Received:	1/28/15 12:19	**Analytical Method:**	SW8015B
Date Prepared:	1/28/15	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
ICP-Sidewall	**1501827-001A**	**Soil**	**01/27/2015**	**GC11B**	**100445**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	01/28/2015 19:35
TPH-Hydraulic Oil (C18-C36)	ND	5.0	1	01/28/2015 19:35

Surrogates	REC (%)	Limits	
C9	107	70-130	01/28/2015 19:35

Analyst(s): TK

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
ICP-Floor	**1501827-002A**	**Soil**	**01/27/2015**	**GC11B**	**100445**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**3.6**	1.0	1	01/28/2015 21:52
TPH-Hydraulic Oil (C18-C36)	**29**	5.0	1	01/28/2015 21:52

Surrogates	REC (%)	Limits	Analytical Comments: e7,e2	
C9	108	70-130		01/28/2015 21:52

Analyst(s): TK

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1501827
Date Prepared:	1/27/15	**BatchID:**	100445
Date Analyzed:	1/27/15	**Extraction Method:**	SW3550B
Instrument:	GC2A	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP	**Sample ID:**	MB/LCS-100445 1501769-001AMS/MSD

QC Summary Report for SW8015B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	40.1	1.0	40	-	98	70-130
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	26.2	26.2		25	105	105	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	50.6	51.9	40	8.421	106	109	70-130	2.40	30
Surrogate Recovery									
C9	26.1	26.2	25		104	105	70-130	0.435	30

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1501827 **ClientCode: NACS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Steve Schwartz
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806
(510) 669-0256 FAX: (510) 758-7692

Email: sschwartz1@sbcglobal.net
cc/3rd Party:
PO:
ProjectNo: ICP

Bill to:
Accounts Payable
Nova Abatement & Construction Service
3051 Research Drive
Richmond,, CA 94806

Requested TAT: 1 day

Date Received: **01/28/2015**
Date Printed: **01/29/2015**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1501827-001	ICP-Sidewall	Soil	1/27/2015	☐	A											
1501827-002	ICP-Floor	Soil	1/27/2015	☐	A											

Test Legend:

1	TPH_S	2		3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Erika Santos

Comments: 1 Day TAT

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: NOVA ABATEMENT & CONSTRUCTION SERVICES, I
QC Level: LEVEL 2
Work Order: 1501827
Project: ICP
Client Contact: Steve Schwartz
Date Received: 1/28/2015
Comments: 1 Day TAT
Contact's Email: sschwartz1@sbcglobal.net

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1501827-001A	ICP-Sidewall	Soil	SW8015B (TEPHs) <TPH-Diesel (C10-C23), TPH-Hydraulic Oil (C18-C36)>	1	Brass tube 2"x6"	☐	1/27/2015	1 day		☐	
1501827-002A	ICP-Floor	Soil	SW8015B (TEPHs) <TPH-Diesel (C10-C23), TPH-Hydraulic Oil (C18-C36)>	1	Brass tube 2"x6"	☐	1/27/2015	1 day		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

1501827

McCampbell Analytical, Inc.

1534 Willow Pass Rd. / Pittsburg, Ca. 94565-1701
www.mccampbell.com / main@mccampbell.com
Telephone: (877) 252-9262 / Fax: (925) 252-9269

RUSH CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☐ 24 HR ☑ 48 HR ☐ 72 HR ☐ 5 DAY ☐

GeoTracker EDF ☐ PDF ☐ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐

Effluent Sample Requiring "J" flag ☐ **UST Clean Up Fund Project** ☐ ; **Claim #**_____

Report To: Nova **Bill To:**

Company: Nova Abatement + Construction Services, Inc

3051 Research Dr.

Richmond, CA 94806 **E-Mail:** sschwartz2@sbcglobal.net

Tele: (510) 812 6469 **Fax:** ( )

Project #: ICP **Project Name:** ICP

Project Location: Oakland/Fibert **Purchase Order#**

Sampler Signature:

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX: Ground Water	Waste Water	Drinking Water	Sea \ Water	Soil	Air	Sludge	Other	METHOD PRESERVED: HCL	HNO_3	Other
ICP-Sidewall		1/27		1					X						
ICP-Floor		1		1					X						

Analysis Request

BTEX & TPH as Gas (8021/ 8015 or 8260) / MTBE	TPH as Diesel (8015) + HP	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	MTBE / BTEX ONLY (EPA 8260/ 8021)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Metals (200.7 / 200.8 / 6010 / 6020)	Filter sample for DISSOLVED metals analysis
	X														
	X														

****MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.**

Relinquished By:	Date:	Time:	Received By:
	1/28/15	1155	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° 22.5
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION_____ pH<2_____

COMMENTS:

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name: **Nova Abatement & Construction Services, Inc.**
Date and Time Received: **1/28/2015 12:19:08 PM**

Project Name: **ICP**
LogIn Reviewed by: Erika Santos

WorkOrder №: **1501827** Matrix: Soil
Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☐	No ☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Sample/Temp Blank temperature	Temp: 22.5°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☐	No ☑	

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

** NOTE: If the "No" box is checked, see comments below.*

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1501928

Report Created for: Nova Abatement & Construction Services, Inc.
3051 Research Drive
Richmond, CA 94806

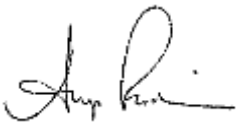
Project Contact: Steve Schwartz
Project P.O.:
Project Name: ICP-Oakland

Project Received: 01/30/2015

Analytical Report reviewed & approved for release on 02/02/2015 by:

Question about your data?

Click here to email McCampbell



Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

ACCREDITED IN ACCORDANCE WITH nelac

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Nova Abatement & Construction Services, Inc.
Project: ICP-Oakland
WorkOrder: 1501928

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
TEQ	Toxicity Equivalence

Analytical Qualifiers

e2	diesel range compounds are significant; no recognizable pattern
e7	oil range compounds are significant

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1501928
Project:	ICP-Oakland	**Extraction Method:**	SW3550B
Date Received:	1/30/15 14:38	**Analytical Method:**	SW8015B
Date Prepared:	1/30/15	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
ICP-Floor 2	**1501928-001A**	**Soil**	**01/30/2015 13:00**	**GC6B**	**100560**

Analytes	Result	RL	DF	Date Analyzed
TPH-Hydraulic Oil (C18-C36)	**99**	5.0	1	02/02/2015 10:25

Surrogates	REC (%)	Limits	Analytical Comments: e7,e2	
C9	107	70-130		02/02/2015 10:25

Analyst(s): TK

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1501928
Date Prepared:	1/29/15	**BatchID:**	100560
Date Analyzed:	1/29/15 - 1/30/15	**Extraction Method:**	SW3550B
Instrument:	GC6B	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Oakland	**Sample ID:**	MB/LCS-100560 1501893-001AMS/MSD

QC Summary Report for SW8015B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	50.0	1.0	40	-	125	70-130
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	26.3	26.0		25	105	104	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	72.6	72.0	40	23.41	123	121	70-130	0.850	30
Surrogate Recovery									
C9	24.9	25.0	25		100	100	70-130	0	30

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1501928 **ClientCode: NACS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Steve Schwartz
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806
(510) 669-0256 FAX: (510) 758-7692

Email: sschwartz1@sbcglobal.net
cc/3rd Party:
PO:
ProjectNo: ICP-Oakland

Bill to:
Accounts Payable
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806

Requested TAT: 1 day
Date Received: **01/30/2015**
Date Printed: **01/30/2015**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1501928-001	ICP-Floor 2	Soil	1/30/2015 13:00	☐	A											

Test Legend:

1	TPH_S	2		3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Erika Santos

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: NOVA ABATEMENT & CONSTRUCTION SERVICES, I
QC Level: LEVEL 2
Work Order: 1501928
Project: ICP-Oakland
Client Contact: Steve Schwartz
Date Received: 1/30/2015
Comments:
Contact's Email: sschwartz1@sbcglobal.net

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1501928-001A	ICP-Floor 2	Soil	SW8015B (TEPHs) <TPH-Hydraulic Oil (C18-C36)>	1	Brass tube 2"x6"	☐	1/30/2015 13:00	1 day		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

1301928

McCampbell Analytical, Inc.

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www.mccampbell.com / main@mccampbell.com
Telephone: (877) 252-9262 / Fax: (925) 252-9269

RUSH

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☐ 24 HR ☒ 48 HR ☐ 72 HR ☐ 5 DAY ☐

GeoTracker EDF ☐ PDF ☐ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐

Effluent Sample Requiring "J" flag ☐ **UST Clean Up Fund Project** ☐ **; Claim #**_____

Report To: Nova	**Bill To:**
Company: Nova Abatement + Const Services	
	E-Mail: sschwartz@sbcglobal.net
Tele: (510) 812-6469	**Fax:** ( )
Project #:	**Project Name:** ICP-Oakland
Project Location: ICP-Oakland	**Purchase Order#**
Sampler Signature:	

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX: Ground Water	Waste Water	Drinking Water	Sea \ Water	Soil	Air	Sludge	Other	METHOD PRESERVED: HCL	HNO_3	Other	BTEX & TPH as Gas (8021/ 8015 or 8260) / MTBE	TPH as Diesel (8015) H2O	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	MTBE / BTEX ONLY (EPA 8260/ 8021)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Metals (200.7 / 200.8 / 6010 / 6020)	Filter sample for DISSOLVED metals analysis
ICP-Floor 2		1/30/15	1300	1					X								X															

Analysis Request

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

Relinquished By:	Date:	Time:	Received By:
	1/30/15	1535	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° 24.4
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS: Hydraulic O.K. Rush

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION_____ pH<2_____

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"When Quality Counts"

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Nova Abatement & Construction Services, Inc.**	Date and Time Received:	**1/30/2015 2:38:00 PM**
Project Name:	**ICP-Oakland**	LogIn Reviewed by:	Erika Santos
WorkOrder №:	**1501928** Matrix: Soil	Carrier:	Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐	
Chain of custody signed when relinquished and received?	Yes	☑	No	☐	
Chain of custody agrees with sample labels?	Yes	☑	No	☐	
Sample IDs noted by Client on COC?	Yes	☑	No	☐	
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐	
Sampler's name noted on COC?	Yes	☑	No	☐	

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA ☑
Shipping container/cooler in good condition?	Yes	☑	No	☐	
Samples in proper containers/bottles?	Yes	☑	No	☐	
Sample containers intact?	Yes	☑	No	☐	
Sufficient sample volume for indicated test?	Yes	☑	No	☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	
Sample/Temp Blank temperature	Temp: 24.4°C				NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes	☐	No	☐	NA ☑
Sample labels checked for correct preservation?	Yes	☑	No	☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA ☑
Samples Received on Ice?	Yes	☐	No	☑	

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes	☐	No	☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes	☐	No	☐	NA ☑

** NOTE: If the "No" box is checked, see comments below.*

Comments:

APPENDIX F
NOVA UST Tank #2 Removal Report

Nova
Abatement & Construction Services
License #793297
3051Research Drive
Richmond, CA 94806
Tel: 510-669-0256
Fax: 510-223-1750

15 July 2015

Mrs. Molly Maybrun
Director, Special Projects
City Ventures
444 Spear Street, Suite 200
San Francisco CA 94117

Tank Removal (Closed-In-Place)
Ice Cream Plant Demolition
2240 Filbert, Oakland

Dear Mrs. Maybrun:

During the course of site demolition and removal activities, a former 800-gallon underground storage tank (UST) that was closed-in-place under permit from the Alameda County Health Department (April 1996) was encountered and removed. The tank was located on the southwest corner of the property at West Grand and Filbert Street. I have attached a copy of the figure obtained from the Tank Closure Report prepared by IT International, dated April 1996.

On 16 June 2015, the tank was excavated and removed without incident. It was verified to be full of concrete. The metal tank "skin" was removed and the concrete interior was broken into small pieces by the excavator. Both were transported for appropriate recycle.

No holes in the tank, odors or soil issues were encountered during the removal actions. No removal permits were required (reference: City of Oakland Fire Department and Alameda County Health Department).

Pictures have been attached for reference.

We can be reached for comment or questions at 510.669.0256.

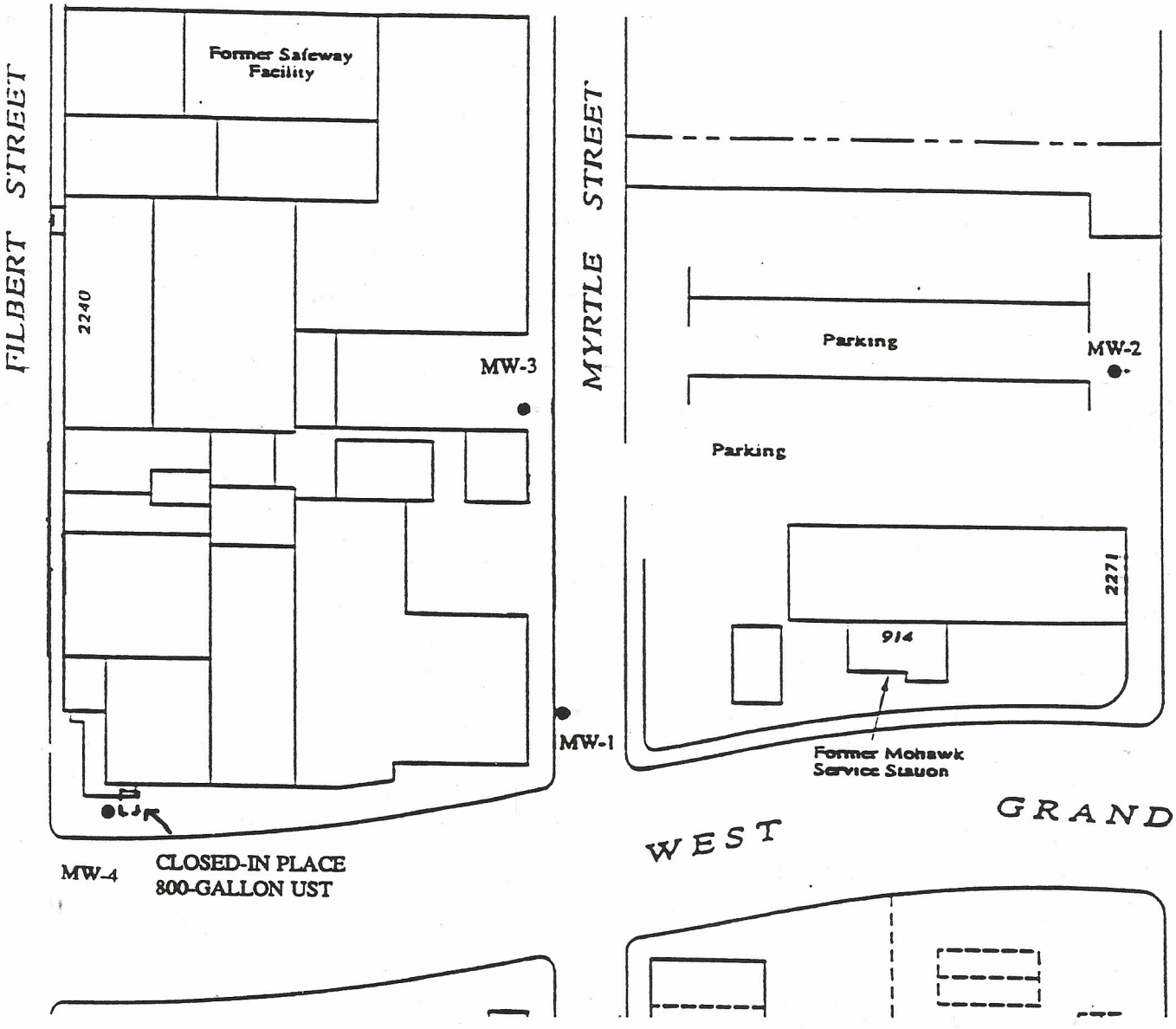
Sincerely,

Stephen Schwartz
Project Manager









DRAWN BY | CHECKED BY / APPROVED BY | DRAWING NUMBER

FIGURE 2

GROUND WATER MONITORING WELL LOCATION MAP
2240 FILBERT STREET
OAKLAND, CA

126076

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Do Not Scale This Drawing

IT . . Creating a Safer Tomorrow

APPENDIX G
NOVA Freight Elevator #12 Removal Report

Nova
Abatement & Construction Services, Inc.

Asbestos

Lead Paint

Mold

Specialty Construction

Tenant Improvement

Commercial & Residential Restoration

Insurance Claim Work

3051 Research Dr.
Richmond, CA
94806

CA.Lic.No.
793297
A, B, C-2, ASB, HIC

21 September 2015

Mrs. Molly Maybrun
Director, Special Projects
City Ventures
444 Spear Street, Suite 200
San Francisco CA 94117

South Freight Elevator Piston/Cylinder Removal
Ice Cream Plant Demolition
2240 Filbert, Oakland

Dear Mrs. Maybrun:

During the course of site demolition and removal activities the south freight elevator shaft beneath the concrete flooring was encountered and removed (Figure 1). It was constructed very similar to the elevator that we removed from the north west corner of the property documented in the report entitled "*East Freight Elevator Piston/Cylinder*", dated 4 February 2015). Note that it should be referenced as "West" or "North West". East references are in error.

The metal cylindrical shaft was approximately 18-inches in diameter and encased in hydraulic oil. The shaft was encased in a second metal tube and further contained in a 4 foot by 4 foot concrete vault (Figure 2). The piston and encasements extended to approximately 9 feet below ground surface (bgs).

Site demolition crews began removing the elevator piston and casing on 23 February 2015. Upon removal of the cylinder it was apparent that the soils surrounding the cylinder housing had been impacted with some form of hydraulic oil associated with the operation of the elevator. The 20-30 gallon hydraulic oil tank was located in an adjacent above ground elevator mechanical room. It was not contained in an underground storage tank.

On 25 February 2015, crews excavated and separated the soils in this immediate area. We excavated approximately 2-3 feet on all sides and approximately 2 feet past the bottom of the shaft to approximately 11 feet bgs.

Following removal of the piston and approximately another 2 feet around the casing, we procured two side wall samples, an excavation floor soil sample and a stockpile sample. On 25 February 2015, the sidewall samples were taken at approximately 7 feet bgs from the north and east sides of the excavation. Excavation observations/staining made it necessary to obtain a second sidewall sample.

The first floor excavation sample was obtained in the middle of the excavation at approximately 11 feet bgs. The soil samples were submitted to McCampbell Analytical Inc (McCampbell), a State certified laboratory for analysis. Based on the results of the previous elevator soils excavation and removal activities, the four soil samples were analyzed for total petroleum hydrocarbons as Hydraulic Oil (HO) by EPA Method 801. The stockpile soil sample was analyzed for HO, total petroleum hydrocarbons as gasoline (TPH-g) by EPA Method 8015 and fuel components benzene, toluene, ethylbenzene, xylenes (BTEX). The stockpile sample was also analyzed for leaking underground fuel tank (LUFT) metals. This analysis was required by Republic Services, Inc. (Keller Canyon Landfill) for appropriate disposal. Copies of the laboratory analytical reports and chain-of-custody documentation are included as Attachment 1.

The north sidewall sample (Sidewall 1) contained no hydraulic oil above the method detection limits (MDL). The east sidewall (Sidewall 2) contained 19 parts per million (ppm). The floor sample (Floor) obtained at 11-feet bgs contained hydraulic oil at 100 ppm.

Mrs. Eva Howe (buyer representative with Stantec) was informed of the excavation results and requested that we remove the floor soils containing the 100 ppm. On 26 February 2015, an additional 2 feet of soil was removed to approximately 13 feet bgs. Upon removing an additional 2 feet of soils to an approximate depth of 13 feet bgs, it appeared that groundwater was infiltrating the excavation. The excavation was terminated at 13 bgs and backfilled and compacted to surface. No odors or discoloration were noted in the final excavated soils. However, a soil sample was not obtained at 13 feet bgs.

The stockpile soils from both the north elevator and this site (south elevator) were combined and transported under non-hazardous bill of lading for disposal/recycle to Keller Canyon Landfill in Pittsburg, California. Approximately 260 cubic yards (combined) were excavated from the north and south elevator excavations. Copies of the bills of lading are available but not included in this report.

Nova
Abatement & Construction Services, Inc.

The City of Oakland Fire Department is the Lead Agency for underground tanks in the City of Oakland. There is no notification process for elevator cylinders. As the final results indicate that the impacted material was removed and isolated to within three feet of the casing sides and within 2 feet of the bottom of the cylinder, it is our understanding that no additional work or notifications are required.

We can be reached for comment or questions at 510.669.0256.

Sincerely,

Stephen Schwartz
Project Manager

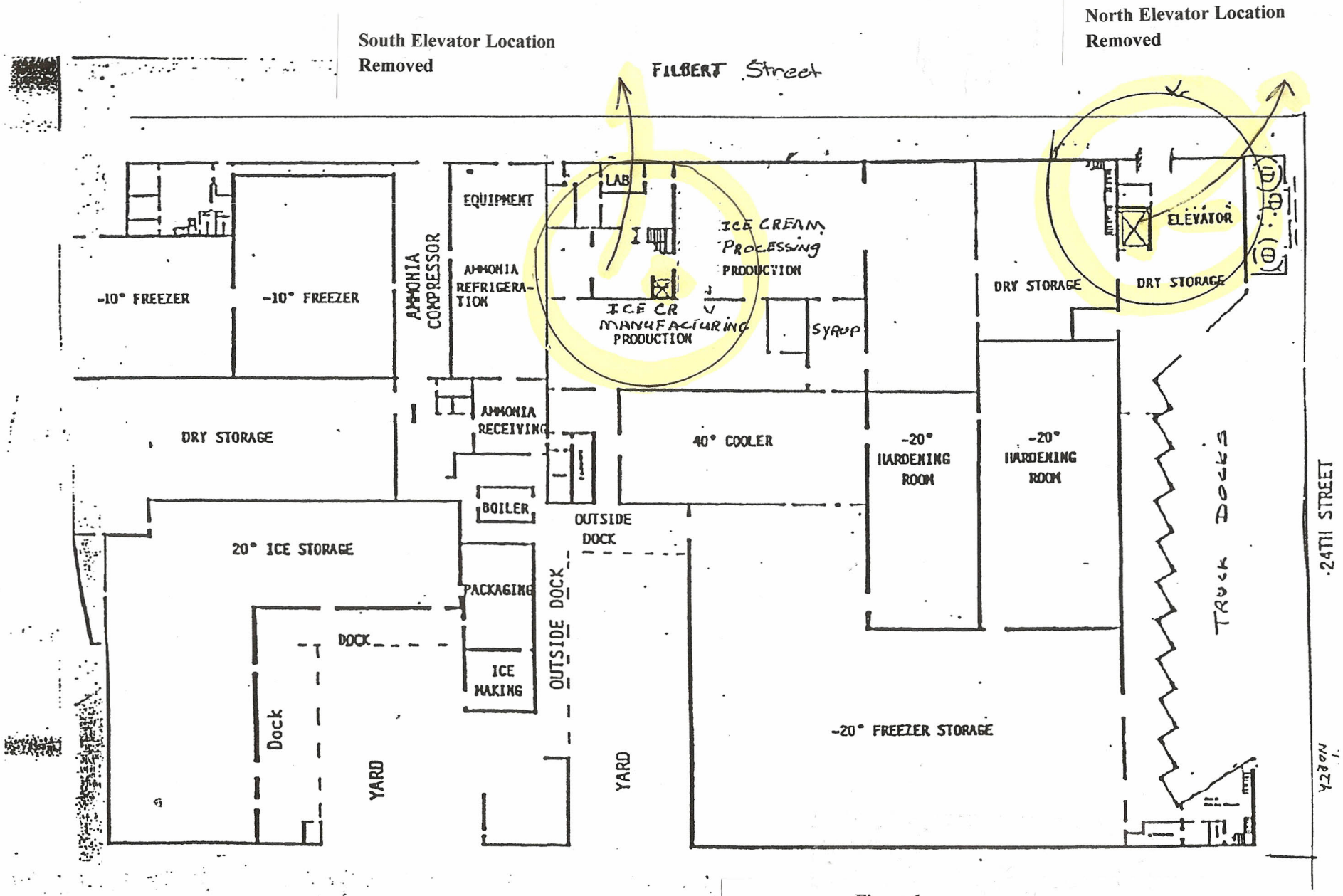
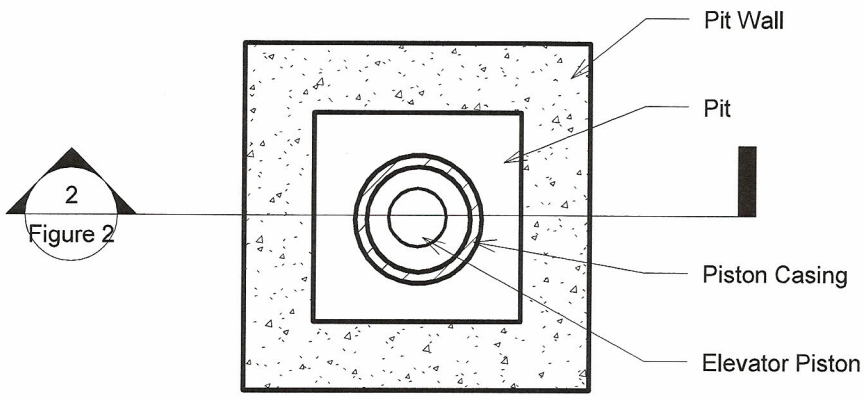
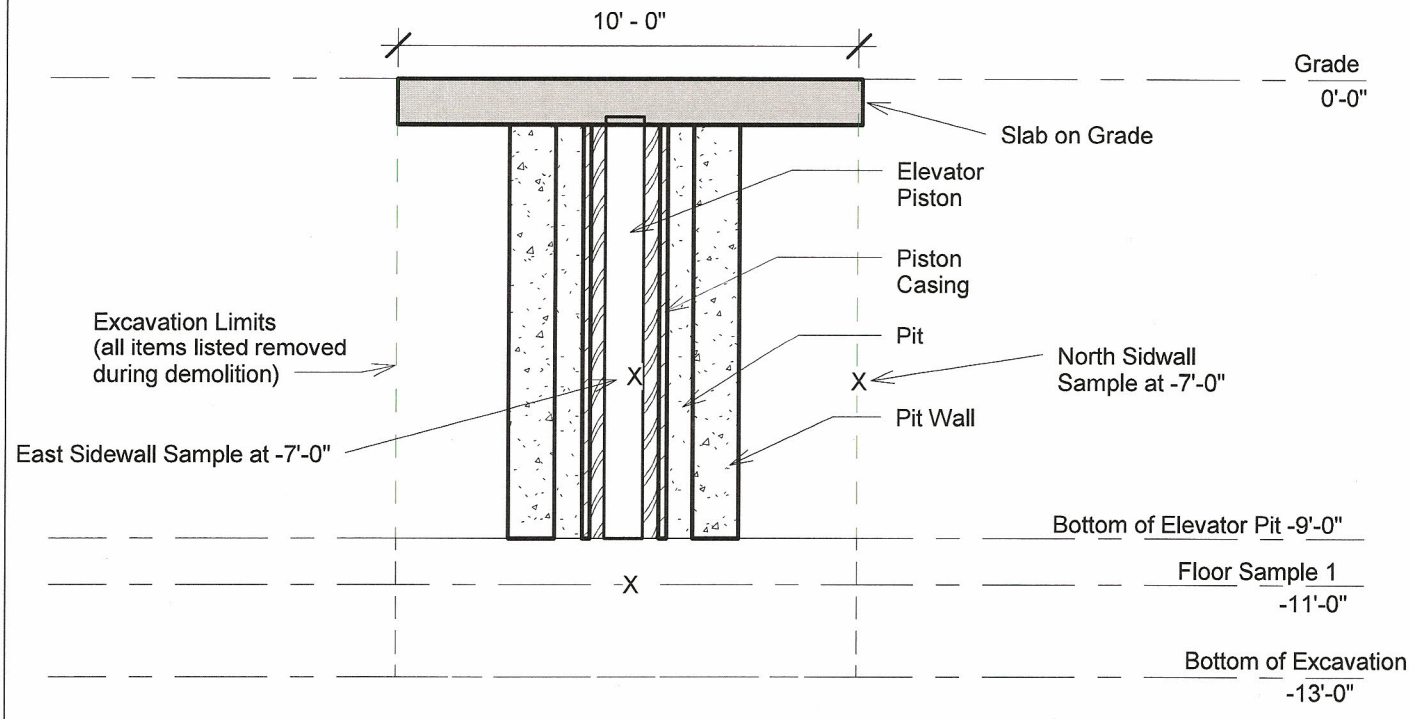


Figure 1
South Elevator Piston/Cylinder Removal
2240 Filbert Street
Oakland, CA



Elevator Pit Floor Plan

3/8" = 1'-0"



X -Soil Sample Location

Nova Abatement & Construction Services, Inc. 3051 Research Drive Richmond, CA 94806 Phone 510-812-6469	**ICP Demolition**	South Freight Elevator Piston Removal and Soil Sample Location Map Project number: Project Number Date: 9/18/15 Drawn by: Author Checked by: Steve Schwartz Figure 2 Scale: As indicated

9/21/2015 3:29:56 PM

APPENDIX H
Quantum Geotechnical Investigation Report

GEOTECHNICAL INVESTIGATION

On

PROPOSED RESIDENTIAL DEVELOPMENT
Icehouse (Oakland 2)

at
West Grand Avenue
Oakland, California

For
City Ventures

DRAFT

By
Quantum Geotechnical, Inc.

Project No. B044.G
September 24, 2015

QUANTUM GEOTECHNICAL INC.

Project No. B044.G
September 24, 2015

Mr. Andrew Warner
Director of Development
City Ventures
444 Spear Street, Suite 200
San Francisco, Ca 94105

Subject: Proposed Residential Development
Icehouse (Oakland 2)
West Grand Avenue
Oakland, California
GEOTECHNICAL INVESTIGATION

Dear Mr. Warner:

In accordance with your authorization, ***Quantum Geotechnical, Inc.,*** has investigated the geotechnical conditions at the subject site located in Oakland, California

The accompanying report presents the results of our field investigation. Our findings indicate that development of the site for the proposed new residence is feasible provided the recommendations of this report are carefully followed and are incorporated into the project plans and specifications.

Should you have any questions relating to the contents of this report or should additional information be required, please contact our office at your convenience.

Sincerely,
Quantum Geotechnical, Inc.

Simon Makdessi, P.E., G.E.
President

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GEOTECHNICAL IVESTIGATION

PURPOSE AND SCOPE

The purpose of the investigation for the proposed new residential subdivision located on West Grand Avenue in Oakland, California, was to determine the surface and subsurface soil conditions at the subject site. Based on the results of the investigation, criteria were established for the grading of the site, the design of foundations for the proposed development, and the construction of other related facilities on the property.

Our investigation included the following:

a. Field reconnaissance by the Soil Engineer;
b. Determine the general seismicity of the site in accordance with the 2013 CBC;
b. Drilling and sampling of six soil borings and five cone penetrometer tests (CPT);
c. Laboratory testing of soil samples;
d. Analysis of the data and formulation of conclusions and recommendations; and
e. Preparation of this written report.

PROPOSED DEVELOPMENT

It is our understanding that the proposed project consists of developing the site for the construction of 126 residential townhome units and 8 commercial units within a total of 15 buildings, and associated interior streets. The buildings are planned to be 3 stories in height, of wood frame construction and supported on a post-tensioned slab foundation system. Given the flat nature of the site and recent demolition, grading is expected to consist of placing up to 2 feet of fill to achieve design grades.

SITE LOCATION AND DESCRIPTION

The site is located in the central part of Oakland, within level terrain, and consists of two properties. One property is approximately 3.8 acres in size and covers an entire block bounded by West Grand Avenue, Filbert Street, 24th Street, and Myrtle Street. This property was previously occupied by

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various factory/warehouse facilities, that have recently been demolished and at the time of our investigation, some minor demolition and clearing was being performed. The site was scattered with small piles of debris, containers and miscellaneous equipment. The second property is located on the east side of Myrtle Street, in approximately the center of the block, is approximately 0.7 acres in size, and is currently vacant with mainly concrete pavement covering the entire site.

GENERAL GEOLOGIC CONDITIONS

The site resides on low-elevation, level terrain to the east of the San Francisco Bay, along an alluvial plain referred to as the East Bay Plain. Bedrock underlying this plain, and throughout the San Francisco Bay, subsided as a result of Miocene age subduction along the present Northern California coast. The resulting sedimentary basin was infilled with deep marine to estuarine deposits throughout the mid-to-late Cenozoic. Concurrent uplift produced the Diablo Range, which borders the plain on the east. Deposition during the Pliestocene and Holocene has consisted of fluvial sediment load from topographic highlands throughout the Diablo Range being carried to the west and deposited onto the East Bay Plain. The vicinity also hosts marine terrace deposits dating to the Pliestocene; an epoch that was marked by a series of glacial and interglacial periods and the corresponding rise and fall of sea level that produced such deposits. The site is expected to be underlain by recent Holocene alluvium, with older beach sand deposits underneath (3), as indicated on Figure 1 Regional Geology Map, attached to the Appendix.

According to the Association of Bay Area Governments (ABAG) interactive liquefaction susceptibility map (1), the site is in a region of moderate liquefaction susceptibility. The California Geological Survey, Seismic Hazard Zones Map, for the Oakland West Quadrangle (2) includes the site in an area of potential liquefaction requiring special investigation. According to this report, the historic high groundwater level within the vicinity will be found from five to ten feet below ground surface. The site lies within proximity of several major Bay Area faults including; the Hayward Fault, approximately 3.5 miles due east, and the San Andreas Fault, approximately 16 miles to the west (4). A map showing the location of these faults relative to the site is presented as Figure 3.

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INVESTIGATION

The field investigation was performed on May 30, 2014 and August 20, 2015, and included a reconnaissance of the site and the drilling of six exploratory borings and five cone penetrometer tests (CPT) at the approximate locations shown on Figure 2 "Site Plan".

Three borings were drilled to depths ranging from 21.5 feet below the existing grade to 51.5 feet. The drilling was performed with a CME-55 truck-mounted auger drill rig. Visual classifications were made from cuttings and the samples in the field. As the drilling proceeded, relatively undisturbed core samples were obtained by means of 3 inch and 2.5 inch O.D. split-tube samplers. The sampler was driven into the in-situ soils under the impact of a 140-pound hammer undergoing a free fall of 30 inches. The number of blows required to advance the sampler 12 inches into the soil is reported on the boring logs. The samples were sealed and returned to the laboratory for testing. Classifications made in the field were verified in the laboratory after further examination and testing.

The stratification of the soils, descriptions, location of undisturbed soil samples and blow counts are shown on the respective "Logs of Test Borings" contained within Appendix A.

Laboratory testing was conducted for Atterberg Limits, moisture density, gradation analysis and corrosion potential. The data received from the lab are presented on the boring logs, and summarized in Appendix B.

SUBSURFACE CONDITIONS

The subsurface conditions encountered in the borings and CPTs generally consisted of a surface layer of sandy and clayey soil fill ranging in thicknes from 2 to 6 feet over predominantly firm to stiff silty clay with variable sequences and interbeds of loose to medium dense and dense to very dense sands and gravels. The sandy and gravelly layers ranged in thickness from 2 to 7 feet.

Ground water was encountered in all borings at depths ranging from 9 to 19 feet at the time of our exploration. Fluctuations in the groundwater table can be expected with changes in seasonal rainfall, urbanization, and construction activities at or in the vicinity of the site.

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A more thorough description and stratification of the soil conditions are presented on the respective, "Logs of Test Borings" and "CPT Data" in Appendix A. The approximate locations of the borings and CPTs are shown on Figure 2, "Site Plan" Appendix A.

LIQUEFACTION POTENTIAL EVALUATION

Liquefaction occurs primarily in relatively loose, saturated, cohesionless soils. Under earthquake stresses, these soils become "quick", lose their strength and become incapable of supporting the weight of the overlying soils or structures. The data used for evaluating liquefaction potential of the subsurface soils consisted of the penetration resistance, the soil gradation, the relative density of the materials, and the groundwater level.

Loose to medium dense cohesionless soil such as sands and some silts and low plasticity clays are potentially liquefiable, while dense and very dense cohesionless sands and gravels are considered to have a very low potential for liquefaction. The sand layers in all borings varied in consistency from loose/medium dense to dense and very dense. The loose to medium dense sands in borings B-1, B-2 and B-3, are potentially liquefiable. The low plasticity clay below the groundwater registered a Plasticity Index (PI) of 19 and is assessed as non-liquefiable according to the screening procedures outlined in a technical paper by Bray and Sancio presented in the Journal of Geotechnical and Environmental Engineering titled "Assessment of the Liquefaction Susceptibility of Fine Grained Soils, September 2006.

Based on the data from the borings, it is estimated that a liquefaction induced settlements ranging from approximately 1.0 to 1.5 inches may occur in the sand layers in borings B-1, B-2 and B-3. Given the variability in consistency of the sand layers, a differential settlement of 0.75 inches is over 50 feet is estimated. Due to the presence of a thick predominantly-clay and non-liquefiable cover overlying any potential liquefiable sand layers, no sand boils are expected and will limit any surface manifestations of liquefaction to differential settlements estimated above.

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2013 CBC SEISMIC DESIGN CRITERIA

The potential damaging effects of regional earthquake activity should be considered in the design of structures. As a minimum, seismic design should be in accordance with Chapter 16 of the 2013 California Building Code (CBC). The 2013 CBC utilizes the design procedures outlined in the 2010 ASCE 7-10 Standard. Using the criteria in Chapter 20 of ASCE 7-10, the site is classified as Site Class F, due to the presence of liquefiable soil, and a site response analysis is required. However, per the requirements of ASCE 7-10, section 20.3.1.1, a site response analysis is not required because the fundamental period of vibration of the proposed structures is less than 0.5 seconds, and a the seismic design can be based on using a site class as determined from Table 20.3-1. The seismic design will be based on a Site Class E. The seismic design parameters have been developed using the online U.S. Geological Survey, US Seismic Design Maps tool, version 3.1.0, last updated 11 July 2013, and a site location based on longitude and latitude. The parameters generated for the subject site for a latitude of 37.8156° N, and longitude of -122.2800° W, are presented in the following Table 1:

Table I
2013 CBC Seismic Design Criteria

Seismic Parameter	Coefficient	Value
Mapped MCE Spectral Acceleration at Short-Period 0.2 secs	S_s	1.703
Mapped MCE Spectral Acceleration at a Period of 1.0s	S_1	0.673
Site Class		E
Adjusted MCE, 5% Damped Spectral Response Acceleration at Short Period of 0.2s	S_{MS}	1.533
Adjusted MCE, 5% Damped Spectral Response Acceleration at Period of 1.0s	S_{M1}	1.616
Design 5% Damped Spectral Response Acceleration at Short Period of 0.2s for Occupancy Category I/II/III	S_{DS}	1.022
Design 5% Damped Spectral Response Acceleration at Period of 1.0s for Occupancy Category I/II/III	S_{D1}	1.077

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DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

GENERAL

1. From a geotechnical point of view, the site is suitable for the construction of the proposed residential development provided the recommendations presented in this report are incorporated into the project plans and specifications.

2. The most prominent geotechnical features of this site are the presence of fill and potential for liquefaction. The fill ranges in thickness from 2 to 6 feet from current ground surface and was mainly sandy material with areas of clay. The fill contained some construction debris likely from demolition activities. The fill must be sub-excavated and replaced as engineered fill.

3. As stated earlier, the site has the potential to undergo liquefaction, and it is estimated that liquefaction induced settlements of up to 1.5 inches could occur, with a differential settlement of 0.75 inches over 50 feet. The estimated liquefaction induced differential settlement is to be considered in the design of foundations and gravity utilities.

4. The proposed structures may be satisfactorily supported on structural post tensioned slabs. Specific foundation design recommendations are provided under the heading Foundations.

GRADING

5. The grading requirements presented herein are an integral part of the grading specifications presented in Appendix C of this report and should be considered as such.

6. Grading activities during the rainy season on cohesive soils will be hampered by excessive moisture. Grading activities may be performed during the rainy season, however, achieving proper compaction may be difficult due to excessive moisture; and delays may occur. In addition, measures to control potential erosion may need to be provided. Grading performed during the dry months will minimize the occurrence of the above problems.

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7. Currently the site does not contain any vegetation. Vegetation cover conditions may be different at the time of planned grading, and the depth of stripping, if necessary, or type of site preparation will be evaluated by the Soil Engineer prior to the commencement of any grading activities.

8. After removal of any fill, the top 8 inches of exposed native ground should be scarified and compacted to a degree of relative compaction of at least 90% at 3 percent above optimum moisture content as determined by ASTM D1557-12 Laboratory Test Procedure.

9. The site may be brought to the desired finished grades by placing engineered fill in lifts of 8 inches in uncompacted thickness and compacting to a minimum relative compaction of 90% at 3percent above optimum moisture content for lean clay soil, and 1 to 2% for sandy soil as determined by ASTM D1557-12 Laboratory Test Procedure.

10. All soils encountered during our investigation except those within the top few inches of predominantly organic material, are suitable for use as engineered fill when placed and compacted at the recommended moisture content and provided it does not contain any debris..

SURFACE AND SUBSURFACE DRAINAGE

11. All finish grades should be provided with a positive gradient to an adequate discharge point in order to provide rapid removal of surface water runoff away from all foundations. No ponding of water should be allowed on the pad or adjacent to the foundations. Surface drainage must be designed by the project Civil Engineer and maintained by the property owners at all times. The pad should be graded in a manner that surface flow is to a controlled discharge system.

12. Lot slopes and drainage must be provided by the project Civil Engineer to remove all storm water from the pad and to minimize storm and/or irrigation water from seeping beneath the structures. Should surface water be allowed to seep under the structure, foundation movement resulting in structural cracking and damage will occur. Where possible, finished grades around the perimeter of the structures should be compacted and should be sloped at a minimum 2% gradient away from the exterior foundation. Surface drainage requirements constructed by the builder should be maintained during landscaping. In particular, the creation of planter areas confined on all sides by concrete

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walkways or decks and the residence foundation is not desirable since any surface water due to rain or irrigation becomes trapped in the planter area with no outlet. If such a landscape feature is necessary, surface area drains in the planter area or a subdrain along the foundation perimeter must be installed.

13. Continuous roof gutters are recommended. According to local government requirements, roof downspout and drain flows should be directed to at grade bio-filtration areas, or raised planter boxes next to the building perimeter, where possible. From a geotechnical and maintenance point of view it is undesirable to discharge water into at grade bio-filtration areas near foundations, because of the possibility of water ponding for sustained periods of time. Typically, the bio-filtration areas consist of an 18 inch layer of sandy loam over 18 inches of permeable gravel material. The top of the bio-filtration area is typically approximately 1 foot below pad grade, therefore, the base of the bio-filtration area will be approximately 4 feet below pad grade. The base of the bio-filtration area will typically contain a perforated pipe to drain any water that may collect within 24 hours. In some situations, the bio-filtration areas may be located as close as 2 to 3 feet from the building perimeter. If such a system is employed, we must be consulted to evaluate the impact of these systems when located in close proximity to the foundation and provide supplemental recommendations including deepened footings or waterproofing. In addition, the property owners must always maintain the bio-filtration area to ensure that it is performing as designed and that water does not pond in the area for longer than 48 hours.

FOUNDATIONS

14. Provided the site is prepared as recommended in the "Grading" section, a post-tensioned slab foundation may be satisfactorily used. The slab must be designed to tolerate the estimated differential settlement due to liquefaction provided earlier.

Post Tensioned Slab on Grade

15. Post-tensioned slabs should be designed using the following criteria which is based on the design method presented in the Post-tensioning Institute, Design of Post-Tensioned Slabs on Ground, 3rd edition 2004, addendum 2 dated May 2008, and assuming that low plasticity soil with a PI of less than 15 is used. If import material with a PI greater than 15 is utilized, we should be consulted to

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provide updated foundation design criteria. Using the relevant site soil and climatic parameters, the recommended geotechnical criteria for use in the design of the post-tensioned slabs is as follows;

	Swelling Mode	
	Center Lift	Edge Lift
Edge Moisture Variation Distance (e_m)	9.0 feet	5.1 feet
Differential Soil Movement (y_m)	0.59 inches	1.09 inches

The maximum allowable bearing pressure at the base of the slab and for localized thickened footings should not exceed 2,000 p.s.f. for dead plus sustained live loads.

16. As indicated earlier, bio-filtration areas may be designed close to the foundation. Where bio-filtration areas are located closer than 5 feet of the building, the section of loose loam and gravel, will provide reduced lateral support, and we recommend a deepened footing be constructed along the perimeter the building adjacent to the bio-filtration area and extending 3 feet beyond in plan length. The depth of the deepened footing will depend on how close the bio-filtration area to the building perimeter. As a guide, the footing is to be deepened such that when an imaginary line inclined at 45 degrees from the outside edge base of the footings, it extends below the base of the bio-filtration area excavation.

General Construction Requirements for Post-Tensioned Slab

17. Prior to construction of the slab, the slab subgrade should be observed by the Soil Engineer to verify that all under-slab utility trenches greater than 18 inches in width have been properly backfilled and compacted, and that no loose or soft soils are present on the slab subgrade.

18. If clayey import material is used to grade the site the slab subgrade should be soaked to saturation (minimum 5% above optimum) to a depth of 12 to 18 inches prior to placement of the capillary break or vapor retarder/barrier. This should be verified and approved by the Soil Engineer. The penetration of a thin metal probe to a depth of 10-12 inches generally indicates sufficient saturation.

19. The four (4) inch (minimum thickness) layer of gravel typically placed to provide a capillary break beneath concrete slab-on-grade floors may be omitted beneath the monolithically poured mat slab foundations provided that the slabs are at least 10 inches thick as recommended above. If it is desired to

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use a 4 inch layer or thinner of gravel section, the gravel should consist of broken stone, crushed or uncrushed gravel, quarry waste, or a combination thereof. The aggregate shall be free from deleterious substances. It shall be of such quality that the absorption of water in a saturated dry condition does not exceed 3% of the oven dry weight of the sample. The material shall be ¾" minus material with no more than 3% passing the #200 sieve, as specified in Appendix C.

20. A moisture vapor retarder/barrier is recommended beneath all slabs-on-grade that will be covered by moisture-sensitive flooring materials such as vinyl, linoleum, wood, carpet, rubber, rubber-backed carpet, tile, impermeable floor coatings, adhesives, or where moisture-sensitive equipment, products, or environments will exist. We recommend that design and construction of the moisture vapor retarder/barrier conform to Section 1805 of the 2013 CBC and relevant sections of American Concrete Institute (ACI) guidance documents 302.1R-04, 302.2R-06 and 360R-10.

21. The moisture vapor retarder/barrier can be placed above the 4 inches of gravel or directly on the soil subgrade and should consist of a minimum 10 mils thick polyethylene with a maximum perm rating of 0.1 in accordance with ASTM E 1745. Seams in the moisture vapor retarder/barrier should be overlapped no less than 6 inches or in accordance with the manufacturer's recommendations. Joints and penetrations should be sealed with the manufacturer's recommended adhesives, pressure-sensitive tape, or both. The contractor must avoid damaging or puncturing the moisture vapor retarder/barrier and repair any punctures with additional polyethylene properly lapped and sealed. The installation of the vapor retarder membrane must be in conformance with ASTM E1643.

22. A minimum of two inches of wetted sand should be placed over the vapor retarder membrane to facilitate curing of the concrete and to act as a cushion to protect the membrane. The perimeter of the mat should be thickened to bear on the prepared building pad and to confine the sand. During winter construction, sand may become saturated due to rainy weather prior to pouring. Saturated sand is not desirable because the sand cushion may become over saturated, and boil into the concrete causing undesirable structural monopolies of sand pockets within the slab. As an alternate, a sand-fine gravel mixture that is stable under saturated conditions may be used. However, the material must be approved by the Soil Engineer prior to use.

23. Alternatively, the sand layer may be eliminated provided the concrete has a maximum water/cement ratio of 0.45 and a 10 mil Class A vapor retarder membrane, such as Stego® Wrap. In

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any case, the vapor retarder/barrier should have a maximum perm rating of 0.3 in accordance with ASTM E 1745. Seams in the moisture vapor retarder/barrier should be overlapped no less than 6 inches or in accordance with the manufacturer's recommendations. Joints and penetrations should be sealed with the manufacturer's recommended adhesives, pressure-sensitive tape, or both. The contractor must avoid damaging or puncturing the vapor retarder/barrier and repair any punctures with additional polyethylene properly lapped and sealed.

24. Any exterior concrete flatwork such as steps, patios, or sidewalks should be designed independently of the slab, and expansion joints should be provided between the flatwork and the structural unit.

SOIL CORROSIVITY

25. In order to evaluate the corrosion potential of the near surface soil toward concrete and buried metal pipe, a sample of soil within the upper 5 feet was collected and tested for resistivity, soluble chloride, soluble sulfate, and pH. The results of the testing is summarized as follows;

Resistivity	351 Ohm-cm
Chloride	48 mg/kg
Sulfate	34 mg/kg
pH	7.0

26. Many factors contribute to the corrosion potential. The most important factor with respect to corrosion potential toward buried metal pipes and fittings is soil resistivity, and the most important factor with respect to corrosion potential toward concrete is the sulfate content.

27. Based on the above results, the near surface soil is severely corrosive to buried metal pipe and fittings. We recommend that a corrosion engineer be consulted to provide specific corrosion protection measures. Further, the sulfate exposure to concrete is negligible, and no special cements are required.

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MISCELLANEOUS CONCRETE FLATWORK

28. Miscellaneous flatwork, driveways, and walkways may be designed with a minimum thickness of 4.0 inches. Control joints should be constructed to create squares or rectangles with a maximum spacing of 15 feet on large slab areas. Walkways should be separated from foundations with a thick expansion joint filler. Control joints should be constructed into walkways at a maximum of 5 feet spacing.

RETAINING WALLS

29. Retaining walls should be designed to resist lateral pressures exerted from a media having an equivalent fluid weight as follows:

Active Condition	=	55 p.c.f. for horizontal backslope
At-rest Condition	=	70 p.c.f.
Passive Condition	=	250 p.c.f.
Coefficient of Friction	=	0.30

30. For a non-horizontal backslope, the active condition equivalent fluid weight can be increased by 1.5 p.c.f. for each 2 degree rise in slope from the horizontal.

31. Active conditions occur when the top of the wall is free to move outward. At-rest conditions apply when the top of wall is restrained from any movement.

32. It should be noted that the effects of any surcharge, traffic or compaction loads behind the walls must be accounted for in the design of the walls.

33. The above criteria are based on fully drained conditions. If drained conditions are not possible, then the hydrostatic pressure must be included in the design of the wall. An additional linear distribution of hydrostatic pressure of 63 p.c.f. should be adopted, in this case.

34. In order to achieve fully-drained conditions, a drainage filter blanket should be placed behind the wall. The blanket should be a minimum of 12 inches thick and should extend the full height of the wall to within 12 inches of the surface. If the excavated area behind the wall exceeds 12 inches, the entire excavated space behind the 12-inch blanket should consist of compacted engineered fill or

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blanket material. The drainage blanket material may consist of either granular crushed rock and drain pipe fully encapsulated in geotextile filter fabric or Class II permeable material that meets CalTrans Specification, Section 68, with drainage pipe but without fabric. A 4-inch perforated drain pipe should be installed in the bottom of the drainage blanket and should be underlain by at least 4 inches of filter type material. A 12-inch cap of clayey soil material should be placed over the drainage blanket. A typical detail for retaining wall back drains is presented in Appendix C. All back drains should be outlet to suitable drainage devices. Retaining wall less than 3 feet in height should be provided with backdrains or weep holes.

35. As an alternate to the 12-inch drainage blanket, a pre-fabricated strip drain (such as Miradrain) may be used between the wall and retained soil. In this case, the wall must be designed to resist an additional lateral hydrostatic pressure of 30 p.c.f.

36. Piping with adequate gradient shall be provided to discharge water that collects behind the walls to an adequately controlled discharge system away from the structure foundation.

37. The retaining walls may be founded on a friction pier foundation or on spread footing foundations for walls that are not a part of a building structure. Spread footing and pier design criteria are given below.

RETAINING WALL/SOUNDWALL FOUNDATION - SPREAD FOOTINGS

38. Spread footings should have a minimum depth of twenty four (24) inches below lowest adjacent pad grade (i.e., trenching depth) for soil subgrade. At this depth, the recommended design bearing pressure for continuous footings should not exceed 2,500 p.s.f. due to dead plus sustained live loads and 3,300 p.s.f. due to all loads which include wind and seismic.

39. To accommodate lateral loads, the passive resistance of the foundation soil can be utilized. The passive soil pressures can be assumed to act against the front face of the footing below a depth of one foot below the ground surface. It is recommended that a passive pressure equivalent to that of a fluid weighing 250 p.c.f. be used. The weight of the soil above the footing can be used in the frictional calculations. For design purposes, an allowable friction coefficient of 0.30 can be assumed at the base of the spread footing.

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RETAINING WALL/SOUNDWALL FOUNDATION - PIER FOOTINGS

40. The piers should be designed on the basis of skin friction acting between the soil and the pier. For the soils at the site, an allowable skin friction value of 500 p.s.f. can be used for combined dead and live loads, below a depth of 3 feet. This value can be increased by one-third for total loads which include wind or seismic forces. Given the highly expansive nature of the soil, we recommend that any grade beams footings or bottom of soundwall panels that are buried into the ground, should be designed for an uplift pressure of 2,500 p.s.f. acting against the bottom of the grade beam/soundwall panel and an uplift adhesion of 300 p.s.f. acting along the upper 3 feet of the pier. Resistance to uplift is to be provided by the pier foundations, and an allowable skin friction value of 500 p.s.f can be used below 3 feet. The size, depth and spacing of the piers is to be determined by the structural engineer.

41. To resist lateral loads, the passive resistance of the soil can be used. The soil passive pressures can be assumed to act against the lateral projected area twice the pier diameter. It is recommended that a passive pressure equivalent to that of a fluid weighing 250 p.c.f be used below 3 feet of final pad grade.

PAVEMENT AREAS

42. R-value tests were not performed as part of this investigation, as the soil expected at subgrade level is not known and depends on the planned grading. Assuming the subgrade material will consist of imported sandy or low expansive clay material, we will assume an R-value of 10 for preliminary design.

43. Based on an R-Value of 10, the following flexible pavement sections are recommended.

Traffic Index	AC (inches)	Class II[1] AB (inches)
4.5	4.0	7.5
5.0	4.0	8.5
6.0	4.0	11.0

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Notes: [1]Minimum R-Value = 78
R-Value = Resistance Value
All Layers in compacted thickness to Cal-Trans Standard Specifications

44. After underground facilities have been placed in the areas to receive pavement and removal of excess material has been completed, the upper 6 inches of the sub-grade soil shall be scarified, moisture conditioned, and compacted to a minimum relative compaction of 95% in accordance with the grading recommendations specified in this report.

45. All aggregate base material placed subsequently should be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure of D1557-12 (latest edition). The construction of the pavement areas should conform to the requirements set forth by the latest Standard Specifications of the Department of Transportations of the State of California and/or City of Oakland, Department of Public Works.

46. If planter areas are provided within or immediately adjacent to the pavement areas, or if permeable pavers are used for some areas of pavement, provisions should be made to control irrigation and surface water from entering the pavement subgrade. Water entering the pavement section at subgrade level, which does not have a means for discharge, could cause softening of this zone and lead to pavement failure. We recommend that for areas of permeable pavers, the subgrade be graded to a low point where a subdrain is constructed to discharge any accumulated water.

UTILITY TRENCHES

47. Applicable safety standards require that trenches in excess of 5 feet must be properly shored or that the walls of the trench slope back to provide safety for installation of lines. If trench wall sloping is performed, the inclination should vary with the soil type. The underground contractor should request an opinion from the Soil Engineer as to the type of soil and the resulting inclination.

48. With respect to state-of-the-art construction or local requirements, utility lines are generally bedded with granular materials. These materials can convey surface or subsurface water beneath the structures. It is, therefore, recommended that all utility trenches which possess the potential to transport

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water be sealed with a compacted impervious cohesive soil material or lean concrete where the trench enters/exits the building perimeter.

49. Utility trenches extending underneath all traffic areas must be backfilled with native or approved import material and compacted to a relative compaction of 90% to within 6 inches of the subgrade. The upper 6 inches should be compacted to 95% relative compaction in accordance with Laboratory Test Procedure ASTM D1557 (latest edition). Backfilling and compaction of these trenches must meet the requirements set forth by the City of Oakland, Department of Public Works. Utility trenches within landscape areas may be compacted to a relative compaction of 85%.

PROJECT REVIEW AND CONSTRUCTION MONITORING

50. All grading and foundation plans for the development must be reviewed by the Soil Engineer prior to contract bidding or submitted to governmental agencies so that plans are reconciled with soil conditions and sufficient time is allowed for suitable mitigative measures to be incorporated into the final grading specifications.

51. ***Quantum Geotechnical, Inc.*** should be notified at least two working days prior to site clearing, grading, and/or foundation operations on the property. This will give the Soil Engineer ample time to discuss the problems that may be encountered in the field and coordinate the work with the contractor.

52. Field observation and testing during the demolition and/or foundation operations must be provided by representatives of ***Quantum Geotechnical, Inc.*** to enable them to form an opinion regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the specification requirements. Any work related to the grading and/or foundation operations performed without the full knowledge and under the direct observation of the Soil Engineer will render the recommendations of this report invalid. This does not imply full-time observation. The degree of observation and frequency of testing services would depend on the construction methods and schedule, and the item of work.

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REFERENCES

1. Association of Bay Area Governments. "Interactive Liquefaction Susceptibility Map". Accessed September 15, 2015 from ABAG website: http://resilience.abag.ca.gov/earthquakes/.

2. California Geological Survey. 2003. “Seismic Hazard Zone Report for the Oakland West 7.5-Minute Quadrangle, Alameda County, California”. Seismic Hazard Zone Report 081.

3. Graymer, R.W., Moring, B.C., Saucedo, G.J., Wentworth, C.M., Brabb, E.E., and Knudsen, K.L. 2006. “Geologic Map of the San Francisco Bay Region”. U.S. Geological Survey. Scientific Investigations Map 2918.

4. U.S. Geological Survey and California Geological Survey. 2006. "Quaternary fault and fold database for the United States". Accessed September 15, 2015 from USGS web site: http//earthquakes.usgs.gov/regional/qfaults/.

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LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his representative to notify ***Quantum Geotechnical, Inc.,*** in writing, a minimum of two working days before any clearing, grading, or foundation excavations can commence at the site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings and from a reconnaissance of the site. Should any variations or undesirable conditions be encountered during the development of the site, ***Quantum Geotechnical,*** will provide supplemental recommendations as dictated by the field conditions.

3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans and the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

4. At the present date, the findings of this report are valid for the property investigated. With the passage of time, significant changes in the conditions of a property can occur due to natural processes or works of man on this or adjacent properties. In addition, legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may render this report invalid, wholly or partially. Therefore, this report should not be considered valid after a period of two (2) years without our review, nor should it be used, or is it applicable, for any properties other than those investigated.

5. Not withstanding all the foregoing, applicable codes must be adhered to at all times.

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APPENDIX A

Regional Geology Map

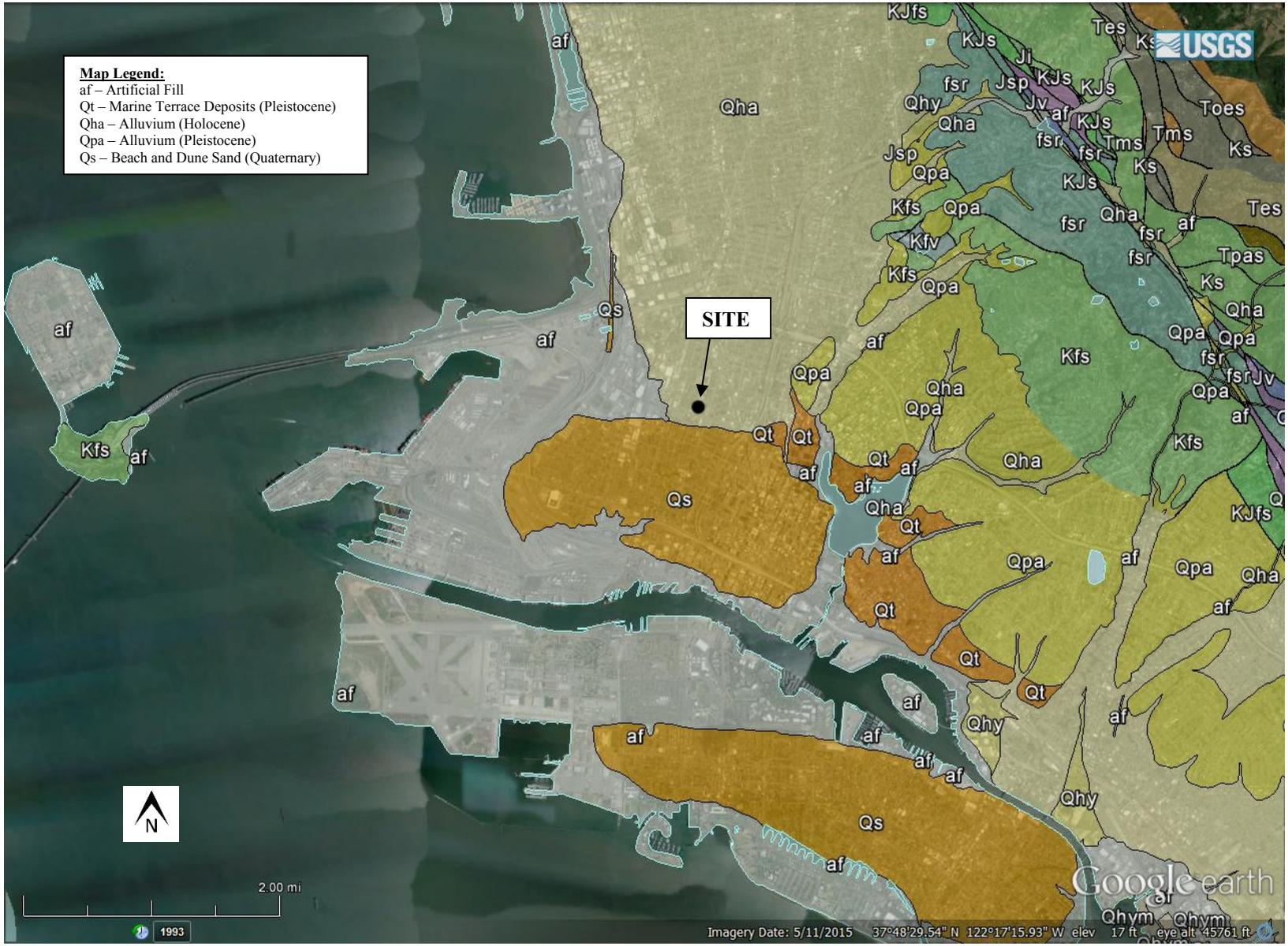
Site Plan

Site Vicinity and Fault Map

Logs of Test Borings

CPT Data

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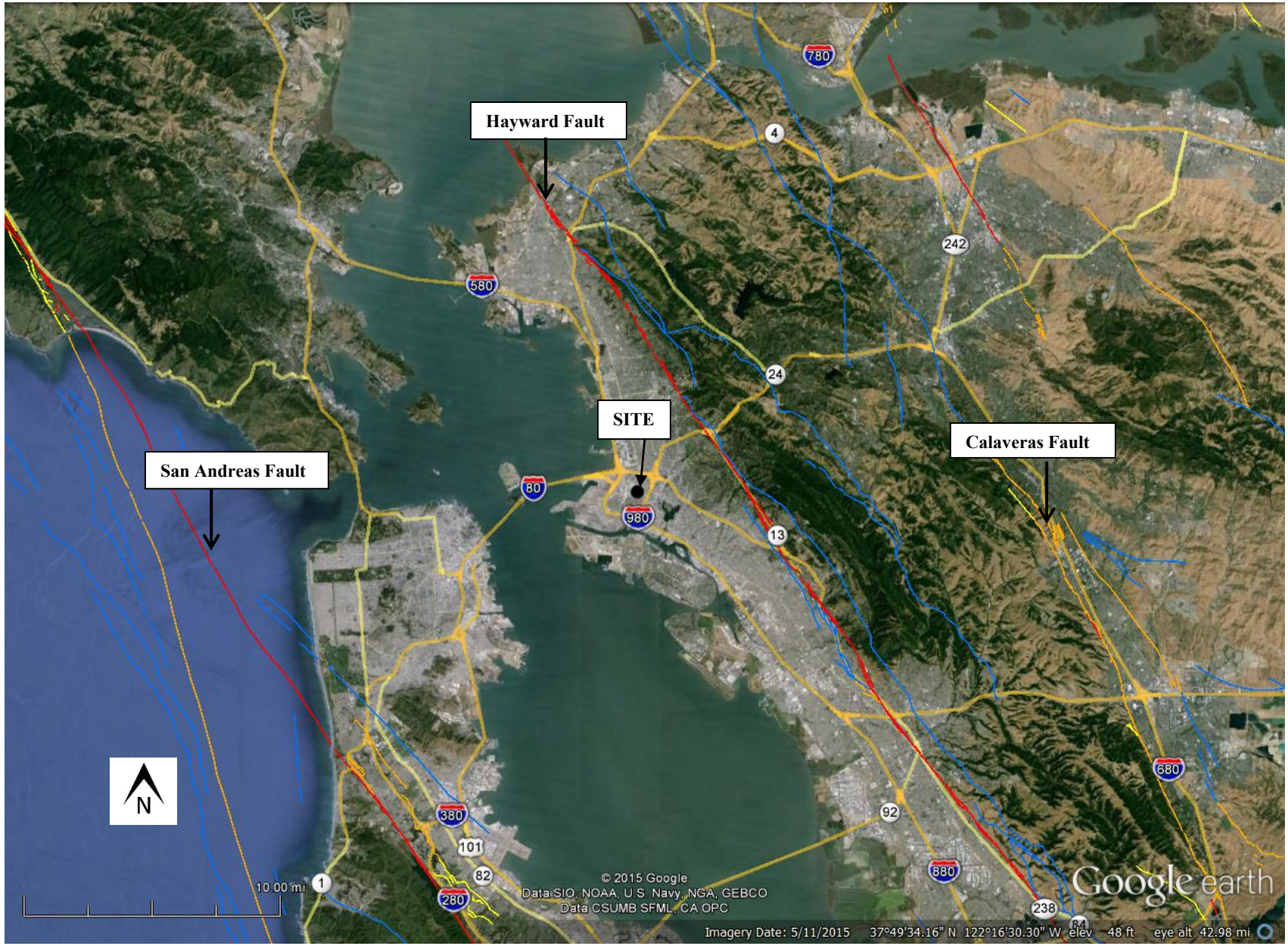


Geologic Map Overlay Source: Graymer, R.W., Moring, B.C., Saucedo, G.J., Wentworth, C.M., Brabb, E.E., and Knudsen, K.L. 2006. "Geologic Map of the San Francisco Bay Region". USGS. Scientific Investigations Map 2918.

QUANTUM GEOTECHNICAL, INC.	REGIONAL GEOLOGY MAP			
	Oakland West Grand Avenue, Oakland	Project No. B044.G	Drawn by: D.T.	Figure No. 1



QUANTUM GEOTECHNICAL, INC.	SITE PLAN			
	Oakland West Grand Avenue, Oakland	Project No. B044.G	Drawn by: D.T.	Figure No. 2

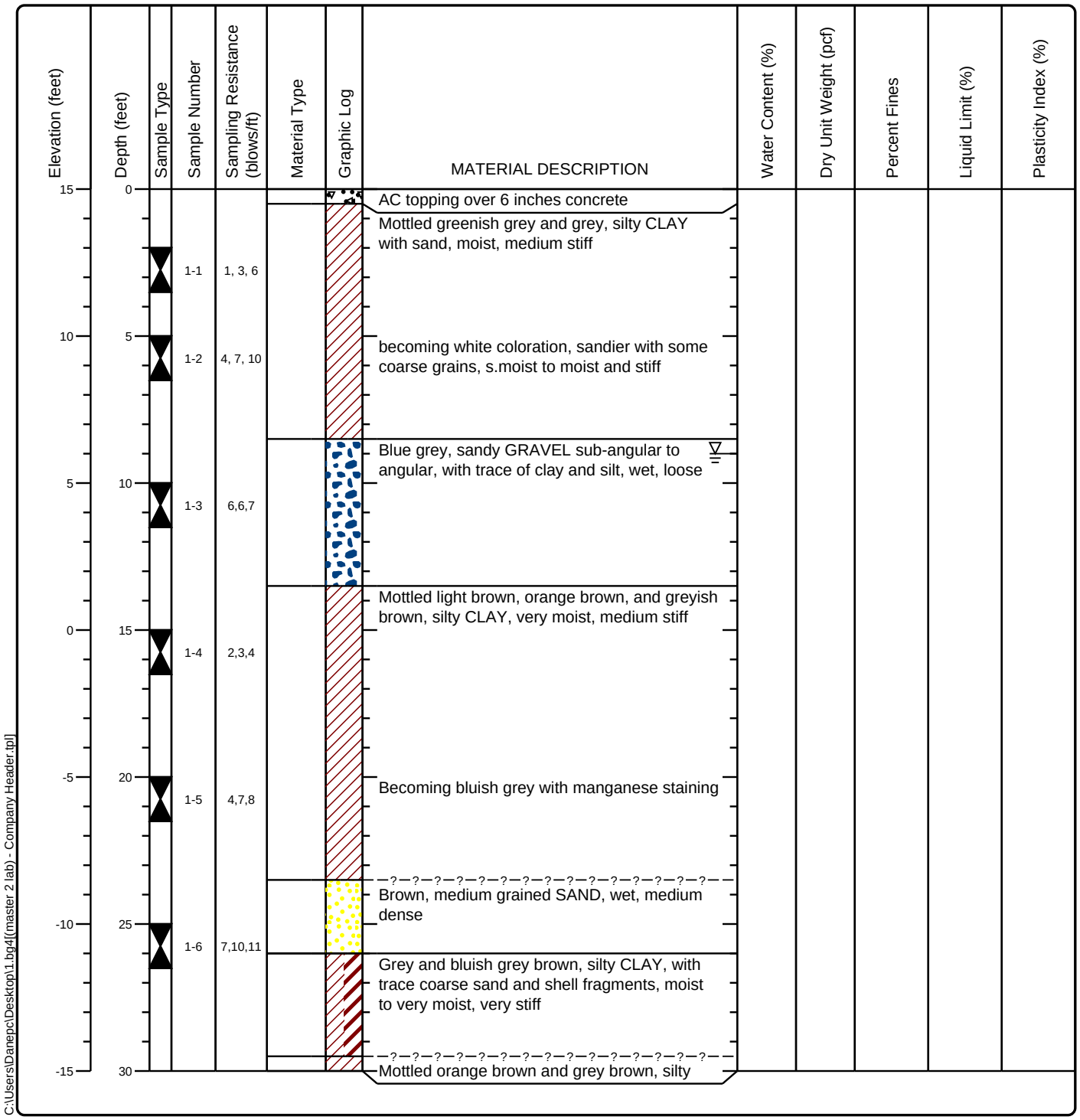


Fault Map Overlay Source: U.S. Geological Survey and California Geological Survey. 2006. Quaternary fault and fold database for the United States. Accessed September 15, 2015 from USGS web site: http//earthquakes.usgs.gov/regional/qfaults/.

QUANTUM GEOTECHNICAL, INC.	SITE VICINITY AND FAULT MAP			
	Oakland West Grand Avenue, Oakland	Project No. B044.G	Drawn by: D.T.	Figure No. 3

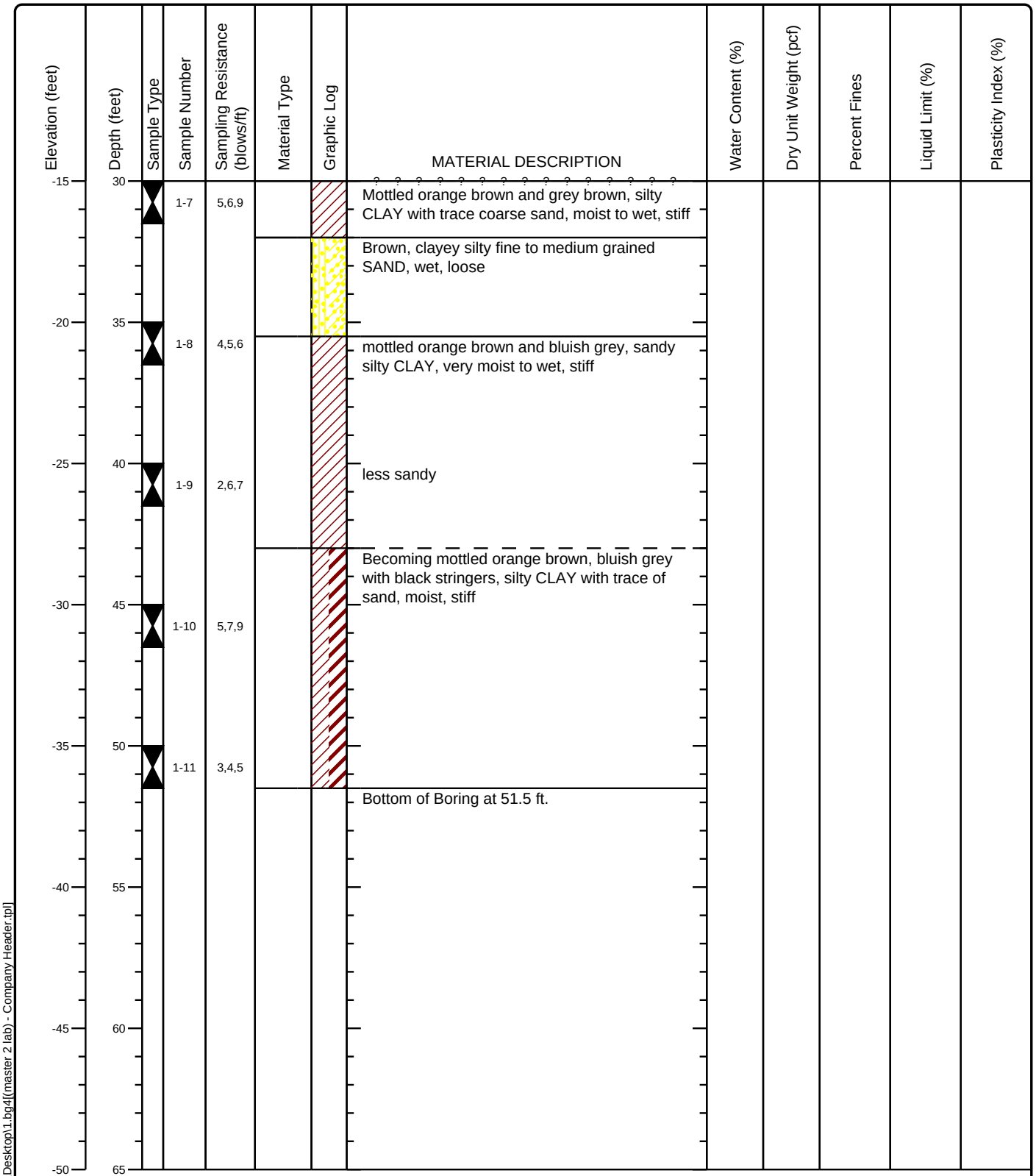
Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-1 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **5/30/2014**	Logged By **MH**	Checked By **SM**
Drilling Method **Hollow Stem**	Drill Bit Size/Type **8"**	Total Depth of Borehole **51.5 ft. bgs.**
Drill Rig Type **CME 55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **9 ft. bgs.**	Sampling Method(s) **California**	Hammer Data **Automatic**
Borehole Backfill **Grout**	Location **See Site Plan**	



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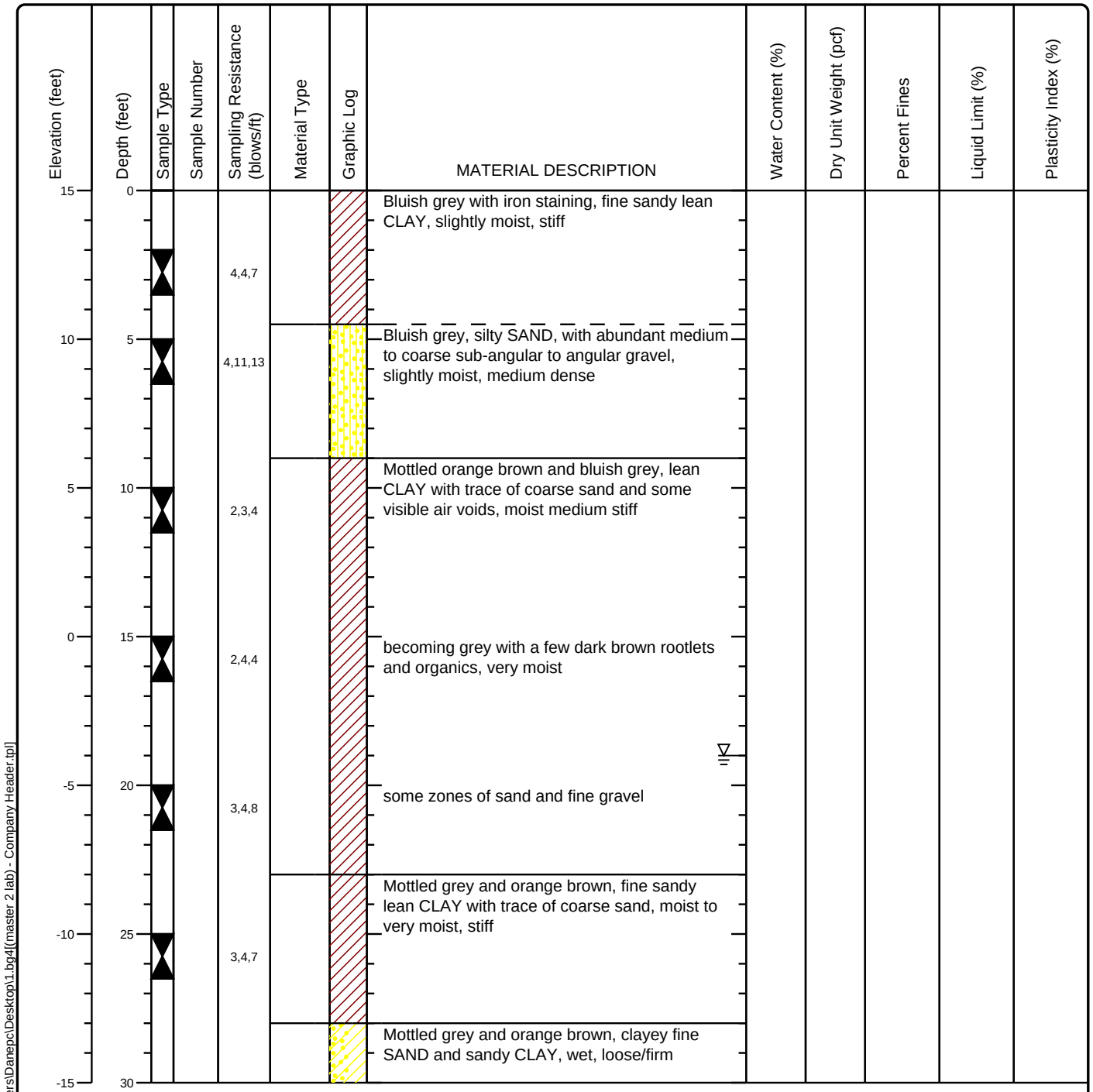
Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-1 **Sheet 2 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751



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Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-2 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **5/30/2014**	Logged By **MH**	Checked By **SM**
Drilling Method **Hollow Stem**	Drill Bit Size/Type **8"**	Total Depth of Borehole **51.5 ft. bgs.**
Drill Rig Type **CME 55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **19 ft. bgs.**	Sampling Method(s) **California**	Hammer Data **Automatic**
Borehole Backfill **Grout**	Location **See Site Plan**	



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Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-2 **Sheet 2 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
-15	30			3,5,6			Mottled grey and orange brown, clayey fine SAND and sandy CLAY, wet, loose/firm					
							Mottled orange and grey brown, silty CLAY with some coarse sand, moist, very stiff					
-20	35			5,9,15								
-25	40			6,7,10			less sandy					
							Mottled orange and greyish brown, sandy lean CLAY, with trace coarse sand and abundant shell fragments, wet, stiff					
-30	45			4,6,7								
							Dark grey, lean silty CLAY, with decayed organic stringers, moist, medium stiff					
-35	50			3,4,5								
							Bottom of Boring at 51.5 ft.					
-40	55											
-45	60											
-50	65											

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Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-3 **Sheet 1 of 1**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **5/30/2014**	Logged By **MH**	Checked By **SM**
Drilling Method **Hollow Stem**	Drill Bit Size/Type **8"**	Total Depth of Borehole **21.5 ft. bgs.**
Drill Rig Type **CME 55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **13 ft. bgs.**	Sampling Method(s) **California**	Hammer Data **Automatic**
Borehole Backfill **Grout**	Location **See Site Plan**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
15	0						Black, sandy lean CLAY with small pieces of brick and concrete, slightly moist, stiff. FILL					
				3,5,6								
10	5						Greyish brown with iron staining, coarse sandy lean CLAY with gravel, slightly moist to moist, stiff to very stiff					
				5,6,10								
5	10						as above but with abundant sub-angular to angular gravel					
				4,8,8			▽					
0	15						poorly graded coarse SAND, with trace of silt and fine gravel, wet, medium dense					
				12,15,12								
-5	20											
				3,5,6			Blue grey, silty CLAY with sand, s.moist, stiff					
							Bottom of Boring at 21.5 ft.					
-10	25											
-15	30											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-4 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **8/20/15**	Logged By **M. Hachey**	Checked By **SM**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **4 in.**	Total Depth of Borehole **31.5 ft. bgs.**
Drill Rig Type **CME-55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **15 ft. bgs.**	Sampling Method(s) **Modified California**	Hammer Data **140 lb./ 30 in. drop**
Borehole Backfill **Grout**	Location **See Site Plan**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
15	0						Silty SAND: Variegated dark, reddish, and orange brown; slightly moist; medium dense; contains wood debris.					
			4-1	14 11 11				13.6	120.8	24		
10	5		4-2	8 8 10			At 6 ft: Increased gravel.					
5	10		4-3	3 5 6			At 10 ft: Very moist; loose.					
0	15		4-4	2 3 5			Lean CLAY: Bluish grey with white; medium stiff; very moist.					
-5	20		4-5	5 7 9			At 20 ft: Color shange to bluish grey with black; stiff; contains trace fine sand and gravel.					
-10	25		4-6	6 10 11			At 25 ft: Very stiff; weak cementation.					
-15	30											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-4 **Sheet 2 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
-15	30		4-7	4 5 7			At 25 ft: Very stiff; weak cementation.					
							Bottom of Boring at 31.5 ft.					
-20	35											
-25	40											
-30	45											
-35	50											
-40	55											
-45	60											
-50	65											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-5 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **8/20/15**	Logged By **M. Hachey**	Checked By **SM**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **4 in.**	Total Depth of Borehole **31.5 ft. bgs.**
Drill Rig Type **CME-55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **15 ft. bgs.**	Sampling Method(s) **Modified California, SPT**	Hammer Data **140 lb./ 30 in. drop**
Borehole Backfill **Grout**	Location **See Site Plan**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
15	0						Silty SAND with gravel: Variegated dark, reddish, and orange brown; slightly moist; medium dense. [FILL]					
10	5		5-1	5 8 11			CLAY: Variegated light greyish brown and bluish grey; slightly moist; very stiff; contains trace sand and fine gravel; visible structure.	21.0	106.1	69.5	54	34
5	10		5-2	2 4 6			At 10 ft: Moist; medium stiff; contains trace gravel.					
0	15		5-3	2 4 7			At 15 ft: Moist to very moist with zones of saturation; stiff; contains organics, trace sand, and air voids.					
-5	20		5-4	2 2 3			At 21 ft: Moist; medium stiff; fine sand.				44	19
-10	25		5-5	11 12 20			Poorly-Graded SAND: Moderate brown; wet; dense; coarse sand.	17.9		12.6		
-15	30											

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Project: **West Grand Avenue**
Project Location: **West Grand Avenue, Oakland**
Project Number: **B044.G**

Log of Boring B-5
Sheet 2 of 2

Quantum Geotechnical, Inc.
1110 Burnett Avenue, Ste. B
Concord, CA 94520
(925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
-15	30		5-6	2 3 4			CLAY: Variegated orange, brown, and bluish grey; moist to wet; medium stiff; contains trace fine gravel.					
							Bottom of Boring at 31.5 ft.					
-20	35											
-25	40											
-30	45											
-35	50											
-40	55											
-45	60											
-50	65											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-6 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **8/20/15**	Logged By **M. Hachey**	Checked By **SM**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **4 in.**	Total Depth of Borehole **31.5 ft. bgs.**
Drill Rig Type **CME-55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **15 ft. bgs.**	Sampling Method(s) **Modified California**	Hammer Data **140 lb./ 30 in. drop**
Borehole Backfill **Grout**	Location **See Site Plan**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
15	0						Silty Clayey SAND: Dark reddish and orange brown; slightly moist; medium dense. [Fill]					
			6-1	5 9 14			Fat CLAY: Variegated orange, brown, and bluish grey; slightly moist; very stiff; contains sand. [Native]	17.0	112.6	68.0	36	18
10	5		6-2	5 9 11			At 6 ft: decrease in plasticity; increase in sand.					
5	10		6-3	2 4 6			At 10 ft: Moist to slightly moist; medium stiff; increase in sand.					
0	15		6-4	11 18 15			Well-Graded Gravel with Sand: Saturated; medium dense; coarse to fine, subangular to angular gravel; coarse sand.	12.9	113.8	7.3		
-5	20		6-5	3 4 4			Lean CLAY: Variegated bluish grey with orange brown; very moist; medium stiff; contains fine sand.	32.8	91.6			
-10	25		6-6	18 33 47			Well-Graded Silty SAND: Wet; very dense; medium to coarse sand.	12.1	128.9	15		
-15	30											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-6 **Sheet 2 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
-15	30		6-7	3 5 7			Lean CLAY: Variegated orange and greyish brown; moist to very moist; stiff; contains fine sand.					
							Bottom of Boring at 31.5 ft.					
-20	35											
-25	40											
-30	45											
-35	50											
-40	55											
-45	60											
-50	65											

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Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Key to Boring Logs **Sheet 1 of 1**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
1	2	3	4	5	6	7	8	9	10	11	12	13

COLUMN DESCRIPTIONS

1. Elevation (feet): Elevation (MSL, feet).
2. Depth (feet): Depth in feet below the ground surface.
3. Sample Type: Type of soil sample collected at the depth interval shown.
4. Sample Number: Sample identification number.
5. Sampling Resistance (blows/ft): Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
6. Material Type: Type of material encountered.
7. Graphic Log: Graphic depiction of the subsurface material encountered.
8. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9. Water Content (%): Water content of the soil sample, expressed as percentage of dry weight of sample.
10. Dry Unit Weight (pcf): Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.
11. Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.
12. Liquid Limit (%): Liquid Limit, expressed as a water content.
13. Plasticity Index (%): Plasticity Index, expressed as a water content.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

- Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)
- Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
- Lean-Fat CLAY, CLAY w/SAND, SANDY CLAY (CL-CH)
- Portland Cement Concrete
- AF
- Well graded GRAVEL (GW)
- Clayey SAND to Sandy CLAY (SC-CL)
- Silty SAND (SM)
- Silty to Clayey SAND (SM-SC)
- Poorly graded SAND (SP)
- Well graded SAND with Silt (SW-SM)

TYPICAL SAMPLER GRAPHIC SYMBOLS

- 3-inch-OD California w/ brass rings
- 2.5-inch-OD Modified California w/ brass liners
- 2-inch-OD unlined split spoon (SPT)

OTHER GRAPHIC SYMBOLS

- Water level (at time of drilling, ATD)
- Water level (after waiting)
- Minor change in material properties within a stratum
- Inferred/gradational contact between strata
- Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

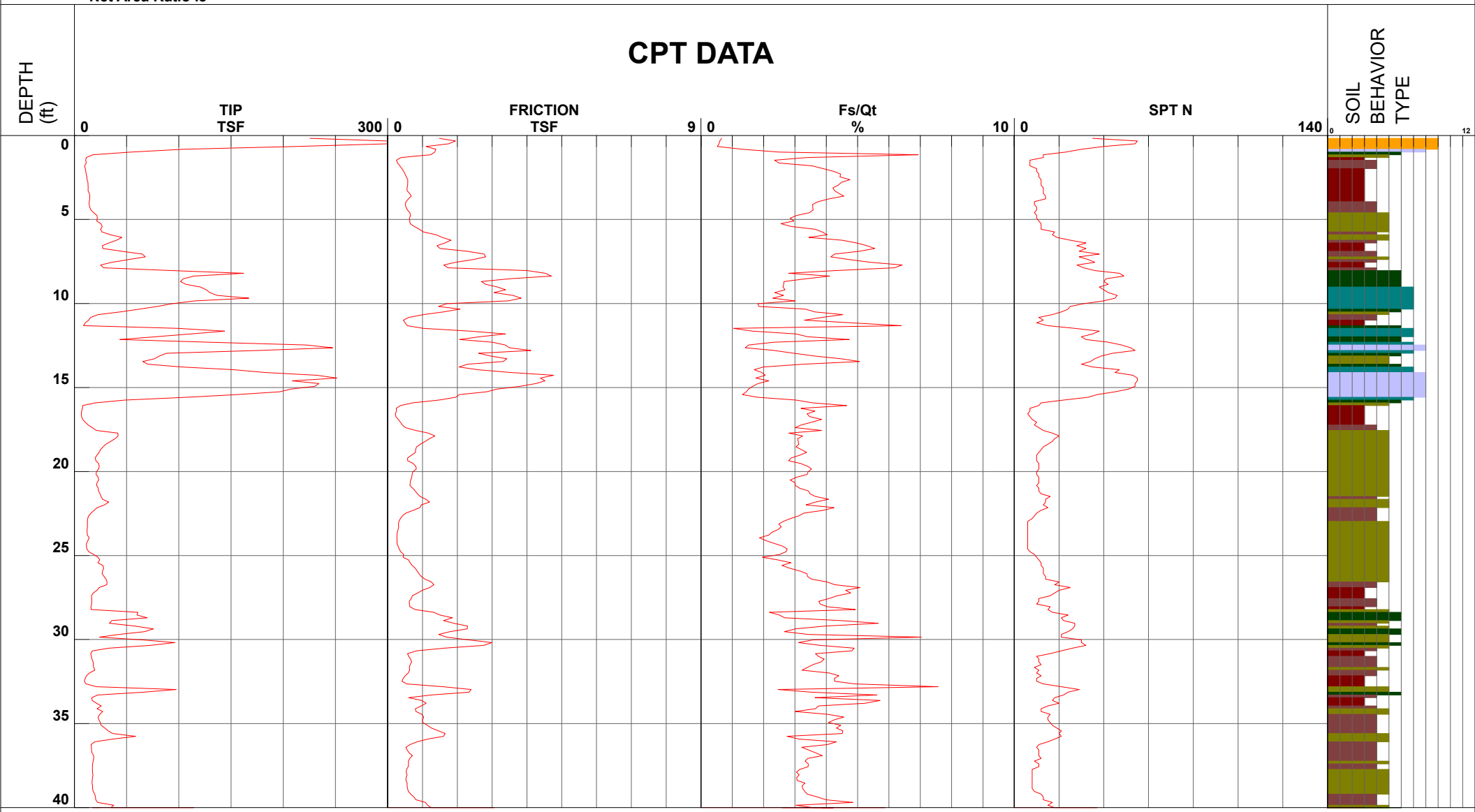
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Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(062).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-01	Date and Time	8/20/2015 2:17:51 PM	Maximum Depth	41.83 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

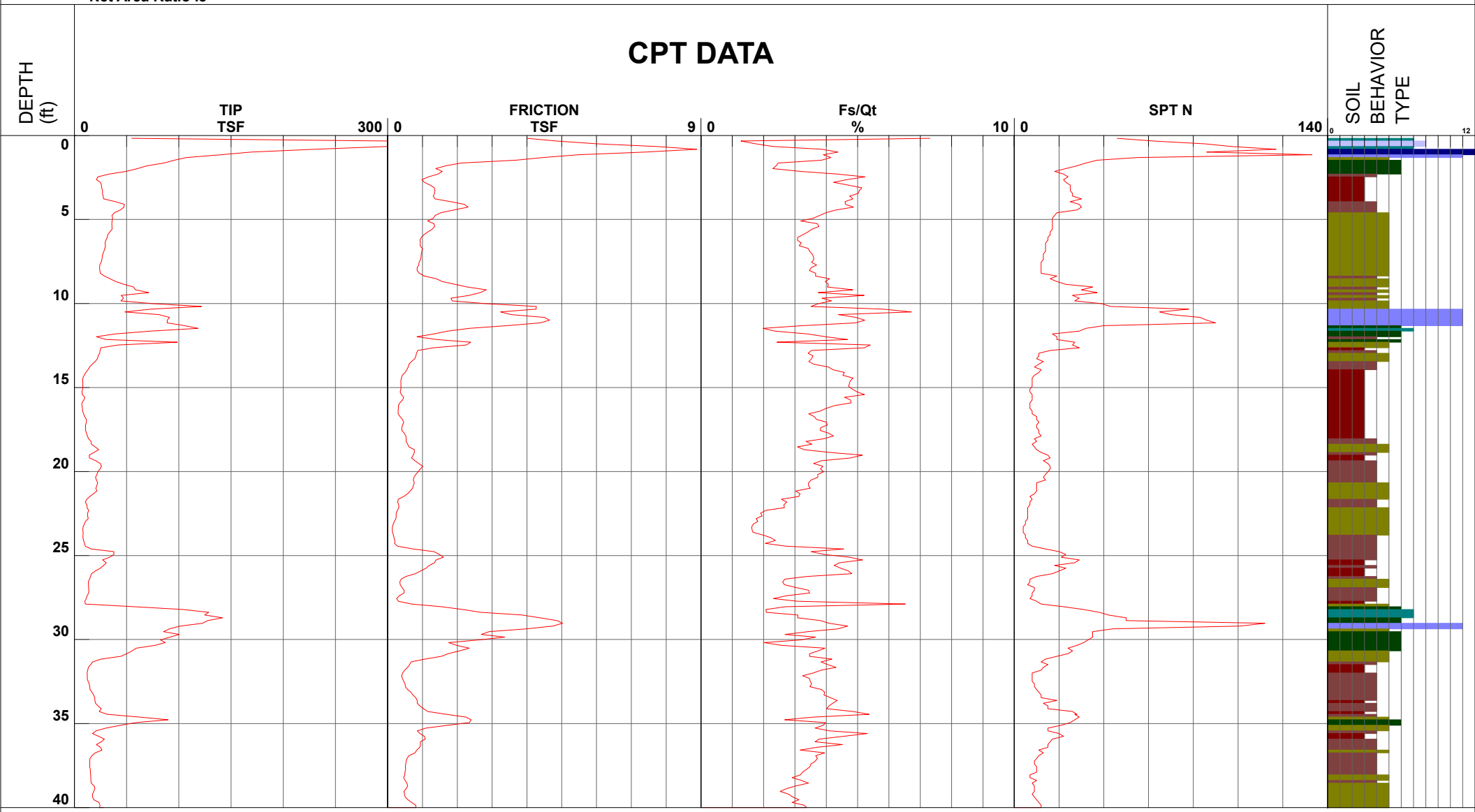
S*Soil behavior type and SPT based on data from UBC-1983

Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(061).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-02	Date and Time	8/20/2015 1:50:48 PM	Maximum Depth	40.52 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

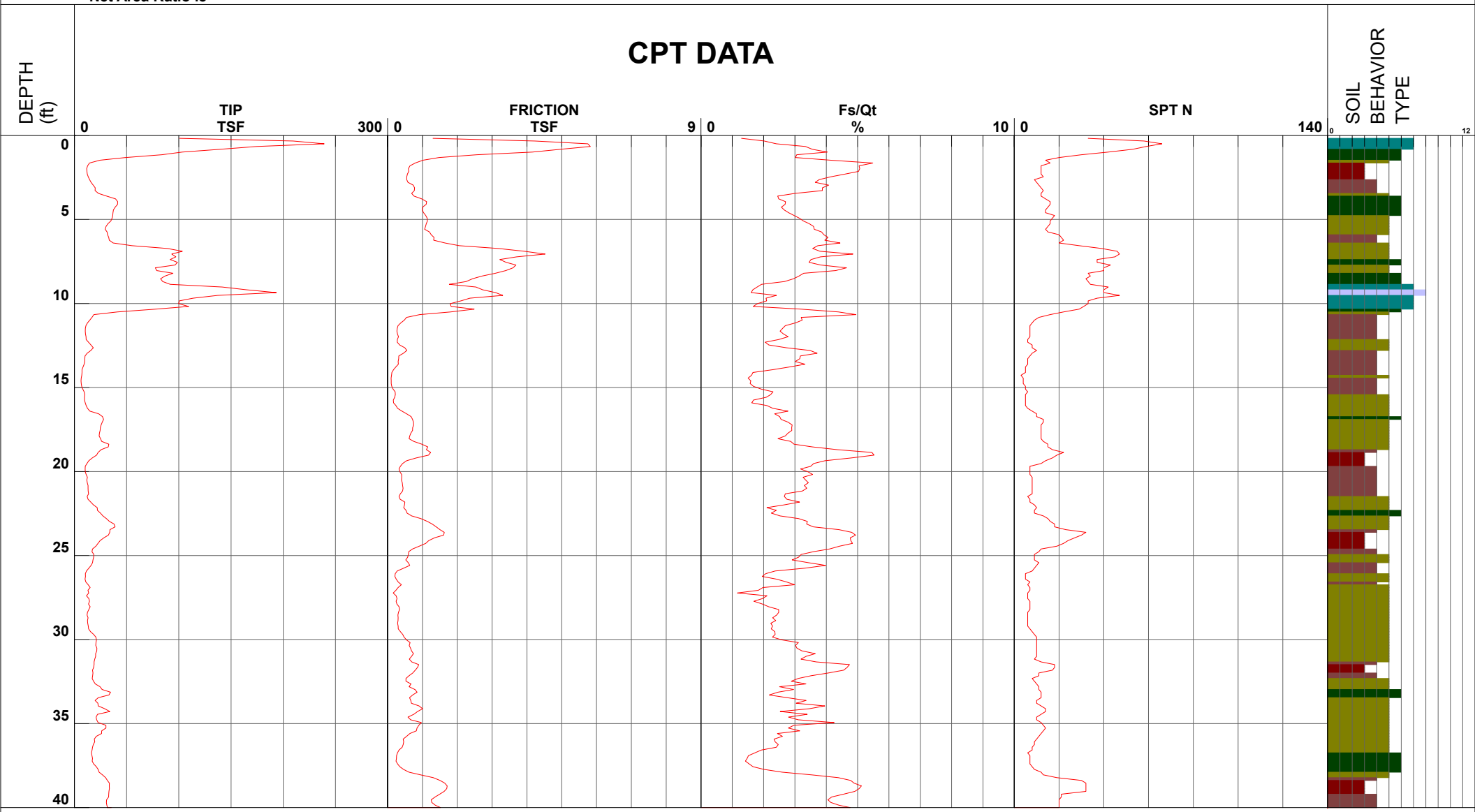
S*Soil behavior type and SPT based on data from UBC-1983

Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(058).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-03	Date and Time	8/20/2015 12:00:49 PM	Maximum Depth	40.52 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

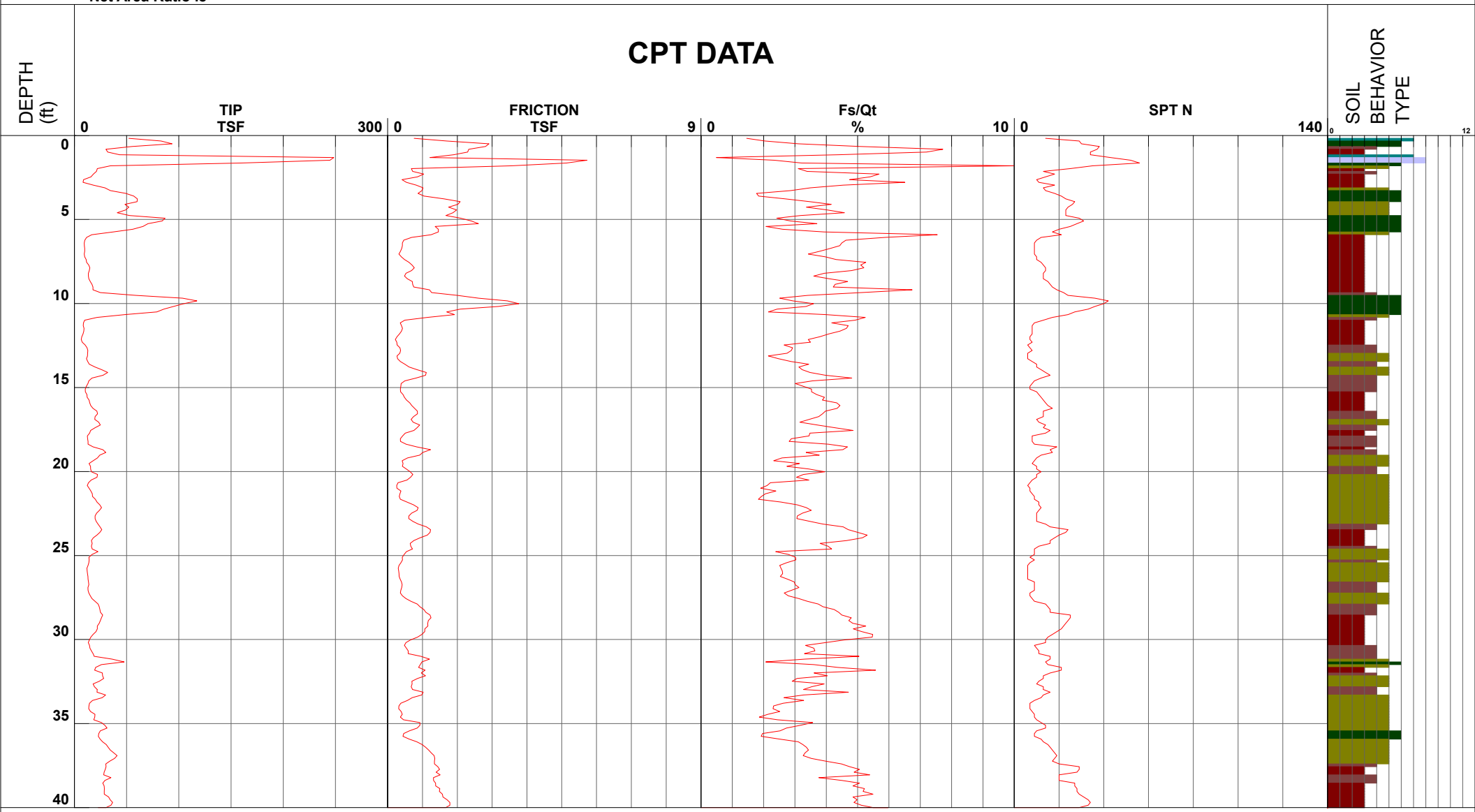
S*Soil behavior type and SPT based on data from UBC-1983

Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(059).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-04	Date and Time	8/20/2015 12:30:16 PM	Maximum Depth	40.52 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

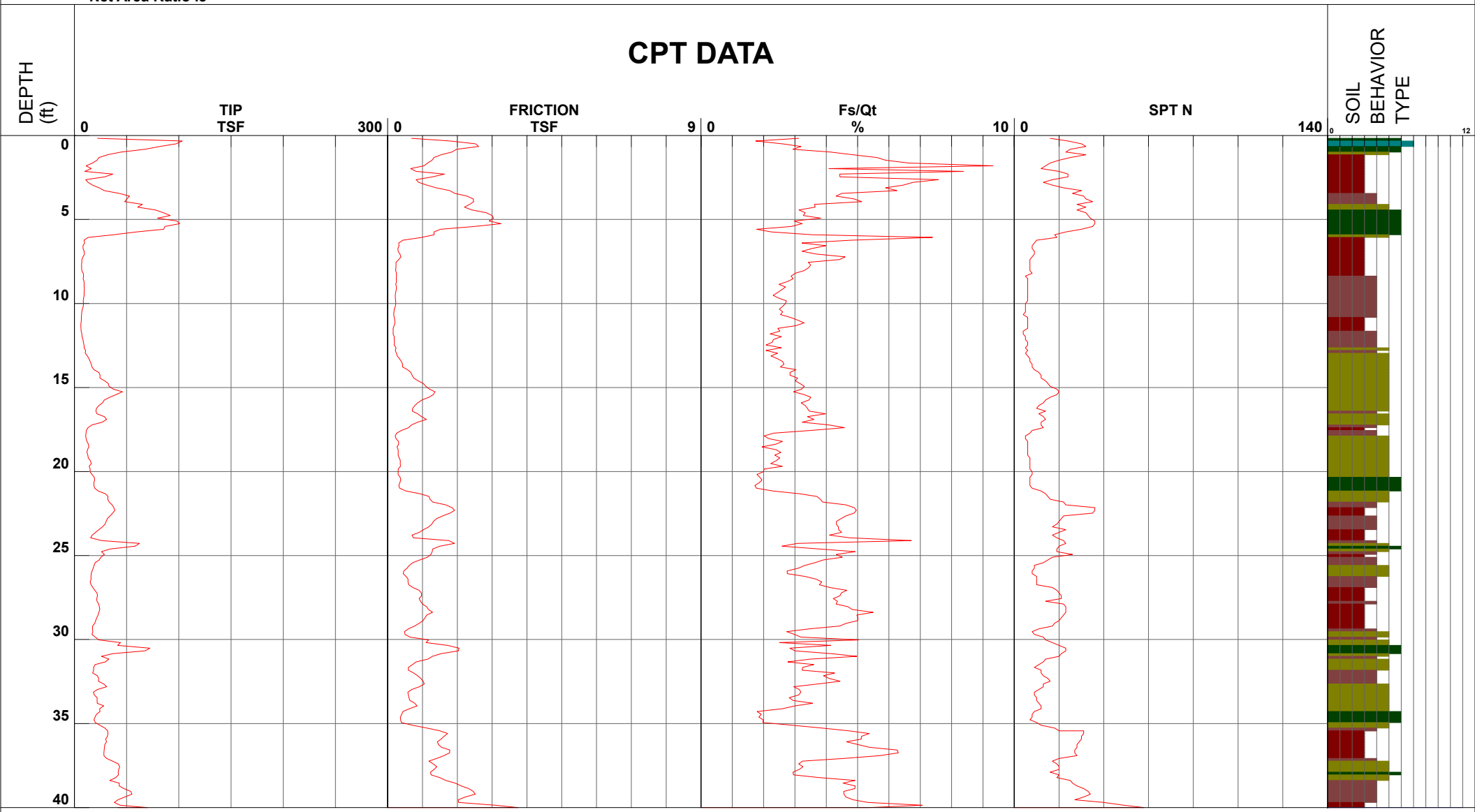
S*Soil behavior type and SPT based on data from UBC-1983

Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(060).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-05	Date and Time	8/20/2015 1:11:03 PM	Maximum Depth	40.52 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

APPENDIX B

Laboratory Investigation

Summary of Laboratory Test Results

Corrosion Test Results

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LABORATORY INVESTIGATION

The laboratory testing program was directed towards providing sufficient information for the determination of the engineering characteristics of the site soils so that the recommendations outlined in this report could be formulated.

Moisture content and dry unit weight tests were performed on relatively undisturbed soil samples in order to determine the consistency of the soil and moisture variation throughout the explored soil profile and to estimate the compressibility of the underlying soils.

Sieve analysis testing was performed to determine the percentage of fines.

Atteberg Limits tests were performed to determine the expansion potential of the foundation soils.

The strength parameters of the foundation soils were obtained by evaluating the penetration resistance (blow counts) during sample recovery.

A summary of all laboratory test results is presented on Table B-I of this appendix and on the respective "Logs of Test Borings", Appendix A.

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SUMMARY OF LABORATORY TESTS

TABLE B-1

Sample Number	Depth (ft)	Dry Density (p.c.f.)	Moisture Content (% Dry Wt.)	Atterberg Limits		Sieve Analysis (% Passing No. 200 Sieve)
				Liquid Limit (%)	Plasticity Index (%)	
4-1	3	120.8	13.6	--	--	24.0
5-1	6	106.1	21.0	54	34	69.5
5-4	20	--	--	44	19	--
5-5	25	--	17.9	--	--	12.6
6-1	3	112.6	17.0	36	18	68.0
6-4	16	113.8	12.9	--	--	7.3
6-5	21	91.6	32.8	--	--	--
6-6	26	128.9	12.1	--	--	15.0

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Corrosivity Tests Summary

CTL # 740-191 **Date:** 9/22/2015 **Tested By:** PJ **Checked:** PJ

Client: T. Makdissy Consulting **Project:** West Grand Ave **Proj. No:** B044-G

Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP (Redox)		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%				Qualitative	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		E_H (mv)	At Test	by Lead	%	
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
-	-	0-5	-	-	351	48	34	0.0034	7.0	547	26	Negative	4.7	Olive Sandy CLAY

Appendix C

The Grading Specification

Guide Specifications for Rock Under Floor Slabs

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THE GRADING SPECIFICATIONS
on
Proposed Residential Development
Icehouse, (Oakland 2)
West Grand Avenue
Oakland, California

1. General Description

1.1 These specifications have been prepared for the grading and site development of the subject residential development. ***Quantum Geotechnical Inc.***, hereinafter described as the Soil Engineer, should be consulted prior to any site work connected with site development to ensure compliance with these specifications.

1.2 The Soil Engineer should be notified at least two working days prior to any site clearing or grading operations on the property in order to observe the stripping of organically contaminated material and to coordinate the work with the grading contractor in the field.

1.3 This item shall consist of all clearing or grubbing, preparation of land to be filled, filling of the land, spreading, compaction and control of fill, and all subsidiary work necessary to complete the grading of the filled areas to conform with the lines, grades, and slopes as shown on the accepted plans. The Soil Engineer is not responsible for determining line, grade elevations, or slope gradients. The property owner, or his representative, shall designate the person or organizations who will be responsible for these items of work.

1.4 The contents of these specifications shall be integrated with the soil report of which they are a part, therefore, they shall not be used as a self-contained document.

2. Tests

The standard test used to define maximum densities of all compaction work shall be the ASTM D1557-12 Laboratory Test Procedure. All densities shall be expressed as a relative compaction in terms of the maximum dry density obtained in the laboratory by the foregoing standard procedure.

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3. Clearing, Grubbing, and Preparing Areas To Be Filled

3.1 If encountered, all vegetable matter, trees, root systems, shrubs, debris, and organic topsoil shall be removed from all structural areas and areas to receive fill.

3.2 If encountered, any soil deemed soft or unsuitable by the Soil Engineer shall be removed. Any existing debris or excessively wet soils shall be excavated and removed as required by the Soil Engineer during grading.

3.3 All underground structures shall be removed from the site such as old foundations, abandoned pipe lines, septic tanks, and leach fields.

3.4 The final stripped excavation shall be approved by the Soil Engineer during construction and before further grading is started.

3.5 After the site has been cleared, stripped, excavated to the surface designated to receive fill, and scarified, it shall be disked or bladed until it is uniform and free from large clods. The native subgrade soils shall be moisture conditioned and compacted to the requirements as specified in the grading section of this report. Fill can then be placed to provide the desired finished grades. The contractor shall obtain the Soil Engineer's approval of subgrade compaction before any fill is placed.

4. Materials

4.1 All fill material shall be approved by the Soil Engineer. The material shall be a soil or soil-rock mixture which is free from organic matter or other deleterious substances. The fill material shall not contain rocks or lumps over 6 inches in greatest dimension and not more than 15% larger than 2-1/2 inches. Materials from the site below the stripping depth are suitable for use in fills provided the above requirements are met.

4.2 Materials existing on the site are suitable for use as compacted engineered fill after the removal of all debris and organic material. All fill soils shall be approved by the Soil Engineer in the field.

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4.3 Should import material be required, it should be approved by the soil Engineer before it is brought to the site.

5. Placing, Spreading, and Compacting Fill Material

5.1 The fill materials shall be placed in uniform lifts of not more than 8 inches in uncompacted thickness. Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to obtain uniformity of material in each layer. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either (a) aerating the material if it is too wet, or (b) spraying the material with water if it is too dry.

5.2 After each layer has been placed, mixed, and spread evenly, either import material or native material shall be compacted to a relative compaction designated for engineered fill.

5.3 Compaction shall be by footed rollers or other types of acceptable compacting rollers. Rollers shall be of such design that they will be able to compact the fill to the specified density. Rolling shall be accomplished while the fill material is within the specified moisture content range. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient trips to ensure that the required density has been obtained. No ponding or jetting shall be permitted.

5.4 Field density tests shall be made in each compacted layer by the Soil Engineer in accordance with Laboratory Test Procedure ASTM D1556-15 or D6938-10. When footed rollers are used for compaction, the density tests shall be taken in the compacted material below the surface disturbed by the roller. When these tests indicate that the compaction requirements on any layer of fill, or portion thereof, has not been met, the particular layer, or portion thereof, shall be reworked until the compaction requirements have been met.

5.5 No soil shall be placed or compacted during periods of rain nor on ground which contains free water. Soil which has been soaked and wetted by rain or any other cause shall not be compacted until completely drained and until the moisture content is within the limits hereinbefore described or approved by the Soil Engineer. Approval by the Soil Engineer shall be obtained prior to continuing the grading operations.

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6. Pavement

6.1 The proposed subgrade under pavement sections, native soil, and/or fill shall be compacted to a minimum relative compaction of 95% at 2% above optimum moisture content for a depth of 12 inches.

6.2 All aggregate base material placed subsequently should also be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure D1557-12. The construction of the pavement in the parking and traffic areas should conform to the requirements set forth by the latest Standard Specifications of the Department of Transportation of the State of California and/or City of Oakland, Department of Public Works.

6.3 It is recommended that soils at the proposed subgrade level be tested for a pavement design after the preliminary grading is completed and the soils at the site design subgrade levels are known.

7. Utility Trench Backfill

7.1 The utility trenches extending under concrete slabs-on-grade shall be backfilled with native on-site soils or approved import materials and compacted to the requirements pertaining to the adjacent soil. No ponding or jetting will be permitted.

7.2 Utility trenches extending under all pavement areas shall be backfilled with native or approved import material and properly compacted to meet the requirements set forth by the City of Oakland, Department of Public Works.*

7.3 Where any opening is made under or through the perimeter foundations for such items as utility lines and trenches, the openings must be resealed so that they are watertight to prevent the possible entrance of outside irrigation or rain water into the underneath portion of the structures.

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8. Subsurface Line Removal

8.1 The methods of removal will be designated by the Soil Engineer in the field depending on the depth and location of the line. One of the following methods will be used.

8.2 Remove the pipe and fill and compact the soil in the trench according to the applicable portions of sections pertaining to compaction and utility backfill.

8.3 The pipe shall be crushed in the trench. The trench shall then be filled and compacted according to the applicable portions of Section 5.

8.4 Cap the ends of the line with concrete to prevent entrance of water. The length of the cap shall not be less than 5 feet. The concrete mix shall have a minimum shrinkage.

9. Unusual Conditions

9.1 In the event that any unusual conditions not covered by the special provisions are encountered during the grading operations, the Soil Engineer shall be immediately notified for additional recommendations.

10. General Requirements

Dust Control

10.1 The contractor shall conduct all grading operations in such a manner as to preclude windblown dirt and dust and related damage to neighboring properties. The means of dust control shall be left to the discretion of the contractor and he shall assume liability for claims related to windblown material.

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GUIDE SPECIFICATIONS FOR ROCK UNDER FLOOR SLABS

Definition

Graded gravel or crushed rock for use under slabs-on-grade shall consist of a minimum thickness of mineral aggregate placed in accordance with these specifications and in conformance with the dimensions shown on the plans. The minimum thickness is specified in the accompanying report.

Material

The mineral aggregate shall consist of broken stone, crushed or uncrushed gravel, quarry waste, or a combination thereof. The aggregate shall be free from deleterious substances. It shall be of such quality that the absorption of water in a saturated dry condition does not exceed 3% of the oven dry weight of the sample.

Gradation

The mineral aggregate shall be of such size that the percentage composition by dry weight, as determined by laboratory sieves (U.S. Sieves) will conform to the following gradation:

Sieve Size	Percentage Passing
¾''	90-100
No. 4	25-60
No. 8	18-45
No. 200	0-3

Placing

Subgrade, upon which gravel or crushed rock is to be placed, shall be prepared as outlined in the accompanying soil report.

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APPENDIX I
NOVA Clarifier Letter Removal Report

Nova
Abatement & Construction Services, Inc.

Asbestos

Lead Paint

Mold

Specialty Construction

Tenant Improvement

Commercial & Residential Restoration

Insurance Claim Work

3051 Research Dr.
Richmond, CA
94806

CA.Lic.No.
793297
A, B, C-2, ASB, HIC

8 September 2015

Mrs. Molly Maybrun
Director, Special Projects
City Ventures
444 Spear Street, Suite 200
San Francisco CA 94117

Letter Report - Clarifier Removal
Ice Cream Plant Demolition
2240 Filbert, Oakland

Dear Mrs. Maybrun:

During the Afternoon of 16 July 2015, the demolition crews began removing the concrete slab and associate drainage area in the north portion of the property adjacent to 24th Street. A metal grate approximately 3 feet wide by 4 feet long was embedded in the concrete. Beneath the grate lay a suspected clarifier which was approximately 10 feet long by 6 feet wide by 6 feet deep (Figure 1).

Crews removing the clarifier encountered green soils approximately 18-inches under the concrete slab, around and beneath the clarifier. The soils had a petroleum, gasoline odor associated with them. Please find a brief discussion of the action steps taken to abate this issue.

1) EXCAVATION #1

On the morning of 17 July 2015, I returned to the site and had the crews excavate the entire area that had the concrete driveway removed (approximately 18 feet wide x 38 feet long x 11 feet deep). The northern concrete pad/driveway remained on both the east and west sides of the excavation, prohibiting lateral excavation in those directions. Olfactory senses were utilized to help determine the depth and southerly limits of Excavation 1 (Figure 2). Based on odor and color, I obtained a floor/sidewall sample from approximately 12 feet below ground surface (Sidewall/Floor Sample) where a light-brown clay was encountered with green mottled features (indicating the vertical-termination of the impact).

I also obtained a four-point composite stockpile sample (Stockpile Sample) for disposal purposes. The samples were transported under chain-of-custody to McCampbell Analytical, Inc., a State Certified laboratory in Pittsburg, California

Due to the presence of a suspected clarifier, the soil samples were analyzed for volatile organic compounds (VOCs) by EPA Method 8260, total petroleum hydrocarbons as gasoline (TPH-g) and fuel components benzene, toluene, ethylbenzene and xylene (BTEX) by EPA Method 8021. The samples were also analyzed for methyl tertiary butyl ether (MTBE) and leaking underground fuel tank (LUFT) Metals.

No VOCs, BTEX or MTBE were found above method detection limits (MDLs). LUFT metal concentrations did not present any issues or concerns. TPH-g was detected in the Floor/Sidewall Sample at a concentration of 2.6 parts per million (ppm).

The Soil Stockpile soil sample contained 420 ppm TPH-g, 1.8 ppm ethylbenzene, 0.62 ppm, ethylbenzene. VOCs, n-Butyl benzene and sec-Butyl benzene were detected at 0.40 and 0.38 ppm respectively. LUFT metal concentrations did not represent any issues or concerns. Copies of the laboratory reports are included as Attachment A.

Due to the significant potential of overnight intruders, the samples were placed on RUSH status and upon receipt of the favorable results, each excavation was immediately backfilled and compacted prior to moving forward.

2) EXCAVATION #2

On 2 August 2015, the concrete slab was removed approximately 25 feet east towards Myrtle. I was informed of similar site conditions and informed crews to remove the soils until color/odor warranted that they stop. I returned to the site on 3 August 2015 and observed the site conditions. The similar brownish/green mottled clay was found on the excavation floor at approximately 10 feet bgs. I obtained one (1) soil sample for analysis and transported it to McCampbell Analytical for analysis. Based on the results of the soil sample obtained from Excavation #1 and the Soil Stockpile sample, the additional soil samples were not analyzed for VOCS or LUFT Metals. The soil sample entitled Excavation Floor #2, contained 12ppm TPH-g. No other analytes were found above the MDLs. The excavation is shown in Figure 2.

As stated earlier, the excavation was immediately backfilled following receipt of favorable analytical data.

3) EXCAVATION #3

Due to the excavation depths and the large amount of "smear" and apparent cross-contamination from the excavator, I dug small trenches approximately 2 feet outside the limits of the sidewalls to a depth of 4-5 feet bgs. Although the green soils were found 18-inches under the concrete slab, the maximum residual impact appeared to be at roughly four (4) feet bgs, decreasing with depth thereafter.

As the concrete driveway remained to the east and west of Excavation #1 and #2, I returned to the site on 12 August 2015, and excavated a confirmation pit approximately 2-3 feet south of the middle of both Excavation #1 and #2 (Figure 2). Green soils were encountered at approximately eighteen (18) inches below surface. Gasoline odors were increasing to approximately four (4) feet bgs.

I dug a second trench approximately 8-10 feet to the south of the first trench and encountered light green mottled soils with little to no odor. I did not have equipment to obtain a soil sample at that time but authorized Excavation #3, approximately 10-feet wide along the entire length of Excavation #1 and #2.

Due to lingering petroleum odors in Excavation #3 moving westerly, the crew excavated approximately 10-feet laterally past the western edge of the former Excavation #1.

Based on the results of the previous excavations at 10-12 feet bgs, a sample was not obtained from Excavation #3. Mrs. Eva Hey, the buyers environmental site representative, requested a floor sample from Excavation #3 (which had been previously backfilled).

During the excavation of the West Limit Excavation, the western edge of the Excavation #3 was dug to approximately 10 feet and a sample was obtained (West Excavation Floor). It contained 73 ppm TPH-g. 0.61ppm ethylbenzene, and 0.93ppm xylenes. Based on these results, the western opening of Excavation #3 was again closed and backfilled.

4) EXCAVATION #4

I returned to the site on 19 August 2015, and excavated three conformation test pits, approximately 2-3 feet from the Excavation #1-3 (Figure 2) to a depth of approximately 4-5 feet bgs. The samples were analyzed for TPH-g, BTEX, and MTBE.

The East Limit confirmation sample, taken adjacent to the eastern edge of Excavation #2, did not detect any analytes above any of the MDLs.

The South Limit confirmation sample taken adjacent to the Excavation #3 contained 1.5 ppm TPH-g, all other analytes were below the respective MDLs.

The West Limit confirmation sample was taken west of Excavation #1. It contained 540 ppm TPH-g, 0.61 ppm ethylbenzene and 0.93 ppm xylenes. Benzene, toluene and MTBE were below MDLs.

Mrs. Hey was notified of the results of confirmation test pit adjacent to Excavation #1 . Mrs. Hey indicated that she would like the 540 ppm to be removed to below 500 ppm.

Based on the limits of Excavation #3, Crews excavated approximately 8-10 feet wide (in the westerly direction and approximately 38 feet south to connect with the western edge of Excavation #3, completing the "box" and final excavation limits depicted in Figure 2.

A final floor sample was obtained at approximately 10 feet bgs (West Floor) and contained 47 ppm TPH-g, 0.35 ppm Ethylbenzene and 0.25 ppm xylenes.

5) SOIL SAMPLE RESULTS

The results and approximate location of the soil samples are depicted in Figure #3.

Sample Identification	Depth (Feet BGS)	TPH-G (PPM)	Ethylbenze	Xylenes
StockPile	N/A	**420**	1.8	0.62
Sidewall/Floor (EX-1)	12	**2.6**	ND	ND
Excavation Floor #2 (EX-2)	10	**12**	ND	ND
East Limit Confirmation	4.5	ND	ND	ND
South Limit Confirmation	4.5	**1.5**	ND	ND
West Limit Confirmation	4.5	**540**	**0.61**	**0.93**
West Excavation Floor (EX-3)	10	**73**	**0.21**	**0.24**
West Limit Confirmation #2	4.5	**74**	**0.15**	**0.16**
West Floor (EX-4)	10	**47**	**0.35**	**0.25**
Stockpile Fill (Potrero)	N/A	ND	ND	ND

EX-1,2,3 and 4 corresponds to the associated excavation.
BGS - depth below ground surface
N/A - Not Applicable

6) DISPOSAL

The material was profiled as Non-Hazardous Waste, to Potrero Hills Landfill for disposal under Bill-of-Lading. A copy of the Special Waste Permit is included as Attachment #2. Approximately 82 loads of material were transported to Potrero Hills for disposal/recycle.

The numerous scale tags and non-hazardous manifests are not included in this report but are available upon request.

7) IMPORTED FILL

The City of Oakland required that the site sub-grade be flush or below the surrounding sidewalk profile. The site was approximately 4-feet above the sidewalk at the West Grand (south-end) of the site and 4-5 feet below the side walk at the 24th Street side (north-end). Soils were graded northward to the 24th from West Grand. Those soils were largely utilized for excavation fill. Due to the extent and depth of the final excavation, 26 loads of import fill were purchased and transported to the site from Potrero Landfill. A copy of the correspondence from Potrero Hills Landfill is included as Attachment #3.

As a precaution, I stopped a random load being imported to the site and obtained a soil sample for laboratory analysis. The sample was analyzed for total petroleum hydrocarbons as diesel (TPH-d), TPH-g, BTEX, MTBE and Cam 17 Metals. Less the metal analysis, no analytes were found above the MDLs. The Cam17 metals did not raise any issues or concerns.

8) CONCLUSIONS & RECOMMENDATIONS

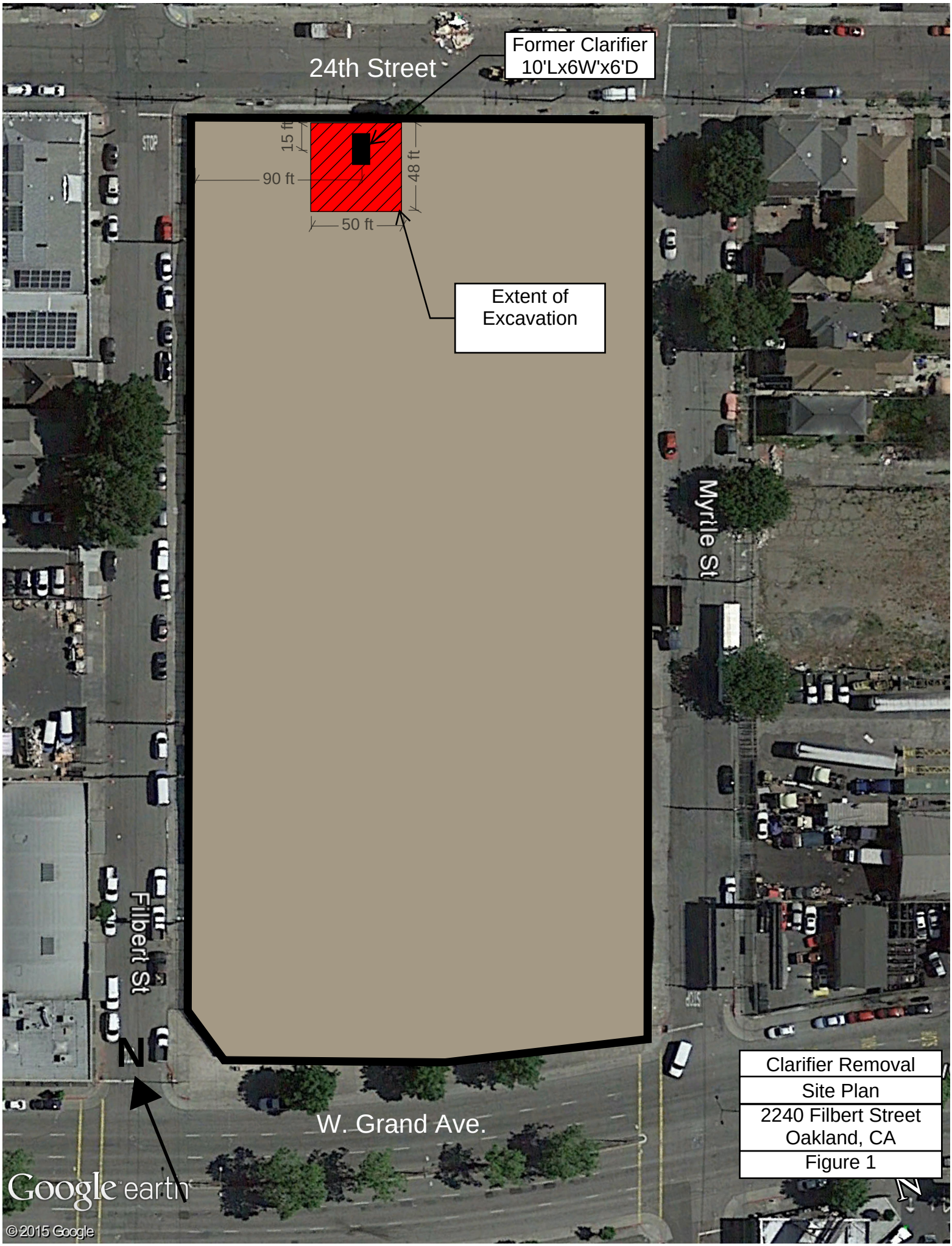
The site activities are complete. We feel this issue has been adequately addressed and that no further actions or recommendations are warranted at this time.

We can be reached for comment or questions at 510.669.0256.

Sincerely,



Stephen Schwartz
Project Manager


24th Street
Former Clarifier
10'Lx6W'x6'D
15 ft
48 ft
90 ft
50 ft
Extent of
Excavation
Myrtle St
Filbert St
W. Grand Ave.
N
Clarifier Removal
Site Plan
2240 Filbert Street
Oakland, CA
Figure 1
Google earth
© 2015 Google

24th Street

Excavation #4

Excavation #1

Excavation #2

West Confirmation Test Pit #2

West Confirmation Test Pit #1

East Confirmation Test Pit #1

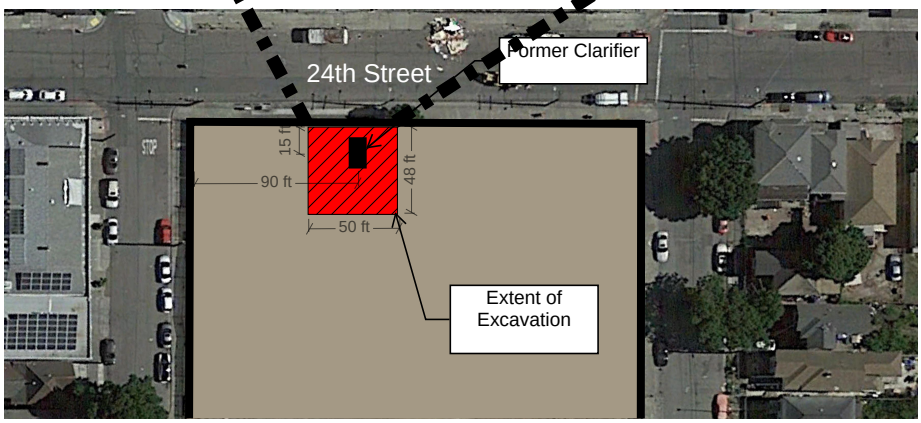
South Confirmation Test Pit #1

Excavation #3

Not To Scale

South Confirmation Test Pit #2

N



Clarifier Removal
Excavation Location Map
2240 Filbert Street Oakland, CA
Figure 2

24th Street

Excavation #4

Excavation #1

Excavation #2

West Confirmation Test Pit #2

X 74 ppm (@4.5 feet)

West Confirmation Test Pit #1 (removed)

X 540 ppm (removed) (@4.5 feet)

X 47 ppm (@10 feet)

X 2.6 ppm (@12 feet)

X 12 ppm (@10 feet)

East Confirmation Test Pit #1

X ND (@4.5 feet)

X 73 ppm (@10 feet)

South Confirmation Test Pit #1

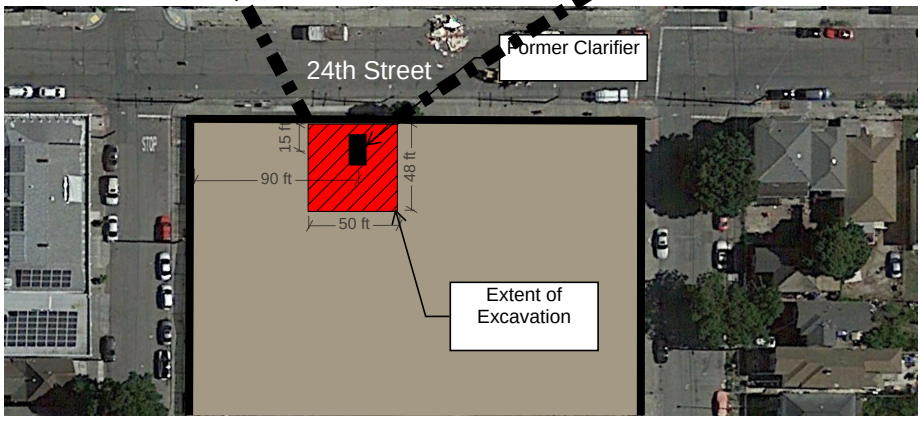
Excavation #3

Not To Scale

X 1.5 ppm (@4.5 feet)

South Confirmation Test Pit #2

N



Clarifier Removal
Soil Sample Location Map TPH-g Concentration
2240 Filbert Street Oakland, CA
Figure 3

ATTACHMENT 1

LABORATORY ANALYTICAL REPORTS

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1507669

Report Created for: Nova Abatement & Construction Services, Inc.

3051 Research Drive
Richmond, CA 94806

Project Contact: Steve Schwartz
Project P.O.:
Project Name: ICP-Demo

Project Received: 07/17/2015

Analytical Report reviewed & approved for release on 07/20/2015 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Nova Abatement & Construction Services, Inc.
Project: ICP-Demo
WorkOrder: 1507669

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

d7	strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
d9	no recognizable pattern

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD was out of acceptance criteria; LCS validated the prep batch.

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1507669
Project:	ICP-Demo	**Extraction Method:**	SW5030B
Date Received:	7/17/15 13:28	**Analytical Method:**	SW8260B
Date Prepared:	7/17/15	**Unit:**	mg/kg

Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Sidewall/floor	**1507669-001A**	**Soil**	**07/17/2015 11:00**	**GC10**	**107799**

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	07/17/2015 21:48
tert-Amyl methyl ether (TAME)	ND	0.0050	1	07/17/2015 21:48
Benzene	ND	0.0050	1	07/17/2015 21:48
Bromobenzene	ND	0.0050	1	07/17/2015 21:48
Bromochloromethane	ND	0.0050	1	07/17/2015 21:48
Bromodichloromethane	ND	0.0050	1	07/17/2015 21:48
Bromoform	ND	0.0050	1	07/17/2015 21:48
Bromomethane	ND	0.0050	1	07/17/2015 21:48
2-Butanone (MEK)	ND	0.020	1	07/17/2015 21:48
t-Butyl alcohol (TBA)	ND	0.050	1	07/17/2015 21:48
n-Butyl benzene	ND	0.0050	1	07/17/2015 21:48
sec-Butyl benzene	ND	0.0050	1	07/17/2015 21:48
tert-Butyl benzene	ND	0.0050	1	07/17/2015 21:48
Carbon Disulfide	ND	0.0050	1	07/17/2015 21:48
Carbon Tetrachloride	ND	0.0050	1	07/17/2015 21:48
Chlorobenzene	ND	0.0050	1	07/17/2015 21:48
Chloroethane	ND	0.0050	1	07/17/2015 21:48
Chloroform	ND	0.0050	1	07/17/2015 21:48
Chloromethane	ND	0.0050	1	07/17/2015 21:48
2-Chlorotoluene	ND	0.0050	1	07/17/2015 21:48
4-Chlorotoluene	ND	0.0050	1	07/17/2015 21:48
Dibromochloromethane	ND	0.0050	1	07/17/2015 21:48
1,2-Dibromo-3-chloropropane	ND	0.0040	1	07/17/2015 21:48
1,2-Dibromoethane (EDB)	ND	0.0040	1	07/17/2015 21:48
Dibromomethane	ND	0.0050	1	07/17/2015 21:48
1,2-Dichlorobenzene	ND	0.0050	1	07/17/2015 21:48
1,3-Dichlorobenzene	ND	0.0050	1	07/17/2015 21:48
1,4-Dichlorobenzene	ND	0.0050	1	07/17/2015 21:48
Dichlorodifluoromethane	ND	0.0050	1	07/17/2015 21:48
1,1-Dichloroethane	ND	0.0050	1	07/17/2015 21:48
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	07/17/2015 21:48
1,1-Dichloroethene	ND	0.0050	1	07/17/2015 21:48
cis-1,2-Dichloroethene	ND	0.0050	1	07/17/2015 21:48
trans-1,2-Dichloroethene	ND	0.0050	1	07/17/2015 21:48
1,2-Dichloropropane	ND	0.0050	1	07/17/2015 21:48
1,3-Dichloropropane	ND	0.0050	1	07/17/2015 21:48
2,2-Dichloropropane	ND	0.0050	1	07/17/2015 21:48
1,1-Dichloropropene	ND	0.0050	1	07/17/2015 21:48

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Analytical Report

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Project:	ICP-Demo	**Extraction Method:**	SW5030B
Date Received:	7/17/15 13:28	**Analytical Method:**	SW8260B
Date Prepared:	7/17/15	**Unit:**	mg/kg

Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Sidewall/floor	**1507669-001A**	**Soil**	**07/17/2015 11:00**	**GC10**	**107799**

Analytes	Result	RL	DF	Date Analyzed
cis-1,3-Dichloropropene	ND	0.0050	1	07/17/2015 21:48
trans-1,3-Dichloropropene	ND	0.0050	1	07/17/2015 21:48
Diisopropyl ether (DIPE)	ND	0.0050	1	07/17/2015 21:48
Ethylbenzene	ND	0.0050	1	07/17/2015 21:48
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	07/17/2015 21:48
Freon 113	ND	0.0050	1	07/17/2015 21:48
Hexachlorobutadiene	ND	0.0050	1	07/17/2015 21:48
Hexachloroethane	ND	0.0050	1	07/17/2015 21:48
2-Hexanone	ND	0.0050	1	07/17/2015 21:48
Isopropylbenzene	ND	0.0050	1	07/17/2015 21:48
4-Isopropyl toluene	ND	0.0050	1	07/17/2015 21:48
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	07/17/2015 21:48
Methylene chloride	ND	0.0050	1	07/17/2015 21:48
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	07/17/2015 21:48
Naphthalene	ND	0.0050	1	07/17/2015 21:48
n-Propyl benzene	ND	0.0050	1	07/17/2015 21:48
Styrene	ND	0.0050	1	07/17/2015 21:48
1,1,1,2-Tetrachloroethane	ND	0.0050	1	07/17/2015 21:48
1,1,2,2-Tetrachloroethane	ND	0.0050	1	07/17/2015 21:48
Tetrachloroethene	ND	0.0050	1	07/17/2015 21:48
Toluene	ND	0.0050	1	07/17/2015 21:48
1,2,3-Trichlorobenzene	ND	0.0050	1	07/17/2015 21:48
1,2,4-Trichlorobenzene	ND	0.0050	1	07/17/2015 21:48
1,1,1-Trichloroethane	ND	0.0050	1	07/17/2015 21:48
1,1,2-Trichloroethane	ND	0.0050	1	07/17/2015 21:48
Trichloroethene	ND	0.0050	1	07/17/2015 21:48
Trichlorofluoromethane	ND	0.0050	1	07/17/2015 21:48
1,2,3-Trichloropropane	ND	0.0050	1	07/17/2015 21:48
1,2,4-Trimethylbenzene	ND	0.0050	1	07/17/2015 21:48
1,3,5-Trimethylbenzene	ND	0.0050	1	07/17/2015 21:48
Vinyl Chloride	ND	0.0050	1	07/17/2015 21:48
Xylenes, Total	ND	0.0050	1	07/17/2015 21:48

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Date Received:	7/17/15 13:28	**Analytical Method:**	SW8260B
Date Prepared:	7/17/15	**Unit:**	mg/kg

Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Sidewall/floor	**1507669-001A**	**Soil**	**07/17/2015 11:00**	**GC10**	**107799**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	109	70-130		07/17/2015 21:48
Toluene-d8	97	70-130		07/17/2015 21:48
4-BFB	98	70-130		07/17/2015 21:48
Benzene-d6	75	60-140		07/17/2015 21:48
Ethylbenzene-d10	85	60-140		07/17/2015 21:48
1,2-DCB-d4	68	60-140		07/17/2015 21:48

Analyst(s): KF

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Project:	ICP-Demo	**Extraction Method:**	SW5030B
Date Received:	7/17/15 13:28	**Analytical Method:**	SW8260B
Date Prepared:	7/17/15	**Unit:**	mg/kg

Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile	**1507669-002A**	**Soil**	**07/17/2015 11:00**	**GC10**	**107799**

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	2.0	20	07/17/2015 22:29
tert-Amyl methyl ether (TAME)	ND	0.10	20	07/17/2015 22:29
Benzene	ND	0.10	20	07/17/2015 22:29
Bromobenzene	ND	0.10	20	07/17/2015 22:29
Bromochloromethane	ND	0.10	20	07/17/2015 22:29
Bromodichloromethane	ND	0.10	20	07/17/2015 22:29
Bromoform	ND	0.10	20	07/17/2015 22:29
Bromomethane	ND	0.10	20	07/17/2015 22:29
2-Butanone (MEK)	ND	0.40	20	07/17/2015 22:29
t-Butyl alcohol (TBA)	ND	1.0	20	07/17/2015 22:29
n-Butyl benzene	**0.40**	0.10	20	07/17/2015 22:29
sec-Butyl benzene	**0.38**	0.10	20	07/17/2015 22:29
tert-Butyl benzene	ND	0.10	20	07/17/2015 22:29
Carbon Disulfide	ND	0.10	20	07/17/2015 22:29
Carbon Tetrachloride	ND	0.10	20	07/17/2015 22:29
Chlorobenzene	ND	0.10	20	07/17/2015 22:29
Chloroethane	ND	0.10	20	07/17/2015 22:29
Chloroform	ND	0.10	20	07/17/2015 22:29
Chloromethane	ND	0.10	20	07/17/2015 22:29
2-Chlorotoluene	ND	0.10	20	07/17/2015 22:29
4-Chlorotoluene	ND	0.10	20	07/17/2015 22:29
Dibromochloromethane	ND	0.10	20	07/17/2015 22:29
1,2-Dibromo-3-chloropropane	ND	0.080	20	07/17/2015 22:29
1,2-Dibromoethane (EDB)	ND	0.080	20	07/17/2015 22:29
Dibromomethane	ND	0.10	20	07/17/2015 22:29
1,2-Dichlorobenzene	ND	0.10	20	07/17/2015 22:29
1,3-Dichlorobenzene	ND	0.10	20	07/17/2015 22:29
1,4-Dichlorobenzene	ND	0.10	20	07/17/2015 22:29
Dichlorodifluoromethane	ND	0.10	20	07/17/2015 22:29
1,1-Dichloroethane	ND	0.10	20	07/17/2015 22:29
1,2-Dichloroethane (1,2-DCA)	ND	0.080	20	07/17/2015 22:29
1,1-Dichloroethene	ND	0.10	20	07/17/2015 22:29
cis-1,2-Dichloroethene	ND	0.10	20	07/17/2015 22:29
trans-1,2-Dichloroethene	ND	0.10	20	07/17/2015 22:29
1,2-Dichloropropane	ND	0.10	20	07/17/2015 22:29
1,3-Dichloropropane	ND	0.10	20	07/17/2015 22:29
2,2-Dichloropropane	ND	0.10	20	07/17/2015 22:29
1,1-Dichloropropene	ND	0.10	20	07/17/2015 22:29

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Date Received:	7/17/15 13:28	**Analytical Method:**	SW8260B
Date Prepared:	7/17/15	**Unit:**	mg/kg

Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile	**1507669-002A**	**Soil**	**07/17/2015 11:00**	**GC10**	**107799**

Analytes	Result	RL	DF	Date Analyzed
cis-1,3-Dichloropropene	ND	0.10	20	07/17/2015 22:29
trans-1,3-Dichloropropene	ND	0.10	20	07/17/2015 22:29
Diisopropyl ether (DIPE)	ND	0.10	20	07/17/2015 22:29
Ethylbenzene	ND	0.10	20	07/17/2015 22:29
Ethyl tert-butyl ether (ETBE)	ND	0.10	20	07/17/2015 22:29
Freon 113	ND	0.10	20	07/17/2015 22:29
Hexachlorobutadiene	ND	0.10	20	07/17/2015 22:29
Hexachloroethane	ND	0.10	20	07/17/2015 22:29
2-Hexanone	ND	0.10	20	07/17/2015 22:29
Isopropylbenzene	ND	0.10	20	07/17/2015 22:29
4-Isopropyl toluene	ND	0.10	20	07/17/2015 22:29
Methyl-t-butyl ether (MTBE)	ND	0.10	20	07/17/2015 22:29
Methylene chloride	ND	0.10	20	07/17/2015 22:29
4-Methyl-2-pentanone (MIBK)	ND	0.10	20	07/17/2015 22:29
Naphthalene	ND	0.10	20	07/17/2015 22:29
n-Propyl benzene	ND	0.10	20	07/17/2015 22:29
Styrene	ND	0.10	20	07/17/2015 22:29
1,1,1,2-Tetrachloroethane	ND	0.10	20	07/17/2015 22:29
1,1,2,2-Tetrachloroethane	ND	0.10	20	07/17/2015 22:29
Tetrachloroethene	ND	0.10	20	07/17/2015 22:29
Toluene	ND	0.10	20	07/17/2015 22:29
1,2,3-Trichlorobenzene	ND	0.10	20	07/17/2015 22:29
1,2,4-Trichlorobenzene	ND	0.10	20	07/17/2015 22:29
1,1,1-Trichloroethane	ND	0.10	20	07/17/2015 22:29
1,1,2-Trichloroethane	ND	0.10	20	07/17/2015 22:29
Trichloroethene	ND	0.10	20	07/17/2015 22:29
Trichlorofluoromethane	ND	0.10	20	07/17/2015 22:29
1,2,3-Trichloropropane	ND	0.10	20	07/17/2015 22:29
1,2,4-Trimethylbenzene	ND	0.10	20	07/17/2015 22:29
1,3,5-Trimethylbenzene	ND	0.10	20	07/17/2015 22:29
Vinyl Chloride	ND	0.10	20	07/17/2015 22:29
Xylenes, Total	ND	0.10	20	07/17/2015 22:29

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1507669
Project:	ICP-Demo	**Extraction Method:**	SW5030B
Date Received:	7/17/15 13:28	**Analytical Method:**	SW8260B
Date Prepared:	7/17/15	**Unit:**	mg/kg

Volatile Organics by P&T and GC/MS (Basic Target List)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile	**1507669-002A**	**Soil**	**07/17/2015 11:00**	**GC10**	**107799**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	REC (%)	Limits		
Dibromofluoromethane	115	70-130		07/17/2015 22:29
Toluene-d8	100	70-130		07/17/2015 22:29
4-BFB	95	70-130		07/17/2015 22:29
Benzene-d6	85	60-140		07/17/2015 22:29
Ethylbenzene-d10	106	60-140		07/17/2015 22:29
1,2-DCB-d4	103	60-140		07/17/2015 22:29

Analyst(s): KF

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1507669
Project:	ICP-Demo	**Extraction Method:**	SW5030B
Date Received:	7/17/15 13:28	**Analytical Method:**	SW8021B/8015Bm
Date Prepared:	7/17/15	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Sidewall/floor	**1507669-001A**	**Soil**	**07/17/2015 11:00**	**GC19**	**107778**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	**2.6**	1.0	1	07/17/2015 16:20
MTBE	ND	0.050	1	07/17/2015 16:20
Benzene	ND	0.0050	1	07/17/2015 16:20
Toluene	ND	0.0050	1	07/17/2015 16:20
Ethylbenzene	ND	0.0050	1	07/17/2015 16:20
Xylenes	ND	0.0050	1	07/17/2015 16:20
Surrogates	REC (%)	Limits		
2-Fluorotoluene	93	70-130		07/17/2015 16:20

Analyst(s): IA Analytical Comments: d7

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile	**1507669-002A**	**Soil**	**07/17/2015 11:00**	**GC19**	**107778**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	**420**	40	40	07/18/2015 05:02
MTBE	ND	2.0	40	07/18/2015 05:02
Benzene	ND	0.20	40	07/18/2015 05:02
Toluene	ND	0.20	40	07/18/2015 05:02
Ethylbenzene	**1.8**	0.20	40	07/18/2015 05:02
Xylenes	**0.62**	0.20	40	07/18/2015 05:02
Surrogates	REC (%)	Limits		
2-Fluorotoluene	96	70-130		07/18/2015 05:02

Analyst(s): IA Analytical Comments: d7,d9

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1507669
Project:	ICP-Demo	**Extraction Method:**	SW3050B
Date Received:	7/17/15 13:28	**Analytical Method:**	SW6020
Date Prepared:	7/17/15	**Unit:**	mg/Kg

LUFT 5 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Sidewall/floor	**1507669-001A**	**Soil**	**07/17/2015 11:00**	**ICP-MS2**	**107772**

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.25	1	07/20/2015 10:30
Chromium	**42**	0.50	1	07/20/2015 10:30
Lead	**5.7**	0.50	1	07/20/2015 10:30
Nickel	**46**	0.50	1	07/20/2015 10:30
Zinc	**42**	5.0	1	07/20/2015 10:30

Surrogates	REC (%)	Limits	
Terbium	94	70-130	07/20/2015 10:30

Analyst(s): DVH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile	**1507669-002A**	**Soil**	**07/17/2015 11:00**	**ICP-MS2**	**107772**

Analytes	Result	RL	DF	Date Analyzed
Cadmium	**0.28**	0.25	1	07/20/2015 10:48
Chromium	**59**	0.50	1	07/20/2015 10:48
Lead	**6.5**	0.50	1	07/20/2015 10:48
Nickel	**66**	0.50	1	07/20/2015 10:48
Zinc	**51**	5.0	1	07/20/2015 10:48

Surrogates	REC (%)	Limits	
Terbium	97	70-130	07/20/2015 10:48

Analyst(s): DVH

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1507669
Date Prepared:	7/16/15	**BatchID:**	107778
Date Analyzed:	7/17/15	**Extraction Method:**	SW5030B
Instrument:	GC19	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-107778 1507669-002AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	0.487	0.40	0.60	-	81.2	70-130
MTBE	ND	0.0906	0.050	0.10	-	90.6	70-130
Benzene	ND	0.106	0.0050	0.10	-	107	70-130
Toluene	ND	0.108	0.0050	0.10	-	108	70-130
Ethylbenzene	ND	0.112	0.0050	0.10	-	112	70-130
Xylenes	ND	0.359	0.0050	0.30	-	120	70-130
Surrogate Recovery							
2-Fluorotoluene	0.113	0.116		0.10	113	117	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	NR	NR		36	NR	NR	-	NR	
MTBE	NR	NR		ND<2	NR	NR	-	NR	
Benzene	NR	NR		ND<0.2	NR	NR	-	NR	
Toluene	NR	NR		ND<0.2	NR	NR	-	NR	
Ethylbenzene	NR	NR		1.8	NR	NR	-	NR	
Xylenes	NR	NR		0.62	NR	NR	-	NR	
Surrogate Recovery									
2-Fluorotoluene	NR	NR			NR	NR	-	NR	

(Cont.)

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1507669
Date Prepared:	7/17/15	**BatchID:**	107799
Date Analyzed:	7/17/15	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-107799 1507669-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	-	0.10	-	-	-	-
tert-Amyl methyl ether (TAME)	ND	0.0380	0.0050	0.050	-	76.1	53-116
Benzene	ND	0.0482	0.0050	0.050	-	96.3	63-137
Bromobenzene	ND	-	0.0050	-	-	-	-
Bromochloromethane	ND	-	0.0050	-	-	-	-
Bromodichloromethane	ND	-	0.0050	-	-	-	-
Bromoform	ND	-	0.0050	-	-	-	-
Bromomethane	ND	-	0.0050	-	-	-	-
2-Butanone (MEK)	ND	-	0.020	-	-	-	-
t-Butyl alcohol (TBA)	ND	0.182	0.050	0.20	-	91.2	41-135
n-Butyl benzene	ND	-	0.0050	-	-	-	-
sec-Butyl benzene	ND	-	0.0050	-	-	-	-
tert-Butyl benzene	ND	-	0.0050	-	-	-	-
Carbon Disulfide	ND	-	0.0050	-	-	-	-
Carbon Tetrachloride	ND	-	0.0050	-	-	-	-
Chlorobenzene	ND	0.0482	0.0050	0.050	-	96.4	77-121
Chloroethane	ND	-	0.0050	-	-	-	-
Chloroform	ND	-	0.0050	-	-	-	-
Chloromethane	ND	-	0.0050	-	-	-	-
2-Chlorotoluene	ND	-	0.0050	-	-	-	-
4-Chlorotoluene	ND	-	0.0050	-	-	-	-
Dibromochloromethane	ND	-	0.0050	-	-	-	-
1,2-Dibromo-3-chloropropane	ND	-	0.0040	-	-	-	-
1,2-Dibromoethane (EDB)	ND	0.0442	0.0040	0.050	-	88.4	67-119
Dibromomethane	ND	-	0.0050	-	-	-	-
1,2-Dichlorobenzene	ND	-	0.0050	-	-	-	-
1,3-Dichlorobenzene	ND	-	0.0050	-	-	-	-
1,4-Dichlorobenzene	ND	-	0.0050	-	-	-	-
Dichlorodifluoromethane	ND	-	0.0050	-	-	-	-
1,1-Dichloroethane	ND	-	0.0050	-	-	-	-
1,2-Dichloroethane (1,2-DCA)	ND	0.0457	0.0040	0.050	-	91.4	58-135
1,1-Dichloroethene	ND	0.0446	0.0050	0.050	-	89.3	42-145
cis-1,2-Dichloroethene	ND	-	0.0050	-	-	-	-
trans-1,2-Dichloroethene	ND	-	0.0050	-	-	-	-
1,2-Dichloropropane	ND	-	0.0050	-	-	-	-
1,3-Dichloropropane	ND	-	0.0050	-	-	-	-
2,2-Dichloropropane	ND	-	0.0050	-	-	-	-
1,1-Dichloropropene	ND	-	0.0050	-	-	-	-
cis-1,3-Dichloropropene	ND	-	0.0050	-	-	-	-
trans-1,3-Dichloropropene	ND	-	0.0050	-	-	-	-

(Cont.)

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1507669
Date Prepared:	7/17/15	**BatchID:**	107799
Date Analyzed:	7/17/15	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-107799 1507669-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Diisopropyl ether (DIPE)	ND	0.0455	0.0050	0.050	-	91	52-129
Ethylbenzene	ND	-	0.0050	-	-	-	-
Ethyl tert-butyl ether (ETBE)	ND	0.0430	0.0050	0.050	-	86	53-125
Freon 113	ND	-	0.0050	-	-	-	-
Hexachlorobutadiene	ND	-	0.0050	-	-	-	-
Hexachloroethane	ND	-	0.0050	-	-	-	-
2-Hexanone	ND	-	0.0050	-	-	-	-
Isopropylbenzene	ND	-	0.0050	-	-	-	-
4-Isopropyl toluene	ND	-	0.0050	-	-	-	-
Methyl-t-butyl ether (MTBE)	ND	0.0428	0.0050	0.050	-	85.6	58-122
Methylene chloride	ND	-	0.0050	-	-	-	-
4-Methyl-2-pentanone (MIBK)	ND	-	0.0050	-	-	-	-
Naphthalene	ND	-	0.0050	-	-	-	-
n-Propyl benzene	ND	-	0.0050	-	-	-	-
Styrene	ND	-	0.0050	-	-	-	-
1,1,1,2-Tetrachloroethane	ND	-	0.0050	-	-	-	-
1,1,2,2-Tetrachloroethane	ND	-	0.0050	-	-	-	-
Tetrachloroethene	ND	-	0.0050	-	-	-	-
Toluene	ND	0.0473	0.0050	0.050	-	94.7	76-130
1,2,3-Trichlorobenzene	ND	-	0.0050	-	-	-	-
1,2,4-Trichlorobenzene	ND	-	0.0050	-	-	-	-
1,1,1-Trichloroethane	ND	-	0.0050	-	-	-	-
1,1,2-Trichloroethane	ND	-	0.0050	-	-	-	-
Trichloroethene	ND	0.0447	0.0050	0.050	-	89.4	72-132
Trichlorofluoromethane	ND	-	0.0050	-	-	-	-
1,2,3-Trichloropropane	ND	-	0.0050	-	-	-	-
1,2,4-Trimethylbenzene	ND	-	0.0050	-	-	-	-
1,3,5-Trimethylbenzene	ND	-	0.0050	-	-	-	-
Vinyl Chloride	ND	-	0.0050	-	-	-	-
Xylenes, Total	ND	-	0.0050	-	-	-	-
Surrogate Recovery							
Dibromofluoromethane	0.135	0.136		0.12	108	109	70-130
Toluene-d8	0.127	0.126		0.12	101	100	70-130
4-BFB	0.0137	0.0126		0.012	110	101	70-130
Benzene-d6	0.0951	0.0966		0.10	95	97	60-140
Ethylbenzene-d10	0.112	0.120		0.10	112	120	60-140
1,2-DCB-d4	0.0862	0.0897		0.10	86	90	60-140

(Cont.)

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1507669
Date Prepared:	7/17/15	**BatchID:**	107799
Date Analyzed:	7/17/15	**Extraction Method:**	SW5030B
Instrument:	GC10	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-107799 1507669-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
tert-Amyl methyl ether (TAME)	0.0336	0.0328	0.050	ND	67.2,F1	65.7,F1	70-130	2.34	20
Benzene	0.0415	0.0405	0.050	ND	83.1	81	70-130	2.55	20
t-Butyl alcohol (TBA)	0.145	0.150	0.20	ND	72.4	74.7	70-130	3.14	20
Chlorobenzene	0.0415	0.0407	0.050	ND	83	81.5	70-130	1.85	20
1,2-Dibromoethane (EDB)	0.0377	0.0380	0.050	ND	75.4	76	70-130	0.773	20
1,2-Dichloroethane (1,2-DCA)	0.0408	0.0394	0.050	ND	81.6	78.9	70-130	3.46	20
1,1-Dichloroethene	0.0397	0.0396	0.050	ND	79.5	79.1	70-130	0.440	20
Diisopropyl ether (DIPE)	0.0402	0.0383	0.050	ND	80.4	76.7	70-130	4.70	20
Ethyl tert-butyl ether (ETBE)	0.0378	0.0366	0.050	ND	75.7	73.1	70-130	3.43	20
Methyl-t-butyl ether (MTBE)	0.0376	0.0364	0.050	ND	75.2	72.8	70-130	3.23	20
Toluene	0.0411	0.0404	0.050	ND	82.2	80.8	70-130	1.82	20
Trichloroethene	0.0392	0.0388	0.050	ND	78.5	77.5	70-130	1.20	20
Surrogate Recovery									
Dibromofluoromethane	0.142	0.139	0.12		113	111	70-130	1.66	20
Toluene-d8	0.125	0.127	0.12		100	101	70-130	1.22	20
4-BFB	0.0131	0.0138	0.012		105	110	70-130	4.92	20
Benzene-d6	0.0850	0.0832	0.10		85	83	60-140	2.12	20
Ethylbenzene-d10	0.0999	0.0960	0.10		100	96	60-140	3.89	20
1,2-DCB-d4	0.0761	0.0750	0.10		76	75	60-140	1.42	20

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1507669
Date Prepared:	7/16/15	**BatchID:**	107772
Date Analyzed:	7/20/15	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-107772

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Cadmium	ND	49.7	0.25	50	-	99	75-125
Chromium	ND	48.7	0.50	50	-	97	75-125
Lead	ND	50.0	0.50	50	-	100	75-125
Nickel	ND	49.6	0.50	50	-	99	75-125
Zinc	ND	509	5.0	500	-	102	75-125
Surrogate Recovery							
Terbium	496	490		500	99	98	70-130

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1507669 **ClientCode: NACS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Steve Schwartz
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806
(510) 669-0256 FAX: (510) 758-7692

Email: sschwartz1@sbcglobal.net
cc/3rd Party:
PO:
ProjectNo: ICP-Demo

Bill to:
Accounts Payable
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806

Requested TAT: 1 day
Date Received: 07/17/2015
Date Printed: 07/17/2015

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1507669-001	Sidewall/floor	Soil	7/17/2015 11:00	☐	A	A	A									
1507669-002	Stockpile	Soil	7/17/2015 11:00	☐	A	A	A									

Test Legend:

1	8260B_S	2	G-MBTEX_S	3	LUFTMS_6020_S	4		5	
6		7		8		9		10	
11		12							

Prepared by: Maria Venegas

Comments: 1 Day TAT

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: NOVA ABATEMENT & CONSTRUCTION SERVICES, I
QC Level: LEVEL 2
Work Order: 1507669
Project: ICP-Demo
Client Contact: Steve Schwartz
Date Received: 7/17/2015
Comments: 1 Day TAT
Contact's Email: sschwartz1@sbcglobal.net

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1507669-001A	Sidewall/floor	Soil	SW6020 (LUFT)	1	Brass tube 2"x6"	☐	7/17/2015 11:00	1 day		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		1 day		☐	
			SW8260B (VOCs)			☐		1 day		☐	
1507669-002A	Stockpile	Soil	SW6020 (LUFT)	1	Brass tube 2"x6"	☐	7/17/2015 11:00	1 day		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		1 day		☐	
			SW8260B (VOCs)			☐		1 day		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

15076669

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CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☒ 1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☐
GeoTracker EDF ☐ PDF ☐ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐
Effluent Sample Requiring "J" flag ☐ **UST Clean Up Fund Project** ☐ ; **Claim #**_____

RUSH

Report To: Nova - Schwartz **Bill To:**
Company: Nova Abatement + Construction Services

Tele: (510) 812-6464 **E-Mail:** sschwartz2@sbcglobal.net
Project #: ICP-Demo **Project Name:** ICP-Demo
Project Location: Oakland **Purchase Order#**
Sampler Signature:

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX: Ground Water	Waste Water	Drinking Water	Sea Water	Soil	Air	Sludge	Other	METHOD PRESERVED: HCL	HNO_3	Other - Ice	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)***	LUFT 5 Metals (200.8 / 6020)***	Metals (200.8 / 6020)***	Lab to Filter sample for Dissolved metals analysis
Sidewall/floor		7/17/15	11:00	1					X						X	X								X				X		
Stockpile		↓	↓	1					X						X	X								X				X		

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

*** If metals are requested for water samples and the water type is not specified on the chain of custody, then MAI will default to metals by E200.8.

Relinquished By:	Date:	Time:	Received By:
	7/17/15	1:30	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° 16.9
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS: Rush Please

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION_____ pH<2_____

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Sample Receipt Checklist

Client Name: **Nova Abatement & Construction Services, Inc.**
Date and Time Received: **7/17/2015 1:28:56 PM**

Project Name: **ICP-Demo**
LogIn Reviewed by: Maria Venegas

WorkOrder №: **1507669** Matrix: Soil
Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Sample/Temp Blank temperature	Temp: 16.9°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☐	No ☑	

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

** NOTE: If the "No" box is checked, see comments below.*

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1508027

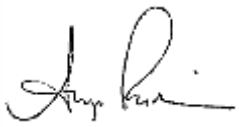
Report Created for: Nova Abatement & Construction Services, Inc.

3051 Research Drive
Richmond, CA 94806

Project Contact: Steve Schwartz
Project P.O.:
Project Name: # ICP-Demo

Project Received: 08/03/2015

Analytical Report reviewed & approved for release on 08/04/2015 by:



Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Nova Abatement & Construction Services, Inc.
Project: # ICP-Demo
WorkOrder: 1508027

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

H	samples were analyzed out of holding time
d7	strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508027
Date Received:	8/3/15 13:50	**Extraction Method:**	SW5030B
Date Prepared:	8/3/15	**Analytical Method:**	SW8021B/8015Bm
Project:	# ICP-Demo	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Excaution Floor #2	1508027-001A	Soil	07/03/2015 12:15	GC19	108461

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
TPH(g)	**12**	H	1.0	1	08/03/2015 23:57
MTBE	ND	H	0.050	1	08/03/2015 23:57
Benzene	ND	H	0.0050	1	08/03/2015 23:57
Toluene	ND	H	0.0050	1	08/03/2015 23:57
Ethylbenzene	ND	H	0.0050	1	08/03/2015 23:57
Xylenes	ND	H	0.0050	1	08/03/2015 23:57

Surrogates	REC (%)	Qualifiers	Limits	
2-Fluorotoluene	98	H	70-130	08/03/2015 23:57

Analyst(s): IA Analytical Comments: d7

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508027
Date Prepared:	8/3/15	**BatchID:**	108461
Date Analyzed:	8/3/15	**Extraction Method:**	SW5030B
Instrument:	GC19	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Soil	**Unit:**	mg/Kg
Project:	# ICP-Demo	**Sample ID:**	MB/LCS-108461 1508020-001AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	0.528	0.40	0.60	-	88	70-130
MTBE	ND	0.0878	0.050	0.10	-	88	70-130
Benzene	ND	0.111	0.0050	0.10	-	111	70-130
Toluene	ND	0.111	0.0050	0.10	-	111	70-130
Ethylbenzene	ND	0.112	0.0050	0.10	-	113	70-130
Xylenes	ND	0.362	0.0050	0.30	-	121	70-130
Surrogate Recovery							
2-Fluorotoluene	0.114	0.114		0.10	114	114	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	0.543	0.539	0.60	ND	91	90	70-130	0.707	20
MTBE	0.0908	0.0877	0.10	ND	91	88	70-130	3.45	20
Benzene	0.106	0.103	0.10	ND	106	103	70-130	2.79	20
Toluene	0.108	0.105	0.10	ND	108	105	70-130	2.74	20
Ethylbenzene	0.112	0.110	0.10	ND	112	110	70-130	2.46	20
Xylenes	0.365	0.357	0.30	ND	122	119	70-130	2.31	20
Surrogate Recovery									
2-Fluorotoluene	0.110	0.108	0.10		110	108	70-130	2.38	20

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Pittsburg, CA 94565-1701
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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1508027 **ClientCode: NACS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Steve Schwartz
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806
(510) 669-0256 FAX: (510) 758-7692

Email: sschwartz1@sbcglobal.net
cc/3rd Party:
PO:
ProjectNo: # ICP-Demo

Bill to:
Accounts Payable
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806

Requested TAT: **1 day;**

Date Received: **08/03/2015**
Date Printed: **08/03/2015**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1508027-001	Excaution Floor #2	Soil	7/3/2015 12:15	☐	A											

Test Legend:

1	G-MBTEX_S	2		3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Briana Cutino

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: NOVA ABATEMENT & CONSTRUCTION SERVICES, I
QC Level: LEVEL 2
Work Order: 1508027
Project: # ICP-Demo
Client Contact: Steve Schwartz
Date Received: 8/3/2015
Comments:
Contact's Email: sschwartz1@sbcglobal.net

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1508027-001A	Excaution Floor #2	Soil	SW8021B/8015Bm (G/MBTEX)	1	Stainless Steel tube 2"x6"	☐	7/3/2015 12:15	1 day		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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RUSH

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☒ 1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☐
GeoTracker EDF ☐ PDF ☐ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐

Effluent Sample Requiring "J" flag ☐ **UST Clean Up Fund Project** ☐ ; **Claim #**_____

Report To: Nova Abatement + **Bill To:** S. Schwartz
Company: Construction Service,

Tele: (510) 812.6469 **E-Mail:** sschwartz1@sbc.global.net
Project #: ICP-Demo **Project Name:**
Project Location: Oakland **Purchase Order#**
Sampler Signature:

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX: Ground Water	Waste Water	Drinking Water	Sea Water	Soil	Air	Sludge	Other	METHOD PRESERVED: HCL	HNO_3	Other	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)***	LUFT 5 Metals (200.8 / 6020)***	Metals (200.8 / 6020)***	Lab to Filter sample for Dissolved metals analysis
Excavation Floor #2		7/3/15	12:15	1					X							X														

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

*** If metals are requested for water samples and the water type is not specified on the chain of custody, then MAI will default to metals by E200.8.

Relinquished By:	Date:	Time:	Received By:
	7/3/15	1:55	8/3 13:30pm
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° 18.0
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS:

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION_____ pH<2_____

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Sample Receipt Checklist

Client Name: **Nova Abatement & Construction Services, Inc.**
Date and Time Received: **8/3/2015 1:50:06 PM**

Project Name: **# ICP-Demo**
LogIn Reviewed by: Briana Cutino

WorkOrder №: **1508027** Matrix: Soil
Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Sample/Temp Blank temperature	Temp: 18°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☐	No ☑	

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

** NOTE: If the "No" box is checked, see comments below.*

Comments: Method SW8021B/8015Bm (G/MBTEX) was received passed its 14-day holding time.

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Analytical Report

WorkOrder: 1508652

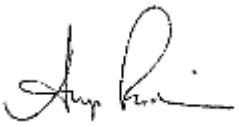
Report Created for: Nova Abatement & Construction Services, Inc.

3051 Research Drive
Richmond, CA 94806

Project Contact: Steve Schwartz
Project P.O.:
Project Name: ICP-Demo

Project Received: 08/19/2015

Analytical Report reviewed & approved for release on 08/20/2015 by:



Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Nova Abatement & Construction Services, Inc.
Project: ICP-Demo
WorkOrder: 1508652

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

d7	strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
d9	no recognizable pattern

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508652
Date Received:	8/19/15 14:22	**Extraction Method:**	SW5030B
Date Prepared:	8/19/15	**Analytical Method:**	SW8021B/8015Bm
Project:	ICP-Demo	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
East Limit Confirmation	1508652-001A	Soil	08/19/2015 11:00	GC19	109184

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	1.0	1	08/20/2015 12:25
MTBE	ND	0.050	1	08/20/2015 12:25
Benzene	ND	0.0050	1	08/20/2015 12:25
Toluene	ND	0.0050	1	08/20/2015 12:25
Ethylbenzene	ND	0.0050	1	08/20/2015 12:25
Xylenes	ND	0.0050	1	08/20/2015 12:25

Surrogates	REC (%)	Limits	
2-Fluorotoluene	110	70-130	08/20/2015 12:25

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
South Limit Confirmation	1508652-002A	Soil	08/19/2015 11:00	GC19	109184

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	**1.5**	1.0	1	08/20/2015 11:24
MTBE	ND	0.050	1	08/20/2015 11:24
Benzene	ND	0.0050	1	08/20/2015 11:24
Toluene	ND	0.0050	1	08/20/2015 11:24
Ethylbenzene	ND	0.0050	1	08/20/2015 11:24
Xylenes	ND	0.0050	1	08/20/2015 11:24

Surrogates	REC (%)	Limits	
2-Fluorotoluene	109	70-130	08/20/2015 11:24

Analyst(s): IA Analytical Comments: d7

(Cont.)

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508652
Date Received:	8/19/15 14:22	**Extraction Method:**	SW5030B
Date Prepared:	8/19/15	**Analytical Method:**	SW8021B/8015Bm
Project:	ICP-Demo	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
West Limit Confirmation	**1508652-003A**	**Soil**	**08/19/2015 11:15**	**GC3**	**109184**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	**540**	40	40	08/20/2015 12:35
MTBE	ND	2.0	40	08/20/2015 12:35
Benzene	ND	0.20	40	08/20/2015 12:35
Toluene	ND	0.20	40	08/20/2015 12:35
Ethylbenzene	**0.61**	0.20	40	08/20/2015 12:35
Xylenes	**0.93**	0.20	40	08/20/2015 12:35

Surrogates	REC (%)	Limits	
2-Fluorotoluene	93	70-130	08/20/2015 12:35

Analyst(s): IA Analytical Comments: d7,d9

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
West Excavation Floor	**1508652-004A**	**Soil**	**08/19/2015 11:15**	**GC3**	**109184**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	**73**	10	10	08/20/2015 12:05
MTBE	ND	0.50	10	08/20/2015 12:05
Benzene	ND	0.050	10	08/20/2015 12:05
Toluene	ND	0.050	10	08/20/2015 12:05
Ethylbenzene	**0.21**	0.050	10	08/20/2015 12:05
Xylenes	**0.24**	0.050	10	08/20/2015 12:05

Surrogates	REC (%)	Limits	
2-Fluorotoluene	88	70-130	08/20/2015 12:05

Analyst(s): IA Analytical Comments: d7,d9

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508652
Date Prepared:	8/19/15	**BatchID:**	109184
Date Analyzed:	8/19/15	**Extraction Method:**	SW5030B
Instrument:	GC19	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-109184 1508652-004AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	0.525	0.40	0.60	-	88	70-130
MTBE	ND	0.0947	0.050	0.10	-	95	70-130
Benzene	ND	0.108	0.0050	0.10	-	108	70-130
Toluene	ND	0.110	0.0050	0.10	-	110	70-130
Ethylbenzene	ND	0.114	0.0050	0.10	-	114	70-130
Xylenes	ND	0.369	0.0050	0.30	-	123	70-130
Surrogate Recovery							
2-Fluorotoluene	0.123	0.117		0.10	123	117	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	NR	NR		10	NR	NR	-	NR	
MTBE	NR	NR		ND<0.5	NR	NR	-	NR	
Benzene	NR	NR		ND<0.05	NR	NR	-	NR	
Toluene	NR	NR		ND<0.05	NR	NR	-	NR	
Ethylbenzene	NR	NR		0.21	NR	NR	-	NR	
Xylenes	NR	NR		0.24	NR	NR	-	NR	
Surrogate Recovery									
2-Fluorotoluene	NR	NR			NR	NR	-	NR	

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1508652 **ClientCode: NACS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Steve Schwartz
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806
(510) 669-0256 FAX: (510) 758-7692

Email: sschwartz1@sbcglobal.net
cc/3rd Party:
PO:
ProjectNo: ICP-Demo

Bill to:
Accounts Payable
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806

Requested TAT: **1 day;**

Date Received: **08/19/2015**
Date Printed: **08/20/2015**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1508652-001	East Limit Confirmation	Soil	8/19/2015 11:00	☐	A											
1508652-002	South Limit Confirmation	Soil	8/19/2015 11:00	☐	A											
1508652-003	West Limit Confirmation	Soil	8/19/2015 11:15	☐	A											
1508652-004	West Excavation Floor	Soil	8/19/2015 11:15	☐	A											

Test Legend:

1	G-MBTEX_S	2		3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Briana Cutino

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: NOVA ABATEMENT & CONSTRUCTION SERVICES, I
QC Level: LEVEL 2
Work Order: 1508652
Project: ICP-Demo
Client Contact: Steve Schwartz
Date Received: 8/19/2015
Comments:
Contact's Email: sschwartz1@sbcglobal.net

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1508652-001A	East Limit Confirmation	Soil	SW8021B/8015Bm (G/MBTEX)	1	Stainless Steel tube 2"x6"	☐	8/19/2015 11:00	1 day		☐	
1508652-002A	South Limit Confirmation	Soil	SW8021B/8015Bm (G/MBTEX)	1	Stainless Steel tube 2"x6"	☐	8/19/2015 11:00	1 day		☐	
1508652-003A	West Limit Confirmation	Soil	SW8021B/8015Bm (G/MBTEX)	1	Stainless Steel tube 2"x6"	☐	8/19/2015 11:15	1 day		☐	
1508652-004A	West Excavation Floor	Soil	SW8021B/8015Bm (G/MBTEX)	1	Stainless Steel tube 2"x6"	☐	8/19/2015 11:15	1 day		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

1508652

McCampbell Analytical, Inc.

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www.mccampbell.com / main@mccampbell.com
Telephone: (877) 252-9262 / Fax: (925) 252-9269

RUSH

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☒ 1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☐

GeoTracker EDF ☐ PDF ☐ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐

Effluent Sample Requiring "J" flag ☐ UST Clean Up Fund Project ☐ ; Claim #_____

Report To: Nova Abatement **Bill To:**

Company: Construction Services

3051 Research Dr. Richmond, CA 94806

Tele: (510) 812-6469 **E-Mail:**

Project #: Tesp-Demo **Project Name:**

Project Location: Oakland **Purchase Order#**

Sampler Signature:

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX: Ground Water	Waste Water	Drinking Water	Sea Water	Soil	Air	Sludge	Other	METHOD PRESERVED: HCL	HNO_3	Other	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)***	LUFT 5 Metals (200.8 / 6020)***	Metals (200.8 / 6020)***	Lab to Filter sample for Dissolved metals analysis
East Limit		8/19	11:00	1					X							X														
Confirmation																														
South Limit																														
Confirmation		8/19	11:00	1					X							X														
West Limit																/														
Confirmation		8/19	11:15	1					X							X														
West Excavation Floor		8/19	11:15	1					X							X														

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

*** If metals are requested for water samples and the water type is not specified on the chain of custody, then MAI will default to metals by E200.8.

Relinquished By:	Date:	Time:	Received By:
	8/19	2:00	8/19 14:00
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° 8.7
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS: Rush

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION_____ pH<2_____

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Sample Receipt Checklist

Client Name: **Nova Abatement & Construction Services, Inc.**
Date and Time Received: **8/19/2015 2:22:42 PM**

Project Name: **ICP-Demo**
LogIn Reviewed by: Briana Cutino

WorkOrder №: **1508652** Matrix: Soil
Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Sample/Temp Blank temperature	Temp: 8.7°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	

(Ice Type: WET ICE)

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

** NOTE: If the "No" box is checked, see comments below.*

Comments:

McCampbell Analytical, Inc.
"When Quality Counts"

Analytical Report

WorkOrder: 1508751

Report Created for: Nova Abatement & Construction Services, Inc.

3051 Research Drive
Richmond, CA 94806

Project Contact: Steve Schwartz
Project P.O.:
Project Name: ICP-Demo

Project Received: 08/21/2015

Analytical Report reviewed & approved for release on 08/24/2015 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Nova Abatement & Construction Services, Inc.
Project: ICP-Demo
WorkOrder: 1508751

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

S	spike recovery outside accepted recovery limits
d7	strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
d9	no recognizable pattern

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Received:	8/21/15 15:57	**Extraction Method:**	SW3050B
Date Prepared:	8/21/15	**Analytical Method:**	SW6020
Project:	ICP-Demo	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile Fill	**1508751-001A**	**Soil**	**08/21/2015 11:20**	**ICP-MS2**	**109265**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.62**	0.50	1	08/24/2015 12:32
Arsenic	**11**	0.50	1	08/24/2015 12:32
Barium	**190**	5.0	1	08/24/2015 12:32
Beryllium	**0.77**	0.50	1	08/24/2015 12:32
Cadmium	ND	0.25	1	08/24/2015 12:32
Chromium	**40**	0.50	1	08/24/2015 12:32
Cobalt	**12**	0.50	1	08/24/2015 12:32
Copper	**39**	0.50	1	08/24/2015 12:32
Lead	**12**	0.50	1	08/24/2015 12:32
Mercury	ND	0.050	1	08/24/2015 12:32
Molybdenum	ND	0.50	1	08/24/2015 12:32
Nickel	**43**	0.50	1	08/24/2015 12:32
Selenium	ND	0.50	1	08/24/2015 12:32
Silver	ND	0.50	1	08/24/2015 12:32
Thallium	ND	0.50	1	08/24/2015 12:32
Vanadium	**78**	0.50	1	08/24/2015 12:32
Zinc	**75**	5.0	1	08/24/2015 12:32

Surrogates	REC (%)	Qualifiers	Limits	
Terbium_159 norm	104	S	70-130	08/24/2015 12:32

Analyst(s): DVH

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Received:	8/21/15 15:57	**Extraction Method:**	SW5030B
Date Prepared:	8/21/15	**Analytical Method:**	SW8021B/8015Bm
Project:	ICP-Demo	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile Fill	**1508751-001A**	**Soil**	**08/21/2015 11:20**	**GC7**	**109258**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	1.0	1	08/22/2015 09:41
MTBE	ND	0.050	1	08/22/2015 09:41
Benzene	ND	0.0050	1	08/22/2015 09:41
Toluene	ND	0.0050	1	08/22/2015 09:41
Ethylbenzene	ND	0.0050	1	08/22/2015 09:41
Xylenes	ND	0.0050	1	08/22/2015 09:41

Surrogates	REC (%)	Limits	
2-Fluorotoluene	113	70-130	08/22/2015 09:41

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Westside Confirmation #2	**1508751-002A**	**Soil**	**08/21/2015**	**GC3**	**109258**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	**74**	1.0	1	08/23/2015 10:32
MTBE	ND	0.050	1	08/23/2015 10:32
Benzene	ND	0.0050	1	08/23/2015 10:32
Toluene	ND	0.0050	1	08/23/2015 10:32
Ethylbenzene	**0.15**	0.0050	1	08/23/2015 10:32
Xylenes	**0.16**	0.0050	1	08/23/2015 10:32

Surrogates	REC (%)	Limits	
2-Fluorotoluene	100	70-130	08/23/2015 10:32

Analyst(s): IA Analytical Comments: d7,d9

(Cont.)

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Received:	8/21/15 15:57	**Extraction Method:**	SW5030B
Date Prepared:	8/21/15	**Analytical Method:**	SW8021B/8015Bm
Project:	ICP-Demo	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
West Floor #2	**1508751-003A**	**Soil**	**08/21/2015**	**GC3**	**109258**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	**47**	1.0	1	08/23/2015 11:02
MTBE	ND	0.050	1	08/23/2015 11:02
Benzene	ND	0.0050	1	08/23/2015 11:02
Toluene	ND	0.0050	1	08/23/2015 11:02
Ethylbenzene	**0.35**	0.0050	1	08/23/2015 11:02
Xylenes	**0.25**	0.0050	1	08/23/2015 11:02
Surrogates	REC (%)	Limits		
2-Fluorotoluene	88	70-130		08/23/2015 11:02

Analyst(s): IA Analytical Comments: d7,d9

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Received:	8/21/15 15:57	**Extraction Method:**	SW3550B
Date Prepared:	8/21/15	**Analytical Method:**	SW8015B
Project:	ICP-Demo	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile Fill	**1508751-001A**	**Soil**	**08/21/2015 11:20**	**GC6A**	**109243**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	08/22/2015 01:11

Surrogates	REC (%)	Limits	
C9	87	70-130	08/22/2015 01:11

Analyst(s): TK

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Prepared:	8/20/15	**BatchID:**	109265
Date Analyzed:	8/24/15	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-109265

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	51.2	0.50	50	-	102	75-125
Arsenic	ND	49.6	0.50	50	-	99	75-125
Barium	ND	486	5.0	500	-	97	75-125
Beryllium	ND	50.2	0.50	50	-	100	75-125
Cadmium	ND	49.5	0.25	50	-	99	75-125
Chromium	ND	49.6	0.50	50	-	99	75-125
Cobalt	ND	48.4	0.50	50	-	97	75-125
Copper	ND	50.0	0.50	50	-	100	75-125
Lead	ND	51.7	0.50	50	-	103	75-125
Mercury	ND	1.28	0.050	1.25	-	102	75-125
Molybdenum	ND	48.5	0.50	50	-	97	75-125
Nickel	ND	50.5	0.50	50	-	101	75-125
Selenium	ND	49.4	0.50	50	-	99	75-125
Silver	ND	50.1	0.50	50	-	100	75-125
Thallium	ND	50.8	0.50	50	-	101	75-125
Vanadium	ND	49.7	0.50	50	-	99	75-125
Zinc	ND	500	5.0	500	-	100	75-125
Surrogate Recovery							
Terbium_159 norm	541	505		500	108	101	70-130

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Prepared:	8/20/15	**BatchID:**	109258
Date Analyzed:	8/22/15 - 8/23/15	**Extraction Method:**	SW5030B
Instrument:	GC19, GC7	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-109258 1508751-002AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	0.524	0.40	0.60	-	87	70-130
MTBE	ND	0.108	0.050	0.10	-	108	70-130
Benzene	ND	0.107	0.0050	0.10	-	107	70-130
Toluene	ND	0.108	0.0050	0.10	-	108	70-130
Ethylbenzene	ND	0.115	0.0050	0.10	-	115	70-130
Xylenes	ND	0.342	0.0050	0.30	-	114	70-130
Surrogate Recovery							
2-Fluorotoluene	0.126	0.114		0.10	126	114	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	NR	NR		1.9	NR	NR	-	NR	
MTBE	NR	NR		ND	NR	NR	-	NR	
Benzene	NR	NR		ND	NR	NR	-	NR	
Toluene	NR	NR		ND	NR	NR	-	NR	
Ethylbenzene	NR	NR		0.15	NR	NR	-	NR	
Xylenes	NR	NR		0.16	NR	NR	-	NR	
Surrogate Recovery									
2-Fluorotoluene	NR	NR			NR	NR	-	NR	

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Prepared:	8/20/15	**BatchID:**	109243
Date Analyzed:	8/21/15	**Extraction Method:**	SW3550B
Instrument:	GC2A	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-109243 1508702-002AMS/MSD

QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	41.1	1.0	40	-	103	70-130
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	23.9	24.2		25	96	97	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	41.5	40.7	40	ND	104	102	70-130	1.77	30
Surrogate Recovery									
C9	26.5	26.6	25		106	106	70-130	0	30

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1508751 **ClientCode: NACS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Steve Schwartz
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806
(510) 669-0256 FAX: (510) 758-7692

Email: sschwartz1@sbcglobal.net
cc/3rd Party:
PO:
ProjectNo: ICP-Demo

Bill to:
Accounts Payable
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806

Requested TAT: **1 day;**
Date Received: **08/21/2015**
Date Printed: **08/21/2015**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1508751-001	Stockpile Fill	Soil	8/21/2015 11:20	☐	A	A	A									
1508751-002	Westside Confirmation #2	Soil	8/21/2015	☐		A										
1508751-003	West Floor #2	Soil	8/21/2015	☐		A										

Test Legend:

1	CAM17MS_S	2	G-MBTEX_S	3	TPH(D)_S	4		5	
6		7		8		9		10	
11		12							

Prepared by: Jena Alfaro

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: NOVA ABATEMENT & CONSTRUCTION SERVICES, I
QC Level: LEVEL 2
Work Order: 1508751
Project: ICP-Demo
Client Contact: Steve Schwartz
Date Received: 8/21/2015
Comments:
Contact's Email: sschwartz1@sbcglobal.net

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1508751-001A	Stockpile Fill	Soil	SW8015B (Diesel)	1	Brass tube 2"x6"	☐	8/21/2015 11:20	1 day		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		1 day		☐	
			SW6020 (CAM 17)			☐		1 day		☐	
1508751-002A	Westside Confirmation #2	Soil	SW8021B/8015Bm (G/MBTEX)	1	Brass tube 2"x6"	☐	8/21/2015	1 day		☐	
1508751-003A	West Floor #2	Soil	SW8021B/8015Bm (G/MBTEX)	1	Brass tube 2"x6"	☐	8/21/2015	1 day		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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150875 1

RUSH

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☑ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAY ☐
GeoTracker EDF ☐ PDF ☐ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐
Effluent Sample Requiring "J" flag ☐ **UST Clean Up Fund Project** ☐ ; **Claim #**_____

Report To: Noa abatement **Bill To:**
Company: construction Services
305 Research Dr.
Richmond, CA 94803
E-Mail: schmartz1@sbglobal.net
Tele: (510) 812 6466 **Fax:** ( )
Project #: ICO-Demo **Project Name:**
Project Location: Oakland **Purchase Order#**
Sampler Signature:

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX: Ground Water	Waste Water	Drinking Water	Sea \ Water	Soil	Air	Sludge	Other	METHOD PRESERVED: HCL	HNO_3	Other	BTEX & TPH as Gas (8021/ 8015 or 8260) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	MTBE / BTEX ONLY (EPA 8260/ 8021)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)	LUFT 5 Metals (200.8 / 6020)	Metals (200.8 / 6020)	Filter sample for DISSOLVED metals analysis
Stockpile Fill		8/21	1120	1					X							X	X											X				
west side Confirmation #2		8/21							X							X																
West Floor #2		8/21							X							X																

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

Relinquished By:	Date:	Time:	Received By:
	8/21	16:30	
Relinquished By:	Date:	Time:	Received By:
	8-21-15	1530	
Relinquished By:	Date:	Time:	Received By:

ICE/t°_____
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS: Rush

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION_____ pH<2_____

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name: **Nova Abatement & Construction Services, Inc.** Date and Time Received: **8/21/2015 3:57:09 PM**

Project Name: **ICP-Demo** LogIn Reviewed by: Jena Alfaro

WorkOrder №: **1508751** Matrix: Soil Carrier: Bernie Cummins (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Sample/Temp Blank temperature	Temp: 2.2°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

** NOTE: If the "No" box is checked, see comments below.*

Comments:

ATTACHMENT B

SPECIAL WASTE PERMIT

POTRERO HILLS LANDFILL

Potrero Hills Landfill
3675 Potrero Hills Lane
Suisun, CA 94585
PH: 707.432.4627
FX: 707.426.5013

WASTE CONNECTIONS INC.
Connect with the Future®

APPROVAL NUMBER:	**PHLF-15-459**
AMENDMENT NUMBER:	
EXPIRATION DATE:	**07/27/2016**
APPROVED BY:	**M. DUFORT**

SPECIAL WASTE PERMIT

(This Page for OFFICE USE ONLY)

GENERATOR: Ice Cream Plant, 2240 Filbert St, Oakland, CA 94607
CUSTOMER: Nova Abatement & Construction Services Inc., 3051 Research Drive, Richmond, CA 94806

H. ENVIRONMENTAL COMPLIANCE SUPERVISOR DECISION

1. ☑ Acceptable ☐ Not Acceptable Reason Non-hazardous Soil; LUFT-5 Metals, TPH, BTEX, VOCs

2. Name: Marcus Dufort, Environmental Engineer	3. Date: 07/27/2015
4. Signature: MDufort Digitally signed by MDufort DN: cn=MDufort, o=Waste Connections Inc, ou=Engineering Department - Western Region, email=MDufort@wcnx.org, c=US Date: 2015.07.27 13:13:43 -07'00'	5. Phone: (360) 566-6922

I. INSTRUCTIONS/HANDLING PROCEDURES

This Section is to be completed by BOTH the Environmental Compliance Supervisor and the Facility Manager.

1. Disposal Method(s): ☐ Landfill ☐ Solidification ☑ Approved ADC ☐ Other:

2. Review and approval of waste is based upon a submitted documentation from generator/customer, the Landfill Waste Acceptance Criteria, and any applicable State or Federal waste disposal regulations. Approval is granted subject to the enforcement of the following conditions. Failure to comply may result in rejection of the wastes.
   A. Customer/Generator shall receive a copy of this sheet upon approval and shall conform to all instructions/limitations noted herein.
   B. Loads may be randomly inspected upon receipt at the landfill to ensure wastes conform to description on Application.
   C. This material must be properly contained, bagged, or covered prior to and during shipment and disposal.

3. The conditions marked below apply to this waste stream.

APPROVAL CONDITION(S):

☐ CONDITIONAL APPROVAL: This is a conditional approval/extension. Upon receipt of additional analyses, this approval may be extended.
SPECIFIC CONDITION:

☐ BLANKET APPROVAL: The manifest accompanying each load of waste shall denote the specific waste generation address/location(s) for that load.

WASTE CONDITION(S):

☐ ABSORBENT MATERIALS: Absorbent material (pads, booms, diapers, socks, soils, etc.) must not be supersaturated so as to release free liquids on handling. Wastes that would not pass a paint filter test must be solidified prior to placement in the landfill.

☐ ASBESTOS CONTAINING MATERIAL (ACM): ☐ Friable ☐ Non-Friable

☐ FREE LIQUIDS/SLUDGE:

☐ OTHER:

LANDFILL SPECIAL HANDLING PROCEDURES:

☐ CARE UNLOADING: Maintain integrity of container/packaging.

☐ DUST: Materials may become airborne. Use appropriate control measures to prevent the material from becoming airborne.

☐ IRRITANT DUST: Materials may be dusty and are likely to cause irritation to skin and/or eyes. Use appropriate dust control measures and PPE as needed to prevent airborne dust and/or employee exposure. See MSDS for additional information.

☐ ODOR: Bury immediately upon arrival.

☐ SLUDGE: Potential traction issue on work face.

☐ SPECIAL BURIAL REQUIREMENTS: Immediately cover waste ☐ MSW ☐ Dirt prior to compaction.

☐ SURVEY REQUIREMENT: Materials must be surveyed in or indicated on a grid.

☐ OTHER:

☐ CALL LANDFILL: Prior to disposal, contact landfill to arrange for delivery (Liquids, Totes, and Asbestos).

Potrero Hills Landfill
3675 Potrero Hills Lane
Suisun, CA 94585
PH: 707.432.4627
FX: 707.426.5013

SPECIAL WASTE APPLICATION

FOR OFFICE USE ONLY
APPROVAL NUMBER:
EXPIRATION DATE:
APPROVED BY:

Information utilized for completion of this form must originate from an authorized representative of the generator of the waste material.
The information on this form must be **COMPLETELY FILLED OUT, TYPE WRITTEN,** and the form must be **SIGNED BY AUTHORIZED REPRESENTATIVE.**

A. PROFILE INFORMATION

1. ■ Initial ☐ Recertification, list prior special waste approval number(s):

2. Have there been any changes to the composition of, or process generating this waste stream that would alter the characteristics of the waste stream?
☐ YES ☐ NO (Updated analysis may be required even if no change to process or composition.)

B. GENERATOR INFORMATION

1. Generator Name: Ice Cream Plant
2. Address: 3049 Research Dr
City: Richmond | County: Contra Costa
State: CA | Zip: 94806
3. Site Location (if different): 2240 Filbert, Oakland, CA
4. Contact Name: Steve Schwartz
5. Phone Number: 510.812.6469 | 6. Fax Number:
7. Email Address: sschwartz1@sbcglobal.net
8. State Facility ID # (if applicable):
9. State Waste Code (if applicable):

C. CUSTOMER/BILLING INFORMATION

1. Billing Name: Nova Abatement & Construction Services, Inc.
2. Address: 3051 Research Dr
City: Richmond | County: Contra Costa
State: CA | Zip: 94806
3. Contact Name: Steve Schwartz
4. Phone Number: 510.812.6469 | 5. Fax Number:
6. Email Address: sschwartz1@sbcglobal.net
7. Is there a service agreement on file? ☐ YES ■ NO
8. Agent / Consultant:
9. Letter of Authorization: ☐ YES ■ NO

D. TRANSPORTER/SHIPPING INFORMATION

1. Name: Alhambra Environmental Services
2. Street Address: PO Box 20607
City: El Sobrante | State: CA | Zip: 94820
3. Phone Number: 510.758.9444 | 4. Fax Number:
5. Contact Name: Jim Garland
6. EPA or State Transporter ID #:
7. Designated Landfill(s): Potrero
8. Transport: ■ End Dump ☐ Roll-Off ☐ Transfer Truck ☐ Flat Bed ☐ Tanker Truck ☐ Box Van ☐ Other:
9. Estimated Volume: 125 ☐ Tons ■ Cubic Yards ☐ Gallons
10. Packaging: ■ Tarped ☐ Bagged ☐ Wrapped ☐ Drums ☐ Totes
11. Shipping Frequency: _____ per: ■ One Time Project ☐ Month ☐ Quarter ☐ Year ☐ Other:

E. WASTE STREAM INFORMATION

1. Common Name of Material or Waste Stream: Soil -Hydrocarbons
2. Detailed Description of Process or How Generated (Attach additional sheet if needed): Clarifier leaked
3. Physical State at 70°F: ■ Solid ☐ Semi-Solid ☐ Sludge ☐ Liquid ☐ Powder ☐ Other
4. Free Liquids: ■ NO ☐ YES % Liquids:
5. Color: | 6. pH Range:
7. Odor: ☐ None ■ Mild ☐ Significant Describe:
8. Flash Point: ☐ °F ☐ °C
9. Reactive: ☐ NO ☐ YES with:
10. State Required Information (if applicable):

F. NON-HAZARDOUS DETERMINATION

1. Attached Document(s) (check all that apply): ☐ Not Applicable ☐ Process Knowledge ☐ MSDS / SDS ■ Certified Analytical Report ☐ Exempt Waste
2. If Process Knowledge, provide details:
3. If analytical data is attached, is the data derived from testing a representative sample in accordance with 40 CFR 261 and/or other applicable laws?
■ YES ☐ NO Type of Sample: ■ Composite ☐ Grab Analysis Provided: Metals, EPA 8260, Gas/BTEX
4. If Exempt Waste, check applicable item below: ☐ UST Corrective Action – 40 CFR 261.4(b)(10) ☐ PCB Bulk Product Waste – 40 CFR 761.62
☐ Oil & Gas E&P Waste – 40 CFR 261.4(b)(5) ☐ RCRA-Empty Containers – 40 CFR 261.7 ☐ Other (provide reference):

G. GENERATOR CERTIFICATION STATEMENT:

I hereby certify that all information contained herein is true and correct, and the material described is properly identified, classified, packaged, labeled, and prepared as indicated. I certify this waste is not hazardous or dangerous as defined by the U.S. EPA, or the state or province of origin. I certify this waste does not contain any regulated radioactive materials, that all known and suspected hazards have been disclosed, and that the waste is not a regulated hazardous waste by government or local authority, and does not contain PCB's regulated by TSCA or any other regulatory authority. I certify that all samples used for this analysis are representative of the materials described herein. I understand that all wastes may undergo inspection upon arrival at the designated facility and may be refused if the delivered material does not conform to the description herein. Notification will be provided immediately if there is a change in the composition of, or process generating this waste stream, prior to offering the waste for shipment or management.

Steve Schwartz - Owner Representative — AUTHORIZED REPRESENTATIVE NAME/TITLE
Nova — COMPANY NAME
AUTHORIZED REPRESENTATIVE SIGNATURE
7/23/15 — DATE COMPLETED

ATTACHMENT C

IMPORTED FILL DOCUMENTATION

POTRERO HILLS LANDFILL

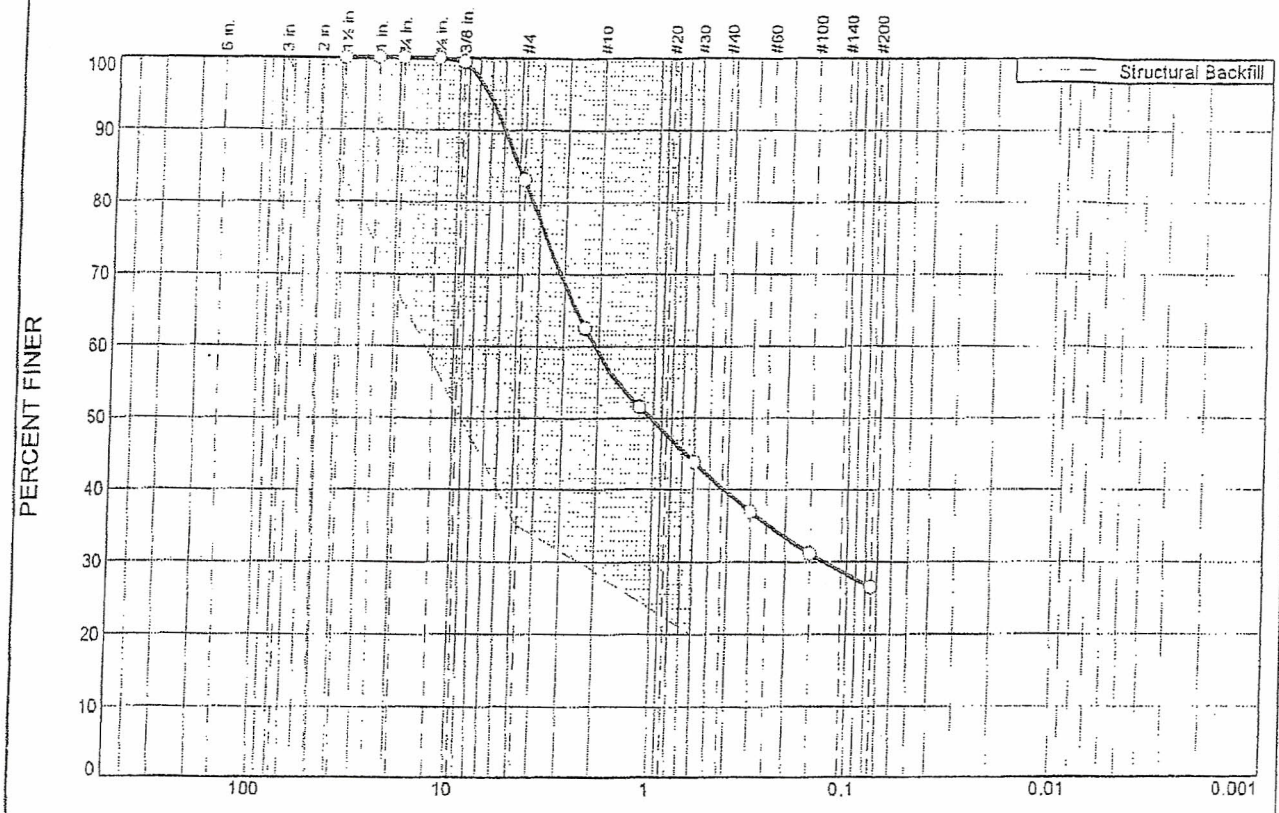
Steve Schwartz

From: Joe Lynch [JoeL@WasteConnections.com]
Sent: Monday, August 24, 2015 10:48 AM
To: 'Steve Schwartz'
Cc: 'Jim Garland (jimgarland@sbcglobal.net)'
Subject: Quarry Soil Geo Report
Attachments: potrero fill.pdf

Here you go. Our quarry is a native soil source only. No soil is allowed to be placed in the quarry; only soil taken out.

Joseph Lynch
Northern California Special Waste Consultant / Sales Manager
Waste Connections Inc.
Potrero Hills & John Smith
Cell - 925-949-9451
joel@wcnx.org

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	17	24	19	14	26	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1-1/2"	100		
1"	100		
3/4"	100		
1/2"	100		
3/8"	100		
#4	83	35 - 100	
#8	63		
#16	52		
#30	44	20 - 100	
#50	37		
#100	31		
#200	26		

* Structural Backfill

Material Description

Structural Backfill

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 5.0336 D_{60}= 2.0913 D_{50}= 1.0342
D_{30}= 0.1274 D_{15}= D_{10}=
C_U= C_C=

Classification

USCS= AASHTO=

Remarks

Sample Number:
Source of Sample: CRETE CRUSH

YOUNGDAHL CONSULTING
El Dorado Hills, California

Client:
Project: Crete Crush Misc. Lab Testing

Project No: 06091.000 Figure 1

APPENDIX J
Import Fill Soil Analytical Report

McCampbell Analytical, Inc.
"When Quality Counts"

Analytical Report

WorkOrder: 1508751

Report Created for: Nova Abatement & Construction Services, Inc.

3051 Research Drive
Richmond, CA 94806

Project Contact: Steve Schwartz
Project P.O.:
Project Name: ICP-Demo

Project Received: 08/21/2015

Analytical Report reviewed & approved for release on 08/24/2015 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Nova Abatement & Construction Services, Inc.
Project: ICP-Demo
WorkOrder: 1508751

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Analytical Qualifiers

S	spike recovery outside accepted recovery limits
d7	strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
d9	no recognizable pattern

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Received:	8/21/15 15:57	**Extraction Method:**	SW3050B
Date Prepared:	8/21/15	**Analytical Method:**	SW6020
Project:	ICP-Demo	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile Fill	**1508751-001A**	**Soil**	**08/21/2015 11:20**	**ICP-MS2**	**109265**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.62**	0.50	1	08/24/2015 12:32
Arsenic	**11**	0.50	1	08/24/2015 12:32
Barium	**190**	5.0	1	08/24/2015 12:32
Beryllium	**0.77**	0.50	1	08/24/2015 12:32
Cadmium	ND	0.25	1	08/24/2015 12:32
Chromium	**40**	0.50	1	08/24/2015 12:32
Cobalt	**12**	0.50	1	08/24/2015 12:32
Copper	**39**	0.50	1	08/24/2015 12:32
Lead	**12**	0.50	1	08/24/2015 12:32
Mercury	ND	0.050	1	08/24/2015 12:32
Molybdenum	ND	0.50	1	08/24/2015 12:32
Nickel	**43**	0.50	1	08/24/2015 12:32
Selenium	ND	0.50	1	08/24/2015 12:32
Silver	ND	0.50	1	08/24/2015 12:32
Thallium	ND	0.50	1	08/24/2015 12:32
Vanadium	**78**	0.50	1	08/24/2015 12:32
Zinc	**75**	5.0	1	08/24/2015 12:32

Surrogates	REC (%)	Qualifiers	Limits	
Terbium_159 norm	104	S	70-130	08/24/2015 12:32

Analyst(s): DVH

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Received:	8/21/15 15:57	**Extraction Method:**	SW5030B
Date Prepared:	8/21/15	**Analytical Method:**	SW8021B/8015Bm
Project:	ICP-Demo	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile Fill	**1508751-001A**	**Soil**	**08/21/2015 11:20**	**GC7**	**109258**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	1.0	1	08/22/2015 09:41
MTBE	ND	0.050	1	08/22/2015 09:41
Benzene	ND	0.0050	1	08/22/2015 09:41
Toluene	ND	0.0050	1	08/22/2015 09:41
Ethylbenzene	ND	0.0050	1	08/22/2015 09:41
Xylenes	ND	0.0050	1	08/22/2015 09:41

Surrogates	REC (%)	Limits	
2-Fluorotoluene	113	70-130	08/22/2015 09:41

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Westside Confirmation #2	**1508751-002A**	**Soil**	**08/21/2015**	**GC3**	**109258**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	**74**	1.0	1	08/23/2015 10:32
MTBE	ND	0.050	1	08/23/2015 10:32
Benzene	ND	0.0050	1	08/23/2015 10:32
Toluene	ND	0.0050	1	08/23/2015 10:32
Ethylbenzene	**0.15**	0.0050	1	08/23/2015 10:32
Xylenes	**0.16**	0.0050	1	08/23/2015 10:32

Surrogates	REC (%)	Limits	
2-Fluorotoluene	100	70-130	08/23/2015 10:32

Analyst(s): IA Analytical Comments: d7,d9

(Cont.)

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Received:	8/21/15 15:57	**Extraction Method:**	SW5030B
Date Prepared:	8/21/15	**Analytical Method:**	SW8021B/8015Bm
Project:	ICP-Demo	**Unit:**	mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
West Floor #2	**1508751-003A**	**Soil**	**08/21/2015**	**GC3**	**109258**

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	**47**	1.0	1	08/23/2015 11:02
MTBE	ND	0.050	1	08/23/2015 11:02
Benzene	ND	0.0050	1	08/23/2015 11:02
Toluene	ND	0.0050	1	08/23/2015 11:02
Ethylbenzene	**0.35**	0.0050	1	08/23/2015 11:02
Xylenes	**0.25**	0.0050	1	08/23/2015 11:02
Surrogates	REC (%)	Limits		
2-Fluorotoluene	88	70-130		08/23/2015 11:02

Analyst(s): IA Analytical Comments: d7,d9

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Analytical Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Received:	8/21/15 15:57	**Extraction Method:**	SW3550B
Date Prepared:	8/21/15	**Analytical Method:**	SW8015B
Project:	ICP-Demo	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Stockpile Fill	**1508751-001A**	**Soil**	**08/21/2015 11:20**	**GC6A**	**109243**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	08/22/2015 01:11

Surrogates	REC (%)	Limits	
C9	87	70-130	08/22/2015 01:11

Analyst(s): TK

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Prepared:	8/20/15	**BatchID:**	109265
Date Analyzed:	8/24/15	**Extraction Method:**	SW3050B
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-109265

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	51.2	0.50	50	-	102	75-125
Arsenic	ND	49.6	0.50	50	-	99	75-125
Barium	ND	486	5.0	500	-	97	75-125
Beryllium	ND	50.2	0.50	50	-	100	75-125
Cadmium	ND	49.5	0.25	50	-	99	75-125
Chromium	ND	49.6	0.50	50	-	99	75-125
Cobalt	ND	48.4	0.50	50	-	97	75-125
Copper	ND	50.0	0.50	50	-	100	75-125
Lead	ND	51.7	0.50	50	-	103	75-125
Mercury	ND	1.28	0.050	1.25	-	102	75-125
Molybdenum	ND	48.5	0.50	50	-	97	75-125
Nickel	ND	50.5	0.50	50	-	101	75-125
Selenium	ND	49.4	0.50	50	-	99	75-125
Silver	ND	50.1	0.50	50	-	100	75-125
Thallium	ND	50.8	0.50	50	-	101	75-125
Vanadium	ND	49.7	0.50	50	-	99	75-125
Zinc	ND	500	5.0	500	-	100	75-125
Surrogate Recovery							
Terbium_159 norm	541	505		500	108	101	70-130

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Prepared:	8/20/15	**BatchID:**	109258
Date Analyzed:	8/22/15 - 8/23/15	**Extraction Method:**	SW5030B
Instrument:	GC19, GC7	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-109258 1508751-002AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	0.524	0.40	0.60	-	87	70-130
MTBE	ND	0.108	0.050	0.10	-	108	70-130
Benzene	ND	0.107	0.0050	0.10	-	107	70-130
Toluene	ND	0.108	0.0050	0.10	-	108	70-130
Ethylbenzene	ND	0.115	0.0050	0.10	-	115	70-130
Xylenes	ND	0.342	0.0050	0.30	-	114	70-130
Surrogate Recovery							
2-Fluorotoluene	0.126	0.114		0.10	126	114	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	NR	NR		1.9	NR	NR	-	NR	
MTBE	NR	NR		ND	NR	NR	-	NR	
Benzene	NR	NR		ND	NR	NR	-	NR	
Toluene	NR	NR		ND	NR	NR	-	NR	
Ethylbenzene	NR	NR		0.15	NR	NR	-	NR	
Xylenes	NR	NR		0.16	NR	NR	-	NR	
Surrogate Recovery									
2-Fluorotoluene	NR	NR			NR	NR	-	NR	

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Quality Control Report

Client:	Nova Abatement & Construction Services, Inc.	**WorkOrder:**	1508751
Date Prepared:	8/20/15	**BatchID:**	109243
Date Analyzed:	8/21/15	**Extraction Method:**	SW3550B
Instrument:	GC2A	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	ICP-Demo	**Sample ID:**	MB/LCS-109243 1508702-002AMS/MSD

QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	41.1	1.0	40	-	103	70-130
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	23.9	24.2		25	96	97	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	41.5	40.7	40	ND	104	102	70-130	1.77	30
Surrogate Recovery									
C9	26.5	26.6	25		106	106	70-130	0	30

McCampbell Analytical, Inc.
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Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1508751 **ClientCode: NACS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Steve Schwartz
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806
(510) 669-0256 FAX: (510) 758-7692

Email: sschwartz1@sbcglobal.net
cc/3rd Party:
PO:
ProjectNo: ICP-Demo

Bill to:
Accounts Payable
Nova Abatement & Construction Service
3051 Research Drive
Richmond, CA 94806

Requested TAT: **1 day;**
Date Received: **08/21/2015**
Date Printed: **08/21/2015**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1508751-001	Stockpile Fill	Soil	8/21/2015 11:20	☐	A	A	A									
1508751-002	Westside Confirmation #2	Soil	8/21/2015	☐		A										
1508751-003	West Floor #2	Soil	8/21/2015	☐		A										

Test Legend:

1	CAM17MS_S	2	G-MBTEX_S	3	TPH(D)_S	4		5	
6		7		8		9		10	
11		12							

Prepared by: Jena Alfaro

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: NOVA ABATEMENT & CONSTRUCTION SERVICES, I
QC Level: LEVEL 2
Work Order: 1508751
Project: ICP-Demo
Client Contact: Steve Schwartz
Date Received: 8/21/2015
Comments:
Contact's Email: sschwartz1@sbcglobal.net

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1508751-001A	Stockpile Fill	Soil	SW8015B (Diesel)	1	Brass tube 2"x6"	☐	8/21/2015 11:20	1 day		☐	
			SW8021B/8015Bm (G/MBTEX)			☐		1 day		☐	
			SW6020 (CAM 17)			☐		1 day		☐	
1508751-002A	Westside Confirmation #2	Soil	SW8021B/8015Bm (G/MBTEX)	1	Brass tube 2"x6"	☐	8/21/2015	1 day		☐	
1508751-003A	West Floor #2	Soil	SW8021B/8015Bm (G/MBTEX)	1	Brass tube 2"x6"	☐	8/21/2015	1 day		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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150875 1

RUSH

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☑ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAY ☐
GeoTracker EDF ☐ PDF ☐ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐
Effluent Sample Requiring "J" flag ☐ **UST Clean Up Fund Project** ☐ ; **Claim #**_____

Report To: Noa abatement **Bill To:**
Company: construction Services
305 Research Dr.
Richmond, CA 94803
E-Mail: schmartz1@sbglobal.net
Tele: (510) 812 6466 **Fax:** ( )
Project #: ICO-Demo **Project Name:**
Project Location: Oakland **Purchase Order#**
Sampler Signature:

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX: Ground Water	Waste Water	Drinking Water	Sea \ Water	Soil	Air	Sludge	Other	METHOD PRESERVED: HCL	HNO_3	Other	BTEX & TPH as Gas (8021/ 8015 or 8260) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	MTBE / BTEX ONLY (EPA 8260/ 8021)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)	LUFT 5 Metals (200.8 / 6020)	Metals (200.8 / 6020)	Filter sample for DISSOLVED metals analysis
Stockpile Fill		8/21	1120	1					X							X	X											X				
west side Confirmation #2		8/21							X							X																
West Floor #2		8/21							X							X																

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

Relinquished By:	Date:	Time:	Received By:
	8/21	16:30	
Relinquished By:	Date:	Time:	Received By:
	8-21-15	1530	
Relinquished By:	Date:	Time:	Received By:

ICE/t°_____
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

COMMENTS: Rush

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION_____ pH<2_____

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name: **Nova Abatement & Construction Services, Inc.** Date and Time Received: **8/21/2015 3:57:09 PM**

Project Name: **ICP-Demo** LogIn Reviewed by: Jena Alfaro

WorkOrder №: **1508751** Matrix: Soil Carrier: Bernie Cummins (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Sample/Temp Blank temperature	Temp: 2.2°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

** NOTE: If the "No" box is checked, see comments below.*

Comments:

APPENDIX B
Human Health Risk Assessment

HUMAN HEALTH RISK ASSESSMENT REPORT

City Ventures-Multiple Parcels
Oakland, California



Prepared for:
City Ventures
444 Spear Street, Suite 200
San Francisco, California

Prepared by:
Stantec Consulting Services Inc.
1340 Treat Boulevard, Suite 300
Walnut Creek, California 94597

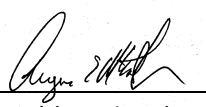
March 2, 2017

Sign-off Sheet

This document entitled HUMAN HEALTH RISK ASSESSMENT REPORT was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of City Ventures (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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Executive Summary

The Alameda County Department of Health Local Oversight Program (LOP) issued the Final Case Closure Letter, for Case File RO0002722 dated January 30, 1997, for the former Safeway Ice Cream Plant (aka West Grand Refrigeration Facility). The letter stated that no further action was required regarding subsurface conditions, the USTs and/or associated monitoring wells. However, the LOP stated that if there was a change in land use from industrial/commercial, the owner must notify the LOP and the City of Oakland Department of Public Works.

CV is in the process of redeveloping the property for multi-unit residential housing and is seeking concurrence from ACEH that based on impacts to soil and soil gas identified within this document there are no unacceptable risks or hazards associated with the planned development of the site for either residential or commercial use.

Potential future receptors (the Site is currently vacant, bare land) and potentially complete exposure pathways include onsite residents-inhalation of VOCs migrating from the subsurface to indoor air and outdoor air in areas designed for pavers, onsite commercial (retail) workers-inhalation of VOCs migrating from the subsurface to indoor air, and onsite construction workers during redevelopment activities-direct exposure to soil including incidental ingestion, dermal contact and inhalation of VOCs.

This human health risk assessment is based on the 2014 and 2016 collection and evaluation of 14 soil gas samples and the 1994 collection and analysis of 93 soil samples. For potential vapor intrusion into onsite residences, risks were evaluated on a point-by-point basis to guide risk management decisions regarding the need for vapor mitigation. For other receptors, risk was evaluated on the basis of a hypothetical sample containing the maximum concentrations of chemicals detected in all samples by medium. California, agencies consider a risk of 1E-06 as the point of departure where no further action is required. Non-carcinogenic chemicals should not be present at concentrations resulting in a hazard index greater than 1. Risk characterization indicates the following:

Receptor/Exposure Route	Risk	Hazard
Point-by-Point Vapor Intrusion-onsite Resident	All less than 1E-06	All less than 1
Onsite Commercial (Retail) Worker (using maximum soil gas concentrations)	1E-06	8E-01

Outdoor Air Exposure-onsite Resident (using maximum soil gas concentrations)	2E-10	1.7E-04
Construction Worker (using maximum soil concentrations)	3E-08	1.5E-02

Based on development of site-specific attenuation factors, the following site-specific screening levels (SLs) have been developed for soil gas for the resident exposure scenario:

Chemical	$ESL_{Indoor\ Air}$ ($\mu g/m^3$)[1,2]	Site-Specific Attenuation Factor-Loam[3]	Site-Specific SL-Soil Gas ($\mu g/m^3$)
Dichlorodifluoromethane	100	7.3E-04	137,000
Trichlorofluoromethane	1,300	6.5E-04	2,000,000
Benzene	0.097	8.1E-04	120
Ethylbenzene	1.1	6.7E-04	1,640
Xylene (m, p and o)	100	6.7E-04	149,000
1,1,2,2-Tetrachloroethane	0.048	5.2E-04	92.3
Hexane	730	7.1E-04	1,030,000
Cyclohexane	6,300	7.5E-04	8,400,000

Based on risk characterization, the following site-specific screening levels have been developed for soil for the onsite construction/utility worker exposure scenario:

Risk-Based Screening Levels-Construction Workers

Chemical	Site-Specific SL-Soil (mg/kg)
Benzene	45
Toluene	7,900
Ethylbenzene	920
Xylenes (m,p and o)	4,500
1,4-Dichlorobenzene	610
Benzo[b]fluoranthene	65
Cis 1,2-Dichloroethene	160
1,1-Dichlorobenzene	16,000

Abbreviations

AST	above-ground storage tank
AT	averaging time
ATc	carcinogenic averaging time
ATn	non-carcinogenic averaging time
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
Cal-EPA	California Environmental Protection Agency
CDI	chronic daily intake
CDIc	chronic daily intake for cancer effects
CDIn	chronic daily intake for non-cancer effects
CFC	chlorofluorocarbon
COPC	chemical of potential concern
CSM	conceptual site model
DCA	dichloroethane
DCB	dichlorobenzene
DCE	dichloroethene
DTSC	Department of Toxic Substances Control
DTSC-SL	DTSC-modified screening level
EPC	exposure point concentration
ft/ft	feet per foot
Freon 11	Trichlorofluoromethane
Freon 12	Dichlorodifluoromethane
Freon 113	1,1,2-Trichloro-1,2,2-trifluoroethane
HEAST	Health Effects Assessment Summary Tables
HERO	Human and Ecological Risk Office
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
IR	immediate response

IRIS	Integrated Risk Information System
IUR	inhalation unit risk
J&E	Johnson and Ettinger
LECR	lifetime excess cancer risk
MCL	maximum contaminant level
mg/kg-day	milligram (chemical) per kilogram (body weight) per day
MtBE	methyl tert-butyl ether
MW	monitoring well
OEHHA	Office of Environmental Health Hazard Assessment
PCE	tetrachloroethene
PEA	Preliminary Endangerment Assessment
PPRTV	Provisional Peer-Reviewed Toxicity Value
RA	risk assessment
RAGS	Risk Assessment Guidance for Superfund
REL	reference exposure level
RfD	reference dose
RfC	reference concentration
RME	reasonable maximum exposure
RSL	regional screening level
RWQCBSFBR	Regional Water Quality Control Board San Francisco Bay Region
SDI	sub-chronic daily intake
SF	slope factor
TCA	trichloroethane
TCDB	Toxicity Criteria Database
TCE	trichloroethene
TIC	tentatively identified compound
TPH	total petroleum hydrocarbons
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHmo	total petroleum hydrocarbons as motor oil
95UCL	ninety-five percent upper confidence limit
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1.0 INTRODUCTION

The Alameda County Department of Health Local Oversight Program (LOP) issued the *Final Case Closure Letter*, for Case File RO0002722 dated January 30, 1997, for the former Safeway Ice Cream Plant (*aka* West Grand Refrigeration Facility). The letter stated that no further action was required regarding subsurface conditions, the underground storage tanks (USTs) and/or associated monitoring wells. However, the LOP stated that if there was a change in land use from industrial/commercial, the owner must notify the LOP and the City of Oakland Department of Public Works.

Accordingly, ACEH was notified of the proposed change in the use of the Site from commercial/industrial to residential via the *Revised Environmental Site Summary* prepared by Stantec and dated July 11, 2016. The report also included a summary of Phase II assessments that were completed at the Site in order to confirm that the Site meets current regulatory requirements for unrestricted use.

City Ventures (CV) is in the process of redeveloping the property for multi-unit residential housing and commercial (retail) space and is seeking concurrence from ACEH that no further environmental assessment is required as a condition to completing the planned development of the Site (Figure 1).

1.1 OVERVIEW OF APPROACH

The approach used to conduct this human health risk assessment (HHRA) is conservative in order to minimize the possibility of underestimating potential human health risks. To ensure a health protective (i.e., conservative) approach, a reasonable maximum exposure (RME) scenario was evaluated for the identified receptors. Risks and hazards were estimated using a deterministic approach under a conceptual site model (CSM) developed on the basis of site information that identifies potential receptors and potentially complete exposure pathways for risk characterization. The HHRA was prepared in accordance with the regulatory guidance described below.

1.2 ORGANIZATION OF REPORT

The HHRA Report is organized as follows:

- Section 1.0 Introduction
- Section 2.0 Background
- Section 3.0 Conceptual Site Model

- ❑ Section 4.0 Exposure Assessment
- ❑ Section 5.0 Toxicity Evaluation
- ❑ Section 6.0 Risk Characterization
- ❑ Section 7.0 Summary and Conclusions
- ❑ Section 8.0 References

2.0 BACKGROUND

2.1 DESCRIPTION OF SITE AND SURROUNDING AREA

The Site is comprised of multiple parcels located between West Grand Avenue, 24th Street, Filbert Street, and Market Street in the City of Oakland, County of Alameda, California (see Figure 1). For purposes of this report, the area of the former Safeway Ice Cream Plant, between West Grand Avenue, Filbert Street, 24th Street, and Myrtle Street, will be referred to as the "West Grand Block". The area of the former parking lot property, located between Myrtle Street and Market Street, will be referred to as the "Market Street Block". References to the "Site" refer to both the West Grand Block and the Market Street Block.

The West Grand Block is located in a mixed use light industrial and residential area of West Oakland. The Site is bounded to the north by 24th Street followed by a vacant light industrial structure, churches, and residences; to the east by Myrtle and Market Streets beyond which are residences, auto body shops, and a restaurant; to the west by Filbert Street beyond which are light industrial buildings and residences; and to the south by West Grand Avenue followed by a vacant light industrial building, residences, and a multi-tenant commercial structure.

The Assessor Parcel Numbers (APNs) for the West Grand Block consist of the following:

- 005-430-017-02 (2338 Filbert Street); and
- 005-430-013-04 (2210 Filbert Street).

The APNs for the Market Street Block consist of the following:

- 005-431-024 (Myrtle Street), -025 (2242 Myrtle Street), -026 (Myrtle Street),-027 (Myrtle Street), and -028 (2310 Myrtle Street);
- 005-431-015-03 (2303 Market Street); and
- 005-431-011 (2317 Market Street) and -012 (2315 Market Street).

2.2 SITE HISTORY, CONTAMINANT SOURCES AND CORRECTIVE MEASURES

West Grand Block

The West Grand Block was occupied by residential structures until approximately 1950 when the Union Ice Company plant was built on the south side of the West Grand Block. Additional businesses, including an automobile repair shop, a cabinet shop, and a cleaning and dyeing works company, occupied the Site until the late 1950s. The Safeway Ice Cream Plant operated at the Site from 1960s until 1994.

The building was converted into multi-tenant space in 1994 when the plant closed. Former tenants included food storage companies, an import car service, and an auto repair facility. The building was vacated in mid-2011.

Historic files for the Site indicate the presence of former USTs.

Market Street Block

The Market Street Block has been used either as residential or as a parking lot for the former Safeway Ice Cream Plant, with no significant industrial or commercial use, since at least the early 1900s (Gribi, 2005). Historical releases resulting in residual impacts to soil and groundwater have been documented at the adjacent property to the South of the Market Street Block (Cornerstone, 2016).

The following is a summary of known or suspected hazardous materials used at the Site based on a review of historical records completed as part of Stantec's 2014 Phase 1 ESA.

- Two former tenants (California Auto Repair and Steve Miller Import Car Service) used small quantities of hazardous substances such as engine oil, lubricants, coolant, and other automotive fluids.

- California Auto Repair had two paint spray booths. Several unlabeled 55-gallon drums were noted on the southeast side of the Site. Due to the absence of any violations regarding the storage or use of hazardous substances, however, the former tenants do not represent an environmental concern to the Site.

- California Auto Repair was listed at the address of 2210 Filbert Street in the HAZNET database. According to the HAZNET database listing, approximately 0.37 tons of unspecified solvent mixture was properly disposed of off-site in 2003 and 0.15 tons of unspecified solvent mixture was properly disposed of off-site in 2004. No violations or other information were associated with California Auto Repair.

- The Safeway Outlet / Safeway Stores Incorporated / Grand Ave Refrigerated Store / Safeway Oakland Ice Cream Plant was listed at the address of 2240 Filbert Street in the CHMIRS, FINDS, HIST CORTESE, CA FID UST, SLIC, Alameda County CS, HIST UST, SWEEPS UST, EMI, EDR US Hist Auto Stat, HAZNET, and ERNS databases:

- According to the CHMIRS listing, a small vapor release of ammonia was reported on October 24, 1993 due to a valve failure. This historic release is not considered to represent an environmental concern.

- According to the HAZNET listing, small amounts of off-specification, aged or surplus organics; waste oil and mixed oil; and aqueous solution with total organic residues of 10 percent or more were disposed of off-site in 1994.

3.0 CONCEPTUAL SITE MODEL

In this section, potential human receptors and potentially complete exposure pathways are identified at the site. A CSM was developed to facilitate the pathway analysis. The CSM is an important preliminary step in the exposure assessment portion of a risk assessment (USEPA, 1989). The CSM schematically presents the relationship between chemical sources in various environmental media and potential receptors at the site, and identifies potentially complete and significant pathways through which receptors may be exposed to the chemicals of potential concern (COPCs). This is accomplished by detailed analysis of historic uses of the site, current and anticipated future land use at the site and vicinity, and beneficial uses of groundwater, and considering such important site characteristics as the source(s) of chemical release, depth to the water table(s), distribution of chemical detections, and fate and transport of chemicals detected in site soil, groundwater, and soil gas. Geologic and hydrogeologic settings are described in Section 2.3 of the Remedial Action Plan (RAP). The CSM is presented graphically in Figure A, and discussed below.

3.1 SUMMARY OF EXPOSURE-RELATED SITE CHARACTERISTICS

The site characteristics provided below, were used to identify potential receptors and potentially complete exposure pathways for quantitative risk characterization specific to this site.

- Previous investigations conducted in 1994 and related to former onsite USTs have indicated that the subsurface has been impacted by one or more historic releases of total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs) and metals.

- Soil and groundwater grab sampling was expanded in 1994 to evaluate other areas of concern within the West Grand Block which included the former cleaning and dyeing works, the former auto repair shop/garage/hazardous materials storage room, and the former elevator sump #1. Impacts to soil and groundwater by benzene, toluene, ethylbenzene, and xylenes (BTEX), TPH as oil and grease (TPHog), TPH as gasoline (TPHg), TPH as mineral spirits (TPHms) and 1,2-dichloroethane (1,2-DCA) (groundwater only) were identified in vadose zone soil and groundwater but were restricted to areas near these potential sources.

- The petroleum hydrocarbons and other VOCs detected in soil and groundwater may migrate vertically in the vapor phase from vadose soil or first-encountered groundwater to the ground surface. Vapors may enter structures above the plume (frequently termed "vapor intrusion"). Vapor emissions from both soil and groundwater to ambient air following re-development are not expected to occur since the Site will be covered almost completely by impervious surfaces and structures.

- Subsurface conditions beneath the Site consist of coarse gravel fill to a depth of one foot below ground surface (bgs); dense clay between approximately 1 and 9 feet bgs; well graded sand with gravel and clay between approximately 9 and 13 feet bgs; and clay between approximately 13 and 19 feet bgs (IT 1996a). The depth-to-groundwater is approximately 9 to 11 feet bgs with a west/southwest flow direction (IT 1996b). Based on limited monitoring events at properties adjacent to and in the vicinity of the Site, more recently groundwater has been documented to flow in the west to northwesterly direction (Cornerstone, 2016).

- Site redevelopment plans indicate that the majority of the Site will be covered with impervious surfaces (e.g., asphalt/concrete), pavers and structures.

3.2 HUMAN RECEPTORS

The site currently consists of vacant land. Under the proposed future land use, potentially-exposed populations include onsite commercial workers, onsite construction/utility workers, and onsite residents. Additional descriptions of these receptors are provided below.

- Onsite Commercial Outdoor Worker – This commercial outdoor worker is assumed to be a long-term receptor employed by the company operating on the Site. This receptor spends most of the work day conducting maintenance or manual labor activities outdoors or regularly performs grounds-keeping activities as part of his/her daily responsibilities. Because nearly the entire Site will be covered with impervious surfaces (e.g., asphalt/concrete), pavers, and buildings, direct contact with soil (ingestion of soil, dermal contact to soil, and inhalation of particulates from soil) is considered an incomplete exposure pathway.

- Onsite Commercial Indoor Worker (Retail Worker) – This commercial indoor worker is assumed to be a long-term receptor employed by businesses operating in proposed ground floor commercial spaces, who spends most of the work day indoors, where they may be exposed to volatiles from subsurface sources while working inside onsite buildings. Because nearly the entire Site will be paved, direct contact to soil (ingestion of soil, dermal contact to soil, and inhalation of particulates from soil) is considered an incomplete exposure pathway. Inhalation of VOCs from the subsurface entering indoor air via vapor intrusion is considered a potentially complete exposure pathway.

- Onsite Construction/Utility Worker – This construction/utility worker (trench worker) is assumed to be exposed to contaminated soil during the work day for the duration of an onsite construction project. The activities for this receptor typically involve substantial exposures to soil during excavation projects (soil intrusive operations). A construction worker is assumed to be exposed to contaminants via the following complete pathways: incidental soil ingestion, dermal contact with soil, and inhalation of volatiles and particulates from soil disturbance activities. While a construction worker is assumed to have a higher soil ingestion rate than a commercial/industrial worker due to the type of activities performed during construction projects, the exposure frequency and duration are assumed to be significantly shorter due to the short-term nature of construction projects. Also, because groundwater at the Site is approximately 9 to 10 ft-bgs), construction workers may be exposed to VOCs in groundwater seeping into open trenches, via inhalation of VOCs volatilized from the groundwater or dermal contact to groundwater. In general, any hypothetical construction worker receptor will be performing activities consistent with a Site Management Plan (SMP) and a Site Health and Safety Plan (HASP). The HASP will require the use of proper personal protective equipment (PPE) and the best management practices (BMPs) will require dewatering to preclude any direct contact with groundwater for workers at the Site. Therefore, direct contact with groundwater is considered an incomplete exposure pathway.

- Onsite Resident – This onsite residential receptor is assumed to be a long-term receptor occupying ground floor residences. This receptor is assumed to live in the dwelling 24 hours per day, 350 days per year for 26 years. Direct exposure to Site-related contaminants may occur through inhalation of vapors originating in the subsurface which are transported to indoor air via vapor intrusion and as such this pathway is considered complete. Direct contact with soil is considered to be an incomplete pathway since the site will be almost completely covered with impervious surfaces (e.g., asphalt/concrete) and resident gardening (e.g., landscaping and yard work) activities are prohibited by the development Conditions, Covenants and Restrictions (CC&Rs) and the Homeowner's Association (HOA).

- Visitors to the Site are expected to be onsite for a shorter period of time than a residential receptor. As a result, the residential scenario will be protective of visitors to the Site, and hence, this receptor will not be evaluated in the HHRA.

3.3 SUMMARY OF POTENTIALLY-COMPLETE EXPOSURE PATHWAYS

A receptor comes into contact with COPCs only if there is a complete exposure pathway (USEPA, 1989). For an exposure pathway to be considered complete, it must be possible for a chemical to be transported via an environmental medium to a potential receptor location, and for receptors to be in contact with the chemical and assimilate it into their bodies via different routes of exposure (e.g., ingestion, inhalation, or dermal contact).

A complete exposure pathway consists of the following four elements (USEPA, 1989):

- A source of chemical;
- A mechanism by which the chemical is released;
- A retention or transport medium through which a chemical travels from the point of release to the receptor location (leaching, volatilization, or uptake via food); and,
- A route of exposure (ingestion, inhalation, or dermal contact) by which the chemical enters the receptors' body.

If any of these elements do not exist, the exposure pathway is considered incomplete and further evaluation of the pathway is not required.

The following potentially-exposed populations and potentially-complete exposure pathways were quantified in the HHRA.

- Onsite Commercial (retail) workers:
  - Inhalation of VOCs originating in subsurface which are transported to indoor air.
- Onsite construction/utility workers:
  - Incidental ingestion of surface soil;
  - Dermal contact with surface soil; and,
  - Inhalation of VOCs and particulates released from soil.
- Onsite residents.
  - Inhalation of VOCs originating in subsurface and transported to indoor air.

4.0 EXPOSURE ASSESSMENT

4.1 SOIL GAS RISK ASSESSMENT DATASET

Soil gas samples were collected from a depth of 5-feet bgs at 4 locations in May 2014 and 10 locations in September 2016. Soil gas data collected from these locations were used to evaluate a RME scenario on a point-by-point basis under the proposed future residential use. The soil gas dataset is provided in Table 1.

4.2 SOIL RISK ASSESSMENT DATASET

The available soil data set includes 93 soil samples collected at depths of between 1 and approximately 19 feet (corrected for the natural grade at the Site) by Levine-Fricke (LF) in 1994

(Table 2). Samples were analyzed for VOCs by USEPA Methods 8020 and 8240; SVOCs by USEPA Method 8270; TPHg and mineral spirits (TPHms) by USEPA Method 5030; and, Oil and Grease (TPHog) by USEPA Method 5520E. Table 2 provides the data for soil samples collected in 1994.

4.3 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

4.3.1 Identification of COPCs for Soil Gas

Two VOCs were detected in soil gas samples collected across the Site in 2014 and 10 VOCs (including n-hexane, cyclohexane and n-heptane which were analyzed in only one sample) were detected in 2016 (Table 1). Therefore, for evaluation of potential indoor air inhalation exposures to the future resident receptors all 10 VOCs are identified as soil gas COPCs.

4.3.2 Identification of COPCs for Soil

For soil, the bulk of soil analytical results were obtained in 1994 and as such there is uncertainty regarding changes in chemical concentration, in particular biodegradation, which may have occurred in the ensuing 23 years. Nonetheless, all chemicals were selected as COPCs with the exception of, fluoranthene, pyrene, isopropylbenzene, propylbenzene, 4-isopropyltoluene, and naphthalene, which were not further evaluated since they were detected only once and at levels between 2 (naphthalene) and 4 orders of magnitude below generic screening levels.

For TPH, generally, the evaluation of petroleum hydrocarbons in a risk assessment includes its components most likely to reflect risk (i.e., benzene, toluene, ethylbenzene, xylenes [BTEX], methyl tert-butyl ether [MTBE], and PAHs). It is unlikely that other less toxic components of petroleum hydrocarbons will drive the overall risk at the Site; therefore, analysis of these indicator compounds is sufficient for the purposes of this HHRA.

Acetone and methylene chloride were not evaluated since according to the EPA (EPA 1989), certain organic chemicals which are commonly used in the laboratory may be introduced into a sample from laboratory cross-contamination. For the site, the maximum concentrations of methylene chloride (0.007 mg/kg) and acetone (0.25 mg/kg) are well below the residential ESLs of 1.9 and 59,000 mg/kg respectively.

4.4 EXPOSURE POINT CONCENTRATIONS

The Exposure Point Concentration (EPC) is the concentration of a COPC that could be contacted by a receptor over the exposure period. The EPC is intended to represent the potential for contact with media at any given location by a receptor moving randomly across the physical boundaries of an exposure area.

4.4.1 Exposure Point Concentrations for Soil Gas

Onsite Residents

The HHRA conservatively assumed that a residence could be constructed anywhere on the Site. The detected concentration of each COPC in soil gas at each sample location and depth was used as the EPC.

Onsite Commercial (Retail) Workers

With the exception of soil gas sample SV-1, no soil gas samples have been collected near or within the proposed locations of ground-floor commercial spaces. SV-1, collected at the southwest corner of the proposed retail spaces did not contain any VOC above the laboratory reporting limits. To conservatively evaluate this receptor, the maximum concentration of each COPC regardless of location was used as the EPC.

4.4.2 Modeled Indoor Air Exposure Point Concentrations from Soil Gas

Exceedance of soil gas screening levels for some COPCs indicates the potential for VOCs in the vapor phase to move from the subsurface to indoor air. This pathway was evaluated using the Johnson and Ettinger (J&E) subsurface vapor intrusion model.

The USEPA (USEPA 2004) developed the 1991 J&E model to provide a set of screening-level, one-dimensional analytical models that account for the diffusion of chemicals through the subsurface, the advection of chemicals through soil and concrete slabs due to pressure differentials between the soil and buildings, and the mixing in indoor air caused by heating and ventilation systems. In, December 2014, the DTSC updated both the soil gas and groundwater screening models (Cal-EPA 2014a). The residential exposure duration (ED) and the averaging time for non-carcinogens (ATnc) have been changed to 26 years as recommended by the DTSC Human and Ecological Risk Office (Cal-EPA 2014b) which is also consistent with the USEPA Exposure Factors Update (USEPA 2014). Other updates included chemical physical parameters and toxicity values in the VLOOKUP Table. The J&E models are provided as Microsoft Excel spreadsheets and each model is constructed of five worksheets:

1. DATAENTER (Data Entry Sheet for single chemical of interest);
2. CHEMPROPS (Chemical Properties Sheet for single chemical of interest);
3. INTERCALCS (Intermediate Calculations Sheet);
4. RESULTS (Results Sheet); and
5. VLOOKUP (Lookup Tables – Physical and chemical data and toxicity values for a list of chemicals).

For this HHRA, the J&E soil gas screening model (SG-SCREEN), modified by the Cal-EPA DTSC (Cal-EPA 2014a), was used to estimate indoor air concentrations using the soil gas data. Soil gas data are typically the preferred medium from which to evaluate the vapor intrusion pathway (Cal-EPA, 2011a). In the original DTSC model, only a single chemical can be modeled at a time; modification of the model was done to allow modeling of multiple chemicals at once.

To assist in evaluating the sensitivity of the models to soil type, the maximum concentration of each chemical detected in the 14 soil gas locations were used to form one hypothetical sample for evaluation using three different soil types (see Attachment A).

Based on the evaluation, Loam (L) was the soil type selected for input into the models.

The J&E vapor intrusion model requires characterization of several building-specific parameters including building size, floor length and width, slab thickness, crack fraction (ratio of crack to building area), ventilation rate and volumetric flow rate of soil gas into the building. However, since the design for proposed residential structures has not been finalized, model-default values were used for these parameters and are presented in Table 3.

Cancer risk and non-cancer hazard were then calculated by the model using the predicted indoor air concentrations in accordance with current USEPA guidance (USEPA 2009). Toxicity values in the J&E spreadsheets were updated in accordance with the latest Cal-EPA and USEPA data wwhich are presented in Table 4. Concentrations at each sampled location were evaluated on a point-by-point basis to provide a complete profile of potential cancer risks and non-cancer hazards associated with soil gas at the Site.

4.4.3 Exposure Point Concentrations for Soil

Onsite Construction/Utility Worker

To evaluate potential exposure to construction/utility workers, EPCs were selected based on the maximum detected concentration in soil of each chemical regardless of location and depth.

4.5 QUANTIFICATION OF DAILY INTAKE FOR DIRECT CONTACT WITH SOIL

Chemical intake for direct contact (incidental ingestion), dermal contact and exposure concentrations for inhalation of particulates and VOCs were calculated in accordance with the following:

The RWQCBSFB has established ESLs for Construction Workers (RWQCBSFB 2016) which utilize equations for deriving non-standard generic ESLs this receptor. The default exposure assumptions (e.g., exposure frequency) are based on continuous exposure over one-year (assuming 5 days per week and 8 hours per day). However, according to City Ventures, the project schedule indicates that exposure to soil will only occur for the first 4 months. Thereafter all subsurface utilities will have been installed and ground surfaces paved. Use of the default exposure assumptions would result in an overestimate of potential risks associated with exposure

to soil by construction workers. Therefore, for the onsite construction worker, risks and hazards were estimated using the exposure assumptions presented in Table 9 by chemical using the following:

4.5.1 Incidental Ingestion of COPCs in Soil

The intake (LADD for carcinogenic effects or ADD for non-carcinogenic effects) due to incidental soil ingestion was calculated using the following equation:

$$\text{Intake} = \frac{(C_{soil} \times FI \times IR \times UCF \times EF \times ED)}{(BW \times AT)}$$

Where:

Intake	=	Lifetime average daily dose for carcinogenic effects, averaged over a lifetime of 70 years, in mg/kg-day;
$Intake_{nc}$	=	Average daily dose for non-carcinogenic effects, averaged over the exposure duration, in mg/kg-day;
C_{soil}	=	Soil concentration, in mg/kg;
FI	=	Fraction ingested from the contaminated source (unitless)
IR	=	Soil intake rate (mg/day);
UCF	=	Conversion factor, 1E-06 kilograms per milligram (kg/mg);
EF	=	Exposure frequency, in days/year (130 days/year)
ED	=	Exposure duration, in years;
BW	=	Average body weight, in kilograms (kg); and,
AT	=	Averaging time, in days; equals 70 years x 365 days/year for carcinogenic effects and ED x 365 days/year for non-carcinogenic effects.

4.5.2 Dermal Absorption of COPCs from Soil

The intake (LADD or ADD) from dermal contact with soil was calculated using the following equation:

$$\text{Intake} = \frac{(C_{soil} \times UCF \times SA \times AF \times ABS_d \times EF \times ED)}{(BW \times AT)}$$

Where:

LADD	=	defined above;
ADD	=	defined above;
C_{soil}	=	Soil concentration, in mg/kg;
CF	=	Conversion factor, 1E-06 kg/mg;
SA	=	Skin surface area for soil contact, in square centimeters per day (cm^2/day);
AF	=	Soil adherence factor, in milligrams per square centimeter (mg/cm^2);
ABS_d	=	Chemical-specific dermal absorption factor (unitless);
EF	=	Exposure frequency, in days/year;

ED = Exposure duration, in years;
BW = Average body weight, in kilograms (kg); and,
AT = Averaging time, in days, equals 70 years x 365 days/year for carcinogenic effects and ED x 365 days/year for non-carcinogenic effects.

4.5.3 Inhalation of COPCs in Particulates/Vapors

USEPA revised guidance for evaluation of the inhalation exposure pathway to include inhalation dosimetry methodology which recommends that when estimating risk via inhalation, risk assessors should use the concentration of chemical in air as the exposure metric rather than inhalation of intake based on body weight and inhalation rate (EPA 2009). Thus the term exposure concentration (EC) is now used to estimate chemical intake via inhalation.

The following equation was used to calculate EC for inhalation of outdoor air from soil gas (Attachment C):

$$EC = \frac{C_{air} \times ET \times EF \times ED}{AT}$$

Where:

EC = Exposure Concentration ;
ET = Exposure time (hour/8 hours day);
EF = Exposure frequency (days/year);
ED = Exposure duration (years); and
AT = Averaging time, in days. Represents the period over which exposure is averaged.
C_{air} = Chemical concentration in air (mg/m^3) calculated using the following;

$$C_{air} = Cs \times ET \times ED \times EF \times ((1/PEF) + (1/VF)) \times UCF1 \times UCF3/AT$$

Where:

C_s = Chemical concentration in soil (mg/kg), as represented by the EPC;
PEF = Particulate emission factor (m^3/kg);
VF = Volatilization factor (m^3/kg)-chemical specific;
UCF1 = Conversion factor-day/hour;
UCF3 = Conversion factor- micrograms to milligrams;
All other terms defined above.

Using default Particulate Emission Factors (PEFs) for excavation workers and chemical-specific Volatilization Factors (VFs), the following equation was used to calculate EC for inhalation of particulates and vapors from soil: The PEF estimates the concentration of particulates released from soil to ambient air by soil disturbance by vehicles and equipment. The soil to air volatilization factor relates the concentration of a contaminant in soil to the concentration of the contaminant in ambient air resulting from volatilization (USEPA, 2002). Volatilization Factors are chemical-specific.

5.0 TOXICITY EVALUATION

Potential toxic effects of chemicals are generally classified as carcinogenic (i.e., cancer causing), or non-carcinogenic (i.e., non-cancer health effects). These endpoints are separately quantified in HHRAs as cancer risks and non-cancer health effects, respectively. Toxicity values numerically express the magnitude of potential toxic effects of chemicals. Reference doses (RfDs) and reference concentrations (RfCs) are used to quantify non-cancer health effects, and cancer slope factors (SFs) and inhalation unit risks (IURs) are used to quantify cancer risks. Both cancer and non-cancer endpoints may be evaluated for carcinogenic chemicals depending on the chemicals' toxic effects and availability of RfDs/RfCs.

Toxicity values are pathway-specific and are provided for both ingestion (RfDs and SFs) and inhalation (RfCs and IURs) pathways, as available and applicable. In addition, the Office of Environmental Health Hazard Assessment (OEHHA) of Cal-EPA has developed reference exposure levels (RELs) for a small number of chemicals. RELs correspond to USEPA reference concentrations for the inhalation pathway.

Non-cancer toxicity values are provided by USEPA for chronic and subchronic exposure, which correspond to 7 years or more exposure, and less than 7 years, respectively. Chronic RfDs and RfCs were used to evaluate receptors in the HHRA. Cancer-based toxicity values correspond to lifetime exposure and are provided for both the ingestion (SFs) and inhalation (IURs) pathways, as available and applicable, by USEPA. Cal-EPA also provides cancer SFs and IURs. Cal-EPA values are based on an independent review by OEHHA of the toxicological literature, and are generally more conservative than USEPA values.

The California Regional Water Quality Control Board-San Francisco Bay Region (RWQCBSFBR) uses the following hierarchy for toxicity values in the development of Environmental Screening Levels (ESLs:

- USEPA Integrated Risk Information System (IRIS;
- USEPA Provisional Peer Reviewed Toxicity Values (PPRTVs);
- Agency for Toxic Substances and Disease Registry (ATSDR) minimal risk levels (MRLs);
- OEHHA Toxicity Criteria Database
- USEPA PPRTV screening toxicity values; and
- USEPA Health Effects Summary Table.

For COPCs other than TPH mixtures (i.e., VOCs), if the most protective toxicity value was available the OEHHA Toxicity Criteria Database (TCDB; Cal-EPA, 2016), then the OEHHA value

was was used. Toxicity values for following COPCs were not available in USEPA IRIS or OEHHA TCDB:

- Dichlorodifluoromethane (Freon 12) – Inhalation RfC sourced from PPRTV screening toxicity value, as presented in USEPA's RSL table;

- Trichlorofluoromethane (Freon 11) – Inhalation RfC extrapolated from oral RfD, as presented in DTSC HERO Note 3; and

- 1,1,2,2-Tetrachloroethane – Inhalation RfC extrapolated from oral RfD, as presented in the Department of Toxic Substances Control (DTSC) HERO Note 3.

For chemicals with no available toxicity values, values for structurally similar chemicals, where available, were used as surrogates. Specifically, hexane was used as a surrogate chemical for evaluation of heptane. The non-cancer and cancer toxicity values for the COPCs evaluated in the HHRA are provided in Table 4.

6.0 RISK CHARACTERIZATION

Risk characterization is the culmination of the risk assessment process (USEPA, 1992b). It integrates the results of the identification of COPCs, exposure assessment, and toxicity assessment to describe the risks to individuals and populations in terms of extent and severity of probable adverse health risks under both current and anticipated future land use conditions. Because the development of carcinogenic and non-carcinogenic effects is assumed to be caused by different mechanisms of action, different methods will be used to evaluate these effects (Cal-EPA, 1996; USEPA, 1989 and 2009b).

Cancer risk (CR) values are expressed in scientific notation in terms such as 1×10^{-5} or 1×10^{-6} (or 1E-06). A CR of 1×10^{-6} means that an exposed individual may have an added one-in-one million of a chance of developing cancer over a lifetime, or one person among one million exposed people might be expected to develop cancer as a result of exposure to Site-related COPCs. Calculation of the CR is based on the assumption that the dose-response relationship is linear in the low-dose portion of dose-response curves due to the low levels of environmental exposures.

For multiple chemical or mixture exposures, the cumulative, total CR will be estimated by summing the CRs for all COPCs for each exposure route. CRs for multiple pathways are the sums for individual or multi-chemicals for all quantified pathways.

For potential non-cancer hazards, the hazard quotient (HQ) for individual compounds and the hazard index (HI) representing the sum of all HQs is compared to a threshold or target of one. If the HQ or HI is greater than one, meaning the exposure level exceeds the threshold RfC, a potential for adverse non-carcinogenic health effects may exist. If the HQ or HI is equal to or less than one, exposures to the COPCs are not expected to result in an adverse health effect. As the

magnitude of the exposures exceeding the RfC increases, the possibility for adverse effects also increases. However, a clear distinction that could categorize all exposures below the RfC as acceptable (risk free) and all exposures in excess of the RfC as unacceptable (causing adverse effects) cannot be made (USEPA 1989).

It should be noted that HQs and HIs are not statistical probabilities, such as ILECR, and the level of concern does not increase linearly as the RfC is approached or exceeded. For regulatory purposes, an HI of one or less is considered to be an exposure that is unlikely to be of concern for members of the general population (USEPA, 1992). If the pathway specific or cumulative exposure HI is greater than one, it does not necessarily mean that adverse health effects will occur, but does indicate that further evaluation may be appropriate.

6.1 EXPOSURE TO SOIL GAS-RESIDENT AND COMMERCIAL (RETAIL WORKER)

Cancer Risk

In accordance with USEPA RAGS Part F (USEPA 2009) cancer risk (CR) was estimated using the following equation:

$$CR = EC * IUR$$

Where:

EC = Exposure Concentration = $((C_{indoor} \times ET \times EF \times ED))/AT_{cancer\ \&\ non\text{-}cancer}$
C_{indoor} = Modeled Indoor air concentration (µg/m^3)
ET = Exposure Time (hours/day), 24-resident, 8-commercial worker
EF = Exposure Frequency (days/year), 350-resident, 250-commercial worker
ED = Exposure Duration (years), 26-resident, 25-commercial worker
AT = (ED in years) (days/year) (hours/day)
Source: Cal-EPA 2014

IUR = Inhalation Unit Risk factor (risk per µg/m^3 or (µg/m^3)$^{-1}$) is the toxicity criterion defining the potency of a carcinogenic chemical when inhaled.

Non-Cancer Hazards

The equation used to calculate the Hazard Quotient (HQ) for non-cancer toxic effects from a VOC inhalation exposure is:

$$HQ = EC_{nc} / (RfC*1000)$$

Where:

EC_{nc} = exposure concentration for assessing hazard (µg/m^3) defined above,

RfC = reference concentration, (mg/m^3). An RfC for a chemical is derived from the threshold concentration at which no adverse non-carcinogenic health effects were observed in the critical study.

1000 = conversion factor-mg to µg

6.2 EXPOSURE TO SOIL CONSTRUCTION WORKER

In assessing the carcinogenic effects resulting from oral and dermal exposures to COPCs in soil, the CR will be calculated using the following equation (USEPA, 1989):

$$CR = LADD \times SF \qquad \text{Eq. 11}$$

Where:

CR = Increased lifetime excess cancer risk;
LADD = Lifetime average daily dose, averaged over a lifetime of 70 years, in mg/kg-day;
SF = Slope factor, in $(mg/kg\text{-}day)^{-1}$.

For the inhalation of VOCs or particulates, the following equation will be used to estimate the CR (USEPA, 2009b):

$$CR = EC \times IUR \qquad \text{Eq. 12}$$

Where:

CR = Increased lifetime excess cancer risk;
EC = Chemical-specific exposure concentration, in $µg/m^3$;
IUR = Inhalation unit risk, in unit of risk per $µg/m^3$ or $(µg/m^3)^{-1}$.

To assess the potential adverse non-carcinogenic effects resulting from oral and dermal exposure to contaminants, the pathway-specific and chemical-specific ADD (or CDI) will be compared with the appropriate chronic RfD to arrive at a ratio called the hazard quotient (HQ; USEPA, 1989) as presented below:

$$HQ = ADD / RfD \qquad \text{Eq. 14}$$

Where:

HQ = Hazard Quotient;
ADD = Average daily dose, in mg/kg-day;
RfD = Chronic inhalation reference dose, in mg/kg-day.

For the inhalation of VOCs or particulates emitted from soils pathway, the following equation will be used to estimate the HQ (USEPA, 2009b):

$$HQ = EC / (RfC \times 1{,}000\ µg/mg) \qquad \text{Eq.15}$$

Where:

HQ	=	Hazard Quotient
EC	=	Chemical-specific exposure concentration, in µg/m^3;
RfC	=	Inhalation reference concentration, in mg/m^3.

6.3 RISK CHARACTERIZATION RESULTS

This section presents the results of the risk characterization which integrates the results of the toxicity and exposure assessments to estimate potential cancer risk (CR) and non-cancer hazard index (HI) associated with exposure to COPCs at the Site.

As described previously within California, agencies consider a risk of 1E-06 as the point of departure where no further action is required. Non-carcinogenic chemicals should not be present at concentrations resulting in a hazard index greater than 1.

6.3.1 VAPOR INTRUSION

Onsite Resident

For vapor intrusion Cal-EPA guidance (Cal-EPA, 2011) indicates that cumulative risk between 1x10-6 and $1x10^{-4}$ fall within a risk management range where further evaluation, remediation or mitigation may be considered. A CR greater than $1x10^{-4}$ indicates that mitigation and/or remediation is needed.

Soil gas risk characterization results for hypothetical future residents potentially exposed via indoor air inhalation at future residence overlying individual sampling locations with selected COPCs are provided in Table 5. No samples were estimated to be at or above the lower bound of the risk range ($1x10^{-6}$).

The non-cancer HI estimates for all samples were below the target HI of 1.

Risk characterization for this receptor is presented in Table 5.

Onsite Commercial (Retail) Worker

The estimated potential cancer risk represented by the *maximum* concentration of each COPC combined into one hypothetical sample to the onsite commercial (retail) worker is **1E-06.** The HI is **8E-01**. Risk characterization for this receptor is presented in Table 6.

6.3.2 INHALATION OF VOCS MIGRATING TO OUTDOOR AIR

Onsite Resident

The potential cumulative risk associated with exposure of onsite resident to VOCs in the subsurface migrating to outdoor air at paver locations is estimated to be **2E-10**. The primary contributor to cancer risk is benzene (60%).

The potential cumulative non-cancer hazard expressed as the hazard index (HI) associated with exposure of an onsite resident to VOCs in the subsurface migrating to outdoor air at paver locations is estimated to be **1.7E-04** which is well below the target HI of one. The primary contributor to non-cancer risk is dichlorodifluoromethane (64%).

Risk characterization for this receptor is presented in Table 8.

6.3.3 CONSTRUCTION WORKERS

Onsite Construction/Utility Worker

The potential cumulative risk associated with exposure by construction workers to a hypothetical sample containing the maximum detected concentrations of chemicals in soil is **2E-08** which is well below the point of departure of 1E-06**.** Benzene and Benzo[b]fluoranthene are the highest contributors to risk although Benzo[b]fluoranthene was detected only once in soil samples collected in 1994.

The potential cumulative non-cancer hazard expressed as the hazard index (HI) associated with exposure by construction workers to a hypothetical sample containing the maximum detected concentrations of chemicals in soil is **1.6E-02** which is well below the target HI of 1**.** Benzene is the largest contributor to non-cancer hazards.

Risk characterization for this receptor is presented in Table 10.

6.4 UNCERTAINTY EVALUATION

Quantifying uncertainty is an essential element of the RA process. According to USEPA's Guidance on Risk Characterization for Risk Managers and Risk Assessors, the point estimates of risk that are generated in a deterministic RA such as that completed for the Site "do not fully convey the range of information considered and used in developing the assessment" (USEPA, 1992). All reasonable steps were taken to limit uncertainties in the RA. However, risk assessment is an inherently uncertain process due to its predictive nature and reliance on assumptions. In general, these uncertainties are driven by variability in:

- Chemical monitoring data and assumptions used in the fate and transport models with which concentrations at receptor locations are estimated;
- Receptor exposure assumptions; and

- ❑ The accuracy of toxicity values used to characterize risks and hazards.

Key uncertainties associated with these and other steps of the RA are described below.

Data Collection and Evaluation

- ❑ Use of soil data obtained as early as 1994 is conservative. Current concentrations at the same sampling locations would likely be lower since changes in chemical mass due to processes such as volatilization, leaching, and biodegradation lead to lower concentrations over time, assuming no ongoing source remains onsite.

- ❑ It was conservatively assumed in this HHRA that soil, and soil gas concentrations do not attenuate over time. Natural attenuation processes such as biodegradation and volatilization tend to decrease organic chemical concentrations in the subsurface over time. Also, an infinite mass of material was assumed present in the subsurface. In reality, mass would likely be depleted over the 26-year exposure period assumed for residents, further lowering exposure estimates.

- ❑ Use of maximum detected COPC concentrations for the EPCs, compounded with the deterministic sampling strategy used at Site and other conservative assumptions regarding chemical concentrations, is likely to result in an overestimation of exposure and subsequent non-cancer hazards and cancer risks. use of maximum detected COPC concentrations is conservative, particularly since maximum concentrations of some chemicals are not consistent with typical concentrations detected at the site. The average concentrations that may be encountered as receptors move around the site would be lower than the maximum concentrations used as EPCs for this HHRA. Moreover, receptors were assumed to be exposed to a single-point EPC for their entire exposure duration, since attenuation and degradation of soil, groundwater, and soil gas concentrations over time were not assumed to occur. These assumptions are associated with an overestimate of risks and hazards.

Fate and Transport Models

- ❑ Fate and Transport Models. The models that were used in this assessment have been developed or accepted by regulatory agencies. This generally means that these models overestimate actual exposures. For instance, the J&E model used to estimate vapor flux from soil gas is an "infinite source" model that assumes no loss of chemical mass over time. It is also a one-compartment model that assumes one direction for vapor chemical migration. Actual vapor flux measurements at the site soil surface often demonstrate a flux rate substantially below that predicted by the models, especially in the future as chemical mass is depleted through volatilization, degradation, and attenuation mechanisms. The models used are designed to overestimate exposure and contribute to conservatism in the risk assessment. No model was available for inhalation exposure by

trench workers, resulting in an unrealistic estimate of potential exposure due to conservative assumptions.

- The exposure assumptions (e.g., exposure frequency) used to derive the generic ESLs used for this screening level risk evaluation assume continuous exposure by an individual for 8 hours a day for 250 days. For the Site, contaminants in soil were only detected in soil at depths greater than 5 feet bgs and as such, exposure by construction workers would occur primarily during excavation and trenching activities such as required for installation of utilities including sewer, water and electrical connections. Thus use of exposure assumptions covering all construction workers including direct contact with surface soil for durations up to a year likely results in overestimates of potential risk to this subset of construction workers. Use of an exposure frequency of 130 days (5 days per week for 6 months) is deemed to represent a more reasonable exposure for subsurface construction activities.

7.0 SUMMARY AND CONCLUSIONS

The Alameda County Department of Health LOP issued the Final Case Closure Letter, for Case File RO0002722 dated January 30, 1997, for the former Safeway Ice Cream Plant (aka West Grand Refrigeration Facility). The letter stated that no further action was required regarding subsurface conditions, the USTs and/or associated monitoring wells. However, the LOP stated that if there was a change in land use from industrial/commercial, the owner must notify the LOP and the City of Oakland Department of Public Works.

CV is in the process of developing the property for multi-unit residential housing and commercial retail space and is seeking concurrence from ACEH that based on impacts to soil and soil gas identified within this document there are no unacceptable risks or hazards associated with the planned development of the site for either residential or commercial use.

Potential future receptors (the Site is currently vacant, bare land) and potentially complete exposure pathways include onsite residents-inhalation of VOCs migrating from the subsurface to indoor air and outdoor air in areas designed for pavers, onsite commercial (retail) workers-inhalation of VOCs migrating from the subsurface to indoor air, and construction workers during redevelopment activities-direct exposure to soil including incidental ingestion, dermal contact and inhalation of VOCs.

This human health risk assessment is based on the 2014 and 2016 collection and evaluation of 14 soil gas samples and the 1994 collection and analysis of 93 soil samples. For potential vapor intrusion into onsite residences, risks were evaluated on a point-by-point basis to guide risk management decisions regarding the need for vapor mitigation. For other receptors, risk was evaluated on the basis of a hypothetical sample containing the maximum concentrations of chemicals detected in all samples by medium.

Based on the results of this HHRA, Stantec makes the following conclusions:

- For future onsite residents and commercial (retail) workers, no unacceptable risks or non-cancer hazards from the transport of VOCs in the subsurface to indoor air has been identified. Based on this, no vapor mitigation systems would be necessary or required.
- For onsite residents, no unacceptable risk or non-cancer hazards have been identified resulting from transport of soil gas to outdoor air at locations where pavers are proposed.
- No unacceptable risks or non-cancer hazards have been identified by any exposure route for construction workers.
- Based on development of site-specific attenuation factors (Attachment B), the following site-specific screening levels have been developed for soil gas for the onsite resident exposure scenario;

Chemical	$ESL_{Indoor\ Air}$ (µg/m³)[1,2]	Site-Specific Attenuation Factor-Loam	Site-Specific SL-Soil Gas (µg/m³)
Dichlorodifluoromethane	100	7.3E-04	137,000
Trichlorofluoromethane	1,300	6.5E-04	2,000,000
Benzene	0.097	8.1E-04	120
Ethylbenzene	1.1	6.7E-04	1,640
Xylene (m, p and o)	100	6.7E-04	149,000
1,1,2,2-Tetrachloroethane	0.048	5.2E-04	92.3
Hexane	730	7.1E-04	1,030,000
Cyclohexane	6,300	7.5E-04	8,400,000

- Based on risk characterization, the following site-specific screening levels have been developed for soil for the onsite construction/utility worker exposure scenario:

Risk-Based Screening Levels-Construction/Utility Workers

Chemical	Screening Level (mg/kg)
Benzene	45
Toluene	7,900
Ethylbenzene	920
Xylenes (m,p and o)	4,500
1,4-Dichlorobenzene	610
Benzo[b]fluoranthene	65
Cis 1,2-Dichloroethene	160
1,1-Dichlorobenzene	16,000

8.0 REFERENCES

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TABLES

Table 1. Soil Vapor Dataset-West Grand Block
City Ventures-Multiple Parcels

Sample Location and ID	Sample Date	Sample Depth (ft. bgs)	EPA METHOD 8260 (µg/m3)													ASTM D1946 (ppmv)	
			Freon 12	Freon 11	Benzene	Ethylbenzene	m,p-Xylene	o-Xylene	1,1,2,2-Tetrachloroethane	cis-1,2-DCE	Vinyl Chloride	n-Hexane	Cyclohexane	n-Heptane	Other VOCs	Methane*	O_2*
SV-1	5/28/2014	5	**19,000**	ND<100	**40 J**	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-2	5/28/2014	5	**140**	ND<100	ND<32 J	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-2-Dup	5/28/2014	5	**120**	ND<100	ND<32 J	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-3	5/28/2014	5	ND<100	ND<100	ND<32 J	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-4	5/28/2014	5	**110**	ND<100	**75 J**	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--
SV-5	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	**53,000**	**22,000**
SV-6	9/26/2016	5	**30,000**	**3,400**	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-7	9/26/2016	5	**2,100**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	**2,900**	**14,000**
SV-8	9/26/2016	5	**1,800**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-9	9/26/2016	5	**2,600**	**210**	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-10	9/26/2016	5	ND<100	ND<100	**60**	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-11	9/26/2016	5	**930**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-12	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-12-Dup	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
SV-13**	9/26/2016	5	**19,000**	ND<3,400	ND<1,900	ND<2,600	ND<2,600	ND<2,600	ND<4,100	ND<2,400	ND<1,500	**220,000**	**220,000**	**47,000**	ND < 1,200-13,000	--	--
SV-14	9/26/2016	5	**76,000**	**1,700**	**78**	**180**	**490**	**140**	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--
Summary																	
Minimum detected concentration			**110**	**210**	**40 J**	**180**	**490**	**140**	**ND<22**	**ND<100**	**ND<9**	**220,000**	**220,000**	**47,000**	--	**2,900**	**14,000**
Maximum detected concentration			**76,000**	**3,400**	**78**	**180**	**490**	**140**	**ND<4,100**	**ND<2,400**	**ND<1,500**	**220,000**	**220,000**	**47,000**	--	**53,000**	**22,000**
Number detected			**11**	**3**	**2**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**1**	--	**2**	**2**
Number analyzed			**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**1**	**1**	**1**	--	**2**	**2**
Frequency of detection			**69%**	**19%**	**13%**	**6%**	**6%**	**6%**	**0%**	**0%**	**0%**	**100%**	**100%**	**100%**	--	**100%**	**100%**
Tier 1 Environmental Screening Levels for Subslab/Soil Gas* **			**50000 *****	**650000 *****	**48**	**560**	**52,000**	**52,000**	**24**	**4,200**	**4.7**	**365,000*** **	**3,150,000*** **	**NA**		**NA**	**NA**
Site-Specific Screening Levels for Soil Gas			**137,000**	**2,000,000**	**120**	**1,640**	**149,000**	**149,000**	**92**	**NE**	**NE**	**1,030,000**	**8,400,000**	**NA**		**--**	**--**

Notes:
µg/m^3: micrograms per cubic meter
ppmv = parts per million by vapor
ft. bgs: feet below ground surface
Freon 12 = Dichlorodifluoromethane
Freon 11 = Trichlorofluoromethane
All samples collected September 26, 2016.
Soil vapor samples analyzed by TEG on-site mobile laboratory except where indicated as analyzed by Curtis & Tompkins, Ltd. In Berkeley, CA
* Analyzed by Curtis & Tompkins, Ltd in Berkeley, CA
** = Analyzed by Curtis & Tompkins, Ltd in Berkeley, CA using EPA Method TO-15.
*** = No SL provided in California Regional Water Quality Control Board (RWQCB) Tier 1 Environmental Screening Levels (ESLs) for Subslab/Soil Gas, February 2016 (Rev 3).
Freon 12 or Dichlorodifluoromethane May 2016 EPA indoor air RSL is 100 µg/m3 and divided by a Water Board recommended attenuation factor of 0.002 generates a value of 30,000 µg/m3.
Freon 11 or Trichlorofluoromethane HERO Note 3 indoor air SL is 1,300 µg/m3 and divided by a Water Board recommended attenuation factor of 0.002 generates a value of 650,000 µg/m3. µg/m3.
Cyclohexane indoor air RSL is 6,300 µg/m3 and divided by a Water Board recommended attenuation factor of 0.002 generates a value of 3,150,000 µg/m3 .
*** Hexane indoor air SL is 730 µg/m^3 and when divided by the default attenuation factor of 0.002 yields a SL = 365,000
Bold cells indicate constituent detected above the laboratory reporting limit (RL)
ND = Not detected at reporting limit as indicated
--- = not analyzed

Table 2. Soil Sample Dataset
City Ventures-Multiple Parcels
Oakland, California

Sample ID	Analytical Footnote	Sample Depth	Sample Date	EPA METHOD 8020 Benzene	Toluene	Ethyl-Benzene	Total Xylenes	EPA METHOD 5030 TPHg	TPHms	Standard Method 5520E Oil & Grease	Standard Method 5520F NPH	EPA METHOD 8270 SVOCs	EPA METHOD 8240 VOCs	Comments
B-5-9.5		9.5	20-Jul-94	--	--	--	--	--	--	37	<10	--	--	
B-6-13.5	(2,5,9,20,21)	13.5	19-Jul-94	0.45	0.58	0.9	0.28	<200	--	140	120	--	--	*(20,21) Pb = ND; TPHd = 2 mg/kg*
B-7-11		11	21-Jul-94	--	--	--	--	--	--	<10	<1	--	--	
B-8-10	(3,5,22)	10	19-Jul-94	<0.01	0.066	0.2	0.21	<50	--	--	--	--	--	*(22) TPHd=ND; Pb=ND*
B-9-10	(23)	10	19-Jul-94	--	--	--	--	--	--	4400	4400	--	--	*(23) PCB = ND*
B-11-9.5	(1)	9.5	20-Jul-94	<0.1	0.52	1.1	1.7	170	--	--	--	--	--	
B-14-9.5	(23)	9.5	19-Jul-94	--	--	--	--	--	--	630	610	--	--	
B-16-9	(4,8,25)	9.0	21-Jul-94	<0.005	<0.005	0.2	0.17	--	--	--	--	--	(6)	*(6,25) Acetone=0.25 mg/kg; benzin = 2,500 mg/kg*
B-17-9.5	(1,7,10,11,20,24)	9.5	22-Jul-94	<0.5	<0.5	<0.5	2.4	1000	--	--	--	--	ND	*(20,24) Pb = ND; TPHd = 1,300 mg/kg; TPHbenzin = <1,000 mg/kg*
B-25-13	(20,26)	13	18-Jul-94	<0.005	<0.005	<0.005	<0.005	<0.2	--	--	--	--	--	*(20,26) Pb = ND; TPHd = ND*
B-26-12.5	(20)	12.5	18-Jul-94	<0.005	<0.005	<0.005	<0.005/<0.02	<0.2	--	--	--	--	--	*(20) Pb = ND*
B-28-4		4	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND	
B-28-5.5		5.5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND	
B-28-10		10	18-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	--	--	--	--	
B-29-6		6	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	(19)	ND	*(19) benzo(b)fluoranthene=0.33 mg/kg; fluoranthene=0.75 mg/kg; pyrene=0.41 mg/kg*
B-29-10		10	18-Nov-94	<0.005	<0.005	1.6	<0.005	370	120	--	--	--	--	
B-30-3		3	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND	
B-30-5		5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND	
B-30-10		10	18-Nov-94	<0.30	<0.30	<0.30	<0.30	<1	<1	--	--	--	--	
B-31-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	40	<30	--	--	
B-31-10		10	11-Nov-94	0.72	0.79	1.5	0.74	330	10	40	<30	--	--	
B-31-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	30	<30	--	--	
B-31-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	--	
B-32-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	53	46	--	ND	
B-32-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.3	<1	<30	<30	ND	ND	
B-32-9.5		9.5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	<1	<30	<30	--	ND	
B-33-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(12)	*(12) methylene chloride = 0.006 mg/kg*
B-33-10		10	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-33-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	(13)	*(13) methylene chloride = 0.007 mg/kg*
B-33-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND	
B-34-1		1	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	70	40	--	--	
B-34-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--	
B-34-10		10	10-Nov-94	<0.3	0.31	0.63	<0.3	170	82	<30	<30	--	--	
B-35-2		2	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	
B-35-10		10	14-Nov-94	<0.5	<0.5	1.1	<0.5	300	51	790	690	--	--	
B-36-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(14)	*(14) 1,1-DCB = 0.77 mg/kg; 1,4-DCB = 0.008 mg/kg*
B-36-2		2	14-Nov-94	<0.005	<0.005	0.013/0.03	<0.005	1.4	<1	<30	<30	--	(15)	*(14) 1,1-DCB = 0.052/0.053 mg/kg*
B-36-5		5	14-Nov-94	<0.005	<0.005	0.021	<0.005	0.6	<1	<30	<30	--	ND	
B-36-10		10	14-Nov-94	<0.005	<0.005	0.051/0.28	0.018/0.031	6.9	5	<30	<30	--	ND	
B-37-1		1	14-Nov-94	0.009/0.09	0.005/0.033	0.06/0.016	0.007/0.02	1.9	<1	160	120	--	(16)	*(16) cis-1,2-DCE = 0.31 mg/kg*
B-37-2		2	14-Nov-94	<0.005	<0.005	0.006/0.089	0.006	1.0	1	40	<30	--	(17)	*(17) methylene chloride = 0.006 mg/kg*

Table 2. Soil Sample Dataset
City Ventures-Multiple Parcels
Oakland, California

Sample ID	Analytical Footnote	Sample Depth	Sample Date	EPA METHOD 8020				EPA METHOD 5030		Standard Method 5520E	Standard Method 5520F	EPA METHOD 8270	EPA METHOD 8240	Comments
				Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHms	Oil & Grease	NPH	SVOCs	VOCs	
B-37-5		5	14-Nov-94	<0.005	<0.005	0.036	<0.005	0.3	<1	<10	<10	ND	ND	
B-37-10		10	14-Nov-94	0.12	0.61	0.95/0.78	<0.3	210	13	40	<30	--	ND	
B-38-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-38-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-38-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-0.5		0.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-1.5		1.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-5		5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-39-10		10	10-Nov-94	--	--	--	--	--	--	470	400	--	--	
B-39s-4	(18)	4	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	ND	
B-39s-7	(18)	7	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	ND	
B-40-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-2		2	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-40-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--	
B-41-1.5		10.5*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	8	--	--	--	--	
B-41-3		19*	11-Nov-94	<0.3	<0.3	<0.3	0.37	260	330	--	--	--	--	
B-41-5		12*	11-Nov-94	<1.0	<1.0	<1.0	<1.0	1600	320	--	--	--	--	
B-41-10		14*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	18	--	--	--	--	
B-42-1.5		9.5*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-42-3		11*	11-Nov-94	<0.1	<0.1	<0.1	0.14	130	7	--	--	--	--	
B-42-5		13*	11-Nov-94	<0.5	<0.5	<0.5	<0.5	440	460	--	--	--	--	
B-42-10		18*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	28	--	--	--	--	
B-43-1.5		8.5*	11-Nov-94	<0.005	<0.005	<0.005	1.1	720	82	--	--	--	--	
B-43-3		10*	11-Nov-94	<0.3	<0.3	1.4	4.4	1900	1100	--	--	--	--	
B-43-5		12*	11-Nov-94	<1.0	<1.0	1.3	7.2	1200	550	--	--	--	--	
B-43-10		17*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	12	--	--	--	--	
B-44-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-44-2		2	14-Nov-94	<0.5	<0.5	<0.5	<0.5	240	49	--	--	--	--	
B-44-5		5	14-Nov-94	<0.005	<0.005	<0.005	0.01	3.1	17	--	--	--	--	
B-44-10		10	14-Nov-94	<3.0	<3.0	<3.0	<3.0	1600	850	--	--	--	--	
B-45-6		9	10-Nov-94	<0.1	<0.1	<0.1	0.15	95	16	--	--	--	--	
B-45-9.5		12.5	10-Nov-94	<0.3	<0.3	<0.3	0.98	350	32	--	--	--	--	
B-46-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-46-10		10	11-Nov-94	<0.05	<0.05	<0.05	0.31	72	67	--	--	--	--	
B-47-3		3	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-47-5		5	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--	
B-47-10		10	15-Nov-94	<0.3	<0.3	<0.3	<0.3	62	1000	--	--	--	--	
B-49-8		8	7-Nov-94	--	--	--	--	--	--	30	<30	--	--	
B-50-12		12	7-Nov-94	0.27	1.7	1.5	<0.050	540	<50	--	--	--	--	
B-56-11.5		11.5	8-Nov-94	<0.03	<0.03	0.061	<0.03	20	3	--	--	--	--	
B-64-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.7	<1	<30	<30	--	--	
B-64-2		2	14-Nov-94	<0.005	<0.005	<0.005	0.006	1.0	<1	<30	<30	--	--	
B-64-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--	

Table 2. Soil Sample Dataset
City Ventures-Multiple Parcels
Oakland, California

Sample ID	Analytical Footnote	Sample Depth	Sample Date	EPA METHOD 8020 Benzene	Toluene	Ethyl-Benzene	Total Xylenes	EPA METHOD 5030 TPHg	TPHms	Standard Method 5520E Oil & Grease	Standard Method 5520F NPH	EPA METHOD 8270 SVOCs	EPA METHOD 8240 VOCs	Comments
B-64-10		10	14-Nov-94	<0.03	<0.03	0.031	<0.03	8	410	480	350	--	--	
MW-1-4-1	(27)	11.5	3-Oct-94	<0.01	<0.01	0.032	0.079	7.9	--	--	--	--	--	*(27) TPHd = 3.8 mg/kg; TPHmo = 14 mg/kg*
MW-2-3-2	(28)	14	3-Oct-94	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*(28) TPHd = ND; TPHmo = ND*
MW-3-5.5'		5.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*
MW-3-10'		10	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*
MW-4-5.0'		5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*
MW-4-10.5'		10.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*
2014 Investigation														
SB-1, 4.5'	(29,30)	4.5	30-May-14	<0.180	<0.180	<0.180	<0.180	--	--	--	--	--	ND	*Naphthalene = ND; Freon 12 = ND*
SB-2, 9'	(29,30,31)	9	30-May-14	<0.0042	<0.0042	<0.0042	<0.0042	--	--	--	--	--	ND	*Naphthalene = ND; Freon 12 = ND; PCB = ND*
SB-3, 8'	(29,30)	8	30-May-14	<0.0037	<0.0037	<0.0037	<0.0037	--	--	--	--	--	ND	*Naphthalene = ND; Freon 12 = ND*
SB-4, 8.5	(30,31)	8.5	30-May-14	<0.50	<0.50	<0.50	<0.50					ND	(32)	*Isopropylbenzene=0.58 mg/kg; propylbenzene=0.67 mg/kg; para-isopropyl toluene=0.70 mg/kg; naphthalene-0.072 mg/kg; PCB = ND*
2015 Vault Removal														
Sidewall	(31)	7	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(31) TPHhp=ND<5.0 mg/kg; TPHd=ND<1.0 mg/kg*
Floor	(32)	11	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(32) TPHho=29 mg/kg; TPHd=3.6 mg/kg*
Floor 2	(33)	13	30-Jan-15	--	--	--	--	--	--	--	--	--	--	*(33) TPHho=ND<5.0 mg/kg*
Sidewall 1		11	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho=ND<5.0 mg/kg*
Sidewall 2		13	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho=19 mg/kg*
Floor		7	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho=100 mg/kg*
Clarifier Removal completed during 2015 Site Demolition														
East Limit Confirmation		4.5	19-Aug-15	--	--	<0.0005	<0.0005	<1.0						*Cd<0.25 mg/kg; Cr<0.42 mg/kg; Pb<5.7 mg/kg; Ni<46 mg/kg; Zn<42 mg/kg*
South Limit Confirmation		4.5	19-Aug-15	--	--	<0.0005	<0.0005	1.5						
West Limit Confirmation		4.5	19-Aug-15	--	--	0.61	0.93	540						
Sidewall/Floor (EX-1)		12	17-Jul-15	--	--	<0.0005	<0.0005	2.6						
Floor 2 (EX-2)		10	3-Aug-15	--	--	<0.0005	<0.0005	12						
West Excavation Floor (EX-3)		10	19-Aug-15	--	--	0.21	0.24	73						
West Limit Confirmation 2		4.5	21-Aug-15	--	--	0.15	0.16	74						
West Floor (EX-4)		10	19-Aug-15	--	--	<0.0005	0.25	47						
Maximum Concentration				**0.72**	**1.7**	**1.6**	**7.2**	**1,900**	**1,100**	**4,400**	**4,400**	--	--	
Site-Specific SL- Construction Worker				**50**	**9,200**	**4,300**	**4,700**	**NE**	**NE**	**NE**	**NE**	--	--	**BaF = 65, 1,1-DCB = 22,000, cis 1,2-DCE = 160 (all in mg/kg)**

Notes:
Data from "Soil and Groundwater Investigation Report", Levine and Fricke, January 17, 1995
All compounds scanned are not included in the table. See notes for specific compounds.
Phase I laboratory data sheets were not available for detection limits.
NE: screening level not established
-- = not analyzed
ND = not detected above laboratory detection limits
* = sample depths corrected using site's natural grade for borings in loading dock areas
Blue font indicates that the area where these samples were collected was subsequently excavated.
(1) The gasoline analysis showed a pattern not typical of gasoline.
(2) Reported limit elevated for gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(3) Reported limit elevated for benzene and gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(4) Sample contains nontarget compounds in 8240 analysis.
(5) Mineral spirits range hydrocarbons detected also.
(7) Reporting limit elevated for BTEX due to a dilution.
(8) Result for benzin (sic.) in the benzin (sic.) and gasoline range but the pattern is not typical of either compound.
(9) The gasoline results shows a pattern not typical for gasoline. There may be a mixture.
(10) Results for diesel are in the mineral spirits range.
(11) Oil range hydrocarbons were also detected.
(12) Methylene chloride detected at 0.006 mg/kg.
(13) Methylene chloride detected at 0.007 mg/kg.
(14) 1,1-Dichlorobenzene detected at 0.770 mg/kg, 1,4-Dichlorobenzene detected at 0.008 mg/kg.
(15) 1,1-Dichlorobenzene detected at 0.052 and 0.053 mg/kg.
(16) Cis-1,2-dichloroethene detected at 0.310 mg/kg.
(17) Methylene chloride was detected at 0.006 mg/kg.
(18) Boring was terminated after reaching a 7-foot depth.
(19) Benzo(b)fluoranthene detected at 0.330 mg/kg; fluoranthene detected at 0.750 mg/kg; pyrene detected at 0.410 mg/kg.
(20) The sample was analyzed for organic lead. Pb = ND
(21) The sample was analyzed for TPH as diesel. TPHd = 2 mg/kg
(22) The sample was analyzed for TPH as diesel and organic lead. TPHd = ND; Pb = ND.
(23) The sample was analyzed for PCBs by EPA Method 8080. PCB = ND
(24) The sample was analyzed for TPH as benzin and diesel. TPH as benzin = <1,000 mg/kg; TPH as diesel = 1,300 mg/kg.
(25) The sample was analyzed for TPH as benzin. Benzin = 2,100 mg/kg.
(26) The sample was analyzed for TPH as diesel. TPHd = ND
(27) The sample was analyzed for TPH as diesel and motor oil. TPHd = 3.8 mg/kg ; TPHmo = 14 mg/kg.
(28) The sample was analyzed for TPH as diesel and motor oil. TPHd = ND; TPHmo = ND.
(29) Naphthalene = ND
(30) Freon 12 = ND
(31) PCB = ND
(32) Isopropylbenzene=0.58 mg/kg; propylbenzene=0.67 mg/kg; para-isopropyl toluene=0.70 mg/kg; naphthalene-0.072 mg/kg.
(33) The sample was analyzed for TPH as hydraulic oil. TPHho=ND<5.0 mg/kg.

Table 3. Johnson and Ettinger Model Inputs
City Ventures-Multiple Parcels
Oakland, California

Model Input Parameter	Value Used	Rationale
Hypothetical Future Residential Building Parameters		
Enclosed space floor length (L_B), cm	1000	Default building dimension (Cal-EPA, 2011a)
Enclosed space floor width (W_B), cm	1000	Default building dimension (Cal-EPA, 2011a)
Enclosed space height (H_B), cm	244	Default ceiling height, 152 cm or 8 feet (Cal-EPA, 2011a)
Indoor air exchange rate (ER), $hour^{-1}$	0.5	Default residential building assumption (Cal-EPA 2011a)
Average vapor flow rate into building (Q_{soil}), L/m	5	Based on 5 L/min per 100 m^2 of building floor space
Other Inputs		
Depth below grade to bottom of enclosed floor space (Lf), cm	15.2	Default assumption
Soil gas sampling depth (L_s), cm	152	Samples collected at approximately 5 feet (152 cm)
Average soil temperature (Ts), C	24	Default assumption
Thickness of soil stratum A (5-10 foot soil gas) (h_A), cm	152	Site Specific, 5 feet
Vadose zone SCS soil type	Loam	See Attachment A
Soil dry bulk density ($grams/cm^3$)	1.59	Default from VLOOKUP
Soil total porosity (cm^3/cm^3)	0.399	Default from VLOOKUP
Soil water-filled porosity (θw), cm^3/cm^3	0.148	Default from VLOOKUP
Exposure Parameters		
Averaging time-carcinogens (AT_c), yrs	70	Cal-EPA HERO HHRA Note: 1, September 30, 2014 [1]
Averaging time-non-carcinogens (AT_{nc}), yrs	26	Cal-EPA HERO HHRA Note: 1, September 30, 2014
Exposure duration (ED), yrs	26	Cal-EPA HERO HHRA Note: 1, September 30, 2014
Exposure frequency (EF), days/yr	350	Cal-EPA HERO HHRA Note: 1, September 30, 2014
Exposure time (ET), hrs/day	24	Cal-EPA HERO HHRA Note: 1, September 30, 2014
Exposure frequency (EF), days/yr commercial	250	Cal-EPA HERO HHRA Note: 1, September 30, 2014
Exposure time (ET), hrs/day commercial	8	Cal-EPA HERO HHRA Note: 1, September 30, 2014

Notes:

1. Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities

Table 4. Toxicity Values
City Ventures-Multiple Parcels
Oakland, California

Chemical of Potential Concern	CAS Number	Cancer Toxicity		Non-Cancer Toxicity	
		Inhalation Unit Risk Factor, URF $(\mu g/m^3)^{-1}$	Source	Inhalation RfC (mg/m^3)	Source
Dichlorodifluoromethane (Freon 12)	75718	nc	--	1.0E-01	4
Trichlorofluoromethane (Freon 11)	75694	nc	--	1.2E+00	1
Benzene	71432	2.90E-05	1	3.0E-03	1
Ethylbenzene	100414	2.50E-06	2	1.0E+00	2
Total Xylenes (m-Xylene)	108383	nc	--	1.0E-01	2
1,1,2,2-Tetrachloroethane	79345	5.80E-05	2	8.0E-02	1
n-Hexane	110543	nc	--	7.0E-01	2
Cyclohexane	110827	nc	--	6.0E+00	2
n-Heptane	142825	nc	--	7.0E-01	3

Notes:

1. Cal-EPA Human and Ecological Risk Office (HERO), HERO Note #3

2. Intergrated Risk Information System (IRIS); for 1,1,2,2-Tetrachloroethane extrapolated from RfD

3. n-Hexane was used as a surrogate for n-Heptane

4. Appendix PPRTV Screen-USEPA RSLs May 2016

nc = non-carcinogen

Table 5. Risk Characterization-Residential Receptors Loam Soil Type
City Ventures-Multiple Parcels
Oakland, California

Sample ID	Sample Depth (ft.)	Freon 12		Freon 11		Benzene [1]		Ethylbenzene		m-,p-Xylenes		o-Xylenes [1]		1,1,2,2-Tetrachloroethane [1]		n-Hexane		n-Heptane		Cyclohexane		Cumulative Cancer Risk	Cumulative Hazard (HI)
		CR	HQ	CR	HQ	CR	HQ	CR	HQ	CR	HQ	CR	HQ	CR	HQ	CR	HQ	CR	HQ	CR	HQ		
SV-1	5	nc	1.3E-01	nc	2.6E-06	1.3E-07	4.2E-03	7.8E-09	8.4E-06	nc	6.5E-04	nc	3.2E-04	5.4E-07	3.1E-04	nc	--	nc	--	nc	--	**7.E-07**	**1.E-01**
SV-2	5	nc	9.8E-04	nc	2.6E-05	1.3E-07	4.2E-03	7.8E-09	8.4E-06	nc	6.5E-04	nc	3.2E-04	5.4E-07	3.1E-04	nc	--	nc	--	nc	--	**7.E-07**	**6.E-03**
SV-4	5	nc	7.7E-04	nc	2.6E-05	6.3E-07	1.9E-02	7.8E-09	8.4E-06	nc	6.5E-05	nc	3.2E-04	5.4E-07	3.1E-04	nc	--	nc	--	nc	--	**1.E-06**	**2.E-02**
SV-6	5	nc	2.1E-01	nc	1.8E-03	1.5E-07	4.5E-03	6.0E-09	6.5E-06	nc	2.7E-03	nc	9.1E-04	1.2E-07	6.9E-05	nc	--	nc	--	nc	--	**3.E-07**	**2.E-01**
SV-7	5	nc	1.5E-02	nc	2.6E-05	1.5E-07	4.5E-03	6.0E-09	6.5E-06	nc	6.5E-04	nc	3.2E-04	1.2E-07	6.9E-05	nc	--	nc	--	nc	--	**3.E-07**	**2.E-02**
SV-8	5	nc	1.3E-02	nc	2.6E-05	1.5E-07	4.5E-03	6.0E-09	6.5E-06	nc	6.5E-04	nc	3.2E-04	1.2E-07	6.9E-05	nc	--	nc	--	nc	--	**3.E-07**	**2.E-02**
SV-9	5	nc	1.8E-02	nc	1.1E-04	1.5E-07	4.5E-03	6.0E-09	6.5E-06	nc	6.5E-04	nc	3.2E-04	4.0E-07	2.3E-04	nc	--	nc	--	nc	--	**6.E-07**	**2.E-02**
SV-10	5	nc	3.5E-04	nc	2.6E-05	5.0E-07	1.6E-02	6.0E-09	6.5E-06	nc	2.6E-03	nc	3.2E-04	1.2E-07	6.9E-05	nc	--	nc	--	nc	--	**6.E-07**	**2.E-02**
SV-11	5	nc	6.5E-03	nc	2.6E-05	1.5E-07	4.5E-03	6.0E-09	6.5E-06	nc	2.7E-03	nc	3.2E-04	1.2E-07	6.9E-05	nc	--	nc	--	nc	--	**3.E-07**	**1.E-02**
SV-13	5	nc	1.3E-01	nc	2.6E-05	1.4E-07	4.4E-03	6.0E-09	6.5E-06	nc	6.5E-04	nc	3.2E-04	1.2E-07	6.9E-05	nc	2.1E-01	nc	2.6E-02	nc	4.5E-02	**3.E-07**	**4.E-01**
SV-14	5	nc	5.3E-01	nc	8.8E-04	6.5E-07	2.0E-02	1.1E-07	1.2E-04	nc	5.7E-03	nc	1.8E-03	1.2E-07	6.9E-05	nc	--	nc	--	nc	--	**9.E-07**	**6.E-01**

Notes:

nc = non-carcinogen

CR = Cancer Risk

HQ = Hazard Quotient

HI = Hazard Index

1 = Half the Typical Site Wide Reporting Limits were used excluding elevated RLs above maximum detected concentrations (Benzene = 35/2 or 17.5 ug/m3; 1,1,2,2-TCA = 22/2 or 11 ug/m3)

2. No toxicity values available for n-Heptane. N-Heptane evaluated using hexane as a surrogate.

Table 6. Risk Characterization-Commercial Worker
City Ventures-Multiple Parcels
Oakland, California

Chemical	Concentration (µg/m^3)*	Risk	
Freon 12	**7.6E+04**	CR	nc
		HQ	5.3E-01
Freon 11	**3.4E+03**	CR	nc
		HQ	1.8E-03
Benzene [1]	**7.8E+01**	CR	6.5E-07
		HQ	2.0E-02
Ethylbenzene	**1.8E+02**	CR	1.1E-07
		HQ	1.2E-04
m-Xylenes	**8.9E+02**	CR	nc
		HQ	5.7E-03
o-Xylenes	**2.7E+02**	CR	nc
		HQ	1.8E-03
1,1,2,2-Tetrachloroethane	**3.7E+01**	CR	4.0E-07
		HQ	2.7E-04
n-Hexane	**2.2E+05**	CR	nc
		HQ	2.1E-01
n-Heptane[2]	**4.7E+04**	CR	nc
		HQ	4.5E-02
Cyclohexane	**2.2E+05**	CR	nc
		HQ	2.6E-02
Cumulative Cancer Risk			**1.E-06**
Cumulative Hazard (HI)			**8.5E-01**

Notes:

* = Maximum concentration detected in any sample across the site.

nc = non-carcinogen

CR = Cancer Risk

HQ = Hazard Quotient

HI = Hazard Index

1. Half the Typical Site Wide Reporting Limits were used excluding elevated RLs above maximum detected concentrations (Benzene = 35/2 or 17.5 ug/m3; 1,1,2,2-TCA = 22/2 or 11 ug/m3)

2. No toxicity values available for n-Heptane. N-Heptane evaluated using hexane as a surrogate.

Table 7. Calculation of Outdoor Air EPCs Using Maximum Soil Gas Concentrations
City Ventures-Multiple Parcels
Oakland, California

Chemical	Soil Gas Max Detected Concentration (ug/m^3)	Soil Gas Max Detected Concentration (mg/cm^3)	Di	P_t	d	L (cm)	u	h (cm)	Fi	C_o (mg/m^3)	Modeled Ambient Air Concentrations C_o (ug/m^3)
Dichlorodifluoromethane	7.6E+04	7.6E-05	7.90E-02	2.50E-01	152.4	152	460.4	180	9.50E-07	1.75E-03	1.7E+00
Trichlorofluoromethane	3.4E+03	3.4E-06	7.50E-02	2.50E-01	152.4	152	460.4	180	4.03E-08	7.42E-05	7.4E-02
Benzene	7.8E+01	7.8E-08	9.00E-02	2.50E-01	152.4	152	460.4	180	1.11E-09	2.04E-06	2.0E-03
Ethylbenzene	1.8E+02	1.8E-07	6.80E-02	2.50E-01	152.4	152	460.4	180	1.94E-09	3.56E-06	3.6E-03
Xylenes	1.2E+03	1.2E-06	6.90E-02	2.50E-01	152.4	152	460.4	180	1.31E-08	2.41E-05	2.4E-02
1,1,2,2-Tetrachloroethane	3.7E+01	3.7E-08	4.90E-02	2.50E-01	152.4	152	460.4	180	2.87E-10	5.28E-07	5.3E-04
Hexane	2.7E+05	2.7E-04	7.30E-02	2.50E-01	152.4	152	460.4	180	3.12E-06	5.73E-03	5.7E+00
Cyclohexane	2.2E+05	2.2E-04	8.00E-02	2.50E-01	152.4	152	460.4	180	2.78E-06	5.12E-03	5.1E+00

Notes:

Equations:

$$Fi = \frac{D_i \times C_{sg} \times P_t^{4/3}}{d}$$

Fi = Vapor flux of chemical (mg/cm^2-sec);

Di = Diffusivity in air (cm^2/sec), chemical specific;

C_{SG} = Maximum soil gas concentration at sample location VP-3 expressed as milligrams per cubic centimeter (mg/cm^3);

P_t = Air filled soil porosity-loam [from boring logs] (0.489 cm^3/cm^3 from US EPA (2004) J& E Model Default Inputs;

d = Depth to soil vapor sample 152.4 cm (approximately 5 feet bgs)

$$C_O = \frac{(F_i \times L)}{u \times h} \times 1E{+}06\ cm^3/m^3$$

C_o = Outdoor chemical concentration (mg/m^3) converted to $\mu g/m^3$ for comparison;

L = Downwind length of contamination (cm);

u = Wind speed (cm/sec) (annual average windspeed source:http://ncdc.noaa.gov/oa/climate/online).

h = Height of box, 180 cm (default)

Table 8. Calculation of Potential Risk/Hazard-Outdoor Air Inhalation
City Ventures-Multiple Parcels
Oakland, California

Chemical	Modeled Ambient Air Concentrations C_o(ug/m^3)	Carcinogenic EC_{car} (ug/m^3)	NonCarcinogenic EC_{noncar} (ug/m3)	Inhalation Unit Risk (IUR)	Chronic Reference Concentration (RfC)	Individual Lifetime Excess Cancer Risk	Hazard Quotient	RME - % Risk Contribution	
	RME	RME	RME	(μg/m^3)$^{-1}$	(mg/m^3)	RME	RME	Cancer	Hazard
Dichlorodifluoromethane	1.8E+00	6.2E-01	1.7E+00	nc	1.0E-01	nc	1.7E-02	nc	64%
Trichlorofluoromethane	7.4E-02	2.6E-02	7.1E-02	nc	1.2E+00	nc	5.9E-05	nc	0%
Benzene	2.0E-03	7.3E-04	2.0E-03	2.9E-05	3.0E-03	2.1E-08	6.5E-04	60%	2%
Ethylbenzene	3.6E-03	1.3E-03	3.4E-03	2.5E-06	1.0E+00	3.2E-09	3.41E-06	9%	0%
Xylenes	2.4E-02	nc	2.3E-02	nc	1.0E-01	nc	2.31E-04	nc	1%
1,1,2,2-Tetrachloroethane	5.3E-04	1.9E-04	5.1E-04	5.8E-05	8.0E-02	1.1E-08	6.33E-06	31%	0%
Hexane	5.7E+00	nc	5.5E+00	nc	7.0E-01	nc	7.85E-03	nc	30%
Cyclohexane	5.1E+00	nc	4.9E+00	nc	6.0E+00	nc	8.18E-04	nc	3%
					TOTAL	**4.E-08**	**2.6E-02**		

Inhalation Equation: EC (μg/m^3) = (C_a x ET x EF x ED) / (AT)

			RME
EC = Exposure Concentration (mg/m^3)		EF = Exposure Frequency (days/year) =	350
C_o = Chemical Concentration in Air (mg/m^3)	Table 7	ED = Exposure Duration (years)[1] =	26
ET = Exposure Time (hours/day)	24	AT_c = Averaging Time (Carcinogenic Effects) (hours) =lifetime (yrs) *365 days/yr *24 hrs/day	613,200
Notes:		AT_{nc} = Averaging Time (Noncarcinogenic Effects) (hours) =ED (yrs) * 365 days/yr * 24 hrs/da	227,760

µg/m3 = micrograms per cubic meter

Risk = EC * IUR

HQ = EC÷(RfC * 1000 µg/mg)

1. According to US EPA, when assessing risk for chemicals whose toxicity is expressed by an IUR, the concentration of the chemical in air should be used as the exposure metric rather than individual intake of the chemical in air based on inhalation rate and body weight. As such there was no adjustment made for childhood exposure duration.

2. Reference: US EPA RAGS Part F.

Table 9. Construction Worker Intake/Exposure Concentrations
City Ventures-Multiple Parcels
Oakland, California

CAS No.	Chemical	Max Soil (mg/kg)	VF (m^3/kg)	1/VF (kg/m^3)	IN direct contact cancer (mg/kg-day)	IN direct contact non-cancer (mg/kg-day)	IN dermal cancer (mg/kg-day)	IN dermal non-cancer (mg/kg-day)	EC inhalation cancer (ug/m^3)	EC inhalation non-cancer (mg/m3)
71-43-2	Benzene	0.72	2.5E+03	4.0E-04	1.5E-08	1.1E-06	1.3E-07	9.0E-06	4.9E-04	3.4E-05
108-88-3	Toluene	1.7	3.7E+03	2.7E-04		2.5E-06		2.1E-05		5.5E-05
100-41-4	Ethylbenzene	1.5	5.0E+03	2.0E-04	3.1E-08	2.2E-06	2.7E-07	1.9E-05	5.1E-04	3.6E-05
1330-20-7	Xylenes	7.2	5.6E+03	1.8E-04		1.1E-05		9.0E-05		1.5E-04
106-46-7	1,4-Dichlorobenzene	0.008	1.3E+04	7.5E-05	1.7E-10	1.2E-08	1.4E-09	1.0E-07	1.0E-06	7.2E-08
205-99-2	Benzo[b]fluoranthene	0.33			6.9E-09	4.8E-07	5.9E-08	4.1E-06	4.0E-07	2.8E-08
156-59-2	cis 1,2-Dichloroethene	0.31	2.7E+03	3.7E-04		4.6E-07		3.9E-06		1.4E-05
95-50-1	1,2-Dichlorobenzene *	0.77	1.3E+04	7.5E-05		1.1E-06		9.7E-06		6.9E-06

* = Surrogate for 1,1-Dichlorobenzene

Intake (IN)	Direct contact	cancer	mg/kg-day	Cs x IR-S x FI x UCF x EF x ED / BW x AT
		non-cancer	mg/kg-day	
	Dermal contact	cancer	mg/kg-day	Cs x SA x AF x ABS x UCF x EF x ED / BW x AT
		non-cancer	mg/kg-day	
EC	Inhalation of volatiles	cancer	ug/m3	Cs x ET x ED x EF x ((1/VF)+(1/PEF)) x UCF1 x UCF3/AT
		non-cancer	mg/m3	Cs x ET x ED x EF x ((1/VF)+(1/PEF)) x UCF1 /AT

Parameter	Unit	Name		Value	Source
EC	ug/cm^3	Exposure Concentration		--	--
IN	mg/kg-day	Intake		--	--
C_s	mg/kg	Conc. In Soil		chemical specific	
ET	hrs/day	exposure time		8	
EF	days/year	exposure freqency		130	
ED	years	exposure duration		1	EPA 2002
			Cancer	25550	
AT	days	average time	Non-Cancer	365	
UCF	kg/mg	unit conversion factor		1.00E-06	
UCF1	day/hr	unit conversion factor		0.04166	
UCF2	mg/ug	unit conversion factor		1.00E-03	
UCF3	ug/mg	unit conversion factor		1.00E+03	
SA	cm^2	skin surface contact area		3527	EPA 2016
BW	kg	body weight		80	EPA 2011
IR-S	mg/day	soil ingestion rate		330	EPA 2002
AF	mg/cm^2-day	adherence factor		0.8	EPA 2002
VF	m^3/kg	volatilization factor		chemical specific	ESLs 2016
ABS	unitless	dermal absorption fractior		chemical specific	ESLs 2016
FI	unitless	fraction ingested		1	ESLs 2016
PEF	m^3/kg	particulate-emission factor		1.40E+06	ESLs, 2016
1/PEF	kg/m^3			7.14E-07	

Notes:

EPA, 2011: EPA Exposure Factors Handbook: 2011 Edition. September 2011.

EPA, 2002: Supplemental Guidance For Developing Soil Screening Levels For Superfund Sites. OSWER 9355.4-24. December 2002.

EPA 2016: Regional Screening Levels May 2016.

RWQCBSFBR ESLs 2016

Table 10. Construction Worker Site-Specific Potential Risk and Screening Levels
City Ventures-Multiple Parcels
Oakland, California

Chemical Concentration and Toxicity Data							Potential Risk/Hazard by Exposure Route						Site Specific SL **	
CAS No.	Chemical	Max Soil (mg/kg)	SFo	RfD	IUR	RfC	Direct Contact		Dermal		Inhalation			
							cancer	non-cancer	cancer	non-cancer	cancer	non-cancer	cancer	non-cancer
71-43-2	Benzene	0.72	1.00E-01	4.00E-03	2.95E-05	3.00E+00	2.E-09	2.6E-04	1.E-08	2.3E-03	1.E-08	1.14E-02	**5.0E+01**	**6.3E+01**
108-88-3	Toluene	1.7	nc	8.00E-02	nc	3.00E+02	nc	3.1E-05	nc	ntv	nc	1.85E-04	**nc**	**9.2E+03**
100-41-4	Ethylbenzene	1.5	1.10E-02	1.00E-01	2.50E-06	1.00E+03	3.E-10	2.2E-05	ntv	ntv	1.E-09	3.60E-05	**4.3E+03**	**4.2E+04**
1330-20-7	Xylenes	7.2	nc	2.00E-01	nc	1.00E+02	nc	5.3E-05	nc	ntv	nc	1.53E-03	**nc**	**4.7E+03**
106-46-7	1,4-Dichlorobenzene	0.008	5.40E-03	7.00E-02	1.10E-05	8.00E+02	9.E-13	1.7E-07	ntv	ntv	1.E-11	8.94E-08	**8.8E+03**	**8.9E+04**
205-99-2	Benzo[b]fluoranthene	0.33	7.30E-01	ntv	1.10E-04	ntv	5.E-09	ntv	ntv	ntv	4.E-11	ntv	**6.5E+01**	**ntv**
156-59-2	cis 1,2-Dichloroethene	0.31	nc	2.00E-03	nc	8.00E+00	nc	2.3E-04	nc	ntv	nc	1.73E-03	**nc**	**1.8E+02**
95-50-1	1,2-Dichlorobenzene *	0.77	nc	9.00E-02	nc	2.00E+02	nc	1.3E-05	nc	ntv	nc	3.44E-05	**nc**	**2.2E+04**

Notes:

* = 1,2-Dichlorobenzene used as surrogate for 1,1-Dichlorobenzene

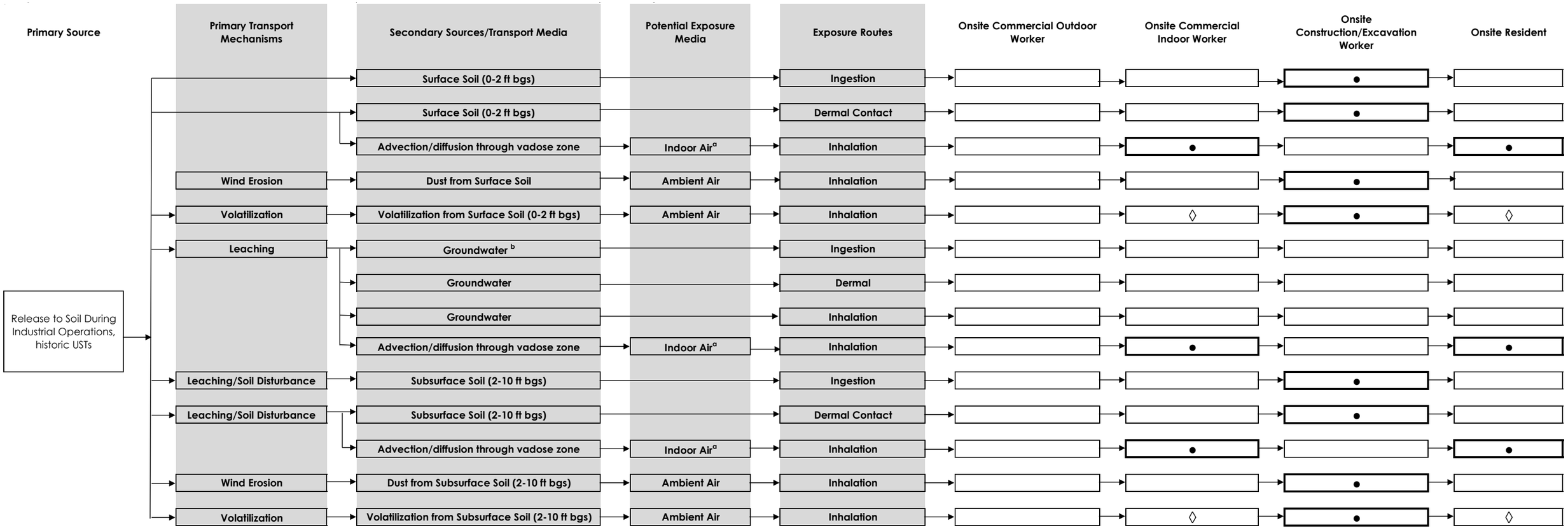
** = Risk/hazard at maximum concentration extrapolated to risk-based concentration (SL) at target risk = 1E-06 and HQ = 1 using highest potential risk/hazard by exposure route.

nc = non-carcinogen

ntv = no toxicity value-consistent with ESLs, dermal pathway not evaluated for VOCs.

FIGURES

Figure A. Conceptual Site Model
City Ventures-Multiple Parcels
Oakland, California



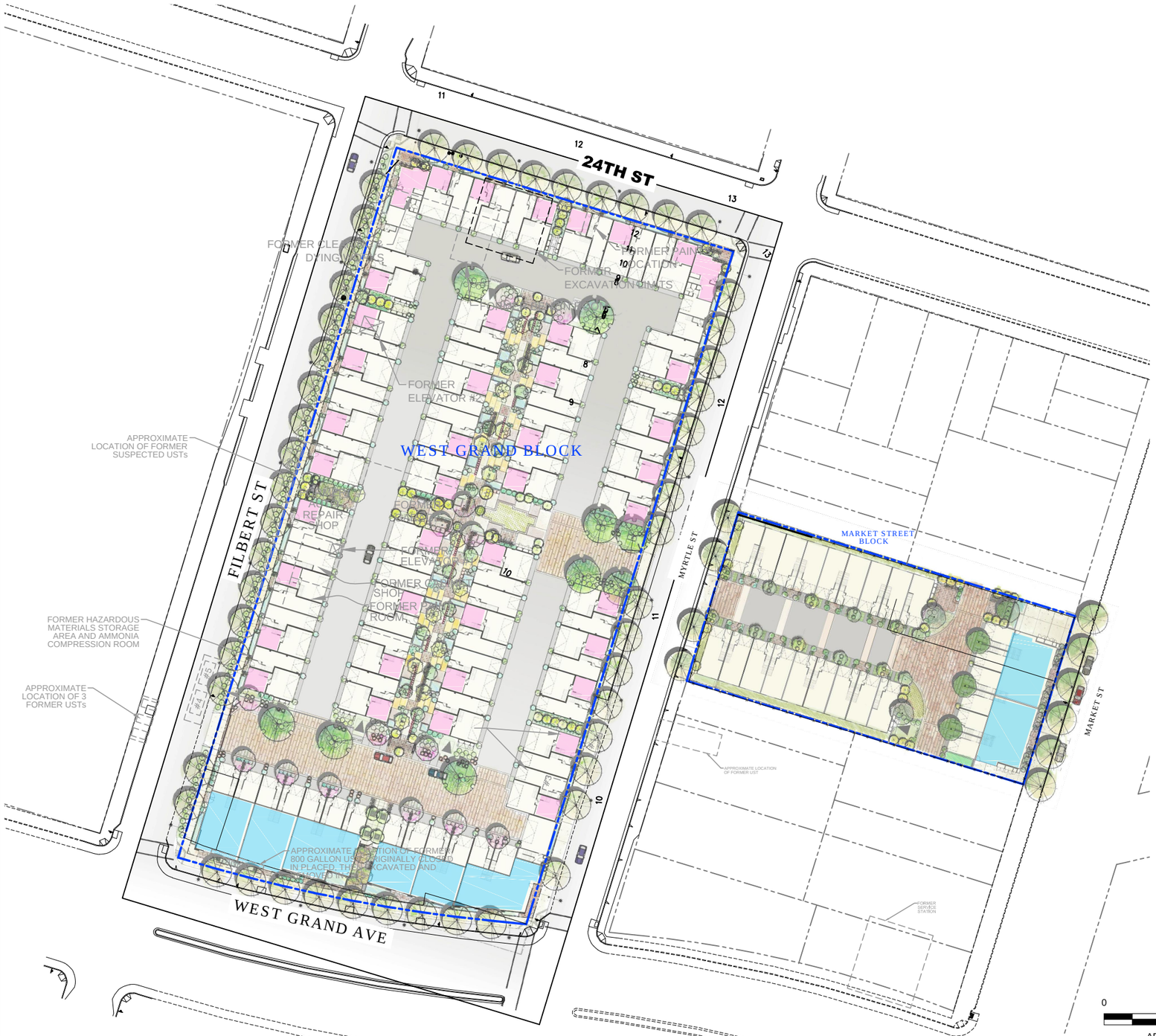
LEGEND

●	Exposure pathway is complete or potentially complete. Pathway will be quantitatively evaluated.
◊	Exposure pathway is potentially complete but contributes little to risk.
	Exposure pathway is incomplete. Pathway will not be evaluated.

[a] Evaluated using soil gas data.

[b] Assumes no beneficial use of groundwater.

CSM Exposure Pathways.xls
CSM
3/1/2017



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE

N

0 80 160

APPROXIMATE SCALE IN FEET

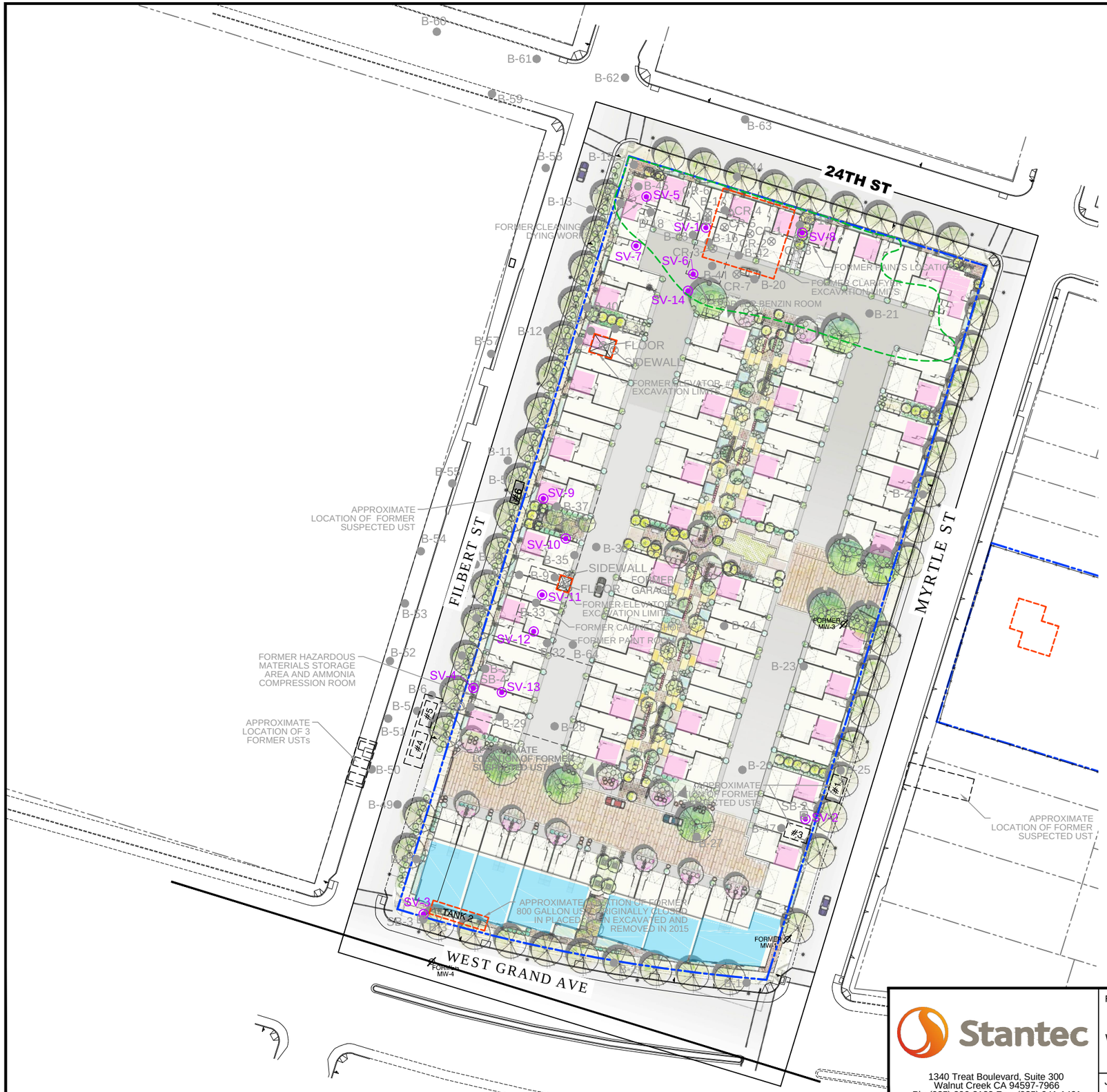
Stantec
1340 Treat Boulevard, Suite 300
Walnut Creek CA 94597-7966
Ph: (925) 296-2133 Fax: (925) 941-1401

FOR:
CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

SITE DEVELOPMENT PLAN

FIGURE: **1**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185703027.200.0001	RRR/MDR	EH	EH	09/07/15



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 SOIL BORING LOCATION (1994)
- SV-1 SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SB-1 SOIL BORING SAMPLE LOCATION (2014)
- SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- APPROXIMATE LOCATION OF FORMER GROUNDWATER MONITORING WELL
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE
- EXCAVATION LIMITS
- CURRENT DEPRESSION IN NORTHERN PORTION OF SITE; FILL WILL BE PLACED DURING REDEVELOPMENT.

NOTES

1. SOIL AND GROUNDWATER SAMPLE RESULTS FOR UPPER SECTION ARE SHOWN ON FIGURES 6 AND 9 RESPECTIVELY.
2. SOIL AND GROUNDWATER SAMPLE RESULTS FOR MIDDLE SECTION ARE SHOWN ON FIGURES 7 AND 10 RESPECTIVELY.
3. SOIL AND GROUNDWATER SAMPLE RESULTS FOR LOWER SECTION ARE SHOWN ON FIGURES 8 AND 11 RESPECTIVELY.

N

0 70 140

APPROXIMATE SCALE IN FEET

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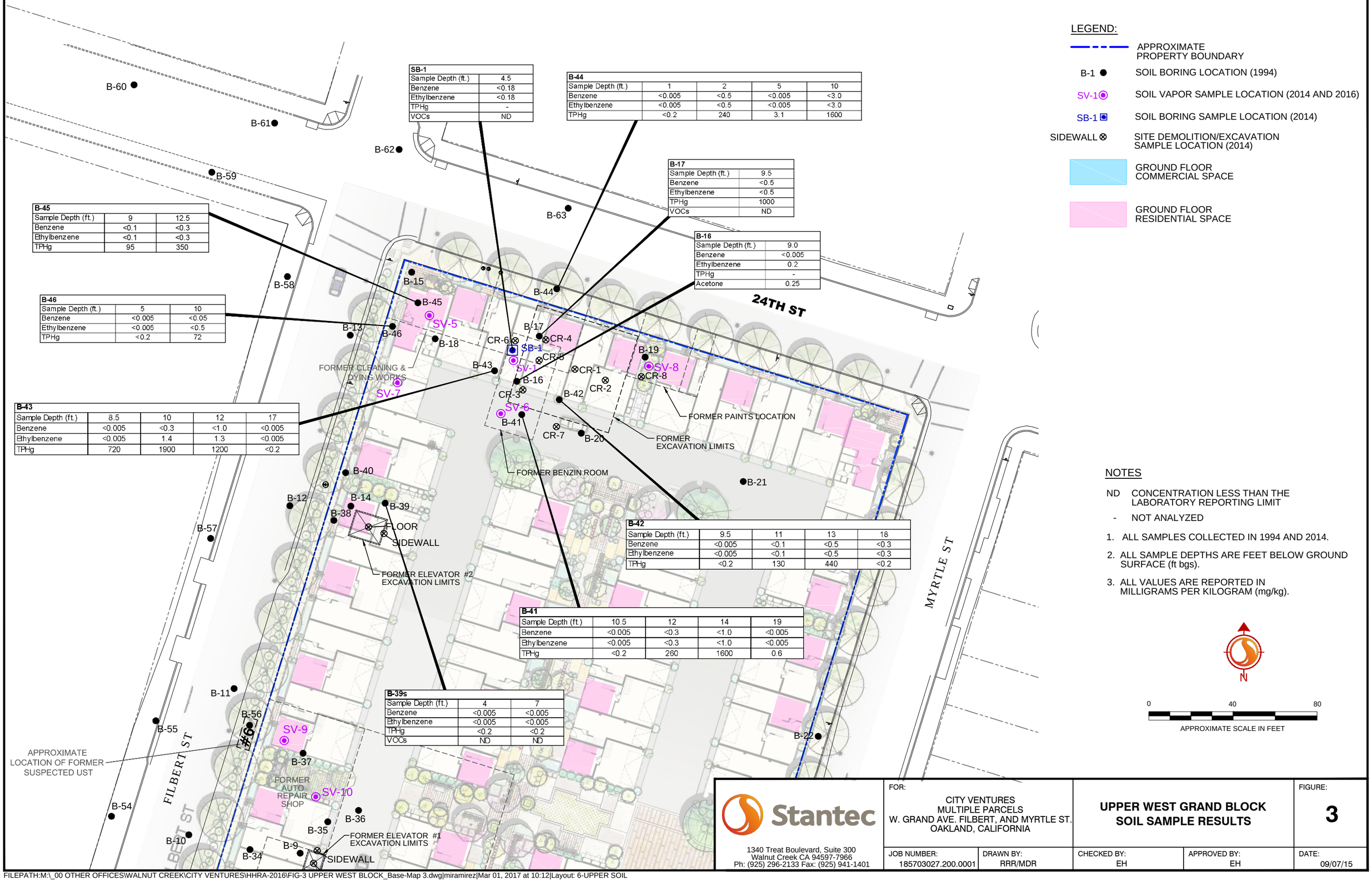
FOR:
CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

SOIL VAPOR SAMPLE LOCATIONS

FIGURE: **2**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185703027.200.0001	RRR/MDR	EH	EH	09/07/15

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\HHRA-2016\FIG-2 AND 15.dwg|miramirez|Mar 01, 2017 at 10:01|Layout: F4



SB-1	
Sample Depth (ft.)	4.5
Benzene	<0.18
Ethylbenzene	<0.18
TPHg	-
VOCs	ND

B-44				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.5	<0.005	<3.0
Ethylbenzene	<0.005	<0.5	<0.005	<3.0
TPHg	<0.2	240	3.1	1600

B-17	
Sample Depth (ft.)	9.5
Benzene	<0.5
Ethylbenzene	<0.5
TPHg	1000
VOCs	ND

B-45		
Sample Depth (ft.)	9	12.5
Benzene	<0.1	<0.3
Ethylbenzene	<0.1	<0.3
TPHg	95	350

B-16	
Sample Depth (ft.)	9.0
Benzene	<0.005
Ethylbenzene	0.2
TPHg	-
Acetone	0.25

B-46		
Sample Depth (ft.)	5	10
Benzene	<0.005	<0.05
Ethylbenzene	<0.005	<0.5
TPHg	<0.2	72

B-43				
Sample Depth (ft.)	8.5	10	12	17
Benzene	<0.005	<0.3	<1.0	<0.005
Ethylbenzene	<0.005	1.4	1.3	<0.005
TPHg	720	1900	1200	<0.2

B-42				
Sample Depth (ft.)	9.5	11	13	18
Benzene	<0.005	<0.1	<0.5	<0.3
Ethylbenzene	<0.005	<0.1	<0.5	<0.3
TPHg	<0.2	130	440	<0.2

B-41				
Sample Depth (ft.)	10.5	12	14	19
Benzene	<0.005	<0.3	<1.0	<0.005
Ethylbenzene	<0.005	<0.3	<1.0	<0.005
TPHg	<0.2	260	1600	0.6

B-39s		
Sample Depth (ft.)	4	7
Benzene	<0.005	<0.005
Ethylbenzene	<0.005	<0.005
TPHg	<0.2	<0.2
VOCs	ND	ND

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 ● SOIL BORING LOCATION (1994)
- SV-1 ◉ SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SB-1 ◘ SOIL BORING SAMPLE LOCATION (2014)
- SIDEWALL ⊗ SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE

NOTES

ND CONCENTRATION LESS THAN THE LABORATORY REPORTING LIMIT

\- NOT ANALYZED

1. ALL SAMPLES COLLECTED IN 1994 AND 2014.
2. ALL SAMPLE DEPTHS ARE FEET BELOW GROUND SURFACE (ft bgs).
3. ALL VALUES ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg).

N

0 40 80

APPROXIMATE SCALE IN FEET

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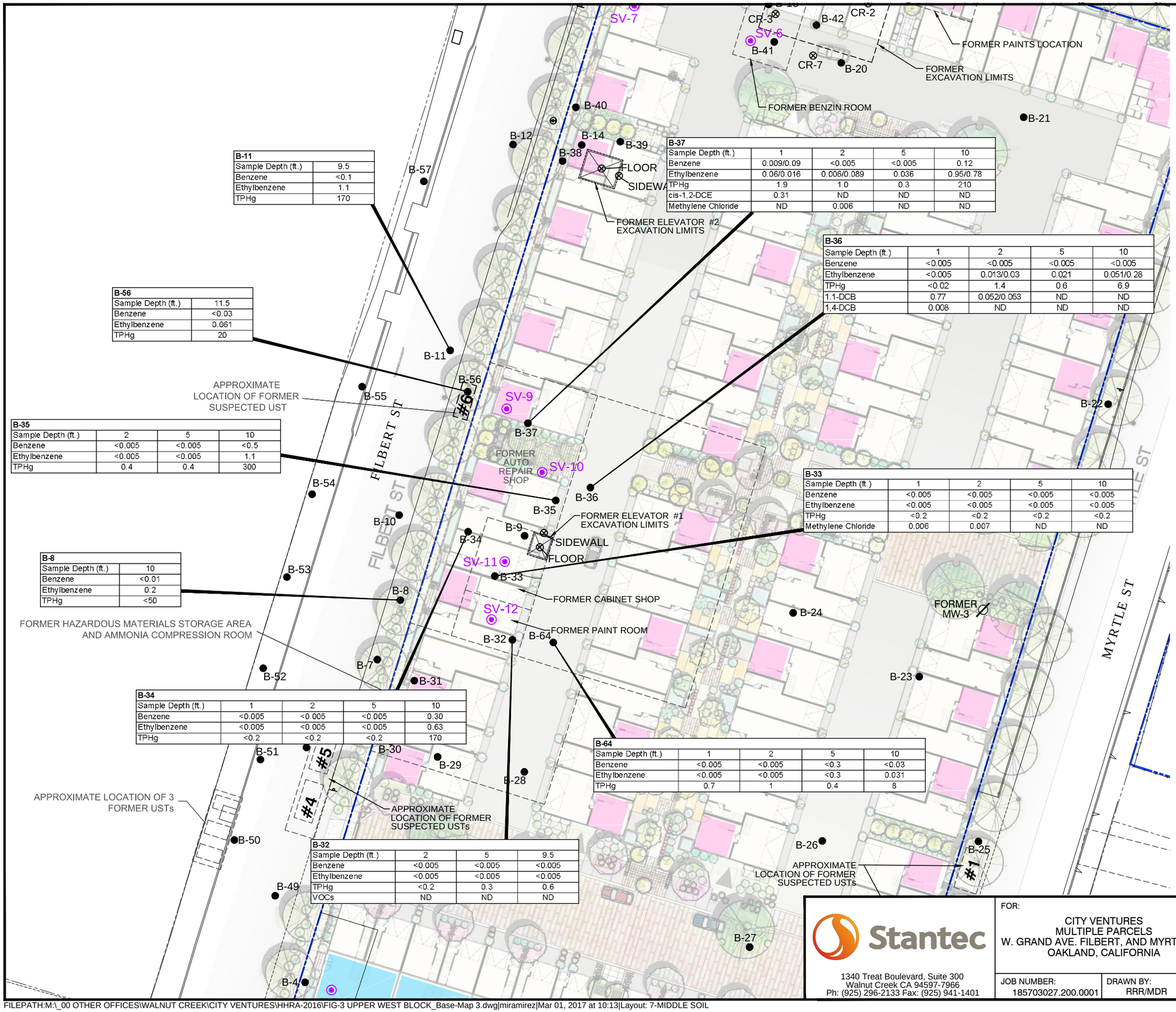
FOR: CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

UPPER WEST GRAND BLOCK SOIL SAMPLE RESULTS

FIGURE: **3**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185703027.200.0001	RRR/MDR	EH	EH	09/07/15

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\HHRA-2016\FIG-3 UPPER WEST BLOCK_Base-Map 3.dwg|miramirez|Mar 01, 2017 at 10:12|Layout: 6-UPPER SOIL



B-11	
Sample Depth (ft.)	9.5
Benzene	<0.1
Ethylbenzene	1.1
TPHg	170

B-37				
Sample Depth (ft.)	1	2	5	10
Benzene	0.009/0.09	<0.005	<0.005	0.12
Ethylbenzene	0.06/0.016	0.006/0.089	0.036	0.95/0.78
TPHg	1.9	1.0	0.3	210
cis-1,2-DCE	0.31	ND	ND	ND
Methylene Chloride	ND	0.006	ND	ND

B-36				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	0.013/0.03	0.021	0.051/0.28
TPHg	<0.02	1.4	0.6	6.9
1,1-DCB	0.77	0.052/0.053	ND	ND
1,4-DCB	0.008	ND	ND	ND

B-56	
Sample Depth (ft.)	11.5
Benzene	<0.03
Ethylbenzene	0.061
TPHg	20

APPROXIMATE LOCATION OF FORMER SUSPECTED UST

B-35			
Sample Depth (ft.)	2	5	10
Benzene	<0.005	<0.005	<0.5
Ethylbenzene	<0.005	<0.005	1.1
TPHg	0.4	0.4	300

B-33				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	<0.005	<0.005	<0.005
TPHg	<0.2	<0.2	<0.2	<0.2
Methylene Chloride	0.006	0.007	ND	ND

B-8	
Sample Depth (ft.)	10
Benzene	<0.01
Ethylbenzene	0.2
TPHg	<50

FORMER HAZARDOUS MATERIALS STORAGE AREA AND AMMONIA COMPRESSION ROOM

B-34				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.005	0.30
Ethylbenzene	<0.005	<0.005	<0.005	0.63
TPHg	<0.2	<0.2	<0.2	170

B-64				
Sample Depth (ft.)	1	2	5	10
Benzene	<0.005	<0.005	<0.3	<0.03
Ethylbenzene	<0.005	<0.005	<0.3	0.031
TPHg	0.7	1	0.4	8

APPROXIMATE LOCATION OF 3 FORMER USTs

APPROXIMATE LOCATION OF FORMER SUSPECTED USTs

B-32			
Sample Depth (ft.)	2	5	9.5
Benzene	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	<0.005	<0.005
TPHg	<0.2	0.3	0.6
VOCs	ND	ND	ND

APPROXIMATE LOCATION OF FORMER SUSPECTED USTs

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- B-1 ● SOIL BORING LOCATION (1994)
- SV-1◉ SOIL VAPOR SAMPLE LOCATION (2014 AND 2016)
- SIDEWALL ⊗ SITE DEMOLITION/EXCAVATION SAMPLE LOCATION (2014)
- ⌀ APPROXIMATE LOCATION OF FORMER GROUNDWATER MONITORING WELL
- GROUND FLOOR COMMERCIAL SPACE
- GROUND FLOOR RESIDENTIAL SPACE

NOTES

ND CONCENTRATION LESS THAN THE LABORATORY REPORTING LIMIT

\- NOT ANALYZED

1. ALL SAMPLES COLLECTED IN 1994 AND 2014.
2. ALL SAMPLE DEPTHS ARE FEET BELOW GROUND SURFACE (ft bgs).
3. ALL VALUES ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg).

N

0 40 80

APPROXIMATE SCALE IN FEET

Stantec
1340 Treat Boulevard, Suite 300
Walnut Creek CA 94597-7966
Ph: (925) 296-2133 Fax: (925) 941-1401

FOR:
CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

MIDDLE WEST GRAND BLOCK SOIL SAMPLE RESULTS

FIGURE: **4**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185703027.200.0001	RRR/MDR	EH	EH	09/07/15

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\HHRA-2016\FIG-3 UPPER WEST BLOCK_Base-Map 3.dwg|miramirez|Mar 01, 2017 at 10:13|Layout: 7-MIDDLE SOIL

ATTACHMENT A

SOIL TYPE SENSITIVITY EVALUATION

Stantec

March 2, 2017

SOIL SENSITIVITY EVALUATION-SOIL TYPE TO RISK/HAZARD CHARACTERIZATION

Soil boring logs prepared during soil boring installation in 1994, logged the soils within the interval between the upper asphalt surface and a depth of 5 feet below the ground surface as silty clay. However, the USCS soil classification used in boring logs does not translate to the USDA soil classification used in the J&E model. According to the USEPA (EPA 2004) USCS soil type classification should be converted to the appropriate USDA soil type prior to input into the J&E models.

Physical soil property analyses (i.e., particle size distribution, dry bulk density, and porosity) were not conducted at the Site. Based on other site investigations in the Oakland area, including those conducted by Apex-SGI, soil physical properties analyses have identified similar soils classified as silty clay consisting of fine-grained material (clays and silts) with some sand. The particle size distribution analyses on soil at two Oakland sites in the vicinity of the Site, indicate a "loam" SCS soil textural classification. These two specific sites in Oakland are described in the following bullets:

- Chestnut Street and 26th Street, Oakland, California (approximately 500 feet northwest of the Site) in December 2012, soil property laboratory analyses were conducted on one soil sample collected at 4.5 to 5 feet bgs. The soil property laboratory analyses results indicated a fine-grained material that was approximately 43-percent silt, 21-percent clay and 36-percent sand. Using Figure 3 of the User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings (USEPA, 2004), the particle size distribution analysis indicated a "loam" soil textural classification. The reported values for soil property analyses were 1.56 g/cm3 for dry bulk density, 0.411 for total porosity, 0.284 for water-filled porosity, and 0.127 for air-filled porosity.

o In August 2014, soil property laboratory analyses were conducted on three soil samples collected at 5.5 to 6 feet bgs. In all three samples, the soil property laboratory analyses results indicated a fine-grained material that was approximately 50-percent silt, 30-percent clay and 20-percent sand. The laboratory results from the particle size distribution analysis indicated a "silty clay loam" soil textural classification for all three soil samples. The most conservative reported values for soil property analyses were 1.43 g/cm3 for dry bulk density, 0.481 for total porosity, 0.347 for water-filled porosity, and 0.134 for air-filled porosity.

- Grand Avenue and Euclid Avenue, Oakland, California (approximately 1.6 miles southeast of the Site);

  - In April 2016, soil property laboratory analyses were conducted on two soil samples collected at approximately 10 feet bgs. The soil property laboratory analyses results indicated a fine-grained material that was approximately 50-percent silt, 25-percent clay and 25-percent sand. The laboratory results from the particle size distribution analysis

indicated a "loam" soil textural classification. The reported values for soil property analyses were 1.63 g/cm3 for dry bulk density, 0.383 for total porosity, 0.326 for water-filled porosity, 0.057 for air-filled porosity.

In addition, during recent site investigations at the property immediately south of the Market Street Block, soil boring logs have indicated that the lithology in the area is predominately clays and silts to approximately 10 feet bgs, with groundwater at approximately 11 feet bgs (Salem, 2012; Cornerstone, 2016).

Since soil water-filled porosity for each provided soil type is the greatest factor in determining diffusion of chemicals through the soil column (and subsequent soil gas transport to the bottom of an enclosed floor slab), three soil types were used in modeling a hypothetical soil gas sample composite sample consisting of *maximum* chemical soil concentrations detected in samples collected at 14 locations in 2014 and 2016. J&E varying soil types were selected whose classification includes combinations of very stiff clay and silt ranging from silt-clay loam to silty-clay to approximate a range of potential estimated risk/hazard under varying soil types (and default water-filled porosity) moisture as indicated in the following table.

Estimated Potential Risk/Hazard by Soil Type (Max Concentration Composite Sample)

Silt-Clay Loam Soil Type		**Loam Soil Type**		**Silty-Clay Soil Type**	
Risk	**Hazard**	**Risk**	**Hazard**	**Risk**	**Hazard**
1E-06	8.2E-01	1E-06	8.0E-01	1E-06	6.9E-01

Individual results for each soil type provided in Attachment E.

Based on soil boring logs for the Site and soil property laboratory analyses on soil in the vicinity of the Site, "loam" was selected as the vadose zone input parameter for the fate and transport modeling. The DTSC (2014) default values for "loam" (L) were 1.59 g/cm3 for dry bulk density, 0.399 for total porosity, 0.148 for water-filled porosity, 0.251 for air-filled porosity.

ATTACHMENT B

SITE-SPECIFIC SCREENING LEVELS FOR SOIL GAS

Stantec

March 2, 2017

SITE-SPECIFIC SCREENING LEVELS FOR SOIL GAS

To assist evaluation of analytical results for additional soil gas sampling at the Site which may be proposed as part of a Remedial Action Plan (RAP) and to guide selection of future sampling locations, where needed, Site-specific Screening Levels have been calculated for all chemicals previously detected in soil gas at the Site.

Vapor intrusion screening levels for soil gas established by the RWQCBSFBR are based on a concentration of an individual chemical in indoor air which represents no unacceptable cancer risk (1E-06) or non-cancer hazard quotient (HQ) above 1 for residential and commercial/industrial receptors in accordance with the following equation:

$$SL_{soil\ gas} = ESL_{indoor\ air} \div \text{attenuation factor (AF)}$$

The RWQCBSFBR uses a generic AF of 0.002 based on vapor flux although with climate-specific adjustments (Brewer et al. 2014) when establishing generic soil gas ESLs for *existing* residential use properties which applies to both sub-slab soil gas and soil gas at other depths (RWQCBSFBR 2016). However, the RWQCBSFBR allows use of the J&E model to evaluate potential site conditions (e.g., soil type) for both current buildings and future construction which may contribute to greater attenuation than provided using the ESLs.

The following proposed Site-specific soil gas screening levels have been established using the above equation but with AFs internally calculated in the DTSC-modified J&E soil gas screening model (DTSC 2014) using loam as the predominant soil type across the site (Attachment A). Current soil gas ESLs are provided for comparison.

Chemical	$ESL_{Indoor\ Air}$ (µg/m³)[1,2]	Attenuation Factor-Loam[3]	Soil Gas ESL (µg/m³)[1]	Site-Specific SL-Soil Gas
Dichlorodifluoromethane[2]	100	7.3E-04	50,000	137,000
Trichlorofluoromethane[2]	1,300	6.5E-04	650,000	2,000,000
Benzene	0.097	8.1E-04	48	120
Ethylbenzene	1.1	6.7E-04	560	1,640
Xylene (m, p and o)	100	6.7E-04	52,000	149,000
1,1,2,2-Tetrachloroethane	0.048	5.2E-04	24	92.3
Hexane[2]	730	7.1E-04	365,000	1,030,000
Cyclohexane[2]	1,000	7.5E-04	3,150,000	8,400,000

Notes:
1. RWQCBSFBR ESLs Table IA-1, February 2016 (Ver. 3). For chemicals with no ESL, the indoor air screening level from DTSC HERO Note 3 or USEPA RSL was divided by RWQCBSFBR default attenuation factor = 0.002.
2. No ESL established. Indoor air screening level from more protective of DTSC HERO Note 3 (June 2016) or USEPA RSLs (May 2016).
3. Attenuation Factor calculated by DTSC-modified J&E Soil Gas Screening Model-December 2014.

ATTACHMENT C

MODELING SOIL GAS EMISSIONS TO OUTDOOR AIR

Stantec

March 2, 2017

MODELING SOIL GAS EMISSIONS TO OUTDOOR AIR

Inhalation of VOCs in outdoor air is generally negligible due to the effects of mixing and dispersion, therefore this exposure pathway is generally not considered significant. However, proposed plans for Site development include two limited, common areas where pavers will be placed. Therefore, potential inhalation of VOCs migrating from soil to outdoor air has been evaluated.

Each paver will be installed directly over a 1-inch layer of concrete sand underlain by approximately 4-inches of Class II aggregate base with a compacted subgrade meeting geotechnical specifications below.

For this HHRA, the Shen Model (EPA 1989a) was used to estimate the vapor flux rates of VOCs from 5-foot soil gas concentrations.

$$F_i = \frac{D_i \times C_{sg} \times P_t^{4/3}}{d}$$

Where:

F_i	=	Vapor flux rate of chemical (mg/cm^2-sec);
D_i	=	Diffusivity in air (cm^2/sec), chemical-specific (USEPA, 2004a);
C_{sg}	=	Maximum soil gas concentration in the exposure area of interest (mg/cm^3);
P_t	=	Total soil porosity, site-specific weighted average for 5 feet soil column 0.251 cm^3/cm^3 or unitless for loam soil type).
d	=	Depth to impacted soil, or depth of soil cover (cm), estimated at 152 cm or 5 feet for 2016 soil gas data.

The Farmer Box/Shen Models were originally developed on behalf of and used by the U.S. EPA to evaluate subsurface emissions from landfills and surface impoundments to the ambient air. Since only soil gas data from approximately five feet below the ground surface were available for sampled locations the Farmer/Shen models were deemed appropriate to predict concentrations of COCs at the surface resulting from upward transport of soil gas. Although the model provides limited user-defined input regarding plume height and length with which to evaluate contaminant concentrations away from a source, it was not designed or intended to be a true dispersion model. However, use of the Farmer/Shen models has been accepted for evaluating the ambient air pathway in human health risk assessment by the California Department of Toxic Substances Control and the California Office of Environmental Health Hazard Assessment.

Acceptance is primarily related to the conservative manner in which inhalation risk is calculated using model derived ambient air concentrations: calculations assume a receptor remains stationary over the point source for the entire exposure duration (30 years for residential exposure) and, no attenuation would occur either through biodegradation of contaminants in the surface, or dispersion and/or dilution of contaminant concentrations due to meteorological conditions. It should be noted that the Shen model is very conservative in the way that it uses total soil porosity, rather than air-filled soil porosity, in the equation. This assumes completely dry soil (worst case) since the presence of water in a soil cover tends to decrease the flux rate of a compound by effectively decreasing the porosity (EPA, 1988a). Thus the ultimate purpose for using the Farmer/Shen models was to assist evaluation of potential risk to residents on a very conservative basis, thereby aiding ACEH with possible risk-management decisions.

The outdoor concentrations of VOCs can then be estimated using the box model:

$$C_o = \frac{F_i \times L \times 10^6 cm^3 / m^3}{u \times h}$$

Where:

C_o = Outdoor chemical concentration (mg/m^3);
L = Downwind length of contamination, assumed 150 cm (ASTM, 2002);
u = Wind speed, assumed 460.4 cm/sec for Oakland Airport (WRCC, 2016).
h = Height of box, 180 cm.

Calculations to derive EPCs and the results of the risk characterization are provided in Tables 7 and 8.

ATTACHMENT D

SOIL BORING LOGS

Stantec

Project: City Ventures - Oakland

Boring Location: 2240 Filbert St, Oakland

Project No.:

Subcontractor and Equipment: Teg / Dual Wall DP

Logged By: CM

Log of Boring — Page of

SB/SV-1

Sampling Method: Cont. Core

Monitoring Device: PID

Comments: SV-1 set in 1" borehole

Start Date/ Time: 5-28-14

Finish Date/ Time:

First Water (BGS): 7.5

Stabilized Water Level (BGS): NA

Surface Elevation: Casing Top Elevation:

Sample Interval/ Recovery, Inches	Blows/foot	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
H			1	Y	12" = concrete
A		362	2	XX	Silty Clay (CL): Olive gray (5Y-4/2); V. stiff; Dry; Med. plast.; (0,0,30,70) @ 2' mod. chem. odor; green staining
			3		DK. greenish gray (10Y-4/1)
			4		AA - strong chem. odor
	1120	974	5	X	Silty Sand with gravel trace clay (SM); V. DK. greenish gray (10Y-3/1)
			6		
			7		
	V	310	8		Clay (CH); DK. Brn (10YR-3/3); Stiff; Dry; High plast.; (0,0,0,100)
		4	9		
			10		

SB-1 / SV-1

Boring Abandonment/ Well Construction Details

1" dia. borehole

Hyd. Bent.

Dry

#3 Sand

Stantec

Reviewed by: _____ Date: _____

Project: City Ventures - Oakland

Boring Location: 2240 Filbert St, Oakland

Project No.:

Subcontractor and Equipment: Teg / Dual Wall DP

Logged By: CM

Log of Boring — Page of

SB/SV-2

Sampling Method: Cont. Core

Monitoring Device: PID

Comments:

Start Date/ Time: 5-28-14

Finish Date/ Time:

First Water (BGS): NA

Stabilized Water Level (BGS): NA

Surface Elevation: Casing Top Elevation:

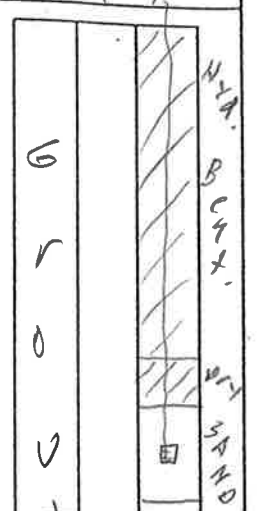
Sample Interval/ Recovery, Inches	Blows/foot	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
			0		2" Asphalt
11			1		
			2		
A		2	3		Silty Clay (CL); greenish gray (5GY-3/1); V. Stiff; Dry; Med. Plast.; some HC staining in zones; (0,0,30,70)
		2	4		
			5		
		2	6		
			7		
		4	8		Silty Sand with gravel and Clay (SM); DK. greenish gray (10Y-4/1); Sand is F.; Gravel is F-M; Dense; Dry; (15-50,25,10)
	1150	7	9	X	Silty Clay (CL) - AA; Faint HC odor
			10		

SB-2 Boring Abandonment/ Well Construction Details

3.5"

SV-2

1"



Stantec

Reviewed by: _____ Date: _____

Project: City Ventures - Oakland

Boring Location: 2240 Filbert St, Oakland

Project No.:

Subcontractor and Equipment: Teg / Dual Wall DP

Logged By: CM

Log of Boring — Page of

SB/SV-3

Sampling Method: Cont. Core

Monitoring Device: PID

Comments:

Start Date/ Time: 5-28-14

Finish Date/ Time:

First Water (BGS): NA

Stabilized Water Level (BGS): NA

Surface Elevation: Casing Top Elevation:

SB-3 Boring Abandonment/ Well Construction Details — 3.5'

SV-3 — 1'

LITHOLOGIC DESCRIPTION
(color, grain size, consistency, moisture, other)

Sample Interval/ Recovery, Inches	Blows/foot	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION
H			1	xx	4" Concrete
			2		Silty Clay (CL): Lt. Olive Brn (2.5Y-5/3); V. Stiff; dry; med. plastic; (0, 0, 30, 70)
A		0	3		
			4		
			5		
		0	6		
			7		AA - Lt. Olive Brn (2.5Y-5/6);
		0	8	X	
	1310				
		0	9		Silty Sand (SM): Lt. Olive Brn (2.5Y-5/6); Lt. Olive Brn (2.5Y-5/6); Sand is F; med. dense; moist; (0, 60, 40, 0)
			10		

SB-3: 6 / 5 / 0 / U / T

SV-3: 11-Q. Bent. / D-1 Sand

Stantec

Reviewed by: _____ Date: _____

Project: City Ventures - Oakland

Boring Location: 2240 Filbert St, Oakland

Subcontractor and Equipment: Teg / Dual Wall DP

Sampling Method: Cont. Core

Start Date/ Time: 5-28-14

First Water (BGS): NA

Project No.:

Logged By: CM

Monitoring Device: PID

Finish Date/ Time:

Stabilized Water Level (BGS): NA

Log of Boring: SB/SV-4

Page of

Comments:

Surface Elevation: Casing Top Elevation:

Sample Interval/ Recovery, Inches	Blows/foot	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
					6" concrete
1'		0	1	CH	Clay (CH); Black (5Y-2.5/1); Soft; high plasti; moist; (0,0,0,100)
			2		@ 2' - stiff; dry
			3		
		3	4	CL	Clay (CL); Olive (5Y-5/3); V. stiff; dry; med. plasti; HC staining in zones
		4	5		
			6		
		526	7		@ 7' strong HC odor; HC staining dk. greenish gray (10Y-4/1)
			8		
	1020	701	9	SM	Silty Sand with gravel and clay (SM); dk. greenish gray (10Y-4/1); sand is F; gravel is F-C subrounded; dense; dry; strong HC odor and staining (15,50,25,10)
			10		

SB-4 / SV-4 Boring Abandonment/ Well Construction Details

3.5" 1"

0.2

Stantec

Reviewed by: _____ Date: _____

Project: City Ventures - Oakland

Boring Location: 2240 Filbert St, Oakland

Project No.:

Subcontractor and Equipment: Teg / Dual Wall DP

Logged By: CM

Log of Boring SB-5 Page of

Sampling Method: Cont. Core

Monitoring Device: PID

Comments:

Start Date/ Time: 5-28-14

Finish Date/ Time:

First Water (BGS): N A

Stabilized Water Level (BGS): N A

Surface Elevation: Casing Top Elevation:

Sample Interval/ Recovery, Inches	Blows/foot	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
					Asphalt + Baserock
R	1340		1		Silty Clay (CL); V. DK. gray (10YR-3/1); med. stiff; Dry; med. plast; (0,0,40,60)
			2		Silty Clay (CL); Olive (5Y-5/3); V. stiff; Dry; med. plasy; (0,0,30,70)
A	1345		3		
			4		
			5		
	1350		6		A A
			7		
			8		
			9		
	1355		10		Silty Sand (SM); Lt. Olive Brn (2.5Y-5/6); Sand is F; med. dense; moist; (0,60,40,0)

Boring Abandonment/ Well Construction Details: 6 r o u t

Stantec

Reviewed by: _____ Date: _____

Project: City Ventures - Oakland			Log of Boring: SB-6 Page of
Boring Location: 2240 Filbert St, Oakland	Project No.:		
Subcontractor and Equipment: Teg / Pugl Well DP	Logged By: CM		
Sampling Method: Cont. Core	Monitoring Device: PID	Comments:	
Start Date/ Time: 5-28-14	Finish Date/ Time:		
First Water (BGS): NA	Stabilized Water Level (BGS): NA		

Surface Elevation: Casing Top Elevation:

Sample Interval/ Recovery, Inches	Blows/foot	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)	Boring Abandonment/ Well Construction Details
					Asphalt Baserock	
X	1405		1		Silty Clay (CL); V. Dk. Gray (10YR-3/1); med. stiff; Dry; med. plast; (0,0,40,60)	6
A	1410		2 3			Y
			4		Silty Clay (CL); Olive (5Y-5/3) V. stiff; Dry; med. plast; (0,0,30,70)	O
	1415		5 6			U
			7			T
	1420		8 9 10		Silty Sand with gravel and clay (SM); Lt. Olive Brn (2.5Y-5/6); Sand is F; med. dense; moist; (10,60,30,0)	

Stantec

Reviewed by: _____ Date: _____

Project: City Ventures - Oakland

Boring Location: 2240 Filbert St, Oakland

Subcontractor and Equipment: Teg / Dual Wall DP

Sampling Method: Continuous Core

Start Date/ Time: 5-28-14

First Water (BGS): NA

Project No.:

Logged By: CM

Monitoring Device: PID

Finish Date/ Time:

Stabilized Water Level (BGS): NA

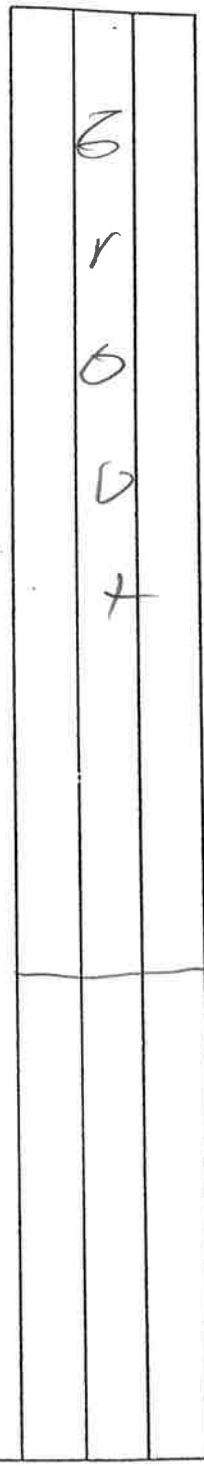
Log of Boring SB-7 Page of

Comments:

Surface Elevation: Casing Top Elevation:

Sample Interval/ Recovery, inches	Blows/foot	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
					Asphalt
					Sandy gravel basecrock
4	1435		1		Silty Clay (CL); V. DK. Gray (10YR-3/1); med. stiff; Dry; med. plast; (0,0,40,60)
			2		
	1440		3		
4					
			4		Silty Clay (CL); Olive (5Y-5/3); V. stiff; Dry; med. plast; (0,0,30,70)
			5		
	1445		6		
			7		Silty Sand with gravel (SM); Lt. Olive Brn (2.5Y-5/6); Sand is Fi; gravel is F-m; Dense; moist; (10,60,30,0)
			8		
			9		Silty Clay (CL) - AA
	1450		10		

Boring Abandonment/ Well Construction Details



Stantec

Reviewed by: _____ Date: _____

Project: City Ventures - Oakland		Log of Boring	Page of
Boring Location: 2240 Filbert St, Oakland	Project No.:	SB-8	
Subcontractor and Equipment: Teg / Dual Wall DP	Logged By: CM		
Sampling Method: Continuous Core	Monitoring Device: PID	Comments:	
Start Date/ Time: 5-28-14	Finish Date/ Time:		
First Water (BGS): NA	Stabilized Water Level (BGS): NA		

Surface Elevation: Casing Top Elevation:

Sample Interval/ Recovery, Inches	Blows/foot	PID (ppm)	Depth (feet)	USCS Symbol	LITHOLOGIC DESCRIPTION (color, grain size, consistency, moisture, other)
					Asphalt
					Sandy gravel base rock
H	1500	0	1		Silty Clay (CL): V. Dk. Gray (10YR-3/1); Med. Stiff; Dry; med plast; (0,0,40,60)
			2		
A	1505	0	3		
			4		Silty Clay (CL): Olive (5Y-5/3); V. Stiff; Dry; med. plast; (0,0,30,70)
			5		
	1510	0	6		
			7		
			8		Silty Sand with gravel (SM): Lt. Olive Brn (2.5Y-5/6); Sand is F.; gravel is F-m; med. dense; moist; (10,60,30,0)
			9		
	1515	0	10		

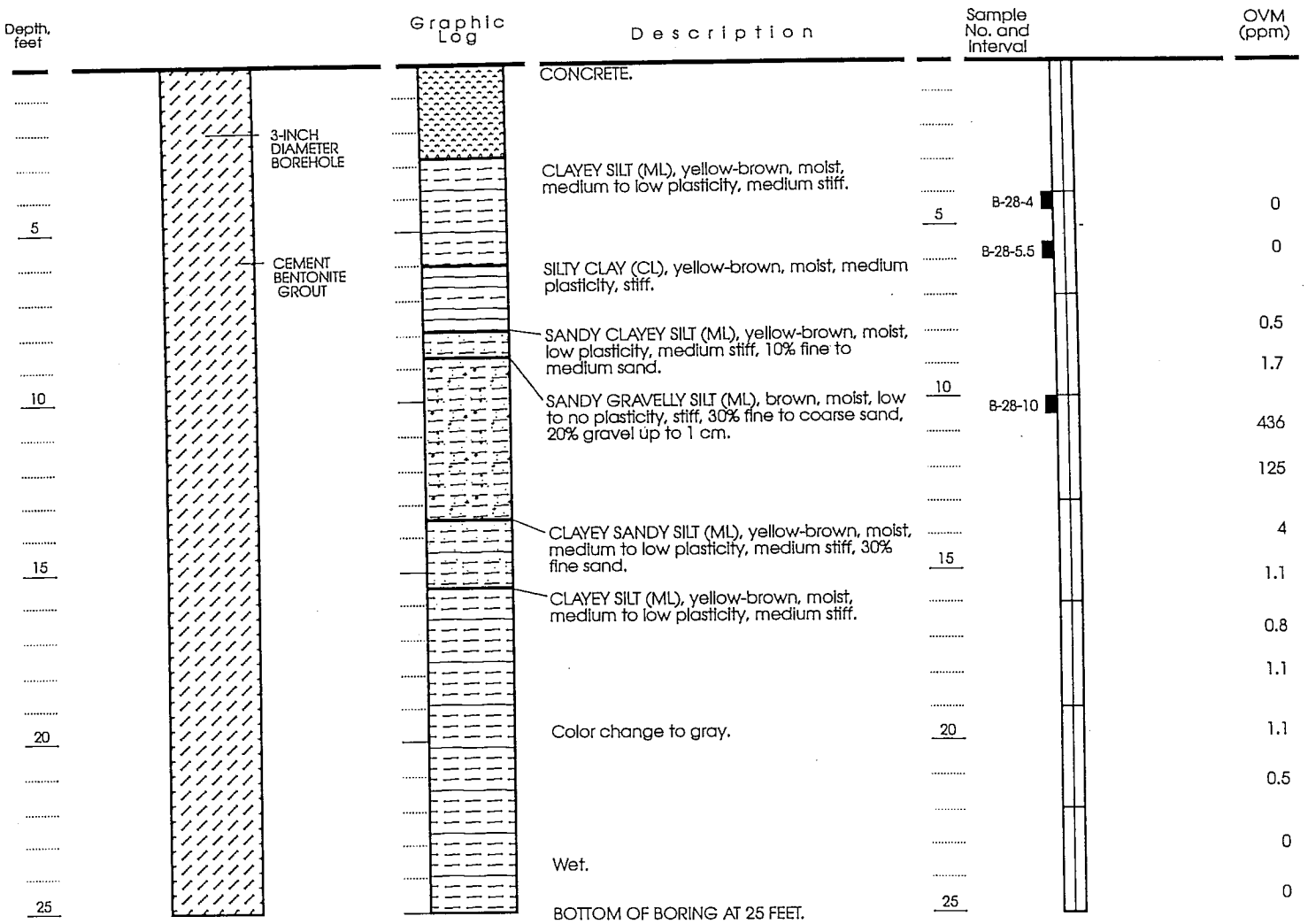
Boring Abandonment/ Well Construction Details: SVOC

Stantec

Reviewed by: _____ Date: _____

APPENDIX B

BORING LOGS FOR LEVINE-FRICKE'S PHASE II INVESTIGATION



Date boring drilled: November 18, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

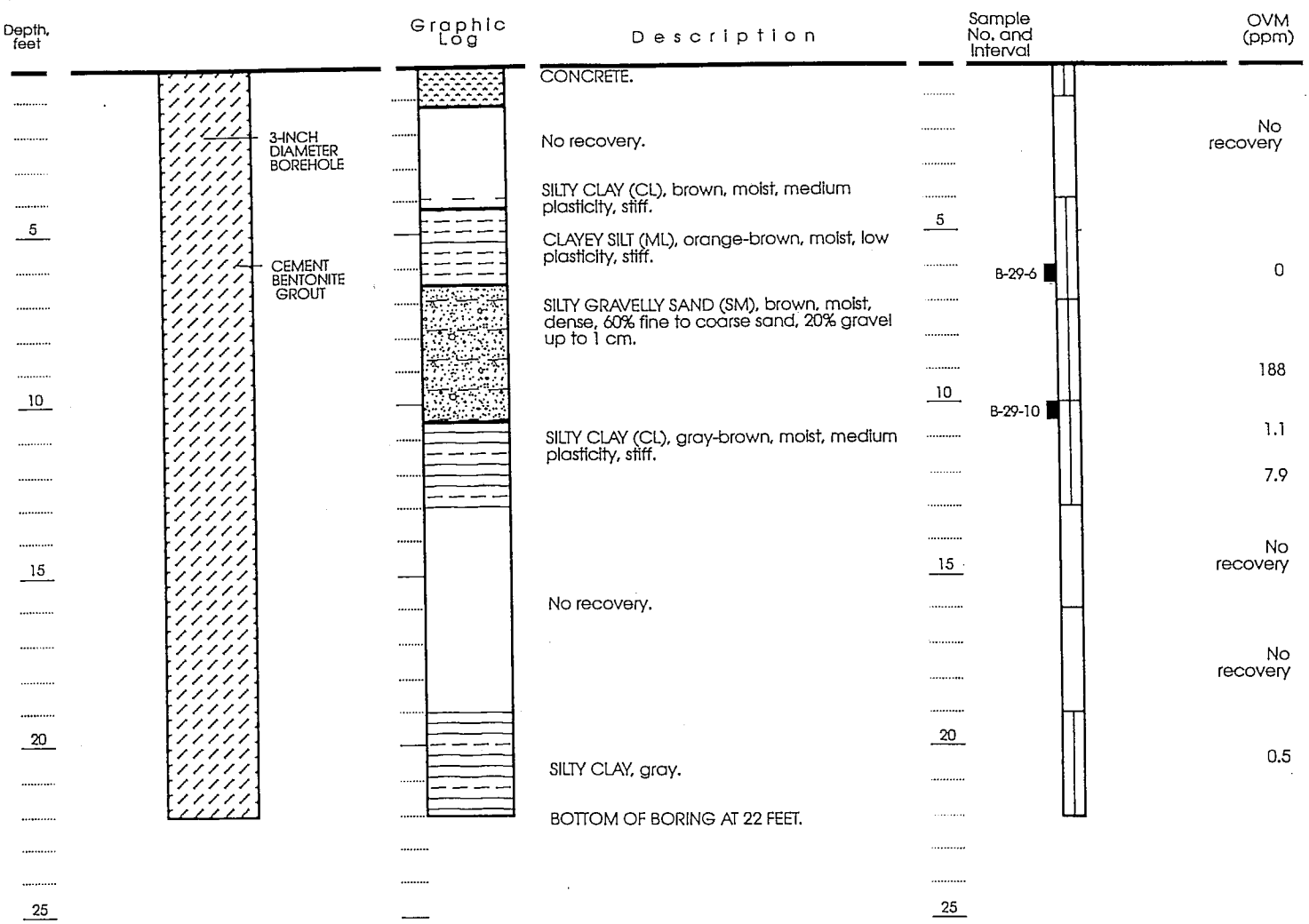
Approved by: rah (EG 1562)

Figure B1: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-28 *(page 1 of 1)*

Project No. 3230.94-05

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3230L061.RWB:MPM 122994



Date boring drilled: November 18, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

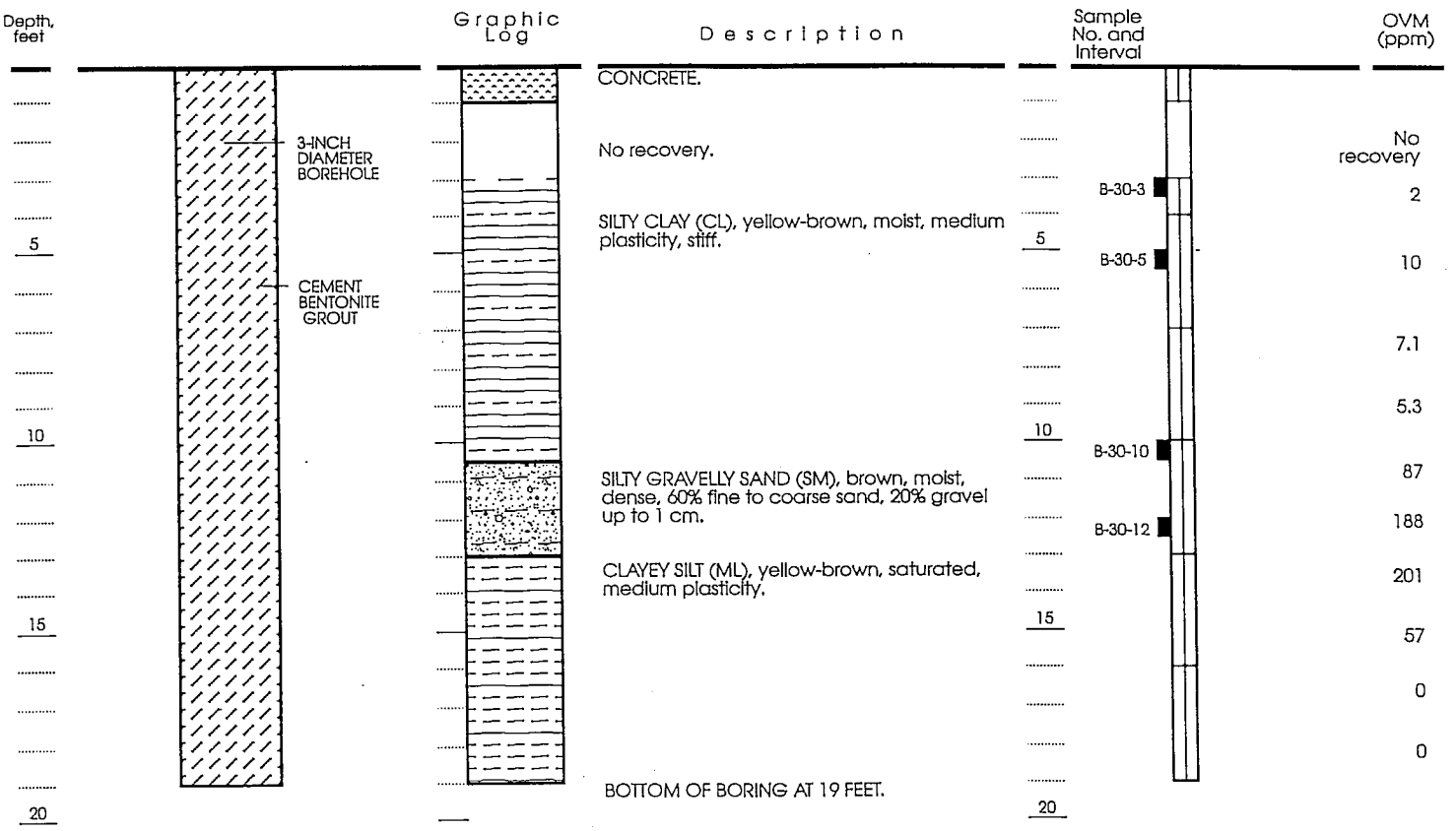
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EG 1562)

Figure B2: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-29 *(page 1 of 1)*



Date boring drilled: November 18, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

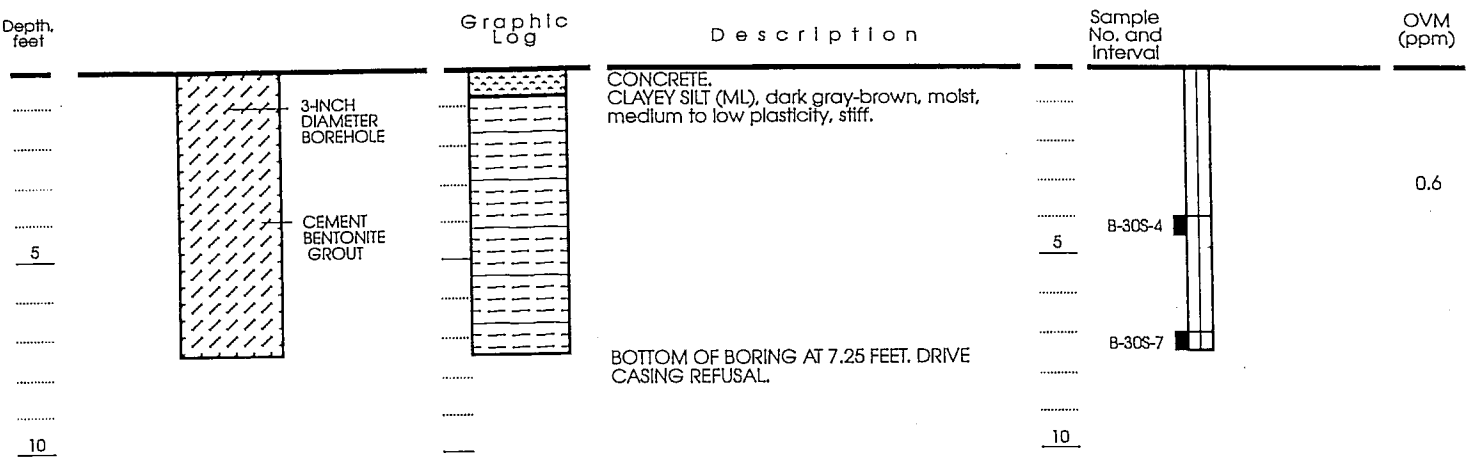
Approved by: Zak (EG 1562)

Figure B3: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-30 *(page 1 of 1)*

Project No. 3230.94-05

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3230L063.RWB:MPM 122994



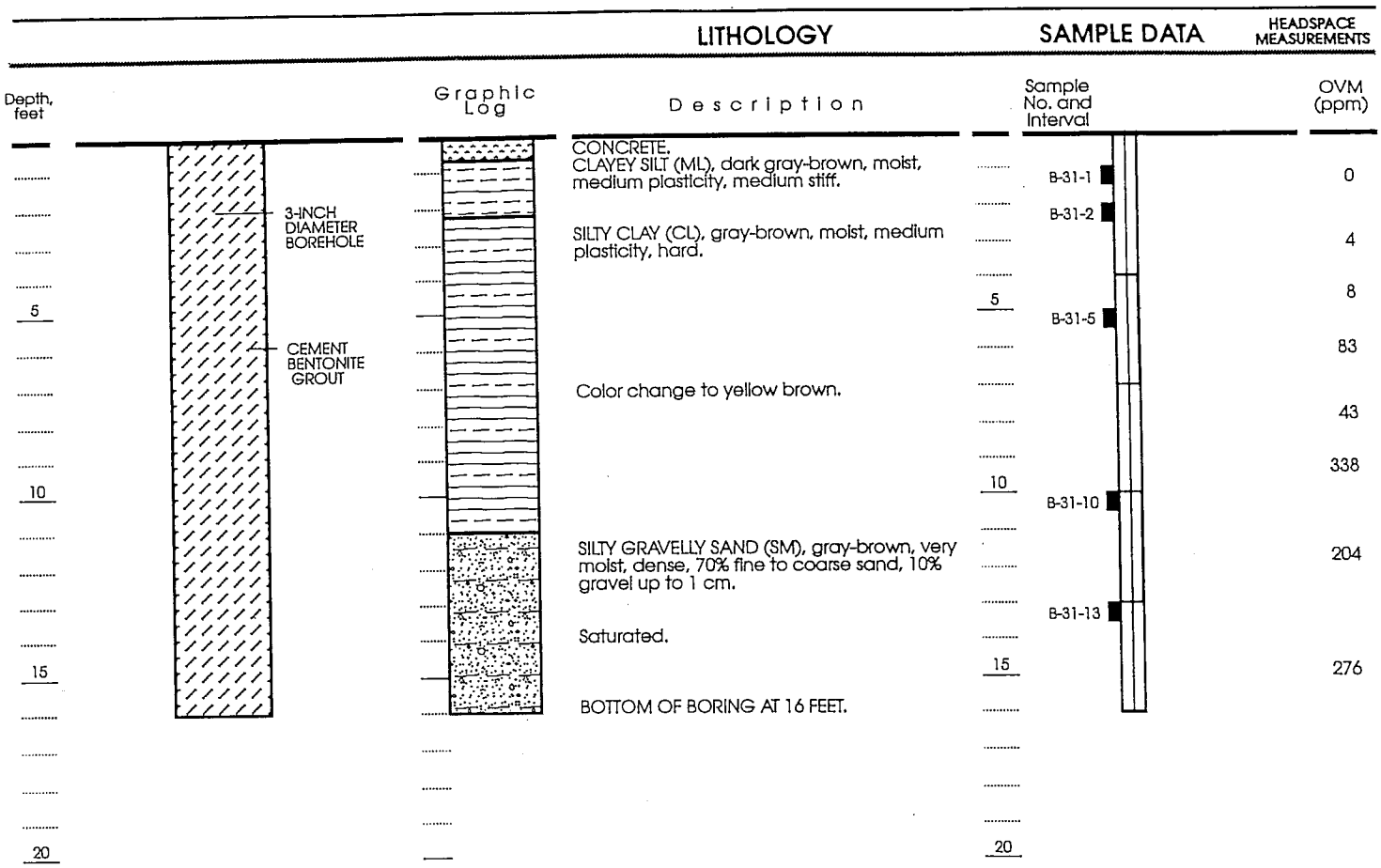
Date boring drilled: November 15, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Continuous Core
- Sample retained for analysis
- OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EG1562)

Figure B4: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-30S *(page 1 of 1)*



Date boring drilled: November 11, 1994
Drilling Company: Precision Sampling
Driller: Francisco
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

Clay

Silt

Sand

Gravel

Interval sampled using Continuous Core

Sample retained for analysis

OVM (ppm) Organic Vapor Meter reading in parts per million

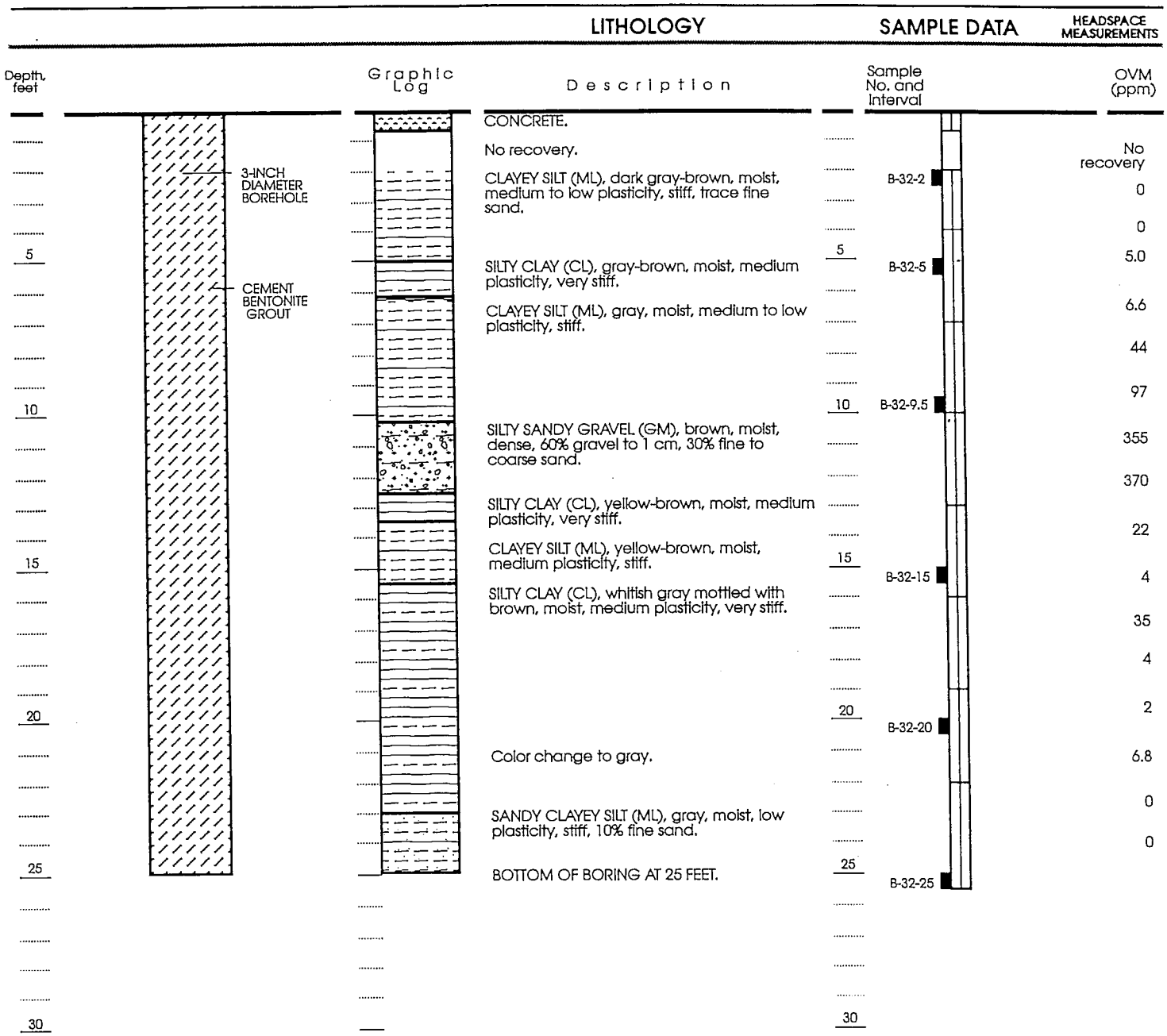
Approved by: Zak (EG 1562)

Figure B5: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-31 *(page 1 of 1)*

Project No. 3230.94-05

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3230L029.RWB:MPM 122994



Date boring drilled: November 10, 1994
Drilling Company: Precision Sampling
Driller: Francisco
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

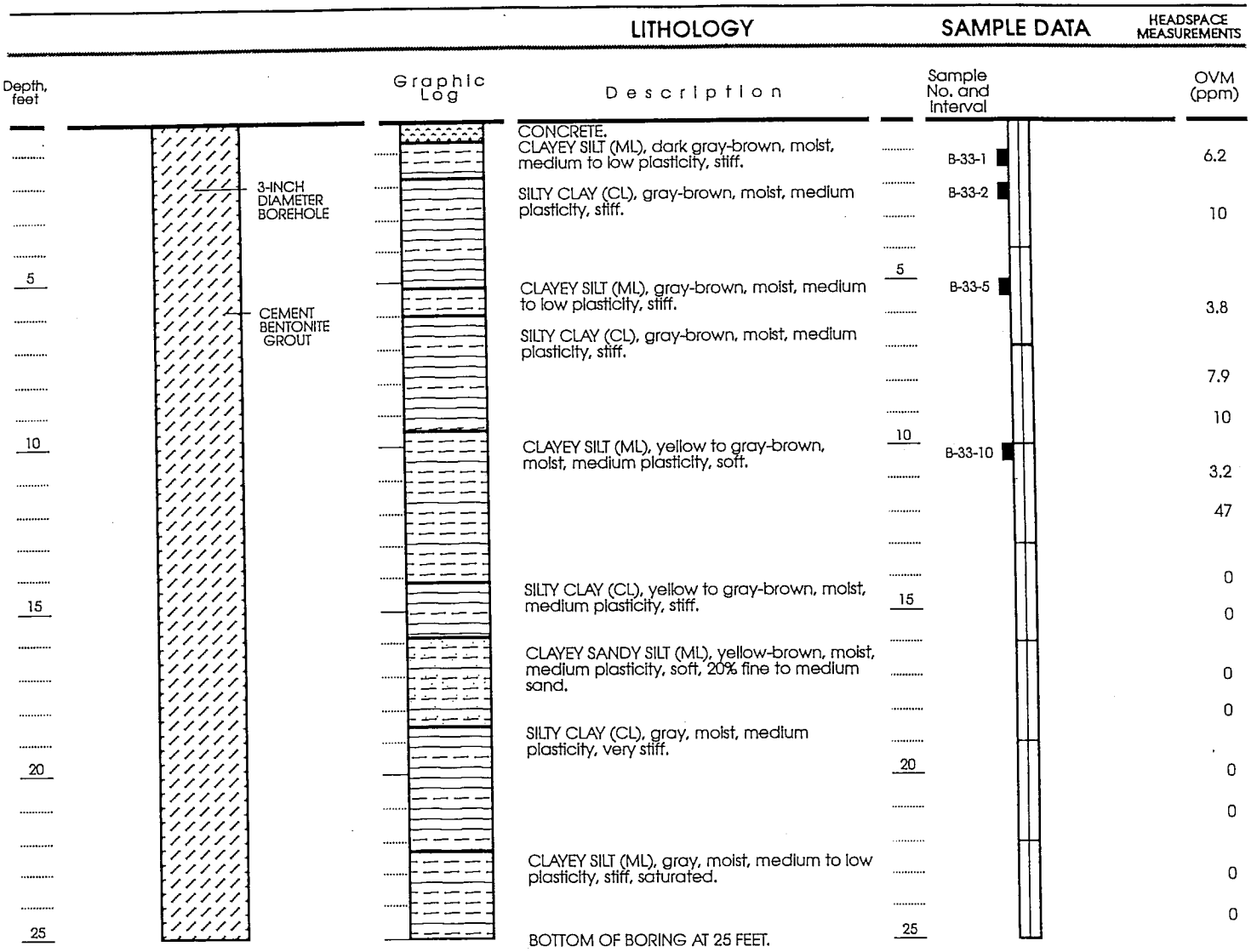
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EG 1562)

Figure B6: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-32 *(page 1 of 1)*



Date boring drilled: November 11, 1994
Drilling Company: Precision Sampling
Driller: Francisco
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

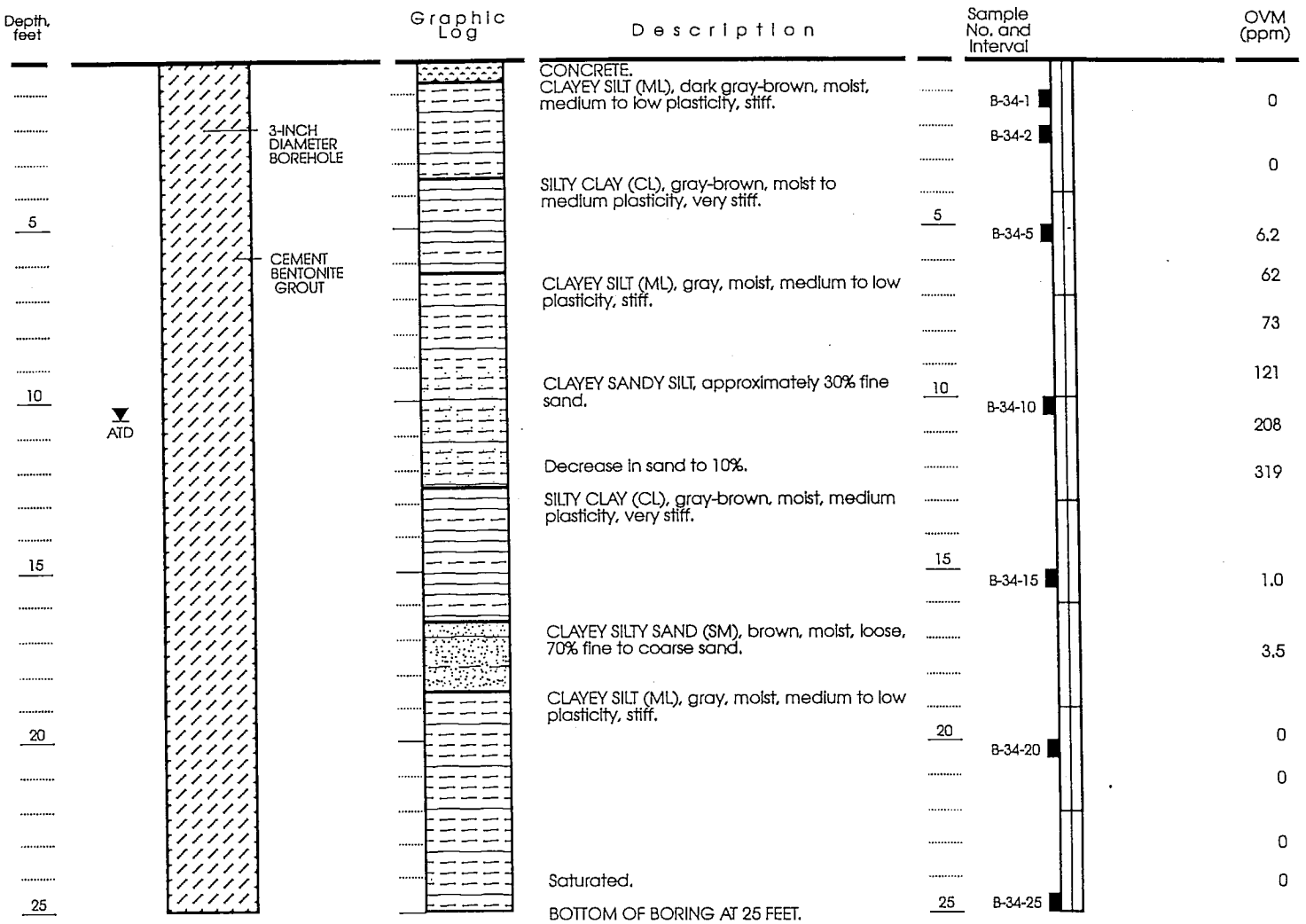
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zal (EG1562)

Figure B7: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-33 *(page 1 of 1)*



Date boring drilled: November 10, 1994
Drilling Company: Precision Sampling
Driller: Francisco
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

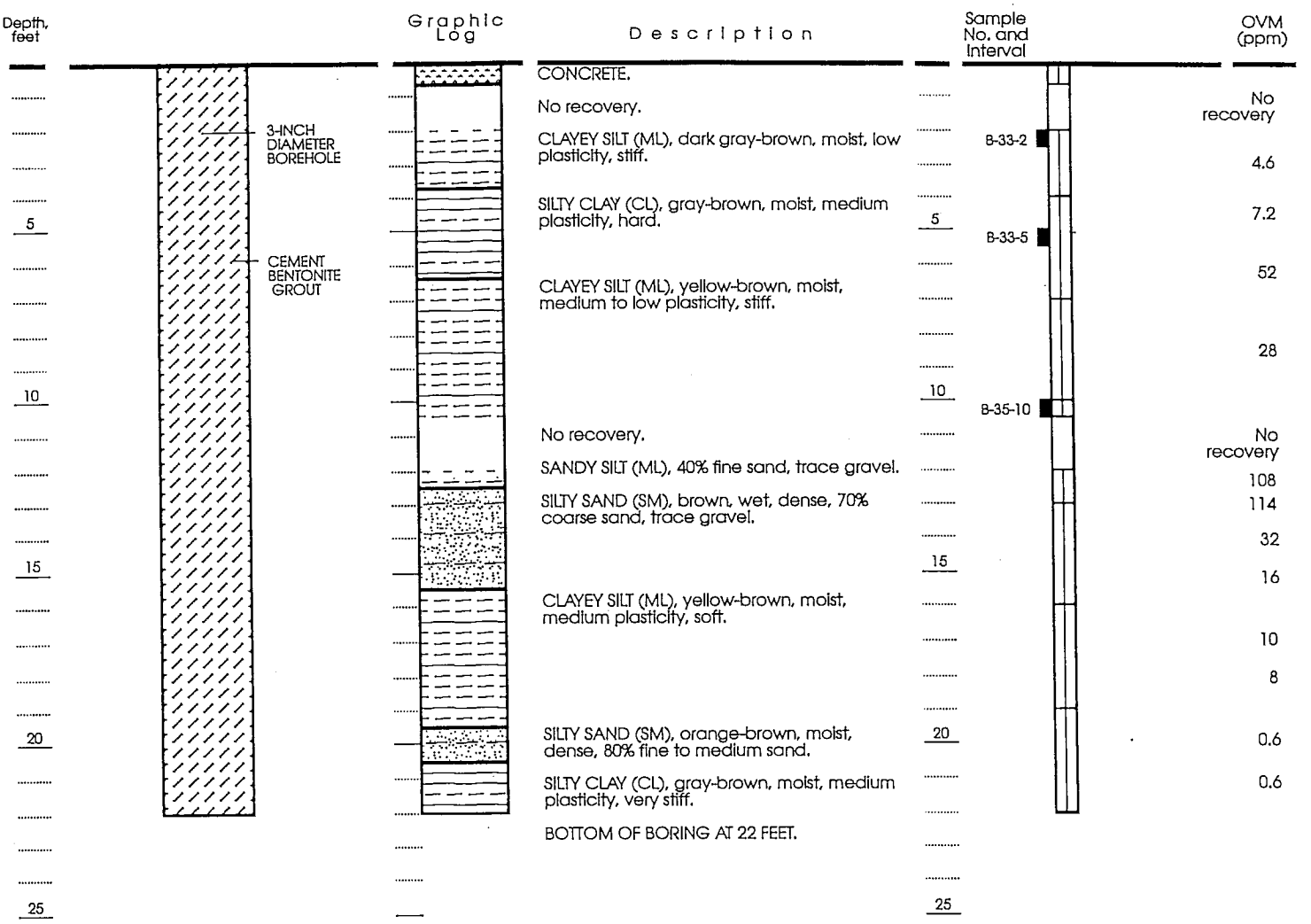
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
ATD Water level measured at time of drilling
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zeh (EG 1562)

Figure B8: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-34 *(page 1 of 1)*



Date boring drilled: November 14, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

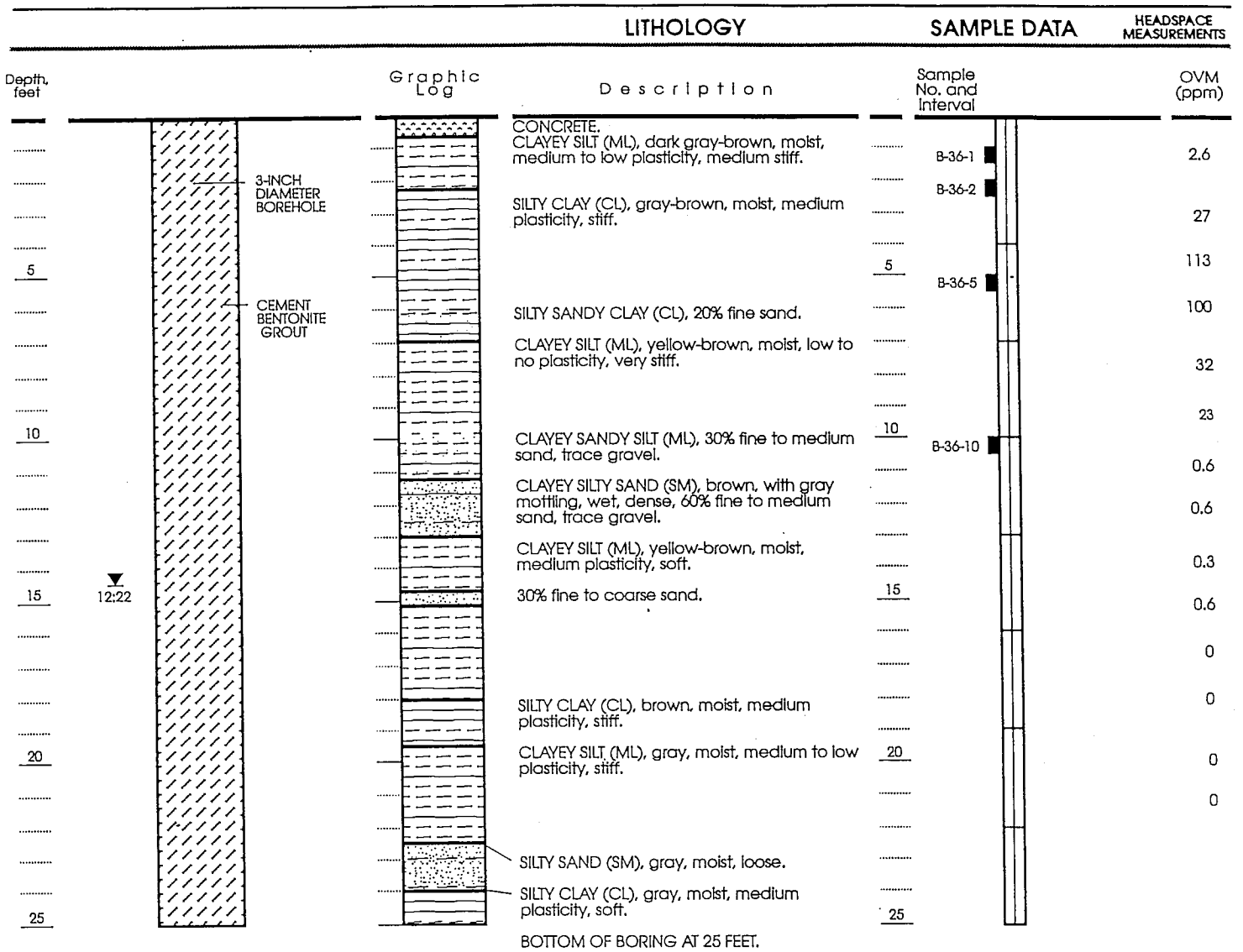
Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis

OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EG 1562)

Figure B9: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-35 *(page 1 of 1)*



Date boring drilled: November 14, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
Water level in well measured on November 14, 1994
OVM (ppm) Organic Vapor Meter reading in parts per million

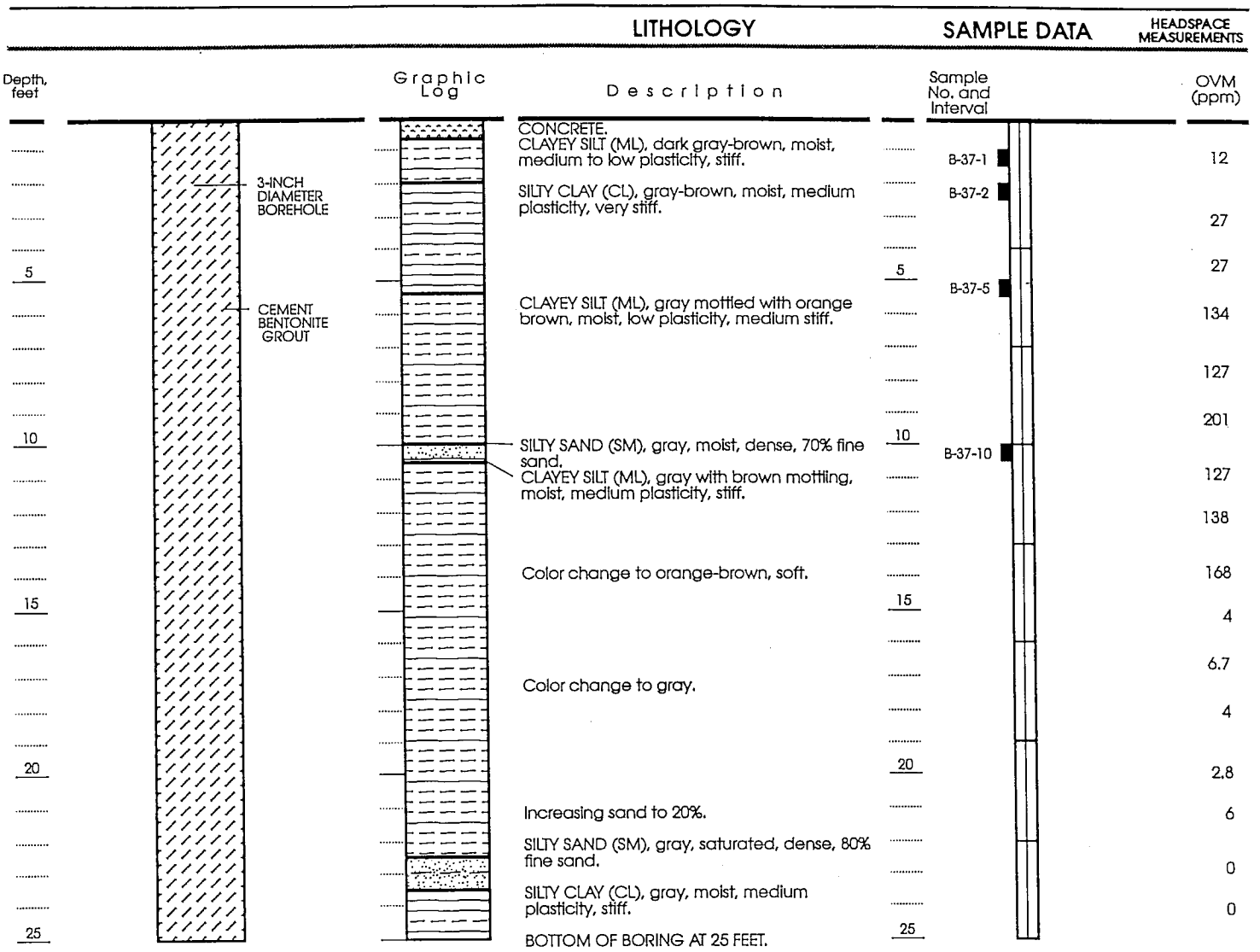
Approved by: Zal (EG1562)

Figure B10: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-36 *(page 1 of 1)*

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3230L034.RWB:MPM 122994



Date boring drilled: November 14, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

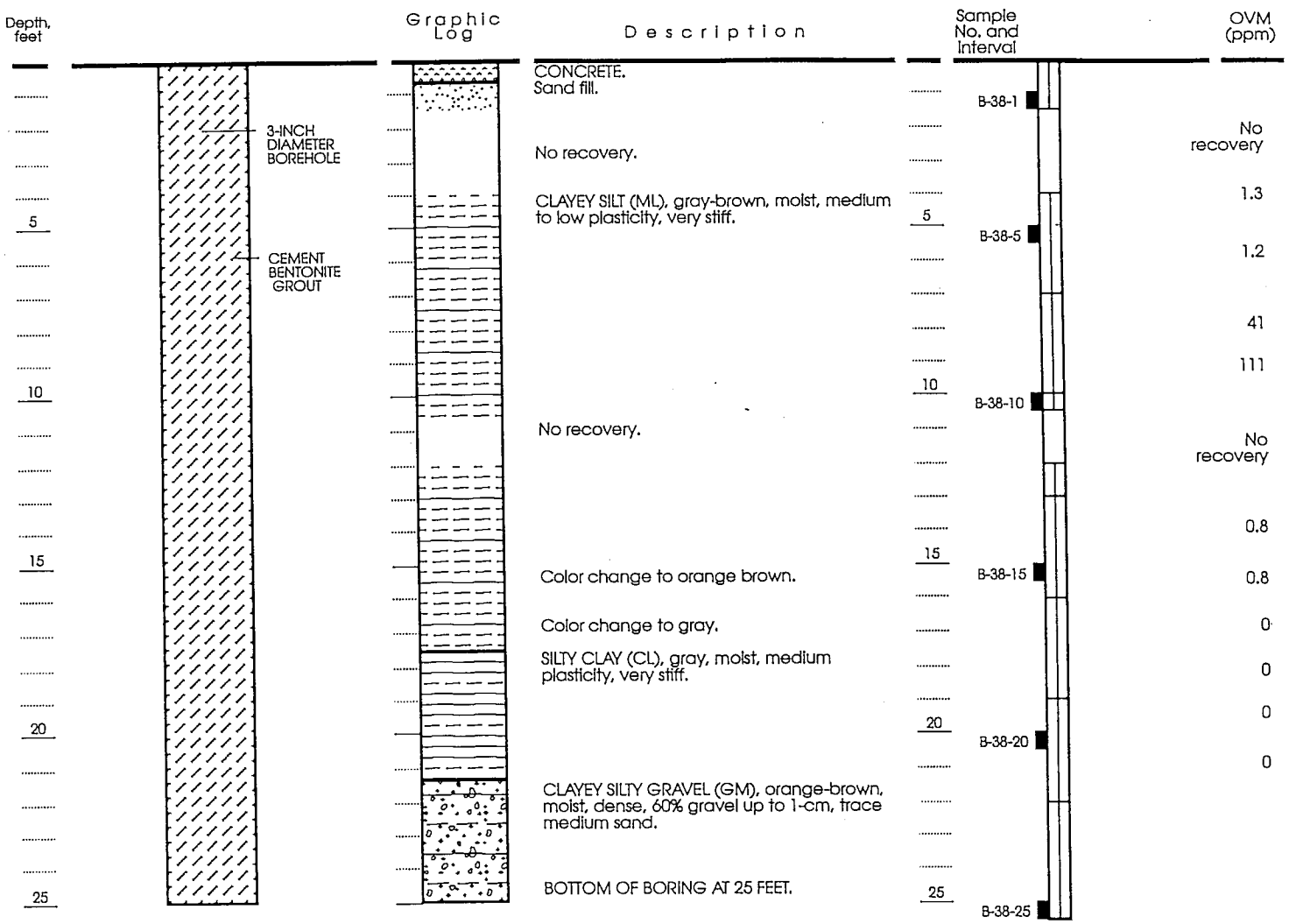
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zal (EG 1562)

Figure B11: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-37 *(page 1 of 1)*



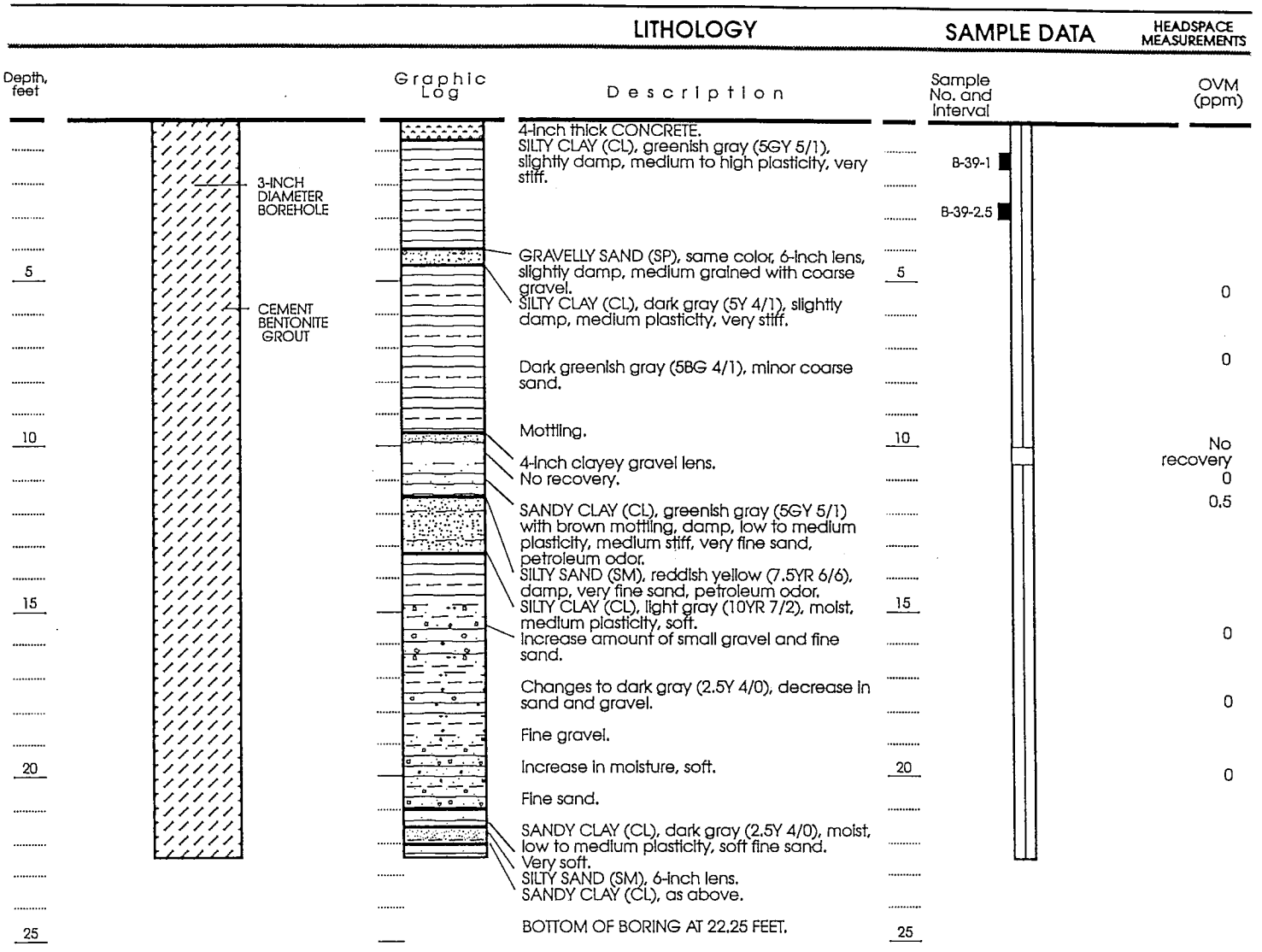
Date boring drilled: November 9, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Continuous Core
- Sample retained for analysis
- OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: (EG1562)

Figure B12: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-38 *(page 1 of 1)*



Date boring drilled: November 10, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Rick Hirsch

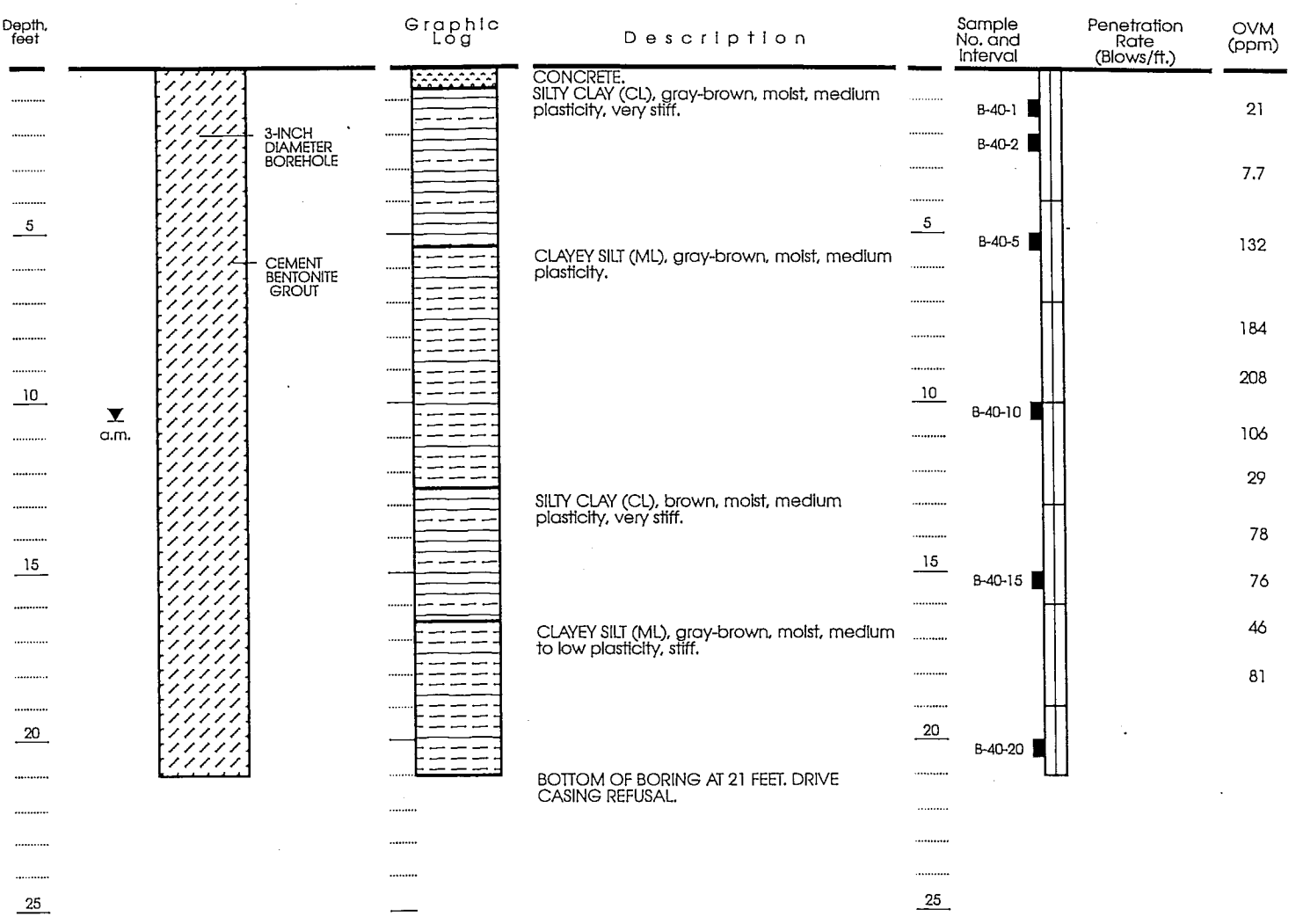
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EG 1562)

Figure B13: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-39 *(page 1 of 1)*



Date boring drilled: November 9, 1994
Drilling Company: Precision Sampling
Driller: Francisco
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

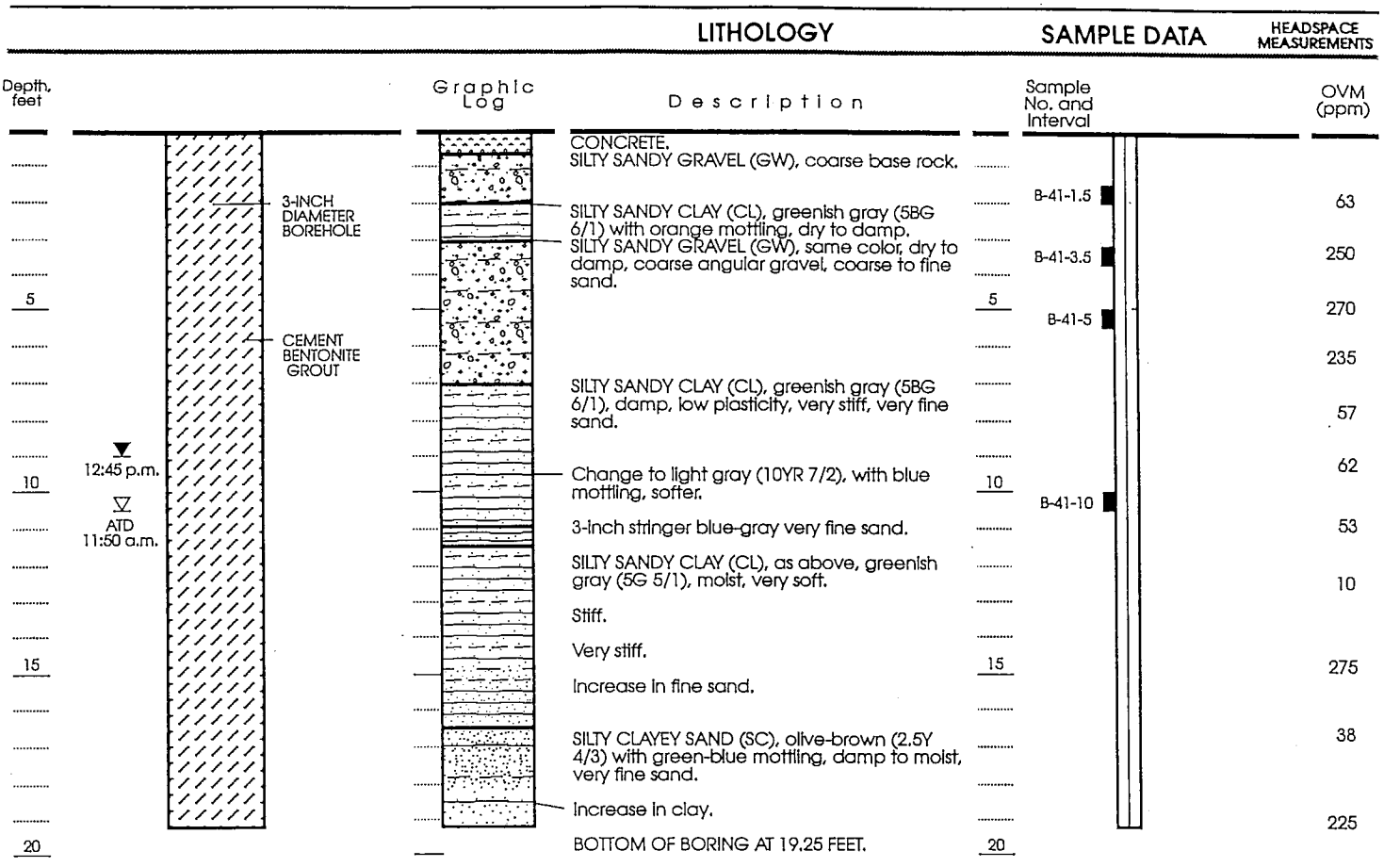
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
Water in well measured on November 10, 1994
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (E41562)

Figure B14: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-40 *(page 1 of 1)*



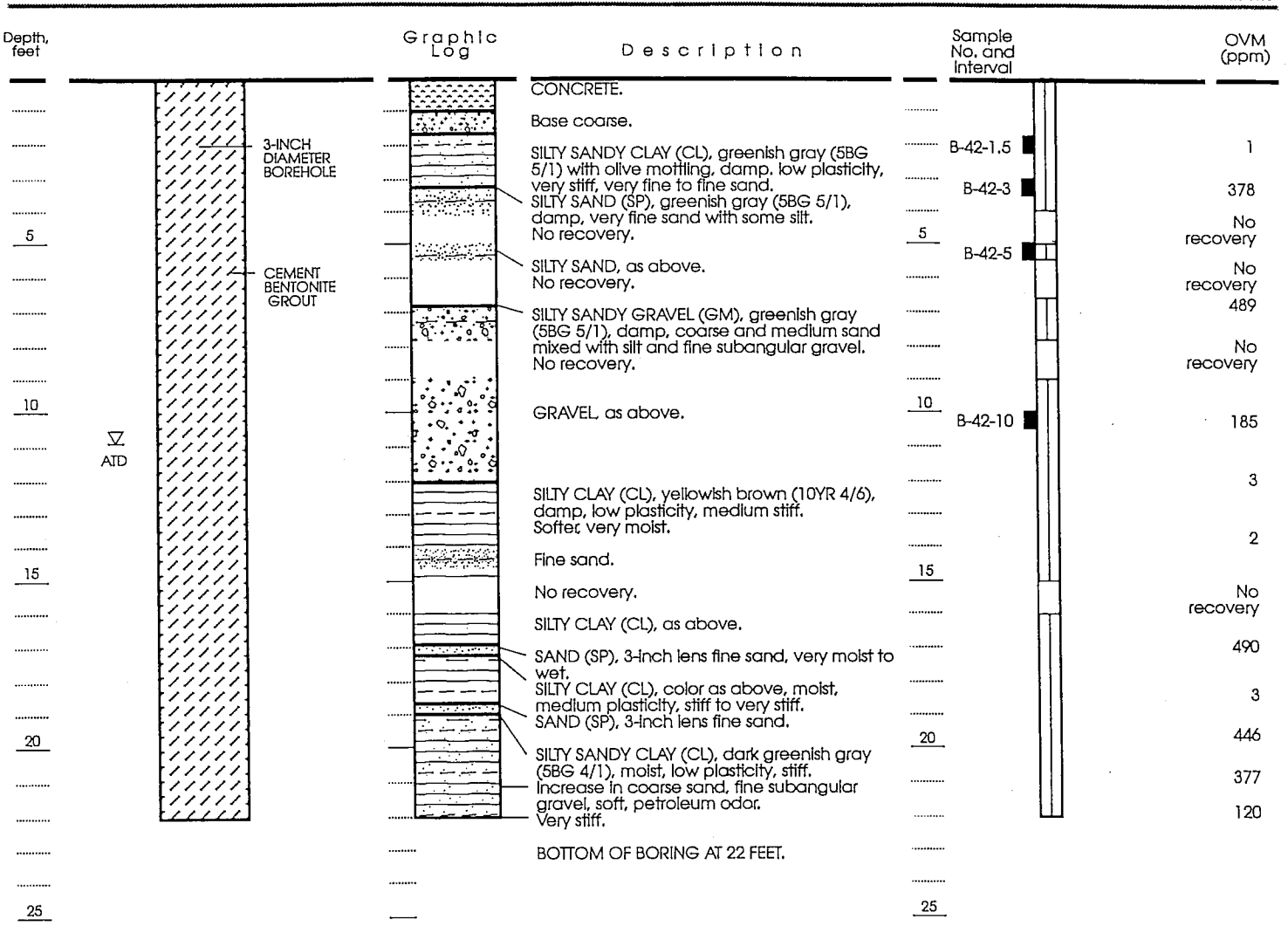
Date boring drilled: November 11, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Rick Hirsch

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Continuous Core
- Sample retained for analysis
- Water in well measured on November 10, 1994
- OVM (ppm) Organic Vapor Meter reading in parts per million
- ATD Water level measured at time of drilling

Approved by: Zal (EG 1562)

Figure B15: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-41 *(page 1 of 1)*



Date boring drilled: November 11, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Rick Hirsch

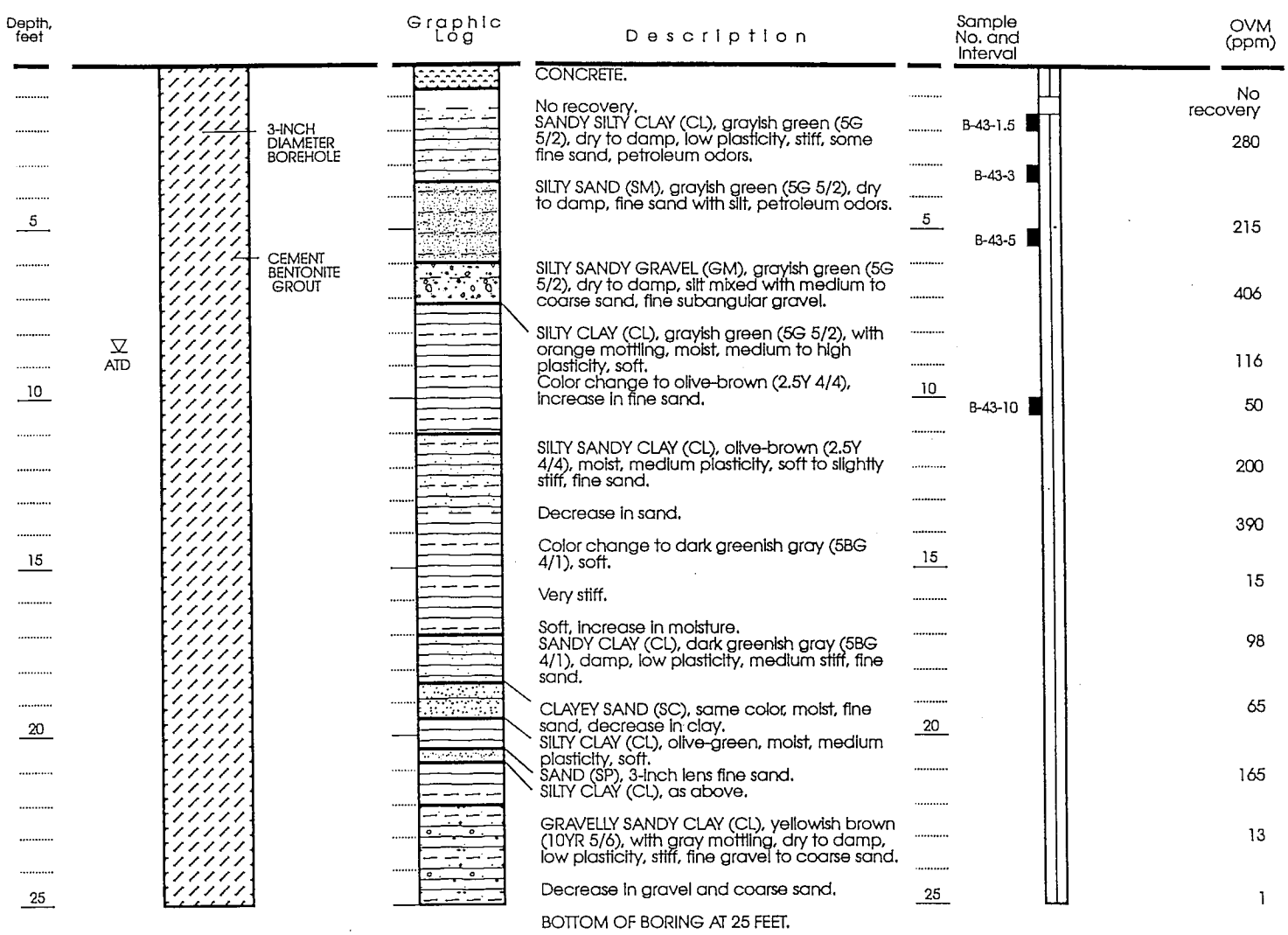
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
ATD — Water level measured at time of drilling
OVM (ppm) — Organic Vapor Meter reading in parts per million

Approved by: Zoe (EG 1562)

Figure B-16: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-42 *(page 1 of 1)*



Date boring drilled: November 11, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Rick Hirsch

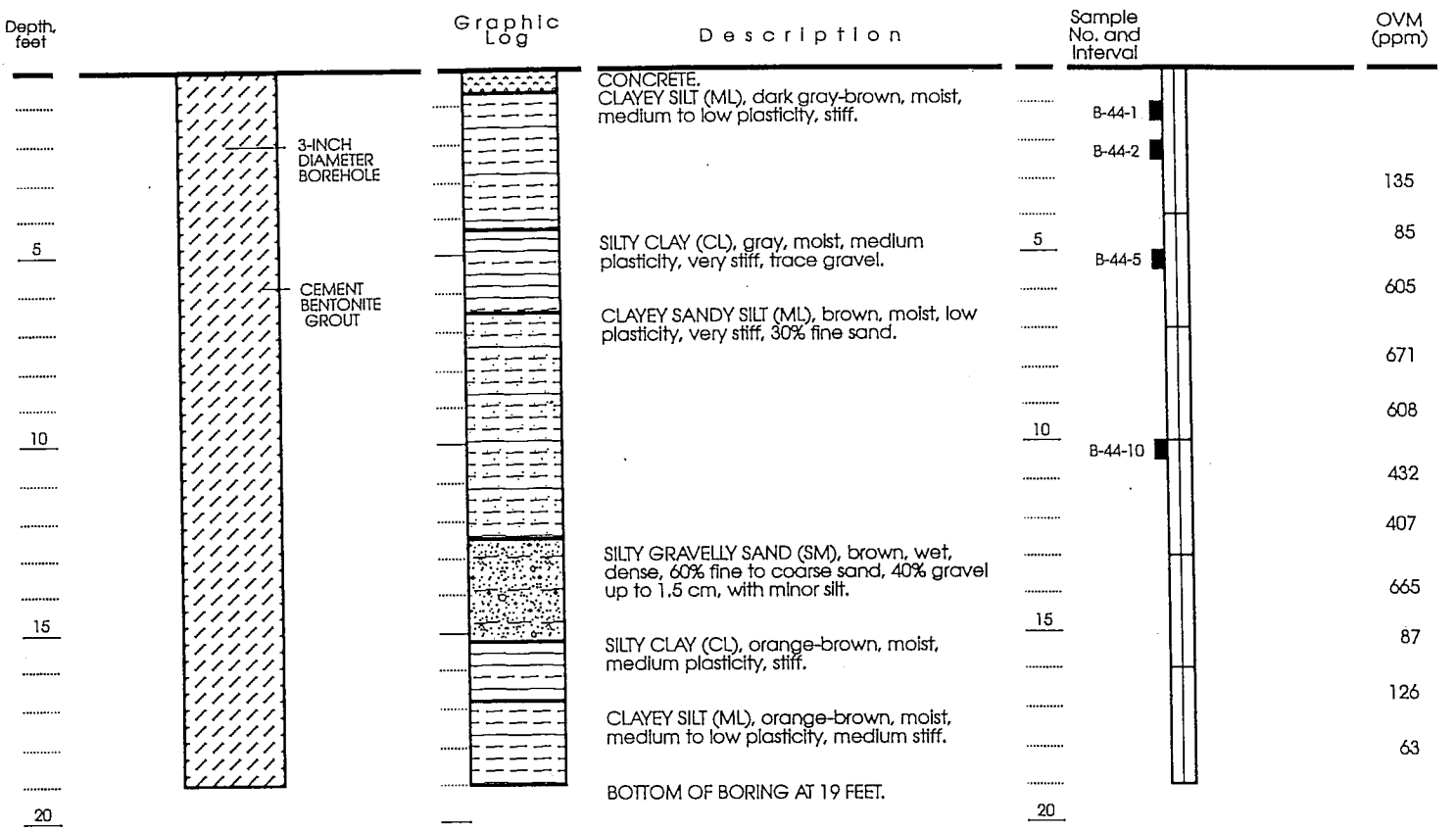
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
ATD Water level measured at time of drilling
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zol (EG 1562)

Figure B17: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-43 *(page 1 of 1)*



Date boring drilled: November 14, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

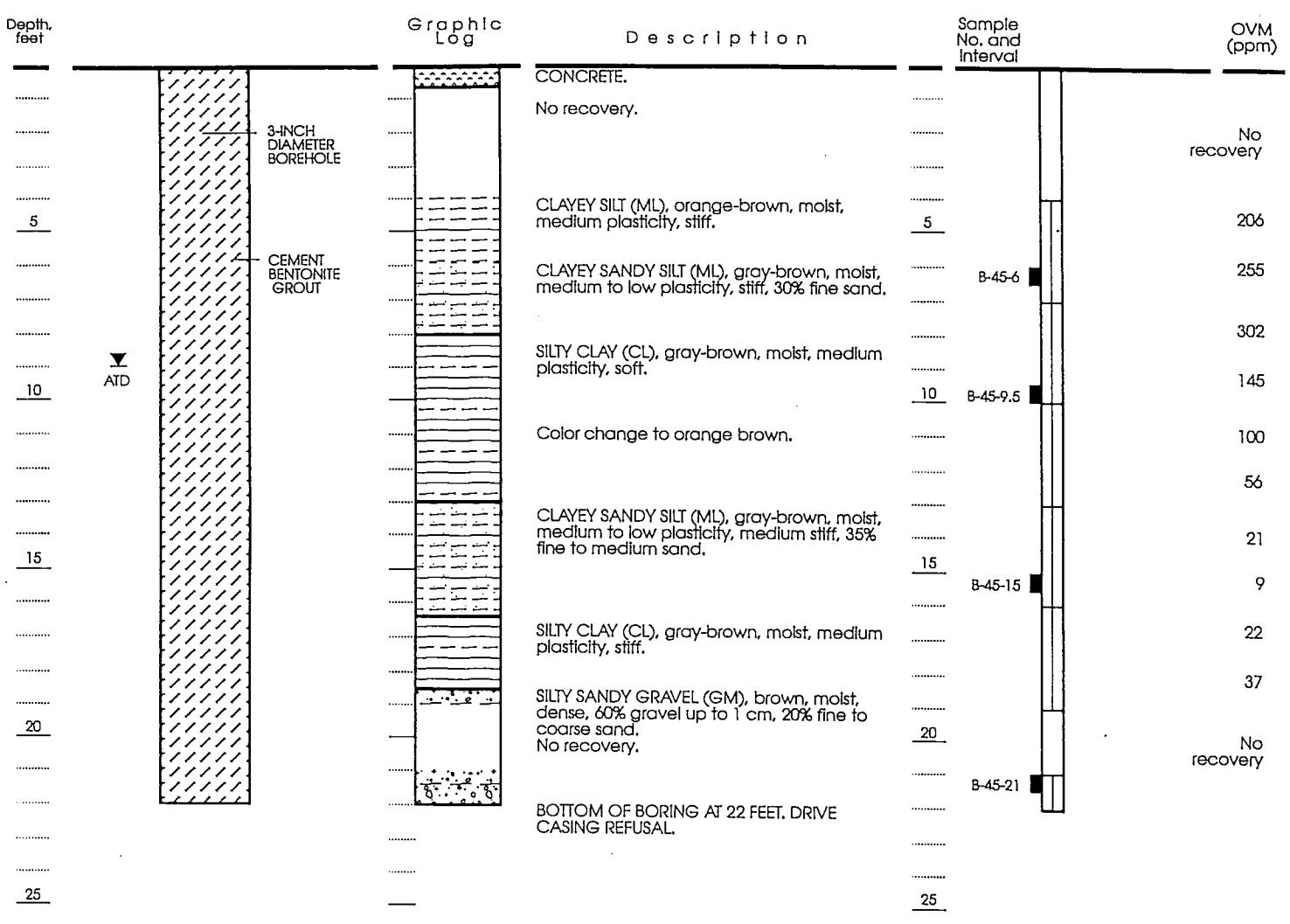
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Eqle (EG1562)

Figure B18: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-44 *(page 1 of 1)*



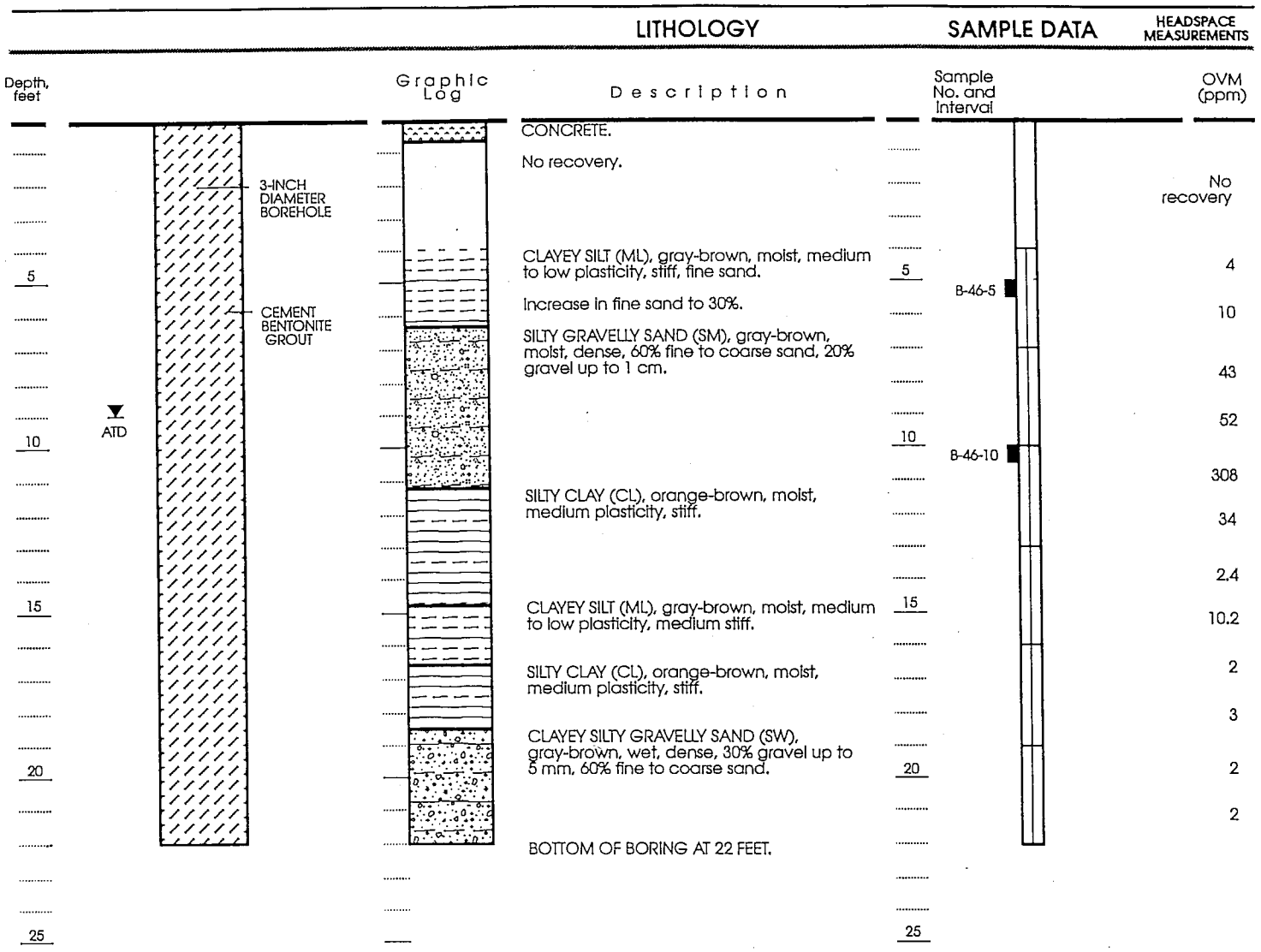
Date boring drilled: November 10, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Continuous Core
- Sample retained for analysis
- Water in well measured on November 11, 1994
- OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zale (EA156z)

Figure B19: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-45 *(page 1 of 1)*



Date boring drilled: November 11, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

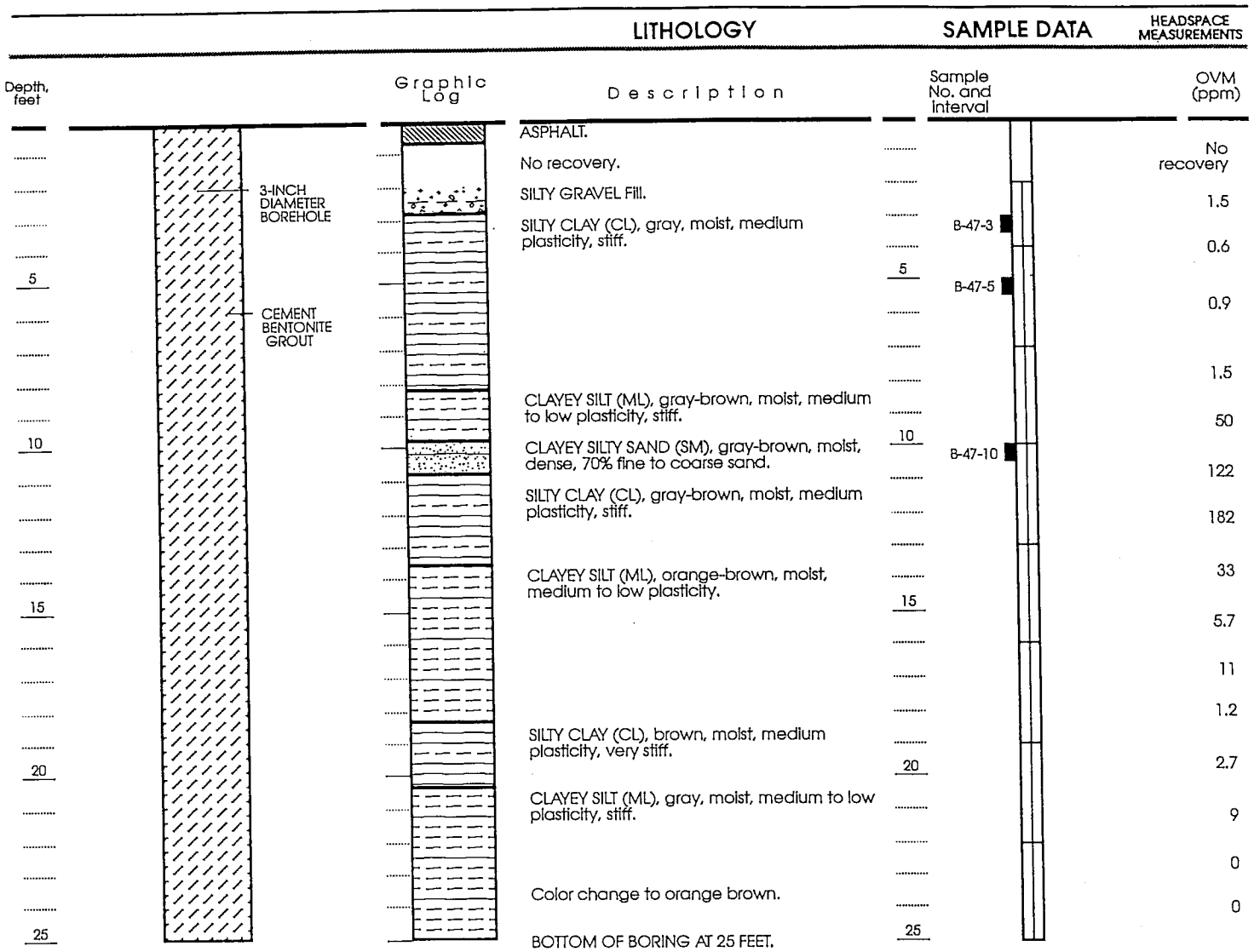
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
ATD — Water level measured at time of drilling
OVM (ppm) — Organic Vapor Meter reading in parts per million

Approved by: Zak (EG1562)

Figure B20: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-46 *(page 1 of 1)*



Date boring drilled: November 15, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

Clay

Silt

Sand

Gravel

Interval sampled using Continuous Core

Sample retained for analysis

OVM (ppm) Organic Vapor Meter reading in parts per million

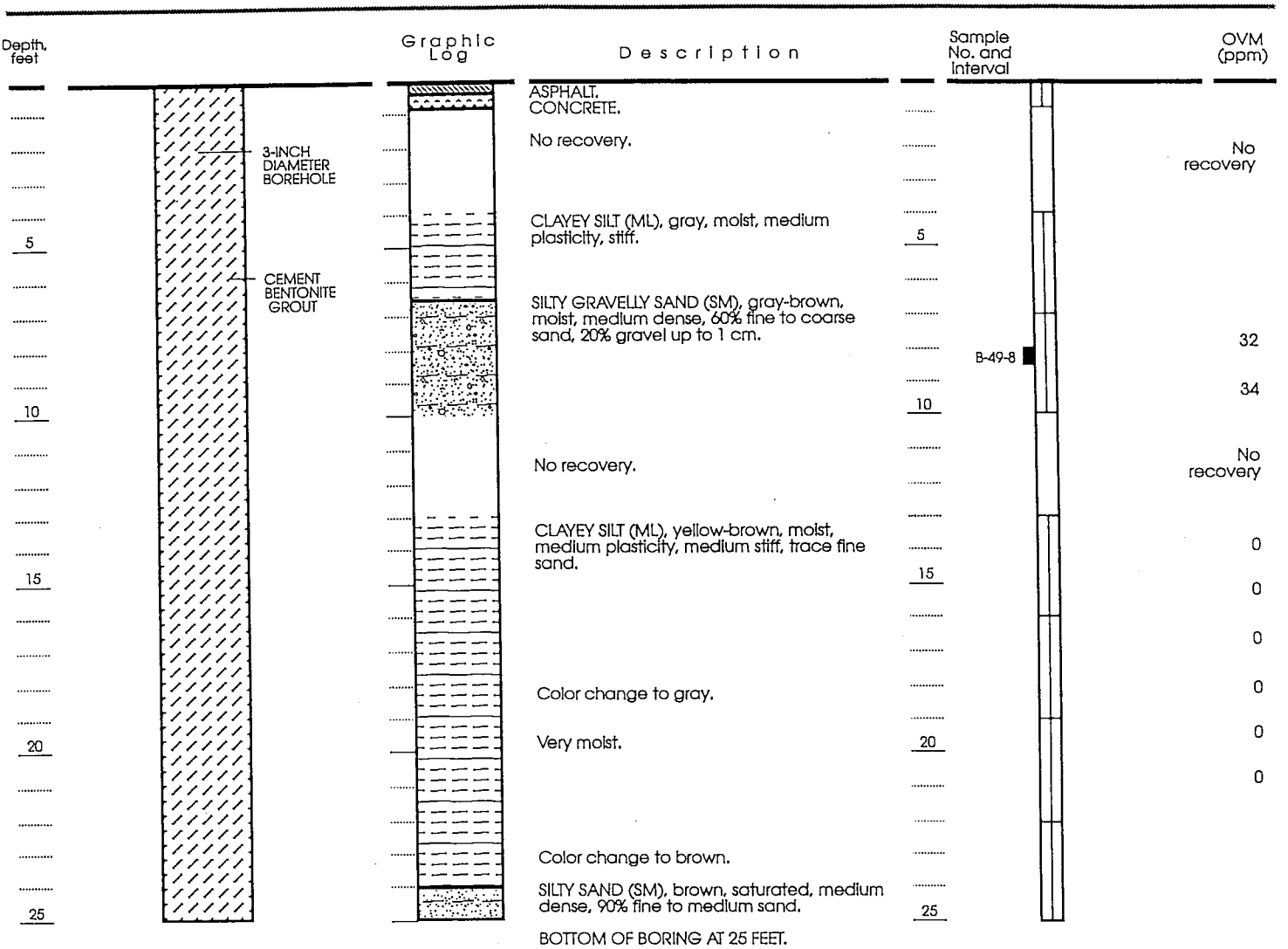
Approved by: Zak (EG 1562)

Figure B21: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-47 *(page 1 of 1)*

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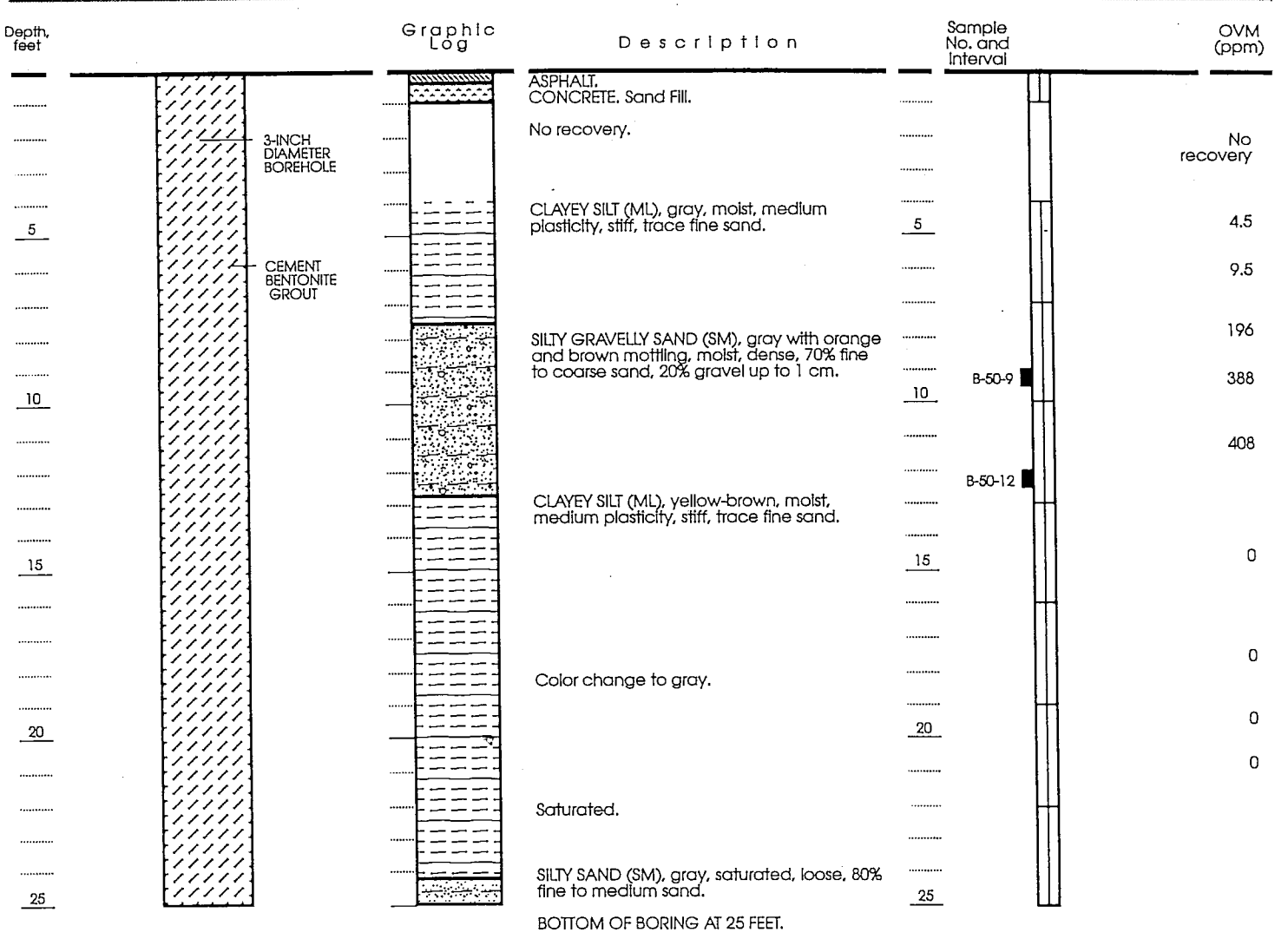
Date boring drilled: November 7, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Continuous Core
- Sample retained for analysis
- OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zal (EG1562)

Figure B22: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-49 *(page 1 of 1)*



Date boring drilled: November 7, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

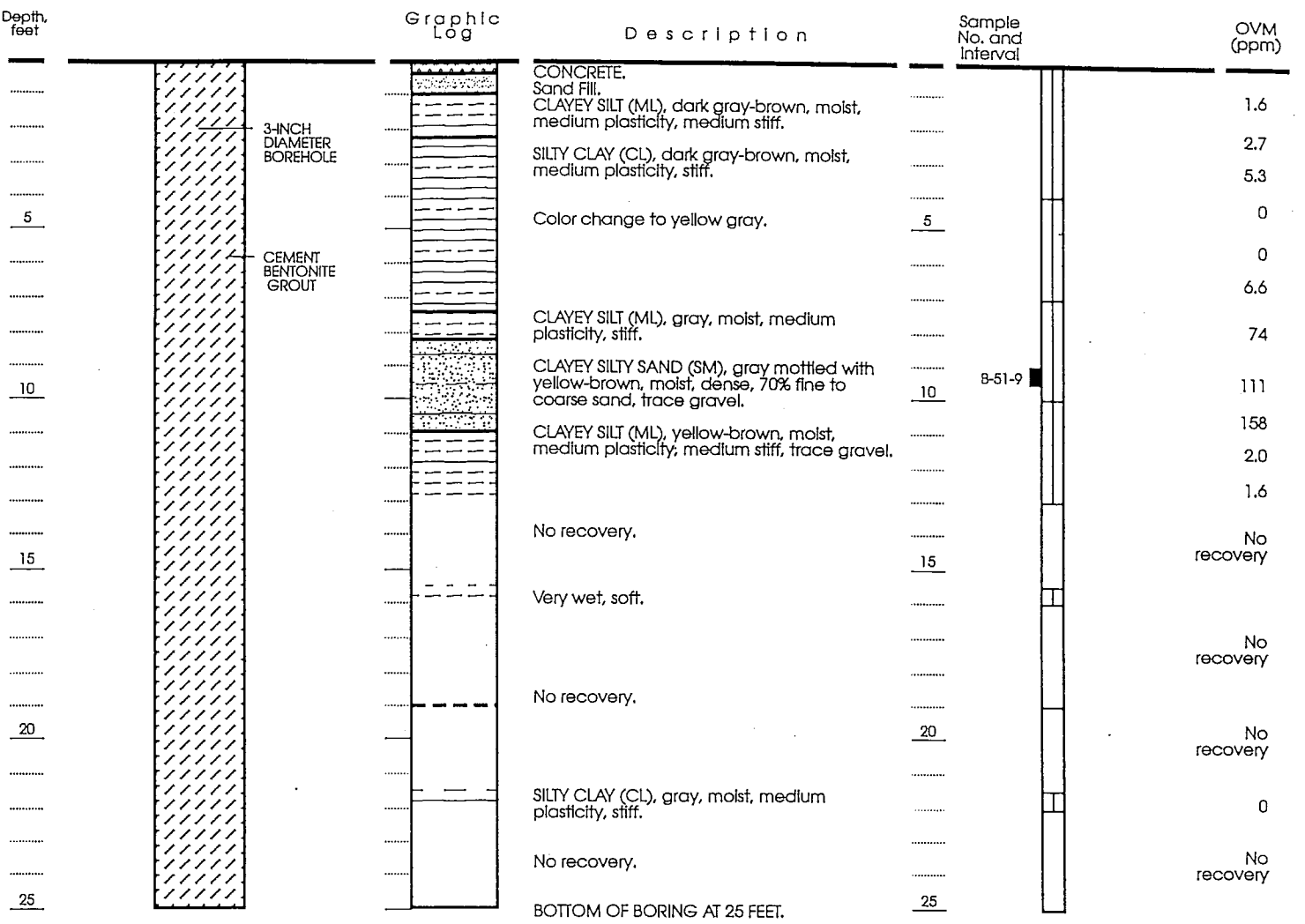
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EG 1562)

Figure B23: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-50 *(page 1 of 1)*



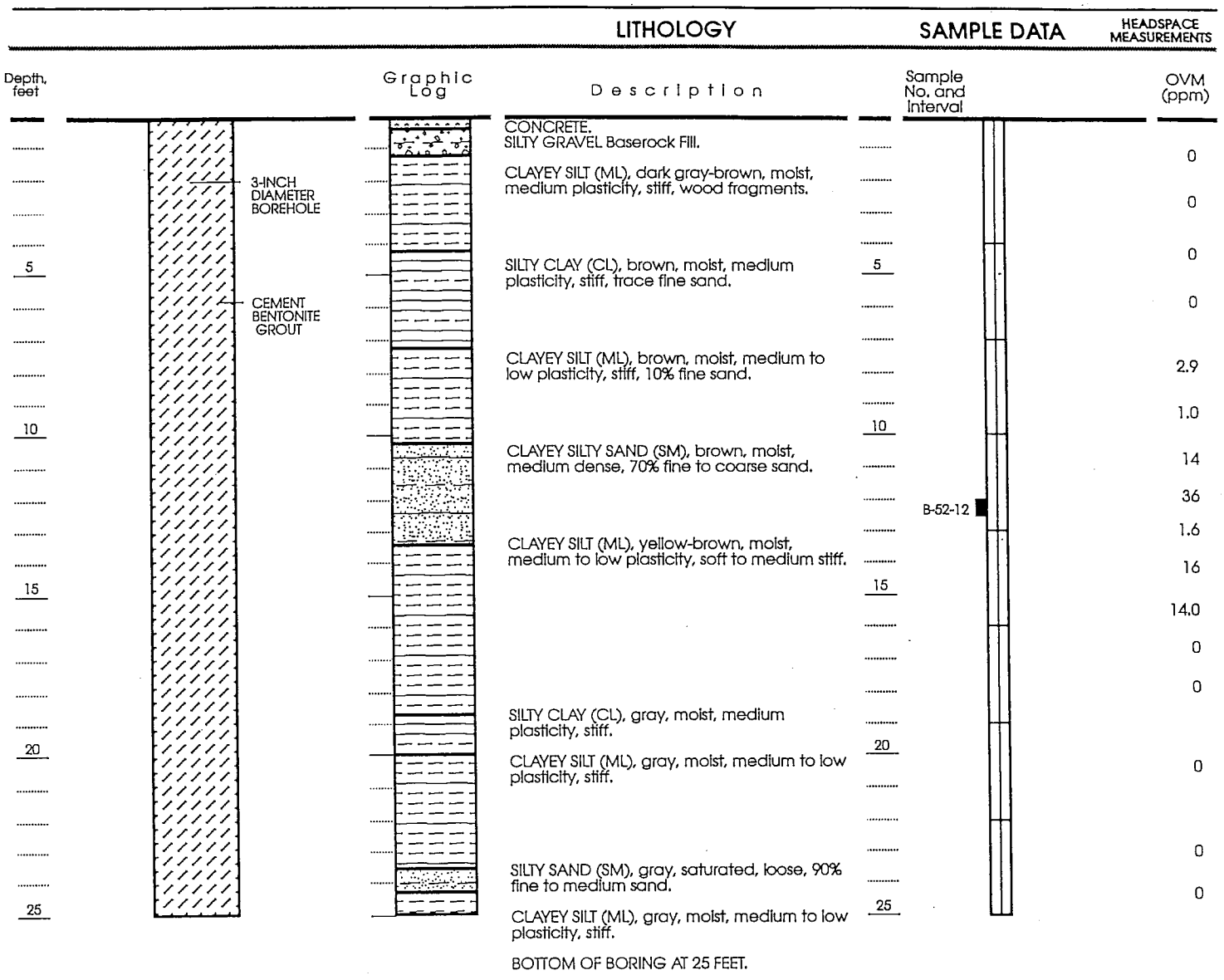
Date boring drilled: November 7, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

Clay
Silt
Sand
Gravel
Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zol (EG 1562)

Figure B24: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-51 *(page 1 of 1)*



Date boring drilled: November 7, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

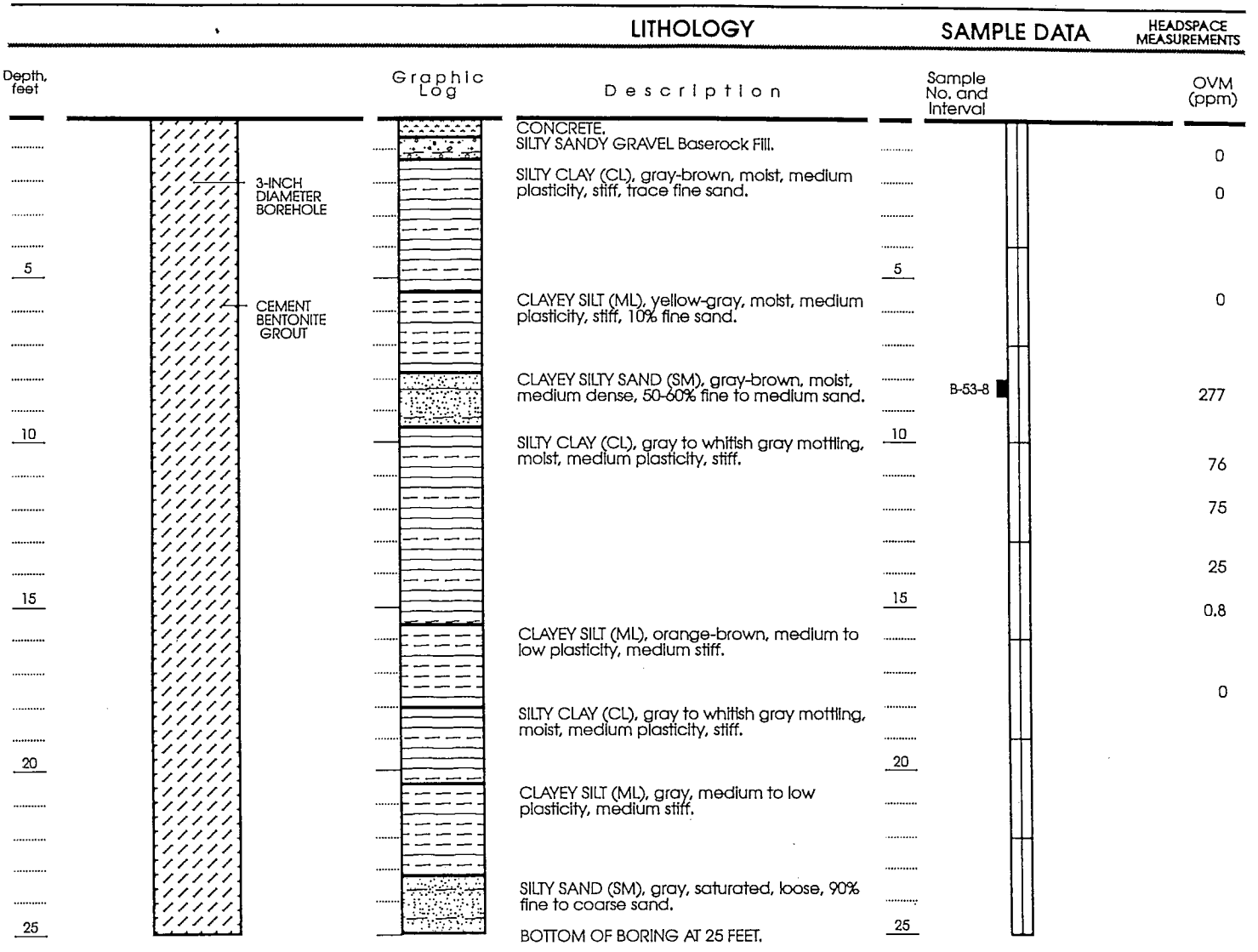
Approved by: Zal (EG 1562)

Figure B25: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-52 *(page 1 of 1)*

Project No. 3230.94-05

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3230L049.RWB:MPM 122994



Date boring drilled: November 7, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

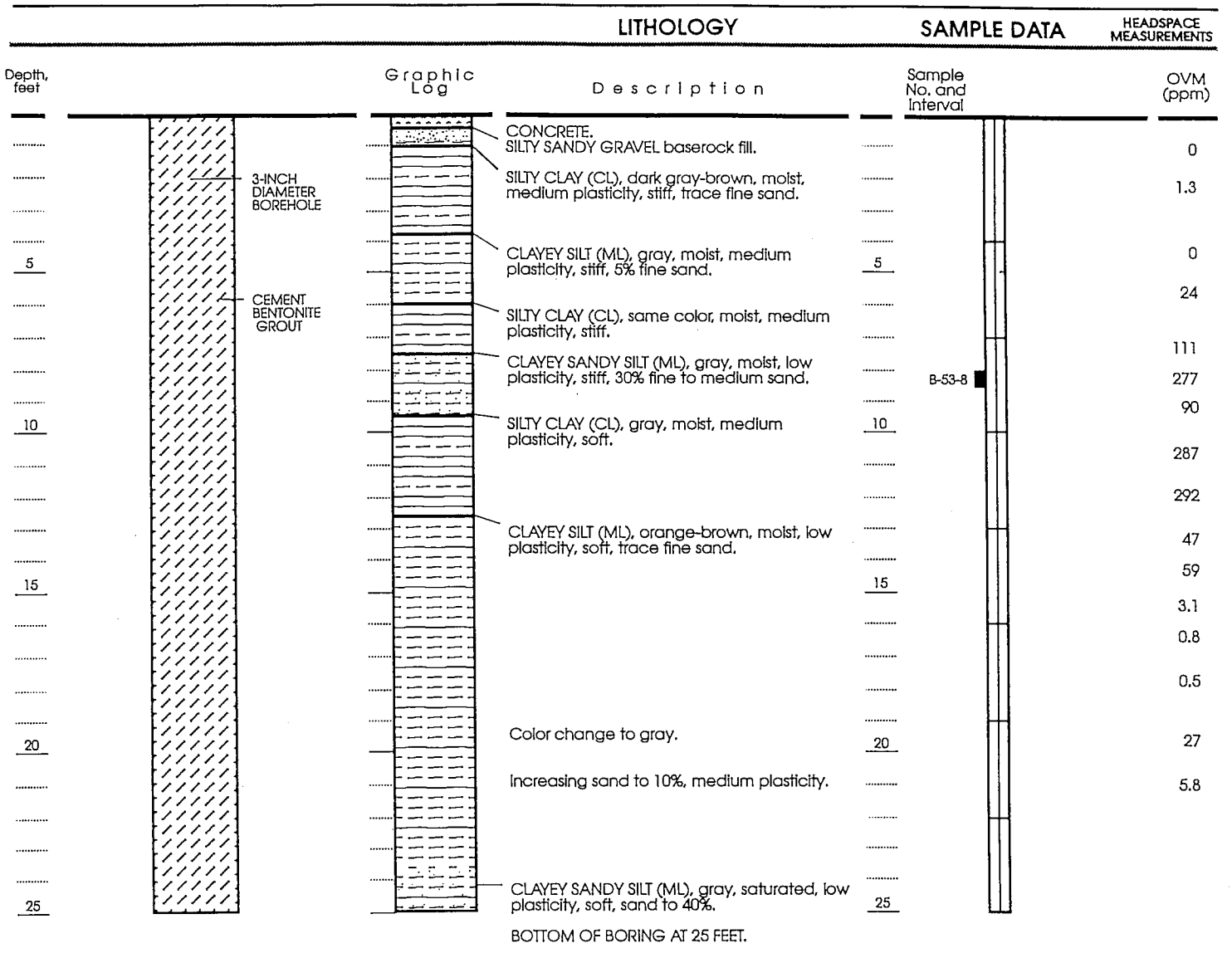
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zoli (EG1562)

Figure B26: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-53 *(page 1 of 1)*



Date boring drilled: November 8, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

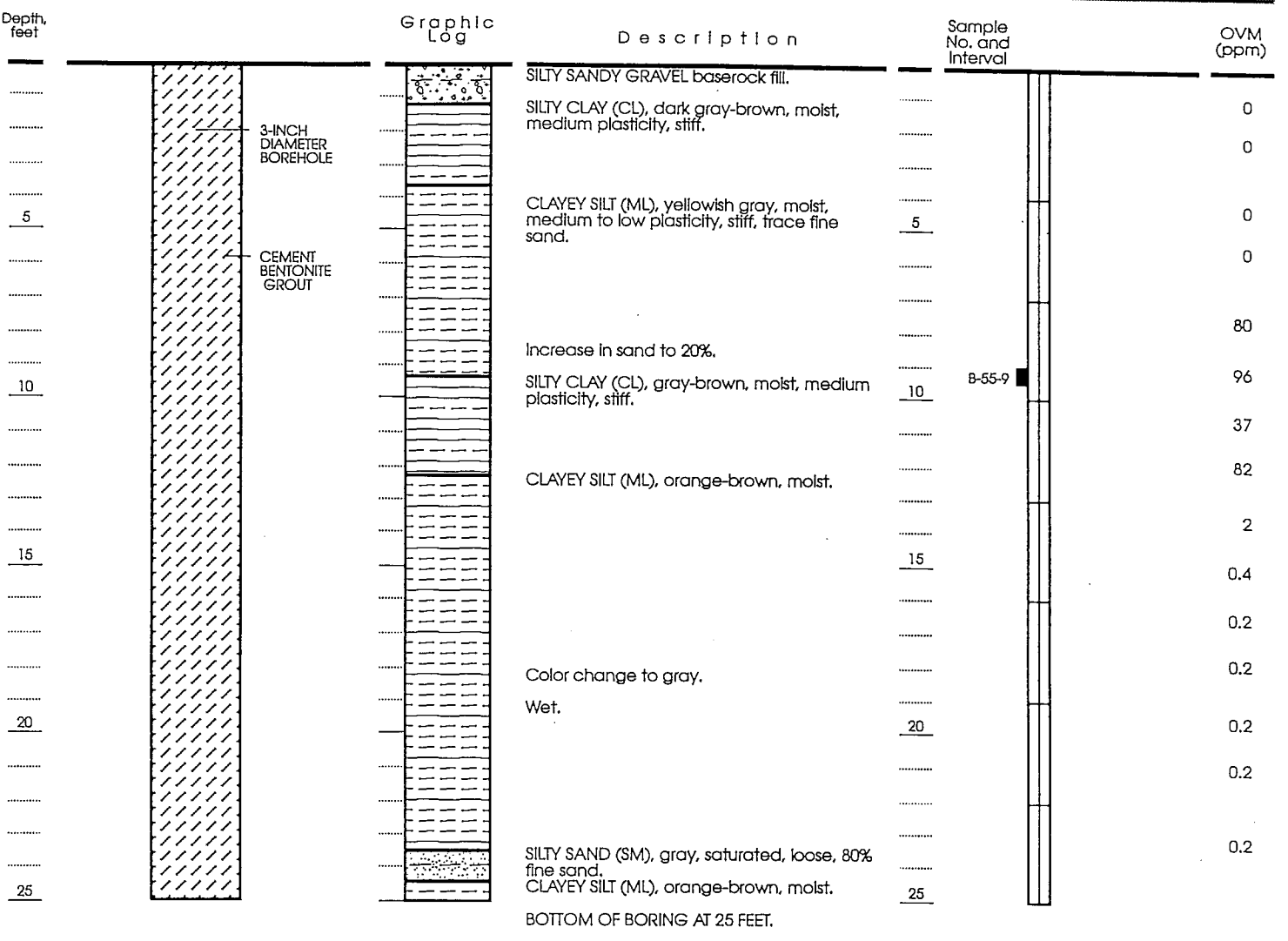
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EC 1562)

Figure B27: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-54 *(page 1 of 1)*



Date boring drilled: November 8, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

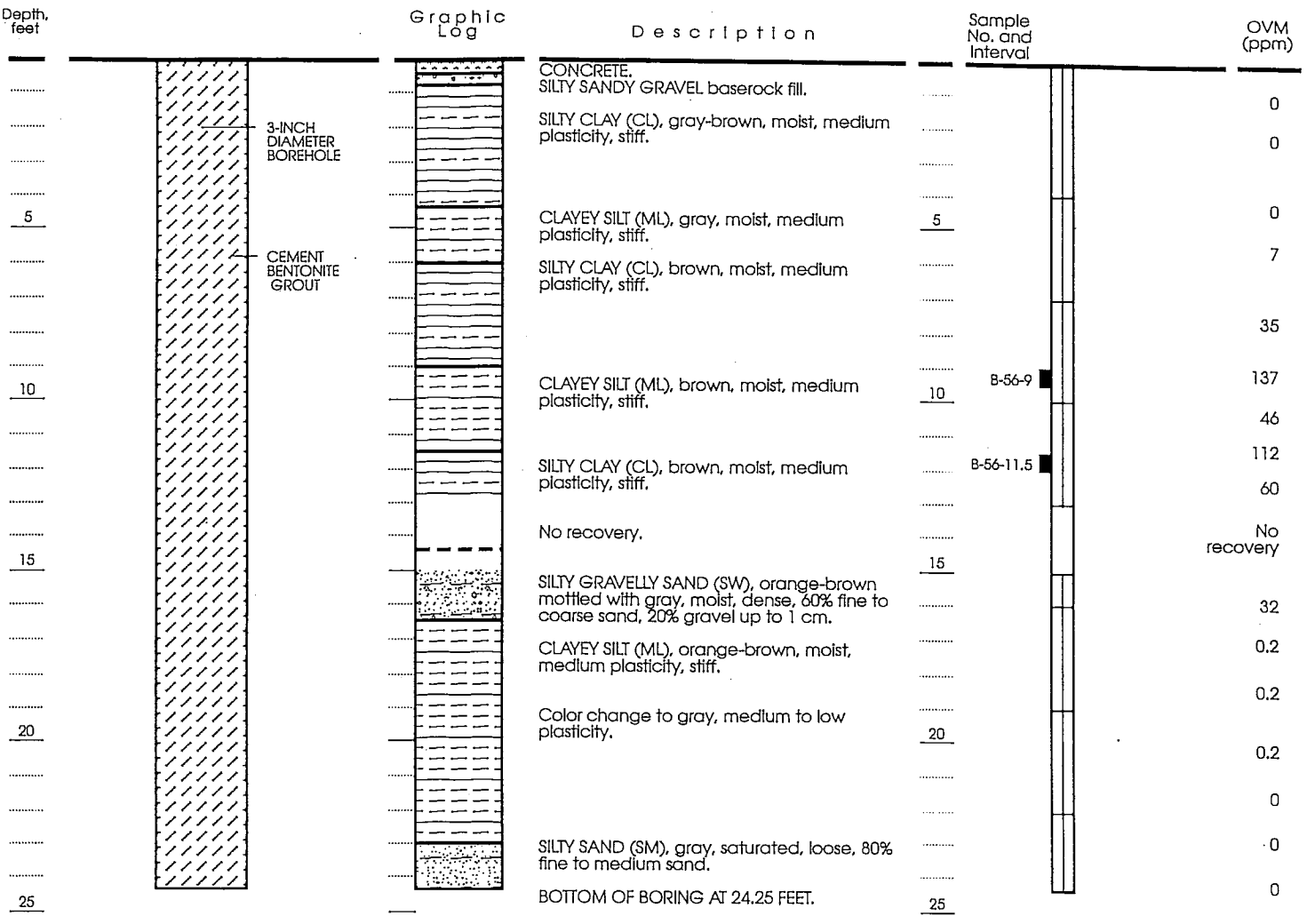
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EG 1562)

Figure B28: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-55 *(page 1 of 1)*



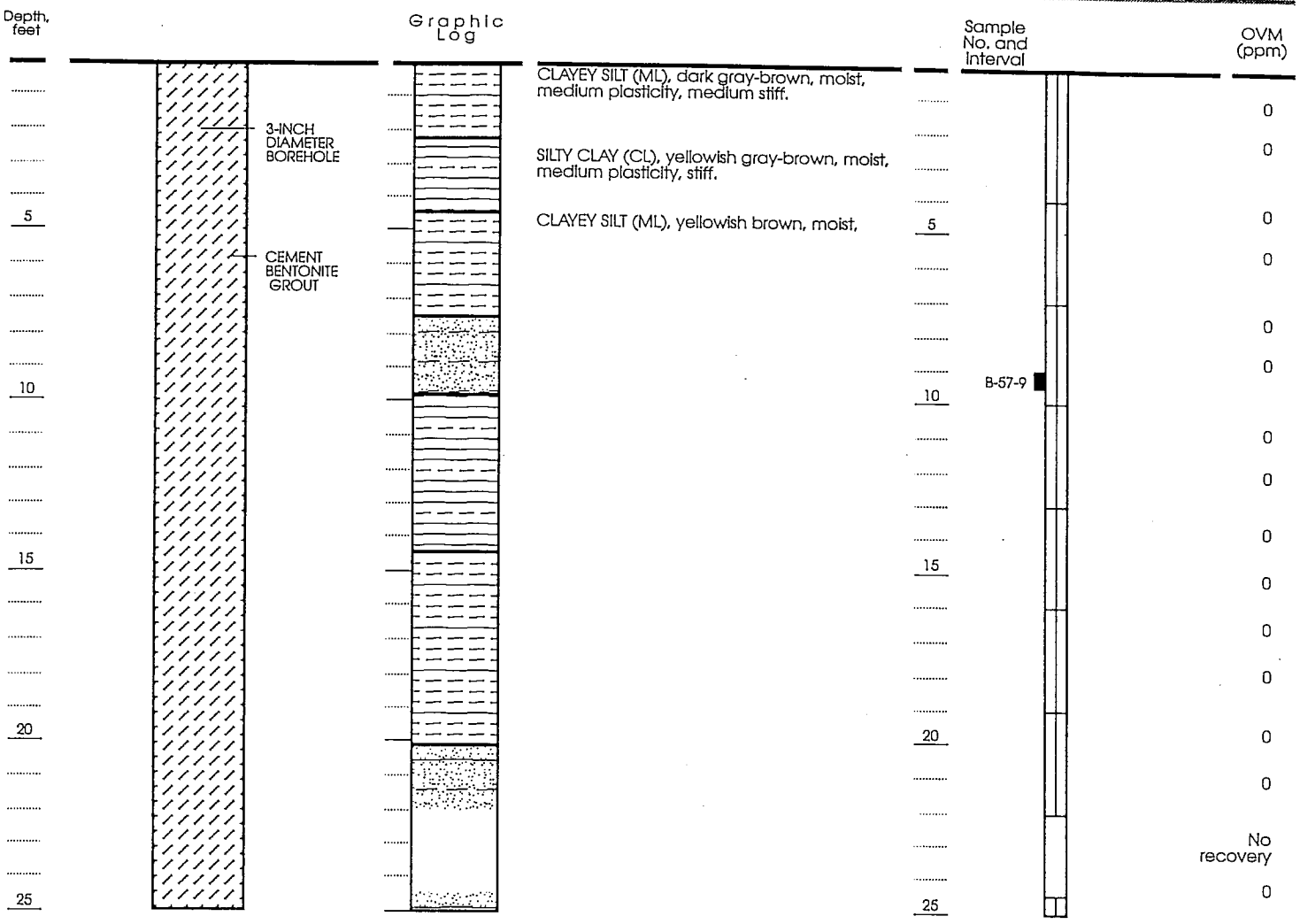
Date boring drilled: November 8, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Continuous Core
- Sample retained for analysis
- OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EE 1562)

Figure B29: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-56 *(page 1 of 1)*



EXPLANATION

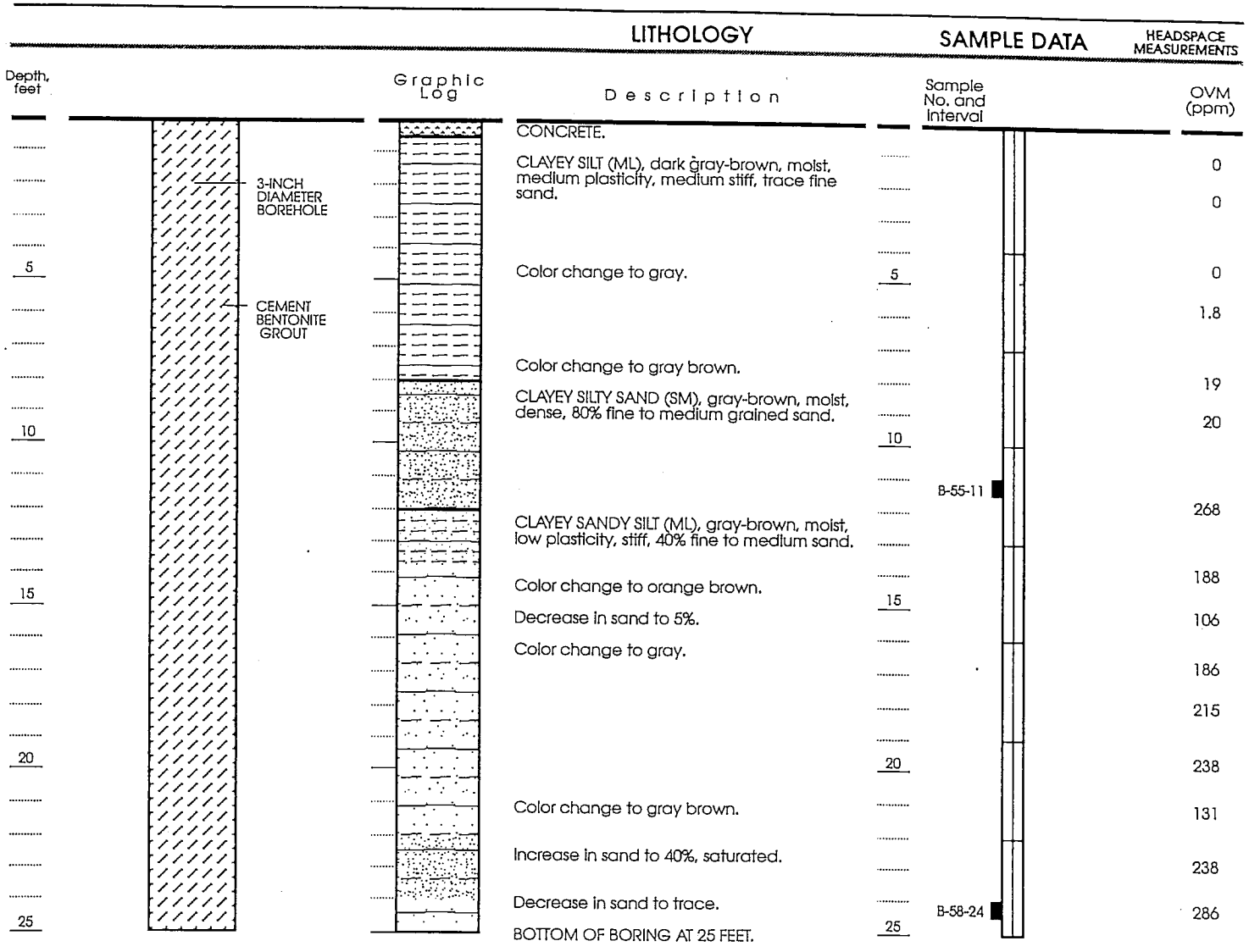
Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Date boring drilled: November 8, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

Approved by: Zak (EG 1562)

Figure B30: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-57 *(page 1 of 1)*



Date boring drilled: November 8, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

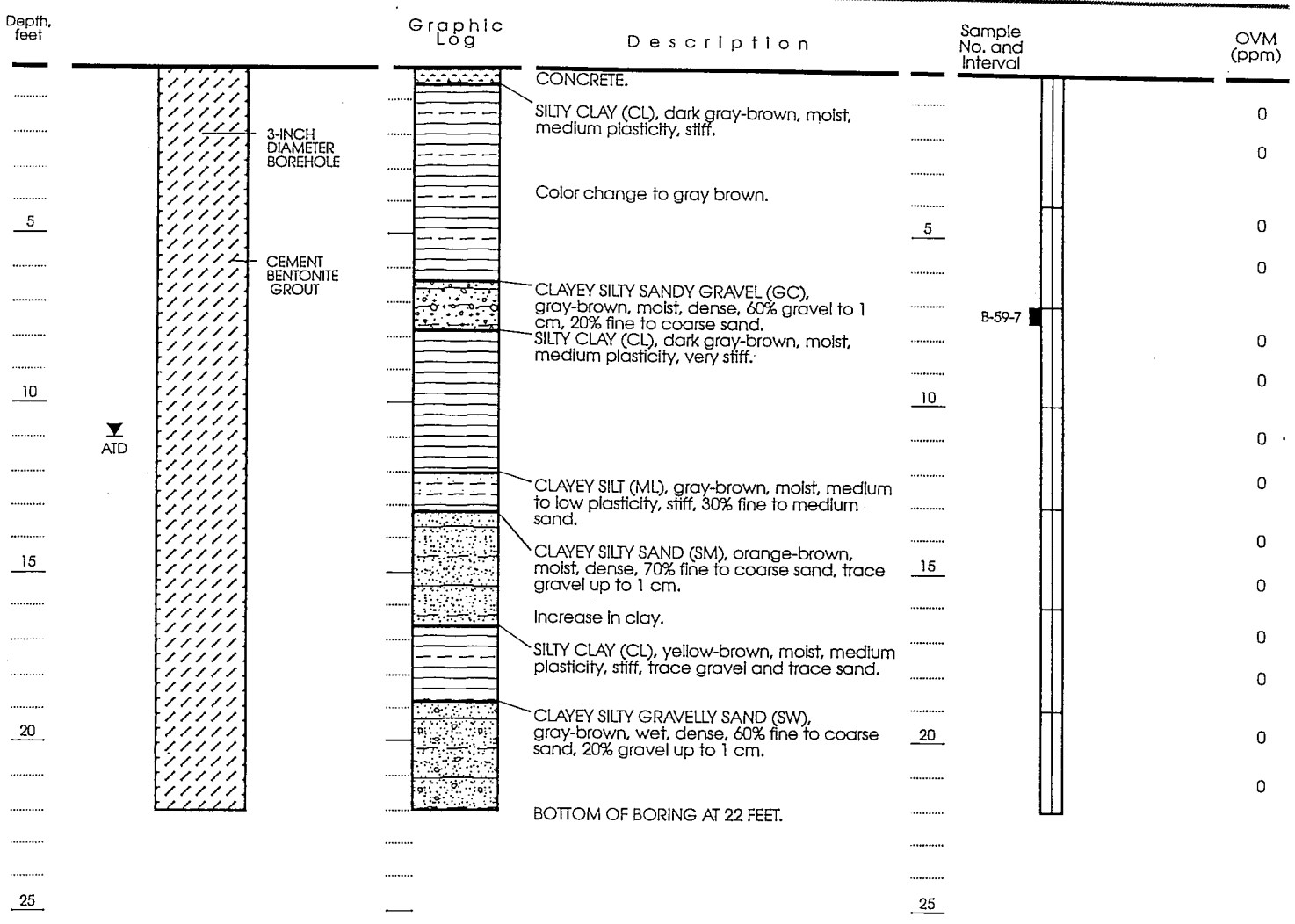
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EG 1562)

Figure B31: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-58 *(page 1 of 1)*



Date boring drilled: November 9, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

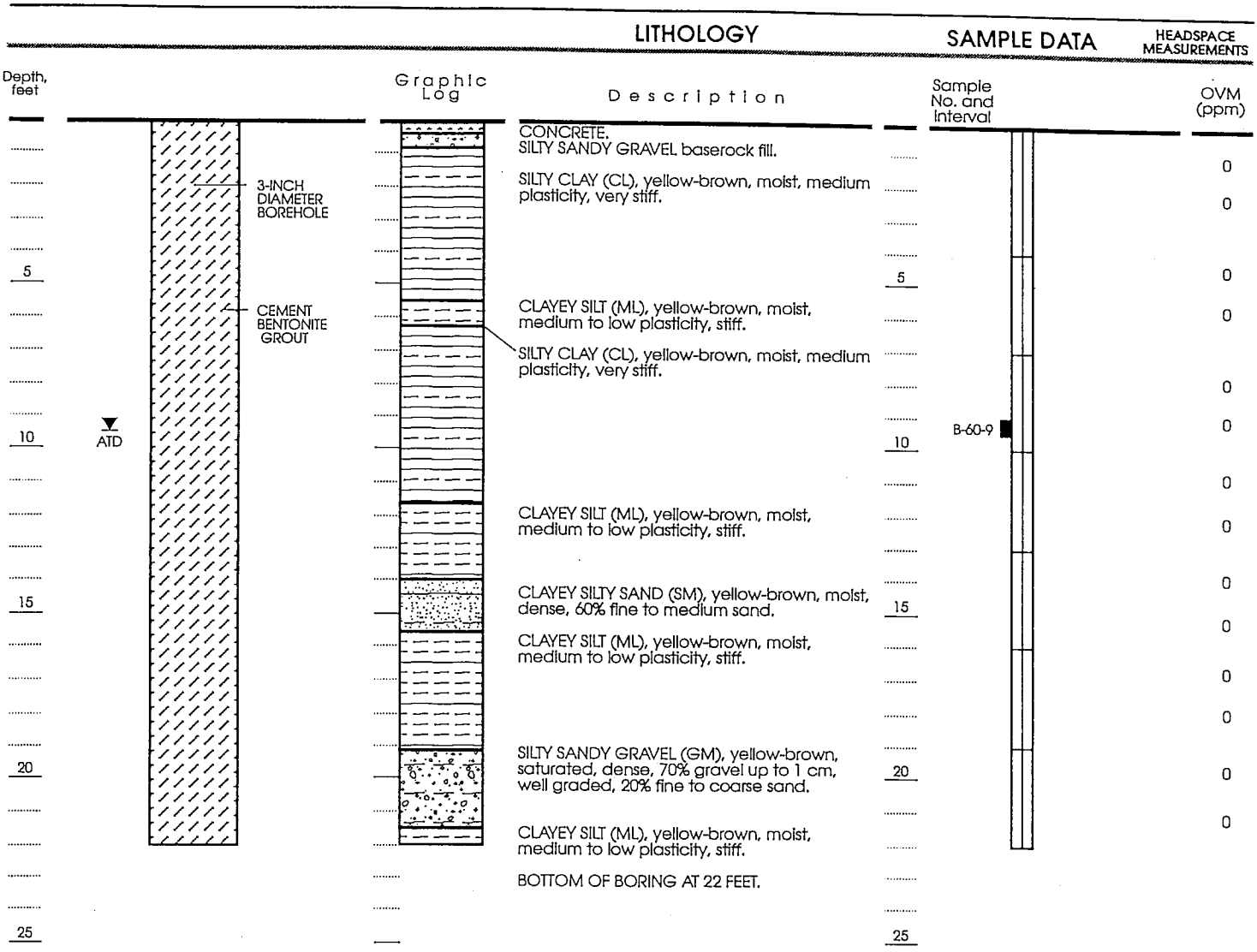
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
ATD Water level measured at time of drilling
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zale (EG 1562)

Figure B32: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-59 *(page 1 of 1)*



Date boring drilled: November 9, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

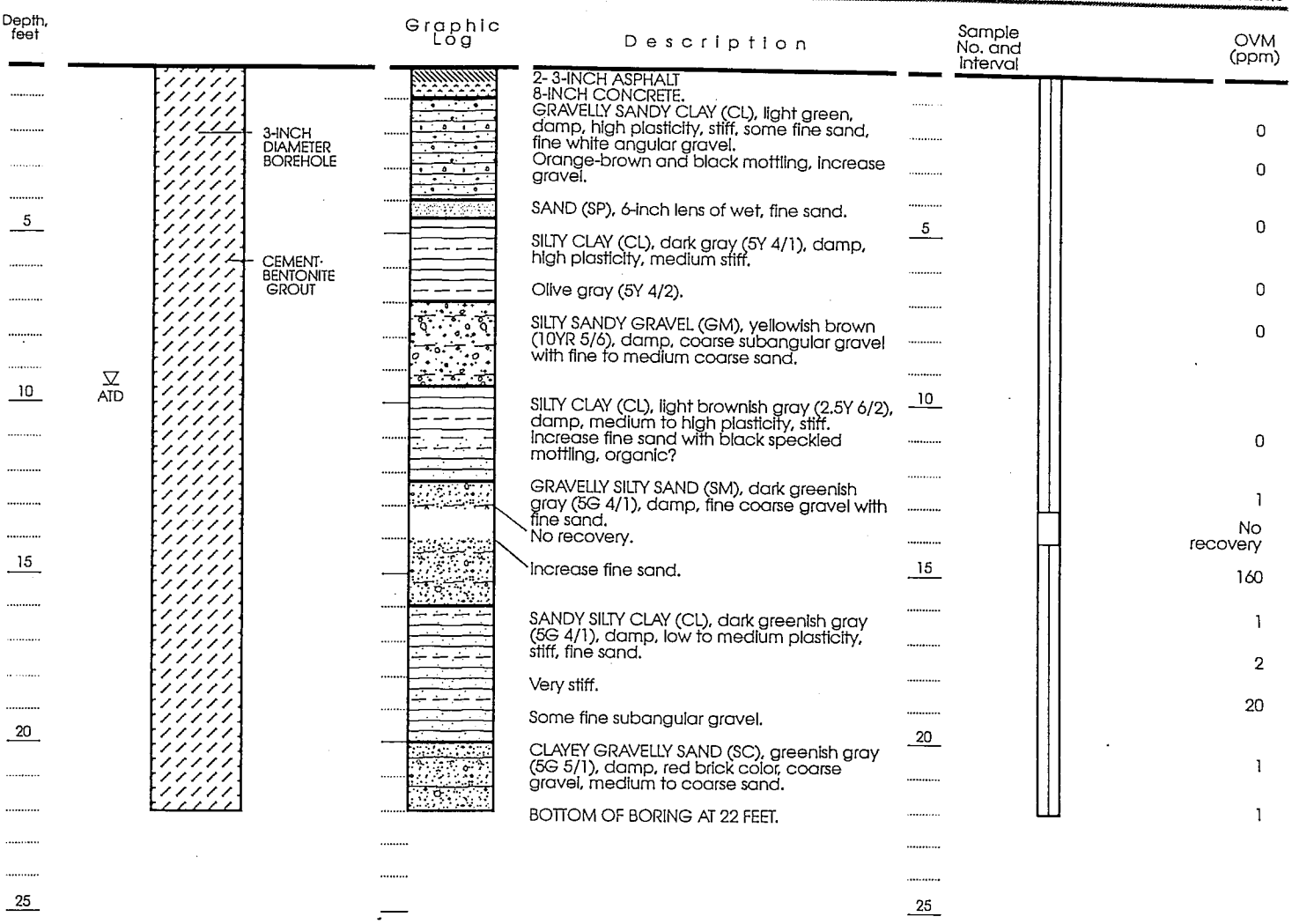
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
ATD Water level measured at time of drilling
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: ZGL (EC 1562)

Figure B33: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-60 *(page 1 of 1)*



Date boring drilled: November 10, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Rick Hirsch

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Continuous Core
- Sample retained for analysis
- ATD: Water level measured at time of drilling
- OVM (ppm): Organic Vapor Meter reading in parts per million

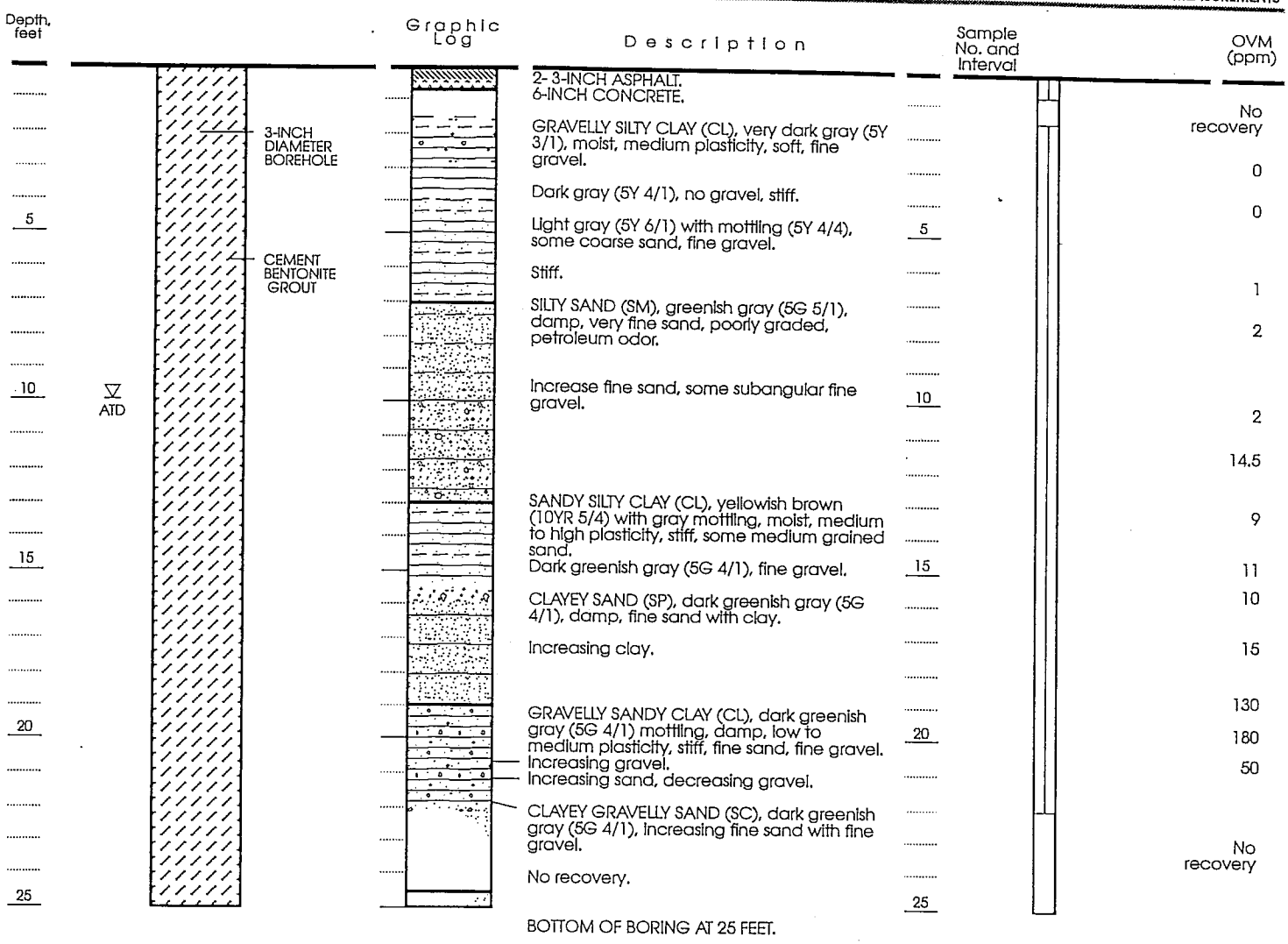
Approved by: Zak (EG 1562)

Figure B34: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-61 *(page 1 of 1)*

Project No. 3230.94-05

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3230L058.RWB:MPM/JSM 122994



Date boring drilled: November 10, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Rick Hirsch

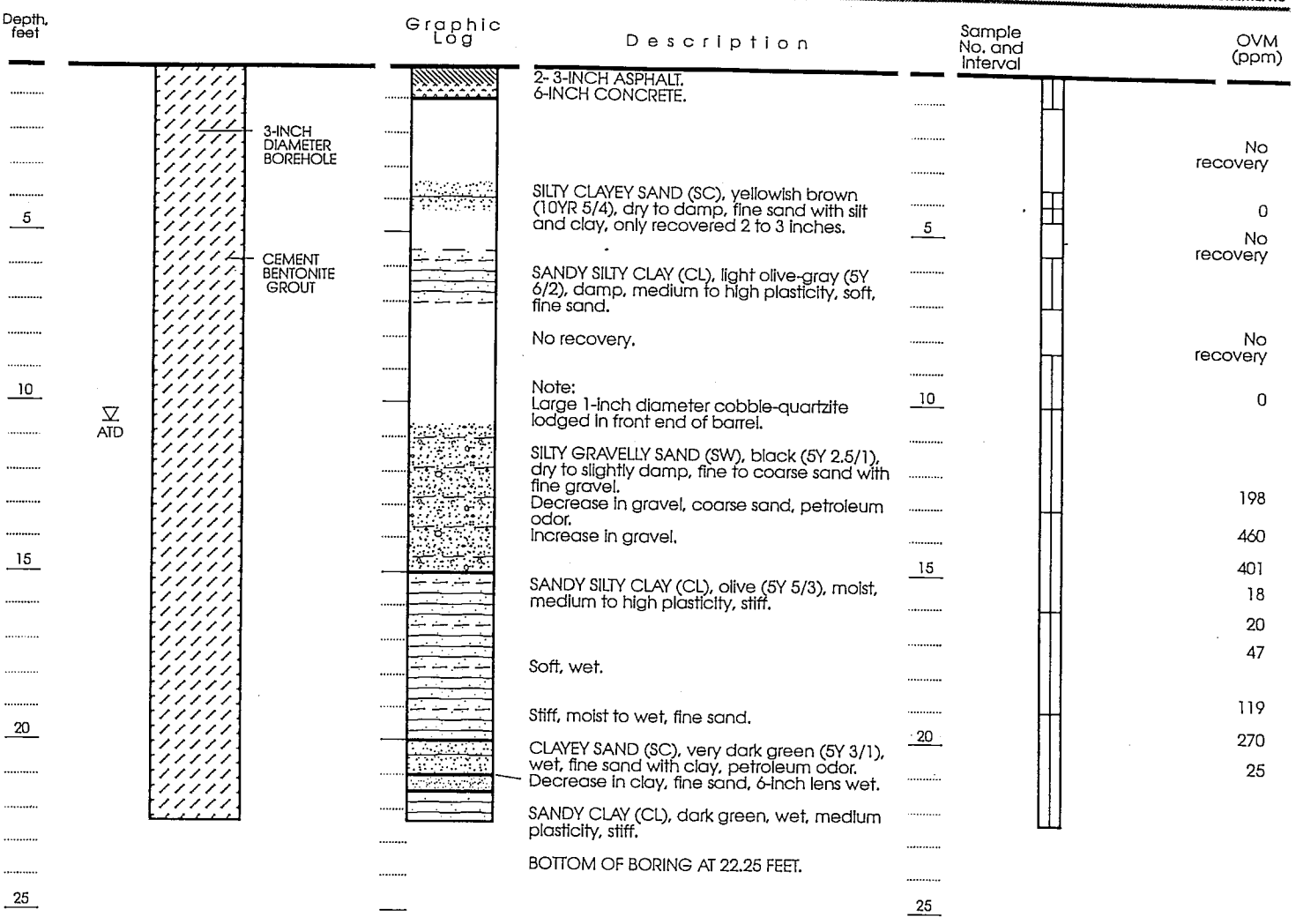
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
ATD Water level measured at time of drilling
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zak (EG 1562)

Figure B35: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-62 *(page 1 of 1)*



Date boring drilled: November 10, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Rick Hirsch

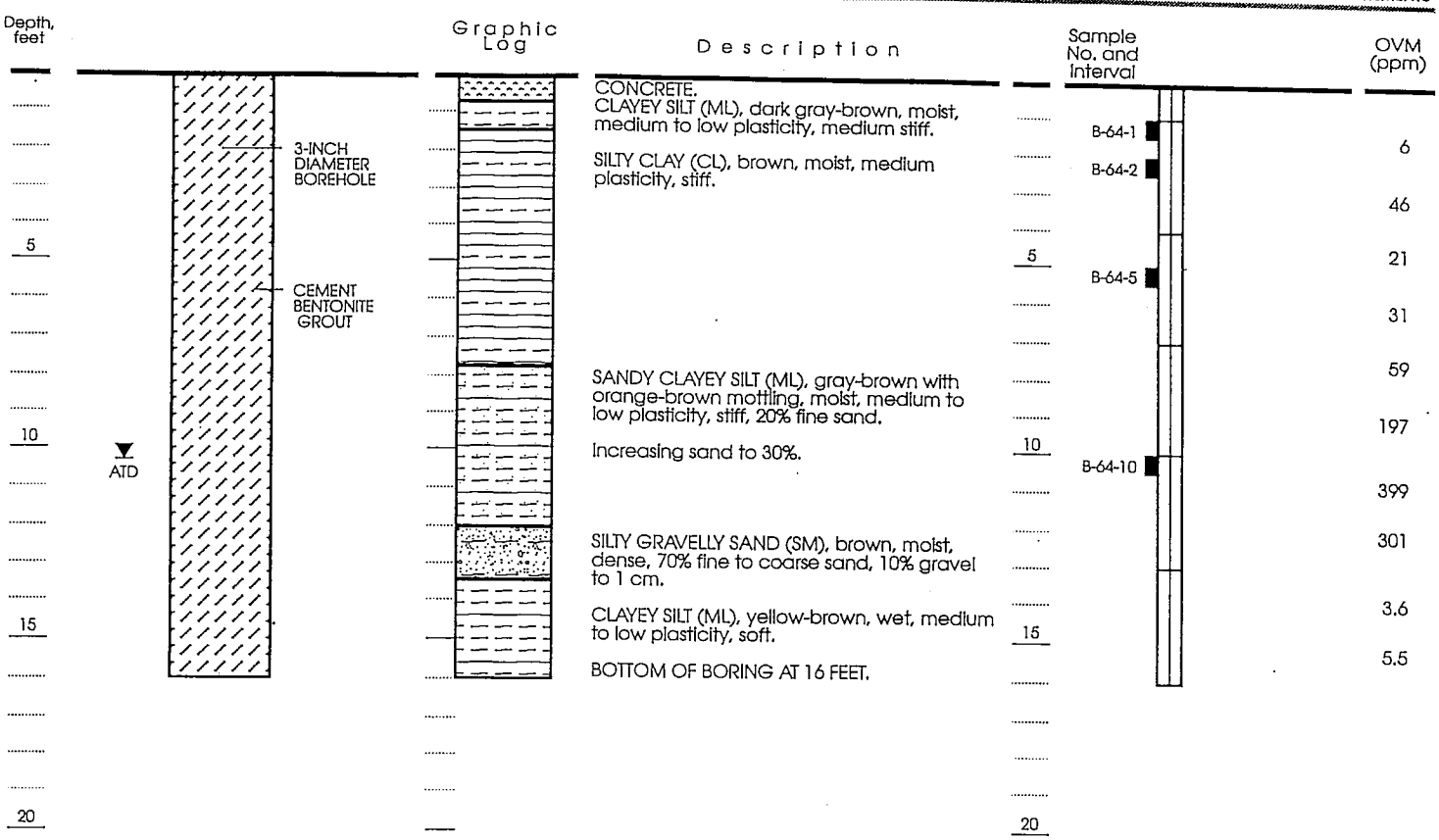
EXPLANATION

Clay
Silt
Sand
Gravel

Interval sampled using Continuous Core
Sample retained for analysis
ATD Water level measured at time of drilling
OVM (ppm) Organic Vapor Meter reading in parts per million

Approved by: Zah (EG 1562)

Figure B36: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-63 *(page 1 of 1)*



Date boring drilled: November 14, 1994
Drilling Company: Precision Sampling
Driller: Sean
Drilling method: Hydraulic Hammer
Sampling method: Continuous Core
LF Geologist: Robin Barber

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Interval sampled using Continuous Core
- Sample retained for analysis
- ATD — Water level measured at time of drilling
- OVM (ppm) — Organic Vapor Meter reading in parts per million

Approved by: Cole (EH156-2)

Figure B37: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING B-64 *(page 1 of 1)*

ATTACHMENT E

JOHNSON & ETTTINGER MODELS

Stantec

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-1 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	1.90E+04			Dichlorodifluoromethane
2	75694	5.00E+01			Trichlorofluoromethane
3	71432	1.60E+01			Benzene
4	100414	1.30E+01			Ethylbenzene
5	108383	1.00E+02			m-Xylene
6	79345	5.00E+01			1,1,2,2-Tetrachloroethane
9	95476	5.00E+01			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
1.90E+04	7.3E-04	1.4E+01	NA	1.3E-01
5.00E+01	6.5E-04	3.3E-02	NA	2.6E-05
1.60E+01	8.1E-04	1.3E-02	1.3E-07	4.2E-03
1.30E+01	6.7E-04	8.8E-03	7.8E-09	8.4E-06
1.00E+02	6.7E-04	6.7E-02	NA	6.5E-04
5.00E+01	5.2E-04	2.6E-02	5.4E-07	3.1E-04
5.00E+01	6.8E-04	3.4E-02	NA	3.2E-04
			6.8E-07	1.4E-01

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.90E+04	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.60E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.30E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.90E+04	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	1.38E+01
15	5.00E+01	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	3.26E-02
15	1.60E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	1.30E-02
15	1.30E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	8.76E-03
15	1.00E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	6.73E-02
15	5.00E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	2.62E-02
15	0.00E+00	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	0.00E+00
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	5.00E+01	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	3.39E-02
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	7.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-2 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	1.40E+02			Dichlorodifluoromethane
2	75694	5.00E+01			Trichlorofluoromethane
3	71432	1.60E+01			Benzene
4	100414	1.30E+01			Ethylbenzene
5	108383	1.00E+02			m-Xylene
6	79345	5.00E+01			1,1,2,2-Tetrachloroethane
9	95476	5.00E+01			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
1.40E+02	7.3E-04	1.0E-01	NA	9.8E-04
5.00E+01	6.5E-04	3.3E-02	NA	2.6E-05
1.60E+01	8.1E-04	1.3E-02	1.3E-07	4.2E-03
1.30E+01	6.7E-04	8.8E-03	7.8E-09	8.4E-06
1.00E+02	6.7E-04	6.7E-02	NA	6.5E-04
5.00E+01	5.2E-04	2.6E-02	5.4E-07	3.1E-04
5.00E+01	6.8E-04	3.4E-02	NA	3.2E-04
			6.8E-07	6.5E-03

Enter soil gas concentration above.

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.40E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.60E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.30E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.40E+02	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	1.02E-01
15	5.00E+01	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	3.26E-02
15	1.60E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	1.30E-02
15	1.30E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	8.76E-03
15	1.00E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	6.73E-02
15	5.00E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	2.62E-02
15	0.00E+00	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	0.00E+00
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	5.00E+01	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	3.39E-02
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	7.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-4 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	1.10E+02			Dichlorodifluoromethane
2	75694	5.00E+01			Trichlorofluoromethane
3	71432	7.50E+01			Benzene
4	100414	1.30E+01			Ethylbenzene
5	108383	1.00E+02			m-Xylene
6	79345	5.00E+01			1,1,2,2-Tetrachloroethane
7	95476	5.00E+01			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
1.10E+02	7.3E-04	8.0E-02	NA	7.7E-04
5.00E+01	6.5E-04	3.3E-02	NA	2.6E-05
7.50E+01	8.1E-04	6.1E-02	6.3E-07	1.9E-02
1.30E+01	6.7E-04	8.8E-03	7.8E-09	8.4E-06
1.00E+02	6.7E-04	6.7E-02	NA	6.5E-04
5.00E+01	5.2E-04	2.6E-02	5.4E-07	3.1E-04
5.00E+01	6.8E-04	3.4E-02	NA	3.2E-04
			1.2E-06	2.2E-02

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.10E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	7.50E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.30E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.10E+02	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	7.99E-02
15	5.00E+01	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	3.26E-02
15	7.50E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	6.10E-02
15	1.30E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	8.76E-03
15	1.00E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	6.73E-02
15	5.00E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	2.62E-02
15	5.00E+01	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	3.39E-02
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	1.0E-01
NA	6.0E+00
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-6 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	3.00E+04			Dichlorodifluoromethane
2	75694	3.40E+03			Trichlorofluoromethane
3	71432	1.75E+01			Benzene
4	100414	1.00E+01			Ethylbenzene
5	108383	4.20E+02			m-Xylene
6	79345	1.10E+01			1,1,2,2-Tetrachloroethane
7	95476	1.40E+02			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
3.00E+04	7.3E-04	2.2E+01	NA	2.1E-01
3.40E+03	6.5E-04	2.2E+00	NA	1.8E-03
1.75E+01	8.1E-04	1.4E-02	1.5E-07	4.5E-03
1.00E+01	6.7E-04	6.7E-03	6.0E-09	6.5E-06
4.20E+02	6.7E-04	2.8E-01	NA	2.7E-03
1.10E+01	5.2E-04	5.8E-03	1.2E-07	6.9E-05
1.40E+02	6.8E-04	9.5E-02	NA	9.1E-04
			2.7E-07	**2.2E-01**

MORE ↓

Enter soil gas concentration above.

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24	0.5
					(NEW)	(NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	3.00E+04	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	3.40E+03	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.75E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	4.20E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.10E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.40E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	3.00E+04	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	2.18E+01
15	3.40E+03	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	2.21E+00
15	1.75E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	1.42E-02
15	1.00E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	6.74E-03
15	4.20E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	2.83E-01
15	1.10E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	5.76E-03
15	1.40E+02	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	9.48E-02
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	1.0E-01
NA	6.0E+00
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-7 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	2.10E+03			Dichlorodifluoromethane
2	75694	5.00E+01			Trichlorofluoromethane
3	71432	1.75E+01			Benzene
4	100414	1.00E+01			Ethylbenzene
5	108383	1.00E+02			m-Xylene
6	79345	1.10E+01			1,1,2,2-Tetrachloroethane
9	95476	5.00E+01			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
2.10E+03	7.3E-04	1.5E+00	NA	1.5E-02
5.00E+01	6.5E-04	3.3E-02	NA	2.6E-05
1.75E+01	8.1E-04	1.4E-02	1.5E-07	4.5E-03
1.00E+01	6.7E-04	6.7E-03	6.0E-09	6.5E-06
1.00E+02	6.7E-04	6.7E-02	NA	6.5E-04
1.10E+01	5.2E-04	5.8E-03	1.2E-07	6.9E-05
5.00E+01	6.8E-04	3.4E-02	NA	3.2E-04
			2.7E-07	2.0E-02

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.10E+03	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.75E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.10E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	2.10E+03	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	1.53E+00
15	5.00E+01	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	3.26E-02
15	1.75E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	1.42E-02
15	1.00E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	6.74E-03
15	1.00E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	6.73E-02
15	1.10E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	5.76E-03
15	0.00E+00	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	0.00E+00
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	5.00E+01	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	3.39E-02
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	7.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-8 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	1.80E+03			Dichlorodifluoromethane
2	75694	5.00E+01			Trichlorofluoromethane
3	71432	1.75E+01			Benzene
4	100414	1.00E+01			Ethylbenzene
5	108383	1.00E+02			m-Xylene
6	79345	1.10E+01			1,1,2,2-Tetrachloroethane
9	95476	5.00E+01			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
1.80E+03	7.3E-04	1.3E+00	NA	1.3E-02
5.00E+01	6.5E-04	3.3E-02	NA	2.6E-05
1.75E+01	8.1E-04	1.4E-02	1.5E-07	4.5E-03
1.00E+01	6.7E-04	6.7E-03	6.0E-09	6.5E-06
1.00E+02	6.7E-04	6.7E-02	NA	6.5E-04
1.10E+01	5.2E-04	5.8E-03	1.2E-07	6.9E-05
5.00E+01	6.8E-04	3.4E-02	NA	3.2E-04
			2.7E-07	1.8E-02

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.80E+03	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.75E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.10E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.80E+03	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	1.31E+00
15	5.00E+01	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	3.26E-02
15	1.75E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	1.42E-02
15	1.00E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	6.74E-03
15	1.00E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	6.73E-02
15	1.10E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	5.76E-03
15	0.00E+00	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	0.00E+00
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	5.00E+01	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	3.39E-02
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	7.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-9 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	2.60E+03			Dichlorodifluoromethane
2	75694	2.10E+02			Trichlorofluoromethane
3	71432	1.75E+01			Benzene
4	100414	1.00E+01			Ethylbenzene
5	108383	1.00E+02			m-Xylene
6	79345	3.70E+01			1,1,2,2-Tetrachloroethane
9	95476	5.00E+01			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
2.60E+03	7.3E-04	1.9E+00	NA	1.8E-02
2.10E+02	6.5E-04	1.4E-01	NA	1.1E-04
1.75E+01	8.1E-04	1.4E-02	1.5E-07	4.5E-03
1.00E+01	6.7E-04	6.7E-03	6.0E-09	6.5E-06
1.00E+02	6.7E-04	6.7E-02	NA	6.5E-04
3.70E+01	5.2E-04	1.9E-02	4.0E-07	2.3E-04
5.00E+01	6.8E-04	3.4E-02	NA	3.2E-04
			5.5E-07	2.4E-02

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.60E+03	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.10E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.75E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	3.70E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	2.60E+03	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	1.89E+00
15	2.10E+02	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	1.37E-01
15	1.75E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	1.42E-02
15	1.00E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	6.74E-03
15	1.00E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	6.73E-02
15	3.70E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	1.94E-02
15	0.00E+00	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	0.00E+00
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	5.00E+01	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	3.39E-02
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	7.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-10 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	5.00E+01			Dichlorodifluoromethane
2	75694	5.00E+01			Trichlorofluoromethane
3	71432	6.00E+01			Benzene
4	100414	1.00E+01			Ethylbenzene
5	108383	4.10E+02			m-Xylene
6	79345	1.10E+01			1,1,2,2-Tetrachloroethane
9	95476	5.00E+01			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
5.00E+01	7.3E-04	3.6E-02	NA	3.5E-04
5.00E+01	6.5E-04	3.3E-02	NA	2.6E-05
6.00E+01	8.1E-04	4.9E-02	5.0E-07	1.6E-02
1.00E+01	6.7E-04	6.7E-03	6.0E-09	6.5E-06
4.10E+02	6.7E-04	2.8E-01	NA	2.6E-03
1.10E+01	5.2E-04	5.8E-03	1.2E-07	6.9E-05
5.00E+01	6.8E-04	3.4E-02	NA	3.2E-04
			6.3E-07	**1.9E-02**

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, $\rho_b{}^A$ (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24	0.5
					(NEW)	**(NEW)**

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	6.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	4.10E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.10E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	5.00E+01	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	3.63E-02
15	5.00E+01	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	3.26E-02
15	6.00E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	4.88E-02
15	1.00E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	6.74E-03
15	4.10E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	2.76E-01
15	1.10E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	5.76E-03
15	0.00E+00	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	0.00E+00
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	5.00E+01	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	3.39E-02
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	7.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-11 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	9.30E+02			Dichlorodifluoromethane
2	75694	5.00E+01			Trichlorofluoromethane
3	71432	1.75E+01			Benzene
4	100414	1.00E+01			Ethylbenzene
5	108383	4.20E+02			m-Xylene
6	79345	1.10E+01			1,1,2,2-Tetrachloroethane
9	95476	5.00E+01			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
9.30E+02	7.3E-04	6.8E-01	NA	6.5E-03
5.00E+01	6.5E-04	3.3E-02	NA	2.6E-05
1.75E+01	8.1E-04	1.4E-02	1.5E-07	4.5E-03
1.00E+01	6.7E-04	6.7E-03	6.0E-09	6.5E-06
4.20E+02	6.7E-04	2.8E-01	NA	2.7E-03
1.10E+01	5.2E-04	5.8E-03	1.2E-07	6.9E-05
5.00E+01	6.8E-04	3.4E-02	NA	3.2E-04
			2.7E-07	**1.4E-02**

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24	0.5
					(NEW)	**(NEW)**

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	9.30E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.75E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	4.20E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.10E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	9.30E+02	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	6.75E-01
15	5.00E+01	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	3.26E-02
15	1.75E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	1.42E-02
15	1.00E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	6.74E-03
15	4.20E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	2.83E-01
15	1.10E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	5.76E-03
15	0.00E+00	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	0.00E+00
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	5.00E+01	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	3.39E-02
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	7.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-13 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	1.90E+04			Dichlorodifluoromethane
2	75694	5.00E+01			Trichlorofluoromethane
3	71432	1.75E+01			Benzene
4	100414	1.00E+01			Ethylbenzene
5	108383	3.00E+02			m-Xylene
6	79345	1.10E+01			1,1,2,2-Tetrachloroethane
7	110543	2.20E+05			Hexane
8	110827	2.20E+05			Cyclohexane
9	110543	4.70E+04			Hexane
10	95476	3.00E+02			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
1.90E+04	7.3E-04	1.4E+01	NA	1.3E-01
5.00E+01	6.5E-04	3.3E-02	NA	2.6E-05
1.75E+01	8.1E-04	1.4E-02	1.5E-07	4.5E-03
1.00E+01	6.7E-04	6.7E-03	6.0E-09	6.5E-06
3.00E+02	6.7E-04	2.0E-01	NA	1.9E-03
1.10E+01	5.2E-04	5.8E-03	1.2E-07	6.9E-05
2.20E+05	7.1E-04	1.6E+02	NA	2.1E-01
2.20E+05	7.5E-04	1.7E+02	NA	2.6E-02
4.70E+04	7.1E-04	3.3E+01	NA	4.5E-02
3.00E+02	6.8E-04	2.0E-01	NA	1.9E-03
			2.7E-07	4.3E-01

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24	0.5
					(NEW)	(NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.90E+04	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	5.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.75E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.00E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	3.00E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.10E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.20E+05	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.20E+05	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	4.70E+04	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	3.00E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.90E+04	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	1.38E+01
15	5.00E+01	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	3.26E-02
15	1.75E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	1.42E-02
15	1.00E+01	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	6.74E-03
15	3.00E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	2.02E-01
15	1.10E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	5.76E-03
15	2.20E+05	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	1.55E+02
15	2.20E+05	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	1.66E+02
15	4.70E+04	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	3.32E+01
15	3.00E+02	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	2.03E-01
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	7.0E-01
NA	6.0E+00
NA	7.0E-01
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

SV-14 LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	7.60E+04			Dichlorodifluoromethane
2	75694	1.70E+03			Trichlorofluoromethane
3	71432	7.80E+01			Benzene
4	100414	1.80E+02			Ethylbenzene
5	108383	8.90E+02			m-Xylene
6	79345	1.10E+01			1,1,2,2-Tetrachloroethane
7	95476	2.70E+02			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
7.60E+04	7.3E-04	5.5E+01	NA	5.3E-01
1.70E+03	6.5E-04	1.1E+00	NA	8.8E-04
7.80E+01	8.1E-04	6.3E-02	6.5E-07	2.0E-02
1.80E+02	6.7E-04	1.2E-01	1.1E-07	1.2E-04
8.90E+02	6.7E-04	6.0E-01	NA	5.7E-03
1.10E+01	5.2E-04	5.8E-03	1.2E-07	6.9E-05
2.70E+02	6.8E-04	1.8E-01	NA	1.8E-03
			9.E-07	5.6E-01

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	7.60E+04	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.70E+03	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	7.80E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.80E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	8.90E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.10E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.70E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	0.00E+00	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	7.60E+04	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	5.52E+01
15	1.70E+03	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	1.11E+00
15	7.80E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	6.34E-02
15	1.80E+02	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	1.21E-01
15	8.90E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	5.99E-01
15	1.10E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	5.76E-03
15	2.70E+02	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	1.83E-01
15	0.00E+00	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	0.00E+00
15	0.00E+00	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	0.00E+00
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	8.0E-02
NA	1.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

COMBO LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	7.60E+04			Dichlorodifluoromethane
2	75694	3.40E+03			Trichlorofluoromethane
3	71432	7.80E+01			Benzene
4	100414	1.80E+02			Ethylbenzene
5	108383	8.90E+02			m-Xylene
6	79345	3.70E+01			1,1,2,2-Tetrachloroethane
7	110543	2.20E+05			Hexane
8	110827	2.20E+05			Cyclohexane
9	110543	4.70E+04			Hexane
10	95476	2.70E+02			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Commercial

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
7.60E+04	3.6E-04	2.8E+01	NA	6.3E-02
3.40E+03	3.3E-04	1.1E+00	NA	2.1E-04
7.80E+01	4.1E-04	3.2E-02	7.5E-08	2.4E-03
1.80E+02	3.4E-04	6.1E-02	1.2E-08	1.4E-05
8.90E+02	3.4E-04	3.0E-01	NA	6.8E-04
3.70E+01	2.6E-04	9.7E-03	4.6E-08	3.2E-05
2.20E+05	3.5E-04	7.8E+01	NA	2.5E-02
2.20E+05	3.8E-04	8.3E+01	NA	3.1E-03
4.70E+04	3.5E-04	1.7E+01	NA	5.4E-03
2.70E+02	3.4E-04	9.1E-02	NA	2.1E-04
			1.3E-07	1.0E-01

Enter soil gas concentration above.

MORE ↓

ENTER Depth below grade of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas depth below grade, L_s (cm)	ENTER #N/A soil temperature, T_S (°C)	ENTER Vadose zone soil type (used to estimate soil vapor permeability)	#N/A OR	ENTER User-defined soil vapor permeability, k_v (cm^2)
#N/A	#N/A	#N/A	#N/A		#N/A
15	152	16.7	L		

MORE ↓

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)		ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148		5

MORE ↓

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	70	25	25	250	8 (NEW)	1 (NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Commercial

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	7.60E+04	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	3.40E+03	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	7.80E+01	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.80E+02	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	8.90E+02	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	3.70E+01	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.20E+05	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.20E+05	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	4.70E+04	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.70E+02	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	6.78E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	7.60E+04	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**3.63E-04**	2.76E+01
15	3.40E+03	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**3.26E-04**	1.11E+00
15	7.80E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**4.06E-04**	3.17E-02
15	1.80E+02	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**3.37E-04**	6.07E-02
15	8.90E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**3.37E-04**	3.00E-01
15	3.70E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**2.62E-04**	9.69E-03
15	2.20E+05	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**3.53E-04**	7.77E+01
15	2.20E+05	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**3.76E-04**	8.28E+01
15	4.70E+04	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**3.53E-04**	1.66E+01
15	2.70E+02	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**3.39E-04**	9.14E-02
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	7.0E-02
NA	7.0E-01
NA	6.0E+00
NA	7.0E-01
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
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#N/A	#N/A
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#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

COMBO LOAM

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	7.60E+04			Dichlorodifluoromethane
2	75694	3.40E+03			Trichlorofluoromethane
3	71432	7.80E+01			Benzene
4	100414	1.80E+02			Ethylbenzene
5	108383	8.90E+02			m-Xylene
6	79345	3.70E+01			1,1,2,2-Tetrachloroethane
7	110543	2.20E+05			Hexane
8	110827	2.20E+05			Cyclohexane
9	95476	2.70E+02			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
7.60E+04	7.3E-04	5.5E+01	NA	5.3E-01
3.40E+03	6.5E-04	2.2E+00	NA	1.8E-03
7.80E+01	8.1E-04	6.3E-02	6.5E-07	2.0E-02
1.80E+02	6.7E-04	1.2E-01	1.1E-07	1.2E-04
8.90E+02	6.7E-04	6.0E-01	NA	5.7E-03
3.70E+01	5.2E-04	1.9E-02	4.0E-07	2.7E-04
2.20E+05	7.1E-04	1.6E+02	NA	2.1E-01
2.20E+05	7.5E-04	1.7E+02	NA	2.6E-02
2.70E+02	6.8E-04	1.8E-01	NA	1.8E-03
			1.2E-06	8.0E-01

Enter soil gas concentration above.

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	L		

MORE

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
L	1.59	0.399	0.148	5

MORE

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

INTERMEDIATE CALCULATIONS SHEET

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	7.60E+04	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	3.40E+03	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	7.80E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	1.80E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	8.90E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	3.70E+01	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.20E+05	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.20E+05	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	2.70E+02	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04
137	0.251	0.257	1.87E-09	0.854	1.60E-09	4,000	#N/A	3.39E+04

INTERMEDIATE CALCULATIONS SHEET

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	4.79E-03	137
1.00E+06	5.00E-03	15	6,080	7.23E-02	3.04E+00	1.77E-04	4.11E-03	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	5.64E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	4.31E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	4.30E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	3.09E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	4.60E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	5.03E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	4.34E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

INTERMEDIATE CALCULATIONS SHEET

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	7.60E+04	1.25	8.33E+01	4.79E-03	5.00E+03	1.33E+15	**7.26E-04**	5.52E+01
15	3.40E+03	1.25	8.33E+01	4.11E-03	5.00E+03	3.93E+17	**6.51E-04**	2.21E+00
15	7.80E+01	1.25	8.33E+01	5.64E-03	5.00E+03	6.94E+12	**8.13E-04**	6.34E-02
15	1.80E+02	1.25	8.33E+01	4.31E-03	5.00E+03	6.22E+16	**6.74E-04**	1.21E-01
15	8.90E+02	1.25	8.33E+01	4.30E-03	5.00E+03	6.58E+16	**6.73E-04**	5.99E-01
15	3.70E+01	1.25	8.33E+01	3.09E-03	5.00E+03	2.65E+23	**5.24E-04**	1.94E-02
15	2.20E+05	1.25	8.33E+01	4.60E-03	5.00E+03	5.36E+15	**7.06E-04**	1.55E+02
15	2.20E+05	1.25	8.33E+01	5.03E-03	5.00E+03	2.39E+14	**7.52E-04**	1.66E+02
15	2.70E+02	1.25	8.33E+01	4.34E-03	5.00E+03	4.81E+16	**6.77E-04**	1.83E-01
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
NA	1.2E+00
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	7.0E-02
NA	7.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
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#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

COMBO SILTY CLAY

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	7.60E+04			Dichlorodifluoromethane
2	75694	3.40E+03			CAS No. not found
3	71432	7.80E+01			Benzene
4	100414	1.80E+02			Ethylbenzene
5	108383	8.90E+02			m-Xylene
6	79345	3.70E+01			1,1,2,2-Tetrachloroethane
7	110543	2.20E+05			Hexane
8	110827	2.20E+05			Cyclohexane
9	95476	2.70E+02			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
7.60E+04	6.3E-04	4.8E+01	NA	4.6E-01
3.40E+03	#N/A	#N/A	ERROR	ERROR
7.80E+01	7.1E-04	5.5E-02	5.7E-07	1.8E-02
1.80E+02	5.8E-04	1.1E-01	9.4E-08	1.0E-04
8.90E+02	5.8E-04	5.2E-01	NA	5.0E-03
3.70E+01	4.5E-04	1.7E-02	3.4E-07	2.3E-04
2.20E+05	6.1E-04	1.3E+02	NA	1.8E-01
2.20E+05	6.6E-04	1.4E+02	NA	2.3E-02
2.70E+02	5.9E-04	1.6E-01	NA	1.5E-03
			1.0E-06	6.9E-01

Enter soil gas concentration above.

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	SIC		

MORE

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIC	1.38	0.481	0.216	5

MORE

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

Scenario: Residential

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	7.60E+04	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	3.40E+03	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	7.80E+01	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	1.80E+02	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	8.90E+02	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	3.70E+01	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	2.20E+05	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	2.20E+05	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	2.70E+02	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04
137	0.265	0.284	1.50E-09	0.844	1.27E-09	4,000	#N/A	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,188	2.31E-01	9.71E+00	1.77E-04	3.95E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	8,053	3.76E-03	1.58E-01	1.77E-04	4.65E-03	137
1.00E+06	5.00E-03	15	10,078	4.84E-03	2.04E-01	1.77E-04	3.55E-03	137
1.00E+06	5.00E-03	15	10,177	4.39E-03	1.85E-01	1.77E-04	3.55E-03	137
1.00E+06	5.00E-03	15	10,473	2.21E-04	9.30E-03	1.77E-04	2.56E-03	137
1.00E+06	5.00E-03	15	7,648	1.24E+00	5.23E+01	1.77E-04	3.79E-03	137
1.00E+06	5.00E-03	15	7,898	1.02E-01	4.31E+00	1.77E-04	4.15E-03	137
1.00E+06	5.00E-03	15	10,328	3.14E-03	1.32E-01	1.77E-04	3.58E-03	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137
1.00E+06	5.00E-03	15	#N/A	#N/A	#N/A	1.77E-04	#N/A	137

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	7.60E+04	1.25	8.33E+01	3.95E-03	5.00E+03	2.22E+18	**6.32E-04**	4.80E+01
15	3.40E+03	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	7.80E+01	1.25	8.33E+01	4.65E-03	5.00E+03	3.73E+15	**7.11E-04**	5.55E-02
15	1.80E+02	1.25	8.33E+01	3.55E-03	5.00E+03	2.32E+20	**5.84E-04**	1.05E-01
15	8.90E+02	1.25	8.33E+01	3.55E-03	5.00E+03	2.48E+20	**5.83E-04**	5.19E-01
15	3.70E+01	1.25	8.33E+01	2.56E-03	5.00E+03	1.66E+28	**4.51E-04**	1.67E-02
15	2.20E+05	1.25	8.33E+01	3.79E-03	5.00E+03	1.20E+19	**6.13E-04**	1.35E+02
15	2.20E+05	1.25	8.33E+01	4.15E-03	5.00E+03	2.76E+17	**6.56E-04**	1.44E+02
15	2.70E+02	1.25	8.33E+01	3.58E-03	5.00E+03	1.69E+20	**5.87E-04**	1.58E-01
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A
15	#N/A	1.25	8.33E+01	#N/A	5.00E+03	#N/A	**#N/A**	#N/A

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01
#N/A	#N/A
2.9E-05	3.0E-03
2.5E-06	1.0E+00
NA	1.0E-01
5.8E-05	7.0E-02
NA	7.0E-01
NA	6.0E+00
NA	1.0E-01
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
#N/A	#N/A
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#N/A	#N/A
#N/A	#N/A

END

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET **COMBO SILT-CLAY LOAM**

Reset to Defaults

Soil Gas Concentration Data

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1	75718	7.60E+04			Dichlorodifluoromethane
2	75694	3.40E+03			Trichlorofluoromethane
3	71432	7.80E+01			Benzene
4	100414	1.80E+02			Ethylbenzene
5	108383	8.90E+02			m-Xylene
6	79345	3.70E+01			1,1,2,2-Tetrachloroethane
7	110543	2.20E+05			Hexane
8	110827	2.20E+05			Cyclohexane
9	95476	2.70E+02			o-Xylene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

Scenario: Residential

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
7.60E+04	7.4E-04	5.7E+01	NA	5.4E-01
3.40E+03	6.7E-04	2.3E+00	NA	1.8E-03
7.80E+01	8.3E-04	6.5E-02	6.7E-07	2.1E-02
1.80E+02	6.9E-04	1.2E-01	1.1E-07	1.2E-04
8.90E+02	6.9E-04	6.1E-01	NA	5.9E-03
3.70E+01	5.4E-04	2.0E-02	4.1E-07	2.7E-04
2.20E+05	7.2E-04	1.6E+02	NA	2.2E-01
2.20E+05	7.7E-04	1.7E+02	NA	2.7E-02
2.70E+02	6.9E-04	1.9E-01	NA	1.8E-03
			1.2E-06	8.2E-01

Enter soil gas concentration above.

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	16.7	SICL		

MORE

Lookup Soil Parameters

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SICL	1.37	0.482	0.198	5

MORE

Lookup Receptor Parameters

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Residential	70	26	26	350	24 (NEW)	0.5 (NEW)

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Molecular weight, MW (g/mol)
7.60E-02	1.08E-05	3.43E-01	25	9,421	243.20	384.95	0.0E+00	1.0E-01	120.92
6.54E-02	1.00E-05	9.70E-02	25	5,999	296.70	471.00	0.0E+00	1.2E+00	137.36
8.95E-02	1.03E-05	5.55E-03	25	7,342	353.24	562.16	2.9E-05	3.0E-03	78.11
6.85E-02	8.46E-06	7.88E-03	25	8,501	409.34	617.20	2.5E-06	1.0E+00	106.17
6.84E-02	8.44E-06	7.18E-03	25	8,523	412.27	617.05	0.0E+00	1.0E-01	106.17
4.89E-02	9.29E-06	3.67E-04	25	8,996	419.60	661.15	5.8E-05	7.0E-02	167.85
7.31E-02	8.17E-06	1.80E+00	25	6,895	341.70	508.00	0.0E+00	7.0E-01	86.18
8.00E-02	9.11E-06	1.50E-01	25	7,154	353.70	553.40	0.0E+00	6.0E+00	84.16
6.89E-02	8.53E-06	5.18E-03	25	8,661	417.60	630.30	0.0E+00	1.0E-01	106.17
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

END

ATTACHMENT F

OAKLAND GEOTECHNICAL INVESTIGATION

Stantec

GEOTECHNICAL INVESTIGATION

On

PROPOSED RESIDENTIAL DEVELOPMENT
Icehouse (Oakland 2)

at
West Grand Avenue
Oakland, California

For
City Ventures

By
Quantum Geotechnical, Inc.

Project No. B044.G
September 24, 2015

QUANTUM GEOTECHNICAL, INC.

Project No. B044.G
September 24, 2015

Mr. Andrew Warner
Director of Development
City Ventures
444 Spear Street, Suite 200
San Francisco, Ca 94105

Subject: Proposed Residential Development
Icehouse (Oakland 2)
West Grand Avenue
Oakland, California
GEOTECHNICAL INVESTIGATION

Dear Mr. Warner:

In accordance with your authorization, ***Quantum Geotechnical, Inc.,*** has investigated the geotechnical conditions at the subject site located in Oakland, California

The accompanying report presents the results of our field investigation. Our findings indicate that development of the site for the proposed new residence is feasible provided the recommendations of this report are carefully followed and are incorporated into the project plans and specifications.

Should you have any questions relating to the contents of this report or should additional information be required, please contact our office at your convenience.

Sincerely,
Quantum Geotechnical, Inc.



Simon Makdessi, P.E., G.E.
President

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GEOTECHNICAL IVESTIGATION

PURPOSE AND SCOPE

The purpose of the investigation for the proposed new residential subdivision located on West Grand Avenue in Oakland, California, was to determine the surface and subsurface soil conditions at the subject site. Based on the results of the investigation, criteria were established for the grading of the site, the design of foundations for the proposed development, and the construction of other related facilities on the property.

Our investigation included the following:

a. Field reconnaissance by the Soil Engineer;
b. Determine the general seismicity of the site in accordance with the 2013 CBC;
b. Drilling and sampling of six soil borings and five cone penetrometer tests (CPT);
c. Laboratory testing of soil samples;
d. Analysis of the data and formulation of conclusions and recommendations; and
e. Preparation of this written report.

PROPOSED DEVELOPMENT

It is our understanding that the proposed project consists of developing the site for the construction of 126 residential townhome units and 8 commercial units within a total of 15 buildings, and associated interior streets. The buildings are planned to be 3 stories in height, of wood frame construction and supported on a post-tensioned slab foundation system. Given the flat nature of the site and recent demolition, grading is expected to consist of placing up to 2 feet of fill to achieve design grades.

SITE LOCATION AND DESCRIPTION

The site is located in the central part of Oakland, within level terrain, and consists of two properties. One property is approximately 3.8 acres in size and covers an entire block bounded by West Grand Avenue, Filbert Street, 24th Street, and Myrtle Street. This property was previously occupied by

various factory/warehouse facilities, that have recently been demolished and at the time of our investigation, some minor demolition and clearing was being performed. The site was scattered with small piles of debris, containers and miscellaneous equipment. The second property is located on the east side of Myrtle Street, in approximately the center of the block, is approximately 0.7 acres in size, and is currently vacant with mainly concrete pavement covering the entire site.

GENERAL GEOLOGIC CONDITIONS

The site resides on low-elevation, level terrain to the east of the San Francisco Bay, along an alluvial plain referred to as the East Bay Plain. Bedrock underlying this plain, and throughout the San Francisco Bay, subsided as a result of Miocene age subduction along the present Northern California coast. The resulting sedimentary basin was infilled with deep marine to estuarine deposits throughout the mid-to-late Cenozoic. Concurrent uplift produced the Diablo Range, which borders the plain on the east. Deposition during the Pliestocene and Holocene has consisted of fluvial sediment load from topographic highlands throughout the Diablo Range being carried to the west and deposited onto the East Bay Plain. The vicinity also hosts marine terrace deposits dating to the Pliestocene; an epoch that was marked by a series of glacial and interglacial periods and the corresponding rise and fall of sea level that produced such deposits. The site is expected to be underlain by recent Holocene alluvium, with older beach sand deposits underneath (3), as indicated on Figure 1 Regional Geology Map, attached to the Appendix.

According to the Association of Bay Area Governments (ABAG) interactive liquefaction susceptibility map (1), the site is in a region of moderate liquefaction susceptibility. The California Geological Survey, Seismic Hazard Zones Map, for the Oakland West Quadrangle (2) includes the site in an area of potential liquefaction requiring special investigation. According to this report, the historic high groundwater level within the vicinity will be found from five to ten feet below ground surface. The site lies within proximity of several major Bay Area faults including; the Hayward Fault, approximately 3.5 miles due east, and the San Andreas Fault, approximately 16 miles to the west (4). A map showing the location of these faults relative to the site is presented as Figure 3.

INVESTIGATION

The field investigation was performed on May 30, 2014 and August 20, 2015, and included a reconnaissance of the site and the drilling of six exploratory borings and five cone penetrometer tests (CPT) at the approximate locations shown on Figure 2 "Site Plan".

Three borings were drilled to depths ranging from 21.5 feet below the existing grade to 51.5 feet. The drilling was performed with a CME-55 truck-mounted auger drill rig. Visual classifications were made from cuttings and the samples in the field. As the drilling proceeded, relatively undisturbed core samples were obtained by means of 3 inch and 2.5 inch O.D. split-tube samplers. The sampler was driven into the in-situ soils under the impact of a 140-pound hammer undergoing a free fall of 30 inches. The number of blows required to advance the sampler 12 inches into the soil is reported on the boring logs. The samples were sealed and returned to the laboratory for testing. Classifications made in the field were verified in the laboratory after further examination and testing.

The stratification of the soils, descriptions, location of undisturbed soil samples and blow counts are shown on the respective "Logs of Test Borings" contained within Appendix A.

Laboratory testing was conducted for Atterberg Limits, moisture density, gradation analysis and corrosion potential. The data received from the lab are presented on the boring logs, and summarized in Appendix B.

SUBSURFACE CONDITIONS

The subsurface conditions encountered in the borings and CPTs generally consisted of a surface layer of sandy and clayey soil fill ranging in thicknes from 2 to 6 feet over predominantly firm to stiff silty clay with variable sequences and interbeds of loose to medium dense and dense to very dense sands and gravels. The sandy and gravelly layers ranged in thickness from 2 to 7 feet.

Ground water was encountered in all borings at depths ranging from 9 to 19 feet at the time of our exploration. Fluctuations in the groundwater table can be expected with changes in seasonal rainfall, urbanization, and construction activities at or in the vicinity of the site.

A more thorough description and stratification of the soil conditions are presented on the respective, "Logs of Test Borings" and "CPT Data" in Appendix A. The approximate locations of the borings and CPTs are shown on Figure 2, "Site Plan" Appendix A.

LIQUEFACTION POTENTIAL EVALUATION

Liquefaction occurs primarily in relatively loose, saturated, cohesionless soils. Under earthquake stresses, these soils become "quick", lose their strength and become incapable of supporting the weight of the overlying soils or structures. The data used for evaluating liquefaction potential of the subsurface soils consisted of the penetration resistance, the soil gradation, the relative density of the materials, and the groundwater level.

Loose to medium dense cohesionless soil such as sands and some silts and low plasticity clays are potentially liquefiable, while dense and very dense cohesionless sands and gravels are considered to have a very low potential for liquefaction. The sand layers in all borings varied in consistency from loose/medium dense to dense and very dense. The loose to medium dense sands in borings B-1, B-2 and B-3, are potentially liquefiable. The low plasticity clay below the groundwater registered a Plasticity Index (PI) of 19 and is assessed as non-liquefiable according to the screening procedures outlined in a technical paper by Bray and Sancio presented in the Journal of Geotechnical and Environmental Engineering titled "Assessment of the Liquefaction Susceptibility of Fine Grained Soils, September 2006.

Based on the data from the borings, it is estimated that a liquefaction induced settlements ranging from approximately 1.0 to 1.5 inches may occur in the sand layers in borings B-1, B-2 and B-3. Given the variability in consistency of the sand layers, a differential settlement of 0.75 inches is over 50 feet is estimated. Due to the presence of a thick predominantly-clay and non-liquefiable cover overlying any potential liquefiable sand layers, no sand boils are expected and will limit any surface manifestations of liquefaction to differential settlements estimated above.

2013 CBC SEISMIC DESIGN CRITERIA

The potential damaging effects of regional earthquake activity should be considered in the design of structures. As a minimum, seismic design should be in accordance with Chapter 16 of the 2013 California Building Code (CBC). The 2013 CBC utilizes the design procedures outlined in the 2010 ASCE 7-10 Standard. Using the criteria in Chapter 20 of ASCE 7-10, the site is classified as Site Class F, due to the presence of liquefiable soil, and a site response analysis is required. However, per the requirements of ASCE 7-10, section 20.3.1.1, a site response analysis is not required because the fundamental period of vibration of the proposed structures is less than 0.5 seconds, and a the seismic design can be based on using a site class as determined from Table 20.3-1. The seismic design will be based on a Site Class E. The seismic design parameters have been developed using the online U.S. Geological Survey, US Seismic Design Maps tool, version 3.1.0, last updated 11 July 2013, and a site location based on longitude and latitude. The parameters generated for the subject site for a latitude of 37.8156° N, and longitude of -122.2800° W, are presented in the following Table 1:

Table I
2013 CBC Seismic Design Criteria

Seismic Parameter	Coefficient	Value
Mapped MCE Spectral Acceleration at Short-Period 0.2 secs	S_s	1.703
Mapped MCE Spectral Acceleration at a Period of 1.0s	S_1	0.673
Site Class		E
Adjusted MCE, 5% Damped Spectral Response Acceleration at Short Period of 0.2s	S_{MS}	1.533
Adjusted MCE, 5% Damped Spectral Response Acceleration at Period of 1.0s	S_{M1}	1.616
Design 5% Damped Spectral Response Acceleration at Short Period of 0.2s for Occupancy Category I/II/III	S_{DS}	1.022
Design 5% Damped Spectral Response Acceleration at Period of 1.0s for Occupancy Category I/II/III	S_{D1}	1.077

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

GENERAL

1. From a geotechnical point of view, the site is suitable for the construction of the proposed residential development provided the recommendations presented in this report are incorporated into the project plans and specifications.

2. The most prominent geotechnical features of this site are the presence of fill and potential for liquefaction. The fill ranges in thickness from 2 to 6 feet from current ground surface and was mainly sandy material with areas of clay. The fill contained some construction debris likely from demolition activities. The fill must be sub-excavated and replaced as engineered fill.

3. As stated earlier, the site has the potential to undergo liquefaction, and it is estimated that liquefaction induced settlements of up to 1.5 inches could occur, with a differential settlement of 0.75 inches over 50 feet. The estimated liquefaction induced differential settlement is to be considered in the design of foundations and gravity utilities.

4. The proposed structures may be satisfactorily supported on structural post tensioned slabs. Specific foundation design recommendations are provided under the heading Foundations.

GRADING

5. The grading requirements presented herein are an integral part of the grading specifications presented in Appendix C of this report and should be considered as such.

6. Grading activities during the rainy season on cohesive soils will be hampered by excessive moisture. Grading activities may be performed during the rainy season, however, achieving proper compaction may be difficult due to excessive moisture; and delays may occur. In addition, measures to control potential erosion may need to be provided. Grading performed during the dry months will minimize the occurrence of the above problems.

7. Currently the site does not contain any vegetation. Vegetation cover conditions may be different at the time of planned grading, and the depth of stripping, if necessary, or type of site preparation will be evaluated by the Soil Engineer prior to the commencement of any grading activities.

8. After removal of any fill, the top 8 inches of exposed native ground should be scarified and compacted to a degree of relative compaction of at least 90% at 3 percent above optimum moisture content as determined by ASTM D1557-12 Laboratory Test Procedure.

9. The site may be brought to the desired finished grades by placing engineered fill in lifts of 8 inches in uncompacted thickness and compacting to a minimum relative compaction of 90% at 3percent above optimum moisture content for lean clay soil, and 1 to 2% for sandy soil as determined by ASTM D1557-12 Laboratory Test Procedure.

10. All soils encountered during our investigation except those within the top few inches of predominantly organic material, are suitable for use as engineered fill when placed and compacted at the recommended moisture content and provided it does not contain any debris..

SURFACE AND SUBSURFACE DRAINAGE

11. All finish grades should be provided with a positive gradient to an adequate discharge point in order to provide rapid removal of surface water runoff away from all foundations. No ponding of water should be allowed on the pad or adjacent to the foundations. Surface drainage must be designed by the project Civil Engineer and maintained by the property owners at all times. The pad should be graded in a manner that surface flow is to a controlled discharge system.

12. Lot slopes and drainage must be provided by the project Civil Engineer to remove all storm water from the pad and to minimize storm and/or irrigation water from seeping beneath the structures. Should surface water be allowed to seep under the structure, foundation movement resulting in structural cracking and damage will occur. Where possible, finished grades around the perimeter of the structures should be compacted and should be sloped at a minimum 2% gradient away from the exterior foundation. Surface drainage requirements constructed by the builder should be maintained during landscaping. In particular, the creation of planter areas confined on all sides by concrete

walkways or decks and the residence foundation is not desirable since any surface water due to rain or irrigation becomes trapped in the planter area with no outlet. If such a landscape feature is necessary, surface area drains in the planter area or a subdrain along the foundation perimeter must be installed.

13. Continuous roof gutters are recommended. According to local government requirements, roof downspout and drain flows should be directed to at grade bio-filtration areas, or raised planter boxes next to the building perimeter, where possible. From a geotechnical and maintenance point of view it is undesirable to discharge water into at grade bio-filtration areas near foundations, because of the possibility of water ponding for sustained periods of time. Typically, the bio-filtration areas consist of an 18 inch layer of sandy loam over 18 inches of permeable gravel material. The top of the bio-filtration area is typically approximately 1 foot below pad grade, therefore, the base of the bio-filtration area will be approximately 4 feet below pad grade. The base of the bio-filtration area will typically contain a perforated pipe to drain any water that may collect within 24 hours. In some situations, the bio-filtration areas may be located as close as 2 to 3 feet from the building perimeter. If such a system is employed, we must be consulted to evaluate the impact of these systems when located in close proximity to the foundation and provide supplemental recommendations including deepened footings or waterproofing. In addition, the property owners must always maintain the bio-filtration area to ensure that it is performing as designed and that water does not pond in the area for longer than 48 hours.

FOUNDATIONS

14. Provided the site is prepared as recommended in the "Grading" section, a post-tensioned slab foundation may be satisfactorily used. The slab must be designed to tolerate the estimated differential settlement due to liquefaction provided earlier.

Post Tensioned Slab on Grade

15. Post-tensioned slabs should be designed using the following criteria which is based on the design method presented in the Post-Tensioning Institute, Design of Post-Tensioned Slabs on Ground, 3rd edition 2004, addendum 2 dated May 2008, and assuming that low plasticity soil with a PI of less than 15 is used. If import material with a PI greater than 15 is utilized, we should be

consulted to provide updated foundation design criteria. Using the relevant site soil and climatic parameters, the recommended geotechnical criteria for use in the design of the post-tensioned slabs is as follows;

	Swelling Mode	
	Center Lift	Edge Lift
Edge Moisture Variation Distance (e_m)	9.0 feet	5.1 feet
Differential Soil Movement (y_m)	0.59 inches	1.09 inches

The maximum allowable bearing pressure at the base of the slab and for localized thickened footings should not exceed 2,000 p.s.f. for dead plus sustained live loads.

16. As indicated earlier, bio-filtration areas may be designed close to the foundation. Where bio-filtration areas are located closer than 5 feet of the building, the section of loose loam and gravel, will provide reduced lateral support, and we recommend a deepened footing be constructed along the perimeter the building adjacent to the bio-filtration area and extending 3 feet beyond in plan length. The depth of the deepened footing will depend on how close the bio-filtration area to the building perimeter. As a guide, the footing is to be deepened such that when an imaginary line inclined at 45 degrees from the outside edge base of the footings, it extends below the base of the bio-filtration area excavation.

General Construction Requirements for Post-Tensioned Slab

17. Prior to construction of the slab, the slab subgrade should be observed by the Soil Engineer to verify that all under-slab utility trenches greater than 18 inches in width have been properly backfilled and compacted, and that no loose or soft soils are present on the slab subgrade.

18. If clayey import material is used to grade the site the slab subgrade should be soaked to saturation (minimum 5% above optimum) to a depth of 12 to 18 inches prior to placement of the capillary break or vapor retarder/barrier. This should be verified and approved by the Soil Engineer. The penetration of a thin metal probe to a depth of 10-12 inches generally indicates sufficient saturation.

19. The four (4) inch (minimum thickness) layer of gravel typically placed to provide a capillary break beneath concrete slab-on-grade floors may be omitted beneath the monolithically poured mat slab

foundations provided that the slabs are at least 10 inches thick as recommended above. If it is desired to use a 4 inch layer or thinner of gravel section, the gravel should consist of broken stone, crushed or uncrushed gravel, quarry waste, or a combination thereof. The aggregate shall be free from deleterious substances. It shall be of such quality that the absorption of water in a saturated dry condition does not exceed 3% of the oven dry weight of the sample. The material shall be ¾" minus material with no more than 3% passing the #200 sieve, as specified in Appendix C.

20. A moisture vapor retarder/barrier is recommended beneath all slabs-on-grade that will be covered by moisture-sensitive flooring materials such as vinyl, linoleum, wood, carpet, rubber, rubber-backed carpet, tile, impermeable floor coatings, adhesives, or where moisture-sensitive equipment, products, or environments will exist. We recommend that design and construction of the moisture vapor retarder/barrier conform to Section 1805 of the 2013 CBC and relevant sections of American Concrete Institute (ACI) guidance documents 302.1R-04, 302.2R-06 and 360R-10.

21. The moisture vapor retarder/barrier can be placed above the 4 inches of gravel or directly on the soil subgrade and should consist of a minimum 10 mils thick polyethylene with a maximum perm rating of 0.1 in accordance with ASTM E 1745. Seams in the moisture vapor retarder/barrier should be overlapped no less than 6 inches or in accordance with the manufacturer's recommendations. Joints and penetrations should be sealed with the manufacturer's recommended adhesives, pressure-sensitive tape, or both. The contractor must avoid damaging or puncturing the moisture vapor retarder/barrier and repair any punctures with additional polyethylene properly lapped and sealed. The installation of the vapor retarder membrane must be in conformance with ASTM E1643.

22. A minimum of two inches of wetted sand should be placed over the vapor retarder membrane to facilitate curing of the concrete and to act as a cushion to protect the membrane. The perimeter of the mat should be thickened to bear on the prepared building pad and to confine the sand. During winter construction, sand may become saturated due to rainy weather prior to pouring. Saturated sand is not desirable because the sand cushion may become over saturated, and boil into the concrete causing undesirable structural monopolies of sand pockets within the slab. As an alternate, a sand-fine gravel mixture that is stable under saturated conditions may be used. However, the material must be approved by the Soil Engineer prior to use.

23. Alternatively, the sand layer may be eliminated provided the concrete has a maximum water/cement ratio of 0.45 and a 10 mil Class A vapor retarder membrane, such as Stego® Wrap. In any case, the vapor retarder/barrier should have a maximum perm rating of 0.3 in accordance with ASTM E 1745. Seams in the moisture vapor retarder/barrier should be overlapped no less than 6 inches or in accordance with the manufacturer's recommendations. Joints and penetrations should be sealed with the manufacturer's recommended adhesives, pressure-sensitive tape, or both. The contractor must avoid damaging or puncturing the vapor retarder/barrier and repair any punctures with additional polyethylene properly lapped and sealed.

24. Any exterior concrete flatwork such as steps, patios, or sidewalks should be designed independently of the slab, and expansion joints should be provided between the flatwork and the structural unit.

SOIL CORROSIVITY

25. In order to evaluate the corrosion potential of the near surface soil toward concrete and buried metal pipe, a sample of soil within the upper 5 feet was collected and tested for resistivity, soluble chloride, soluble sulfate, and pH. The results of the testing is summarized as follows;

Resistivity	351 Ohm-cm
Chloride	48 mg/kg
Sulfate	34 mg/kg
pH	7.0

26. Many factors contribute to the corrosion potential. The most important factor with respect to corrosion potential toward buried metal pipes and fittings is soil resistivity, and the most important factor with respect to corrosion potential toward concrete is the sulfate content.

27. Based on the above results, the near surface soil is severely corrosive to buried metal pipe and fittings. We recommend that a corrosion engineer be consulted to provide specific corrosion protection measures. Further, the sulfate exposure to concrete is negligible, and no special cements are required.

MISCELLANEOUS CONCRETE FLATWORK

28. Miscellaneous flatwork, driveways, and walkways may be designed with a minimum thickness of 4.0 inches. Control joints should be constructed to create squares or rectangles with a maximum spacing of 15 feet on large slab areas. Walkways should be separated from foundations with a thick expansion joint filler. Control joints should be constructed into walkways at a maximum of 5 feet spacing.

RETAINING WALLS

29. Retaining walls should be designed to resist lateral pressures exerted from a media having an equivalent fluid weight as follows:

Active Condition	=	55 p.c.f. for horizontal backslope
At-rest Condition	=	70 p.c.f.
Passive Condition	=	250 p.c.f.
Coefficient of Friction	=	0.30

30. For a non-horizontal backslope, the active condition equivalent fluid weight can be increased by 1.5 p.c.f. for each 2 degree rise in slope from the horizontal.

31. Active conditions occur when the top of the wall is free to move outward. At-rest conditions apply when the top of wall is restrained from any movement.

32. It should be noted that the effects of any surcharge, traffic or compaction loads behind the walls must be accounted for in the design of the walls.

33. The above criteria are based on fully drained conditions. If drained conditions are not possible, then the hydrostatic pressure must be included in the design of the wall. An additional linear distribution of hydrostatic pressure of 63 p.c.f. should be adopted, in this case.

34. In order to achieve fully-drained conditions, a drainage filter blanket should be placed behind the wall. The blanket should be a minimum of 12 inches thick and should extend the full height of the wall to within 12 inches of the surface. If the excavated area behind the wall exceeds 12 inches, the entire excavated space behind the 12-inch blanket should consist of compacted engineered fill or

blanket material. The drainage blanket material may consist of either granular crushed rock and drain pipe fully encapsulated in geotextile filter fabric or Class II permeable material that meets CalTrans Specification, Section 68, with drainage pipe but without fabric. A 4-inch perforated drain pipe should be installed in the bottom of the drainage blanket and should be underlain by at least 4 inches of filter type material. A 12-inch cap of clayey soil material should be placed over the drainage blanket. A typical detail for retaining wall back drains is presented in Appendix C. All back drains should be outlet to suitable drainage devices. Retaining wall less than 3 feet in height should be provided with backdrains or weep holes.

35. As an alternate to the 12-inch drainage blanket, a pre-fabricated strip drain (such as Miradrain) may be used between the wall and retained soil. In this case, the wall must be designed to resist an additional lateral hydrostatic pressure of 30 p.c.f.

36. Piping with adequate gradient shall be provided to discharge water that collects behind the walls to an adequately controlled discharge system away from the structure foundation.

37. The retaining walls may be founded on a friction pier foundation or on spread footing foundations for walls that are not a part of a building structure. Spread footing and pier design criteria are given below.

RETAINING WALL/SOUNDWALL FOUNDATION - SPREAD FOOTINGS

38. Spread footings should have a minimum depth of twenty four (24) inches below lowest adjacent pad grade (i.e., trenching depth) for soil subgrade. At this depth, the recommended design bearing pressure for continuous footings should not exceed 2,500 p.s.f. due to dead plus sustained live loads and 3,300 p.s.f. due to all loads which include wind and seismic.

39. To accommodate lateral loads, the passive resistance of the foundation soil can be utilized. The passive soil pressures can be assumed to act against the front face of the footing below a depth of one foot below the ground surface. It is recommended that a passive pressure equivalent to that of a fluid weighing 250 p.c.f. be used. The weight of the soil above the footing can be used in the frictional calculations. For design purposes, an allowable friction coefficient of 0.30 can be assumed at the base of the spread footing.

RETAINING WALL/SOUNDWALL FOUNDATION - PIER FOOTINGS

40. The piers should be designed on the basis of skin friction acting between the soil and the pier. For the soils at the site, an allowable skin friction value of 500 p.s.f. can be used for combined dead and live loads, below a depth of 3 feet. This value can be increased by one-third for total loads which include wind or seismic forces. Given the highly expansive nature of the soil, we recommend that any grade beams footings or bottom of soundwall panels that are buried into the ground, should be designed for an uplift pressure of 2,500 p.s.f. acting against the bottom of the grade beam/soundwall panel and an uplift adhesion of 300 p.s.f. acting along the upper 3 feet of the pier. Resistance to uplift is to be provided by the pier foundations, and an allowable skin friction value of 500 p.s.f can be used below 3 feet. The size, depth and spacing of the piers is to be determined by the structural engineer.

41. To resist lateral loads, the passive resistance of the soil can be used. The soil passive pressures can be assumed to act against the lateral projected area twice the pier diameter. It is recommended that a passive pressure equivalent to that of a fluid weighing 250 p.c.f be used below 3 feet of final pad grade.

PAVEMENT AREAS

42. R-value tests were not performed as part of this investigation, as the soil expected at subgrade level is not known and depends on the planned grading. Assuming the subgrade material will consist of imported sandy or low expansive clay material, we will assume an R-value of 10 for preliminary design.

43. Based on an R-Value of 10, the following flexible pavement sections are recommended.

Traffic Index	AC (inches)	Class II[1] AB (inches)
4.5	4.0	7.5
5.0	4.0	8.5
6.0	4.0	11.0

Notes: [1]Minimum R-Value = 78
R-Value = Resistance Value
All Layers in compacted thickness to Cal-Trans Standard Specifications

44. After underground facilities have been placed in the areas to receive pavement and removal of excess material has been completed, the upper 6 inches of the sub-grade soil shall be scarified, moisture conditioned, and compacted to a minimum relative compaction of 95% in accordance with the grading recommendations specified in this report.

45. All aggregate base material placed subsequently should be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure of D1557-12 (latest edition). The construction of the pavement areas should conform to the requirements set forth by the latest Standard Specifications of the Department of Transportations of the State of California and/or City of Oakland, Department of Public Works.

46. If planter areas are provided within or immediately adjacent to the pavement areas, or if permeable pavers are used for some areas of pavement, provisions should be made to control irrigation and surface water from entering the pavement subgrade. Water entering the pavement section at subgrade level, which does not have a means for discharge, could cause softening of this zone and lead to pavement failure. We recommend that for areas of permeable pavers, the subgrade be graded to a low point where a subdrain is constructed to discharge any accumulated water.

UTILITY TRENCHES

47. Applicable safety standards require that trenches in excess of 5 feet must be properly shored or that the walls of the trench slope back to provide safety for installation of lines. If trench wall sloping is performed, the inclination should vary with the soil type. The underground contractor should request an opinion from the Soil Engineer as to the type of soil and the resulting inclination.

48. With respect to state-of-the-art construction or local requirements, utility lines are generally bedded with granular materials. These materials can convey surface or subsurface water beneath the structures. It is, therefore, recommended that all utility trenches which possess the potential to transport

water be sealed with a compacted impervious cohesive soil material or lean concrete where the trench enters/exits the building perimeter.

49. Utility trenches extending underneath all traffic areas must be backfilled with native or approved import material and compacted to a relative compaction of 90% to within 6 inches of the subgrade. The upper 6 inches should be compacted to 95% relative compaction in accordance with Laboratory Test Procedure ASTM D1557 (latest edition). Backfilling and compaction of these trenches must meet the requirements set forth by the City of Oakland, Department of Public Works. Utility trenches within landscape areas may be compacted to a relative compaction of 85%.

PROJECT REVIEW AND CONSTRUCTION MONITORING

50. All grading and foundation plans for the development must be reviewed by the Soil Engineer prior to contract bidding or submitted to governmental agencies so that plans are reconciled with soil conditions and sufficient time is allowed for suitable mitigative measures to be incorporated into the final grading specifications.

51. ***Quantum Geotechnical, Inc.*** should be notified at least two working days prior to site clearing, grading, and/or foundation operations on the property. This will give the Soil Engineer ample time to discuss the problems that may be encountered in the field and coordinate the work with the contractor.

52. Field observation and testing during the demolition and/or foundation operations must be provided by representatives of ***Quantum Geotechnical, Inc.*** to enable them to form an opinion regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the specification requirements. Any work related to the grading and/or foundation operations performed without the full knowledge and under the direct observation of the Soil Engineer will render the recommendations of this report invalid. This does not imply full-time observation. The degree of observation and frequency of testing services would depend on the construction methods and schedule, and the item of work.

REFERENCES

1. Association of Bay Area Governments. "Interactive Liquefaction Susceptibility Map". Accessed September 15, 2015 from ABAG website: http://resilience.abag.ca.gov/earthquakes/.

2. California Geological Survey. 2003. “Seismic Hazard Zone Report for the Oakland West 7.5-Minute Quadrangle, Alameda County, California”. Seismic Hazard Zone Report 081.

3. Graymer, R.W., Moring, B.C., Saucedo, G.J., Wentworth, C.M., Brabb, E.E., and Knudsen, K.L. 2006. “Geologic Map of the San Francisco Bay Region”. U.S. Geological Survey. Scientific Investigations Map 2918.

4. U.S. Geological Survey and California Geological Survey. 2006. "Quaternary fault and fold database for the United States". Accessed September 15, 2015 from USGS web site: http//earthquakes.usgs.gov/regional/qfaults/.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his representative to notify ***Quantum Geotechnical, Inc.,*** in writing, a minimum of two working days before any clearing, grading, or foundation excavations can commence at the site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings and from a reconnaissance of the site. Should any variations or undesirable conditions be encountered during the development of the site, ***Quantum Geotechnical,*** will provide supplemental recommendations as dictated by the field conditions.

3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans and the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

4. At the present date, the findings of this report are valid for the property investigated. With the passage of time, significant changes in the conditions of a property can occur due to natural processes or works of man on this or adjacent properties. In addition, legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may render this report invalid, wholly or partially. Therefore, this report should not be considered valid after a period of two (2) years without our review, nor should it be used, or is it applicable, for any properties other than those investigated.

5. Not withstanding all the foregoing, applicable codes must be adhered to at all times.

APPENDIX A

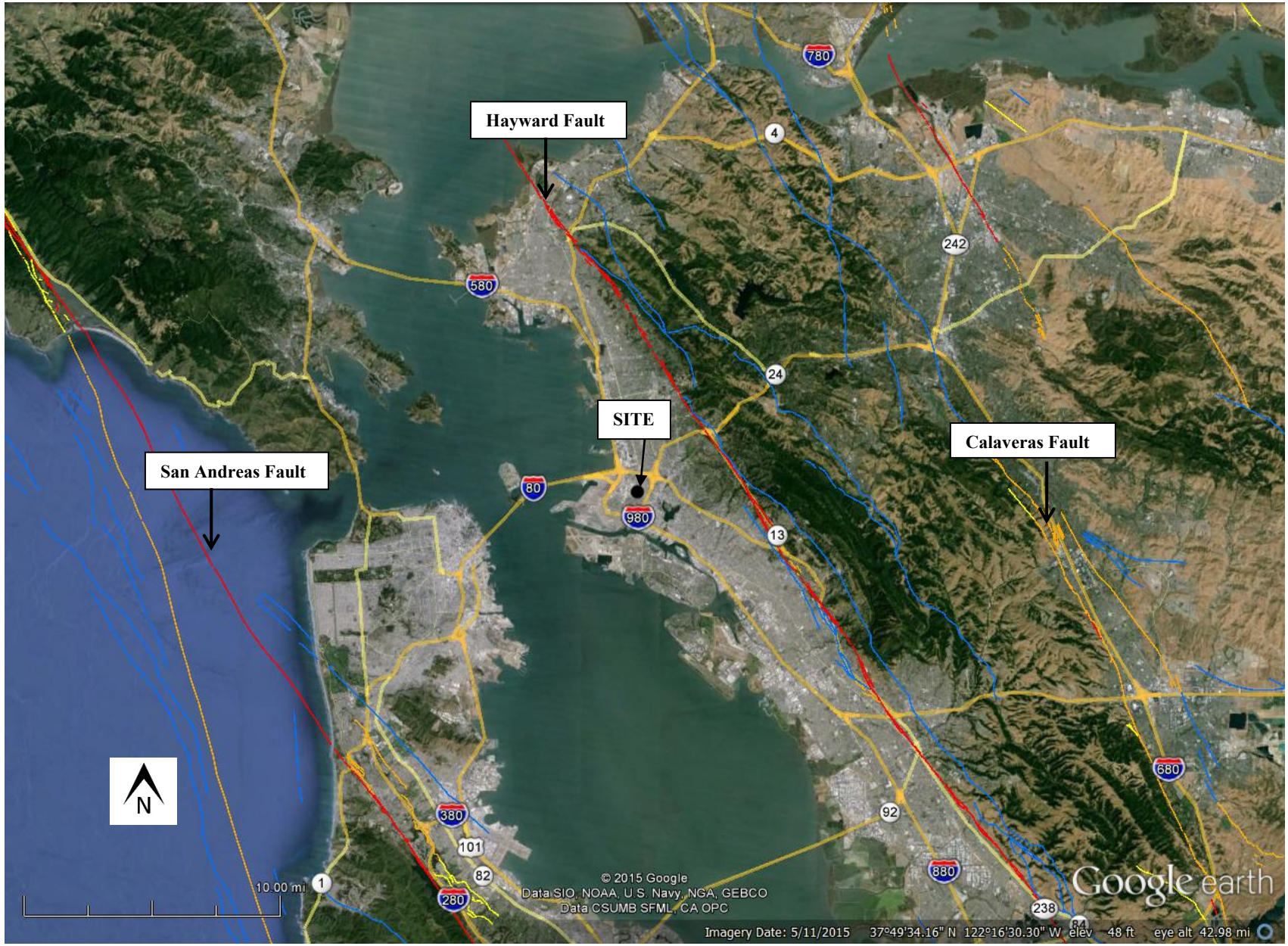
Site Vicinity and Fault Map

Regional Geology Map

Site Plan

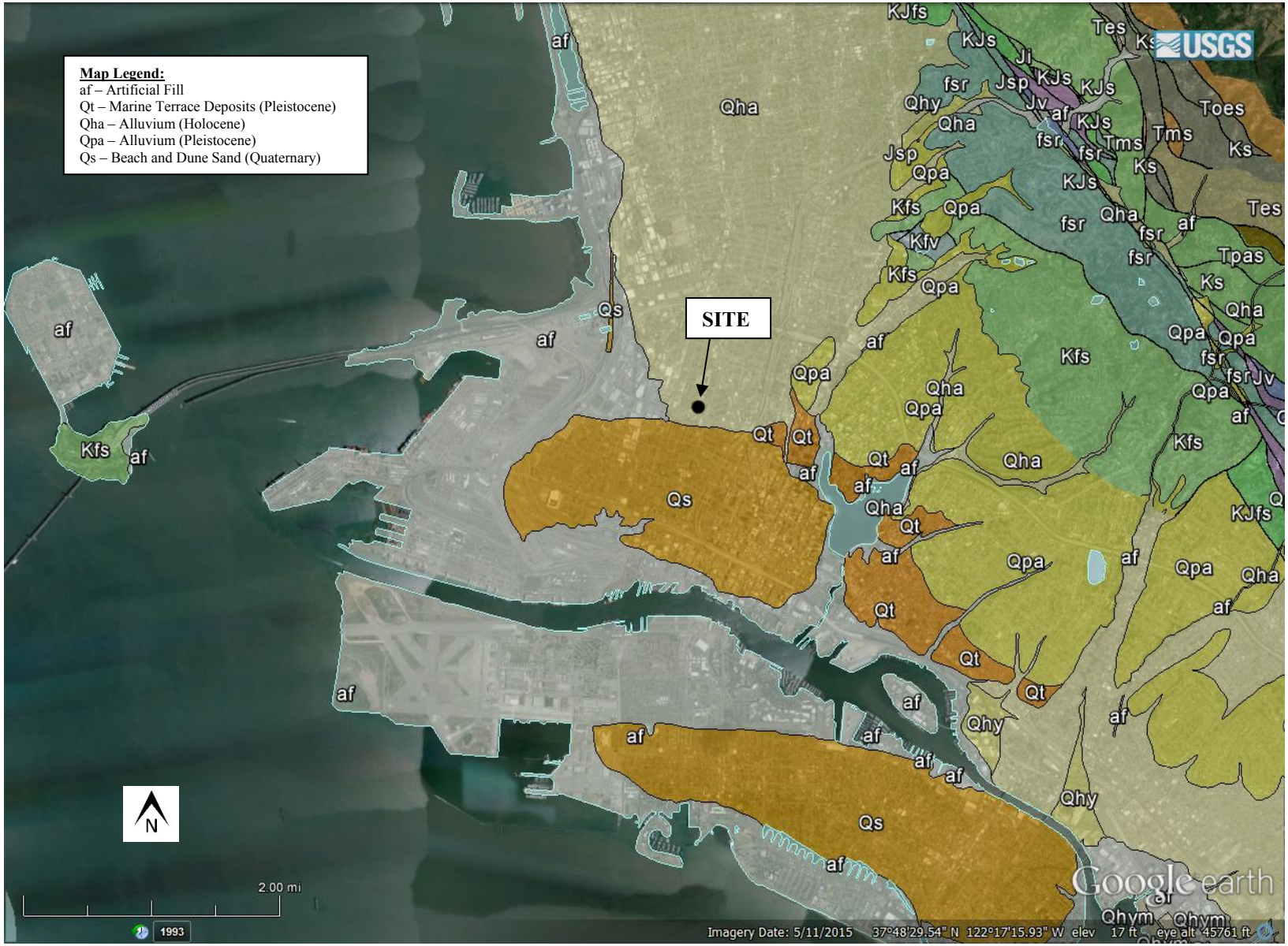
Logs of Test Borings

CPT Data



Fault Map Overlay Source: U.S. Geological Survey and California Geological Survey. 2006. Quaternary fault and fold database for the United States. Accessed September 15, 2015 from USGS web site: http//earthquakes.usgs.gov/regional/qfaults/.

QUANTUM GEOTECHNICAL, INC.	SITE VICINITY AND FAULT MAP			
	Oakland West Grand Avenue, Oakland	Project No. B044.G	Drawn by: D.T.	Figure No. 1



Geologic Map Overlay Source: Graymer, R.W., Moring, B.C., Saucedo, G.J., Wentworth, C.M., Brabb, E.E., and Knudsen, K.L. 2006. "Geologic Map of the San Francisco Bay Region". USGS. Scientific Investigations Map 2918.

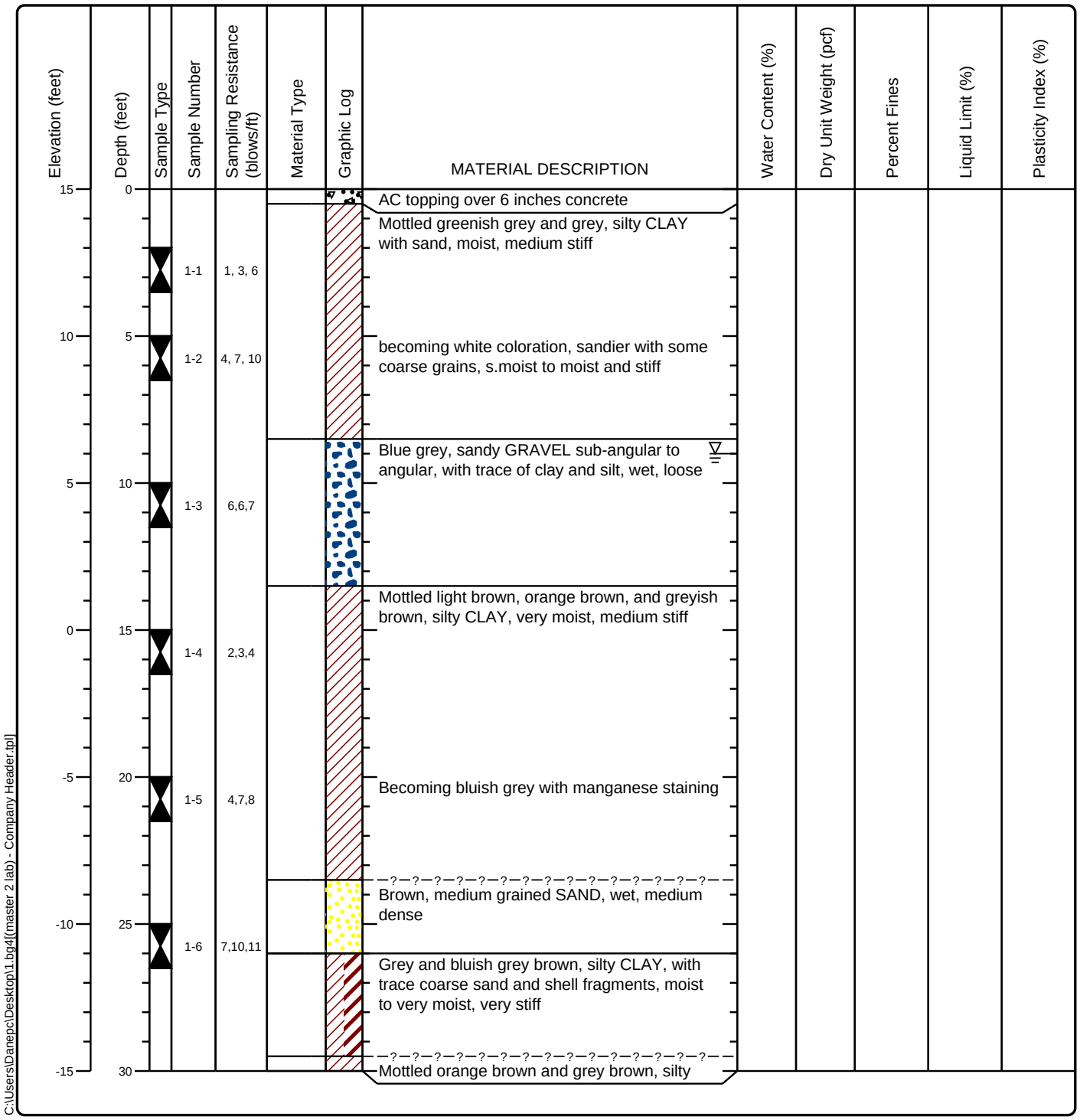
QUANTUM GEOTECHNICAL, INC.	REGIONAL GEOLOGY MAP			
	Oakland West Grand Avenue, Oakland	Project No. B044.G	Drawn by: D.T.	Figure No. 2



QUANTUM GEOTECHNICAL, INC.	SITE PLAN			
	Oakland West Grand Avenue, Oakland	Project No. B044.G	Drawn by: D.T.	Figure No. 2

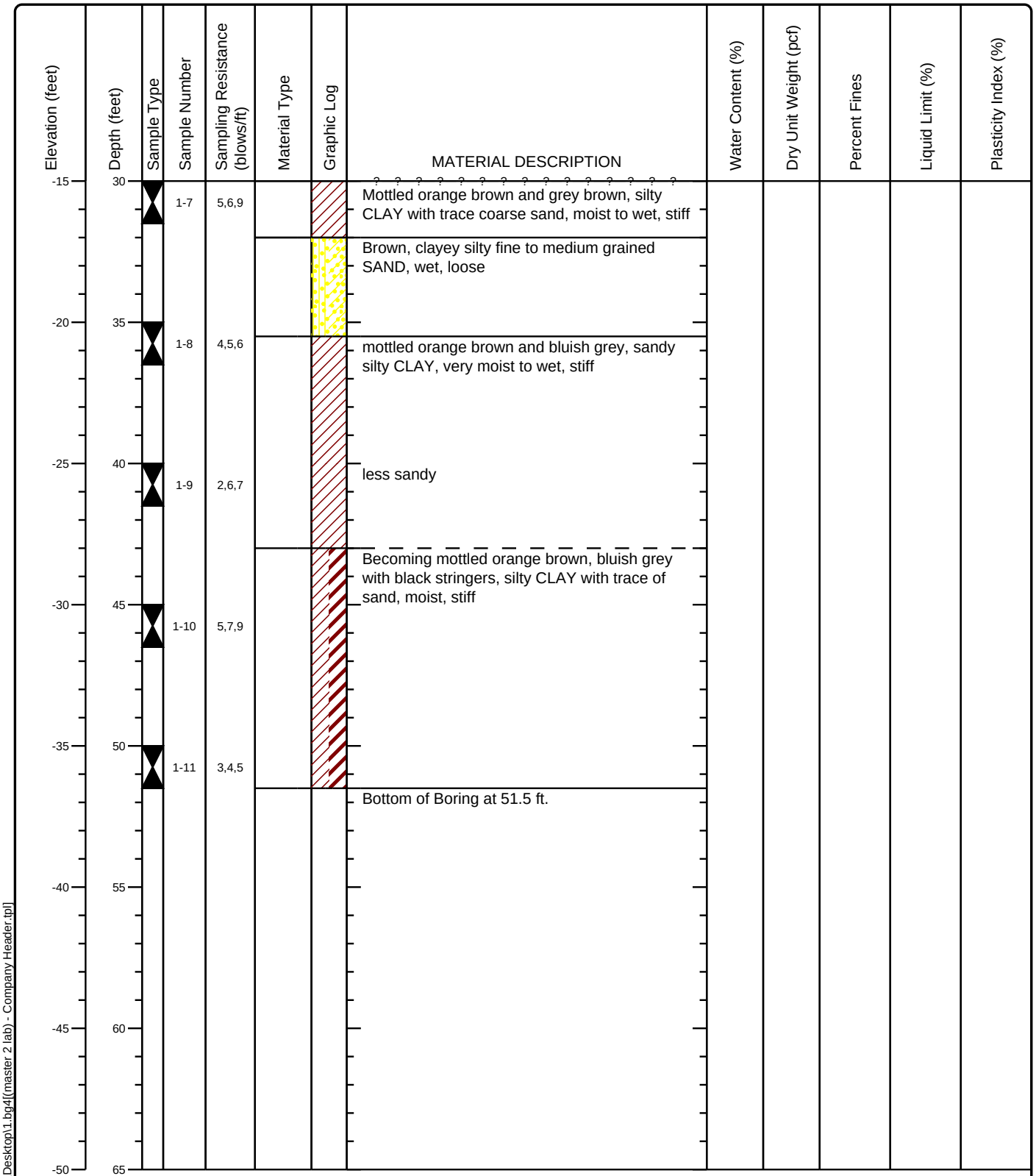
Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-1 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **5/30/2014**	Logged By **MH**	Checked By **SM**
Drilling Method **Hollow Stem**	Drill Bit Size/Type **8"**	Total Depth of Borehole **51.5 ft. bgs.**
Drill Rig Type **CME 55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **9 ft. bgs.**	Sampling Method(s) **California**	Hammer Data **Automatic**
Borehole Backfill **Grout**	Location **See Site Plan**	



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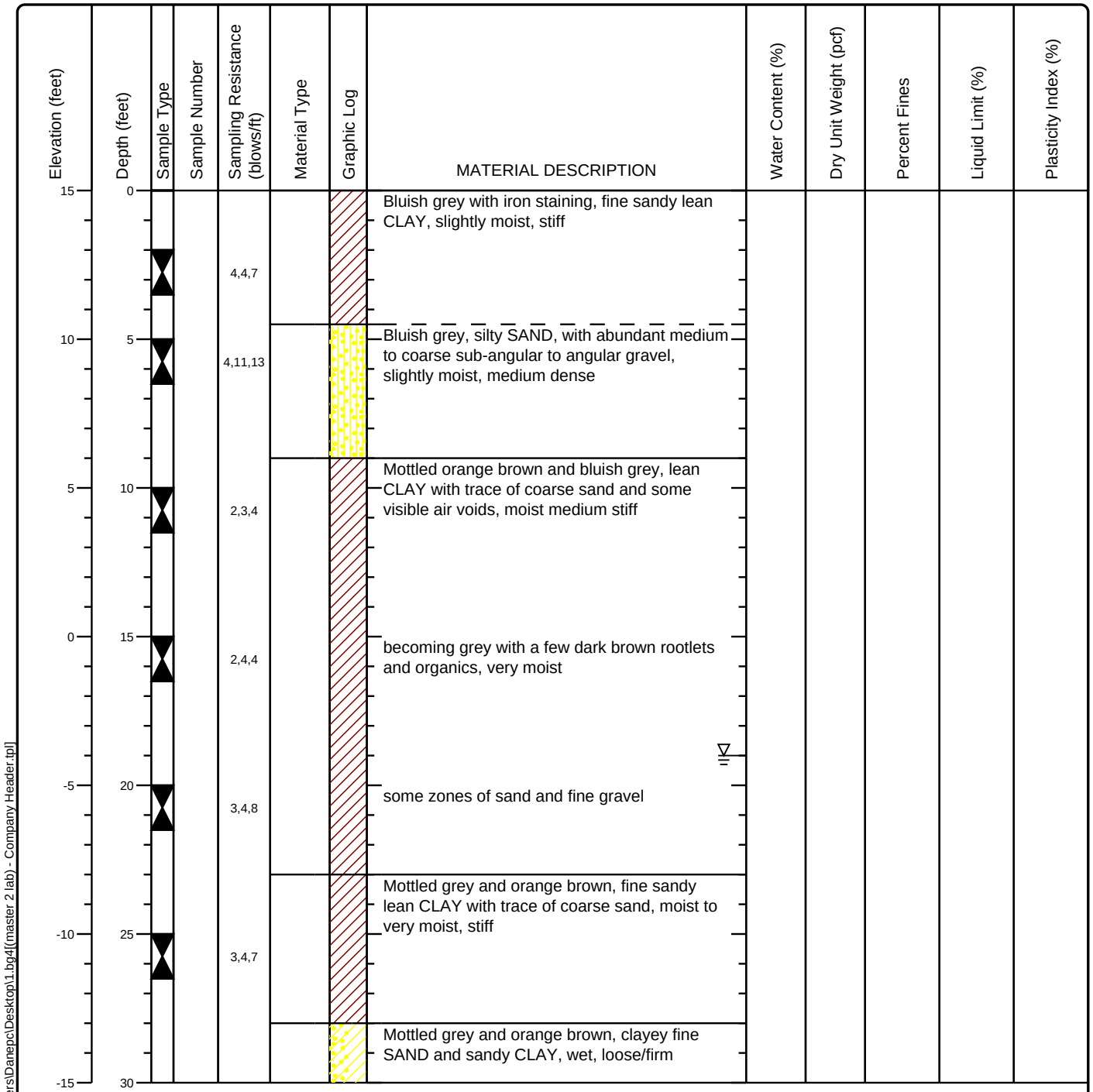
Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-1 **Sheet 2 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751



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Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-2 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **5/30/2014**	Logged By **MH**	Checked By **SM**
Drilling Method **Hollow Stem**	Drill Bit Size/Type **8"**	Total Depth of Borehole **51.5 ft. bgs.**
Drill Rig Type **CME 55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **19 ft. bgs.**	Sampling Method(s) **California**	Hammer Data **Automatic**
Borehole Backfill **Grout**	Location **See Site Plan**	



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Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-2 **Sheet 2 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
-15	30			3,5,6			Mottled grey and orange brown, clayey fine SAND and sandy CLAY, wet, loose/firm					
							Mottled orange and grey brown, silty CLAY with some coarse sand, moist, very stiff					
-20	35			5,9,15								
-25	40			6,7,10			less sandy					
							Mottled orange and greyish brown, sandy lean CLAY, with trace coarse sand and abundant shell fragments, wet, stiff					
-30	45			4,6,7								
							Dark grey, lean silty CLAY, with decayed organic stringers, moist, medium stiff					
-35	50			3,4,5								
							Bottom of Boring at 51.5 ft.					
-40	55											
-45	60											
-50	65											

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Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Log of Boring B-3 **Sheet 1 of 1**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **5/30/2014**	Logged By **MH**	Checked By **SM**
Drilling Method **Hollow Stem**	Drill Bit Size/Type **8"**	Total Depth of Borehole **21.5 ft. bgs.**
Drill Rig Type **CME 55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **13 ft. bgs.**	Sampling Method(s) **California**	Hammer Data **Automatic**
Borehole Backfill **Grout**	Location **See Site Plan**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
15	0						Black, sandy lean CLAY with small pieces of brick and concrete, slightly moist, stiff. FILL					
				3,5,6								
10	5						Greyish brown with iron staining, coarse sandy lean CLAY with gravel, slightly moist to moist, stiff to very stiff					
				5,6,10								
5	10						as above but with abundant sub-angular to angular gravel					
				4,8,8			▽					
0	15						poorly graded coarse SAND, with trace of silt and fine gravel, wet, medium dense					
				12,15,12								
-5	20											
				3,5,6			Blue grey, silty CLAY with sand, s.moist, stiff					
							Bottom of Boring at 21.5 ft.					
-10	25											
-15	30											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-4 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **8/20/15**	Logged By **M. Hachey**	Checked By **SM**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **4 in.**	Total Depth of Borehole **31.5 ft. bgs.**
Drill Rig Type **CME-55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **15 ft. bgs.**	Sampling Method(s) **Modified California**	Hammer Data **140 lb./ 30 in. drop**
Borehole Backfill **Grout**	Location **See Site Plan**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
15	0						Silty SAND: Variegated dark, reddish, and orange brown; slightly moist; medium dense; contains wood debris.					
			4-1	14 11 11				13.6	120.8	24		
10	5		4-2	8 8 10			At 6 ft: Increased gravel.					
5	10		4-3	3 5 6			At 10 ft: Very moist; loose.					
0	15		4-4	2 3 5			Lean CLAY: Bluish grey with white; medium stiff; very moist.					
-5	20		4-5	5 7 9			At 20 ft: Color shange to bluish grey with black; stiff; contains trace fine sand and gravel.					
-10	25		4-6	6 10 11			At 25 ft: Very stiff; weak cementation.					
-15	30											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-4 **Sheet 2 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
-15	30		4-7	4 5 7			At 25 ft: Very stiff; weak cementation.					
							Bottom of Boring at 31.5 ft.					
-20	35											
-25	40											
-30	45											
-35	50											
-40	55											
-45	60											
-50	65											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-5 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **8/20/15**	Logged By **M. Hachey**	Checked By **SM**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **4 in.**	Total Depth of Borehole **31.5 ft. bgs.**
Drill Rig Type **CME-55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **15 ft. bgs.**	Sampling Method(s) **Modified California, SPT**	Hammer Data **140 lb./ 30 in. drop**
Borehole Backfill **Grout**	Location **See Site Plan**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
15	0						Silty SAND with gravel: Variegated dark, reddish, and orange brown; slightly moist; medium dense. [FILL]					
10	5		5-1	5 8 11			CLAY: Variegated light greyish brown and bluish grey; slightly moist; very stiff; contains trace sand and fine gravel; visible structure.	21.0	106.1	69.5	54	34
5	10		5-2	2 4 6			At 10 ft: Moist; medium stiff; contains trace gravel.					
0	15		5-3	2 4 7			At 15 ft: Moist to very moist with zones of saturation; stiff; contains organics, trace sand, and air voids.					
-5	20		5-4	2 2 3			At 21 ft: Moist; medium stiff; fine sand.				44	19
-10	25		5-5	11 12 20			Poorly-Graded SAND: Moderate brown; wet; dense; coarse sand.	17.9		12.6		
-15	30											

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Project: **West Grand Avenue**
Project Location: **West Grand Avenue, Oakland**
Project Number: **B044.G**

Log of Boring B-5
Sheet 2 of 2

Quantum Geotechnical, Inc.
1110 Burnett Avenue, Ste. B
Concord, CA 94520
(925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
-15	30		5-6	2 3 4			CLAY: Variegated orange, brown, and bluish grey; moist to wet; medium stiff; contains trace fine gravel.					
							Bottom of Boring at 31.5 ft.					
-20	35											
-25	40											
-30	45											
-35	50											
-40	55											
-45	60											
-50	65											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-6 **Sheet 1 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Date(s) Drilled **8/20/15**	Logged By **M. Hachey**	Checked By **SM**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **4 in.**	Total Depth of Borehole **31.5 ft. bgs.**
Drill Rig Type **CME-55**	Drilling Contractor **Britton Exploration**	Approximate Surface Elevation **15 ft. amsl.**
Groundwater Level and Date Measured **15 ft. bgs.**	Sampling Method(s) **Modified California**	Hammer Data **140 lb./ 30 in. drop**
Borehole Backfill **Grout**	Location **See Site Plan**	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
15	0						Silty Clayey SAND: Dark reddish and orange brown; slightly moist; medium dense. [Fill]					
			6-1	5 9 14			Fat CLAY: Variegated orange, brown, and bluish grey; slightly moist; very stiff; contains sand. [Native]	17.0	112.6	68.0	36	18
10	5		6-2	5 9 11			At 6 ft: decrease in plasticity; increase in sand.					
5	10		6-3	2 4 6			At 10 ft: Moist to slightly moist; medium stiff; increase in sand.					
0	15		6-4	11 18 15			Well-Graded Gravel with Sand: Saturated; medium dense; coarse to fine, subangular to angular gravel; coarse sand.	12.9	113.8	7.3		
-5	20		6-5	3 4 4			Lean CLAY: Variegated bluish grey with orange brown; very moist; medium stiff; contains fine sand.	32.8	91.6			
-10	25		6-6	18 33 47			Well-Graded Silty SAND: Wet; very dense; medium to coarse sand.	12.1	128.9	15		
-15	30											

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Project: **West Grand Avenue** Project Location: **West Grand Avenue, Oakland** Project Number: **B044.G**	Log of Boring B-6 **Sheet 2 of 2**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
-15	30		6-7	3 5 7			Lean CLAY: Variegated orange and greyish brown; moist to very moist; stiff; contains fine sand.					
							Bottom of Boring at 31.5 ft.					
-20	35											
-25	40											
-30	45											
-35	50											
-40	55											
-45	60											
-50	65											

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Project: **West Grand Avenue** Project Location: **Oakland** Project Number: **E382-1**	Key to Boring Logs **Sheet 1 of 1**	**Quantum Geotechnical, Inc.** 1110 Burnett Avenue, Ste. B Concord, CA 94520 (925) 788-2751

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance (blows/ft)	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content (%)	Dry Unit Weight (pcf)	Percent Fines	Liquid Limit (%)	Plasticity Index (%)
1	2	3	4	5	6	7	8	9	10	11	12	13

COLUMN DESCRIPTIONS

1. Elevation (feet): Elevation (MSL, feet).
2. Depth (feet): Depth in feet below the ground surface.
3. Sample Type: Type of soil sample collected at the depth interval shown.
4. Sample Number: Sample identification number.
5. Sampling Resistance (blows/ft): Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
6. Material Type: Type of material encountered.
7. Graphic Log: Graphic depiction of the subsurface material encountered.
8. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9. Water Content (%): Water content of the soil sample, expressed as percentage of dry weight of sample.
10. Dry Unit Weight (pcf): Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.
11. Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.
12. Liquid Limit (%): Liquid Limit, expressed as a water content.
13. Plasticity Index (%): Plasticity Index, expressed as a water content.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

- Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)
- Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
- Lean-Fat CLAY, CLAY w/SAND, SANDY CLAY (CL-CH)
- Portland Cement Concrete
- AF
- Well graded GRAVEL (GW)
- Clayey SAND to Sandy CLAY (SC-CL)
- Silty SAND (SM)
- Silty to Clayey SAND (SM-SC)
- Poorly graded SAND (SP)
- Well graded SAND with Silt (SW-SM)

TYPICAL SAMPLER GRAPHIC SYMBOLS

- 3-inch-OD California w/ brass rings
- 2.5-inch-OD Modified California w/ brass liners
- 2-inch-OD unlined split spoon (SPT)

OTHER GRAPHIC SYMBOLS

- Water level (at time of drilling, ATD)
- Water level (after waiting)
- Minor change in material properties within a stratum
- Inferred/gradational contact between strata
- Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

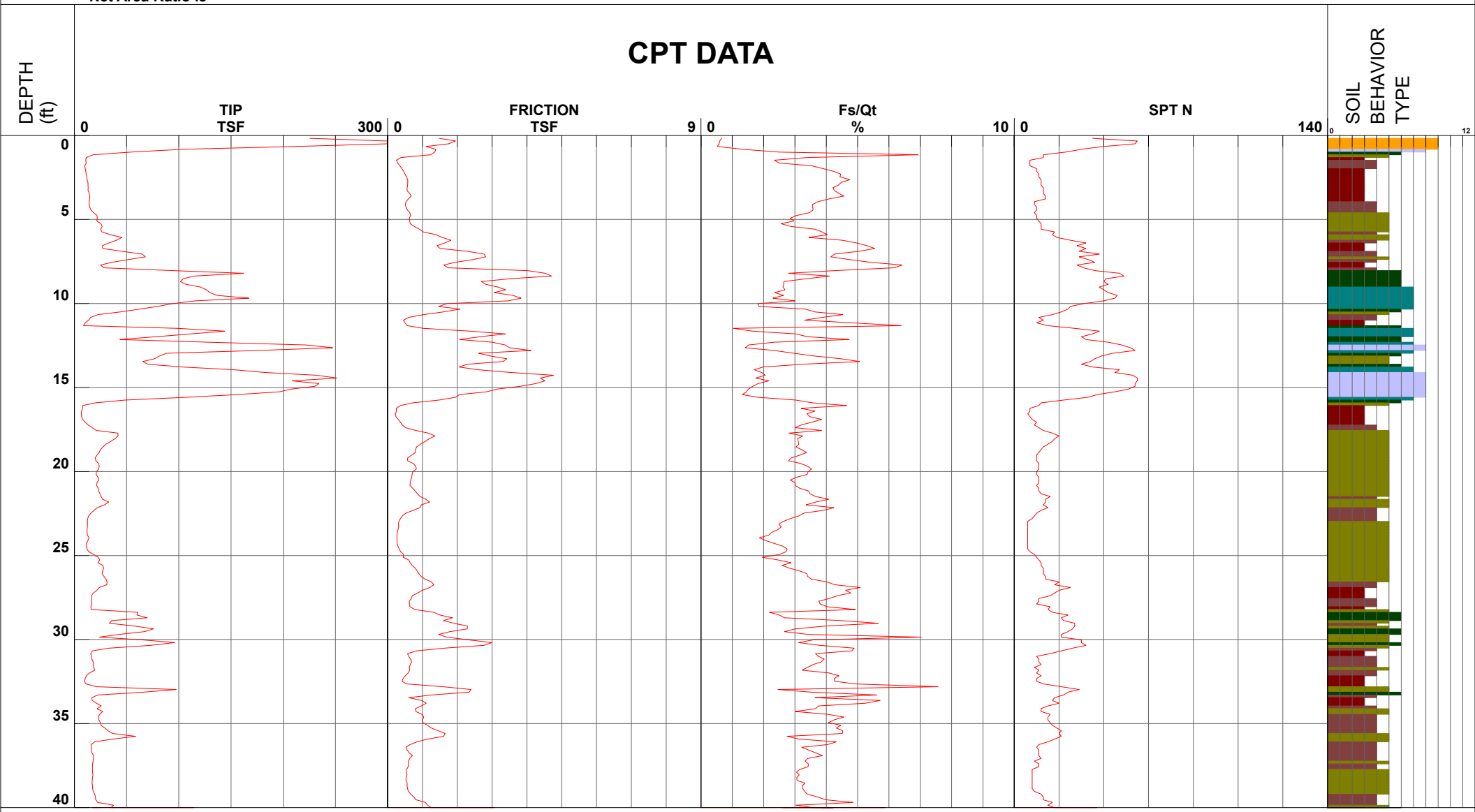
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Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(062).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-01	Date and Time	8/20/2015 2:17:51 PM	Maximum Depth	41.83 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

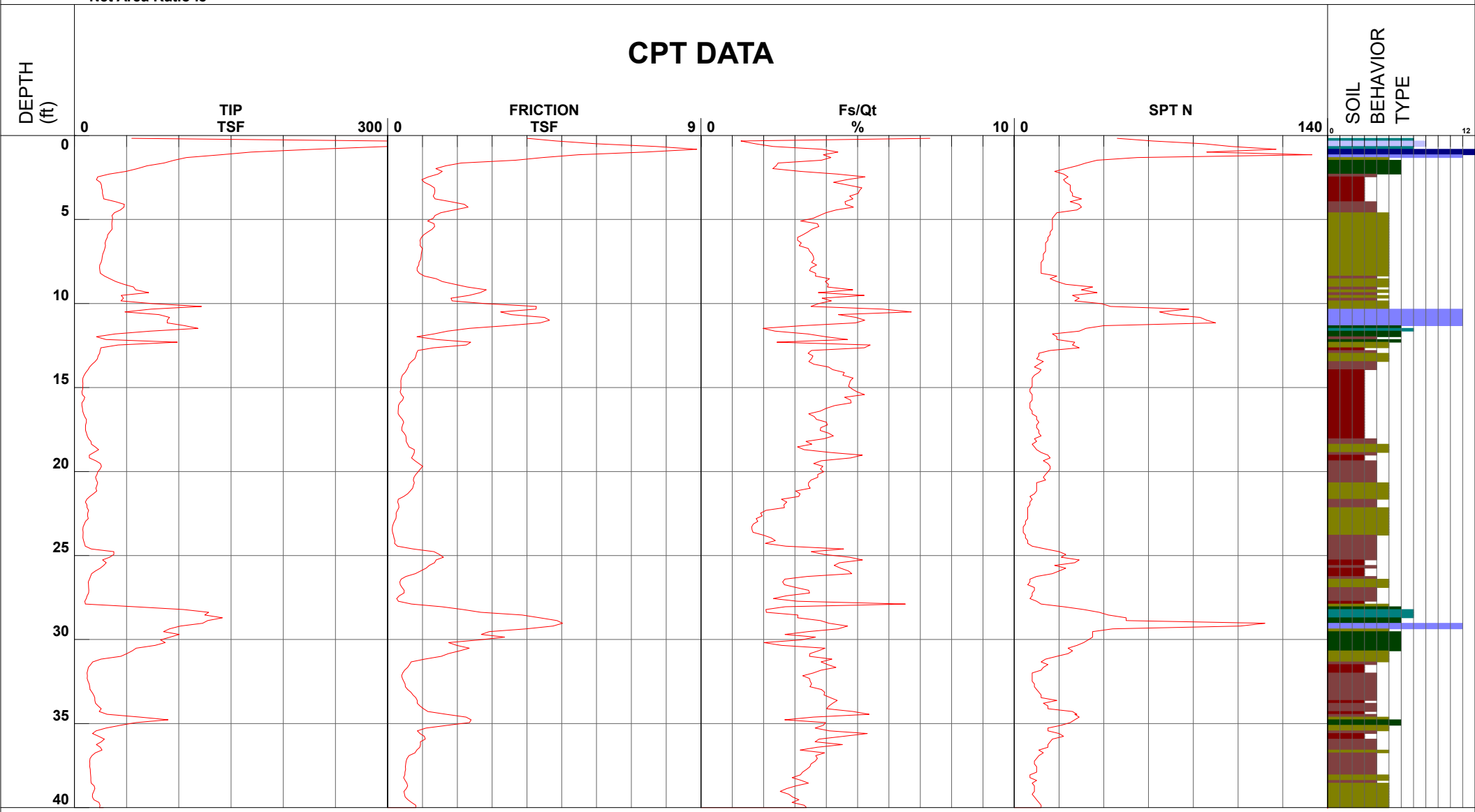
S*Soil behavior type and SPT based on data from UBC-1983

Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(061).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-02	Date and Time	8/20/2015 1:50:48 PM	Maximum Depth	40.52 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

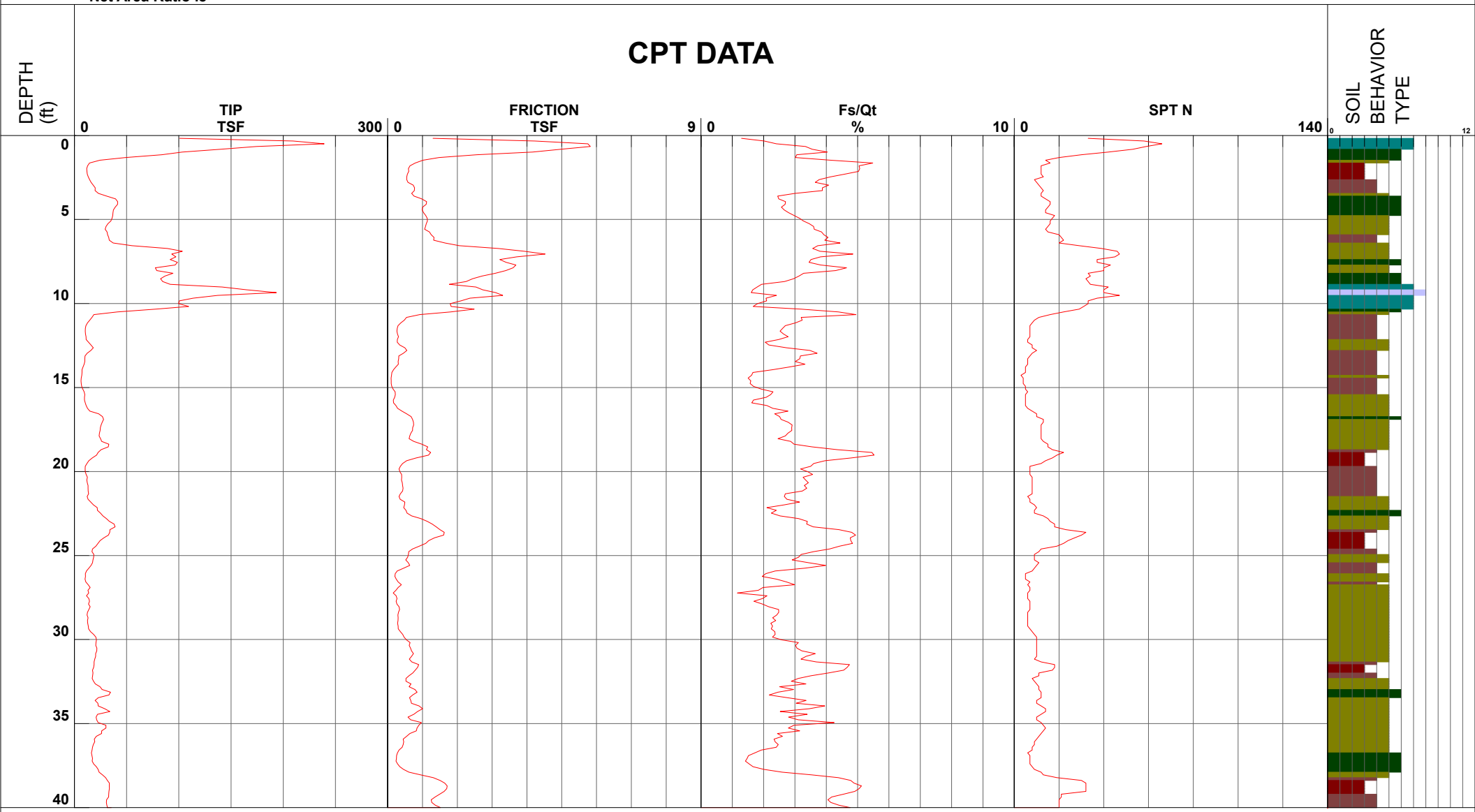
S*Soil behavior type and SPT based on data from UBC-1983

Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(058).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-03	Date and Time	8/20/2015 12:00:49 PM	Maximum Depth	40.52 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

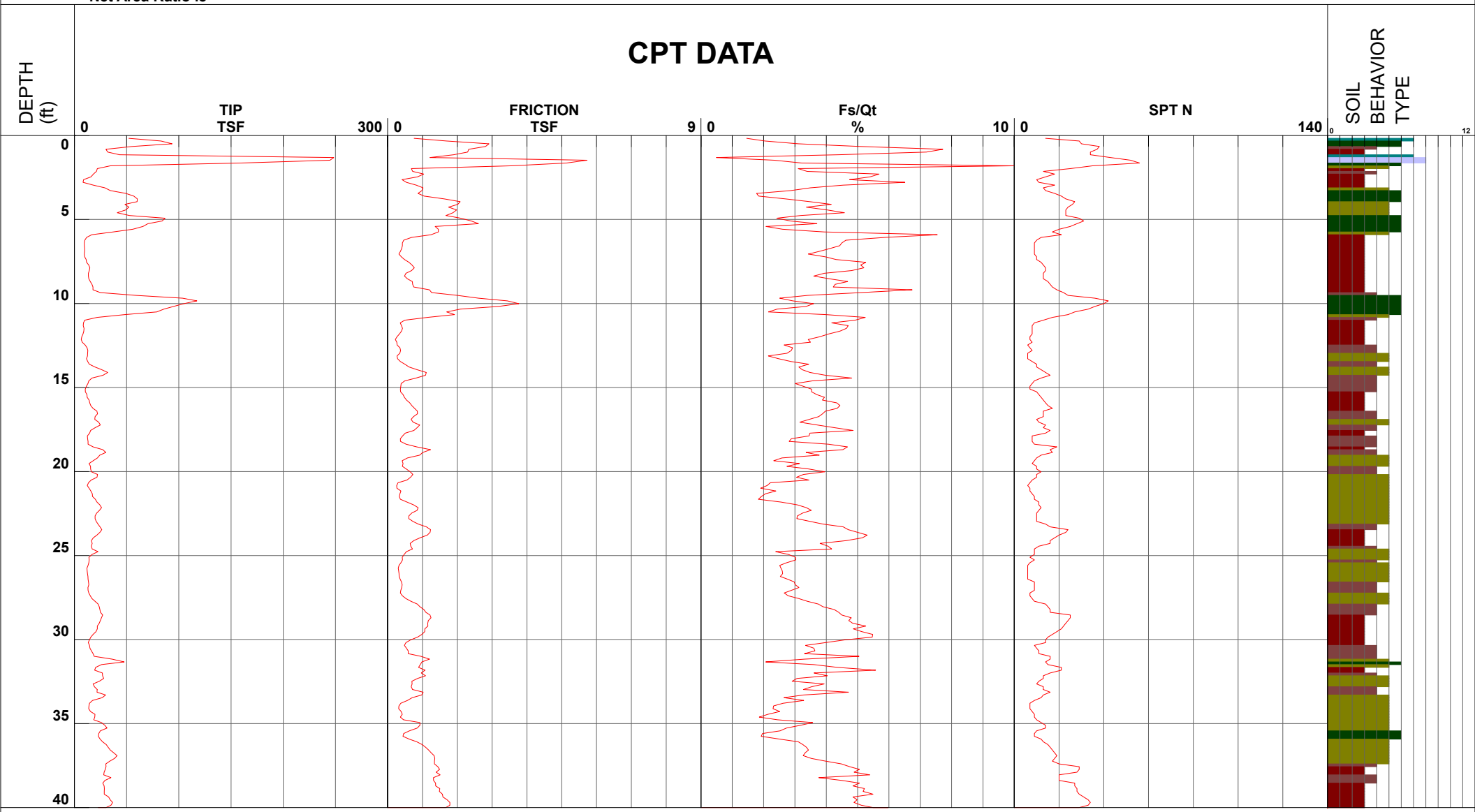
S*Soil behavior type and SPT based on data from UBC-1983

Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(059).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-04	Date and Time	8/20/2015 12:30:16 PM	Maximum Depth	40.52 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

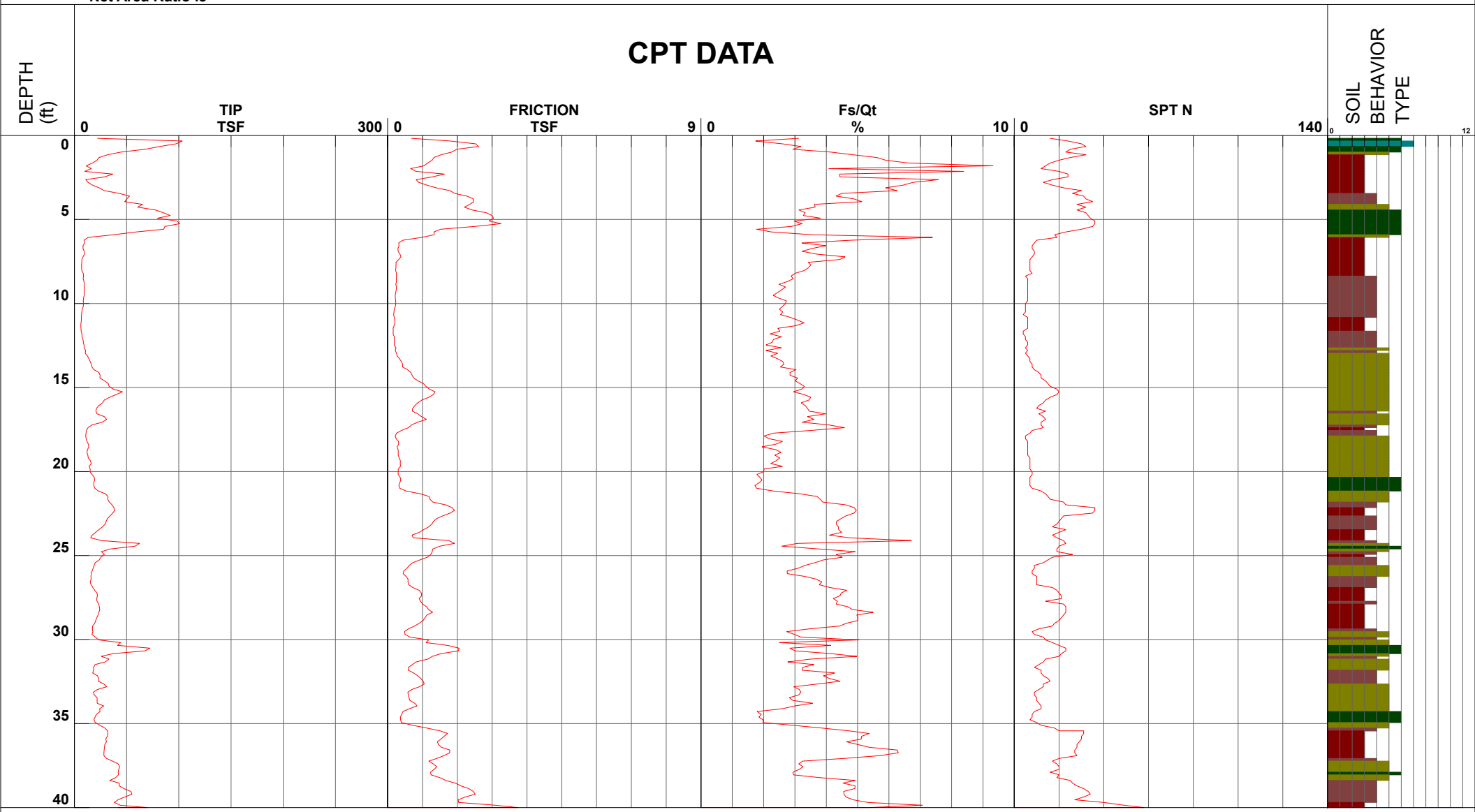
S*Soil behavior type and SPT based on data from UBC-1983

Quantum Geotechnical Inc.

Project	West Grand Avenue	Operator	CB	Filename	SDF(060).cpt
Job Number	B044.G	Cone Number	DDG1281	GPS	
Hole Number	CPT-05	Date and Time	8/20/2015 1:11:03 PM	Maximum Depth	40.52 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

APPENDIX B

Laboratory Investigation

Summary of Laboratory Test Results

Corrosion Test Results

LABORATORY INVESTIGATION

The laboratory testing program was directed towards providing sufficient information for the determination of the engineering characteristics of the site soils so that the recommendations outlined in this report could be formulated.

Moisture content and dry unit weight tests were performed on relatively undisturbed soil samples in order to determine the consistency of the soil and moisture variation throughout the explored soil profile and to estimate the compressibility of the underlying soils.

Sieve analysis testing was performed to determine the percentage of fines.

Atterberg Limits tests were performed to determine the expansion potential of the foundation soils.

The strength parameters of the foundation soils were obtained by evaluating the penetration resistance (blow counts) during sample recovery.

A summary of all laboratory test results is presented on Table B-I of this appendix and on the respective "Logs of Test Borings", Appendix A.

SUMMARY OF LABORATORY TESTS

TABLE B-1

Sample Number	Depth (ft)	Dry Density (p.c.f.)	Moisture Content (% Dry Wt.)	Atterberg Limits		Sieve Analysis (% Passing No. 200 Sieve)
				Liquid Limit (%)	Plasticity Index (%)	
4-1	3	120.8	13.6	--	--	24.0
5-1	6	106.1	21.0	54	34	69.5
5-4	20	--	--	44	19	--
5-5	25	--	17.9	--	--	12.6
6-1	3	112.6	17.0	36	18	68.0
6-4	16	113.8	12.9	--	--	7.3
6-5	21	91.6	32.8	--	--	--
6-6	26	128.9	12.1	--	--	15.0

Corrosivity Tests Summary

CTL # 740-191 **Date:** 9/22/2015 **Tested By:** PJ **Checked:** PJ

Client: T. Makdissy Consulting **Project:** West Grand Ave **Proj. No:** B044-G

Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP (Redox)		Sulfide	Moisture	Soil Visual Description
			As Rec.	Min	Sat.	mg/kg	mg/kg	%				Qualitative	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		E_H (mv)	At Test	by Lead	%	
Boring	Sample, No.	Depth, ft.	ASTM G57	Cal 643	ASTM G57	ASTM D4327	ASTM D4327	ASTM D4327	ASTM G51	ASTM G200	Temp °C	Acetate Paper	ASTM D2216	
-	-	0-5	-	-	351	48	34	0.0034	7.0	547	26	Negative	4.7	Olive Sandy CLAY

Appendix C

The Grading Specification

Guide Specifications for Rock Under Floor Slabs

THE GRADING SPECIFICATIONS
on
Proposed Residential Development
Icehouse, (Oakland 2)
West Grand Avenue
Oakland, California

1. General Description

1.1 These specifications have been prepared for the grading and site development of the subject residential development. ***Quantum Geotechnical Inc.***, hereinafter described as the Soil Engineer, should be consulted prior to any site work connected with site development to ensure compliance with these specifications.

1.2 The Soil Engineer should be notified at least two working days prior to any site clearing or grading operations on the property in order to observe the stripping of organically contaminated material and to coordinate the work with the grading contractor in the field.

1.3 This item shall consist of all clearing or grubbing, preparation of land to be filled, filling of the land, spreading, compaction and control of fill, and all subsidiary work necessary to complete the grading of the filled areas to conform with the lines, grades, and slopes as shown on the accepted plans. The Soil Engineer is not responsible for determining line, grade elevations, or slope gradients. The property owner, or his representative, shall designate the person or organizations who will be responsible for these items of work.

1.4 The contents of these specifications shall be integrated with the soil report of which they are a part, therefore, they shall not be used as a self-contained document.

2. Tests

The standard test used to define maximum densities of all compaction work shall be the ASTM D1557-12 Laboratory Test Procedure. All densities shall be expressed as a relative compaction in terms of the maximum dry density obtained in the laboratory by the foregoing standard procedure.

3. Clearing, Grubbing, and Preparing Areas To Be Filled

3.1 If encountered, all vegetable matter, trees, root systems, shrubs, debris, and organic topsoil shall be removed from all structural areas and areas to receive fill.

3.2 If encountered, any soil deemed soft or unsuitable by the Soil Engineer shall be removed. Any existing debris or excessively wet soils shall be excavated and removed as required by the Soil Engineer during grading.

3.3 All underground structures shall be removed from the site such as old foundations, abandoned pipe lines, septic tanks, and leach fields.

3.4 The final stripped excavation shall be approved by the Soil Engineer during construction and before further grading is started.

3.5 After the site has been cleared, stripped, excavated to the surface designated to receive fill, and scarified, it shall be disked or bladed until it is uniform and free from large clods. The native subgrade soils shall be moisture conditioned and compacted to the requirements as specified in the grading section of this report. Fill can then be placed to provide the desired finished grades. The contractor shall obtain the Soil Engineer's approval of subgrade compaction before any fill is placed.

4. Materials

4.1 All fill material shall be approved by the Soil Engineer. The material shall be a soil or soil-rock mixture which is free from organic matter or other deleterious substances. The fill material shall not contain rocks or lumps over 6 inches in greatest dimension and not more than 15% larger than 2-1/2 inches. Materials from the site below the stripping depth are suitable for use in fills provided the above requirements are met.

4.2 Materials existing on the site are suitable for use as compacted engineered fill after the removal of all debris and organic material. All fill soils shall be approved by the Soil Engineer in the field.

4.3 Should import material be required, it should be approved by the soil Engineer before it is brought to the site.

5. Placing, Spreading, and Compacting Fill Material

5.1 The fill materials shall be placed in uniform lifts of not more than 8 inches in uncompacted thickness. Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to obtain uniformity of material in each layer. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either (a) aerating the material if it is too wet, or (b) spraying the material with water if it is too dry.

5.2 After each layer has been placed, mixed, and spread evenly, either import material or native material shall be compacted to a relative compaction designated for engineered fill.

5.3 Compaction shall be by footed rollers or other types of acceptable compacting rollers. Rollers shall be of such design that they will be able to compact the fill to the specified density. Rolling shall be accomplished while the fill material is within the specified moisture content range. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient trips to ensure that the required density has been obtained. No ponding or jetting shall be permitted.

5.4 Field density tests shall be made in each compacted layer by the Soil Engineer in accordance with Laboratory Test Procedure ASTM D1556-15 or D6938-10. When footed rollers are used for compaction, the density tests shall be taken in the compacted material below the surface disturbed by the roller. When these tests indicate that the compaction requirements on any layer of fill, or portion thereof, has not been met, the particular layer, or portion thereof, shall be reworked until the compaction requirements have been met.

5.5 No soil shall be placed or compacted during periods of rain nor on ground which contains free water. Soil which has been soaked and wetted by rain or any other cause shall not be compacted until completely drained and until the moisture content is within the limits hereinbefore described or approved by the Soil Engineer. Approval by the Soil Engineer shall be obtained prior to continuing the grading operations.

6. Pavement

6.1 The proposed subgrade under pavement sections, native soil, and/or fill shall be compacted to a minimum relative compaction of 95% at 2% above optimum moisture content for a depth of 12 inches.

6.2 All aggregate base material placed subsequently should also be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure D1557-12. The construction of the pavement in the parking and traffic areas should conform to the requirements set forth by the latest Standard Specifications of the Department of Transportation of the State of California and/or City of Oakland, Department of Public Works.

6.3 It is recommended that soils at the proposed subgrade level be tested for a pavement design after the preliminary grading is completed and the soils at the site design subgrade levels are known.

7. Utility Trench Backfill

7.1 The utility trenches extending under concrete slabs-on-grade shall be backfilled with native on-site soils or approved import materials and compacted to the requirements pertaining to the adjacent soil. No ponding or jetting will be permitted.

7.2 Utility trenches extending under all pavement areas shall be backfilled with native or approved import material and properly compacted to meet the requirements set forth by the City of Oakland, Department of Public Works.*

7.3 Where any opening is made under or through the perimeter foundations for such items as utility lines and trenches, the openings must be resealed so that they are watertight to prevent the possible entrance of outside irrigation or rain water into the underneath portion of the structures.

8. Subsurface Line Removal

8.1 The methods of removal will be designated by the Soil Engineer in the field depending on the depth and location of the line. One of the following methods will be used.

8.2 Remove the pipe and fill and compact the soil in the trench according to the applicable portions of sections pertaining to compaction and utility backfill.

8.3 The pipe shall be crushed in the trench. The trench shall then be filled and compacted according to the applicable portions of Section 5.

8.4 Cap the ends of the line with concrete to prevent entrance of water. The length of the cap shall not be less than 5 feet. The concrete mix shall have a minimum shrinkage.

9. Unusual Conditions

9.1 In the event that any unusual conditions not covered by the special provisions are encountered during the grading operations, the Soil Engineer shall be immediately notified for additional recommendations.

10. General Requirements

Dust Control

10.1 The contractor shall conduct all grading operations in such a manner as to preclude windblown dirt and dust and related damage to neighboring properties. The means of dust control shall be left to the discretion of the contractor and he shall assume liability for claims related to windblown material.

GUIDE SPECIFICATIONS FOR ROCK UNDER FLOOR SLABS

Definition

Graded gravel or crushed rock for use under slabs-on-grade shall consist of a minimum thickness of mineral aggregate placed in accordance with these specifications and in conformance with the dimensions shown on the plans. The minimum thickness is specified in the accompanying report.

Material

The mineral aggregate shall consist of broken stone, crushed or uncrushed gravel, quarry waste, or a combination thereof. The aggregate shall be free from deleterious substances. It shall be of such quality that the absorption of water in a saturated dry condition does not exceed 3% of the oven dry weight of the sample.

Gradation

The mineral aggregate shall be of such size that the percentage composition by dry weight, as determined by laboratory sieves (U.S. Sieves) will conform to the following gradation:

Sieve Size	Percentage Passing
¾''	90-100
No. 4	25-60
No. 8	18-45
No. 200	0-3

Placing

Subgrade, upon which gravel or crushed rock is to be placed, shall be prepared as outlined in the accompanying soil report.

APPENDIX C
Excavation Summary Report

Remedial Excavation Report

Market Street Block Parcels
2240 Filbert Street
Oakland, California
Stantec PN: 185703027

Prepared for:
City Ventures
444 Spear Street, Suite 200
San Francisco, California

Prepared by:
Stantec Consulting Services Inc.
1340 Treat Boulevard
Suite 300
Walnut Creek, California 94597

February 3, 2017

Limitations and Certifications

This report was prepared in accordance with the scope of work outlined in Stantec's Master Services Agreement with City Ventures and with generally accepted professional engineering and environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of City Ventures for the express purpose stated above. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Stantec. To the extent that this report is based on information provided to Stantec by third parties, Stantec may have made efforts to verify this third party information, but Stantec cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties, expressed or implied are made by Stantec.

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Information, conclusions, and recommendations provided by Stantec in this document have been prepared under the supervision of and reviewed by the licensed professional whose signature appears below.

Licensed Approver:

Dan Schreiner, PG
Senior Geologist
CA P.G. #7646



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Abbreviations and Acronyms

ACEH	Alameda County Environmental Health
APN	Assessor Parcel Number
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CV	City Ventures
ESL	Environmental Screening Level
Gribi	Gribi Associates
i.e.,	id est, meaning "that is" (Latin)
IRAP	Interim Remedial Action Plan
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MTBE	methyl tertiary-butyl ether
NFA	No Further Action
RWQCB	Regional Water Quality Control Board
Stantec	Stantec Consulting Services Inc.
SWRCB	State Water Resources Control Board
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHms	total petroleum hydrocarbons as mineral spirits
TPHog	total petroleum hydrocarbons as oil and grease
µg/L	micrograms per liter
U.S. EPA	United States Environmental Protection Agency
VOC	volatile organic compound

1.0 INTRODUCTION / EXECUTIVE SUMMARY

This Remedial Excavation Report (Report) was prepared by Stantec Consulting Services Inc. (Stantec), for the City Ventures (CV) project located at 2240 Filbert Street in Oakland, California (the "Site", **Figure 1**). The purpose of the remedial excavation was to clean up lead-impacted soil at the Site, specifically the Market Street Block, in order to obtain No Further Action status from the overseeing regulatory agency, Alameda County Environmental Health (ACEH), so that residential development of the Site may proceed (*see* **Figure 2**).

During previous Phase I and Phase II investigations related to evaluating the Site's viability for residential redevelopment, lead was discovered at concentrations that could potentially pose a risk to future occupants on the Market Street Block portion of the Site (**Table 1**). As described in this report, the lead-impacted soil on the Market Street Block was addressed through limited source area excavation, in accordance with the Stantec Interim Remedial Action Plan (IRAP) dated November 23, 2015 and approved by ACEH in correspondence between the ACEH and CV dated April 18, 2016.

Accordingly, based on the information presented in this report, CV hereby requests that ACEH confirm that no further action or investigation is necessary in regard to the environmental condition of the Market Street Block in light of the pending residential redevelopment.

This report provides the Site background, a summary of site investigations, a discussion of the area that was remediated, and recommendations regarding no further remedial action for the Site (Market Street Block).

1.1 PURPOSE

City Ventures is in the process of redeveloping the Site with multi-unit residential housing and is seeking to confirm that no further environmental assessment or remedial action is required prior to commencing the residential development. Two areas of the Market Street Block – the western portion (centered around boring B-7) and the northwest corner (centered around boring B-1) – had previously contained elevated lead levels in shallow soil. To address this issue, CV elected to remediate the lead-impacted soil to concentrations consistent with residential cleanup levels and conducted discrete confirmation sampling in accordance with a request from ACEH which differed from the approved IRAP.

1.2 SCREENING LEVELS

The analytical results of the current investigation (**Table 2**) were compared to the applicable environmental screening level (ESL) for lead in soil. The previous investigations indicated no other constituents of concern in soil at concentrations exceeding applicable ESLs.

1.2.1 Soil Screening Levels

San Francisco Bay Regional Water Quality Control Board (RWQCB) Tier 1 direct contact residential ESL for lead in soil (RWQCB, 2016) was used as the target cleanup level. ESLs are conservative long-term screening levels that correspond to an acceptable risk level (i.e., cancer risk of one-in-one million or 1×10^{-6}; non-cancer hazard quotient of 1.0) and are considered to provide long-term protection of human health and the environment.

The comparison of detected concentrations to an ESL of 80 milligrams per kilogram (mg/kg) for lead was conducted to determine where remediation efforts were necessary for the Site to achieve no further action status and be cleared for residential redevelopment. ACEH previously approved the use of the ESL for screening of lead impacts at the Site.

Concentrations of lead below their respective ESL (80 mg/kg) can be considered to pose no significant risk. Concentrations of lead above their respective ESL do not necessarily indicate a risk is present, but rather suggest that further evaluation may be warranted. This report documents the removal of soil in areas where previous shallow soil sampling indicated lead at concentrations above 80 mg/kg.

2.0 BACKGROUND

2.1 SITE NAME AND LOCATION

The Site is comprised of multiple parcels located between West Grand Avenue, 24th Street, Filbert Street, and Market Street in the City of Oakland, County of Alameda, California (**Figures 1 and 2**). For purposes of this report, the area of the former parking lot property, located between Myrtle Street and Market Street, will be referred to as the "Market Street Block". References to the "Site" in this report refer only to the Market Street Block.

The APNs for the Market Street Block consist of the following:

- Myrtle Street addresses: 005-431-024, 005-431-025, 005-431-026, 005-431-027, and 005-431-028
- Market Street addresses: 005-431-015-03, 005-431-011 and 005-431-012

2.2 FORMER PROPERTY USE

The Market Street property was historically used for residential housing and more recently as a parking lot for the former Safeway Ice Cream Plant located across Myrtle Street, with no significant industrial or commercial use since at least the early 1900's (Gribi 2005).

2.3 CURRENT PROPERTY USE

There are currently no structures on the Site, which is not being used. Most of the Site is covered with asphalt from the former use as a parking lot. The Site is secured by a chain-link fence around the perimeter of the property and a locked gate.

2.4 PROPOSED PROPERTY USE

City Ventures has proposed to develop the Site with a mixed–use residential and commercial development. The development plan is illustrated on **Figure 2**.

The proposed residential development has been designed with a parking garage on the ground floor and with the primary living areas on the second and third floors. None of the units in the Market Street block have living areas on the ground floor (as shown on **Figure 2**). Commercial spaces will also be present at the Site, and will be located on the ground floor along Market Street.

2.5 SITE TOPOGRAPHY

The Site is at an elevation of approximately 16 feet above mean sea level and the regional topographic gradient is to the general west/northwest. The site is relatively flat, with the current grade at approximately the same elevation as the bordering streets.

2.6 SITE VICINITY

The Site is located in a mixed use light industrial and residential area of West Oakland. The Site is bounded to the north by residential units and 24th Street followed by light industrial structures, residential, churches, and commercial buildings; to the east by Market Street, auto body shops, and a restaurant beyond which are light industrial buildings (La Bonne Cuisine Catering and Anderson Carpet and Linoleum) and residences; to the west by Myrtle Street beyond which is the West Grand Block Parcels (also planned for similar redevelopment by CV); and to the south by West Grand Avenue followed by a vacant light industrial building, residences, and a multi-tenant commercial structure.

2.7 GEOLOGY AND HYDROGEOLOGY

Subsurface conditions beneath the Site consist of coarse gravel fill to a depth of one foot below ground surface (bgs); dense clay between approximately 1 and 9 feet bgs; well graded sand with gravel and clay between approximately 9 and 13 feet bgs; and clay between approximately 13 and 19 feet bgs (IT, 1996a). The depth-to-groundwater is approximately 9 to 11 feet bgs (IT, 1996b).

3.0 SOIL REMEDIATION ACTIVITIES

This section presents the soil remediation activities completed by Stantec from June 3, 2016 through August 15, 2016.

3.1 RATIONALE AND PROPOSED ACTION

Based on a comparison of historical soil data to the screening criteria (**Table 1**), excavation of elevated concentrations of lead-affected soil in the Market Street Block was proposed in the approved IRAP as the appropriate remedial measure. **Figure 3** presents the historical sample locations and sample results in the Market Street Block, including the original locations where total lead exceeded the regulatory benchmark of 80 mg/kg.

The evaluation of soil analytical data collected from the Market Street Block previously indicated lead exceeded the ESL of 80 mg/kg in samples from the following three sample locations:

- B-1 at 2.0 feet bgs
- B-7 at 2.0 feet bgs
- SB-5 at 1.0 feet bgs (SB-5 and B-7 are directly adjacent to one another)

As described in the *IRAP*, the chemical properties of lead, the distribution of lead in soil at the Site, and potential future exposure pathways were considered in developing the remediation plan for the Site (Stantec, 2015). The locations where lead exceeded the ESL were limited to two areas at depths ranging from 1 to 2 feet bgs (SB-5 and B-7 are considered one area). To remove the potential for future exposure to lead in soil at concentrations above the screening level, the areas of these exceedances were excavated.

The following sections describe the recent soil excavation activities.

3.2 REMEDIAL ACTION

Prior to the start of the excavation, the excavation boundaries were scaled off using the figure provided in the IRAP. **Figures 4** and **Figure 5** define the areas around B-7/SB-5 and B-1, where lead was detected above the ESL. The proposed excavation was estimated at 20 feet by 20 feet and to an approximate depth of 2 to 2.5 feet bgs which was centered boring locations B-7/SB-5 and B-1. The remedial excavations were performed at the specified locations using an excavator. Confirmation sampling was conducted from the excavation bottoms and sidewalls following soil removal in accordance with the IRAP, and as described further in Section 3.3 of this report. Dust monitoring was conducted by Stantec during excavation and soil handling to ensure that offsite receptors were not being impacted and to ensure safe levels were maintained for the workers at the Site. Water was on hand during the excavation and soil

handling activities should dust monitoring data or visual observation indicate the need for dust control. Dust monitoring data is included in **Appendix A** and discussed in Section 3.5.

Based on confirmation sampling results, both excavation areas required additional soil removal from the sidewalls and/or excavation bottoms. At the B-1 excavation location, several rounds of soil removal and confirmation sampling was conducted until data indicated that residual lead impacts were below the Site cleanup benchmark of 80 mg/kg. Laboratory reports for all confirmation samples collected during the remedial action are provided in **Appendix B**.

During the excavation activities, the resulting soil stockpiles were placed on polyethylene plastic sheeting in areas adjacent to each excavation and covered with more sheeting. Waddling was also used to help eliminate the potential for runoff while the stockpiles were onsite, pending characterization and offsite disposal. Approximately 49.46 cubic yards (69.25 tons) of non-hazardous soil was disposed of at Keller Canyon Landfill, and an approximately 198.95 cubic yards (278.53 tons) of non-RCRA hazardous soil generated from the excavations was disposed of at Kettleman Hills Landfill. Landfill information and the quantity of soil hauled to each landfill site are discussed in Section 3.4, and waste manifests are provided in **Appendix C**.

3.2.1 B-7/SB-5 Excavation

The B-7/SB-5 area was excavated to approximately 2 feet bgs. The initial round of excavation and confirmation sampling took place on June 3, 2016. Additional excavation activities took place on June 16, 2016. All shallow total lead soil concentrations in the final confirmation samples were below 80 mg/kg, indicating no further soil removal is necessary. The final B-7/SB-5 excavation is approximately 751 square feet (ft^2) in size. The area of the excavation is shown on **Figure 4**.

One stockpile was generated for the B-7/SB-5 excavation. The waste soil was characterized as non-hazardous waste and the waste soil has been removed from the Site. Waste soil from the B-7/SB-5 area was taken to Keller Canyon Landfill for proper disposal. No clean fill material has been imported to date; it is anticipated that clean fill will be brought in during Site development, as needed to achieve final grade.

3.2.2 B-1 Excavation

The B-1 area was excavated to 2.5 feet bgs with a few select areas being excavated to 3 feet bgs based on results of confirmation sampling during the remedial event. The initial excavation took place on June 3, 2016. Based on results of confirmation sampling during the remedial event and based on field observations, additional excavation was conducted on June 16, 2016, June 28, 2016, July 8, 2016, July 21, 2016, and August 15, 2016. Deeper excavation, down to 3 feet bgs in select areas, took place on June 28, 2016. The final B-1 excavation is approximately 2,273 ft^2. The area of the excavation is shown on **Figure 5**.

During the B-1 excavation, a degraded brick wall or brick building foundation was discovered along the northern sidewall, at the property boundary (see **Figure 5**). This brick extends to at least 3 feet bgs, based on the total depth explored during the excavation. Soil was removed in

the northern direction up to the property boundary and up to the brick (in the area where the brick was observed). Confirmation samples were collected from the sidewalls at the extent of the excavation, however, at the brick, confirmation soil samples (B1-N-2 through B1-N-4) were not able to be collected as there was no soil to collect.

Waste soil generated from the B-1 excavation was stockpiled and later characterized as non-RCRA hazardous waste. Waste soil from the B-1 area was taken to Kettlemen Hills Landfill for proper disposal. No clean fill material has been imported to date; it is anticipated that clean fill will be brought in during Site development, as needed to achieve final grade.

3.3 CONFIRMATION SAMPLING

After initial removal of each of the 20 foot by 20 foot areas, confirmation sampling was conducted to confirm the lead-impacts in soil are at concentrations below the residential ESL of 80 mg/kg. The initial round of confirmation sampling was completed using the Incremental Sampling Methodology (ISM) that was described in the IRAP, which included collection of 30 individual sub-samples of equal volume collected in a random pattern from the base of each area and the sidewall to be processed as a single ISM sample from each location. Following the initial round of sampling, and in accordance with the comments provided by the ACEH originally in a meeting on February 8, 2016 between Angus McGrath (Stantec) and Keith Nowell (ACEH), a discreet sampling approach was used to confirm the ISM results and for confirmation sampling moving forward when additional excavation was needed.

Following each round of excavation, sidewall confirmation soil samples were collected along each sidewall at a rate of roughly one composite sample every 10 linear feet in the approximate middle of the vertical wall and bottom and a minimum of 3 confirmation samples were collected from the excavation sidewall, as discussed during discussions with the ACEH referenced above. Additional samples were added to the excavation bottom as the excavations grew in size during the remedial event. A total of 4 confirmation samples were collected from the bottom of the B-7/SB-5 excavation and 18 samples were collected from the bottom of the B-1 excavation. The samples were collected using a properly cleaned shovel and tightly packed into 8-ounce glass jars for delivery under chain-of-custody protocol to an offsite State-certified analytical laboratory for 24-hour analysis. The sampling shovel was decontaminated between collection of composite samples using a triple rinse of Alconox™ and clean water in 5 gallon buckets.

The confirmation soil sampling locations are depicted on **Figure 4** and **Figure 5**. Analytical results for confirmation samples collected during the remedial action are shown on **Table 2** and laboratory reports are provided in **Appendix B.**

3.4 WASTE DISPOSAL

Soil characterization samples were collected from the two stockpiles (B-1 and B-7/SB-5) generated during the remedial excavations. The soils were sampled and analyzed based on contaminants of concern and acceptance criteria of the receiving waste disposal facility. In total, 69.25 tons of non-hazardous soils and 278.53 tons of non-RCRA California hazardous soils

were disposed of offsite at licensed waste disposal facilities. Non-hazardous soils were disposed of at Keller Canyon Landfill in Contra Costa County, California. Non-RCRA California hazardous soils were disposed of at Kettleman Hills Landfill in Kettleman City, California. Copies of non-hazardous and non-RCRA California waste manifests are provided in **Appendix C**.

3.5 DUST CONTROL

During soil excavation activities, dust control measures were implemented to minimize dust generation. All excavation work was performed in accordance with the Occupational Safety and Health Administration (OSHA) and Cal/OSHA regulations. During excavation activities, dust control measures, such as application of water, was used as necessary to minimize generation of airborne dust. Additionally, soil stockpiles were covered and trucks were swept clean prior to exiting the Site.

During the excavation activities and during handling of the stockpiles, Stantec monitored airborne dust at the upwind and downwind Site perimeters using a Mini-Ram pDR 1000™ for measurement of total suspended particulate matter. Stantec personnel evaluated the real-time data to determine the maximum and average dust concentrations at the upwind and downwind perimeter monitoring locations. If the downwind measurements exceeded the upwind measurement by 50 micrograms per cubic meter (µg/m^3), or if visual observation indicated increased dust during handling of excavated soils, additional water was applied. If the daily calculated average from any day exceeded 50 µg/m^3, other corrective actions would have been discussed and implemented to increase dust control. Dust monitoring data is included in **Appendix A**.

3.6 LABORATORY SERVICES

Following each round of soil removal for both of the excavation areas, collected confirmation samples were submitted under chain-of-custody protocol to either Curtis & Tompkins located in Berkeley, California, or Pace Analytical located in Davis, California. Soil confirmation samples collected within excavations (B-1 and B-7) were analyzed for total lead by EPA 6010B. The complete laboratory reports are included in **Appendix C**.

Confirmation sample results are discussed in Section 4.0. The analytical results for all soil samples collected during this remedial action, including those that did not meet Site cleanup levels in areas that were subsequently over-excavated, are summarized on **Table 2**.

4.0 RESULTS

4.1 SITE CLEAN UP LEVELS

The Site cleanup level for lead, as approved by the ACEH, is as follows:

- Total Lead by EPA Method 6010B – 80 mg/kg

No other metals were considered a potential contaminant of concern. Additionally, previous assessments of the property did not indicate other constituents of concern for the soil at Site (Market Street Block).

Site cleanup levels are also listed in historical soil Table 2.

4.2 EXCAVATION SOIL SAMPLING RESULTS

Confirmation sampling results are summarized in **Table 1.** All sample locations collected during the previous site assessment activities (prior to this remedial event), including those that were above cleanup levels and subsequently excavated, are shown on **Figure 3** and summarized in **Table 2**. Final excavation limits and remaining confirmation sample locations for excavations B-1 and B-7 are shown on **Figure 4** and **Figure 5**. Please note that data presented on **Figure 4** and **Figure 5** only include final confirmation samples and do not include samples that were subsequently excavated during the remediation event. The analytical reports for all samples collected during the remediation event are provided in **Appendix B**.

Lead concentrations in final confirmation samples collected from the bottoms and sidewalls of excavations B-1 and B-7 range from 3.6 mg/kg to 63.9 mg/kg, aside from sample B1-N-1. Only one confirmation soil sample remains in which the regulatory benchmark of 80 mg/kg was exceeded; confirmation sample B1-N-1 at 1.5 ft bgs, along the north wall of the excavation, and just west of the exposed brick (discussed in Section 3.2.2) contained lead at 1,600 mk/kg. Further excavation in this location was deemed inaccessible due to it's location along the property boundary and existing fence line. Additional excavation was conducted in that area after sample B1-N-1 was collected to deepen that area to approximately 3 feet bgs (based on results from bottom sample B1-B-1), and sample B1-N-7 was collected along the same sidewall near B1-N-1 from a depth of 3 feet bgs. Results from lead analysis of B1-N-7 indicate residual lead at that location is 9.6 mg/kg. Based on the location of sample B1-N-1 along the northern property boundary and the reported concentrations from samples near B1-N-1, the reported lead at 1,600 mg/kg is suspected to be anomalous and not indicative of a larger problem at the Site. Additionally, it is anticipated that future handling of soils will not be necessary in that area and the surface will remain capped per the proposed development and current offsite property use to the north. No further remedial action is needed to address lead impacts at the Site.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The remedial excavations completed at the Site have successfully removed lead impacts to concentrations below a Site cleanup level of 80 mg/kg within the Market Street Block property. In total, approximately 347.78 tons of lead-impacted soil was removed from the Site and properly disposed of at a licensed disposal facility.

Based on the removal of potentially lead-impacted soil, results of remaining confirmation samples, and known future use of the Site, no further remedial action is necessary for Site soil at the Market Street Block.

6.0 REFERENCES

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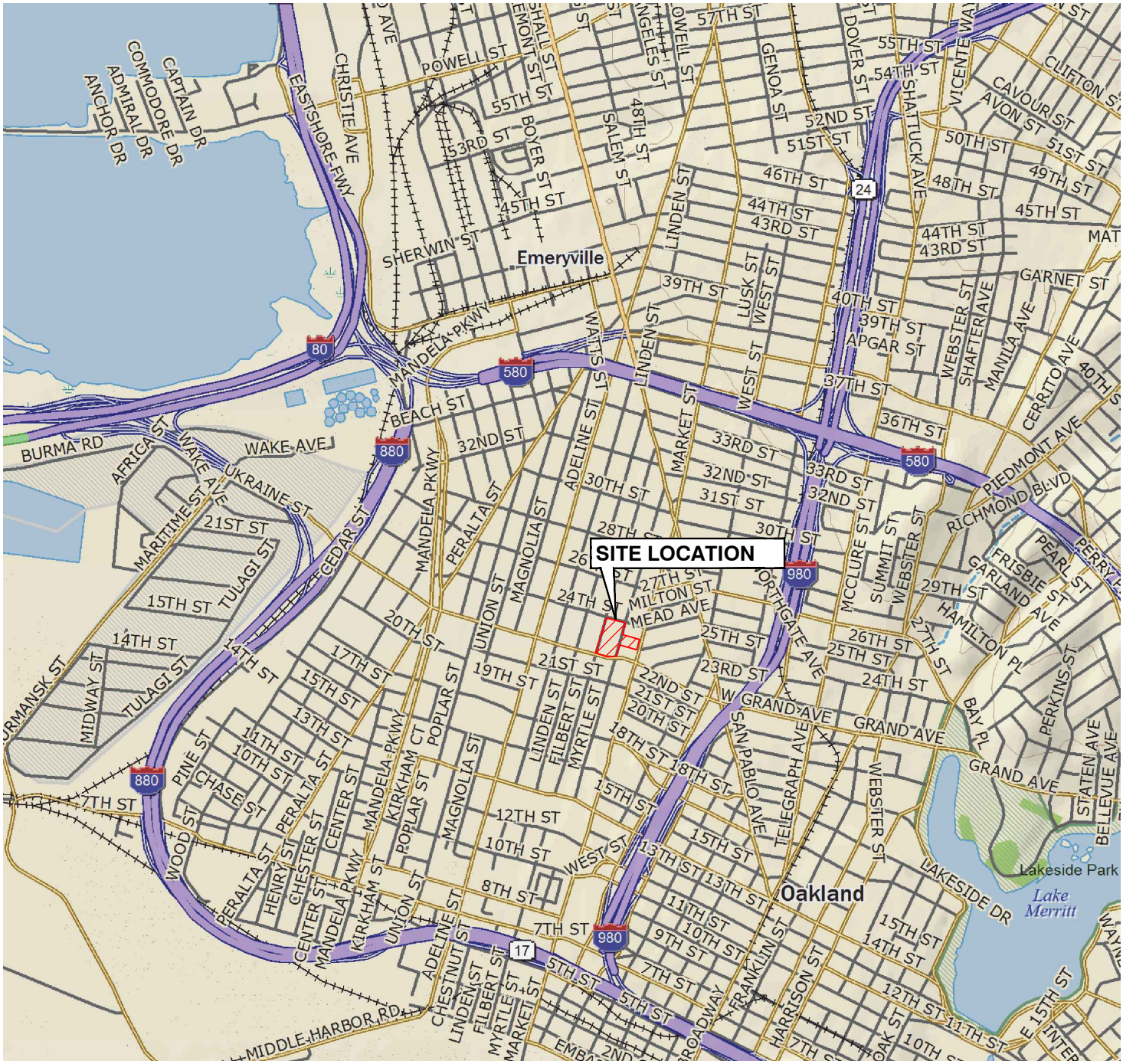
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FIGURES



North

CALIFORNIA

SCALE (MILES): 1 1/2 0 1

SCALE (FEET): 1000 0 1000 2000 3000 4000 5000 6000 7000

REFERENCE: USGS 7.5 MINUTE QUADRANGLE, OAKLAND WEST, CALIFORNIA

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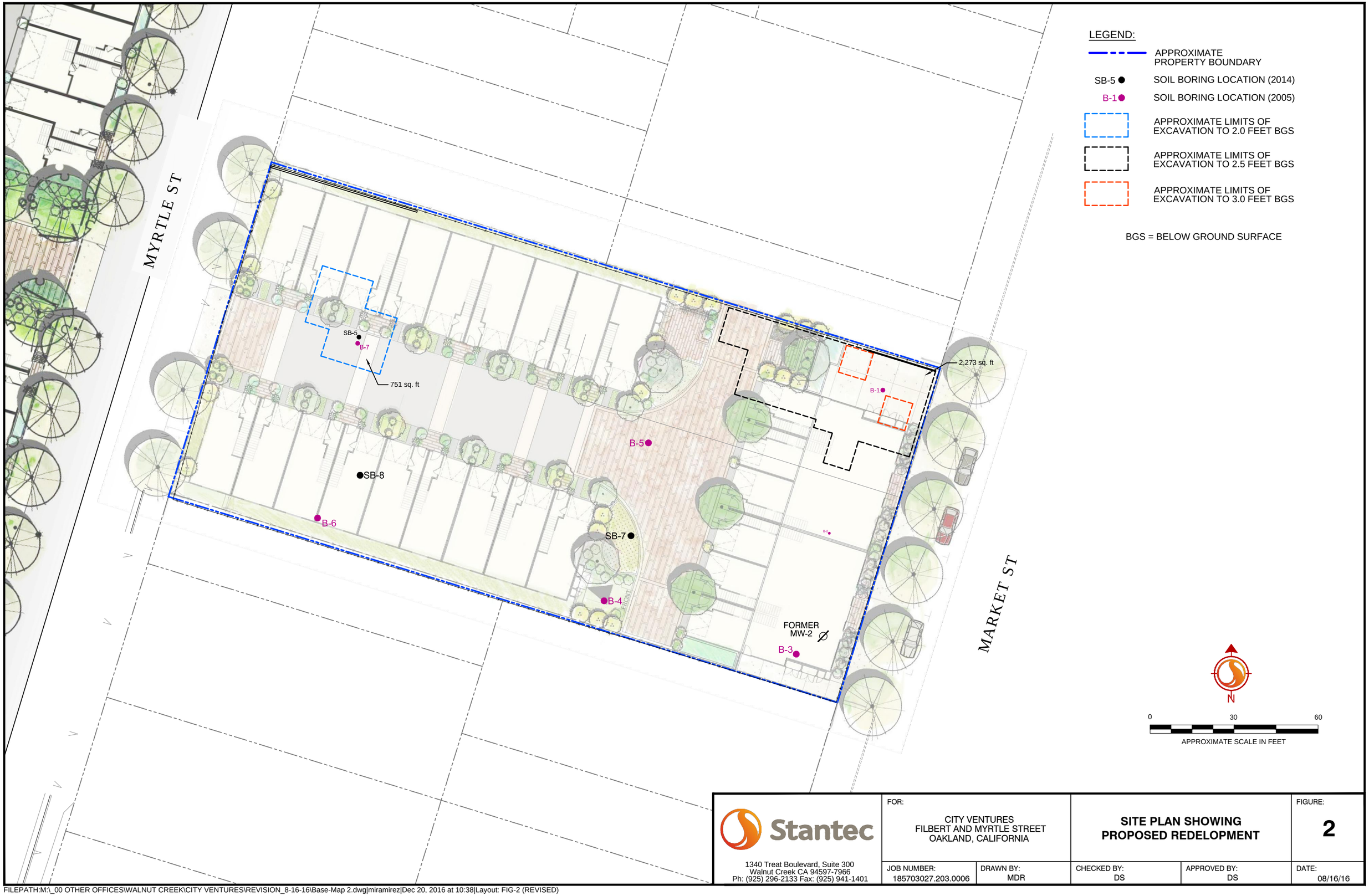
FOR:
CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

SITE LOCATION MAP

FIGURE: **1**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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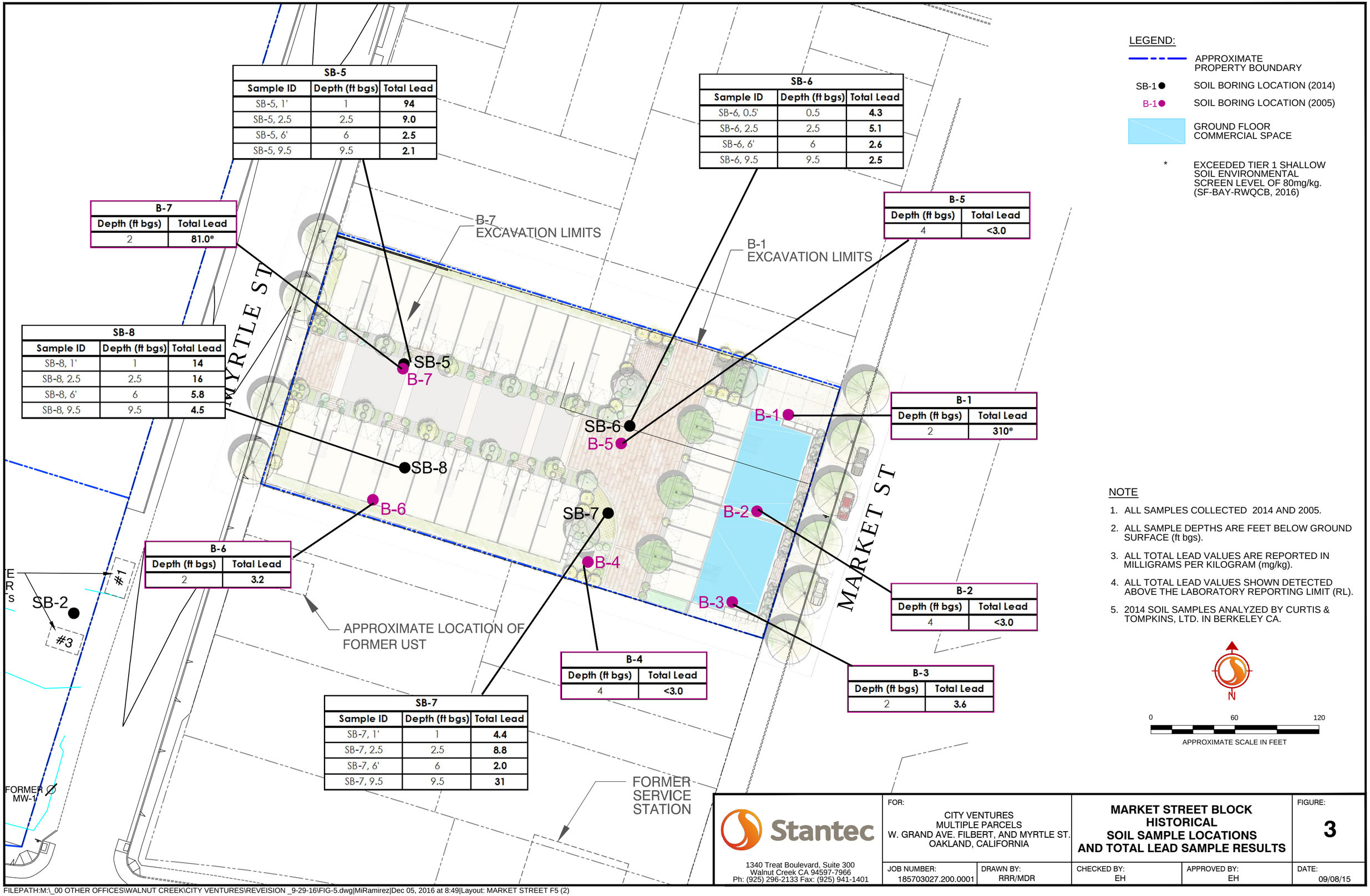


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FOR:			FIGURE:
CITY VENTURES FILBERT AND MYRTLE STREET OAKLAND, CALIFORNIA		**SITE PLAN SHOWING PROPOSED REDELOPMENT**	**2**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185703027.203.0006	MDR	DS	DS	08/16/16

FILEPATH:M:_00 OTHER OFFICES\WALNUT CREEK\CITY VENTURES\REVISION_8-16-16\Base-Map 2.dwg|miramirez|Dec 20, 2016 at 10:38|Layout: FIG-2 (REVISED)



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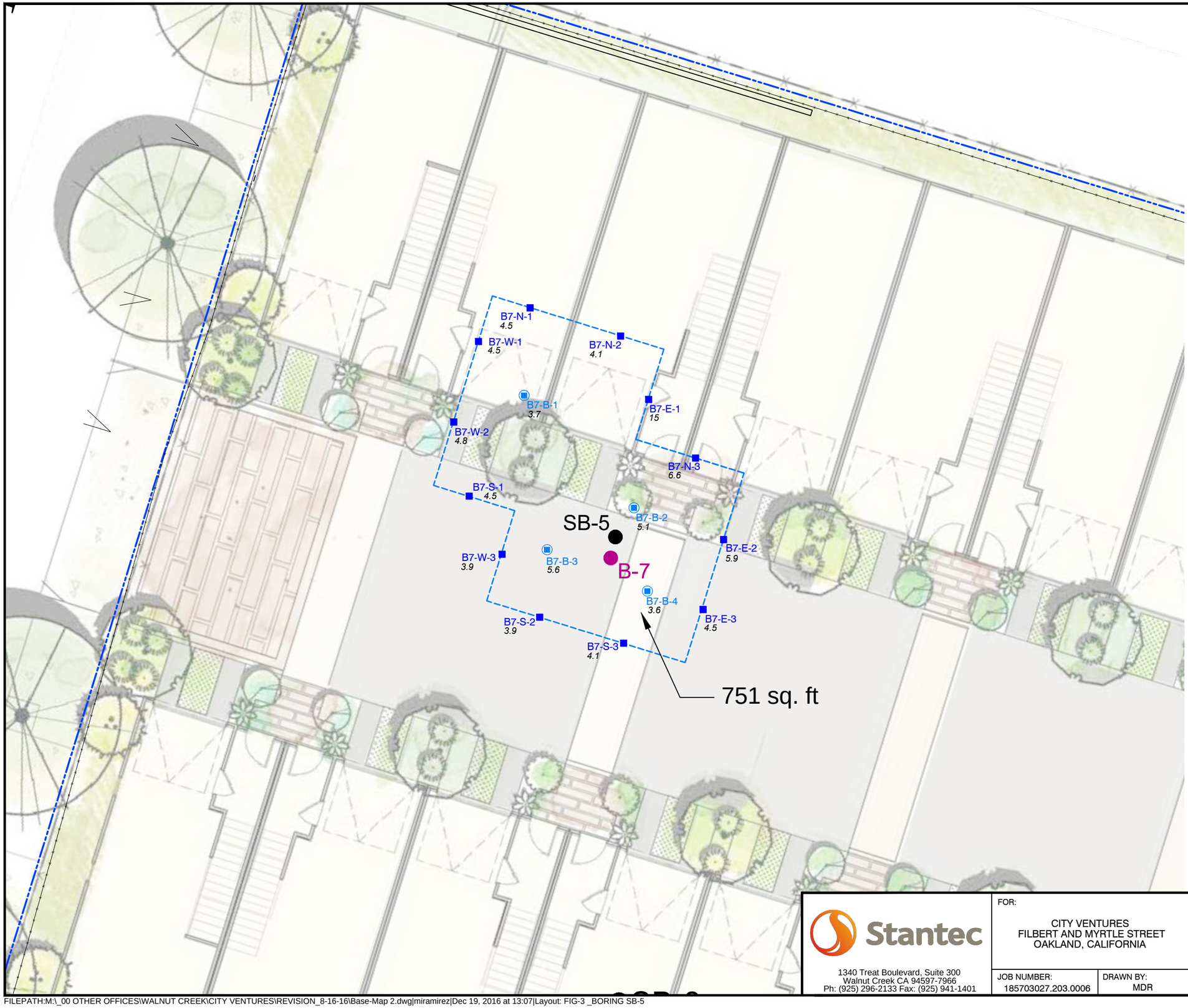
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CITY VENTURES
MULTIPLE PARCELS
W. GRAND AVE. FILBERT, AND MYRTLE ST.
OAKLAND, CALIFORNIA

MARKET STREET BLOCK HISTORICAL SOIL SAMPLE LOCATIONS AND TOTAL LEAD SAMPLE RESULTS

FIGURE: **3**

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LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- SB-5 ● SOIL BORING LOCATION (2014)
- B-7 ● SOIL BORING LOCATION (2005)
- B7-N-1 ■ SIDEWALL CONFIRMATION SAMPLE LOCATION
- B7-B1 ◉ EXCAVATION BOTOM CONFIRMATION SAMPLE LOCATION
- APPROXIMATE LIMITS OF EXCAVATION TO 2.0 FEET BGS

3.9 = REPORTED TOTAL LEAD CONCENTRATION (mg/kg)

BGS = BELOW GROUND SURFACE

mg/kg = MILLIGRAM PER KILOGRAM

N

0 10 20

APPROXIMATE SCALE IN FEET

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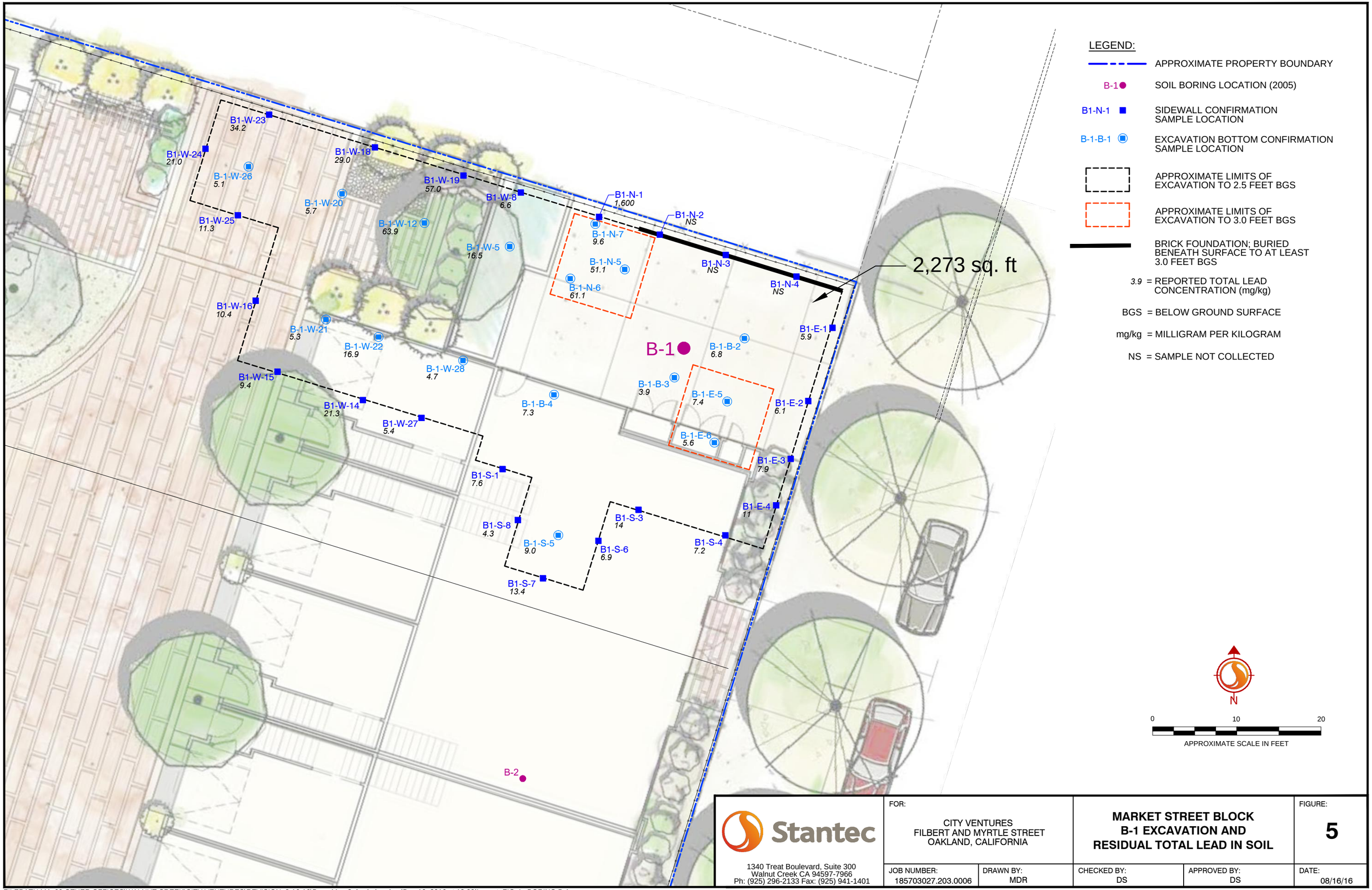
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FILBERT AND MYRTLE STREET
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MARKET STREET BLOCK
B-7 EXCAVATION AND
RESIDUAL TOTAL LEAD IN SOIL

FIGURE: **4**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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FOR:
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MARKET STREET BLOCK B-1 EXCAVATION AND RESIDUAL TOTAL LEAD IN SOIL

FIGURE: 5

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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TABLES

TABLE 1
Current Analytical Results for Confirmation Soil Samples
Market Street Block, Oakland California

Notes	Sample Location	Sample ID	Sample Date	Sample Depth (ft. bgs)	Lead (mg/kg)
	B-1 Focused Excavation:				
a	Western Portion of Northern Sidewall	B1-NW-W	06/03/16	0.0 - 2.0	1,100
a	Eastern Portion of Northern Sidewall	B1-NW-E	06/03/16	0.0 - 2.0	800
a	Northern Portion of Eastern Sidewall	B1-EW-N	06/03/16	0.0 - 2.0	1,400
a	Southern Portion of Eastern Sidewall	B1-EW-S	06/03/16	0.0 - 2.0	840
a	Eastern Portion of Southern Sidewall	B1-SW-E	06/03/16	0.0 - 2.0	380
a	Western Portion of Southern Sidewall	B1-SW-W	06/03/16	0.0 - 2.0	510
a	Southern Portion of Western Sidewall	B1-WW-S	06/03/16	0.0 - 2.0	1,500
a	Northern Portion of Western Sidewall	B1-WW-N	06/03/16	0.0 - 2.0	1,200
a	Base of Excavation	B1-EB-2'	06/03/16	2.0	1,700
c	North	B1-N-1	06/16/16	1.5	**1,600**
b	North	B1-N-2	06/16/16	1.5	--
b	North	B1-N-3	06/16/16	1.5	--
b	North	B1-N-4	06/16/16	1.5	--
	East	B-1-E-1	06/16/16	1.5	**5.9**
	East	B-1-E-2	06/16/16	1.5	**6.1**
	East	B-1-E-3	06/16/16	1.5	**7.9**
	East	B-1-E-4	06/16/16	1.5	**11**
	South	B-1-S-1	06/16/16	1.5	**7.6**
	South	B-1-S-2	06/16/16	1.5	120
	South	B-1-S-3	06/16/16	1.5	**14**
	South	B-1-S-4	06/16/16	1.5	**7.2**
	West	B-1-W-1	06/16/16	1.5	19
	West	B-1-W-2	06/16/16	1.5	630
	West	B-1-W-3	06/16/16	1.5	11
	West	B-1-W-4	06/16/16	1.5	6.1
	Base of Excavation	B-1-B-1	06/16/16	2.5	1,100
	Base of Excavation	B-1-B-2	06/16/16	2.5	**6.8**
	Base of Excavation	B-1-B-3	06/16/16	2.5	**3.9**
	Base of Excavation	B-1-B-4	06/16/16	2.5	**7.3**
	Base of Excavation	B-1-B-5	06/16/16	2.5	510
	Base of Excavation	B1-E-5	06/28/16	3.0	**7.4**
	Base of Excavation	B1-E-6	06/28/16	3.0	**5.6**
	Base of Excavation	B1-N-5	06/28/16	3.0	**51.1**
	South	B1-S-5	06/28/16	1.5	**9.0**
	South	B1-S-6	06/28/16	1.5	**6.9**
	South	B1-S-7	06/28/16	1.5	**13.4**
	South	B1-S-8	06/28/16	1.5	**4.3**
	Base of Excavation	B1-N-6	06/28/16	3.0	**61.1**
	Base of Excavation	B1-N-7	06/28/16	3.0	**9.6**
	Base of Excavation	B1-W-5	06/28/16	1.5	**16.5**
	West	B1-W-6	06/28/16	1.5	7.2
	West	B1-W-7	06/28/16	1.5	145
	West	B1-W-8	06/28/16	1.5	**6.6**
	West	B1-W-9	07/08/16	1.5	221
	West	B1-W-10	07/08/16	1.5	136
	West	B1-W-11	07/08/16	1.5	960
	Base of Excavation	B1-W-12	07/08/16	2.5	**63.9**
Tier 1 Direct Contact Residential Environmental Screening Level (ESL; 2016)					80

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TABLE 1
Current Analytical Results for Confirmation Soil Samples
Market Street Block, Oakland California

Notes	Sample Location	Sample ID	Sample Date	Sample Depth (ft. bgs)	Lead (mg/kg)
	B-1 Focused Excavation (cont):				
	West	B1-W-13	07/21/16	1.5	173
	West	B1-W-14	07/21/16	1.5	**21.3**
	West	B1-W-15	07/21/16	1.5	**9.4**
	West	B1-W-16	07/21/16	1.5	**10.4**
	West	B1-W-17	07/21/16	1.5	1,260
	West	B1-W-18	07/21/16	1.5	**29.0**
	West	B1-W-19	07/21/16	1.5	**57.0**
	Base of Excavation	B1-W-20	07/21/16	2.5	**5.7**
	Base of Excavation	B1-W-21	07/21/16	2.5	**5.3**
	Base of Excavation	B1-W-22	07/21/16	2.5	**16.9**
	West	B1-W-23	08/15/16	1.5	**34.2**
	West	B1-W-24	08/15/16	1.5	**21.0**
	West	B1-W-25	08/15/16	1.5	**11.3**
	Base of Excavation	B1-W-26	08/15/16	2.5	**5.1**
	West	B1-W-27	08/15/16	1.5	**5.4**
	Base of Excavation	B1-W-28	08/15/16	2.5	**4.7**
	B-7 Focused Excavation:				
a	Western Portion of Northern Sidewall	B7-NW-W	06/03/16	0.0 - 2.0	210
a	Eastern Portion of Northern Sidewall	B7-NW-E	06/03/16	0.0 - 2.0	**25**
a	Northern Portion of Eastern Sidewall	B7-EW-N	06/03/16	0.0 - 2.0	**60**
a	Southern Portion of Eastern Sidewall	B7-EW-S	06/03/16	0.0 - 2.0	**6.3**
a	Eastern Portion of Southern Sidewall	B7-SW-E	06/03/16	0.0 - 2.0	**5.6**
a	Western Portion of Southern Sidewall	B7-SW-W	06/03/16	0.0 - 2.0	**5.8**
a	Southern Portion of Western Sidewall	B7-WW-S	06/03/16	0.0 - 2.0	**30**
a	Northern Portion of Western Sidewall	B7-WW-N	06/03/16	0.0 - 2.0	490
a	Base of Excavation	B7-EB-2'	06/03/16	2.0	**23**
	North	B7-N-1	06/16/16	1.0	**4.5**
	North	B7-N-2	06/16/16	1.0	**4.1**
	East	B7-E-1	06/16/16	1.0	**15**
	West	B7-W-1	06/16/16	1.0	**4.5**
	West	B7-W-2	06/16/16	1.0	**4.8**
	South	B7-S-1	06/16/16	1.0	**4.5**
	Base of Excavation	B7-B-1	06/16/16	2.0	**3.7**
	Base of Excavation	B7-B-2	06/16/16	2.0	**5.1**
	Base of Excavation	B7-B-3	06/16/16	2.0	**5.6**
	North	B7-N-3	06/16/16	1.0	**6.6**
	East	B7-E-2	06/16/16	1.0	**5.9**
	East	B7-E-3	06/16/16	1.0	**4.5**
	South	B7-S-1	06/16/16	1.0	**4.5**
	South	B7-S-2	06/16/16	1.0	**3.9**
	South	B7-S-3	06/16/16	1.0	**4.1**
	West	B7-W-3	06/16/16	1.0	**3.9**
	Base of Excavation	B7-B-4	06/16/16	2.0	**3.6**
Tier 1 Direct Contact Residential Environmental Screening Level (ESL; 2016)					80

Notes:

a- samples collected using incremental sampling technique; a discrete sample was later taken; observed exceedences were over-excavated

b - samples could not be collected; inaccessible-edge of excavation at burried brick foundation

c - soil was excavated to extent practicable; location was inaccessible; sample exceeds ESL benchmark

Bold - final confirmation sample; not over-excavated

ESL Screening Level - California Water Boards 2016 Tier 1 Direct Contact to Soil Residential Environmental Screening Level (ESL; SF Bay RWQCB, February 2016)

mg/kg - micrograms per kilogram

ft. bgs - feet below ground surface

Lead - total lead by EPA Method 6010B

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TABLE 2
Historical Analytical Results for Soil Samples - Market Street Block
2240 Filbert Street, Oakland California

Sample Location	Sample ID	Sample Date	Sample Depth (ft. bgs)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	Lead (mg/kg)
B-1	B-1	2/8/2005	2.0	--	--	--	--	--	--	**310**
	B-1	2/8/2005	13.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
	B-1	2/8/2005	21.5	ND<2.0	ND<0.02	ND<0.02	ND<0.02	ND<0.04	ND<0.08	--
B-2	B-2	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0
	B-2	2/8/2005	12.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
B-3	B-3	2/8/2005	4.0	--	--	--	--	--	--	3.6
	B-3	2/8/2005	11.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
	B-3	2/8/2005	13.0	310	ND<0.02	0.13	0.16	2.4	0.096	--
B-4	B-4	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0
	B-4	2/8/2005	12.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
	B-4	2/8/2005	13.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
B-5	B-5	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0
	B-5	2/8/2005	11.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--
B-6	B-6	2/8/2005	2.0	--	--	--	--	--	--	3.2
B-7	B-7	2/8/2005	2.0	--	--	--	--	--	--	**81**
SB-5	SB-5, 1'	5/30/2014	1.0	--	--	--	--	--	--	**94**
SB-5	SB-5, 2.5	5/30/2014	2.5	--	--	--	--	--	--	9
SB-5	SB-5, 6'	5/30/2014	6.0	--	--	--	--	--	--	2.5
SB-5	SB-5, 9.5	5/30/2014	9.5	--	--	--	--	--	--	2.1
SB-6	SB-6, 0.5'	5/30/2014	0.5	--	--	--	--	--	--	4.3
SB-6	SB-6, 2.5	5/30/2014	2.5	--	--	--	--	--	--	5.1
SB-6	SB-6, 6'	5/30/2014	6.0	--	--	--	--	--	--	2.6
SB-6	SB-6, 9.5	5/30/2014	9.5	--	--	--	--	--	--	2.5
SB-7	SB-7, 1'	5/30/2014	1.0	--	--	--	--	--	--	4.4
SB-7	SB-7, 2.5	5/30/2014	2.5	--	--	--	--	--	--	8.8
SB-7	SB-7, 6'	5/30/2014	6.0	--	--	--	--	--	--	2
SB-7	SB-7, 9.5	5/30/2014	9.5	--	--	--	--	--	--	31
SB-8	SB-8, 1'	5/30/2014	1.0	--	--	--	--	--	--	14
SB-8	SB-8, 2.5	5/30/2014	2.5	--	--	--	--	--	--	16
SB-8	SB-8, 6'	5/30/2014	6.0	--	--	--	--	--	--	5.8
SB-8	SB-8, 9.5	5/30/2014	9.5	--	--	--	--	--	--	4.5
		Maximum Concentration		310	ND<0.02	0.13	0.16	2.4	0.096	310
		Residential Soil ESL		100/500[(1)]	0.044	2.9	3.3	2.3	0.023	80

Notes:

February 2004 data compiled from Table 1, "Report of Phase II Environmental Site Assessment", GRIBI Associates, March 18, 2005

Residential Direct Contact to Soil ESL - Environmental Screening Levels (ESLs) established by the SF Bay Regional Water Quality Control Board (SF Bay RWQCB, January 2016)

(1) - ESLs for shallow soil (<3 meters) and deep soil (>3 meters)

MTBE: methyl-tertiary-butyl ether

mg/kg - micrograms per kilogram

ft. bgs - feet below ground surface

-- not analyzed

ND - not detected above laboratory reporting limits listed

Benzene, toluene, ethylbenzene, total xylenes and MTBE by EPA Method 8020

TPHg- total petroleum hydrocarbons as gasoline by EPA Method 8015M

Lead - total lead by EPA Method 6010B

Bold - Exceeds SF-Bay RWQCB Tier 1 ESL established for direct contact to shallow soil for a residential receptor

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APPENDIX A
Dust Monitoring Data

Appendix A
Dust Monitoring Data
Oakland 2 Market Street Block, Oakland California

Date	Upwind Station			Downwind Station		
	Time	Instant	Average	Time	Instant	Average
6/3/2016	7:30 AM	0.087	0.074	7:30 AM	0.043	0.035
	8:00 AM	0.075	0.077	8:00 AM	0.045	0.044
	8:30 AM	0.080	0.078	8:30 AM	0.045	0.045
	9:00 AM	0.078	0.078	9:00 AM	0.097	0.077
	9:30 AM	0.069	0.078	9:30 AM	0.091	0.089
	10:00 AM	0.075	0.078	10:00 AM	0.114	0.093
	10:30 AM	0.079	0.078	10:30 AM	0.091	0.096
	11:00 AM	0.064	0.077	11:00 AM	0.064	0.11
	11:30 AM	0.074	0.077	11:30 AM	0.088	0.103
	12:00 PM	0.061	0.077	12:00 PM	0.039	0.101
	12:30 PM	0.079	0.077	12:30 PM	0.045	0.098
6/16/2016	No dust monitoring needed due to weather conditions					
6/28/2016	Upwind Mini Ram not working, replaced with working one at 10:00 AM			7:40 AM	0.016	0.019
				8:30 AM	0.017	0.019
				9:24 AM	0.029	0.02
	10:00 AM	0.033	0.040	10:00 AM	0.062	0.03
	10:30 AM	0.070	0.038	10:30 AM	0.018	0.04
	11:00 AM	0.071	0.037	11:00 AM	0.029	0.039
	11:30 AM	0.036	0.037	11:30 AM	0.018	0.037
	12:00 PM	0.035	0.037	12:00 PM	0.030	0.035
	12:40 PM	0.036	0.038	12:40 PM	0.029	0.033
	1:00 PM	0.038	0.038	1:00 PM	0.032	0.033
	1:30 AM	0.037	0.038	1:30 AM	0.031	0.032
	2:00 PM	0.040	0.400	2:00 PM	0.030	0.032
	2:30 PM	0.053	0.420	2:30 PM	0.026	0.032
	2:50 PM	0.025	0.032	2:50 PM	0.056	0.043
7/8/2016	7:30 AM	0.000	0.015	7:30 AM	0.009	0.014
	8:00 AM	0.000	0.000	8:00 AM	0.008	0.000
	8:30 AM	0.000	0.000	8:30 AM	0.000	0.000
	9:00 AM	0.000	0.000	9:00 AM	0.028	0.001
	9:30 AM	0.000	0.000	9:30 AM	0.002	0.001
	10:00 AM	0.000	0.000	10:00 AM	0.021	0.003
	10:30 AM	0.000	0.000	10:30 AM	0.015	0.005
	10:45 AM	0.000	0.000	10:45 AM	0.009	0.004

Appendix A
Dust Monitoring Data
Oakland 2 Market Street Block, Oakland California

Date	Upwind Station			Downwind Station		
	Time	Instant	Average	Time	Instant	Average
7/21/2016	8:00 AM	0.003	0.000	7:30 AM	0.009	0.000
	8:30 AM	0.000	0.000	8:00 AM	0.006	0.003
	9:00 AM	0.000	0.000	8:30 AM	0.000	0.002
	9:30 AM	0.000	0.000	9:00 AM	0.007	0.003
	10:00 AM	0.000	0.000	9:30 AM	0.000	0.002
	10:30 AM	0.004	0.000	10:00 AM	0.008	0.002
	11:00 AM	0.000	0.000	10:30 AM	0.008	0.004
	11:30 AM	0.000	0.000	8:00 AM	0.011	0.008
	12:00 PM	0.008	0.001	8:30 AM	0.012	0.006
	12:30 PM	0.000	0.000	9:00 AM	0.000	0.003
	1:00 PM	0.003	0.002	9:30 AM	0.000	0.010
	1:30 PM	0.006	0.001	10:00 AM	0.002	0.009
	2:00 PM	0.000	0.000	10:30 AM	0.002	0.007
	2:30 PM	0.000	0.000	10:45 AM	0.002	0.004
8/15/2016	7:00 AM	0.000	0.000	7:00 AM	0.000	0.000
	7:30 AM	0.000	0.000	7:30 AM	0.028	0.001
	8:00 AM	0.000	0.000	8:00 AM	0.000	0.000
	8:30 AM	0.000	0.000	8:30 AM	0.000	0.000
	9:00 AM	0.000	0.000	9:00 AM	0.000	0.001
	9:30 AM	0.000	0.000	9:30 AM	0.003	0.000
	10:00 AM	0.000	0.000	10:00 AM	0.027	0.013
	10:30 AM	0.000	0.000	10:30 AM	0.018	0.016
	11:00 AM	0.000	0.000	11:00 AM	0.012	0.022
	11:30 AM	0.000	0.000	11:30 AM	0.007	0.021
	12:00 PM	0.000	0.000	12:00 PM	0.028	0.029

Note: Instant and Average measurements reported as parts per milligrams per cubic meter; action level exceedences determined by subtracting upwind result from downwind result

APPENDIX B
Laboratory Analytical Reports


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 277417
ANALYTICAL REPORT

Stantec
1340 Treat Blvd.
Walnut Creek, CA 94597

Project : 185703027.203.0001
Location : City Ventures - Oak 2
Level : II

Sample ID	Lab ID
B1-NW-W	277417-001
B1-NW-E	277417-002
B1-EW-N	277417-003
B1-EW-S	277417-004
B1-SW-E	277417-005
B1-SW-W	277417-006
B1-WW-S	277417-007
B1-WW-N	277417-008
B1-EB-2'	277417-009
B7-NW-W	277417-010
B7-NW-E	277417-011
B7-EW-N	277417-012
B7-EW-S	277417-013
B7-SW-E	277417-014
B7-SW-W	277417-015
B7-WW-S	277417-016
B7-WW-N	277417-017
B7-EB-2'	277417-018

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 06/06/2016

Mike Dahlquist
Project Manager
mike.dahlquist@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**277417**
Client:	**Stantec**
Project:	**185703027.203.0001**
Location:	**City Ventures - Oak 2**
Request Date:	**06/03/16**
Samples Received:	**06/03/16**

This data package contains sample and QC results for eighteen soil samples, requested for the above referenced project on 06/03/16. The samples were received cold and intact.

Metals (EPA 6010B):
No analytical problems were encountered.

277417

CHAIN OF CUSTODY RECORD

Stantec

Stantec Walnut Creek Office
1340 Treat Blvd., Suite 300
Walnut Creek, CA 94597
TEL:(916) 861-0400 FAX:(916)861-0430

Stantec Company Contact(s) for Invoice:
Project Manager: Sean Coyle
email: sean.coyle@stantec.com

Stantec Project #: 185703027

DATE: 6-3-16

PAGE: 1 OF 2

Project Name: City Ventures - Oak 2

Address: Market St. Block assoc. w/ 2240 Filbert St. Oakland CA

Sampler(s) Printed Name: Charles Melancon

Sampler(s) Signature:

Laboratory: Curtis & Tompkins

Lab Use Only:

Turn-around Time (Business Days):

10 DAYS ☐ 5 DAYS ☐ 72 HR ☐ 48 HR ☐ 24 HR ☒ <24 HR ☐

☐ OTHER

Special Instructions or Notes: analyze using ISM process

Temperature Upon Receipt (C):

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	No. of Cont.	Preserve	tot. lead 6010B	Laboratory Notes
1	B1-NW-W	6-3-16	1230	S	1	-	X	
2	B1-NW-E	"	1240	"	1	-	X	
3	B1-EW-N	"	1250	"	1	-	X	
4	B1-EW-S	"	1300	"	1	-	X	
5	B1-SW-E	"	1310	"	1	-	X	
6	B1-SW-W	"	1320	"	1	-	X	
7	B1-WW-S	"	1330	"	1	-	X	
8	B1-WW-N	"	1340	"	1	-	X	
9	B1-EB-2'	↓	1350	↓	1	-	X	

	Date	Time		Date	Time
Relinquished by: (Signature)	6-3-16	1540	Received by: (Signature)	6/3/16	15 40
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

277417

CHAIN OF CUSTODY RECORD

Stantec

Stantec Walnut Creek Office
1340 Treat Blvd., Suite 300
Walnut Creek, CA 94597
TEL:(916) 861-0400 FAX:(916)861-0430

Stantec Company Contact(s) for Invoice:
Project Manager: Sean Coyle
email: sean.coyle@stantec.com

Stantec Project #: 185703027

DATE: 6-3-16

PAGE: 2 OF 2

Project Name: City Ventures - Oak 2

Address: Market St. Block assoc. W/ 2240 Filbert St. Oakland CA

Sampler(s) Printed Name: Charles Melancon

Sampler(s) Signature:

Laboratory: Curtis & Tompkins

Lab Use Only:

Turn-around Time (Business Days):

10 DAYS ☐ 5 DAYS ☐ 72 HR ☐ 48 HR ☐ 24 HR ☒ <24 HR ☐

☐ OTHER

Special Instructions or Notes: analyze using ISM process

Temperature Upon Receipt (C):

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	No. of Cont.	Preserve	Tot. Lead 6010B	Laboratory Notes
10	B7-NW-W	6-3-16	1340	S	1	-	X	
11	B7-NW-E		1350		1	-	X	
12	B7-EW-N		1400		1	-	X	
13	B7-EW-S		1410		1	-	X	
14	B7-SW-E		1420		1	-	X	
15	B7-SW-W		1430		1	-	X	
16	B7-WW-S		1440		1	-	X	
17	B7-WW-N		1450		1	-	X	
18	B7-EB-2'	↓	1500	↓	1	-	X	

	Date:	Time:	Received by: (Signature)		Time:
Relinquished by: (Signature)	6-3-16	1540		6/3/16	15 40
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)		Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)		Time:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 277417 Date Received 6/3/16 Number of coolers 1
Client Stantec Project City Ventures - Oak 2

Date Opened 6/3 By (print) CB (sign) [signature]
Date Logged in ↓ By (print) SL (sign) [signature]
Date Labelled ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) ____ YES (NO)
   Shipping info ____
2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many ____ Name ____ Date ____
2B. Were custody seals intact upon arrival? ____ YES NO (N/A)
3. Were custody papers dry and intact when received? ____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? ____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) ____ (YES) NO
6. Indicate the packing in cooler: (if other, describe) ____

☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 7.9°

☐ Temperature blank(s) included? ☐ Thermometer# ____ ☒ IR Gun# A

☒ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? ____ YES (NO)
   If YES, what time were they transferred to freezer? ____
9. Did all bottles arrive unbroken/unopened? ____ (YES) NO
10. Are there any missing / extra samples? ____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? ____ (YES) NO
12. Are sample labels present, in good condition and complete? ____ (YES) NO
13. Do the sample labels agree with custody papers? ____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? ____ (YES) NO
15. Are the samples appropriately preserved? ____ YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? ____ YES NO (N/A)
17. Did you document your preservative check? (pH strip lot# ____) YES NO (N/A)
18. Did you change the hold time in LIMS for unpreserved VOAs? ____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? ____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? ____ YES NO (N/A)
21. Was the client contacted concerning this sample delivery? ____ YES (NO)
   If YES, Who was called? ____ By ____ Date: ____

COMMENTS ____

Curtis & Tompkins, Ltd.

Detections Summary for 277417

Results for any subcontracted analyses are not included in this summary.

Client : Stantec
Project : 185703027.203.0001
Location : City Ventures - Oak 2

Client Sample ID : B1-NW-W Laboratory Sample ID : 277417-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	1,100		12	mg/Kg	As Recd	50.00	EPA 6010B	EPA 3050B

Client Sample ID : B1-NW-E Laboratory Sample ID : 277417-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	800		12	mg/Kg	As Recd	50.00	EPA 6010B	EPA 3050B

Client Sample ID : B1-EW-N Laboratory Sample ID : 277417-003

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	1,400		12	mg/Kg	As Recd	50.00	EPA 6010B	EPA 3050B

Client Sample ID : B1-EW-S Laboratory Sample ID : 277417-004

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	840		12	mg/Kg	As Recd	50.00	EPA 6010B	EPA 3050B

Client Sample ID : B1-SW-E Laboratory Sample ID : 277417-005

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	380		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : B1-SW-W Laboratory Sample ID : 277417-006

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	510		2.4	mg/Kg	As Recd	10.00	EPA 6010B	EPA 3050B

Client Sample ID : B1-WW-S Laboratory Sample ID : 277417-007

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	1,500		24	mg/Kg	As Recd	100.0	EPA 6010B	EPA 3050B

Curtis & Tompkins, Ltd.

Client Sample ID : B1-WW-N Laboratory Sample ID : 277417-008

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	1,200		23	mg/Kg	As Recd	100.0	EPA 6010B	EPA 3050B

Client Sample ID : B1-EB-2' Laboratory Sample ID : 277417-009

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	1,700		25	mg/Kg	As Recd	100.0	EPA 6010B	EPA 3050B

Client Sample ID : B7-NW-W Laboratory Sample ID : 277417-010

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	210		0.24	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : B7-NW-E Laboratory Sample ID : 277417-011

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	25		0.24	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : B7-EW-N Laboratory Sample ID : 277417-012

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	60		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : B7-EW-S Laboratory Sample ID : 277417-013

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	6.3		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : B7-SW-E Laboratory Sample ID : 277417-014

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	5.6		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : B7-SW-W Laboratory Sample ID : 277417-015

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	5.8		0.24	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : B7-WW-S Laboratory Sample ID : 277417-016

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	30		0.24	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : B7-WW-N Laboratory Sample ID : 277417-017

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	490		2.4	mg/Kg	As Recd	10.00	EPA 6010B	EPA 3050B

Client Sample ID : B7-EB-2' Laboratory Sample ID : 277417-018

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	23		0.24	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Curtis & Tompkins, Ltd.

Lead

Lab #:	277417	Location:	City Ventures - Oak 2
Client:	Stantec	Prep:	EPA 3050B
Project#:	185703027.203.0001	Analysis:	EPA 6010B
Analyte:	Lead	Sampled:	06/03/16
Matrix:	Soil	Received:	06/03/16
Units:	mg/Kg	Analyzed:	06/06/16
Basis:	as received		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Batch#	Prepared
B1-NW-W	SAMPLE	277417-001	1,100	12	50.00	235781	06/05/16
B1-NW-E	SAMPLE	277417-002	800	12	50.00	235781	06/05/16
B1-EW-N	SAMPLE	277417-003	1,400	12	50.00	235781	06/05/16
B1-EW-S	SAMPLE	277417-004	840	12	50.00	235781	06/05/16
B1-SW-E	SAMPLE	277417-005	380	0.25	1.000	235781	06/05/16
B1-SW-W	SAMPLE	277417-006	510	2.4	10.00	235781	06/05/16
B1-WW-S	SAMPLE	277417-007	1,500	24	100.0	235781	06/05/16
B1-WW-N	SAMPLE	277417-008	1,200	23	100.0	235781	06/05/16
B1-EB-2'	SAMPLE	277417-009	1,700	25	100.0	235781	06/05/16
B7-NW-W	SAMPLE	277417-010	210	0.24	1.000	235781	06/05/16
B7-NW-E	SAMPLE	277417-011	25	0.24	1.000	235781	06/05/16
B7-EW-N	SAMPLE	277417-012	60	0.25	1.000	235781	06/05/16
B7-EW-S	SAMPLE	277417-013	6.3	0.25	1.000	235781	06/05/16
B7-SW-E	SAMPLE	277417-014	5.6	0.23	1.000	235781	06/05/16
B7-SW-W	SAMPLE	277417-015	5.8	0.24	1.000	235784	06/06/16
B7-WW-S	SAMPLE	277417-016	30	0.24	1.000	235784	06/06/16
B7-WW-N	SAMPLE	277417-017	490	2.4	10.00	235784	06/06/16
B7-EB-2'	SAMPLE	277417-018	23	0.24	1.000	235784	06/06/16
	BLANK	QC838267	ND	0.24	1.000	235781	06/05/16
	BLANK	QC838281	ND	0.24	1.000	235784	06/06/16

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Lead

Lab #:	277417	Location:	City Ventures - Oak 2
Client:	Stantec	Prep:	EPA 3050B
Project#:	185703027.203.0001	Analysis:	EPA 6010B
Analyte:	Lead	Sampled:	06/03/16
Matrix:	Soil	Received:	06/03/16
Units:	mg/Kg	Analyzed:	06/06/16
Basis:	as received		

Field ID	Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Batch#	Prepared
	LCS		QC838268		50.30	51.41	102	80-120			1.000	235781	06/05/16
B1-NW-W	MS	277417-001	QC838269	1,080	47.66	1,311	484 NM	53-125			50.00	235781	06/05/16
B1-NW-W	MSD	277417-001	QC838270		48.17	1,064	-34 NM	53-125	21	42	50.00	235781	06/05/16
	LCS		QC838282		47.94	49.31	103	80-120			1.000	235784	06/06/16
B7-WW-S	MS	277417-016	QC838283	29.70	49.36	75.62	93	53-125			1.000	235784	06/06/16
B7-WW-S	MSD	277417-016	QC838284		48.26	73.21	90	53-125	2	42	1.000	235784	06/06/16

NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Lead

Lab #:	277756	Prep:	EPA 3050B
Client:	Stantec	Analysis:	EPA 6010B
Project#:	185703027		
Analyte:	Lead	Sampled:	06/16/16
Matrix:	Soil	Received:	06/16/16
Units:	mg/Kg	Prepared:	06/17/16
Basis:	as received	Analyzed:	06/17/16

Field ID	Type	Lab ID	Result	RL	Diln Fac	Batch#
B1-N-1	SAMPLE	277756-001	1,600	12	50.00	236173
B1-E-1	SAMPLE	277756-002	5.9	0.26	1.000	236173
B1-E-2	SAMPLE	277756-003	6.1	0.28	1.000	236173
B1-E-3	SAMPLE	277756-004	7.9	0.25	1.000	236173
B1-E-4	SAMPLE	277756-005	11	0.26	1.000	236173
B1-S-1	SAMPLE	277756-006	7.6	0.27	1.000	236173
B1-S-2	SAMPLE	277756-007	120	0.25	1.000	236173
B1-S-3	SAMPLE	277756-008	14	0.23	1.000	236173
B1-S-4	SAMPLE	277756-009	7.2	0.25	1.000	236173
B1-W-1	SAMPLE	277756-010	19	0.26	1.000	236173
B1-W-2	SAMPLE	277756-011	630	13	50.00	236173
B1-W-3	SAMPLE	277756-012	11	0.23	1.000	236173
B1-W-4	SAMPLE	277756-013	6.1	0.23	1.000	236173
B1-B-1	SAMPLE	277756-014	1,100	14	50.00	236173
B1-B-2	SAMPLE	277756-015	6.8	0.24	1.000	236173
B1-B-3	SAMPLE	277756-016	3.9	0.26	1.000	236173
B1-B-4	SAMPLE	277756-017	7.3	0.26	1.000	236173
B1-B-5	SAMPLE	277756-018	510	0.27	1.000	236173
B7-N-1	SAMPLE	277756-019	4.5	0.26	1.000	236173
B7-N-2	SAMPLE	277756-020	4.1	0.23	1.000	236173
B7-E-1	SAMPLE	277756-021	15	0.24	1.000	236176
B7-W-1	SAMPLE	277756-022	4.5	0.24	1.000	236176
B7-W-2	SAMPLE	277756-023	4.8	0.23	1.000	236176
B7-S-1	SAMPLE	277756-024	4.5	0.23	1.000	236176
B7-B-1	SAMPLE	277756-025	3.7	0.23	1.000	236176
B7-B-2	SAMPLE	277756-026	5.1	0.23	1.000	236176
B7-B-3	SAMPLE	277756-027	5.6	0.25	1.000	236176
B7-N-3	SAMPLE	277756-028	6.6	0.26	1.000	236176
B7-E-2	SAMPLE	277756-029	5.9	0.24	1.000	236176
B7-E-3	SAMPLE	277756-030	4.5	0.25	1.000	236176
B7-S-2	SAMPLE	277756-031	3.9	0.26	1.000	236176
B7-S-3	SAMPLE	277756-032	4.1	0.27	1.000	236176
B7-W-3	SAMPLE	277756-033	3.9	0.24	1.000	236176
B7-B-4	SAMPLE	277756-034	3.6	0.25	1.000	236176
	BLANK	QC839827	ND	0.28	1.000	236173
	BLANK	QC839837	ND	0.25	1.000	236176

ND= Not Detected
RL= Reporting Limit

Pace Analytical Services, Inc.
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

June 30, 2016

Dan Schreiner
Stantec Consulting Services
1340 Treat Blvd
Walnut Creek, CA 945972101

RE: Project: City Ventures Oak 2
Pace Project No.: 1269361

Dear Dan Schreiner:
Enclosed are the analytical results for sample(s) received by the laboratory on June 29, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

LeeAnn Heathcote
leeann.heathcote@pacelabs.com
Project Manager

Enclosures

cc: Data Dept for EDDs, Stantec

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CERTIFICATIONS

Project: City Ventures Oak 2
Pace Project No.: 1269361

Davis Cerification IDs

2795 Second Street Suite 300 Davis, CA 95618
North Dakota Certification #: R-214
Oregon Certification #: CA300002
Washington Certification #: C926-15a
California Certification #: 08263CA
Minnesota Department of Health Certification #: 006-999-465

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SAMPLE SUMMARY

Project: City Ventures Oak 2
Pace Project No.: 1269361

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1269361001	**B1-E-5**	Solid	06/28/16 11:30	06/29/16 09:55
1269361002	**B1-E-6**	Solid	06/28/16 11:30	06/29/16 09:55
1269361003	**B1-N-5**	Solid	06/28/16 12:50	06/29/16 09:55
1269361004	**B1-S-5**	Solid	06/28/16 13:30	06/29/16 09:55
1269361005	**B1-S-6**	Solid	06/28/16 13:30	06/29/16 09:55
1269361006	**B1-S-7**	Solid	06/28/16 13:30	06/29/16 09:55
1269361007	**B1-S-8**	Solid	06/28/16 13:30	06/29/16 09:55
1269361008	**B1-N-6**	Solid	06/28/16 14:30	06/29/16 09:55
1269361009	**B1-N-7**	Solid	06/28/16 14:30	06/29/16 09:55
1269361010	**B1-W-5**	Solid	06/28/16 14:35	06/29/16 09:55
1269361011	**B1-W-6**	Solid	06/28/16 14:35	06/29/16 09:55
1269361012	**B1-W-7**	Solid	06/28/16 14:35	06/29/16 09:55
1269361013	**B1-W-8**	Solid	06/28/16 14:35	06/29/16 09:55

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SAMPLE ANALYTE COUNT

Project: City Ventures Oak 2
Pace Project No.: 1269361

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1269361001	**B1-E-5**	EPA 6010B	JLL	1	PASI-DAV
1269361002	**B1-E-6**	EPA 6010B	JLL	1	PASI-DAV
1269361003	**B1-N-5**	EPA 6010B	JLL	1	PASI-DAV
1269361004	**B1-S-5**	EPA 6010B	JLL	1	PASI-DAV
1269361005	**B1-S-6**	EPA 6010B	JLL	1	PASI-DAV
1269361006	**B1-S-7**	EPA 6010B	JLL	1	PASI-DAV
1269361007	**B1-S-8**	EPA 6010B	JLL	1	PASI-DAV
1269361008	**B1-N-6**	EPA 6010B	JLL	1	PASI-DAV
1269361009	**B1-N-7**	EPA 6010B	JLL	1	PASI-DAV
1269361010	**B1-W-5**	EPA 6010B	JLL	1	PASI-DAV
1269361011	**B1-W-6**	EPA 6010B	JLL	1	PASI-DAV
1269361012	**B1-W-7**	EPA 6010B	JLL	1	PASI-DAV
1269361013	**B1-W-8**	EPA 6010B	JLL	1	PASI-DAV

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SUMMARY OF DETECTION

Project: City Ventures Oak 2
Pace Project No.: 1269361

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
1269361001	**B1-E-5**					
EPA 6010B	Lead	7.4	mg/kg	0.47	06/30/16 09:47	
1269361002	**B1-E-6**					
EPA 6010B	Lead	5.6	mg/kg	0.50	06/30/16 09:57	
1269361003	**B1-N-5**					
EPA 6010B	Lead	51.1	mg/kg	0.50	06/30/16 10:01	
1269361004	**B1-S-5**					
EPA 6010B	Lead	9.0	mg/kg	0.48	06/30/16 10:04	
1269361005	**B1-S-6**					
EPA 6010B	Lead	6.9	mg/kg	0.47	06/30/16 10:08	
1269361006	**B1-S-7**					
EPA 6010B	Lead	13.4	mg/kg	0.49	06/30/16 10:11	
1269361007	**B1-S-8**					
EPA 6010B	Lead	4.3	mg/kg	0.47	06/30/16 10:21	
1269361008	**B1-N-6**					
EPA 6010B	Lead	61.1	mg/kg	0.45	06/30/16 10:25	
1269361009	**B1-N-7**					
EPA 6010B	Lead	9.6	mg/kg	0.47	06/30/16 10:28	
1269361010	**B1-W-5**					
EPA 6010B	Lead	16.5	mg/kg	0.50	06/30/16 10:32	
1269361011	**B1-W-6**					
EPA 6010B	Lead	7.2	mg/kg	0.50	06/30/16 10:35	
1269361012	**B1-W-7**					
EPA 6010B	Lead	145	mg/kg	0.46	06/30/16 10:38	
1269361013	**B1-W-8**					
EPA 6010B	Lead	6.6	mg/kg	0.48	06/30/16 10:42	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: City Ventures Oak 2
Pace Project No.: 1269361

Sample: B1-E-5 **Lab ID: 1269361001** Collected: 06/28/16 11:30 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**7.4**	mg/kg	0.47	1	06/29/16 12:35	06/30/16 09:47	7439-92-1	

Sample: B1-E-6 **Lab ID: 1269361002** Collected: 06/28/16 11:30 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**5.6**	mg/kg	0.50	1	06/29/16 12:35	06/30/16 09:57	7439-92-1	

Sample: B1-N-5 **Lab ID: 1269361003** Collected: 06/28/16 12:50 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**51.1**	mg/kg	0.50	1	06/29/16 12:35	06/30/16 10:01	7439-92-1	

Sample: B1-S-5 **Lab ID: 1269361004** Collected: 06/28/16 13:30 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**9.0**	mg/kg	0.48	1	06/29/16 12:35	06/30/16 10:04	7439-92-1	

Sample: B1-S-6 **Lab ID: 1269361005** Collected: 06/28/16 13:30 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**6.9**	mg/kg	0.47	1	06/29/16 12:35	06/30/16 10:08	7439-92-1	

Sample: B1-S-7 **Lab ID: 1269361006** Collected: 06/28/16 13:30 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**13.4**	mg/kg	0.49	1	06/29/16 12:35	06/30/16 10:11	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: City Ventures Oak 2
Pace Project No.: 1269361

Sample: B1-S-8 **Lab ID: 1269361007** Collected: 06/28/16 13:30 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**4.3**	mg/kg	0.47	1	06/29/16 12:35	06/30/16 10:21	7439-92-1	

Sample: B1-N-6 **Lab ID: 1269361008** Collected: 06/28/16 14:30 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**61.1**	mg/kg	0.45	1	06/29/16 12:35	06/30/16 10:25	7439-92-1	

Sample: B1-N-7 **Lab ID: 1269361009** Collected: 06/28/16 14:30 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**9.6**	mg/kg	0.47	1	06/29/16 12:35	06/30/16 10:28	7439-92-1	

Sample: B1-W-5 **Lab ID: 1269361010** Collected: 06/28/16 14:35 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**16.5**	mg/kg	0.50	1	06/29/16 12:35	06/30/16 10:32	7439-92-1	

Sample: B1-W-6 **Lab ID: 1269361011** Collected: 06/28/16 14:35 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**7.2**	mg/kg	0.50	1	06/29/16 12:35	06/30/16 10:35	7439-92-1	

Sample: B1-W-7 **Lab ID: 1269361012** Collected: 06/28/16 14:35 Received: 06/29/16 09:55 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**145**	mg/kg	0.46	1	06/29/16 12:35	06/30/16 10:38	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: City Ventures Oak 2
Pace Project No.: 1269361

Sample: B1-W-8 **Lab ID: 1269361013** Collected: 06/28/16 14:35 Received: 06/29/16 09:55 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**6.6**	mg/kg	0.48	1	06/29/16 12:35	06/30/16 10:42	7439-92-1	

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QUALITY CONTROL DATA

Project: City Ventures Oak 2
Pace Project No.: 1269361

QC Batch: DAMP/2066 Analysis Method: EPA 6010B
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 1269361001, 1269361002, 1269361003, 1269361004, 1269361005, 1269361006, 1269361007, 1269361008, 1269361009, 1269361010, 1269361011, 1269361012, 1269361013

METHOD BLANK: 337550 Matrix: Solid
Associated Lab Samples: 1269361001, 1269361002, 1269361003, 1269361004, 1269361005, 1269361006, 1269361007, 1269361008, 1269361009, 1269361010, 1269361011, 1269361012, 1269361013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	mg/kg	ND	0.48	06/30/16 09:40	

LABORATORY CONTROL SAMPLE: 337551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	mg/kg	46.7	47.4	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 337552 337553

Parameter	Units	1269361001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	mg/kg	7.4	48.1	45.5	49.0	48.0	87	89	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: City Ventures Oak 2
Pace Project No.: 1269361

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DAV Pace Analytical Services - Davis

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: City Ventures Oak 2
Pace Project No.: 1269361

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1269361001	**B1-E-5**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361002	**B1-E-6**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361003	**B1-N-5**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361004	**B1-S-5**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361005	**B1-S-6**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361006	**B1-S-7**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361007	**B1-S-8**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361008	**B1-N-6**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361009	**B1-N-7**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361010	**B1-W-5**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361011	**B1-W-6**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361012	**B1-W-7**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322
1269361013	**B1-W-8**	EPA 3050	DAMP/2066	EPA 6010B	DAMT/2322

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

Section A Required Client Information:

Company: Stantec
Address: 1340 Treat Blvd Walnut Creek, CA
Email To: dan.schreiner@stantec.com
Phone: 916-384-0766 Fax:
Requested Due Date/TAT: 24 HR TAT

Section B Required Project Information: Dan Schreiner

Report To: ~~Sean Foy~~
Copy To: Site: Oakland 2
Purchase Order No.:
Project Name: City Ventures 52
Project Number: 185703027

Section C Invoice Information:

Attention: Dan Schreiner
Company Name: Stantec
Address:
Pace Quote Reference:
Pace Project Manager: Lee Ann Heatwole
Pace Profile #:

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER
Site Location STATE: CA

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Lead (6010)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	B1-E-5	S		6/28/16	1130		1	X									X		001
	B1-E-6	S		6/28/16	1130		1										X		002
	B1-N-5	S		6/28/16	1250		1										X		003
	B1-S-5	S		6/28/16	1330		1										X		004
	~~B1-~~ B1-S-6						1										X		005
	B1-S-7						1										X		006
	B1-S-8						1										X		007
	B1-N-6			6/28/16	1430		1										X		008
	B1-N-7				1430		1										X		009
	B1-W-5				1435		1										X		010

1269361

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Khamly Chuop	6/28/16	1500		062916	0955	23.8	N	N	Y

Electronic Data Deliverable (EDD): EQuIS (format) Excel
State Specific: CA EDF (Global ID: _____) WA EIM
CA WriteOn (Site: _____) Other _____

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Khamly Chuop
SIGNATURE of SAMPLER: Khamly Chuop
DATE Signed (MM/DD/YY): 6/28/16

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company: Stantec
Address: 1340 Treat Blvd Walnut Creek, CA
Email To: dan.schreiner@stantec.com
Phone: 916-384-0766 Fax:
Requested Due Date/TAT: 24 HR TAT

Section B Required Project Information:

Report To: Dan Schreiner
Copy To:
Purchase Order No.:
Project Name: City Ventures Oak 2
Project Number: 185703027

Section C Invoice Information:

Attention: Dan Schreiner
Company Name: Stantec
Address:
Pace Quote Reference:
Pace Project Manager: LeeAnn Heathcote
Pace Profile #:

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER

Site Location STATE:

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS Unpreserved	Preservatives H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: Lead (6010)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	B1-W-6	SL		6/28/2016	1435		1 X								X		011
	B1-W-7	SL		↓	↓		1 X								X		012
	B1-W-8	SL		↓	↓		1 X								X		013

126936 1

ADDITIONAL COMMENTS

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	6/28/16	1500		062916	0955	

Electronic Data Deliverable (EDD): EQuIS (format) Excel

State Specific: CA EDF (Global ID: _____) WA EIM
CA WriteOn (Site: _____) Other _____

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Khanly Chuon

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YY): 6/28/16

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: F-DAV-C-002-rev.02	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO# : 1269361

1269361

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ OnTrac ☐ Other:

Tracking Number: 7766 1638 4651

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermom. Used: ☒ DA1434 4 ☐ DA2285 **Type of Ice:** ☐ Wet ☐ Blue ☐ Dry Ice ☒ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 23.8 **Cooler Temp Corrected(°C):** 23.8

Temp should be above freezing to 6°C **Correction Factor:** +0.4

Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Date and Initials of Person Examining Contents: Eg 062916

Comments:

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☑ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☐ Yes	☑ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☐ Yes	☑ No	☐ N/A	12. Datest times not clear on some plastic bags
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: LeAnn Wachter **Date:** 6/29/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

1269361

Pace Analytical	Document Name: **Soil Checklist**	Document Revised: 13Jan2016 Page 1 of 1
	Document No.: **F-DAV-C-028-Rev.00**	Issuing Authority: Pace Davis Quality Office

SOIL CHECKLIST

To Be Completed by SR Staff:

Client: Stantec Date: 6/29/16 Initials: Emy

Are any samples from a depth of ≤ 6 ft?	☐ Yes ☐ No ☒ Not indicated (If No, proceed with receipt, samples are not regulated.)	
Sample Origin (circle one):	FOREIGN	DOMESTIC
(Note: soil samples from Hawaii and Puerto Rico are considered to be of a Foreign Source)		
If Foreign, list County of Origin:		
If Domestic, circle State of Origin:	AL AR AZ (CA) FL GA ID LA MS NC NM NY OK OR SC TN TX WA ☐ NONE OF THE ABOVE (If None of the Above, proceed with receipt, samples are not regulated.)	
If from a circled state above, County of Origin	*If unknown, contact PM. Project cannot be received until this is determined.* Alameda	
Is County of Origin in a Regulated or Quarantined Zone?	☒ Yes ☐ No (If No, proceed with receipt, samples are not regulated.)	

REQUIREMENT	ACTION	COMPLETED
Samples from a depth of > 6 feet are not regulated under APHIS / USDA guidelines	Were samples segregated by depth ≤ or > 6 feet? (If samples from > 6 feet were in direct contact with soil from ≤ 6 ft, all soils must be treated as regulated.)	YES NO (N/A)
Yellow stickers are to be placed on all regulated samples.	Did yellow stickers get placed on all sample containers?	(YES) NO
Samples must be segregated and stored in designated bins, shelves and coolers.	Were samples placed in a designated cooler, containers and shelves?	(YES) NO
Samples must be double contained to prevent accidental release.	Were there any signs of breakage or leakage (check for broken glass and/or loose soil in the cooler)?	YES (NO)
	If NO, ice and melt water can be disposed of by normal process (down the drain).	
	If **YES**, were ice and melt water separated from the cooler and disposed of properly?	YES NO (N/A)
	Any broken glass and/or loose soil are to be bagged and placed in a USDA Regulated satellite container or active drum (see Waste Coordinator). Ice and melt water must be containerized and sterilized by adding enough bleach to achieve a 10% concentration and allowed to sit for ≥ 30 minutes before disposing.	
Equipment and supplies that have come into contact samples must be decontaminated.	Was the cooler(s) and/or countertop(s) decontaminated using a fresh 10% bleach solution? *(Gloves and other lab supplies will be bagged and placed in the SR USDA Regulated satellite container).*	(YES) NO

To Be Completed by PM/PC for Regulated Soils:

Sample Analysis to be conducted at (circle all that apply): Davis Subcontract Lab

Name of Subcontract Lab(s):

REQUIREMENT	ACTION	COMPLETED
USDA / APHIS rep must be informed by email prior to shipping untreated soil to any subcontract lab, including IR Pace Labs.	Anthony Jackson, USDA APHIS PPQ Tel.: (916) 930-5536 Email: Anthony.S.Jackson@aphis.usda.gov	YES NO N/A
Shipment must include a valid copy of the receiving lab's permit along with all required forms.	Is a copy of all needed paperwork included with the COC? Do NOT ship samples until all necessary paperwork is compiled.	YES NO N/A

Comments: The COC states site as Oakland

Project Manager Signature: Ladd Heathcote Date: 6/29/16

Pace Analytical Services, Inc.
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

July 12, 2016

Dan Schreiner
Stantec Consulting Services
1340 Treat Blvd
Walnut Creek, CA 945972101

RE: Project: City Ventures
Pace Project No.: 1270032

Dear Dan Schreiner:
Enclosed are the analytical results for sample(s) received by the laboratory on July 08, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

LeeAnn Heathcote
leeann.heathcote@pacelabs.com
Project Manager

Enclosures

cc: Data Dept for EDDs, Stantec

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CERTIFICATIONS

Project: City Ventures
Pace Project No.: 1270032

Davis Cerification IDs

2795 Second Street Suite 300 Davis, CA 95618
North Dakota Certification #: R-214
Oregon Certification #: CA300002
Washington Certification #: C926-15a
California Certification #: 08263CA
Minnesota Department of Health Certification #: 006-999-465

REPORT OF LABORATORY ANALYSIS

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2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

SAMPLE SUMMARY

Project: City Ventures
Pace Project No.: 1270032

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1270032001	**B1-W-9**	Solid	07/08/16 10:32	07/08/16 12:35
1270032002	**B1-W-10**	Solid	07/08/16 10:34	07/08/16 12:35
1270032003	**B1-W-11**	Solid	07/08/16 10:36	07/08/16 12:35
1270032004	**B1-W-12**	Solid	07/08/16 10:38	07/08/16 12:35

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(530) 297-4800

SAMPLE ANALYTE COUNT

Project: City Ventures
Pace Project No.: 1270032

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1270032001	**B1-W-9**	EPA 6010B	JLL	1	PASI-DAV
1270032002	**B1-W-10**	EPA 6010B	JLL	1	PASI-DAV
1270032003	**B1-W-11**	EPA 6010B	JLL	1	PASI-DAV
1270032004	**B1-W-12**	EPA 6010B	JLL	1	PASI-DAV

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SUMMARY OF DETECTION

Project: City Ventures
Pace Project No.: 1270032

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
1270032001	**B1-W-9**					
EPA 6010B	Lead	221	mg/kg	0.47	07/11/16 14:25	
1270032002	**B1-W-10**					
EPA 6010B	Lead	136	mg/kg	0.46	07/11/16 14:29	
1270032003	**B1-W-11**					
EPA 6010B	Lead	960	mg/kg	0.46	07/11/16 14:32	
1270032004	**B1-W-12**					
EPA 6010B	Lead	63.9	mg/kg	0.48	07/11/16 14:36	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: City Ventures
Pace Project No.: 1270032

Sample: B1-W-9 **Lab ID: 1270032001** Collected: 07/08/16 10:32 Received: 07/08/16 12:35 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**221**	mg/kg	0.47	1	07/11/16 07:20	07/11/16 14:25	7439-92-1	

Sample: B1-W-10 **Lab ID: 1270032002** Collected: 07/08/16 10:34 Received: 07/08/16 12:35 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**136**	mg/kg	0.46	1	07/11/16 07:20	07/11/16 14:29	7439-92-1	

Sample: B1-W-11 **Lab ID: 1270032003** Collected: 07/08/16 10:36 Received: 07/08/16 12:35 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**960**	mg/kg	0.46	1	07/11/16 07:20	07/11/16 14:32	7439-92-1	

Sample: B1-W-12 **Lab ID: 1270032004** Collected: 07/08/16 10:38 Received: 07/08/16 12:35 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**63.9**	mg/kg	0.48	1	07/11/16 07:20	07/11/16 14:36	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: City Ventures
Pace Project No.: 1270032

QC Batch: 87257 Analysis Method: EPA 6010B
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 1270032001, 1270032002, 1270032003, 1270032004

METHOD BLANK: 341704 Matrix: Solid
Associated Lab Samples: 1270032001, 1270032002, 1270032003, 1270032004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	mg/kg	ND	0.49	07/11/16 13:47	

LABORATORY CONTROL SAMPLE: 341705

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	mg/kg	49.5	50.9	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 341706 341707

Parameter	Units	1269418001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	mg/kg	2.3	49.8	48.9	50.4	48.9	97	95	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: City Ventures
Pace Project No.: 1270032

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DAV Pace Analytical Services - Davis

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: City Ventures
Pace Project No.: 1270032

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1270032001	**B1-W-9**	EPA 3050	87257	EPA 6010B	87346
1270032002	**B1-W-10**	EPA 3050	87257	EPA 6010B	87346
1270032003	**B1-W-11**	EPA 3050	87257	EPA 6010B	87346
1270032004	**B1-W-12**	EPA 3050	87257	EPA 6010B	87346

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Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Stantec Consulting Services	Report To:	Dan Schreiner	Attention:	Dan Schreiner
Address:	3875 Atherton Road	Copy To:	Sean Coyle	Company Name:	Stantec Consulting Services
	Rocklin, CA 95765		Sean.Coyle@stantec.com	Address:	3875 Atherton Road, Rocklin, CA 95765
Email:	Dan.Schreiner@stantec.com	Purchase Order #:		Pace Quote:	
Phone:	(916) 472-3915 Fax:	Project Name:	City Ventures	Pace Project Manager:	leeann.heathcote@pacelabs.com,
Requested Due Date:	24-Hour	Project #:	185703027	Pace Profile #:	5025

Regulatory Agency

State / Location: CA

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: 6010 Pb only	Residual Chlorine (Y/N)	1270032
1	B1-W-9	SL	G	7/5/16	1032				1	X									X		001
2	B1-W-10	SL	G	7/5/16	1034				1	X									X		002
3	B1-W-11	SL	G	7/5/16	1036				1	X									X		003
4	B1-W-12	SL	G	7/5/16	1038				1	X									X		004
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Stantec	7/5/16	12:35	Pace Anal	7/6/16	1225	256	N	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed:

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: F-DAV-C-002-rev.02	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #:

WO# : 1270032

1270032

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace ☐ OnTrac ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermom. Used: ☒ DA1434 ☐ DA2285 **Type of Ice:** ☐ Wet ☐ Blue ☐ Dry Ice ☒ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 24.6 **Cooler Temp Corrected(°C):** 25.6 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +1.0 **Date and Initials of Person Examining Contents:** 07/08/16

Comments:

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☒ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 7/8/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO# : 1270032
PM: LAH Due Date: 07/11/16
CLIENT: 19StantecRC1

Pace Analytical	Document Name: Soil Checklist	
	Document No.: F-DAV-C-028-Rev.01	Pace Davis Quality Office

SOIL CHECKLIST

To Be Completed by SR Staff:

Client: Stantec Date: 070816 Initials: [illegible]

Are any samples from a depth of ≤ 6 ft?	☐ Yes ☐ No ☒ Not indicated	
Is sub any analysis requested?	☐ Yes ☒ No (If No to both questions, proceed with receipt, samples are not regulated.)	
Sample Origin (circle one):	FOREIGN	DOMESTIC
(Note: soil samples from Hawaii and Puerto Rico are considered to be of a Foreign Source)		
If Foreign, list County of Origin:	N/A	
If Domestic, circle State of Origin:	AL AR AZ (CA) FL GA ID LA MS NC NM NY OK OR SC TN TX VA ☐ NONE OF THE ABOVE (If None of the Above, proceed with receipt, samples are not regulated.)	
If from a circled state above, County of Origin	*If unknown, contact PM, Project cannot be received until this is determined.* Alameda	
Is sample from a Regulated or Quarantined Zone?	☒ Yes ☐ No (If No, proceed with receipt, samples are not regulated.)	

REQUIREMENT	ACTION	COMPLETED
Samples from a depth of > 6 feet are not regulated under APHIS / USDA guidelines	Were samples segregated by depth ≤ or > 6 feet? (If samples from > 6 feet were in direct contact with soil from ≤ 6 ft, all soils must be treated as regulated.)	YES NO (N/A)
	Samples from a depth of >6 feet are exempt from classification as regulated soil per California APHIS /USDA guidelines. For sub analyses, the receiving lab must confirm that the >6 feet exemption is allowable. Otherwise, treat the sub samples as regulated soil regardless of sample depth.	
Samples must be double contained to prevent accidental release.	Were there any signs of breakage or leakage (check for broken glass and/or loose soil in the cooler)?	YES (NO)
	If NO, ice and melt water can be disposed of by normal process (down the drain).	
	If **YES**, were ice and melt water separated from the cooler and disposed of properly?	YES NO (N/A)
	Any broken glass and/or loose soil are to be bagged and placed in a USDA Regulated satellite container or active drum (see Waste Coordinator). Ice and melt water must be containerized and sterilized by adding enough bleach to achieve a 10% concentration and allowed to sit for ≥ 30 minutes before disposing.	
Samples must be segregated and stored in designated bins, shelves and coolers.	Were samples placed in a designated cooler, containers and shelves?	(YES) NO
Yellow stickers are to be placed on all regulated samples.	Did yellow stickers get placed on all sample containers?	(YES) NO
Equipment and supplies that have come into contact samples must be decontaminated.	Was the cooler(s) and/or countertop(s) decontaminated using a fresh 10% bleach solution? *(Gloves and other lab supplies will be bagged and placed in the SR USDA Regulated satellite container).*	(YES) NO

To Be Completed by PM/PC for Regulated Soils:

Sample Analysis to be conducted at (circle all that apply): (Davis) Subcontract Lab

Name of Subcontract Lab(s): _____

REQUIREMENT	ACTION	COMPLETED
USDA / APHIS rep must be informed by email prior to shipping untreated soil to any subcontract lab, including IR Pace Labs.	Anthony Jackson, USDA APHIS PPQ Tel.: (916) 930-5536 Email: Anthony.S.Jackson@aphis.usda.gov	YES NO N/A
Shipment must include a valid copy of the receiving lab's permit along with all required forms.	Is a copy of all needed paperwork included with the COC? Do NOT ship samples until all necessary paperwork is compiled.	YES NO N/A

Comments: _____

Project Manager Signature: [signature] Date: 7/8/16

Pace Analytical Services, Inc.
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

July 25, 2016

Dan Schreiner
Stantec Consulting Services
1340 Treat Blvd
Walnut Creek, CA 945972101

RE: Project: City Ventures Oakland 2
Pace Project No.: 1271027

Dear Dan Schreiner:
Enclosed are the analytical results for sample(s) received by the laboratory on July 21, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

LeeAnn Heathcote
leeann.heathcote@pacelabs.com
Project Manager

Enclosures

cc: Data Dept for EDDs, Stantec

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CERTIFICATIONS

Project: City Ventures Oakland 2
Pace Project No.: 1271027

Davis Cerification IDs

2795 Second Street Suite 300 Davis, CA 95618
North Dakota Certification #: R-214
Oregon Certification #: CA300002
Washington Certification #: C926-15a
California Certification #: 08263CA
Minnesota Department of Health Certification #: 006-999-465

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SAMPLE SUMMARY

Project: City Ventures Oakland 2
Pace Project No.: 1271027

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1271027001	**B1-W-13**	Solid	07/21/16 13:36	07/21/16 18:30
1271027002	**B1-W-14**	Solid	07/21/16 13:33	07/21/16 18:30
1271027003	**B1-W-15**	Solid	07/21/16 13:35	07/21/16 18:30
1271027004	**B1-W-16**	Solid	07/21/16 13:38	07/21/16 18:30
1271027005	**B1-W-17**	Solid	07/21/16 13:39	07/21/16 18:30
1271027006	**B1-W-18**	Solid	07/21/16 13:40	07/21/16 18:30
1271027007	**B1-W-19**	Solid	07/21/16 13:42	07/21/16 18:30
1271027008	**B1-W-20**	Solid	07/21/16 13:44	07/21/16 18:30
1271027009	**B1-W-21**	Solid	07/21/16 13:45	07/21/16 18:30
1271027010	**B1-W-22**	Solid	07/21/16 13:47	07/21/16 18:30

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SAMPLE ANALYTE COUNT

Project: City Ventures Oakland 2
Pace Project No.: 1271027

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1271027001	**B1-W-13**	EPA 6010B	JLL	1	PASI-DAV
1271027002	**B1-W-14**	EPA 6010B	JLL	1	PASI-DAV
1271027003	**B1-W-15**	EPA 6010B	JLL	1	PASI-DAV
1271027004	**B1-W-16**	EPA 6010B	JLL	1	PASI-DAV
1271027005	**B1-W-17**	EPA 6010B	JLL	1	PASI-DAV
1271027006	**B1-W-18**	EPA 6010B	JLL	1	PASI-DAV
1271027007	**B1-W-19**	EPA 6010B	JLL	1	PASI-DAV
1271027008	**B1-W-20**	EPA 6010B	JLL	1	PASI-DAV
1271027009	**B1-W-21**	EPA 6010B	JLL	1	PASI-DAV
1271027010	**B1-W-22**	EPA 6010B	JLL	1	PASI-DAV

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SUMMARY OF DETECTION

Project: City Ventures Oakland 2
Pace Project No.: 1271027

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
1271027001	**B1-W-13**					
EPA 6010B	Lead	173	mg/kg	0.46	07/25/16 11:48	
1271027002	**B1-W-14**					
EPA 6010B	Lead	21.3	mg/kg	0.49	07/25/16 11:51	
1271027003	**B1-W-15**					
EPA 6010B	Lead	9.4	mg/kg	0.49	07/25/16 12:01	
1271027004	**B1-W-16**					
EPA 6010B	Lead	10.4	mg/kg	0.50	07/25/16 12:05	
1271027005	**B1-W-17**					
EPA 6010B	Lead	1260	mg/kg	0.49	07/25/16 12:08	
1271027006	**B1-W-18**					
EPA 6010B	Lead	29.0	mg/kg	0.46	07/25/16 12:13	
1271027007	**B1-W-19**					
EPA 6010B	Lead	57.0	mg/kg	0.49	07/25/16 12:16	
1271027008	**B1-W-20**					
EPA 6010B	Lead	5.7	mg/kg	0.47	07/25/16 12:20	
1271027009	**B1-W-21**					
EPA 6010B	Lead	5.3	mg/kg	0.46	07/25/16 12:23	
1271027010	**B1-W-22**					
EPA 6010B	Lead	16.9	mg/kg	0.50	07/25/16 12:27	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: City Ventures Oakland 2
Pace Project No.: 1271027

Sample: B1-W-13 **Lab ID: 1271027001** Collected: 07/21/16 13:36 Received: 07/21/16 18:30 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**173**	mg/kg	0.46	1	07/22/16 08:29	07/25/16 11:48	7439-92-1	

Sample: B1-W-14 **Lab ID: 1271027002** Collected: 07/21/16 13:33 Received: 07/21/16 18:30 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**21.3**	mg/kg	0.49	1	07/22/16 08:29	07/25/16 11:51	7439-92-1	

Sample: B1-W-15 **Lab ID: 1271027003** Collected: 07/21/16 13:35 Received: 07/21/16 18:30 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**9.4**	mg/kg	0.49	1	07/22/16 08:29	07/25/16 12:01	7439-92-1	

Sample: B1-W-16 **Lab ID: 1271027004** Collected: 07/21/16 13:38 Received: 07/21/16 18:30 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**10.4**	mg/kg	0.50	1	07/22/16 08:29	07/25/16 12:05	7439-92-1	

Sample: B1-W-17 **Lab ID: 1271027005** Collected: 07/21/16 13:39 Received: 07/21/16 18:30 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**1260**	mg/kg	0.49	1	07/22/16 08:29	07/25/16 12:08	7439-92-1	

Sample: B1-W-18 **Lab ID: 1271027006** Collected: 07/21/16 13:40 Received: 07/21/16 18:30 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**29.0**	mg/kg	0.46	1	07/22/16 08:29	07/25/16 12:13	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: City Ventures Oakland 2
Pace Project No.: 1271027

Sample: B1-W-19 **Lab ID: 1271027007** Collected: 07/21/16 13:42 Received: 07/21/16 18:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**57.0**	mg/kg	0.49	1	07/22/16 08:29	07/25/16 12:16	7439-92-1	

Sample: B1-W-20 **Lab ID: 1271027008** Collected: 07/21/16 13:44 Received: 07/21/16 18:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**5.7**	mg/kg	0.47	1	07/22/16 08:29	07/25/16 12:20	7439-92-1	

Sample: B1-W-21 **Lab ID: 1271027009** Collected: 07/21/16 13:45 Received: 07/21/16 18:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**5.3**	mg/kg	0.46	1	07/22/16 08:29	07/25/16 12:23	7439-92-1	

Sample: B1-W-22 **Lab ID: 1271027010** Collected: 07/21/16 13:47 Received: 07/21/16 18:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**16.9**	mg/kg	0.50	1	07/22/16 08:29	07/25/16 12:27	7439-92-1	

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QUALITY CONTROL DATA

Project: City Ventures Oakland 2
Pace Project No.: 1271027

QC Batch: 88643 Analysis Method: EPA 6010B
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 1271027001, 1271027002, 1271027003, 1271027004, 1271027005, 1271027006, 1271027007, 1271027008, 1271027009, 1271027010

METHOD BLANK: 348187 Matrix: Solid
Associated Lab Samples: 1271027001, 1271027002, 1271027003, 1271027004, 1271027005, 1271027006, 1271027007, 1271027008, 1271027009, 1271027010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	mg/kg	ND	0.47	07/25/16 10:53	

LABORATORY CONTROL SAMPLE: 348188

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	mg/kg	49.5	51.6	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 348189 348190

Parameter	Units	1271026029 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	mg/kg	7.2	48.1	45.9	49.2	46.4	87	85	75-125	6	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: City Ventures Oakland 2
Pace Project No.: 1271027

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DAV Pace Analytical Services - Davis

WORKORDER QUALIFIERS

WO: 1271027

[1] Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice, indicating the cool down process had begun.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: City Ventures Oakland 2
Pace Project No.: 1271027

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1271027001	**B1-W-13**	EPA 3050	88643	EPA 6010B	88780
1271027002	**B1-W-14**	EPA 3050	88643	EPA 6010B	88780
1271027003	**B1-W-15**	EPA 3050	88643	EPA 6010B	88780
1271027004	**B1-W-16**	EPA 3050	88643	EPA 6010B	88780
1271027005	**B1-W-17**	EPA 3050	88643	EPA 6010B	88780
1271027006	**B1-W-18**	EPA 3050	88643	EPA 6010B	88780
1271027007	**B1-W-19**	EPA 3050	88643	EPA 6010B	88780
1271027008	**B1-W-20**	EPA 3050	88643	EPA 6010B	88780
1271027009	**B1-W-21**	EPA 3050	88643	EPA 6010B	88780
1271027010	**B1-W-22**	EPA 3050	88643	EPA 6010B	88780

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A — Required Client Information:

Company:	STANTEC
Address:	3875 ATHERTON ROAD ROCKLIN, CA 95765
Email To:	DAN.SCHREINER@STANTEC.COM
Phone: (916) 472-3915	Fax:
Requested Due Date/TAT:	24 HR

Section B — Required Project Information:

Report To:	DAN SCHREINER
Copy To:	SEAN.COYLE@STANTEC.COM
Purchase Order No.:	
Project Name:	CITY VENTURES OAKLAND 2
Project Number:	185703027

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: CA — OAKLAND — COUNTY: ALAMEDA

Section D — Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Analysis Test: LEAD	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	B1-W-13	SL	G	7/21/16	1336		1	X									X		1271027 001
	B1-W-14	SL	G		1333		1	X									X		002
	B1-W-15	SL	G		1335		1	X									X		003
	B1-W-16	SL	G		1338		1	X									X		004
	B1-W-17	SL	G		1339		1	X									X		005
	B1-W-18	SL	G		1340		1	X									X		006
	B1-W-19	SL	G		1342		1	X									X		007
	B1-W-20	SL	G		1344		1	X									X		008
	B1-W-21	SL	G		1345		1	X									X		009
	B1-W-22	SL	G		1347		1	X									X		010

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SAME LEAD SAMPLING METHOD AS WITH PREVIOUS SAMPLES	RICHIE WINN / STANTEC	7/21/16	1830	PACE	072216	1830	24.2	N	N	Y

Electronic Data Deliverable (EDD): ☐ EQuIS (format) ☐ Excel

State Specific: ☐ CA EDF (Global ID: _____) ☐ WA EIM ☐ CA WriteOn (Site: _____) ☐ Other _____

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: RICHIE WINN

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 07/21/16

2240 Filbert Oakland ST

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: F-DAV-C-002-rev.02	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Stantec

Project #: WO# : 1271027

1271027

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ OnTrac ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

Thermom. Used: ☑ DA1434 ☐ DA2285 **Type of Ice:** ☐ Wet ☐ Blue ☐ Dry Ice ☑ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 23.2 **Cooler Temp Corrected(°C):** 24.2 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +1.0 **Date and Initials of Person Examining Contents:** EM 072116

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☑ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Dan Schremmer Date/Time:

Comments/Resolution: Compress load only, no Arsenic this project.

Project Manager Review: Scott Fulton **Date:** 7/22/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO#: 1271027
PM: LAH Due Date: 07/25/16
CLIENT: 19StantecRC1

Pace Analytical	Document Name: Soil Checklist	
	Document No.: F-DAV-C-028-Rev.01	Pace Davis Quality Office

SOIL CHECKLIST

To Be Completed by SR Staff:

Client: Stantec Date: 072116 Initials: Ey

Are any samples from a depth of ≤ 6 ft?	☐ Yes ☐ No ☑ Not indicated	
Is sub any analysis requested?	☐ Yes ☑ No (If No to both questions, proceed with receipt, samples are not regulated.)	
Sample Origin (circle one):	FOREIGN	DOMESTIC
(Note: soil samples from Hawaii and Puerto Rico are considered to be of a Foreign Source)		
If Foreign, list County of Origin:		
If Domestic, circle State of Origin:	AL AR AZ (CA) FL GA ID LA MS NC NM NY OK OR SC TN TX VA ☐ NONE OF THE ABOVE (If None of the Above, proceed with receipt, samples are not regulated.)	
If from a circled state above, County of Origin	*If unknown, contact PM. Project cannot be received until this is determined.* Alameda	
Is sample from a Regulated or Quarantined Zone?	☑ Yes ☐ No (If No, proceed with receipt, samples are not regulated.)	

REQUIREMENT	ACTION	COMPLETED
Samples from a depth of > 6 feet are not regulated under APHIS / USDA guidelines	Were samples segregated by depth ≤ or > 6 feet? (If samples from > 6 feet were in direct contact with soil from ≤ 6 ft, all soils must be treated as regulated.)	YES NO (N/A)
	Samples from a depth of >6 feet are exempt from classification as regulated soil per California APHIS /USDA guidelines. For sub analyses, the receiving lab must confirm that the >6 feet exemption is allowable. Otherwise, treat the sub samples as regulated soil regardless of sample depth.	
Samples must be double contained to prevent accidental release.	Were there any signs of breakage or leakage (check for broken glass and/or loose soil in the cooler)?	YES (NO)
	If NO, ice and melt water can be disposed of by normal process (down the drain).	
	If **YES**, were ice and melt water separated from the cooler and disposed of properly?	YES NO (N/A)
	Any broken glass and/or loose soil are to be bagged and placed in a USDA Regulated satellite container or active drum (see Waste Coordinator). Ice and melt water must be containerized and sterilized by adding enough bleach to achieve a 10% concentration and allowed to sit for ≥ 30 minutes before disposing.	
Samples must be segregated and stored in designated bins, shelves and coolers.	Were samples placed in a designated cooler, containers and shelves?	(YES) NO
Yellow stickers are to be placed on all regulated samples.	Did yellow stickers get placed on all sample containers?	(YES) NO
Equipment and supplies that have come into contact samples must be decontaminated.	Was the cooler(s) and/or countertop(s) decontaminated using a fresh 10% bleach solution? *(Gloves and other lab supplies will be bagged and placed in the SR USDA Regulated satellite container).*	(YES) NO

To Be Completed by PM/PC for Regulated Soils:

Sample Analysis to be conducted at (circle all that apply): Davis Subcontract Lab

Name of Subcontract Lab(s): _____

REQUIREMENT	ACTION	COMPLETED
USDA / APHIS rep must be informed by email prior to shipping untreated soil to any subcontract lab, including IR Pace Labs.	Anthony Jackson, USDA APHIS PPQ Tel.: (916) 930-5536 Email: Anthony.S.Jackson@aphis.usda.gov	YES NO N/A
Shipment must include a valid copy of the receiving lab's permit along with all required forms.	Is a copy of all needed paperwork included with the COC? Do NOT ship samples until all necessary paperwork is compiled.	YES NO N/A

Comments: _____

Project Manager Signature: Scott Forbes Date: 7/22/16

Pace Analytical Services, Inc.
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

August 16, 2016

Dan Schreiner
Stantec Consulting Services
1340 Treat Blvd
Walnut Creek, CA 945972101

RE: Project: City Ventures Oakland 2
Pace Project No.: 1272703

Dear Dan Schreiner:
Enclosed are the analytical results for sample(s) received by the laboratory on August 15, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

LeeAnn Heathcote
leeann.heathcote@pacelabs.com
Project Manager

Enclosures

cc: Todd Brown, Stantec
Data Dept for EDDs, Stantec

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CERTIFICATIONS

Project: City Ventures Oakland 2
Pace Project No.: 1272703

Davis Cerification IDs

2795 Second Street Suite 300 Davis, CA 95618
North Dakota Certification #: R-214
Oregon Certification #: CA300002
Washington Certification #: C926-15a
California Certification #: 08263CA
Minnesota Department of Health Certification #: 006-999-465

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SAMPLE SUMMARY

Project: City Ventures Oakland 2
Pace Project No.: 1272703

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1272703001	**B1-W-23**	Solid	08/15/16 11:31	08/15/16 15:00
1272703002	**B1-W-24**	Solid	08/15/16 11:33	08/15/16 15:00
1272703003	**B1-W-25**	Solid	08/15/16 11:36	08/15/16 15:00
1272703004	**B1-W-26**	Solid	08/15/16 11:38	08/15/16 15:00
1272703005	**B1-W-27**	Solid	08/15/16 11:41	08/15/16 15:00
1272703006	**B1-W-28**	Solid	08/15/16 11:44	08/15/16 15:00

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SAMPLE ANALYTE COUNT

Project: City Ventures Oakland 2
Pace Project No.: 1272703

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1272703001	**B1-W-23**	EPA 6010B	JLL	1	PASI-DAV
1272703002	**B1-W-24**	EPA 6010B	JLL	1	PASI-DAV
1272703003	**B1-W-25**	EPA 6010B	JLL	1	PASI-DAV
1272703004	**B1-W-26**	EPA 6010B	JLL	1	PASI-DAV
1272703005	**B1-W-27**	EPA 6010B	JLL	1	PASI-DAV
1272703006	**B1-W-28**	EPA 6010B	JLL	1	PASI-DAV

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SUMMARY OF DETECTION

Project: City Ventures Oakland 2
Pace Project No.: 1272703

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
1272703001	**B1-W-23**					
EPA 6010B	Lead	34.2	mg/kg	0.45	08/16/16 13:16	
1272703002	**B1-W-24**					
EPA 6010B	Lead	21.0	mg/kg	0.50	08/16/16 13:20	
1272703003	**B1-W-25**					
EPA 6010B	Lead	11.3	mg/kg	0.46	08/16/16 13:23	
1272703004	**B1-W-26**					
EPA 6010B	Lead	5.1	mg/kg	0.50	08/16/16 13:26	
1272703005	**B1-W-27**					
EPA 6010B	Lead	5.4	mg/kg	0.50	08/16/16 13:30	
1272703006	**B1-W-28**					
EPA 6010B	Lead	4.7	mg/kg	0.50	08/16/16 13:40	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: City Ventures Oakland 2
Pace Project No.: 1272703

Sample: B1-W-23 **Lab ID: 1272703001** Collected: 08/15/16 11:31 Received: 08/15/16 15:00 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**34.2**	mg/kg	0.45	1	08/16/16 07:09	08/16/16 13:16	7439-92-1	

Sample: B1-W-24 **Lab ID: 1272703002** Collected: 08/15/16 11:33 Received: 08/15/16 15:00 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**21.0**	mg/kg	0.50	1	08/16/16 07:09	08/16/16 13:20	7439-92-1	

Sample: B1-W-25 **Lab ID: 1272703003** Collected: 08/15/16 11:36 Received: 08/15/16 15:00 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**11.3**	mg/kg	0.46	1	08/16/16 07:09	08/16/16 13:23	7439-92-1	

Sample: B1-W-26 **Lab ID: 1272703004** Collected: 08/15/16 11:38 Received: 08/15/16 15:00 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**5.1**	mg/kg	0.50	1	08/16/16 07:09	08/16/16 13:26	7439-92-1	

Sample: B1-W-27 **Lab ID: 1272703005** Collected: 08/15/16 11:41 Received: 08/15/16 15:00 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**5.4**	mg/kg	0.50	1	08/16/16 07:09	08/16/16 13:30	7439-92-1	

Sample: B1-W-28 **Lab ID: 1272703006** Collected: 08/15/16 11:44 Received: 08/15/16 15:00 Matrix: Solid
Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B		Preparation Method: EPA 3050					
Lead	**4.7**	mg/kg	0.50	1	08/16/16 07:09	08/16/16 13:40	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: City Ventures Oakland 2
Pace Project No.: 1272703

QC Batch: 91118 Analysis Method: EPA 6010B
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 1272703001, 1272703002, 1272703003, 1272703004, 1272703005, 1272703006

METHOD BLANK: 358381 Matrix: Solid
Associated Lab Samples: 1272703001, 1272703002, 1272703003, 1272703004, 1272703005, 1272703006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	mg/kg	ND	0.50	08/16/16 12:46	

LABORATORY CONTROL SAMPLE: 358382

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	mg/kg	48.1	52.4	109	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 358383 358384

Parameter	Units	1272478002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	mg/kg	50.6	50	50	96.2	92.8	91	85	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: City Ventures Oakland 2
Pace Project No.: 1272703

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DAV Pace Analytical Services - Davis

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: City Ventures Oakland 2
Pace Project No.: 1272703

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1272703001	**B1-W-23**	EPA 3050	91118	EPA 6010B	91247
1272703002	**B1-W-24**	EPA 3050	91118	EPA 6010B	91247
1272703003	**B1-W-25**	EPA 3050	91118	EPA 6010B	91247
1272703004	**B1-W-26**	EPA 3050	91118	EPA 6010B	91247
1272703005	**B1-W-27**	EPA 3050	91118	EPA 6010B	91247
1272703006	**B1-W-28**	EPA 3050	91118	EPA 6010B	91247

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A — Required Client Information:

Company: STANTEC
Address: 3875 ATHERTON RD ROCKLIN, CA 95765
Email To: DAN.SCHREINER@STANTEC.COM
Phone: (916) 472-3915 Fax:
Requested Due Date/TAT: RUSH - 24 HOUR

Section B — Required Project Information:

Report To: DAN.SCHREINER@STANTEC.COM
Copy To: SEAN.COYLE@STANTEC.COM
Purchase Order No.:
Project Name: CITY VENTURES OAKLAND 2
Project Number: [redacted] 185703027

Section C — Invoice Information:

Attention: DAN SCHREINER
Company Name: STANTEC
Address: 3875 ATHERTON RD, ROCKLIN, CA 95765
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: COUNTY:

Section D — Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Lead (Pb) at 6010	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	B1-W-23	SL	G	8/15/16	1131		1	X								X	X		001
	B1-W-24	SL	G	8/15/16	1133		1	X								X	X		002
	B1-W-25	SL	G	8/15/16	1136		1	X								X	X		003
	B1-W-26	SL	G	8/15/16	1138		1	X								X	X		004
	B1-W-27	SL	G	8/15/16	1141		1	X								X	X		005
	B1-W-28	SL	G	8/16/16	1144		1	X								X	X		006

1272703

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	RICHIE WINN / STANTEC	8/15/16	1500	Lee Leathers PACE	8/15/16	1500	25.8	N	N	Y

Electronic Data Deliverable (EDD): ☐ EQuIS (format) ☐ Excel

State Specific: ☐ CA EDF (Global ID: _____) ☐ WA EIM ☐ CA WriteOn (Site: _____) ☐ Other _____

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: RICHIE WINN

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YY): 08/15/16

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: F-DAV-C-002-rev.02	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt **Client Name:** STANTEC **Project #:** WO# : 1272703

1272703

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client
☐ Commercial ☐ Pace ☐ OnTrac ☐ Other:
Tracking Number: N/A

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No Seals Intact? ☐ Yes ☑ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: Temp Blank? ☐ Yes ☑ No

Thermom. Used: ☑ DA1434 ☐ DA2285 Type of Ice: ☐ Wet ☐ Blue ☐ Dry Ice ☑ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 25.8 Cooler Temp Corrected(°C): 30.8 Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A
Temp should be above freezing to 6°C Correction Factor: +5.0 Date and Initials of Person Examining Contents: 08/15/16 DSL

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☑ Yes	☐ No	☐ N/A	6.
Rush Turn Around Time Requested?	☑ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☑ No	☐ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☑ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:
Comments/Resolution:

Project Manager Review: [signature] **Date:** 8/16/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

1272703

Pace Analytical	Document Name: **Soil Checklist**	Document Revised: 28Jun2016 Page 1 of 1
	Document No.: **F-DAV-C-028-Rev.01**	Issuing Authority: Pace Davis Quality Office

SOIL CHECKLIST

To Be Completed by SR Staff:
Client: STANTEC Date: 08/15/16 Initials:

Are any samples from a depth of ≤ 6 ft?	☐ Yes ☐ No ☒ Not indicated
Is sub any analysis requested?	☐ Yes ☒ No (If No to both questions, proceed with receipt, samples are not regulated.)
Sample Origin (circle one):	FOREIGN / DOMESTIC
(Note: soil samples from Hawaii and Puerto Rico are considered to be of a Foreign Source)	
If Foreign, list County of Origin:	
If Domestic, circle State of Origin:	AL AR AZ CA FL GA ID LA MS NC NM NY OK OR SC TN TX VA ☐ NONE OF THE ABOVE (If None of the Above, proceed with receipt, samples are not regulated.)
If from a circled state above, County of Origin	*If unknown, contact PM. Project cannot be received until this is determined.* Alameda
Is sample from a Regulated or Quarantined Zone?	☒ Yes ☐ No (If No, proceed with receipt, samples are not regulated.)

REQUIREMENT	ACTION	COMPLETED
Samples from a depth of > 6 feet are not regulated under APHIS / USDA guidelines	Were samples segregated by depth ≤ or > 6 feet? (If samples from > 6 feet were in direct contact with soil from ≤ 6 ft, all soils must be treated as regulated.)	YES NO N/A
	Samples from a depth of >6 feet are exempt from classification as regulated soil per California APHIS /USDA guidelines. For sub analyses, the receiving lab must confirm that the >6 feet exemption is allowable. Otherwise, treat the sub samples as regulated soil regardless of sample depth.	
Samples must be double contained to prevent accidental release.	Were there any signs of breakage or leakage (check for broken glass and/or loose soil in the cooler)?	YES NO
	If NO, ice and melt water can be disposed of by normal process (down the drain).	
	If **YES**, were ice and melt water separated from the cooler and disposed of properly?	YES NO N/A
	Any broken glass and/or loose soil are to be bagged and placed in a USDA Regulated satellite container or active drum (see Waste Coordinator). Ice and melt water must be containerized and sterilized by adding enough bleach to achieve a 10% concentration and allowed to sit for ≥ 30 minutes before disposing.	
Samples must be segregated and stored in designated bins, shelves and coolers.	Were samples placed in a designated cooler, containers and shelves?	YES NO
Yellow stickers are to be placed on all regulated samples.	Did yellow stickers get placed on all sample containers?	YES NO
Equipment and supplies that have come into contact samples must be decontaminated.	Was the cooler(s) and/or countertop(s) decontaminated using a fresh 10% bleach solution? *(Gloves and other lab supplies will be bagged and placed in the SR USDA Regulated satellite container).*	YES NO

To Be Completed by PM/PC for Regulated Soils:
Sample Analysis to be conducted at (circle all that apply): Davis Subcontract Lab
Name of Subcontract Lab(s):

REQUIREMENT	ACTION	COMPLETED
USDA / APHIS rep must be informed by email prior to shipping untreated soil to any subcontract lab, including IR Pace Labs.	Anthony Jackson, USDA APHIS PPQ Tel.: (916) 930-5536 Email: Anthony.S.Jackson@aphis.usda.gov	YES NO N/A
Shipment must include a valid copy of the receiving lab's permit along with all required forms.	Is a copy of all needed paperwork included with the COC? Do NOT ship samples until all necessary paperwork is compiled.	YES NO N/A

Comments:

Project Manager Signature: [signature] Date: 8/16/16

APPENDIX C
Waste Manifests

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) UP83759 4N4769 Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CAC002882681	1	800-375-5130	015036099 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
111 Spear Street
San Francisco, CA 94105 415-450-0293
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name
G & H Transport

U.S. EPA ID Number
CAD 000 259 382

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:

U.S. EPA ID Number
CAT080016617

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	DT	1T	Y	611
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
Waste Profile # CAT 611539
Non-RCRA Soil
Account # for ER phone # is BR31029

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Andrew Wainer
Signature:
Month: 11 Day: 14 Year: 16

INTL

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Daniel Gomez
Signature:
Month: 11 Day: 14 Year: 16

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Gigi A Tuso
Signature:
Month: 11 Day: 14 Year: 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CAC002882681	1	888-375-5336	015036100 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
444 Spear Street
San Francisco, CA 94105 415-450-0299
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name
G & H Transport

U.S. EPA ID Number
CHL000259382

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:

U.S. EPA ID Number
CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. RQ UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	DT	12	Y	811
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611559
Non-RCRA Soil
Account # for ER phone # is BR31029
WP 16-15-5
PO 4564

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Kevin Wire
Signature:
Month: 11 Day: 14 Year: 16

INTL

16. International Shipments ☐ Import to U.S. ☑ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Daniel Jr Gomez
Signature:
Month: 11 Day: 14 Year: 16

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Greg Adams
Signature:
Month: 11 Day: 14 Year: 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CAC002882681
2. Page 1 of 1 [illegible]
3. Emergency Response Phone: [illegible] 575-5330
4. Manifest Tracking Number: 015036095 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
444 Spear Street
San Francisco, CA 94105 415-450-0293
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name: Intoxication Trans #1
U.S. EPA ID Number: CAL000415990

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	DT	18	T	611
	2.					
	3.					
	4. Truck WP93028 4PB8562					

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611339
Non-RCRA Soil
Account # for ER phone # is BR31029

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Andrew Warren
Signature:
Month 11 Day 14 Year 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Robert C Mitchell
Signature:
Month 11 Day 14 Year 16

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Gino Adan
Signature:
Month 11 Day 14 Year 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number CAC002882681	2. Page 1 of 1	3. Emergency Response Phone 888-375-5336	4. Manifest Tracking Number 015036098 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
111 Spear Street
San Francisco, CA 94105 415-450-0293
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name: Installation Trans — U.S. EPA ID Number: CAL000415990

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	D T	19	Y	611
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611539
Non-RCRA Soil
Account # for ER phone # is BR31029

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Andrew Weine — Signature — Month 11 Day 14 Year 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Carl Powell — Signature: Carl Powell — Month 11 Day 14 Year 16
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Gil Hall — Signature — Month 11 Day 14 Year 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CAC002882681
2. Page 1 of 1
3. Emergency Response Phone: 888-375-5366
4. Manifest Tracking Number: 015036094 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
111 Spear Street
San Francisco, CA 94105 415-450-0293
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name: Interstate Iron, Inc
U.S. EPA ID Number: CAD009115590

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. RQ UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	D T	18	T	611
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611539
Non-RCRA Soil
Account # for ER phone # is ER31029

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Andrew Warren
Signature:
Month: 11 Day: 14 Year: 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Jonah Dow
Signature:
Month: 11 Day: Year:
Transporter 2 Printed/Typed Name
Signature
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H132 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Chris Arellano
Signature:
Month: 11 Day: 14 Year: 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CAC002682581	1	800-375-5336	015036096 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
111 Spear Street
San Francisco, CA 94105 415-450-0293
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name: Interstate Tanks Inc
U.S. EPA ID Number: CAL000415990

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
RQ	1. UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	DT	1?	Y	611		
	2. WP48714 TRL							
	3. 4MT8570 TRL CRL026							
	4.							

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611539
Non-RCRA Soil
Account # for ER phone # is BR31029

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Arvin Wynn
Signature
Month 11 Day 14 Year 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Wilson Vargas
Signature
Month 11 Day 14 Year 16

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Guy A. Cass
Signature
Month 11 Day 14 Year 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CAC002882691
2. Page 1 of 1
3. Emergency Response Phone: 888-345-5336
4. Manifest Tracking Number: 015036097 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
111 Sutter Street
San Francisco, CA 94106 415-450-0295
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name: INFAtuation TRANS
U.S. EPA ID Number: CAL000115990

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	DT	18	Y	611
	2. WP73737 / 8226 IA					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611539
Non-RCRA Soil
Account # for ER phone # is BR31029

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: [illegible] Wong
Signature:
Month 11 Day 14 Year 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Chris Lugo
Signature: Chris Lugo
Month 11 Day 14 Year 16

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Gino A[illegible]
Signature:
Month 11 Day 14 Year 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CAC002882691
2. Page 1 of 1
3. Emergency Response Phone: 800-375-5336
4. Manifest Tracking Number: 015036093 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
414 Spear Street
San Francisco, CA 94106 415-450-0293
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name: Interstate Trans #4
U.S. EPA ID Number: CAL000415990

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	D T	18	Y	611
	2.					
	3.					
	4. Trash WP23728	Trash 4P6902				

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611539
Non-RCRA Soil
Account # for ER phone # is BR31029

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Andrew Wong
Signature:
Month: 11 Day: 15 Year: 2016

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Robert Mitchell
Signature:
Month: 11 Day: 15 Year: 16

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Chris Adams
Signature:
Month: 11 Day: 15 Year: 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CAC002882081
2. Page 1 of: [illegible]
3. Emergency Response Phone: 888-275-5336
4. Manifest Tracking Number: 015036090 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
444 Spear Street
San Francisco, CA 94105 415-450-0293
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name: Infiniation Trans Inc #3
U.S. EPA ID Number: CALCCO415490

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UH3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	DT	18	Y	611
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611539
Non-RCRA Soil
Account # for ER phone # is BR31029
WP 73714
4m J8571

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Andrew Wang
Signature:
Month: 11 Day: 15 Year: 2016

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Danny Lilly
Signature:
Month: 11 Day: 15 Year: 16

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Greg Adams
Signature:
Month: 11 Day: 15 Year: 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. TRANSPORTER'S COP

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CACO02882021	1	888-375-5336	015036091 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
444 Spear Street
San Francisco, CA 94105 415-450-0293
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name
INFATUATION TRANS
U.S. EPA ID Number
CAL000155990

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:
U.S. EPA ID Number
CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	DT	18	Y	611
	2. WP73737 / 8226IH					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611539
Non-RCRA Soil
Account # for ER phone # is BR31029

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Kevin Wine
Signature:
Month: 11 Day: 15 Year: 2016

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Chris Lugo
Signature:
Month: 11 Day: 15 Year: 16

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Gino Collins
Signature:
Month: 11 Day: 15 Year: 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CAC002882681	1	888-375-5336	015036092 JJK

GENERATOR

5. Generator's Name and Mailing Address
City Ventures
111 Spear Street
San Francisco, CA 94105 415-450-0293
Generator's Phone:

Generator's Site Address (if different than mailing address)
2301 Market Street
San Francisco, CA 94607

6. Transporter 1 Company Name: Interstate Trans Inc
U.S. EPA ID Number: CAL000418990

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Kettleman Hills Landfill
35251 Old Skyline Road
Kettleman City, CA 93239 559-386-9711
Facility's Phone:
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UN3077, Environmentally Hazardous Substance, Solid, N.O.S. 9 PG III (Lead)	1	DT	18	Y	611
	2. WP 48714 TEL 1					
	3. 4MJ2570 TEL 2026					
	4.					

14. Special Handling Instructions and Additional Information
Waste Profile # CA 611539
Non-RCRA Soil
Account # for ER phone # is BR31029

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Evelyn Wong
Signature:
Month: 11 Day: 15 Year: 2016

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Martin Vargas
Signature:
Month: 11 Day: 15 Year: 16

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Mike Adams
Signature:
Month: 11 Day: 15 Year: 16

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

SITE

KELLER CANYON LANDFILL 925-232-2999
901 Bailey Road Pittsburg, CA

CUSTOMER

674789
BTI Environmental
402 Hartz Ave., Bldg C
Danville, CA 94526
Contract:42121619254
Generator:City Ventures

SITE	TICKET #	CELL
01	1096689	

WEIGHMASTER Manuel Z.

DATE/TIME IN	DATE/TIME OUT
11/14/16 10:30 am	11/14/16 10:30 am

VEHICLE	CONTAINER
ITI3	

REFERENCE 3487344

BILL OF LADING

SCALE IN GROSS WEIGHT 80,220 NET TONS 23.44 INBOUND
TARE OUT TARE WEIGHT 33,340 NET WEIGHT 46,880 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
20.00	YD	Tracking QTY				
23.44	tn	SW-BENEFICIAL REUSE Origin:OAKLAND 100%				

THINK CHOOSE SAFETY LIVE It's the Right Thing!

WEIGHMASTER CERTIFICATE - This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accurace, as prescribed by Chapter7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food & Agriculture.

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

SIGNATURE

NET AMOUNT
TENDERED
CHANGE
CHECK#

REPUBLIC SERVICES

NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

3487344

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

I. GENERATOR (Generator completes Ia-r)

a. Generator's US EPA ID Number	b. Manifest Document Number	c. Page 1 of
N/A	N/A	1

d. Generator's Name and Location:	e. Generator's Mailing Address:
City Ventures 2301 Market Street Oakland, CA 94607 f. Phone:	City Ventures 444 Spear Street San Francisco, CA 94106 415-450-0293 g. Phone:
If owner of the generating facility differs from the generator, provide: h. Owner's Name:	i. Owner's Phone No.:

j. Waste Profile #	k. Exp. Date	l. Waste Shipping Name and Description	m. Containers No.	m. Containers Type	n. Total Quantity	o. Unit Wt/Vol
42121619254	11.03.17	Non-Hazardous Soil	1	DT	18	Y

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

p. Generator Authorized Agent Name (Print)	q. Signature	r. Date
[illegible]	[signature]	

II. TRANSPORTER (Generator completes IIa-b and Transporter completes IIc-e)

a. Transporter's Name and Address: Infatuation Trans Inc 7509 Kimberly AV Bakersfield. CA 93308

b. Phone: 760 223-1290 WP737714

c. Driver Name (Print)	d. Signature	e. Date
Danny L. Ly	Danny Lilly	11-14-16

III. DESTINATION (Generator complete IIIa-c and Destination Site completes IIId-g)

a. Disposal Facility and Site Address:	c. US EPA Number	d. Discrepancy Indication Space:
Keller Canyon Landfill 901 Bailey Road Pittsburg, CA 94565 925-232-2999 b.		

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

e. Name of Authorized Agent (Print)	f. Signature	g. Date
Manuel Covarrubias	[signature]	11-14-16

IV. ASBESTOS (Generator completes IVa-f and Operator complete IVg-i)

a. Operator's Name and Address:	c. Responsible Agency Name and Address:
N/A b. Phone:	d. Phone:

e. Special Handling Instructions and Additional Information:

f. ☐ Friable ☒ Non-Friable ☐ Both % Friable % Non-Friable

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

g. Operator's Name and Title (Print)	h. Signature	i. Date

*Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation or both

SITE
KELLER CANYON LANDFILL 925-232-2999
901 Bailey Road Pittsburg, CA

CUSTOMER
674789
BTI Environmental
402 Hartz Ave., Bldg C
Danville, CA 94526
Contract:42121619254
Generator:City Ventures

SITE	TICKET #	CELL
01	1096730	

WEIGHMASTER Felipe C.

DATE/TIME IN	DATE/TIME OUT
11/14/16 12:40 pm	11/14/16 12:40 pm

VEHICLE	CONTAINER
ITI3	

REFERENCE 3487351

BILL OF LADING

SCALE IN GROSS WEIGHT 78,480 NET TONS 22.57
TARE OUT TARE WEIGHT 33,340 NET WEIGHT 45,140

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
20.00	YD	Tracking QTY				
22.57	tn	SW-BENEFICIAL REUSE Origin:OAKLAND 100%				

Think Choose SAFETY Live It's the Right Thing!

WEIGHMASTER CERTIFICATE - This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accurace, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food & Agriculture.

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

SIGNATURE

NET AMOUNT
TENDERED
CHANGE
CHECK#

REPUBLIC SERVICES

NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

3487351

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

I. GENERATOR (Generator completes Ia-r)

a. Generator's US EPA ID Number	b. Manifest Document Number	c. Page 1 of
N/A	N/A	1

d. Generator's Name and Location:	e. Generator's Mailing Address:
City Ventures 2301 Market Street Oakland, CA 94607 f. Phone:	City Ventures 444 Spear Street San Francisco, CA 94108 - 415-450-0293 g. Phone:
If owner of the generating facility differs from the generator, provide: h. Owner's Name:	i. Owner's Phone No.:

j. Waste Profile #	k. Exp. Date	l. Waste Shipping Name and Description	m. Containers No.	m. Containers Type	n. Total Quantity	o. Unit Wt/Vol
42121619254	11.03.17	Non-Hazardous Soil	1	DT	18	Y

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

p. Generator Authorized Agent Name (Print)	q. Signature	r. Date
Andrea Wann		

II. TRANSPORTER (Generator completes IIa-b and Transporter completes IIc-e)

a. Transporter's Name and Address: Infatuation Trans Inc 7509 Kimberly Av Bakersfield CA 93308 WP73714 #3 b. Phone: 760-223-1290		
Danny Willy	Danny Willy	11-14-16
c. Driver Name (Print)	d. Signature	e. Date

III. DESTINATION (Generator complete IIIa-c and Destination Site completes IIId-g)

a. Disposal Facility and Site Address: Keller Canyon Landfill 901 Bailey Road Pittsburg, CA 94565 925-232-2999 b.	c. US EPA Number	d. Discrepancy Indication Space:

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

e. Name of Authorized Agent (Print)	f. Signature	g. Date
PPhot Comer		11-14-16

IV. ASBESTOS (Generator completes IVa-f and Operator complete IVg-i)

a. Operator's Name and Address: N/A b. Phone:	c. Responsible Agency Name and Address: d. Phone:
e. Special Handling Instructions and Additional Information:	

f. ☐ Friable ☐ Non-Friable ☐ Both % Friable % Non-Friable

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

g. Operator's Name and Title (Print)	h. Signature	i. Date

*Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation or both

SITE

KELLER CANYON LANDFILL 925-232-2999
901 Bailey Road Pittsburg, CA

CUSTOMER

674789
BTI Environmental
402 Hartz Ave., Bldg C
Danville, CA 94526
Contract:42121619254
Generator:City Ventures

SITE	TICKET #	CELL
01	1096781	

WEIGHMASTER: Felipe C.

DATE/TIME IN	DATE/TIME OUT
11/14/16 2:49 pm	11/14/16 2:49 pm

VEHICLE	CONTAINER
ITI3	

REFERENCE: 3487350

BILL OF LADING:

SCALE IN GROSS WEIGHT 79,820 NET TONS 23.24
TARE OUT TARE WEIGHT 33,340 NET WEIGHT 46,480

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
20.00	YD	Tracking QTY				
23.24	tn	SW-BENEFICIAL REUSE Origin:OAKLAND 100%				

THINK SAFETY CHOOSE SAFETY LIVE It's the Right Thing!

WEIGHMASTER CERTIFICATE - This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accurace, as prescribed by Chapter7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food & Agriculture.

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

SIGNATURE

NET AMOUNT
TENDERED
CHANGE
CHECK#

REPUBLIC SERVICES

NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

3487350

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

I. GENERATOR (Generator completes Ia-r)

a. Generator's US EPA ID Number	b. Manifest Document Number	c. Page 1 of
N/A	N/A	1

d. Generator's Name and Location:	e. Generator's Mailing Address:
City Ventures 2301 Market Street Oakland, CA 94607 f. Phone:	City Ventures 444 Spear Street San Francisco, CA 94106 415-450-0293 g. Phone:
If owner of the generating facility differs from the generator, provide: h. Owner's Name:	i. Owner's Phone No.:

j. Waste Profile #	k. Exp. Date	l. Waste Shipping Name and Description	m. Containers No.	m. Containers Type	n. Total Quantity	o. Unit Wt/Vol
42121619254	11.03.17	Non-Hazardous Soil	1	DT	18	Y

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

p. Generator Authorized Agent Name (Print)	q. Signature	r. Date
Brian Wade		

II. TRANSPORTER (Generator completes IIa-b and Transporter completes IIc-e)

a. Transporter's Name and Address: Infatuation Trans Inc #3 7509 Kimberly Av Bakersfield CA 93308

b. Phone: 760 303 1290 WP73774

c. Driver Name (Print)	d. Signature	e. Date
Danny Lilly	Danny Lilly	11-14-16

III. DESTINATION (Generator complete IIIa-c and Destination Site completes IIId-g)

a. Disposal Facility and Site Address:	c. US EPA Number	d. Discrepancy Indication Space:
Keller Canyon Landfill 901 Bailey Road Pittsburg, CA 94565 925-232-2909 b.		

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

e. Name of Authorized Agent (Print)	f. Signature	g. Date
Arturo Cornejo		11-14-16

IV. ASBESTOS (Generator completes IVa-f and Operator complete IVg-i)

a. Operator's Name and Address:	c. Responsible Agency Name and Address:
N/A b. Phone:	d. Phone:

e. Special Handling Instructions and Additional Information:

f. ☐ Friable ☐ Non-Friable ☐ Both % Friable % Non-Friable

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

g. Operator's Name and Title (Print)	h. Signature	i. Date

*Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation or both

APPENDIX D
Master Sample Data Table

Master Data Table - TABLE 1A

Analytical Results for Soil Samples - Market Street Block

2240 Filbert Street, Oakland California

(all results in milligrams per kilogram [mg/kg])

Sample Location	Sample ID	Sample Date	Sample Depth	EPA METHOD 8015M	EPA METHOD 8020					EPA Method 6010B	Document where	Report/Field Point Uploaded to GT?
				TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	Lead	Data were Reported	Yes/No
B-1	B-1	2/8/2005	2.0	--	--	--	--	--	--	310	Gribi; 3/18/05	Yes/No
B-1	B-1	2/8/2005	13.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--	Gribi; 3/18/05	Yes/No
B-1	B-1	2/8/2005	21.5	ND<2.0	ND<0.02	ND<0.02	ND<0.02	ND<0.04	ND<0.08	--	Gribi; 3/18/05	Yes/No
B-2	B-2	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0	Gribi; 3/18/05	Yes/No
B-2	B-2	2/8/2005	12.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--	Gribi; 3/18/05	Yes/No
B-3	B-3	2/8/2005	4.0	--	--	--	--	--	--	3.6	Gribi; 3/18/05	Yes/No
B-3	B-3	2/8/2005	11.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--	Gribi; 3/18/05	Yes/No
B-3	B-3	2/8/2005	13.0	310	ND<0.02	0.13	0.16	2.4	0.096	--	Gribi; 3/18/05	Yes/No
B-4	B-4	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0	Gribi; 3/18/05	Yes/No
B-4	B-4	2/8/2005	12.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--	Gribi; 3/18/05	Yes/No
B-4	B-4	2/8/2005	13.0	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--	Gribi; 3/18/05	Yes/No
B-5	B-5	2/8/2005	4.0	--	--	--	--	--	--	ND<3.0	Gribi; 3/18/05	Yes/No
B-5	B-5	2/8/2005	11.5	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.010	ND<0.02	--	Gribi; 3/18/05	Yes/No
B-6	B-6	2/8/2005	2.0	--	--	--	--	--	--	3.2	Gribi; 3/18/05	Yes/No
B-7	B-7	2/8/2005	2.0	--	--	--	--	--	--	81	Gribi; 3/18/05	Yes/No
SB-5	SB-5, 1'	5/28/2014	1.0	--	--	--	--	--	--	94	Stantec ESS Rpt	Yes/Yes
SB-5	SB-5, 2.5	5/28/2014	2.5	--	--	--	--	--	--	9	Stantec ESS Rpt	Yes/Yes
SB-5	SB-5, 6'	5/28/2014	6.0	--	--	--	--	--	--	2.5	Stantec ESS Rpt	Yes/Yes
SB-5	SB-5, 9.5	5/28/2014	9.5	--	--	--	--	--	--	2.1	Stantec ESS Rpt	Yes/Yes
SB-6	SB-6, 0.5'	5/28/2014	0.5	--	--	--	--	--	--	4.3	Stantec ESS Rpt	Yes/Yes
SB-6	SB-6, 2.5	5/28/2014	2.5	--	--	--	--	--	--	5.1	Stantec ESS Rpt	Yes/Yes
SB-6	SB-6, 6'	5/28/2014	6.0	--	--	--	--	--	--	2.6	Stantec ESS Rpt	Yes/Yes
SB-6	SB-6, 9.5	5/28/2014	9.5	--	--	--	--	--	--	2.5	Stantec ESS Rpt	Yes/Yes
SB-7	SB-7, 1'	5/28/2014	1.0	--	--	--	--	--	--	4.4	Stantec ESS Rpt	Yes/Yes
SB-7	SB-7, 2.5	5/28/2014	2.5	--	--	--	--	--	--	8.8	Stantec ESS Rpt	Yes/Yes
SB-7	SB-7, 6'	5/28/2014	6.0	--	--	--	--	--	--	2	Stantec ESS Rpt	Yes/Yes
SB-7	SB-7, 9.5	5/28/2014	9.5	--	--	--	--	--	--	31	Stantec ESS Rpt	Yes/Yes
SB-8	SB-8, 1'	5/28/2014	1.0	--	--	--	--	--	--	14	Stantec ESS Rpt	Yes/Yes
SB-8	SB-8, 2.5	5/28/2014	2.5	--	--	--	--	--	--	16	Stantec ESS Rpt	Yes/Yes
SB-8	SB-8, 6'	5/28/2014	6.0	--	--	--	--	--	--	5.8	Stantec ESS Rpt	Yes/Yes
SB-8	SB-8, 9.5	5/28/2014	9.5	--	--	--	--	--	--	4.5	Stantec ESS Rpt	Yes/Yes
	B1-NW-W	06/03/16	0.0 - 2.0	--	--	--	--	--	--	1,100	Stantec ESS Rpt	Yes/Yes
	B1-NW-E	06/03/16	0.0 - 2.0	--	--	--	--	--	--	800	Stantec ESS Rpt	Yes/Yes
	B1-EW-N	06/03/16	0.0 - 2.0	--	--	--	--	--	--	1,400	Stantec ESS Rpt	Yes/Yes
	B1-EW-S	06/03/16	0.0 - 2.0	--	--	--	--	--	--	840	Stantec ESS Rpt	Yes/Yes
	B1-SW-E	06/03/16	0.0 - 2.0	--	--	--	--	--	--	380	Stantec ESS Rpt	Yes/Yes
	B1-SW-W	06/03/16	0.0 - 2.0	--	--	--	--	--	--	510	Stantec ESS Rpt	Yes/Yes

Master Data Table - TABLE 1A
Analytical Results for Soil Samples - Market Street Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample Location	Sample ID	Sample Date	Sample Depth	EPA METHOD 8015M	EPA METHOD 8020					EPA Method 6010B	Document where	Report/Field Point Uploaded to GT?
				TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	Lead	Data were Reported	Yes/No
	B1-WW-S	06/03/16	0.0 - 2.0	--	--	--	--	--	--	1,500	Stantec ESS Rpt	Yes/Yes
	B1-WW-N	06/03/16	0.0 - 2.0	--	--	--	--	--	--	1,200	Stantec ESS Rpt	Yes/Yes
	B1-EB-2'	06/03/16	2.0	--	--	--	--	--	--	1,700	Stantec ESS Rpt	Yes/Yes
	B1-N-1	06/16/16	1.5	--	--	--	--	--	--	1,600	Stantec ESS Rpt	Yes/Yes
	B1-N-2	06/16/16	1.5	--	--	--	--	--	--	--	Stantec ESS Rpt	Yes/Yes
	B1-N-3	06/16/16	1.5	--	--	--	--	--	--	--	Stantec ESS Rpt	Yes/Yes
	B1-N-4	06/16/16	1.5	--	--	--	--	--	--	--	Stantec ESS Rpt	Yes/Yes
	B-1-E-1	06/16/16	1.5	--	--	--	--	--	--	5.9	Stantec ESS Rpt	Yes/Yes
	B-1-E-2	06/16/16	1.5	--	--	--	--	--	--	6.1	Stantec ESS Rpt	Yes/Yes
	B-1-E-3	06/16/16	1.5	--	--	--	--	--	--	7.9	Stantec ESS Rpt	Yes/Yes
	B-1-E-4	06/16/16	1.5	--	--	--	--	--	--	11	Stantec ESS Rpt	Yes/Yes
	B-1-S-1	06/16/16	1.5	--	--	--	--	--	--	7.6	Stantec ESS Rpt	Yes/Yes
	B-1-S-2	06/16/16	1.5	--	--	--	--	--	--	120	Stantec ESS Rpt	Yes/Yes
	B-1-S-3	06/16/16	1.5	--	--	--	--	--	--	14	Stantec ESS Rpt	Yes/Yes
	B-1-S-4	06/16/16	1.5	--	--	--	--	--	--	7.2	Stantec ESS Rpt	Yes/Yes
	B-1-W-1	06/16/16	1.5	--	--	--	--	--	--	19	Stantec ESS Rpt	Yes/Yes
	B-1-W-2	06/16/16	1.5	--	--	--	--	--	--	630	Stantec ESS Rpt	Yes/Yes
	B-1-W-3	06/16/16	1.5	--	--	--	--	--	--	11	Stantec ESS Rpt	Yes/Yes
	B-1-W-4	06/16/16	1.5	--	--	--	--	--	--	6.1	Stantec ESS Rpt	Yes/Yes
	B-1-B-1	06/16/16	2.5	--	--	--	--	--	--	1,100	Stantec ESS Rpt	Yes/Yes
	B-1-B-2	06/16/16	2.5	--	--	--	--	--	--	6.8	Stantec ESS Rpt	Yes/Yes
	B-1-B-3	06/16/16	2.5	--	--	--	--	--	--	3.9	Stantec ESS Rpt	Yes/Yes
	B-1-B-4	06/16/16	2.5	--	--	--	--	--	--	7.3	Stantec ESS Rpt	Yes/Yes
	B-1-B-5	06/16/16	2.5	--	--	--	--	--	--	510	Stantec ESS Rpt	Yes/Yes
	B1-E-5	06/28/16	3.0	--	--	--	--	--	--	7.4	Stantec ESS Rpt	Yes/Yes
	B1-E-6	06/28/16	3.0	--	--	--	--	--	--	5.6	Stantec ESS Rpt	Yes/Yes
	B1-N-5	06/28/16	3.0	--	--	--	--	--	--	51.1	Stantec ESS Rpt	Yes/Yes
	B1-S-5	06/28/16	1.5	--	--	--	--	--	--	9.0	Stantec ESS Rpt	Yes/Yes
	B1-S-6	06/28/16	1.5	--	--	--	--	--	--	6.9	Stantec ESS Rpt	Yes/Yes
	B1-S-7	06/28/16	1.5	--	--	--	--	--	--	13.4	Stantec ESS Rpt	Yes/Yes
	B1-S-8	06/28/16	1.5	--	--	--	--	--	--	4.3	Stantec ESS Rpt	Yes/Yes
	B1-N-6	06/28/16	3.0	--	--	--	--	--	--	61.1	Stantec ESS Rpt	Yes/Yes
	B1-N-7	06/28/16	3.0	--	--	--	--	--	--	9.6	Stantec ESS Rpt	Yes/Yes
	B1-W-5	06/28/16	1.5	--	--	--	--	--	--	16.5	Stantec ESS Rpt	Yes/Yes
	B1-W-6	06/28/16	1.5	--	--	--	--	--	--	7.2	Stantec ESS Rpt	Yes/Yes
	B1-W-7	06/28/16	1.5	--	--	--	--	--	--	145	Stantec ESS Rpt	Yes/Yes
	B1-W-8	06/28/16	1.5	--	--	--	--	--	--	6.6	Stantec ESS Rpt	Yes/Yes

Master Data Table - TABLE 1A
Analytical Results for Soil Samples - Market Street Block
2240 Filbert Street, Oakland California
(all results in milligrams per kilogram [mg/kg])

Sample Location	Sample ID	Sample Date	Sample Depth	EPA METHOD 8015M	EPA METHOD 8020					EPA Method 6010B	Document where	Report/Field Point Uploaded to GT?
				TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	Lead	Data were Reported	Yes/No
	B1-W-9	07/08/16	1.5	--	--	--	--	--	--	221	Stantec ESS Rpt	Yes/Yes
	B1-W-10	07/08/16	1.5	--	--	--	--	--	--	136	Stantec ESS Rpt	Yes/Yes
	B1-W-11	07/08/16	1.5	--	--	--	--	--	--	960	Stantec ESS Rpt	Yes/Yes
	B1-W-12	07/08/16	2.5	--	--	--	--	--	--	63.9	Stantec ESS Rpt	Yes/Yes
	B1-W-13	07/21/16	1.5	--	--	--	--	--	--	173	Stantec ESS Rpt	Yes/Yes
	B1-W-14	07/21/16	1.5	--	--	--	--	--	--	21.3	Stantec ESS Rpt	Yes/Yes
	B1-W-15	07/21/16	1.5	--	--	--	--	--	--	9.4	Stantec ESS Rpt	Yes/Yes
	B1-W-16	07/21/16	1.5	--	--	--	--	--	--	10.4	Stantec ESS Rpt	Yes/Yes
	B1-W-17	07/21/16	1.5	--	--	--	--	--	--	1,260	Stantec ESS Rpt	Yes/Yes
	B1-W-18	07/21/16	1.5	--	--	--	--	--	--	29.0	Stantec ESS Rpt	Yes/Yes
	B1-W-19	07/21/16	1.5	--	--	--	--	--	--	57.0	Stantec ESS Rpt	Yes/Yes
	B1-W-20	07/21/16	2.5	--	--	--	--	--	--	5.7	Stantec ESS Rpt	Yes/Yes
	B1-W-21	07/21/16	2.5	--	--	--	--	--	--	5.3	Stantec ESS Rpt	Yes/Yes
	B1-W-22	07/21/16	2.5	--	--	--	--	--	--	16.9	Stantec ESS Rpt	Yes/Yes
	B1-W-23	08/15/16	1.5	--	--	--	--	--	--	34.2	Stantec ESS Rpt	Yes/Yes
	B1-W-24	08/15/16	1.5	--	--	--	--	--	--	21.0	Stantec ESS Rpt	Yes/Yes
	B1-W-25	08/15/16	1.5	--	--	--	--	--	--	11.3	Stantec ESS Rpt	Yes/Yes
	B1-W-26	08/15/16	2.5	--	--	--	--	--	--	5.1	Stantec ESS Rpt	Yes/Yes
	B1-W-27	08/15/16	1.5	--	--	--	--	--	--	5.4	Stantec ESS Rpt	Yes/Yes
	B1-W-28	08/15/16	2.5	--	--	--	--	--	--	4.7	Stantec ESS Rpt	Yes/Yes
	B7-NW-W	06/03/16	0.0 - 2.0	--	--	--	--	--	--	210	Stantec ESS Rpt	Yes/Yes
	B7-NW-E	06/03/16	0.0 - 2.0	--	--	--	--	--	--	25	Stantec ESS Rpt	Yes/Yes
	B7-EW-N	06/03/16	0.0 - 2.0	--	--	--	--	--	--	60	Stantec ESS Rpt	Yes/Yes
	B7-EW-S	06/03/16	0.0 - 2.0	--	--	--	--	--	--	6.3	Stantec ESS Rpt	Yes/Yes
	B7-SW-E	06/03/16	0.0 - 2.0	--	--	--	--	--	--	5.6	Stantec ESS Rpt	Yes/Yes
	B7-SW-W	06/03/16	0.0 - 2.0	--	--	--	--	--	--	5.8	Stantec ESS Rpt	Yes/Yes
	B7-WW-S	06/03/16	0.0 - 2.0	--	--	--	--	--	--	30	Stantec ESS Rpt	Yes/Yes
	B7-WW-N	06/03/16	0.0 - 2.0	--	--	--	--	--	--	490	Stantec ESS Rpt	Yes/Yes
	B7-EB-2'	06/03/16	2.0	--	--	--	--	--	--	23	Stantec ESS Rpt	Yes/Yes
	B7-N-1	06/16/16	1.0	--	--	--	--	--	--	4.5	Stantec ESS Rpt	Yes/Yes
	B7-N-2	06/16/16	1.0	--	--	--	--	--	--	4.1	Stantec ESS Rpt	Yes/Yes
	B7-E-1	06/16/16	1.0	--	--	--	--	--	--	15	Stantec ESS Rpt	Yes/Yes
	B7-W-1	06/16/16	1.0	--	--	--	--	--	--	4.5	Stantec ESS Rpt	Yes/Yes
	B7-W-2	06/16/16	1.0	--	--	--	--	--	--	4.8	Stantec ESS Rpt	Yes/Yes
	B7-S-1	06/16/16	1.0	--	--	--	--	--	--	4.5	Stantec ESS Rpt	Yes/Yes
	B7-B-1	06/16/16	2.0	--	--	--	--	--	--	3.7	Stantec ESS Rpt	Yes/Yes
	B7-B-2	06/16/16	2.0	--	--	--	--	--	--	5.1	Stantec ESS Rpt	Yes/Yes

Master Data Table - TABLE 1A

Analytical Results for Soil Samples - Market Street Block

2240 Filbert Street, Oakland California

(all results in milligrams per kilogram [mg/kg])

Sample Location	Sample ID	Sample Date	Sample Depth	EPA METHOD 8015M	EPA METHOD 8020					EPA Method 6010B	Document where	Report/Field Point Uploaded to GT?
				TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	Lead	Data were Reported	Yes/No
	B7-B-3	06/16/16	2.0	--	--	--	--	--	--	5.6	Stantec ESS Rpt	Yes/Yes
	B7-N-3	06/16/16	1.0	--	--	--	--	--	--	6.6	Stantec ESS Rpt	Yes/Yes
	B7-E-2	06/16/16	1.0	--	--	--	--	--	--	5.9	Stantec ESS Rpt	Yes/Yes
	B7-E-3	06/16/16	1.0	--	--	--	--	--	--	4.5	Stantec ESS Rpt	Yes/Yes
	B7-S-1	06/16/16	1.0	--	--	--	--	--	--	4.5	Stantec ESS Rpt	Yes/Yes
	B7-S-2	06/16/16	1.0	--	--	--	--	--	--	3.9	Stantec ESS Rpt	Yes/Yes
	B7-S-3	06/16/16	1.0	--	--	--	--	--	--	4.1	Stantec ESS Rpt	Yes/Yes
	B7-W-3	06/16/16	1.0	--	--	--	--	--	--	3.9	Stantec ESS Rpt	Yes/Yes
	B7-B-4	06/16/16	2.0	--	--	--	--	--	--	3.6	Stantec ESS Rpt	Yes/Yes
Screening Level				**750[(1)]**	**0.230**	**970**	**5.1**	**560**	**42.000**	**80**		

Notes:

RED FONT - Indicates that sample has been removed as part of 2016 excavation.

February 2004 data compiled from Table 1, "Report of Phase II Environmental Site Assessment", GRIBI Associates, March 18, 2005

ESL Screening Level - California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016)

(1) - ESL screening levels for shallow soil (<3 meters) and deep soil (>3 meters)

MTBE: methyl-tertiary-butyl ether

mg/kg - micrograms per kilogram

ft. bgs - feet below ground surface

-- not analyzed

ND - not detected above laboratory reporting limits listed

Benzene, toluene, ethylbenzene, total xylenes and MTBE by EPA Method 8020

GT - Geotracker

TPHg- total petroleum hydrocarbons as gasoline by EPA Method 8015M

Lead - total lead by EPA Method 6010B

Master Data Table - TABLE 1B
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland, California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	EPA METHOD 8020 Benzene	Toluene	Ethyl-Benzene	Total Xylenes	EPA METHOD 5030 TPHg	TPHms	Standard Method 5520E Oil & Grease	Standard Method 5520F NPH	EPA METHOD 8270 SVOCs	EPA METHOD 8240 VOCs	Comments	Document where Data were Reported	Report/Field Point Uploaded to GT?
B-5-9.5		9.5	20-Jul-94	--	--	--	--	--	--	37	<10	--	--		Levine-Fricke; 01/17/95	Yes/No
B-6-13.5	(2,5,9,20,21)	13.5	19-Jul-94	0.45	0.58	0.9	0.28	<200	--	140	120	--	--	*(20,21) Pb = ND; TPHd = 2 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
B-7-11		11	21-Jul-94	--	--	--	--	--	--	<10	<1	--	--		Levine-Fricke; 01/17/95	Yes/No
B-8-10	(3,5,22)	10	19-Jul-94	<0.01	0.066	0.2	0.21	<50	--	--	--	--	--	*(22) TPHd=ND; Pb=ND*	Levine-Fricke; 01/17/95	Yes/No
B-9-10	(23)	10	19-Jul-94	--	--	--	--	--	--	4400	4400	--	--	*(23) PCB = ND*	Levine-Fricke; 01/17/95	Yes/No
B-11-9.5	(1)	9.5	20-Jul-94	<0.1	0.52	1.1	1.7	170	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-14-9.5	(23)	9.5	19-Jul-94	--	--	--	--	--	--	630	610	--	--		Levine-Fricke; 01/17/95	Yes/No
B-16-9	(4,8,25)	9.0	21-Jul-94	<0.005	<0.005	0.2	0.17	--	--	--	--	--	(6)	*(6,25) Acetone=0.25 mg/kg; benzin = 2,500 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
B-17-9.5	(1,7,10,11,20,24)	9.5	22-Jul-94	<0.5	<0.5	<0.5	2.4	1000	--	--	--	--	ND	*(20,24) Pb = ND; TPHd = 1,300 mg/kg; TPHbenzin = <1,000 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
B-25-13	(20,26)	13	18-Jul-94	<0.005	<0.005	<0.005	<0.005	<0.2	--	--	--	--	--	*(20,26) Pb = ND; TPHd = ND*	Levine-Fricke; 01/17/95	Yes/No
B-26-12.5	(20)	12.5	18-Jul-94	<0.005	<0.005	<0.005	<0.005/<0.02	<0.2	--	--	--	--	--	*(20) Pb = ND*	Levine-Fricke; 01/17/95	Yes/No
B-28-4		4	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-28-5.5		5.5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND		Levine-Fricke; 01/17/95	Yes/No
B-28-10		10	18-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-29-6		6	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	(19)	ND	*(19) benzo(b)fluoranthene=0.33 mg/kg; fluoranthene=0.75 mg/kg; pyrene=0.41 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
B-29-10		10	18-Nov-94	<0.005	<0.005	1.6	<0.005	370	120	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-30-3		3	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-30-5		5	18-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	ND	ND		Levine-Fricke; 01/17/95	Yes/No
B-30-10		10	18-Nov-94	<0.30	<0.30	<0.30	<0.30	<1	<1	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-31-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	40	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-31-10		10	11-Nov-94	0.72	0.79	1.5	0.74	330	10	40	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-31-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-31-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	--		Levine-Fricke; 01/17/95	Yes/No
B-32-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	53	46	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-32-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.3	<1	<30	<30	ND	ND		Levine-Fricke; 01/17/95	Yes/No
B-32-9.5		9.5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	<1	<30	<30	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-33-1		1	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(12)	*(12) methylene chloride = 0.006 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
B-33-10		10	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-33-2		2	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	(13)	*(13) methylene chloride = 0.007 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
B-33-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<10	<10	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-34-1		1	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	70	40	--	--		Levine-Fricke; 01/17/95	Yes/No
B-34-2		2	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-34-5		5	10-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-34-10		10	10-Nov-94	<0.3	0.31	0.63	<0.3	170	82	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-35-2		2	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-35-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-35-10		10	14-Nov-94	<0.5	<0.5	1.1	<0.5	300	51	790	690	--	--		Levine-Fricke; 01/17/95	Yes/No
B-36-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	(14)	*(14) 1,1-DCB = 0.77 mg/kg; 1,4-DCB = 0.008 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
B-36-2		2	14-Nov-94	<0.005	<0.005	0.013/0.03	<0.005	1.4	<1	<30	<30	--	(15)	*(14) 1,1-DCB = 0.052/0.053 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
B-36-5		5	14-Nov-94	<0.005	<0.005	0.021	<0.005	0.6	<1	<30	<30	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-36-10		10	14-Nov-94	<0.005	<0.005	0.051/0.28	0.018/0.031	6.9	5	<30	<30	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-37-1		1	14-Nov-94	0.009/0.09	0.005/0.033	0.06/0.016	0.007/0.02	1.9	<1	160	120	--	(16)	*(16) cis-1,2-DCE = 0.31 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
B-37-2		2	14-Nov-94	<0.005	<0.005	0.006/0.089	0.006	1.0	1	40	<30	--	(17)	*(17) methylene chloride = 0.006 mg/kg*	Levine-Fricke; 01/17/95	Yes/No

Master Data Table - TABLE 1B
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland, California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	EPA METHOD 8020 Benzene	Toluene	Ethyl-Benzene	Total Xylenes	EPA METHOD 5030 TPHg	TPHms	Standard Method 5520E Oil & Grease	Standard Method 5520F NPH	EPA METHOD 8270 SVOCs	EPA METHOD 8240 VOCs	Comments	Document where Data were Reported	Report/Field Point Uploaded to GT?
B-37-5		5	14-Nov-94	<0.005	<0.005	0.036	<0.005	0.3	<1	<10	<10	ND	ND		Levine-Fricke; 01/17/95	Yes/No
B-37-10		10	14-Nov-94	0.12	0.61	0.95/0.78	<0.3	210	13	40	<30	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-38-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-38-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-38-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-39-0.5		0.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-39-1.5		1.5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-39-5		5	10-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-39-10		10	10-Nov-94	--	--	--	--	--	--	470	400	--	--		Levine-Fricke; 01/17/95	Yes/No
B-39s-4	(18)	4	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	ND	ND		Levine-Fricke; 01/17/95	Yes/No
B-39s-7	(18)	7	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	<30	<30	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-40-1		1	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-40-2		2	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-40-5		5	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-40-10		10	9-Nov-94	--	--	--	--	--	--	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-41-1.5		10.5*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	8	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-41-3		19*	11-Nov-94	<0.3	<0.3	<0.3	0.37	260	330	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-41-5		12*	11-Nov-94	<1.0	<1.0	<1.0	<1.0	1600	320	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-41-10		14*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	0.6	18	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-42-1.5		9.5*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-42-3		11*	11-Nov-94	<0.1	<0.1	<0.1	0.14	130	7	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-42-5		13*	11-Nov-94	<0.5	<0.5	<0.5	<0.5	440	460	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-42-10		18*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	28	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-43-1.5		8.5*	11-Nov-94	<0.005	<0.005	<0.005	1.1	720	82	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-43-3		10*	11-Nov-94	<0.3	<0.3	1.4	4.4	1900	1100	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-43-5		12*	11-Nov-94	<1.0	<1.0	1.3	7.2	1200	550	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-43-10		17*	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	12	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-44-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-44-2		2	14-Nov-94	<0.5	<0.5	<0.5	<0.5	240	49	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-44-5		5	14-Nov-94	<0.005	<0.005	<0.005	0.01	3.1	17	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-44-10		10	14-Nov-94	<3.0	<3.0	<3.0	<3.0	1600	850	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-45-6		9	10-Nov-94	<0.1	<0.1	<0.1	0.15	95	16	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-45-9.5		12.5	10-Nov-94	<0.3	<0.3	<0.3	0.98	350	32	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-46-5		5	11-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-46-10		10	11-Nov-94	<0.05	<0.05	<0.05	0.31	72	67	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-47-3		3	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-47-5		5	15-Nov-94	<0.005	<0.005	<0.005	<0.005	<0.2	<1	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-47-10		10	15-Nov-94	<0.3	<0.3	<0.3	<0.3	62	1000	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-49-8		8	7-Nov-94	--	--	--	--	--	--	30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-50-12		12	7-Nov-94	0.27	1.7	1.5	<0.050	540	<50	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-56-11.5		11.5	8-Nov-94	<0.03	<0.03	0.061	<0.03	20	3	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-64-1		1	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.7	<1	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-64-2		2	14-Nov-94	<0.005	<0.005	<0.005	0.006	1.0	<1	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No
B-64-5		5	14-Nov-94	<0.005	<0.005	<0.005	<0.005	0.4	<1	<30	<30	--	--		Levine-Fricke; 01/17/95	Yes/No

Master Data Table - TABLE 1B
Analytical Results for Soil Samples - West Grand Block
2240 Filbert Street, Oakland, California
(all results in milligrams per kilogram [mg/kg])

Sample ID	Analytical Footnote	Sample Depth	Sample Date	EPA METHOD 8020 Benzene	Toluene	Ethyl-Benzene	Total Xylenes	EPA METHOD 5030 TPHg	TPHms	Standard Method 5520E Oil & Grease	Standard Method 5520F NPH	EPA METHOD 8270 SVOCs	EPA METHOD 8240 VOCs	Comments	Document where Data were Reported	Report/Field Point Uploaded to GT?
B-64-10		10	14-Nov-94	<0.03	<0.03	0.031	<0.03	8	410	480	350	--	--		Levine-Fricke; 01/17/95	Yes/No
MW-1-4-1	(27)	11.5	3-Oct-94	<0.01	<0.01	0.032	0.079	7.9	--	--	--	--	--	*(27) TPHd = 3.8 mg/kg; TPHmo = 14 mg/kg*	Levine-Fricke; 01/17/95	Yes/No
MW-2-3-2	(28)	14	3-Oct-94	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*(28) TPHd = ND; TPHmo = ND*	Levine-Fricke; 01/17/95	Yes/No
MW-3-5.5'		5.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*	IT Corp; April 1996	Yes/No
MW-3-10'		10	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*	IT Corp; April 1996	Yes/No
MW-4-5.0'		5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*	IT Corp; April 1996	Yes/No
MW-4-10.5'		10.5	6-Mar-96	<0.005	<0.005	<0.005	<0.005	<1.0	--	--	--	--	--	*TPHd = ND<1.0*	IT Corp; April 1996	Yes/No
2014 Investigation																
SB-1, 4.5'	(29,30)	4.5	30-May-14	<0.180	<0.180	<0.180	<0.180	--	--	--	--	--	ND	*Naphthalene = ND; Freon 12 = ND*	Stantec ESS Rpt	Yes/Yes
SB-2, 9'	(29,30,31)	9	30-May-14	<0.0042	<0.0042	<0.0042	<0.0042	--	--	--	--	--	ND	*Naphthalene = ND; Freon 12 = ND; PCB = ND*	Stantec ESS Rpt	Yes/Yes
SB-3, 8'	(29,30)	8	30-May-14	<0.0037	<0.0037	<0.0037	<0.0037	--	--	--	--	--	ND	*Naphthalene = ND; Freon 12 = ND*	Stantec ESS Rpt	Yes/Yes
SB-4, 8.5	(30,31)	8.5	30-May-14	<0.50	<0.50	<0.50	<0.50					ND	(32)	*Isopropylbenzene=0.58 mg/kg; propylbenzene=0.67 mg/kg; para-isopropyl toluene=0.70 mg/kg; naphthalene-0.072 mg/kg; PCB = ND*	Stantec ESS Rpt	Yes/Yes
2015 Vault Removal																
Sidewall	(31)	7	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(31) TPHhp=ND<5.0 mg/kg; TPHd=ND<1.0 mg/kg*	Stantec ESS Rpt	Yes/Yes
Floor	(32)	11	27-Jan-15	--	--	--	--	--	--	--	--	--	--	*(32) TPHho=29 mg/kg; TPHd=3.6 mg/kg*	Stantec ESS Rpt	Yes/Yes
Floor 2	(33)	13	30-Jan-15	--	--	--	--	--	--	--	--	--	--	*(33) TPHho=ND<5.0 mg/kg*	Stantec ESS Rpt	Yes/Yes
Sidewall 1		11	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho=ND<5.0 mg/kg*	Stantec ESS Rpt	Yes/Yes
Sidewall 2		13	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho=19 mg/kg*	Stantec ESS Rpt	Yes/Yes
Floor		7	24-Feb-15	--	--	--	--	--	--	--	--	--	--	*TPHho=100 mg/kg*	Stantec ESS Rpt	Yes/Yes
Clarifier Removal completed during 2015 Site Demolition																
East Limit Confirmation		4.5	19-Aug-15	--	--	<0.0005	<0.0005	<1.0						*Cd<0.25 mg/kg; Cr<0.42 mg/kg; Pb<5.7 mg/kg; Ni<46 mg/kg; Zn<42 mg/kg*	Stantec ESS Rpt	Yes/Yes
South Limit Confirmation		4.5	19-Aug-15	--	--	<0.0005	<0.0005	1.5							Stantec ESS Rpt	Yes/Yes
West Limit Confirmation		4.5	19-Aug-15	--	--	0.61	0.93	540							Stantec ESS Rpt	Yes/Yes
Sidewall/Floor (EX-1)		12	17-Jul-15	--	--	<0.0005	<0.0005	2.6							Stantec ESS Rpt	Yes/Yes
Floor 2 (EX-2)		10	3-Aug-15	--	--	<0.0005	<0.0005	12							Stantec ESS Rpt	Yes/Yes
West Excavation Floor (EX-3)		10	19-Aug-15	--	--	0.21	0.24	73							Stantec ESS Rpt	Yes/Yes
West Limit Confirmation 2		4.5	21-Aug-15	--	--	0.15	0.16	74							Stantec ESS Rpt	Yes/Yes
West Floor (EX-4)		10	19-Aug-15	--	--	<0.0005	0.25	47							Stantec ESS Rpt	Yes/Yes
Screening Level[1]				**0.230**	**970**	**5.1**	**560**	**750[1]**	**160**	**11,000**	--	--	--			

Notes:
Data from "Soil and Groundwater Investigation Report", Levine and Fricke, January 17, 1995
All compounds scanned are not included in the table. See notes for specific compounds.
Phase I laboratory data sheets were not available for detection limits.
1. California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016)
---: screening level not established
-- = not analyzed
ND = not detected above laboratory detection limits
* = sample depths corrected using site's natural grade for borings in loading dock areas
Red font indicates that the area where these samples were collected was subsequently excavated.
(1) The gasoline analysis showed a pattern not typical of gasoline.
(2) Reported limit elevated for gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(3) Reported limit elevated for benzene and gasoline due to hydrocarbon interference. The pattern in the analysis run was not typical of gasoline.
(4) Sample contains nontarget compounds in 8240 analysis.
(5) Mineral spirits range hydrocarbons detected also.
(7) Reporting limit elevated for BTEX due to a dilution.
(8) Result for benzin in in the benzin and gasoline range but the pattern is not typical of either compound.
(9) The gasoline results shows a pattern not typical for gasoline. There may be a mixture.
(10) Results for diesel are in the mineral spirits range.
(11) Oil range hydrocarbons were also detected.
(18) Boring was terminated after reaching a 7-foot depth.
(20) The sample was analyzed for organic lead. Pb = ND
(21) The sample was analyzed for TPH as diesel. TPHd = 2 mg/kg
(22) The sample was analyzed for TPH as diesel and organic lead. TPHd = ND; Pb = ND.
(23) The sample was analyzed for PCBs by EPA Method 8080. PCB = ND
(24) The sample was analyzed for TPH as benzin and diesel. TPH as benzin = <1,000 mg/kg; TPH as diesel = 1,300 mg/kg.
(25) The sample was analyzed for TPH as benzin. Benzin = 2,100 mg/kg.
(26) The sample was analyzed for TPH as diesel. TPHd = ND
(27) The sample was analyzed for TPH as diesel and motor oil. TPHd = 3.8 mg/kg ; TPHmo = 14 mg/kg.
(28) The sample was analyzed for TPH as diesel and motor oil. TPHd = ND; TPHmo = ND.
(29) Naphthalene = ND
(30) Freon 12 = ND
(31) PCB = ND
(32) Isopropylbenzene=0.58 mg/kg; propylbenzene=0.67 mg/kg; para-isopropyl toluene=0.70 mg/kg; naphthalene-0.072 mg/kg.
(32) Isopropylbenzene=0.58 mg/kg; propylbenzene=0.67 mg/kg; para-isopropyl toluene=0.70 mg/kg; naphthalene-0.072 mg/kg.
(33) The sample was analyzed for TPH as hydraulic oil. TPHho=ND<5.0 mg/kg.

Master Data Table - TABLE 1C

Analytical Results for Groundwater Samples - Market Street Block

2240 Filbert Street, Oakland California

(all results in micrograms per liter [µg/L])

Sample Location	Sample ID	Sample Depth (ft. bgs)	EPA METHOD 8015M	EPA METHOD 8020					Document where Data were Reported	Report/Field Point Uploaded to GT?
			TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
B-1	B-1-W	11.2	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<4.0	Gribi; 3/18/05	Yes/No
B-2	B-2-W	9.8	30,000	52	240	37	430	ND<4.0	Gribi; 3/18/05	Yes/No
B-3	B-3-W	9.6	110,000	ND<10	120	140	910	44	Gribi; 3/18/05	Yes/No
B-4	B-4-W	9.9	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<4.0	Gribi; 3/18/05	Yes/No
B-5	B-5-W	10.8	ND<50	ND<1.0	ND<1.0	ND<1.0	ND<2.0	ND<4.0	Gribi; 3/18/05	Yes/No
		Screening Level	**220**	**1.0**	**40**	**30**	**20**	**5.0**	**--**	**--**

Notes:

Samples collected February 28, 2005

Data compiled from Table 1, "Report of Phase II Environmental Site Assessment", GRIBI Associates, March 18, 2005

Screening Level - California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016-Rev 3)

MTBE: methyl-tertiary-butyl ether

-- = Not applicable

ug/L - micrograms per liter

ft. bgs - feet below ground surface

ND - not detected above laboratory reporting limits listed

Benzene, toluene, ethylbenzene, total xylenes and MTBE by EPA Method 8020

TPHg- total petroleum hydrocarbons as gasoline by EPA Method 8015M

Master Data Table - TABLE 1D
Analytical Results for Groundwater Grab Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	EPA METHOD 8020				EPA METHOD 5030	EPA METHOD 3510	GC-FID*	Standard Method 5520E		DHS	Mod. EPA METHOD 8240	EPA METHOD 8270	EPA METHOD 8240	Comments	Document where Data were Reported	Report/Field Point Uploaded to GT?
			Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs			
B-1		20-Jul-94	<0.5	<0.5	<0.5	<2	<50	<50	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-2	2	20-Jul-94	2	0.9	2	<2	800	--	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-3		20-Jul-94	--	--	--	--	--	<50	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-4	2	20-Jul-94	<0.5	<0.5	<0.5	<2	100	<50	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-5	2	20-Jul-94	18	16	40	21	5,000	--	--	<1,000	<1,000	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-6	2,4, 16	19-Jul-94	93	6	49	29	5,900	<50	--	<1,000	<1,000	<200	--	ND	(3)	*(3) trans-1,2-DCE = 5 µg/L*	Levine-Fricke; 01/17/95	Yes/No
B-7	2,7	21-Jul-94	<3	18	37	15	1,200	--	--	<1,000	<1,000	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-8	1,2	20-Jul-94	<10	<10	18	22	17,000	--	--	8,000	<1,000	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-9	24	19-Jul-94	--	--	--	--	--	--	--	270,000	230,000	--	--	--	--	*(24) PCBs = ND*	Levine-Fricke; 01/17/95	Yes/No
B-10		19-Jul-94	--	--	--	--	--	--	--	<1,000	<1,000	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-11		21-Jul-94	2	<0.5	1	<2	300	--	--	<1,000	<1,000	<200	<50,000	(5)	(6)	*(5) bis(2-ehtylhexyl)phthalate = 270 µg/L;* *(6) cis-1,2-DCE=3 µg/L;*	Levine-Fricke; 01/17/95	Yes/No
B-12	2,8,10	21-Jul-94	<5	<5	<5	<20	1,200	--	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-13	2,9,10	21-Jul-94	<10	<10	<10	<40	32,000	--	--	8,000	1,000	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-14	24	20-Jul-94	--	--	--	--	--	--	--	2,000	1,000	--	--	--	--	*(24) PCBs = ND*	Levine-Fricke; 01/17/95	Yes/No
B-15	2	21-Jul-94	340	52	90	2,000	59,000	--	--	170,000	15,000	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-16	2,9,10,12,13,25	22-Jul-94	<5	<5	<5	<5	4,400	--	--	--	--	--	--	--	ND	*(25) TPHbenzin = ND*	Levine-Fricke; 01/17/95	Yes/No
B-17	1,10,12,14,15,25	22-Jul-94	<1	5	<1	41	6,300	3,800	--	--	--	<200	--	--	ND	*(25) TPHbenzin = ND*	Levine-Fricke; 01/17/95	Yes/No
B-18	1,2,10	22-Jul-94	<10	<10	220	24	10,000	--	--	--	--	--	<50,000	--	(11)	*(11) ethylbenzene = 21 µg/L*	Levine-Fricke; 01/17/95	Yes/No
B-19	26	22-Jul-94	<0.5	<0.5	3	9	--	--	--	--	--	--	--	ND	ND	*(26) TPHbenzin = 1.7 mg/kg (stet).*	Levine-Fricke; 01/17/95	Yes/No
B-20		22-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-21		22-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-22		18-Jul-94	--	--	--	--	--	--	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-23		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-24		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-25		19-Jul-94	0.5	<0.5	<0.5	<2	100	<50	--	--	--	<200	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-26		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-27		18-Jul-94	<0.5	<0.5	<0.5	<2	<50	--	--	--	--	--	<50,000	--	--		Levine-Fricke; 01/17/95	Yes/No
B-28		18-Nov-94	<5	<0.5/0.7	4	6	600	--	530	<1,000	<1,000	--	--	ND	ND		Levine-Fricke; 01/17/95	Yes/No
B-29		18-Nov-94	0.8	0.6/0.2	10/8	10	1,400	--	1,200	<1,000	<1,000	--	--	ND	ND		Levine-Fricke; 01/17/95	Yes/No
B-30		18-Nov-94	6/8	2	5/6	10/8	1,100	--	590	<1,000	<1,000	--	--	ND	ND		Levine-Fricke; 01/17/95	Yes/No
B-31		18-Nov-94	110	11	35	60	5,600	--	4,500	<1,000	<1,000	--	--	(17)	ND	*(17) 2-methylnaphthalene = 18 µg/L; naphthalene = 11 µg/L.*	Levine-Fricke; 01/17/95	Yes/No
B-32		11-Nov-94	4/3	1	2/1	2	500	--	<50	<1,000	<1,000	--	--	ND	(18)	*(18) 1,2-DCA = 7 µg/L*	Levine-Fricke; 01/17/95	Yes/No
B-33		11-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	(19)	*(19) 1,2-DCA = 28 µg/L*	Levine-Fricke; 01/17/95	Yes/No
B-34		10-Nov-94	7	<0.5	12	3	1,200	--	<50	<1,000	<1,000	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-35		14-Nov-94	6	0.7	0.7	<2	600	--	200	<1,000	<1,000	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-36		14-Nov-94	<0.5	<0.5	0.5/0.5	<2	100	--	<50	<1,000	<1,000	--	--	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-37		14-Nov-94	<0.5	<0.5	<0.5	<2	70	--	<50	<1,000	<1,000	--	--	ND	(20)	*(20) 1,2-DCA = 2 µg/L*	Levine-Fricke; 01/17/95	Yes/No
B-38		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-39		11-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-40		10-Nov-94	<0.5	<0.5	<0.5	16	13,000	--	31,000	15,000	2,000	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-41		11-Nov-94	<0.5	<0.5	3	5	2,900	--	16,000	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-42		11-Nov-94	<5	<5	<5	22	14,000	--	44,000	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-43		11-Nov-94	<10	15	<10	47	62,000	--	270,000	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-44		14-Nov-94	4	5	<3	22	23,000	--	93,000	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No

Master Data Table - TABLE 1D
Analytical Results for Groundwater Grab Samples - West Grand Block
2240 Filbert Street, Oakland California
(all results in micrograms per liter [µg/L])

Sample ID	Analytical Footnote	Sample Date	EPA METHOD 8020				EPA METHOD 5030	EPA METHOD 3510	GC-FID*	Standard Method 5520E		DHS	Mod. EPA METHOD 8240	EPA METHOD 8270	EPA METHOD 8240	Comments	Document where Data were Reported	Report/Field Point Uploaded to GT?
			Benzene	Toluene	Ethyl-Benzene	Total Xylenes	TPHg	TPHd	TPHms	Oil & Grease	Hydrocarbons	Organic Lead	Ethylene Glycol	SVOCs	VOCs			
B-45		11-Nov-94	<3	<3	35	10	4,900	--	41,000	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-46		11-Nov-94	<1	<1	<1	11	4,700	--	5,100	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-47		15-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-49		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-50		7-Nov-94	23/18	12/3	48/51	12/5	8,200	--	<3,000	<1,000	<1,000	--	--	--	ND		Levine-Fricke; 01/17/95	Yes/No
B-51		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	<1,000	<1,000	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-52		7-Nov-94	<0.5	<0.5	<0.5	<2	300	--	70	--	--	--	--	--	(21)	*(21) 1,2-DCA = 0.0008 µg/L*	Levine-Fricke; 01/17/95	Yes/No
B-53		7-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-54		8-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	(22)	*(22) 1,2-DCA = 0.0006 µg/L*	Levine-Fricke; 01/17/95	Yes/No
B-55		8-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-56		8-Nov-94	16/10	0.5	<0.5	<2	300	--	100	<1,000	<1,000	--	--	--	(23)	*µg/L; trans-1,2-DCE=0.5 µg/L; VC=34*	Levine-Fricke; 01/17/95	Yes/No
B-57		8-Nov-94	<0.5	<0.5	<0.5	<2	500	--	1,600	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-58		8-Nov-94	41	<10	13	<4	17,000	--	6,300	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-59		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-60		9-Nov-94	<0.5	<0.5	<0.5	<2	<50	--	<50	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-61		10-Nov-94	<0.5	<0.5	<0.5	<2	300	--	70	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-62		10-Nov-94	<0.5	<0.5	<0.5	<2	2,000	--	200	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-63		10-Nov-94	62	13	<0.5	47	9,300	--	5,000	--	--	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
B-64		14-Nov-94	45	15	32	39	7,300	--	12,000	8,000	6,000	--	--	--	--		Levine-Fricke; 01/17/95	Yes/No
MW-1	27,28	3-Oct-94	<0.5	<0.5	<0.5	<0.5	16	84	--	--	--	--	--	--	--	*(28) TPHmo = ND*	Levine-Fricke; 01/17/95	Yes/No
MW-1		25-Apr-96	<0.5	<0.5	<0.5	<0.5	<50	<50	--	--	--	--	--	--	--		IT Corp; April 1996	Yes/No
MW-2	27,28	3-Oct-94	7.5	<2.5	<2.5	<2.5	1,100	730	--	--	--	--	--	--	--	*(28) TPHmo = ND*	Levine-Fricke; 01/17/95	Yes/No
MW-2		25-Apr-96	9	3.3	3.7	5.1	2,400	1,100	--	--	--	--	--	--	--		IT Corp; April 1996	Yes/No
MW-3		14-Mar-96	<0.5	<0.5	<0.5	<0.5	<50	<50	--	--	--	--	--	--	--		IT Corp; April 1996	Yes/No
MW-3		25-Apr-96	<0.5	<0.5	<0.5	<0.5	<1	<1	--	--	--	--	--	--	--		IT Corp; April 1996	Yes/No
MW-4		14-Mar-96	<0.5	<0.5	<0.5	<0.5	200	<1	--	--	--	--	--	--	--		IT Corp; April 1996	Yes/No
MW-4		25-Apr-96	<0.5	0.8	1.1	3.5	430	100	--	--	--	--	--	--	--		IT Corp; April 1996	Yes/No
Screening Level			**1.0**	**40**	**30**	**20**	**220**	**150**	**100**	---	---	**2.5**	---	---	---		---	---
Groundwater to Indoor Air[a]			**1.1**	**3600**	**30**	**1300**	---	---	---	---	---	---	---	---	---		---	---

Notes:
Data from Table 2, "Soil and Groundwater Investigation Report", Levine and Fricke, January 17, 1995
All compounds scanned are not included in the table. See notes for specific compounds.
Phase I laboratory data sheets were not available for detection limits.
Screening Level - California Water Boards 2016 Tier 1 ESL (SF Bay RWQCB, February 2016)
---: screening level not established
-- = not analyzed
ND = not detected above laboratory reporting limits
(1) Reporting limit elevated for benzene and toluene due to high levels of target compounds. Sample run at dilution.
(2) Pattern not typical of gasoline.
(3) Trans-1,2-dichlorethene detected at 5 µg/L.
(4) Sample contains nontarget compounds.
(5) Bis(2-ethylhexyl)phthalate = 270 µg/L; no other SVOCs detected.
(6) Cis-1,2-dichloroethene = 3 µg/L; no other SVOCs detected.
(7) Reporting limit elevated for benzene due to dilution.
(8) Reporting limit for BTEX elevated due to dilution.
(9) Reporting limit for BTEX elevated due to dilution.
(10) Light sheen of fuel on surface which resulted in nonmatching runs.
(11) Ethylbenzene = 21 µg/L.
(12) Reporting limit elevated for benzin due to a hydrocarbon interference.
(13) Reporting limit elevated for benzin due to a hydrocarbon interference.
(14) Reporting limit for benzene and ethylbenzene elevated due to dilution.
(15) Results for diesel are in the mineral spirits range.
(16) Hydrocarbons in mineral spirits range also detected in TPHg analysis.
(17) 2-Methylnaphthalene = 18 µg/LL; naphthalene = 11 µg/L.
(18) 1,2-Dichloroethane = 7 µg/L.
(19) 1,2-Dichloroethane = 28 µg/L.
(20) 1,2-Dichloroethane = 2 µg/L.
(21) 1,2-Dichloroethane = 0.8 µg/L.
(22) 1,2-Dichloroethane = 0.6 µg/L.
(23) 1,2-Dichloroethane = 3 µg/L; cis-1/2-dichloroehene = 130 µg/L; trans-1,2-dichloroethene = 0.5 µg/L; vinyl chloride = 34 µg/L.
(24) PCBs by EPA Method 8080 = ND
(25) Sample analyzed for TPH as benzin = ND
(26) Sample analyzed for TPH as benzin = 1.7 mg/kg (stet)
(27) Lab noted sample contained weathered gasoline in the C6 to C12 range.
(28) Sample analyzed for TPHmo = ND

Master Data Table - TABLE 1E
Analytical Results for Soil Vapor Samples - West Grand Block
2240 Filbert Street, Oakland, California

Sample Location and ID	Sample Date	Sample Depth (ft. bgs)	EPA METHOD 8260 (µg/m3) Freon 12	Freon 11	Benzene	Ethylbenzene	m,p-Xylene	o-Xylene	1,1,2,2-Tetrachloroethane	cis-1,2-DCE	Vinyl Chloride	n-Hexane	Cyclohexane	n-Heptane	Other VOCs	ASTM D1946 (ppmv) Methane*	O_2*	Document where Data were Reported	Report/Field Point Uploaded to GT?
SV-1	5/28/2014	5	**19,000**	ND<100	**40 J**	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-2	5/28/2014	5	**140**	ND<100	ND<32 J	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-2-Dup	5/28/2014	5	**120**	ND<100	ND<32 J	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-3	5/28/2014	5	ND<100	ND<100	ND<32 J	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-4	5/28/2014	5	**110**	ND<100	**75 J**	ND<26 J	ND<200	ND<100	ND<100	ND<100	ND<26 J	--	--	--	ND<80-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-5	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	**53,000**	**22,000**	Stantec ESS Rpt	Yes/Yes
SV-6	9/26/2016	5	**30,000**	**3,400**	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-7	9/26/2016	5	**2,100**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	**2,900**	**14,000**	Stantec ESS Rpt	Yes/Yes
SV-8	9/26/2016	5	**1,800**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-9	9/26/2016	5	**2,600**	**210**	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-10	9/26/2016	5	ND<100	ND<100	**60**	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-11	9/26/2016	5	**930**	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-12	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-12-Dup	9/26/2016	5	ND<100	ND<100	ND<35	ND<20	ND<200	ND<100	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--	Stantec ESS Rpt	Yes/Yes
SV-13**	9/26/2016	5	**19,000**	ND<3,400	ND<1,900	ND<2,600	ND<2,600	ND<2,600	ND<4,100	ND<2,400	ND<1,500	**220,000**	**220,000**	**47,000**	ND < 1,200-13,000	--	--	Stantec ESS Rpt	Yes/Yes
SV-14	9/26/2016	5	**76,000**	**1,700**	**78**	**180**	**490**	**140**	ND<22	ND<100	ND<9	--	--	--	ND < 9-200	--	--	Stantec ESS Rpt	Yes/Yes
Summary																			
Tier 1 Environmental Screening Levels for Subslab/Soil Gas* **			**50,000*** **	**10,500*** **	**48**	**560**	**52,000**	**52,000**	**24**	**4,200**	**5**	**305,000*** **	**325,000*** **	**NA**		**NA**	**NA**		

Notes:

ug/m^3: micrograms per cubic meter
ppmv = parts per million by volume
ft. bgs: feet below ground surface
Freon 12 = Dichlorodifluoromethane
Freon 11 = Trichlorofluoromethane
All samples collected September 26, 2016.
Soil vapor samples analyzed by TEG on-site mobile laboratory except where indicated as analyzed by Curtis & Tompkins, Ltd. In Berkeley, CA
* Analyzed by Curtis & Tompkins, Ltd in Berkeley, CA
** = Analyzed by Curtis & Tompkins, Ltd in Berkeley, CA using EPA Method TO-15.
*** = California Regional Water Quality Control Board (RWQCB) Tier 1 Environmental Screening Levels (ESLs) for Subslab/Soil Gas, February 2016 (Rev 3).
Freon 12 or Dichlorodifluoromethane May 2016 EPA indoor air RSL is 100 µg/m3 and divided by a Water Board recommended attenuation factor of 0.002 generates a value of 50,000 µg/m3.
Freon 11 or Trichlorofluoromethane May 2016 EPA indoor air RSL is 21 µg/m3 and divided by a Water Board recommended attenuation factor of 0.002 generates a value of 10,500 µg/m3. µg/m3.
Cyclohexane indoor air RSL is 610 µg/m3 and divided by a Water Board recommended attenuation factor of 0.002 generates a value of 305,000 µg/m3 .
n-Heptane indoor air RSL is 6,500 µg/m3 and divided by a Water Board recommended attenuation factor of 0.002 generates a value of 3,250,000 µg/m3 and of 0.001 as recommended by the EPA generates a value of 6,500,000 µg/m3.
Reported concentration greater than ESL.
Bold cells indicate constituent detected above the laboratory reporting limit (RL)

J = Estimated value. Analyte was detected in the sample above the method detection limit (MDL), but below the laboratory reporting limit (RL). MDL listed for ND samples (rather than RL).
ND = Not detected at reporting limit as indicated
--- = not analyzed

APPENDIX E
2016 Soil Vapor Assessment Laboratory Data Reports

5 October 2016

Mr. Dan Schreiner
Stantec Consulting
3875 Atherton Road
Rocklin, CA 95765-3716

SUBJECT: DATA REPORT - Stantec Consulting # 185703027
Oakland Site 2: West Grand Block
2240 Filbert Street, Oakland, California

TEG Project # 60926F

Mr. Schreiner:

Please find enclosed a data report for the samples analyzed from the above referenced project for Stantec Consulting. The samples were analyzed on site in TEG's mobile laboratory. TEG conducted a total of 10 analyses on 10 soil vapor samples.

-- 10 analyses on soil vapors for volatile organic hydrocarbons by EPA method 8260B.

The results of the analyses are summarized in the enclosed tables. Applicable detection limits and QA/QC data are included in the tables.

TEG appreciates the opportunity to have provided analytical services to Stantec Consulting on this project. If you have any further questions relating to these data or report, please do not hesitate to contact us.

Sincerely,

Mark Jerpbak
Director, TEG-Northern California

teg

Stantec Consulting Project # 185703027
Oakland Site 2: West Grand Block
2240 Filbert Street
Oakland, California

TEG Project #60926F

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER:		Probe Blank	SV-5	SV-6	SV-7	SV-8	SV-9
SAMPLE DEPTH (feet):			5.0	5.0	5.0	5.0	5.0
PURGE VOLUME:			3	3	3	3	3
COLLECTION DATE:		9/26/16	9/26/16	9/26/16	9/26/16	9/26/16	9/26/16
COLLECTION TIME:		10:54	15:08	14:23	12:36	11:44	13:02
DILUTION FACTOR:	RL	1	1	1	1	1	1
Dichlorodifluoromethane	100	nd	nd	30000	2100	1800	2600
Vinyl Chloride	9	nd	nd	nd	nd	nd	nd
Chloroethane	100	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	100	nd	nd	3400	nd	nd	210
1,1-Dichloroethene	100	nd	nd	nd	nd	nd	nd
1,1,2-Trichloro-trifluoroethane	100	nd	nd	nd	nd	nd	nd
Methylene Chloride	100	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	100	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd
Chloroform	58	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	85	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	25	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	45	nd	nd	nd	nd	nd	nd
Benzene	35	nd	nd	nd	nd	nd	nd
Trichloroethene	9	nd	nd	nd	nd	nd	nd
Toluene	200	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	100	nd	nd	nd	nd	nd	nd
Tetrachloroethene	9	nd	nd	nd	nd	nd	nd
Ethylbenzene	20	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd
m,p-Xylene	200	nd	nd	nd	nd	nd	nd
o-Xylene	100	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	22	nd	nd	nd	nd	nd	nd
1,1 Difluoroethane (leak check)	10000	nd	nd	nd	nd	nd	nd
Surrogate Recovery (DBFM)		83%	85%	87%	80%	86%	86%
Surrogate Recovery (1,2-DCA-d4)		89%	101%	95%	94%	92%	92%
Surrogate Recovery (Toluene-d8)		89%	93%	92%	96%	94%	88%

'RL' Indicates reporting limit at a dilution factor of 1
'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab
Analyses performed by: Ms. Lorena Williams

11350 Monier Park Place, Rancho Cordova, CA 95742 • Phone (916) 853-8010 • Fax (916) 853-8020

teg

Stantec Consulting Project # 185703027
Oakland Site 2: West Grand Block
2240 Filbert Street
Oakland, California

TEG Project #60926F

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER:		SV-10	SV-11	SV-12	SV-12 dup	SV-14
SAMPLE DEPTH (feet):		5.0	5.0	5.0	5.0	5.0
PURGE VOLUME:		3	3	3	3	3
COLLECTION DATE:		9/26/16	9/26/16	9/26/16	9/26/16	9/26/16
COLLECTION TIME:		13:27	13:54	15:40	15:40	17:47
DILUTION FACTOR:		1	1	1	1	1
	RL					
Dichlorodifluoromethane	100	nd	930	nd	nd	76000
Vinyl Chloride	9	nd	nd	nd	nd	nd
Chloroethane	100	nd	nd	nd	nd	nd
Trichlorofluoromethane	100	nd	nd	nd	nd	1700
1,1-Dichloroethene	100	nd	nd	nd	nd	nd
1,1,2-Trichloro-trifluoroethane	100	nd	nd	nd	nd	nd
Methylene Chloride	100	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	100	nd	nd	nd	nd	nd
1,1-Dichloroethane	100	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	100	nd	nd	nd	nd	nd
Chloroform	58	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	85	nd	nd	nd	nd	nd
Carbon Tetrachloride	25	nd	nd	nd	nd	nd
1,2-Dichloroethane	45	nd	nd	nd	nd	nd
Benzene	35	60	nd	nd	nd	78
Trichloroethene	9	nd	nd	nd	nd	nd
Toluene	200	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	100	nd	nd	nd	nd	nd
Tetrachloroethene	9	nd	nd	nd	nd	nd
Ethylbenzene	20	nd	nd	nd	nd	180
1,1,1,2-Tetrachloroethane	100	nd	nd	nd	nd	nd
m,p-Xylene	200	nd	nd	nd	nd	490
o-Xylene	100	nd	nd	nd	nd	140
1,1,2,2-Tetrachloroethane	22	nd	nd	nd	nd	nd
1,1 Difluoroethane (leak check)	10000	nd	nd	nd	nd	nd
Surrogate Recovery (DBFM)		87%	87%	86%	86%	82%
Surrogate Recovery (1,2-DCA-d4)		92%	95%	100%	101%	97%
Surrogate Recovery (Toluene-d8)		96%	90%	94%	95%	90%

'RL' Indicates reporting limit at a dilution factor of 1
'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab
Analyses performed by: Ms. Lorena Williams

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teg

Stantec Consulting Project # 185703027
Oakland Site 2: West Grand Block
2240 Filbert Street
Oakland, California

TEG Project #60926F

CALIBRATION DATA - Calibration Check Compounds

	Vinyl Chloride	1,1 DCE	Chloroform	1,2 DCP	Toluene	Ethylbenzene
Midpoint	10.0	10.0	10.0	10.0	10.0	10.0
Continuing Calibration - Midpoint						
9/26/16	9.9	9.0	8.7	10.2	9.2	9.2
	99%	90%	87%	102%	92%	92%

APPENDIX F
Waste Characterization Laboratory Data Reports


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 277244
ANALYTICAL REPORT

Stantec	Project : 185703027.203.0001
1340 Treat Blvd.	Location : City Ventures Oakland 2
Walnut Creek, CA 94597	Level : II

Sample ID	Lab ID
SP-B7 A, B, C, D	277244-001

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 06/03/2016

Mike Dahlquist
Project Manager
mike.dahlquist@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**277244**
Client:	**Stantec**
Project:	**185703027.203.0001**
Location:	**City Ventures Oakland 2**
Request Date:	**05/27/16**
Samples Received:	**05/27/16**

This data package contains sample and QC results for one four-point soil composite, requested for the above referenced project on 05/27/16. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
Matrix spikes QC837587,QC837588 (batch 235598) were not reported because the parent sample required a dilution that would have diluted out the spikes. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A):
No analytical problems were encountered.

277244

CHAIN OF CUSTODY RECORD

Stantec

Stantec Walnut Creek Office
1340 Treat Blvd., Suite 300
Walnut Creek, CA 94597
TEL:(916) 861-0400 FAX:(916)861-0430

Stantec Company Contact(s) for Invoice:
Project Manager: Sean Coyle
email: sean.coyle@stantec.com

Stantec Project #: 203,0001 18570 3027

DATE: 5-27-16

PAGE: 1 OF 1

Project Name: City Ventures Oakland 2
Address: Myrtle & W Grand Oakland CA

Sampler(s) Printed Name: Charles Melancon
Sampler(s) Signature:

Laboratory: Curtis & Tompkins
Lab Use Only:

Turn-around Time (Business Days):
10 DAYS ☐ 5 DAYS ☐ 72 HR ☐ 48 HR ☒ 24 HR ☐ <24 HR ☐
☐ OTHER

Special Instructions or Notes:
Composite jars A-D prior to analysis

Temperature Upon Receipt (C):

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	No. of Cont.	Preserve	CAM 17 Metals	Extract & Store for SILSPTZLB put on hold pending TPHs results	TPHs	VOC's by 8260	Laboratory Notes
	SP-B7 A,B,C,D	5-27-16	0900	S	4	-	X	*	X	X	

Relinquished by: (Signature) Date: 5-27-16 Time: 1005 Received by: (Signature)

Relinquished by: (Signature) Date: Time: Received by: (Signature) 05/27/16 Time: 1005

Relinquished by: (Signature) Date: Time: Received by: (Signature) Time:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 277244 Date Received 5/27/16 Number of coolers 0
Client Stantec Project City Ventures Oakland 2

Date Opened 5/27 By (print) CJP (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
   Shipping info
2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many Name Date
2B. Were custody seals intact upon arrival? YES NO N/A
3. Were custody papers dry and intact when received? (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe)

☐ Bubble Wrap ☐ Foam blocks ☐ Bags ☒ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C)

☐ Temperature blank(s) included? ☐ Thermometer# ☐ IR Gun#

☒ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)
   If YES, what time were they transferred to freezer?
9. Did all bottles arrive unbroken/unopened? (YES) NO
10. Are there any missing / extra samples? YES (NO)
11. Are samples in the appropriate containers for indicated tests? (YES) NO
12. Are sample labels present, in good condition and complete? (YES) NO
13. Do the sample labels agree with custody papers? (YES) NO
14. Was sufficient amount of sample sent for tests requested? (YES) NO
15. Are the samples appropriately preserved? YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? YES NO (N/A)
17. Did you document your preservative check? (pH strip lot#) YES NO (N/A)
18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? YES NO (N/A)
21. Was the client contacted concerning this sample delivery? YES (NO)
   If YES, Who was called? By Date:

COMMENTS

Curtis & Tompkins, Ltd.

Detections Summary for 277244

Results for any subcontracted analyses are not included in this summary.

Client : Stantec
Project : 185703027.203.0001
Location : City Ventures Oakland 2

Client Sample ID : SP-B7 A, B, C, D Laboratory Sample ID : 277244-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Arsenic	3.4		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Barium	280		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Beryllium	0.41		0.10	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Chromium	31		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cobalt	29		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Copper	13		0.26	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Lead	6.9		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Mercury	0.022		0.016	mg/Kg	As Recd	1.000	EPA 7471A	METHOD
Nickel	32		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Vanadium	34		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Zinc	22		1.0	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 5030B
Project#:	185703027.203.0001	Analysis:	EPA 8015B
Field ID:	SP-B7 A, B, C, D	Batch#:	235557
Matrix:	Soil	Sampled:	05/27/16
Units:	mg/Kg	Received:	05/27/16
Basis:	as received	Analyzed:	05/27/16
Diln Fac:	1.000		

Type: SAMPLE Lab ID: 277244-001

Analyte	Result	RL
Gasoline C7-C12	ND	1.1

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	100	78-138

Type: BLANK Lab ID: QC837431

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	90	78-138

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 5030B
Project#:	185703027.203.0001	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC837430	Batch#:	235557
Matrix:	Soil	Analyzed:	05/27/16
Units:	mg/Kg		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	0.9754	98	80-121

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	78-138

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 5030B
Project#:	185703027.203.0001	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	277131-004	Batch#:	235557
Matrix:	Soil	Sampled:	05/24/16
Units:	mg/Kg	Received:	05/24/16
Basis:	as received	Analyzed:	05/27/16

Type: MS Lab ID: QC837432

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.07883	10.10	8.158	80	50-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	78-138

Type: MSD Lab ID: QC837433

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.42	8.100	77	50-120	4	31

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	110	78-138

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 3550B
Project#:	185703027.203.0001	Analysis:	EPA 8015B
Field ID:	SP-B7 A, B, C, D	Batch#:	235598
Matrix:	Soil	Sampled:	05/27/16
Units:	mg/Kg	Received:	05/27/16
Basis:	as received	Prepared:	05/31/16
Diln Fac:	1.000	Analyzed:	06/01/16

Type: SAMPLE Lab ID: 277244-001

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	98	59-140

Type: BLANK Lab ID: QC837585

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	105	59-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 3550B
Project#:	185703027.203.0001	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC837586	Batch#:	235598
Matrix:	Soil	Prepared:	05/31/16
Units:	mg/Kg	Analyzed:	06/01/16

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	50.27	54.30	108	58-137

Surrogate	%REC	Limits
o-Terphenyl	105	59-140

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 5030B
Project#:	185703027.203.0001	Analysis:	EPA 8260B
Field ID:	SP-B7 A, B, C, D	Diln Fac:	0.9671
Lab ID:	277244-001	Batch#:	235549
Matrix:	Soil	Sampled:	05/27/16
Units:	ug/Kg	Received:	05/27/16
Basis:	as received	Analyzed:	05/27/16

Analyte	Result	RL
Freon 12	ND	9.7
Chloromethane	ND	9.7
Vinyl Chloride	ND	9.7
Bromomethane	ND	9.7
Chloroethane	ND	9.7
Trichlorofluoromethane	ND	4.8
Acetone	ND	19
Freon 113	ND	4.8
1,1-Dichloroethene	ND	4.8
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.8
MTBE	ND	4.8
trans-1,2-Dichloroethene	ND	4.8
Vinyl Acetate	ND	48
1,1-Dichloroethane	ND	4.8
2-Butanone	ND	9.7
cis-1,2-Dichloroethene	ND	4.8
2,2-Dichloropropane	ND	4.8
Chloroform	ND	4.8
Bromochloromethane	ND	4.8
1,1,1-Trichloroethane	ND	4.8
1,1-Dichloropropene	ND	4.8
Carbon Tetrachloride	ND	4.8
1,2-Dichloroethane	ND	4.8
Benzene	ND	4.8
Trichloroethene	ND	4.8
1,2-Dichloropropane	ND	4.8
Bromodichloromethane	ND	4.8
Dibromomethane	ND	4.8
4-Methyl-2-Pentanone	ND	9.7
cis-1,3-Dichloropropene	ND	4.8
Toluene	ND	4.8
trans-1,3-Dichloropropene	ND	4.8
1,1,2-Trichloroethane	ND	4.8
2-Hexanone	ND	9.7
1,3-Dichloropropane	ND	4.8
Tetrachloroethene	ND	4.8

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 5030B
Project#:	185703027.203.0001	Analysis:	EPA 8260B
Field ID:	SP-B7 A, B, C, D	Diln Fac:	0.9671
Lab ID:	277244-001	Batch#:	235549
Matrix:	Soil	Sampled:	05/27/16
Units:	ug/Kg	Received:	05/27/16
Basis:	as received	Analyzed:	05/27/16

Analyte	Result	RL
Dibromochloromethane	ND	4.8
1,2-Dibromoethane	ND	4.8
Chlorobenzene	ND	4.8
1,1,1,2-Tetrachloroethane	ND	4.8
Ethylbenzene	ND	4.8
m,p-Xylenes	ND	4.8
o-Xylene	ND	4.8
Styrene	ND	4.8
Bromoform	ND	4.8
Isopropylbenzene	ND	4.8
1,1,2,2-Tetrachloroethane	ND	4.8
1,2,3-Trichloropropane	ND	4.8
Propylbenzene	ND	4.8
Bromobenzene	ND	4.8
1,3,5-Trimethylbenzene	ND	4.8
2-Chlorotoluene	ND	4.8
4-Chlorotoluene	ND	4.8
tert-Butylbenzene	ND	4.8
1,2,4-Trimethylbenzene	ND	4.8
sec-Butylbenzene	ND	4.8
para-Isopropyl Toluene	ND	4.8
1,3-Dichlorobenzene	ND	4.8
1,4-Dichlorobenzene	ND	4.8
n-Butylbenzene	ND	4.8
1,2-Dichlorobenzene	ND	4.8
1,2-Dibromo-3-Chloropropane	ND	4.8
1,2,4-Trichlorobenzene	ND	4.8
Hexachlorobutadiene	ND	4.8
Naphthalene	ND	4.8
1,2,3-Trichlorobenzene	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	128	78-134
1,2-Dichloroethane-d4	126	80-138
Toluene-d8	99	80-120
Bromofluorobenzene	102	78-123

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 5030B
Project#:	185703027.203.0001	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC837399	Batch#:	235549
Matrix:	Soil	Analyzed:	05/27/16
Units:	ug/Kg		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	21.63	87	70-134
Benzene	25.00	24.51	98	80-123
Trichloroethene	25.00	24.33	97	80-128
Toluene	25.00	25.13	101	80-120
Chlorobenzene	25.00	25.10	100	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	101	78-134
1,2-Dichloroethane-d4	103	80-138
Toluene-d8	104	80-120
Bromofluorobenzene	99	78-123

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 5030B
Project#:	185703027.203.0001	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC837401	Batch#:	235549
Matrix:	Soil	Analyzed:	05/27/16
Units:	ug/Kg		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 5030B
Project#:	185703027.203.0001	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC837401	Batch#:	235549
Matrix:	Soil	Analyzed:	05/27/16
Units:	ug/Kg		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	111	78-134
1,2-Dichloroethane-d4	109	80-138
Toluene-d8	103	80-120
Bromofluorobenzene	104	78-123

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 5030B
Project#:	185703027.203.0001	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Diln Fac:	0.9980
MSS Lab ID:	277243-005	Batch#:	235549
Matrix:	Soil	Sampled:	05/27/16
Units:	ug/Kg	Received:	05/27/16
Basis:	as received	Analyzed:	05/27/16

Type: MS Lab ID: QC837450

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.4223	49.90	51.67	104	56-133
Benzene	<0.4187	49.90	50.32	101	57-120
Trichloroethene	<0.4022	49.90	50.76	102	49-145
Toluene	<0.3041	49.90	47.74	96	51-120
Chlorobenzene	<0.3793	49.90	43.55	87	47-120

Surrogate	%REC	Limits
Dibromofluoromethane	113	78-134
1,2-Dichloroethane-d4	116	80-138
Toluene-d8	100	80-120
Bromofluorobenzene	100	78-123

Type: MSD Lab ID: QC837451

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	49.90	50.60	101	56-133	2	46
Benzene	49.90	49.77	100	57-120	1	44
Trichloroethene	49.90	50.43	101	49-145	1	46
Toluene	49.90	47.49	95	51-120	1	47
Chlorobenzene	49.90	43.21	87	47-120	1	50

Surrogate	%REC	Limits
Dibromofluoromethane	113	78-134
1,2-Dichloroethane-d4	117	80-138
Toluene-d8	101	80-120
Bromofluorobenzene	101	78-123

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	277244	Project#:	185703027.203.0001
Client:	Stantec	Location:	City Ventures Oakland 2
Field ID:	SP-B7 A, B, C, D	Diln Fac:	1.000
Lab ID:	277244-001	Sampled:	05/27/16
Matrix:	Soil	Received:	05/27/16
Units:	mg/Kg	Analyzed:	06/01/16
Basis:	as received		

Analyte	Result	RL	Batch#	Prepared	Prep	Analysis
Antimony	ND	2.0	235588	05/30/16	EPA 3050B	EPA 6010B
Arsenic	3.4	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Barium	280	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Beryllium	0.41	0.10	235588	05/30/16	EPA 3050B	EPA 6010B
Cadmium	ND	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Chromium	31	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Cobalt	29	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Copper	13	0.26	235588	05/30/16	EPA 3050B	EPA 6010B
Lead	6.9	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Mercury	0.022	0.016	235645	06/01/16	METHOD	EPA 7471A
Molybdenum	ND	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Nickel	32	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Selenium	ND	2.0	235588	05/30/16	EPA 3050B	EPA 6010B
Silver	ND	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Thallium	ND	0.50	235588	05/30/16	EPA 3050B	EPA 6010B
Vanadium	34	0.25	235588	05/30/16	EPA 3050B	EPA 6010B
Zinc	22	1.0	235588	05/30/16	EPA 3050B	EPA 6010B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 3050B
Project#:	185703027.203.0001	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC837544	Batch#:	235588
Matrix:	Soil	Prepared:	05/30/16
Units:	mg/Kg	Analyzed:	05/31/16

Analyte	Result	RL
Antimony	ND	1.9
Arsenic	ND	0.24
Barium	ND	0.24
Beryllium	ND	0.094
Cadmium	ND	0.24
Chromium	ND	0.24
Cobalt	ND	0.24
Copper	ND	0.24
Lead	ND	0.24
Molybdenum	ND	0.24
Nickel	ND	0.24
Selenium	ND	1.9
Silver	ND	0.24
Thallium	ND	0.47
Vanadium	ND	0.24
Zinc	ND	0.94

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	EPA 3050B
Project#:	185703027.203.0001	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	235588
Units:	mg/Kg	Prepared:	05/30/16
Diln Fac:	1.000	Analyzed:	05/31/16

Type: BS Lab ID: QC837545

Analyte	Spiked	Result	%REC	Limits
Antimony	49.50	49.38	100	80-120
Arsenic	49.50	53.52	108	80-120
Barium	49.50	50.34	102	80-120
Beryllium	24.75	24.80	100	80-120
Cadmium	49.50	51.49	104	80-120
Chromium	49.50	48.72	98	80-120
Cobalt	49.50	48.60	98	80-120
Copper	49.50	49.95	101	80-120
Lead	49.50	50.39	102	80-120
Molybdenum	49.50	48.90	99	80-120
Nickel	49.50	49.92	101	80-120
Selenium	49.50	50.83	103	80-120
Silver	4.950	4.981	101	80-120
Thallium	49.50	49.60	100	80-120
Vanadium	49.50	50.30	102	80-120
Zinc	49.50	49.42	100	80-120

Type: BSD Lab ID: QC837546

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	47.17	47.79	101	80-120	2	20
Arsenic	47.17	49.58	105	80-120	3	20
Barium	47.17	47.95	102	80-120	0	20
Beryllium	23.58	23.43	99	80-120	1	20
Cadmium	47.17	48.99	104	80-120	0	20
Chromium	47.17	46.20	98	80-120	0	20
Cobalt	47.17	46.14	98	80-120	0	20
Copper	47.17	47.49	101	80-120	0	20
Lead	47.17	47.06	100	80-120	2	20
Molybdenum	47.17	45.85	97	80-120	2	20
Nickel	47.17	47.64	101	80-120	0	20
Selenium	47.17	46.19	98	80-120	5	20
Silver	4.717	4.688	99	80-120	1	20
Thallium	47.17	45.26	96	80-120	4	20
Vanadium	47.17	47.61	101	80-120	1	20
Zinc	47.17	46.88	99	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	METHOD
Project#:	185703027.203.0001	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	235645
Lab ID:	QC837769	Prepared:	06/01/16
Matrix:	Soil	Analyzed:	06/01/16
Units:	mg/Kg		

Result	RL
ND	0.016

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	METHOD
Project#:	185703027.203.0001	Analysis:	EPA 7471A
Analyte:	Mercury	Batch#:	235645
Matrix:	Soil	Prepared:	06/01/16
Units:	mg/Kg	Analyzed:	06/01/16
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC837770	0.1984	0.2078	105	80-120		
BSD	QC837771	0.2119	0.2230	105	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

California Title 22 Metals

Lab #:	277244	Location:	City Ventures Oakland 2
Client:	Stantec	Prep:	METHOD
Project#:	185703027.203.0001	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	5.000
Field ID:	ZZZZZZZZZZ	Batch#:	235645
MSS Lab ID:	277116-001	Sampled:	05/20/16
Matrix:	Soil	Received:	05/24/16
Units:	mg/Kg	Prepared:	06/01/16
Basis:	as received	Analyzed:	06/01/16

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC837772	2.458	0.2083	2.529	34 NM	69-142		
MSD	QC837773		0.2049	3.374	447 NM	69-142	29	36

NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	279933	Project#:	185703027
Client:	Stantec	Location:	City Ventures
Field ID:	SP-B1-1	Basis:	as received
Lab ID:	279933-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	08/19/16
Units:	mg/Kg	Received:	08/19/16

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND b	2.0	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Arsenic	3.7	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Barium	490	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Beryllium	0.48	0.11	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Cadmium	0.73	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Chromium	39	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Cobalt	8.5	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Copper	28	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Lead	240	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Mercury	0.57	0.016	238296	08/22/16	08/22/16	METHOD	EPA 7471A
Molybdenum	0.53 b	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Nickel	28	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Selenium	ND b	2.0	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Silver	ND	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Thallium	ND b	0.54	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Vanadium	32	0.27	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Zinc	210	1.1	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B

b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

California Title 22 Metals

Lab #:	279933	Project#:	185703027
Client:	Stantec	Location:	City Ventures
Field ID:	SP-B1-2	Basis:	as received
Lab ID:	279933-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	08/19/16
Units:	mg/Kg	Received:	08/19/16

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	1.9 b	1.8	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Arsenic	5.3	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Barium	290	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Beryllium	0.54	0.091	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Cadmium	1.1	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Chromium	56	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Cobalt	9.7	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Copper	37	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Lead	400	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Mercury	0.36	0.017	238296	08/22/16	08/22/16	METHOD	EPA 7471A
Molybdenum	0.64 b	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Nickel	31	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Selenium	ND b	1.8	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Silver	0.27 b	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Thallium	0.51 b	0.45	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Vanadium	38	0.23	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B
Zinc	230	0.91	238259	08/19/16	08/25/16	EPA 3050B	EPA 6010B

b= See narrative
ND= Not Detected
RL= Reporting Limit


Curtis & Tompkins, Ltd.
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Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 280298
ANALYTICAL REPORT

Stantec	Project : 185703027
3875 Atherton Rd.	Location : City Ventures
Rocklin, CA 95765	Level : II

Sample ID	Lab ID
SP-B1-1	280298-001
SP-B1-2	280298-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: Will Rice Date: 09/09/2016

Will Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**280298**
Client:	**Stantec**
Project:	**185703027**
Location:	**City Ventures**
Request Date:	**08/30/16**
Samples Received:	**08/19/16**

This data package contains sample and QC results for two soil samples, requested for the above referenced project on 08/30/16. The samples were received cold and intact.

Metals (EPA 6010B) TCLP Leachate:
No analytical problems were encountered.

Metals (EPA 6010B) WET Leachate:
High recovery was observed for lead in the MSD for batch 238325; the parent sample was not a project sample, the LCS was within limits, and the associated RPD was within limits. No other analytical problems were encountered.

Curtis & Tompkins, Ltd.

Detections Summary for 280298

Results for any subcontracted analyses are not included in this summary.

Client : Stantec
Project : 185703027
Location : City Ventures

Client Sample ID : SP-B1-1 Laboratory Sample ID : 280298-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	0.20		0.050	mg/L	TCLP	10.00	EPA 6010B	EPA 3010A
Lead	16		0.25	mg/L	STLC	10.00	EPA 6010B	WET

Client Sample ID : SP-B1-2 Laboratory Sample ID : 280298-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Lead	0.18		0.050	mg/L	TCLP	10.00	EPA 6010B	EPA 3010A
Chromium	0.35		0.25	mg/L	STLC	10.00	EPA 6010B	WET
Lead	31		0.25	mg/L	STLC	10.00	EPA 6010B	WET

Curtis & Tompkins, Ltd.

Chromium

Lab #:	280298	Location:	City Ventures
Client:	Stantec	Prep:	EPA 3010A
Project#:	185703027	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	238278
Field ID:	SP-B1-2	Sampled:	08/19/16
Matrix:	TCLP Leachate	Received:	08/19/16
Units:	mg/L	Prepared:	08/21/16
Diln Fac:	10.00		

Type	Lab ID	Result	RL	Analyzed
SAMPLE	280298-002	ND	0.050	09/08/16
BLANK	QC848260	ND	0.050	08/29/16

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Lead

Lab #:	280298	Location:	City Ventures
Client:	Stantec	Prep:	EPA 3010A
Project#:	185703027	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	238278
Matrix:	TCLP Leachate	Sampled:	08/19/16
Units:	mg/L	Received:	08/19/16
Diln Fac:	10.00	Prepared:	08/21/16

Field ID	Type	Lab ID	Result	RL	Analyzed
SP-B1-1	SAMPLE	280298-001	0.20	0.050	09/08/16
SP-B1-2	SAMPLE	280298-002	0.18	0.050	09/08/16
	BLANK	QC848260	ND	0.050	08/29/16

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chromium

Lab #:	280298	Location:	City Ventures
Client:	Stantec	Prep:	EPA 3010A
Project#:	185703027	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	238278
Field ID:	ZZZZZZZZZZ	Sampled:	08/09/16
MSS Lab ID:	279940-003	Received:	08/09/16
Matrix:	TCLP Leachate	Prepared:	08/21/16
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC848261		0.1000	0.1001	100	80-120			1.000	08/30/16
BSD	QC848262		0.1000	0.1024	102	80-120	2	20	1.000	08/30/16
MS	QC848263	0.01028	0.1000	0.1081	98	80-120			10.00	08/31/16
MSD	QC848264		0.1000	0.1074	97	80-120	1	20	10.00	08/31/16

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Lead

Lab #:	280298	Location:	City Ventures
Client:	Stantec	Prep:	EPA 3010A
Project#:	185703027	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	238278
Field ID:	ZZZZZZZZZZ	Sampled:	08/09/16
MSS Lab ID:	279940-003	Received:	08/09/16
Matrix:	TCLP Leachate	Prepared:	08/21/16
Units:	mg/L	Analyzed:	08/29/16

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
BS	QC848261		0.1000	0.09951	100	80-120			1.000
BSD	QC848262		0.1000	0.09996	100	80-120	0	20	1.000
MS	QC848263	0.4272	0.1000	0.5283	101 NM	67-120			10.00
MSD	QC848264		0.1000	0.5461	119 NM	67-120	3	23	10.00

NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Chromium

Lab #:	280298	Location:	City Ventures
Client:	Stantec	Prep:	WET
Project#:	185703027	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	238325
Field ID:	SP-B1-2	Sampled:	08/19/16
Matrix:	WET Leachate	Received:	08/19/16
Units:	mg/L	Prepared:	08/23/16
Diln Fac:	10.00		

Type	Lab ID	Result	RL	Analyzed
SAMPLE	280298-002	0.35	0.25	09/02/16
BLANK	QC848457	ND	0.25	08/29/16

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Lead

Lab #:	280298	Location:	City Ventures
Client:	Stantec	Prep:	WET
Project#:	185703027	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	238325
Matrix:	WET Leachate	Sampled:	08/19/16
Units:	mg/L	Received:	08/19/16
Diln Fac:	10.00	Prepared:	08/23/16

Field ID	Type	Lab ID	Result	RL	Analyzed
SP-B1-1	SAMPLE	280298-001	16	0.25	09/02/16
SP-B1-2	SAMPLE	280298-002	31	0.25	09/02/16
	BLANK	QC848457	ND	0.25	08/29/16

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chromium

Lab #:	280298	Location:	City Ventures
Client:	Stantec	Prep:	WET
Project#:	185703027	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	238325
Field ID:	ZZZZZZZZZZ	Sampled:	08/16/16
MSS Lab ID:	279889-001	Received:	08/16/16
Matrix:	WET Leachate	Prepared:	08/23/16
Units:	mg/L	Analyzed:	08/29/16

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
LCS	QC848459		0.1000	0.1050	105	80-120			1.000
MS	QC848460	<0.05000	0.5000	0.5201	104	80-120			10.00
MSD	QC848461		0.5000	0.5367	107	80-120	3	20	10.00

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

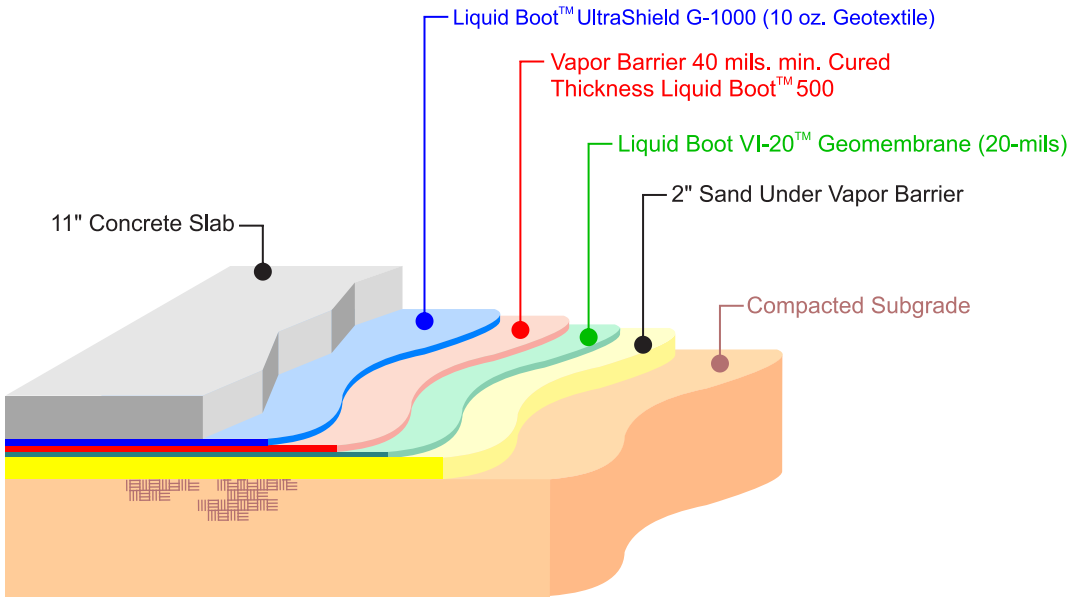
Lead

Lab #:	280298	Location:	City Ventures
Client:	Stantec	Prep:	WET
Project#:	185703027	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	238325
Field ID:	ZZZZZZZZZZ	Sampled:	08/16/16
MSS Lab ID:	279889-001	Received:	08/16/16
Matrix:	WET Leachate	Prepared:	08/23/16
Units:	mg/L		

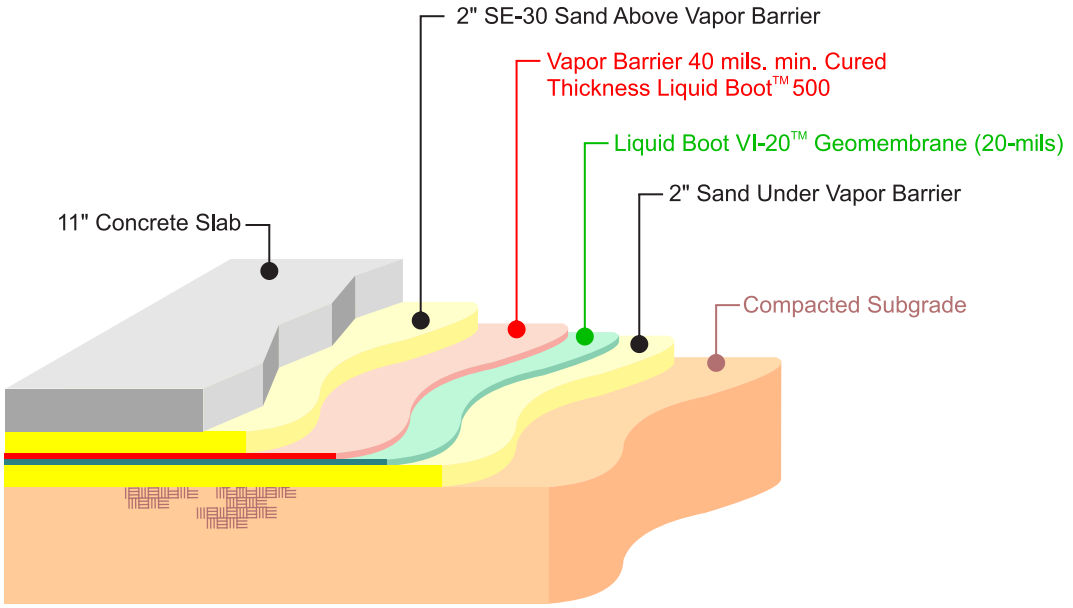
Type	Lab ID	MSS Result	Spiked	Result	%REC		Limits	RPD	Lim	Diln Fac	Analyzed
LCS	QC848459		0.1000	0.1051	105		80-120			1.000	08/29/16
MS	QC848460	1.943	0.5000	2.526	117		67-120			10.00	08/25/16
MSD	QC848461		0.5000	2.624	136	*	67-120	4	23	10.00	08/25/16

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

APPENDIX G
Vapor Barrier Basis of Design



***Option A:** With Liquid Boot™ UltraShield G-1000 Above Vapor Barrier*



***Option B:** With 2" SE-30 Sand Above Vapor Barrier*

Not to Scale

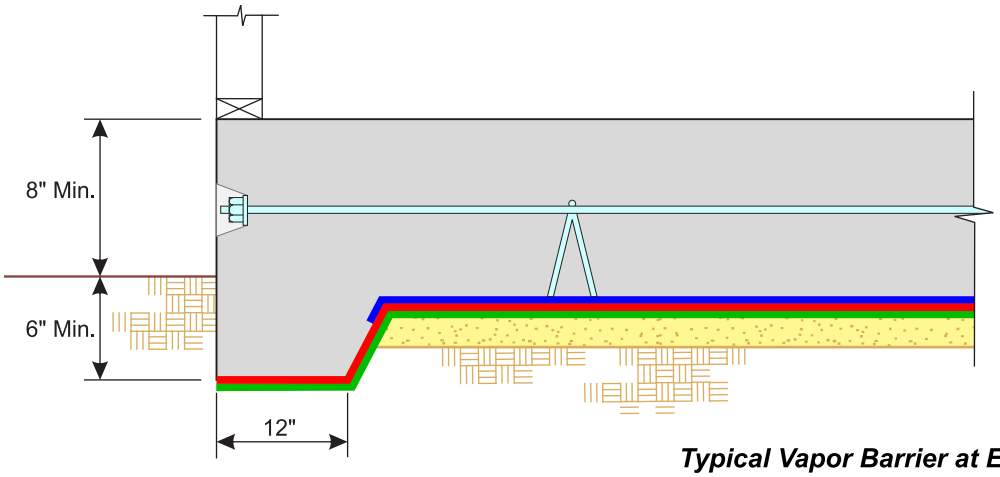
GeoKinetics
Geotechnical & Environmental Engineers

Project Name: City Ventures - Oakland

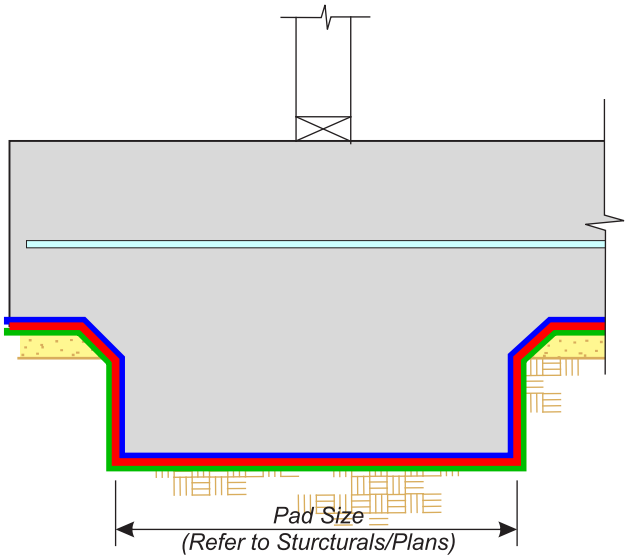
Date: February 2017

Typical Barrier Details

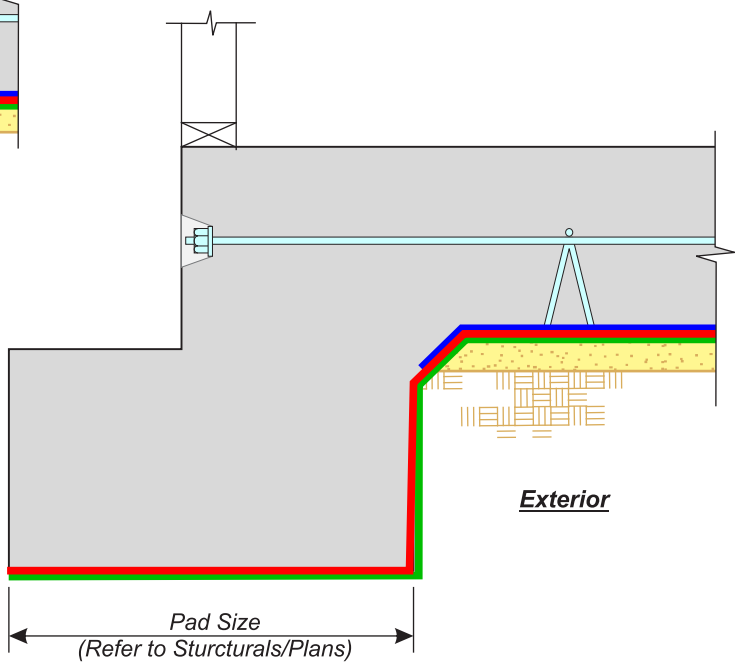
Figure 1



Typical Vapor Barrier at Exterior Footing



Interior



Exterior

Typical Vapor Barrier at Pad Footings

Not to Scale

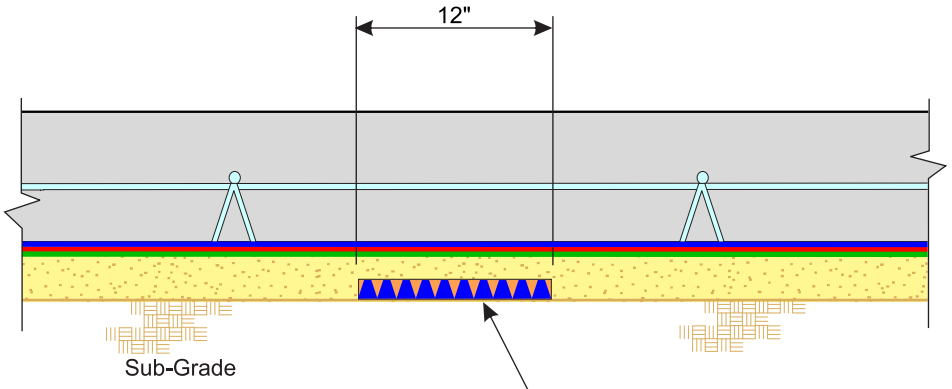
GeoKinetics
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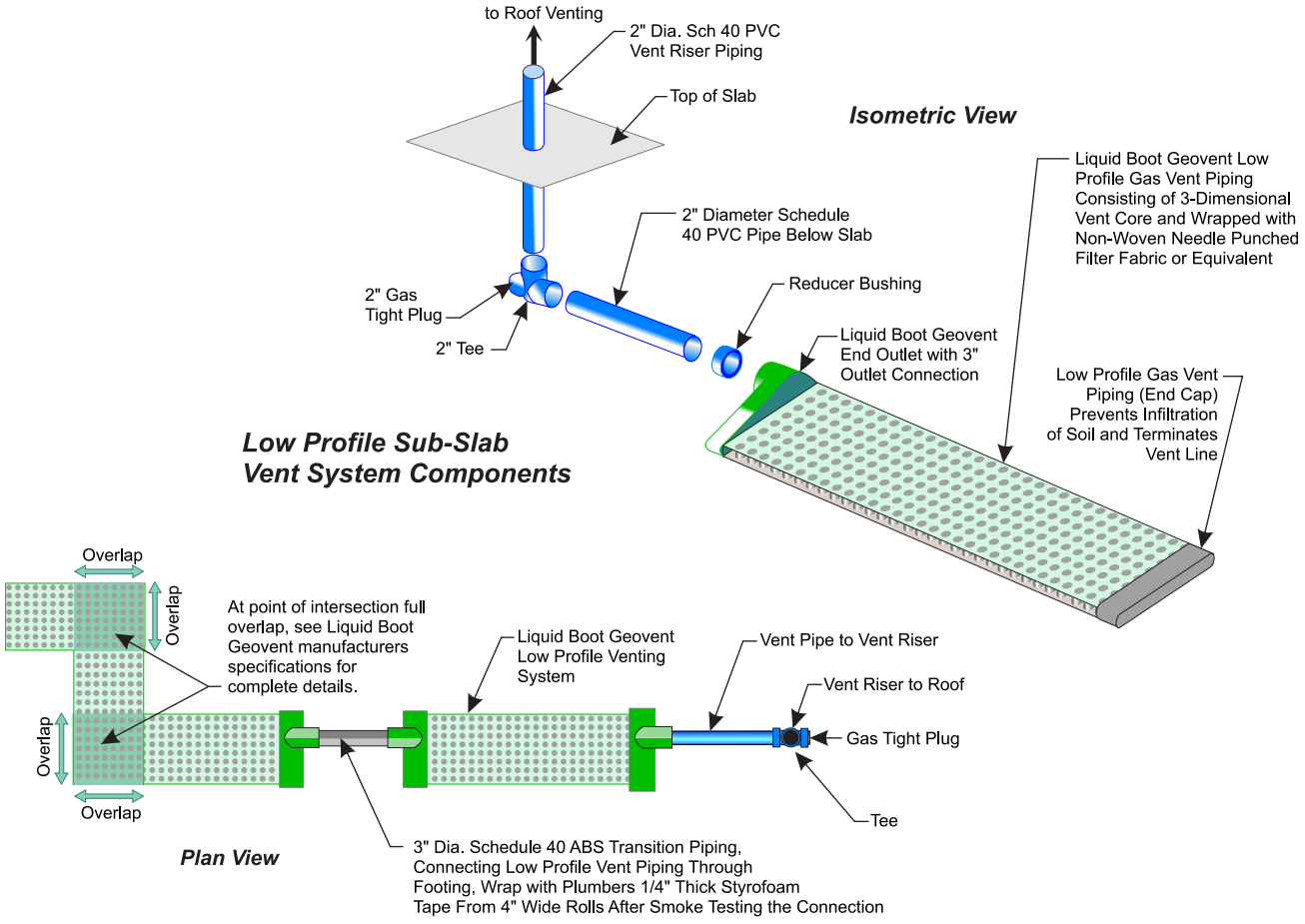
Date: February 2017

Typical Footing Details

Figure 2



Typical Low Profile Sub-Slab System



Not to Scale

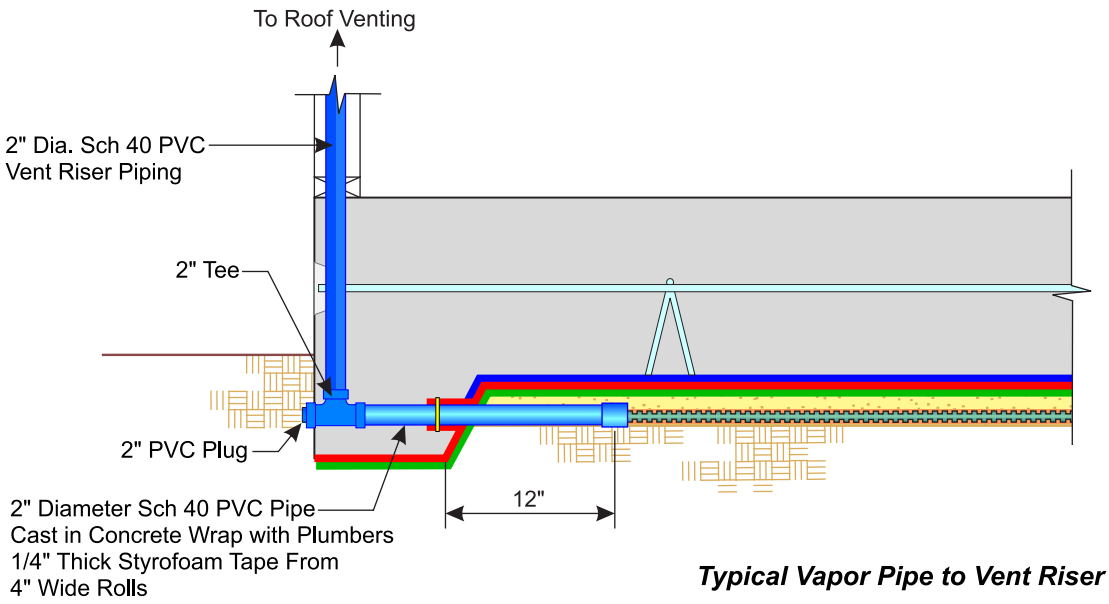
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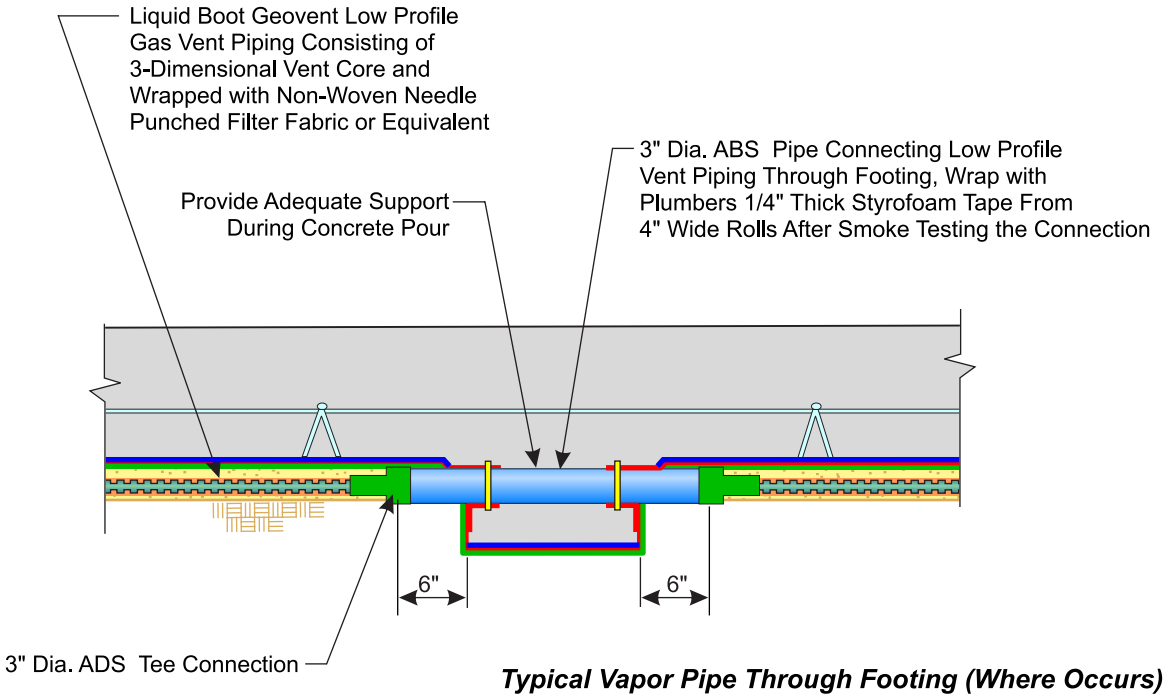
Date: February 2017

Typical Vent Pipiing Details

Figure 3



Typical Vapor Pipe to Vent Riser Transition



Typical Vapor Pipe Through Footing (Where Occurs)

Not to Scale

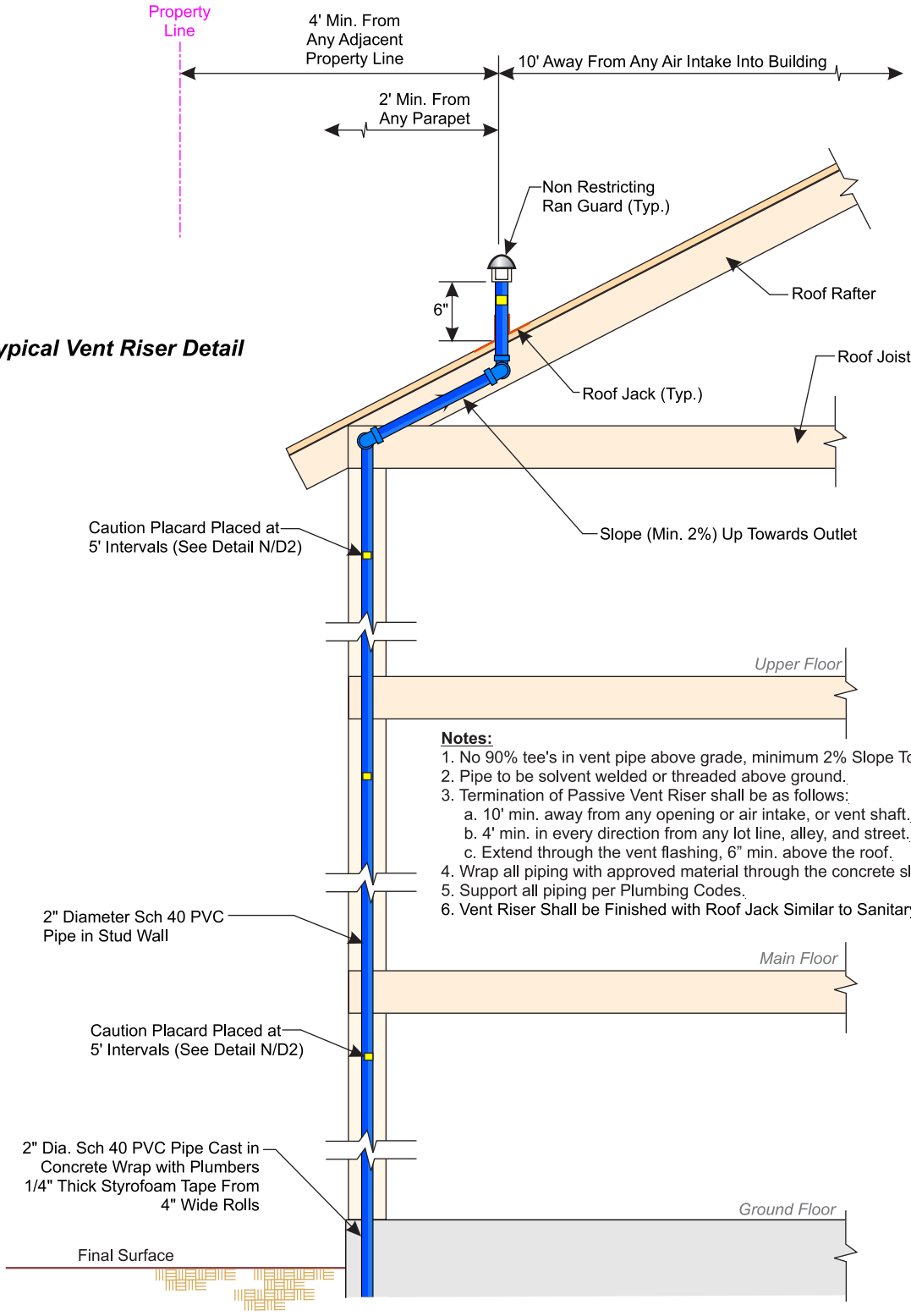
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Typical Vent Pipiing Details

Figure 4



Typical Vent Riser Detail

Notes:

1. No 90% tee's in vent pipe above grade, minimum 2% Slope Towards Outlet.
2. Pipe to be solvent welded or threaded above ground.
3. Termination of Passive Vent Riser shall be as follows:
   a. 10' min. away from any opening or air intake, or vent shaft.
   b. 4' min. in every direction from any lot line, alley, and street.
   c. Extend through the vent flashing, 6" min. above the roof.
4. Wrap all piping with approved material through the concrete slab or floor.
5. Support all piping per Plumbing Codes.
6. Vent Riser Shall be Finished with Roof Jack Similar to Sanitary Vent.

Not to Scale

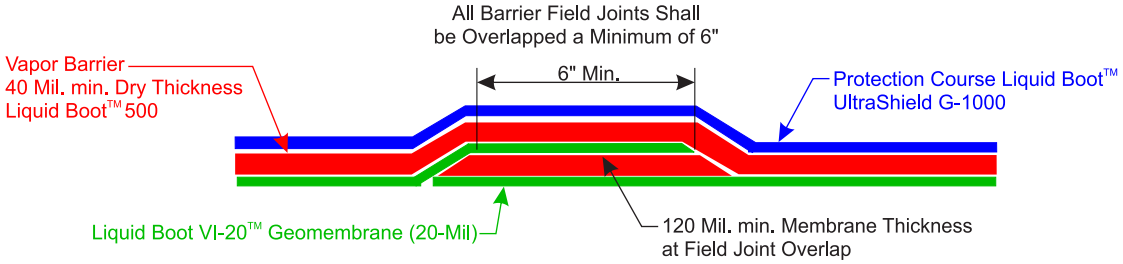
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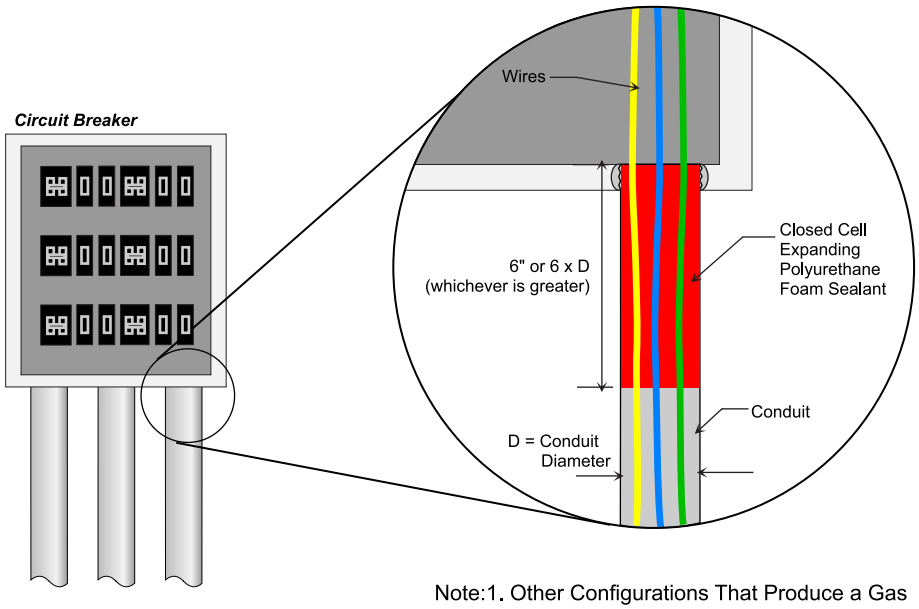
Date: February 2017

Typical Vent Pipiing Details

Figure 5



Typical Vapor Barrier Overlap Detail



Note:1. Other Configurations That Produce a Gas Tight Seal May Be Approved by the Engineer.

Conduit Seal

Not to Scale

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Date: February 2017

Typical Vapor Barrier Overlap and Utility Seal Details

Figure 6