

February 8, 2013

Ms. Jessica DeWit
Palo Alto Housing Corporation
725 Alma Street
Palo Alto, California 94301-2403

Subject: Summary Report, Limited Subsurface Investigations, 3703/3705/3707/3709 El Camino Real, Palo Alto, California, for Palo Alto Housing Corporation

Dear Ms. DeWit:

The Source Group, Inc. (SGI) is pleased to transmit this *Summary Report, Limited Subsurface Investigations* (Report) to Palo Alto Housing Corporation (PAHC) for the properties located at 3703, 3705, 3707, and 3709 El Camino Real (ECR), Palo Alto, California (Site).

The scope of work described herein was developed using information presented in the *Phase I Environmental Site Assessment Report* (ESA) prepared by Essel Environmental Consulting (Essel, 2012) and discussions with PAHC, to preliminarily assess subsurface conditions at the Site with respect to possible environmental concerns associated with historical Site use and nearby facilities. The ESA identified the past presence of a gasoline service station at the 3705 El Camino Real property, a construction company and an electronics components store at the 3709 El Camino Real property, and documented volatile organic compound (VOC) and petroleum hydrocarbon releases and/or use facilities in the immediate Site vicinity.

SCOPE OF WORK

This Report summarizes the activities and results for two field mobilizations conducted at the request of PAHC. The first mobilization was performed on December 21, 2012 in accordance with SGI's *Proposal for Limited Subsurface Investigation* (LSI) dated December 7, 2012. Following review of the LSI results and discussions with PAHC, SGI prepared the *Proposal for Additional Subsurface Investigation* (ASI) on January 18, 2013, and returned to the Site to perform the ASI activities on January 23, 2013.

Limited Subsurface Investigation (LSI)

The initial field activities were performed on December 21, 2012. The work included advancement of two temporary soil vapor probes and three soil borings to assess the following areas of inquiry:

1. Assess the potential presence of petroleum hydrocarbons and VOCs in soil vapor, shallow soil, and groundwater in the vicinity of the former gasoline service station reportedly located at the 3705 ECR property;

2. Assess the potential presence of VOCs in soil vapor and groundwater in the on-site areas hydraulically cross- to down-gradient from the former dry cleaning operation that was located across ECR to the southwest;
3. Assess the potential presence of VOCs and petroleum hydrocarbons (in soil and groundwater) and semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and metals (in soil only) impacts in the vicinity of the former electronics components store and construction materials storage area, located on the 3707 and 3709 ECR properties; and
4. Characterize shallow soils across the Site, for the suite of chemicals generally required for acceptance in the event of off-site soil reuse or disposal. Analytes included VOCs, petroleum hydrocarbons, organochlorine pesticides (OCPs), metals, SVOCs, and PCBs in accordance with the Department of Toxic Substances Control (DTSC) Information Advisory, Clean Imported Fill Material (DTSC, 2001).

Additional Subsurface Investigation (ASI)

Following review of the LSI results, SGI returned to the Site on January 23, 2013 to complete additional field activities. The ASI scope of work included advancing three additional temporary soil vapor probes and three additional soil borings to address areas of further inquiry as indicated by the LSI results, including:

1. Further assess the vicinity of the former service station and along the frontage of the Site with ECR where elevated concentrations of petroleum hydrocarbons, including total petroleum hydrocarbons as diesel (TPHd) and as gasoline (TPHg) were detected in soil vapor during the initial LSI; and
2. Further assess the eastern portion of the property where slightly elevated concentrations of tetrachloroethylene (PCE) in grab groundwater were detected during the initial LSI.

The methods used in performing the field activities are described below.

Preliminary Field Activities

Prior to beginning field-work, SGI prepared a Work Plan and Site-specific Health and Safety Plan (HASP) according to CFR 1910.120 describing safe work practices. In addition, SGI marked the proposed boring locations and notified Underground Service Alert (USA) one week prior to mobilizing to the Site. Prior to initiating the field work, SGI retained Cruz Brothers Locators (Cruz) of Scotts Valley, California and C. Cruz Subsurface Locators (C. Cruz) of Milpitas, California, respectively, to clear potential underground utilities and/or drilling obstructions.

Soil Vapor Sampling

For the December 2012 LSI, SGI retained Vironex of Concord, California, a C-57 licensed drilling contractor, to install two temporary soil vapor probes (SV-1 and SV-2) to a depth of 5 feet bgs at on-site locations along the ECR frontage. For the subsequent January 2013 ASI, three additional temporary soil vapor probes (SV-3, SV-4, and SV-5) were installed by Enprobe

Environmental Probing (Enprobe) of Oroville, California, also a C-57 licensed drilling contractor.

Each of the five soil vapor probes was advanced utilizing hydraulically driven direct push technology (DPT) drill rig equipped with detachable drive points. Prior to installation of the temporary probes, the upper 4 feet of each borehole was cleared for utilities using hand auger equipment. The temporary probes were constructed of clean, dry, 1/4-inch-diameter Teflon tubing attached to a 1-inch-long porous probe tip, which was placed in the middle of a 1-foot sand pack at the bottom of the borehole. Above the sand pack, 6-inches of dry, granular bentonite was poured into the borehole around the temporary probe followed by hydrated bentonite to the ground surface to prevent intrusion of ambient air into the borehole annulus during sampling. A Swagelok®-type compression fitting was attached to the top end of the tubing for connection to the sampling media. The approximate locations of the temporary soil vapor probes are shown on Figure 2.

Once constructed, each probe was allowed to equilibrate for a minimum of two hours prior to sampling. Sampling was conducted by connecting the probe to a clean laboratory-provided vapor purging and sampling apparatus using new Teflon™ tubing, followed by a leak test on each sampling apparatus for a ten (10) minute period. Following a successful leak test, the sample tubing and vapor probe were purged of a minimum of three probe volumes of air at a rate of 100-200 milliliters per minute (ml/min).

Soil vapor samples were collected following the proper leak tests and purging. Concurrent with the start of sampling, a helium-filled shroud was placed over the probe and sampling apparatus to demonstrate that the sample train was competent and without leaks. Helium concentrations within the shroud were monitored for the duration of sampling using a helium meter to ensure a concentration of no less than 10 percent by volume was maintained within the shroud.

Each soil vapor sample was collected into laboratory-supplied, batch certified SUMMA™ canisters and submitted to Kiff Analytical LLC (Kiff) for analyses of the following compounds:

- TPH as gasoline (TPHg) and TPH as diesel (TPHd) using EPA Method TO-3 Modified;
- VOCs (including benzene, toluene, ethylbenzene, and xylenes [BTEX] compounds, methyl tertiary butyl ether [MTBE], and naphthalene) using EPA Method TO-15; and
- Helium and oxygen by ASTM D1946.

Installation of the soil vapor probes, sample collection and analysis of were performed in general accordance with the California Department of Toxic Substances Control (DTSC) Final Vapor Intrusion Guidance document (DTSC, 2011).

Soil and Grab Groundwater Sampling

During the December 2012 LSI, SGI and Vironex advanced three soil borings (SB-1, SB-2, and SB-3) at the Site to allow collection of soil and grab groundwater samples for chemical

analysis. Additional shallow soil samples were collected for possible analysis using a hand auger during advancement of soil vapor probes SV-1 and SV-2. During the subsequent January 2013 ASI, Enprobe and SGI advanced three additional soil borings (SB-4, SB-5, and SB-6) for collection of soil and grab groundwater samples. The approximate locations of the soil borings are shown on Figure 2.

Groundwater was not encountered at boring location SB-1 due to drilling refusal at 15 feet bgs. Soil boring SB-1 was located inside the 3703 ECR building in the vicinity of the historic gasoline service station.

Soil Sampling

After coring through the existing pavement surface, the upper five feet at each boring location was cleared of subsurface obstructions using a hand auger. The driller then advanced each borehole to target depth using a Geoprobe™ 540MT limited access direct push drill rig (SB-1 located inside the 3703 ECR property building) or truck mounted Geoprobe™ 6600 or 5410 direct push drill rig (SB-2 through SB-6).

Vironex and Enprobe collected continuous core soil samples from each borehole. The soil cores were logged by an SGI field geologist working under the direction of a California-Registered Professional Geologist using the Unified Soil Classification System (USCS), including color, moisture content, mottling, and presence of staining or odors. In addition, the encountered soil was field screened for total volatile organics using a photo-ionization detector (PID). Soil boring logs are provided in Appendix A.

Soil encountered during the investigation consisted primarily of clay, sandy clay, sandy silt, and fine-grained sand to the total depth explored. SGI personnel did not observe significantly elevated PID readings, evidence of stained soil, or notable odors possibly indicative of chemical release(s).

During the December 2012 LSI, a total of two soil samples (one each from borings SB-3 and SV-1) were collected for laboratory analysis. During the January 2013 ASI, one soil sample (from boring SB-4) was collected for laboratory analysis. Each soil sample was sealed in an acetate sleeve, capped with Teflon tape and plastic end caps, labeled, and placed in an ice-chilled cooler for transport under Chain-of-Custody (COC) protocol to Kiff, a California certified analytical laboratory.

Groundwater Sampling

Groundwater was first encountered at approximate depths of 26 to 27 feet below ground surface (bgs). Upon encountering groundwater, the driller inserted a new temporary 0.75-inch well screen and riser consisting of new polyvinyl chloride (PVC) through the drill rods, and retracted the rods to expose the screen to saturated soils. SGI allowed each temporary well to accumulate water and attempted to collect a grab groundwater sample.

As described above, drilling refusal was encountered at 15 feet bgs at boring location SB-1 (located inside the 3703 ECR building), and saturated soil was not observed. A temporary well casing was installed at the total depth achieved, however measureable water was not present

in the temporary well after 30 minutes, therefore the casing was removed without collecting a groundwater sample.

Groundwater samples were collected directly into laboratory-supplied sample containers using a disposable bailer. Samples were labeled and placed in an ice-chilled cooler for transport under COC protocol to Kiff for chemical analysis.

LABORATORY ANALYSIS

During the December 2012 LSI, two soil samples were submitted for analysis of the following compounds:

- TPHd and TPH as motor oil (TPHmo) by EPA Method 8015 using silica gel cleanup;
- TPHg and VOCs (including MTBE and BTEX compounds) by EPA Method 8260;
- SVOCs by EPA Method 8270;
- PCBs by EPA Method 8082;
- OCPs by EPA Method 8081;
- California Assessment Manual (CAM17) metals by EPA Method 6010; and
- Hexavalent chromium by EPA Method 7196.

During the January 2013 ASI, one soil sample was submitted for analysis of the following compounds:

- TPHd and TPHmo by EPA Method 8015 using silica gel cleanup; and
- TPHg, MTBE, and BTEX compounds by EPA Method 8260.

During the December 2012 LSI and January 2013 ASI, each groundwater sample was analyzed for the following compounds:

- TPHd and TPHmo by EPA Method 8015 using silica gel cleanup; and
- TPHg and VOCs (including MTBE and BTEX compounds) by EPA Method 8260.

BOREHOLE COMPLETION

Upon completion, each soil vapor probe and soil boring was abandoned using a tremie pipe to backfill each boring to ground surface with neat cement grout. The investigation-derived waste (IDW) materials were stored on-site in California Department of Transportation (DOT)-approved 55-gallon drums pending receipt of laboratory analytical results. We anticipate the IDW may be disposed as non-hazardous waste under bill of lading or manifest signed by the appropriate generator.

ANALYTICAL RESULTS

The analytical results for the LSI and ASI activities are summarized below. Results were compared with applicable risk-based regulatory screening levels, including Environmental Screening Levels (ESLs; CRWQCB, 2008) and California Human Health Screening Levels (CHHSLs; DTSC, 2005), where available.

Soil Vapor Analytical Results

Soil vapor analytical results are summarized on Figure 3 and Tables 1 and 2. During the December 2012 and January 2013 investigations, the following compounds were detected in soil vapor samples above applicable screening levels for vapor intrusion concerns assuming a residential land use scenario:

- TPHd was detected in each of the five samples collected at concentrations ranging from 15,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and 190,000 $\mu\text{g}/\text{m}^3$;
- TPHg was detected in four of the five soil samples collected at a concentrations ranging from 12,000 $\mu\text{g}/\text{m}^3$ to 69,000 $\mu\text{g}/\text{m}^3$.

Low concentrations of VOCs and BTEX compounds were reported at levels well below applicable screening criteria. The reporting limits for naphthalene were above the ESL for samples collected from probes SV-3, SV-4, and SV-5.

Oxygen, which may be used to assess the potential for biological degradation of certain chemical compounds in vadose zone soil and soil vapor, was reported in each of the soil vapor samples at concentrations ranging from 12 percent by volume (%v/v) to 21 %v/v.

Helium, which was used as a leak check compound during soil vapor sample collection, was not detected above reporting limits in any of the soil vapor samples collected, with the exception of sample SV-5 at a concentration of 0.44 %v/v. This result indicates a possible atmospheric dilution factor of less than 5% in the sample collected from probe SV-5. The generally accepted tolerance for field method reproducibility is $\pm 30\%$. Therefore, the soil vapor data presented are deemed valid with respect to sample train competency, and lack of significant leaks and atmospheric dilution.

Soil Analytical Results

Soil analytical results are presented on Tables 3 and 4. During the December 2012 and January 2013 investigations, the following compounds were detected in soil samples above applicable screening levels assuming a residential land use scenario:

- Arsenic was detected in each of the soil samples analyzed at concentrations of 2.9 milligrams per kilogram (mg/kg) (SV-1) and 4.8 mg/kg (SB-3), which exceed the residential ESL for arsenic of 0.39 mg/kg.
- Vanadium was detected in each of the soil samples analyzed at concentrations of 70 mg/kg (SV-1) and 83 mg/kg (SB-3), which exceed the residential ESL for vanadium of 16 mg/kg.
- Total chromium was reported at a concentration of 120 mg/kg in each of the soil samples analyzed. The reported concentration is well below applicable human health risk screening values, however the values exceed the solubility threshold limit concentration (STLC) trigger value (50 mg/kg) used to determine waste hazard classification in the event the soil is moved off-site for disposal or reuse.

TPHd and TPHmo were detected in two of the three soil samples analyzed (SB-3 and SB-4) at a maximum concentration of 50 mg/kg and 120 mg/kg, respectively. Each of the reported TPHd and TPHmo concentrations were below applicable risk-based screening levels.

VOCs, SVOCs, OCPs, and PCBs were not detected above respective reporting limits in any of the soil samples analyzed.

Groundwater Analytical Results

Groundwater analytical results are presented on Tables 5 and 6. During the December 2012 and January 2013 investigations, low concentrations of PCE, trichloroethylene (TCE), and TPHg were detected in two of the five analyzed groundwater samples (SB-2 and SB-3), however, the detected concentrations did not exceed applicable screening levels for vapor intrusion concerns for the residential scenario.

None of the analyzed compounds were reported above reporting limits in groundwater samples collected from borings SB-4, SB-5, and SB-6.

Laboratory analytical reports and chain-of-custody documentation are provided as Appendix B.

CONCLUSIONS

The field activities completed in December 2012 and January 2013 and documented in this Report included the collection and analysis of five soil vapor samples, three soil samples, and five grab groundwater samples from the Site subsurface. The activities were conducted at the request of PAHC to assess areas of environmental inquiry in advance of proposed Site redevelopment.

The results indicate the following subsurface conditions:

- Petroleum hydrocarbons, including TPHd and TPHg, are present in soil vapor beneath the Site, and may be attributed to the former service station along the frontage of the ECR;
- Low concentrations of PCE in groundwater are present on the eastern portion of the property; and
- Low concentrations of metals, including arsenic and vanadium, are present in shallow soil collected from the eastern and southern portions of the property. Each elevated result is further evaluated below.

Petroleum Hydrocarbons

Concentrations of TPHd and TPHg in soil vapor at the Site exceeded ESLs developed for vapor intrusion concerns for a residential land use scenario. Generally, the evaluation of TPH in a risk evaluation includes the evaluation of its components most likely to reflect risk (i.e., BTEX, MTBE, and naphthalene). For vapor intrusion concerns at petroleum release sites, DTSC recommends evaluation of specific volatile indicator compounds within petroleum (DTSC, 2011). The detections of BTEX compounds in soil vapor are well below the

residential ESL for vapor intrusion concerns and naphthalene was not detected above laboratory reporting limits.

Furthermore, the Low-Threat Underground Storage Tank Closure Policy (Closure Policy) adopted by the California State Water Resources Control Board (SWRCB) in May 2012 presents revised criteria for evaluating chemicals of potential concern at underground storage tank (UST) release sites. The Closure Policy "describes conditions, including bioattenuation zones, which if met will assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks (SWRCB, 2012). The Closure Policy requires that where a bioattenuation zone is defined, the following Site-specific conditions be satisfied in order for the Site to be considered low-threat for the vapor-intrusion-to-indoor-air pathway:

1. The bioattenuation zone shall be a continuous zone that provides a separation of at least 5 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings (where dissolved benzene concentrations in groundwater are less than 100 micrograms per liter (ug/l);
2. The bioattenuation zone shall contain Total TPH (TPHg and TPHd combined) less than 100 mg/kg throughout the entire depth of the bioattenuation zone;
3. There is a minimum of five vertical feet of soil between the soil vapor measurement and the foundation of an existing building or ground surface of future construction;
4. Oxygen is greater than or equal to four percent measured at the bottom of the five-foot zone; and
5. Concentrations of benzene, ethylbenzene, and naphthalene in soil vapor are less than 85,000 $\mu\text{g}/\text{m}^3$, 1,100,000 $\mu\text{g}/\text{m}^3$, and 93,000 $\mu\text{g}/\text{m}^3$, respectively.

As described in this Report, the Site meets each of the above criteria by virtue of the following demonstrated conditions:

- Groundwater at the Site was encountered at depths of 26 to 27 feet bgs, and stabilized water levels were measured between 15 and 20 feet bgs and dissolved benzene was not detected above reporting limits in any of the groundwater samples analyzed;
- Total TPH (TPHd and TPHg) concentrations in shallow soil samples collected at the Site ranged from 3.1 to 50 mg/kg;
- Soil vapor samples were collected at a depth of five feet bgs;
- Oxygen concentrations in soil vapor samples collected from across the Site ranged from 12 %v/v to 21 %v/v; and
- Benzene and ethylbenzene were indicated in Site soil vapor samples at maximum concentrations of 12 $\mu\text{g}/\text{m}^3$ and 40 $\mu\text{g}/\text{m}^3$, respectively. Naphthalene was not indicated in Site soil vapor samples above reporting limits.

Therefore, TPHd and TPHg in soil vapor at the Site are not considered a vapor intrusion concern, and the Site may be considered low-threat with respect to petroleum hydrocarbons detected in the subsurface.

Tetrachloroethylene

PCE was reported at a concentration of 19 µg/l in the sample collected from boring SB-3 located behind the 3707 ECR property. The result did not exceed the ESL value of 120 µg/l based on vapor intrusion concerns for a residential scenario, however it does exceed the lowest ESL of 5 µg/l based on groundwater use as a drinking water resource. There are no known water supply wells located at the Site, and SGI understands shallow groundwater is not intended for beneficial use as drinking water in the foreseeable future. Therefore, PCE in Site groundwater is not considered to represent an unacceptable health risk to future occupants.

Metals

Arsenic and vanadium were detected at concentrations above the residential ESL. The DTSC (1992) recommends that metals detected in soils at background (ambient) levels not be identified as chemicals of potential concern at a site. The Lawrence Berkeley National Laboratory (LBNL) and the Lawrence Livermore National Laboratory (LLNL) conducted studies of background distributions of metals in soil, including arsenic and vanadium (LBNL, 2009; LLNL, 1999). The maximum background concentrations from the LBNL study, calculated based upon the 95% upper confidence limit, are 17 mg/kg for arsenic and 77 mg/kg for vanadium. The maximum background concentrations from the LLNL study, calculated based upon the 95% upper confidence limit, are 8.3 mg/kg for arsenic and 130 mg/kg for vanadium. Therefore, it is likely that the arsenic and vanadium concentrations reported in Site soils represent naturally derived background levels and should not be considered chemicals of potential concern at the Site, as the concentrations are within reasonable background ranges.

Total chromium was indicated at a concentration of 120 mg/kg in both soil samples analyzed for chromium. The reported concentration is well below applicable human health risk screening values, however the values exceed the solubility threshold limit concentration (STLC) trigger value (50 mg/kg) used to determine waste hazard classification in the event the soil is moved off-site for disposal or reuse. Therefore, additional analysis of soil exhibiting chromium concentrations over 50 mg/kg, including the waste extraction test (WET), may be warranted prior to soil off-haul to establish its waste hazard class.

RECOMMENDATIONS

Based upon our assessment of the available information, SGI recommends the following:

- ***Soil Management Plan Preparation*** – SGI's work did not include an extensive search for possible remnant service station features (such as USTs) due to access constraints at the Site. However, due to the presence of petroleum compounds in soil vapor beneath the Site and the limited historical information available with respect to the former gasoline service station, SGI recommends preparation of a Soil Management Plan (SMP) for use during Site redevelopment. The SMP would outline precautionary

steps to be taken to mitigate risks to human health and the environment from identified chemicals during future redevelopment and/or intrusive activities at the Site. Intrusive activities include soil grading, excavation, trenching and backfilling activities and utility repair. The SMP would also describe steps to address structures such as USTs and/or conditions associated with the former service station should they be encountered during future Site work.

- **Potential Mitigation Measures** – If remnant features associated with the former service station are found during Site redevelopment, additional subsurface investigation activities may be warranted. If encountered, the presence of residual petroleum hydrocarbons and VOCs in the Site subsurface media may be mitigated through use of construction measures including but not limited to vapor barriers, subsurface parking garages which are ventilated or exposed to ambient air, and passive venting systems placed beneath building foundations.
- **Regulatory Reporting** – SGI recommends this Report and the SMP be submitted in their entirety to the Santa Clara County Department of Environmental Health (SCCDEH) and City of Palo Alto Planning and Community Environment Department for review and concurrence prior to the start of redevelopment activities;
- **Existing Structure Demolition and Disposal** – The existing Site structures may contain lead-based paint (LBP), asbestos-containing materials (ACM), and other potentially hazardous building materials (Essel, 2012). Such assessment was not part of SGI's work scope. Therefore, SGI recommends PAHC retain a qualified ACM and LBP consultant licensed to evaluate the Site for the presence and removal of building materials during demolition of the existing structures on the subject properties.

SGI would welcome the opportunity to discuss our recommendations and the results presented in this Report at your convenience.

LIMITATIONS

This Report has been prepared for the exclusive use of Palo Alto Housing Corporation and their authorized representatives, as it pertains to the identified project Site in Palo Alto, California. This Report does not reflect subsurface variations that may exist between sampling points and such variations cannot be anticipated nor can they be entirely accounted for even with exhaustive additional testing. The information contained in this Report represents our professional opinions, and is based in part on information supplied by others. Our work therefore relied upon the validity of the supplied information, and as such, no warranty is implied or intended. The opinions expressed are based on the conditions of the Site existing at the time of the field investigation, current regulatory requirements, and any specified assumptions. The presented findings and recommendations in this report are intended to be taken in their entirety to assist PAHC personnel in applying their own professional judgment in making decisions related to the property. SGI cannot provide conclusions on environmental

conditions outside the completed scope of work. SGI cannot guarantee that future conditions will not change and affect the validity of the presented conclusions and recommended work.

Sample locations were determined in part by Site access constraints, including the presence of buildings and the demonstrated limitations of limited access drilling technology with respect to Site lithology. In addition, the precise locations of historical features of interest such as USTs were not available during implementation of field activities. Therefore, samples may not have been collected at the exact locations of historical features of interest.

CLOSING

SGI appreciates the opportunity to work with Palo Alto Housing Corporation on this project. Should you have any questions about this Report, please call Morgan Jones at (925) 951-5653.

Sincerely,

The Source Group, Inc.

Morgan G. Jones, GIT
Project Geologist

James G. Ritchie, P.G.
Principal Geologist

cc: Mr. Joshua Walker, PAHC
Ms. Serene Daro, SGI

Attachments:

Figure 1 – Site Vicinity Map

Figure 2 – Site Plan

Figure 3 – Soil Vapor Analytical Results

Table 1 – Summary of Analytical Results for Soil Vapor - Petroleum Hydrocarbons

Table 2 – Summary of Analytical Results for Soil Vapor - Volatile Organic Compounds

Table 3 – Summary of Analytical Results for Soil - Agricultural Chemicals and Metals

Table 4 – Summary of Analytical Results for Soil - Petroleum Hydrocarbons and Volatile Organic Compounds

Table 5 – Summary of Analytical Results for Groundwater - Petroleum Hydrocarbons

Table 6 – Summary of Analytical Results for Groundwater, Volatile and Semi-Volatile Organic Compounds and Metals

Attachment A – Soil Boring Logs

Attachment B – Laboratory Analytical Reports and Chain-of-Custody Documentation

References:

California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB), 2008. Environmental Screening Levels, Interim Final - November 2007 (Revised May 2008).

California State Water Resources Control Board (SWRCB), 2012. Low-Threat Underground Storage Tank Case Closure Policy. May.

Department of Toxic Substances Control (DTSC), 2001. Information Advisory, Clean Imported Fill Material. October.

DTSC, 2005. Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties. California Environmental Protection Agency. January.

DTSC, 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air – Final. California Environmental Protection Agency. October.

Essel Environmental Consulting (Essel), 2012. Phase I Environmental Site Assessment, 3703, 3705, 3707, and 3709 El Camino Real, Palo Alto, California 94306. August 15.

Lawrence Berkeley National Laboratory (LBNL), 2009. Analysis of Background Distributions of Metals in the Soil at LBNL. Revised April.

Lawrence Livermore National Laboratory (LLNL), 1999. Final Site-Wide Feasibility Study for LLNL. November.

— — — — — Approximate Site Boundary

BASEMAP SOURCES:
U.S.G.S. GEOPDF, PALO ALTO CA 2012

SITE VICINITY MAP

3703 3705 3707 3709 EL CAMINO REAL
PALO ALTO, CALIFORNIA

PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-PAHC-001/3	1/11/13	DP	RC



A horizontal scale bar with alternating black and white segments. It is labeled with '0' at the left end, '800' in the middle, and '1,600' at the right end. Below the bar, the text 'HORIZONTAL SCALE IN FEET' is written.



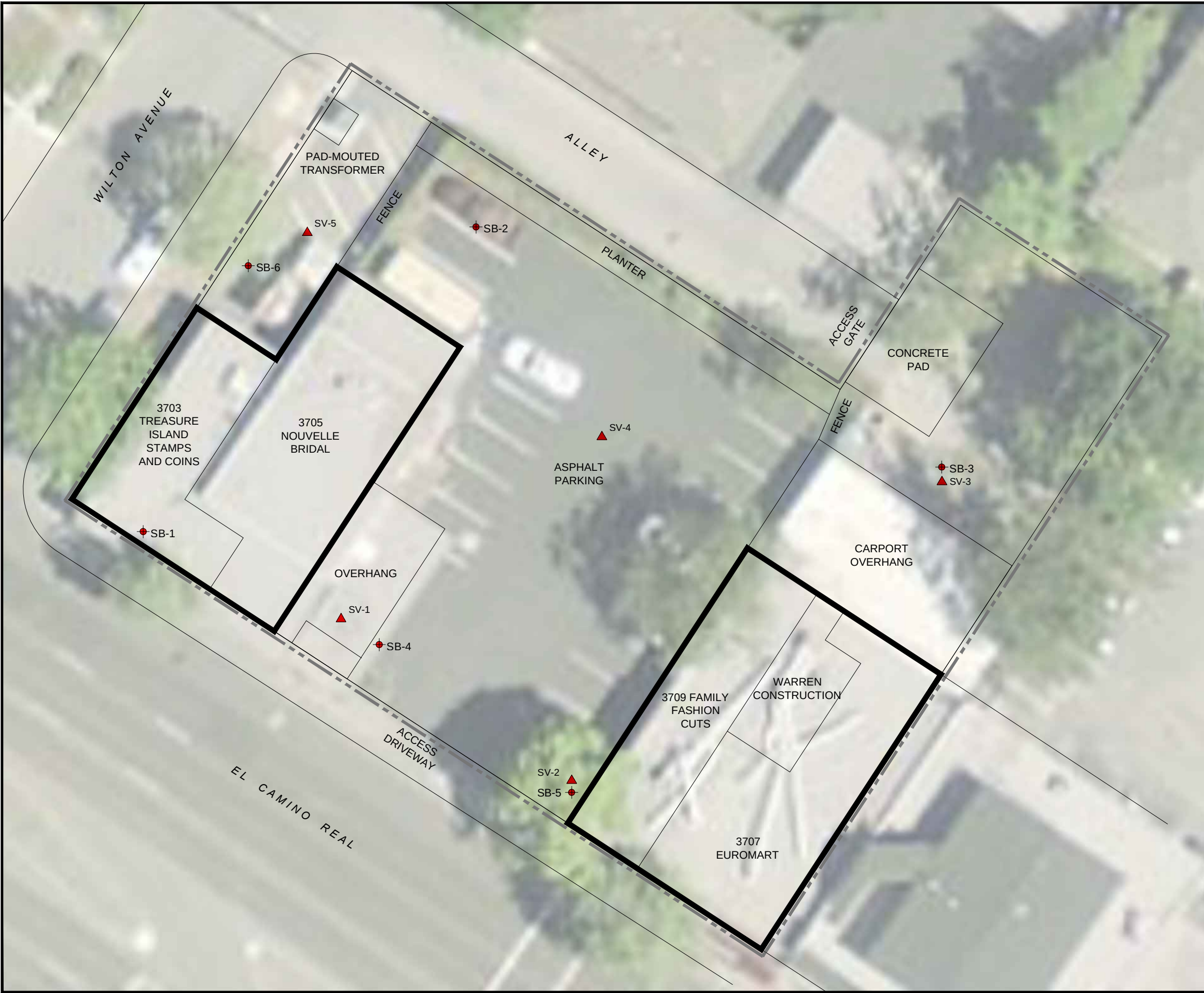
THE
SOURCE GROUP, INC.

3478 Buskirk Avenue, Suite 100
Pleasant Hill, California 94523



FIGURE
1

20130208.05062832 D:\Clients\SGINC\PHAC 3703-09 El Camino\2013-02\PHAC 3703-09 El Camino - 2013Feb.dwg



LEGEND

--- Approximate Property Boundary

▲ Soil Vapor Sampling Location

● Soil and Grab Groundwater Sampling Location

BASEMAP SOURCES:
U.S.G.S. Aerial Photo
Dated: April 2011

SITE PLAN

3703 3705 3707 3709 EL CAMINO REAL
PALO ALTO, CALIFORNIA

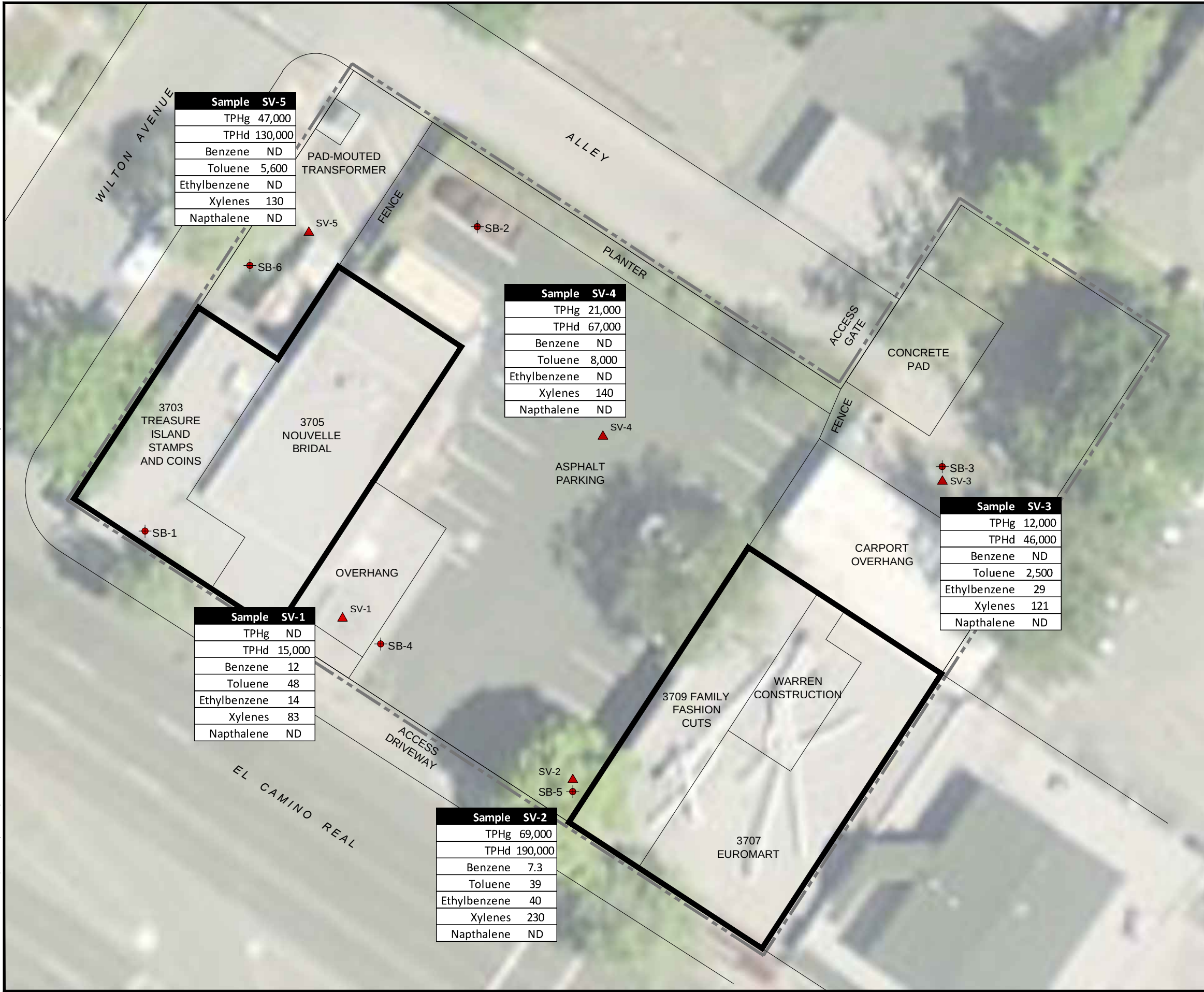
PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-PAHC-001/3	2/8/13	DP	RC

0 60 120
HORIZONTAL SCALE IN FEET

THE SOURCE GROUP, INC.
3478 Buskirk Avenue, Suite 100
Pleasant Hill, California 94523

FIGURE 2

20130208.05063323 D:\Clients\SCINC\PHAC 3703-09 El Camino - 2013Feb.dwg



LEGEND

- Approximate Property Boundary
- ▲ Soil Vapor Sampling Location
- Soil and Grab Groundwater Sampling Location
- TPHg Total Petroleum Hydrocarbons as gasoline
- TPHd Total Petroleum Hydrocarbons as diesel
- ND Not detected above the laboratory reporting limit
- Concentrations in micrograms per cubic meter

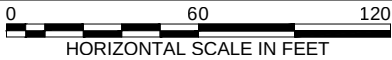
BASEMAP SOURCES:

U.S.G.S. Aerial Photo
Dated: April 2011

SOIL VAPOR ANALYTICAL RESULTS

3703 3705 3707 3709 EL CAMINO REAL
PALO ALTO, CALIFORNIA

PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-PAHC-001/3	2/8/13	DP	RC



THE
SOURCE GROUP, INC.

3478 Buskirk Avenue, Suite 100
Pleasant Hill, California 94523



FIGURE
3

Table 1
Summary of Analytical Results for Soil Vapor
Petroleum Hydrocarbons
Palo Alto Housing Corporation
Palo Alto, California

Sample Location	Date	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl benzene	Total xylenes	MTBE	Naphthalene	1,2,4-TMB	1,3,5-TMB	4-Ethyl Toluene	Oxygen	Helium ^a
		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(%v/v)
Screening Levels														
ESL - Shallow Soil Gas, Vapor Intrusion Concerns		10,000	10,000	84	63,000	980	21,000	9,400	72	---	---	---	---	---
CRWQCB Soil Gas Criteria - Low-Threat UST Case Closure Policy		--	--	85,000	--	1,100,00	--	--	93,000	--	--	--	--	---
SV-1	12/21/12	<9,000	15,000	12	48	14	83	<7.9	<58	27	<4.4	21	21	<0.22
SV-2	12/21/12	69,000	190,000	7.3	39	40	230	<7.3	<53	72	41	140	19	<0.20
SV-3	1/23/13	12,000	46,000	<10	2,500	29	121	<12	<86	<32	<32	<16	12	<0.23
SV-4	1/23/13	21,000	67,000	<44	8,000	<60	140	<50	<360	<140	<140	<68	19	<0.23
SV-5	1/23/13	47,000	130,000	<36	5,600	<49	130	<40	<290	<110	<110	<55	21	0.44

Notes:

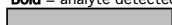
TPHg = total petroleum hydrocarbons as gasoline

TPHd = total petroleum hydrocarbons as diesel

TMB = trimethylbenzene

--- = Not applicable/not analyzed.

<4.4 = Not detected at or above the specified laboratory method reporting limit (RL)

Bold = analyte detected at or above the RL = analyte detected at or above corresponding screening level $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.

%v/v = percent by volume

ESL = California Regional Water Quality Control Board, San Francisco Bay Region. Environmental Screening Levels, Interim Final - November 2007 (Revised May 2008).

Table E for Shallow Soil Gas Residential Land Use, Vapor Intrusion Concerns.

CRWQCB Soil Gas Criteria = California Regional Water Quality Control Board Low-Threat Underground Storage Tank Closure Policy, effective August 17, 2012.

Appendix 4, Scenario 4 - Direct Measurement of Soil Gas Concentrations

a = Helium used as a leak check compound during sample collection

DRAFT

Table 2
Summary of Analytical Results for Soil Vapor
Volatile Organic Compounds
Palo Alto Housing Corporation
Palo Alto, California

Sample Location	Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA	Acetone	4-Methyl-2-Pentanone	MEK	Chloroform	Other VOCs
		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m3)	(µg/m³)	(µg/m³)	(µg/m³)
Screening Levels												
ESL - Shallow Soil Gas, Vapor Intrusion Concerns		410	1,200	7,300	15,000	31	460,000	660,000		1,000,000	---	---
SV-1	12/21/12	<15	<12	<8.7	<8.7	<39	<12	290	<9.0	30	<11	ND
SV-2	12/21/12	<14	<11	<8.0	<8.0	<36	<11	210	<8.3	28	<9.9	ND
SV-3	1/23/13	<22	<18	<13	<13	<8.4	<18	55	15	55	<16	ND
SV-4	1/23/13	<94	<74	<55	<55	<35	<75	ND<160	64	<160	<67	ND
SV-5	1/23/13	<76	<60	<45	<45	<29	<61	ND<130	49	<130	78	ND

Notes:

PCE = Tetrachloroethylene.

TCE = Trichloroethylene.

DCE = Dichloroethylene.

TCA = Trichloroethane.

MEK = Methyl Ethyl Ketone or 2-Butanone

VOCs = Volatile Organic Compounds by EPA Method TO-15

Bold = analyte detected at or above the RL

--- = Not applicable/not analyzed.

<3.2 = Not detected above the specified laboratory method reporting limit.

ND = Not detected above respective laboratory method reporting limits.

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.

ESL = California Regional Water Quality Control Board, San Francisco Bay Region. Environmental Screening Levels, Interim Final - November 2007 (Revised May 2008).

Table E for Shallow Soil Gas Residential Land Use, Vapor Intrusion Concerns.

J = Indicates an estimated value

Table 3
Summary of Analytical Results for Soil
Agricultural Chemicals and Metals
Palo Alto Housing Corporation
Palo Alto, California

Sample Location	Sample Depth	Sample Date	Chlordane	Dieldrin	4,4'-DDD	4-4'-DDE	4-4'-DDT	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium, Hexavalent	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
	(feet bgs)		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Levels																									
CHHSL - Residential Land Use			0.43	0.035	2.3	1.6	1.6	30	0.070	5,200	150	1.7	100,000	17	660	3,000	80	18	380	1,600	380	380	530	530	23,000
ESL - Shallow (≤10 feet bgs)			0.44	0.0023	2.4	1.7	1.7	6.3	0.39	750	4.0	1.7	--	8.0	40	230	200	1.3	40	150	10	20	1.3	16	600
Regional Background Level ¹			---	---	---	---	---	6.0	17	280	1.0	5.6	100	---	22	58	17	0.42	4.8	164	4.9	2.9	10	77	110
Regional Background Level ²			---	---	---	---	---	---	8.3	560	1.4	1.5	78	---	19	66	---	0.2	27	140	1.5	---	14	130	91
SV-1	3-3.5	12/21/12	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.75	2.9	160	0.57	ND<0.50	120	1.7	14	35	4.2	ND<0.050	0.28	110	ND<0.75	ND<0.25	ND<0.75	70	56
SB-3	1-1.5	12/21/12	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.75	4.8	140	0.50	ND<0.50	120	1.4	18	40	7.5	ND<0.050	0.38	98	ND<0.75	ND<0.25	ND<0.75	83	64

Notes:
bgs = below ground surface
mg/kg = milligrams per kilogram
<0.0050 = Not detected at or above the noted laboratory reporting limit
Bold = analyte detected at or above the RL
--- = Not applicable/not analyzed
[shaded box] = analyte detected at or above corresponding screening level

CHHSL = Cal EPA California Human Health Screening Level - January 2005
ESL = California Regional Water Quality Control Board, San Francisco Bay Region. Environmental Screening Levels, Interim Final - November 2007 (Revised May 2008).
Table A for Shallow Soils (≤10 feet bgs) and Table C for Deep Soils (>10 feet bgs), Residential Land Use, Groundwater is a current or potential source of drinking water.

¹ Source: Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory, LBNL June 2002. Revised April 2009.
Values represent background concentrations of selected metal elements in subsurface soil (all depths below 0.5 ft).

² Source: Final Site-Wide Feasibility Study for Lawrence Livermore National Laboratory, LLNL, November 1999.
Values represent 95th Percentile of data set, if available. Otherwise, the 99th percentile is presented.

Table 4
Summary Analytical Results for Soil
Petroleum Hydrocarbons and Volatile Organic Compounds
Palo Alto Housing Corporation
Palo Alto, California

Sample Location	Sample Depth	Date	TPHg	TPHd	TPHmo	Benzene	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Other VOCs/SVOCs
	(feet bgs)		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Screening Levels											
ESL - Shallow (≤10 feet bgs)			83	83	370	0.044	0.37	0.46	0.19	0.67	---
SV-1	3-3.5	12/21/12	ND<1.0	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND
SB-3	1-1.5	12/21/12	ND<1.0	50 ^a	120	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND
SB-4	5-5.5	1/23/13	ND<1.0	3.1 ^a	48	ND<0.0050	---	---	---	---	ND

Notes:
bgs = below ground surface
PCE = Tetrachloroethylene
TCE = Trichloroethylene
DCE = Dichloroethylene
SVOCs = Semi-volatile Organic Compounds
PCB = Polychlorinated biphenyls including Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260, and 1262
mg/kg = milligrams per kilogram
ND<0.0050 = Not detected at or above the noted Laboratory Reporting Limit
Bold = analyte detected at or above the RL
--- = Not applicable/not analyzed
ESL = California Regional Water Quality Control Board, San Francisco Bay Region. Environmental Screening Levels, Interim Final - November 2007 (Revised May 2008).
Table A for Shallow Soils (≤10 feet bgs) and Table C for Deep Soils (>10 feet bgs), Residential Land Use, Groundwater is a current or potential source of drinking water.
a = Hydrocarbons are higher-boiling than typical Diesel Fuel

Table 5
Summary of Chemical Analytical Results for Groundwater
Petroleum Hydrocarbons
Palo Alto Housing Corporation
Palo Alto, California

Sample ID	Date	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Napthalene
		(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
Screening Levels									
ESL - Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion Concerns for Residential Land Use	---	---	---	---	540	380,000	170,000	160,000	3,200
SB-2-GW	12/21/12	ND<50	ND<50	ND<100	ND<0.50	ND<0.50	ND<0.50	ND<1.5	ND<0.50
SB-3-GW	12/21/12	57 ^a	ND<50	ND<100	ND<0.50	ND<0.50	ND<0.50	ND<1.5	ND<0.50
SB-4-GW	1/23/13	ND<50	ND<50	ND<100	ND<0.50	ND<0.50	ND<0.50	ND<1.5	ND<0.50
SB-5-GW	1/23/13	ND<50	ND<50	ND<100	ND<0.50	ND<0.50	ND<0.50	ND<1.5	ND<0.50
SB-6-GW	1/23/13	ND<50	ND<50	ND<100	ND<0.50	ND<0.50	ND<0.50	ND<1.5	ND<0.50

Notes:

TPHg = Total petroleum hydrocarbons as gasoline

TPHd = Total petroleum hydrocarbons as diesel

TPHmo = Total petroleum hydrocarbons as motor oil

µg/l = micrograms per liter

ESL = California Regional Water Quality Control Board, San Francisco Bay Region. Environmental Screening Levels, Interim Final - November 2007 (Revised May 2008).

Table F-1a for Groundwater is a Current or Potential Drinking Water Resource and Table F-1b for Groundwater is NOT a Current or Potential Drinking Water Resource.

a = Primarily compounds not found in typical Gasoline

Bold = analyte detected at or above the laboratory reporting limit

--- = Not applicable/not analyzed

ND<50 = analyte not detected at or above the noted laboratory method detection limit

DRAFT

Table 6
Summary of Analytical Results for Groundwater
Volatile and Semi-Volatile Organic Compounds and Metals
Palo Alto Housing Corporation
Palo Alto, California

Sample ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Other VOCs
		(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
Screening Levels							
ESL - Groundwater is a Current or Potential Drinking Water Resource		5	5	6	10	0.5	---
ESL - Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion Concerns for Residential Land Use		120	530	6,200	6,700	3.8	---
SB-2-GW	12/21/12	0.84	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND
SB-3-GW	12/21/12	19	0.86	ND<0.50	ND<0.50	ND<0.50	ND
SB-4-GW	1/23/13	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND
SB-5-GW	1/23/13	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND
SB-6-GW	1/23/13	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND

Notes:

PCE = Tetrachloroethylene

TCE = Trichloroethylene

DCE = Dichloroethylene

VOCs = Volatile Organic Compounds

µg/l = micrograms per liter.

ND<0.50 = analyte not detected at or above the noted laboratory method detection limit.

--- = Not applicable/not analyzed.

Bold = analyte detected at or above the RL. = analyte detected at or above corresponding screening level

ESL = California Regional Water Quality Control Board, San Francisco Bay Region. Environmental Screening Levels, Interim Final - November 2007 (Revised May 2008).

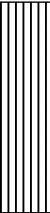
Table F-1a for Groundwater is a Current or Potential Drinking Water Resource and Table E-1 for Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion Concerns (volatile chemicals only)

ATTACHMENT A

Soil Boring Logs

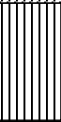
							BORING/WELL ID: SB-1			
PROJECT NAME AND ADDRESS:							Palo Alto Housing Corporation -3703 - 3709 El Camino Real		Project No.: 01-PAHC-001	
BORING LOCATION (AT SITE):							Commercial Shop		Logged By: Andrew Tracy	
CONTRACTOR AND EQUIPMENT:							Vironex - Geoprobe			
SAMPLING METHOD:							Macro Core		MONITORING DEVICE:	
START DATE/ (TIME):							12/21/12 8:00		FINISH DATE/ TIME	
FIRST WATER (BGS):							NA		STABILIZED WATER LEVEL:	
SURFACE ELEVATION:							NA		CASING TOP ELEVATION:	
TOTAL BORING DEPTH(S):							15'		BORING DIAMETER/DEPTH:	
							LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED			
Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy			Well	construction details
8:10	0.3		X		0	3" concrete core.				
					1	Gravelly clay (CL), (7.5 YR 3/1), dry, low plasticity, dense, (20, 0, 10, 20).				
					2	Clay (CL), (7.5 YR 2.3/1), dry, dense, hard, low plasticity, (0, 0, 0, 100).				
8:13	0.3		X		3					
					4					
					5					
8:55	0.0		X		6					
					7					
					8					
8:45	0.0		X		9					
					10					
					11					
9:00	0.0		X		12					
					13					
					14					
					15		Geoprobe Refusal			
					16					
					17					
					18					
					19					
					20					

 THE SOURCE GROUP, INC.						BORING/WELL ID: SB-2		
PROJECT NAME AND ADDRESS:			Palo Alto Housing Corporation -3703 - 3709 El Camino Real			Project No.: 01-PAHC-001		
BORING LOCATION (AT SITE):			Back of Parking Lot			Logged By: Andrew Tracy		
CONTRACTOR AND EQUIPMENT:			Vironex - Geoprobe					
SAMPLING METHOD:			Direct Push		MONITORING DEVICE:	PID		
START DATE/ (TIME):			12/21/12 11:20		FINISH DATE/ TIME	12/21/12 13:15		
FIRST WATER (BGS):			NA		STABILIZED WATER LEVEL:	13.5		
SURFACE ELEVATION:			NA		CASING TOP ELEVATION:	NA		
TOTAL BORING DEPTH(S):			30'		BORING DIAMETER/DEPTH:	1.5"/30'		
Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
11:22	0.0				0		4" asphalt.	
	0.0				1		Sandy silt with gravel (ML), (7.5 YR 4/2), dry, non-plastic ,fine to medium-grained, (5, 20, 20, 5).	
11:26	0.0				2		Lean clay (CL), (7.5 YR 3/1), moist, medium plasticity, (0, 0, 0, 100).	
	0.0				3			
8:55	0.0				4			
	0.0				5			
8:45	0.0				6			
	0.2				7			
9:00	0.0				8			
	0.0				9			
9:00	0.0				10		Lean clay (CL), (7.5 YR 4/6), moist, medium plasticity, (0, 0, 0, 100).	
	0.0				11			
9:00	0.2				12			
	0.0				13		Sandy silt with clay (ML), (7.5 YR 4/6), moist, low plasticity, (10, 25, 55, 10).	
9:00	0.0				14		Increasing gravel.	
	0.0				15		Increasing clay content with depth.	
9:00	0.0				16			
	0.0				17			
9:00	0.0				18		Clay (CL), (7.5 YR 4/6), soft, moist, medium plasticity, (2, 5, 20, 70).	
	0.0				19			
					20			

 THE SOURCE GROUP, Inc.						BORING/WELL ID: SB-2		
PROJECT NAME AND ADDRESS:			Palo Alto Housing Corporation -3703 - 3709 El Camino Real			Project No.: 01-PAHC-001		
BORING LOCATION (AT SITE):			Back of Parking Lot			Logged By: Andrew Tracy		
CONTRACTOR AND EQUIPMENT:			Vironex - Geoprobe					
SAMPLING METHOD:			Direct Push		MONITORING DEVICE:	PID		
START DATE/ (TIME):			12/21/12 11:20		FINISH DATE/ TIME	12/21/12 13:15		
FIRST WATER (BGS):			NA		STABILIZED WATER LEVEL:	13.5'		
SURFACE ELEVATION:			NA		CASING TOP ELEVATION:	NA		
TOTAL BORING DEPTH(S):			30'		BORING DIAMETER/DEPTH:	1.5"/30'		
Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
	0.0				20		Sandy silt (ML), (7.5 YR 4/6), dense, moist, low plasticity, poorly-graded, (0, 20, 80, 0).	
	0.0				21			
	0.0				22			
	0.2				23			
	0.0				24			
	0.0				25		Very fine, poorly-graded sand (SP), (7.5 YR 4/6), moist, non-plastic, (0, 90, 10, 0).	
	0.0				26		Silty sand with gravel (SW), (7.5 YR 4/6), well, non plastic, (25, 35, 40, 0), well graded.	
	0.1				27			
	0.2				28			
	0.2				29			
	0.1				30			
					31		Total Depth 30 feet bgs	
					32			
					33			
					34			
					35			
					36			
					37			
					38			
					39			
					40			

 THE SOURCE GROUP, Inc.							BORING/WELL ID: SB-3	
PROJECT NAME AND ADDRESS:			Palo Alto Housing Corporation -3703 - 3709 El Camino Real				Project No.: 01-PAHC-001	
BORING LOCATION (AT SITE):			NE of Carport				Logged By: Andrew Tracy	
CONTRACTOR AND EQUIPMENT:			Vironex - Geoprobe					
SAMPLING METHOD:			DPT		MONITORING DEVICE:		PID	
START DATE/ (TIME):			12/21/12 13:25		FINISH DATE/ TIME		12/21/12 14:25	
FIRST WATER (BGS):			NA		STABILIZED WATER LEVEL:		18	
SURFACE ELEVATION:			NA		CASING TOP ELEVATION:		NA	
TOTAL BORING DEPTH(S):			30'		BORING DIAMETER/DEPTH:		1.5"/30'	
Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	
13:28	0.0				0		~ 6" asphalt.	
	0.0				1		Sandy silt with gravel (ML) (fill), (7.5 YR 4/2), dry, non-plastic, fine to medium-grained (15, 25, 60, 0).	
	0.0				2		Lean clay (CL), (7.5 YR 2/1), dry, medium plasticity, (0, 0, 0, 100).	
	0.0				3		Coarse-grained material increases (fill), (15, 10, 0, 75).	
	0.0				4			
	0.0				5			
	0.0				6			
	0.0				7			
	0.0				8		Lean clay (CL), (7.5 YR 2/1), dry, medium plasticity, (5, 0, 5, 90).	
	0.0				9			
	0.0				10		No recovery.	
	0.0				11			
	0.0				12		Gravelly clay (CL), (7.5 YR 3/4), moist, non-plastic, (20, 20, 0, 60).	
	0.0				13			
	0.0				14			
	0.0				15			
	0.0				16		Lean clay (CL), (7.5 YR 3/3), moist, medium plasticity, (5, 5, 0, 90).	
	0.0				17		more dense with depth (0, 0, 0, 100).	
	0.0				18			
	0.0				19			
				20				

 THE SOURCE GROUP, Inc.		BORING/WELL ID: SB-3	
PROJECT NAME AND ADDRESS:		Palo Alto Housing Corporation -3703 - 3709 El Camino Real	
BORING LOCATION (AT SITE):		NE of Carport	
CONTRACTOR AND EQUIPMENT:		Vironex - Geoprobe	
SAMPLING METHOD:		DPT	MONITORING DEVICE:
START DATE/ (TIME):		12/21/12 13:25	FINISH DATE/ TIME
FIRST WATER (BGS):		NA	STABILIZED WATER LEVEL:
SURFACE ELEVATION:		NA	CASING TOP ELEVATION:
TOTAL BORING DEPTH(S):		30'	BORING DIAMETER/DEPTH:
		1.5"/30'	

Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
14:02	0.0				20		dense clay continues.	
					21			
	0.0				22			
	0.0				23		6" soft clay.	
	0.0				24			
	0.0				25		Gravel increases, very dense 6", (25, 0, 0, 75).	
					26			
	0.0				27			
	0.0				28		Sandy silt with gravel (ML), (7.5 YR 4/4), dense, moist, gravel increases with depth, (25, 15, 60, 0).	
	0.0				29			
	0.0				30		(35, 15, 50, 0).	
					30	Total Depth 30 feet bgs		
				31				
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				
				40				

 THE SOURCE GROUP, Inc.		BORING/WELL ID: SB-4	
PROJECT NAME AND ADDRESS:		Palo Alto Housing Corporation -3703 - 3709 El Camino Real	
BORING LOCATION (AT SITE):		Outside Bridal Shop Overhang	
CONTRACTOR AND EQUIPMENT:		Enprobe - Geoprobe 5410	
SAMPLING METHOD:		DPT	MONITORING DEVICE: PID
START DATE/ (TIME):		1/23/13 10:30	FINISH DATE/ TIME 1/23/13 12:15
FIRST WATER (BGS):		27'	STABILIZED WATER LEVEL: 18'
SURFACE ELEVATION:		N/A	CASING TOP ELEVATION: N/A
TOTAL BORING DEPTH(S):		28'	BORING DIAMETER/DEPTH: 1.5" / 28'

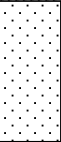
Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
10:30	0.0				0	Asphalt.		
	0.0				1	Sandy gravel (GW) (fill/basereck), dry, loose.		
					2	Lean clay with few sand (CL), dark brown, moist, medium dense, medium plasticity, organic plant material.		
					3			
					4			
11:00	0.0				5	Increasing silt and fine sand, dry.		
	3.4				6			
					7			
	0.0				8			
					9			
	0.0				10			
					11			
	0.0				12			
					13	Well-graded gravelly sand with silt (SW), yellowish brown, moist, loose, coarse sand with sub-angular gravels up to 1.0".		
	0.0				14			
					15			
					16			
	0.0				17	Sandy clay (CL), yellowish/reddish brown, moist, soft, medium plasticity, coarse sand.		
					18			
					19			
	0.0				20			

 THE SOURCE GROUP, INC.						BORING/WELL ID: SB-4	
PROJECT NAME AND ADDRESS:			Palo Alto Housing Corporation -3703 - 3709 El Camino Real			Project No.: 01-PAHC-001	
BORING LOCATION (AT SITE):			Outside Bridal Shop Overhang			Logged By: Serene Daro	
CONTRACTOR AND EQUIPMENT:			Enprobe - Geoprobe 5410				
SAMPLING METHOD:			DPT		MONITORING DEVICE:		PID
START DATE/ (TIME):			1/23/13 10:30		FINISH DATE/ TIME		1/23/13 12:15
FIRST WATER (BGS):			27'		STABILIZED WATER LEVEL:		18'
SURFACE ELEVATION:			N/A		CASING TOP ELEVATION:		N/A
TOTAL BORING DEPTH(S):			28'		BORING DIAMETER/DEPTH:		1.5" / 28'

Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
12:00	0.0				20		CL (as above)	
					21			
					22		Well graded gravelly sand with silt (SW), yellowish brown, moist, loose, coarse sand with sub-angular gravels up to 1.0".	
	0.0				23		Sandy clay (CL), yellowish/reddish brown, moist, soft, medium plasticity, coarse sand, but dense, increasing sand and gravel.	
					24			
					25			
	0.0				26		Well graded sandy gravel, moist, loose, coarse sand and gravels up to 1", iron staining.	
					27			
					28		Total Depth 28 feet bgs	
					29			
					30			
					31			
					32			
					33			
					34			
					35			
				36				
				37				
				38				
				39				
				40				

 THE SOURCE GROUP, Inc.							BORING/WELL ID: SB-5	
PROJECT NAME AND ADDRESS:			Palo Alto Housing Corporation -3703 - 3709 El Camino Real				Project No.: 01-PAHC-001	
BORING LOCATION (AT SITE):			Transformer Pad				Logged By: Serene Daro	
CONTRACTOR AND EQUIPMENT:								
SAMPLING METHOD:							MONITORING DEVICE: PID	
START DATE/ (TIME):			1/23/13 15:50				FINISH DATE/ TIME 1/23/13 16:45	
FIRST WATER (BGS):			27'				STABILIZED WATER LEVEL: 17'	
SURFACE ELEVATION:			N/A				CASING TOP ELEVATION: N/A	
TOTAL BORING DEPTH(S):			28'				BORING DIAMETER/DEPTH: 28'	
Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	
15:50	0.0				0	Asphalt.		Well construction details
					1	Well-graded gravelly sand (SW) (fill/basereck).		
					2	Lean clay (CL), very dark brown, medium dense, medium plasticity.		
					3			
					4			
16:00	0.0				5			
					6	Well-graded gravelly sand (SW), dry, loose, coarse sand and sub-angular gravels.		
					7			
					8	Clayey silt with sand (ML), reddish brown, moist, dense, fine-coarse sand.		
					9			
16:10	0.0				10			
					11			
					12			
					13			
					14	Silty sand (SM), reddish brown, moist, blocky, fine to coarse sand.		
16:20	0.0				15			
					16			
	0.0				17			
					18	Sandy clay (CL), reddish brown, moist, soft, medium plasticity.		
	0.0				19			
					20			

 THE SOURCE GROUP, Inc.						BORING/WELL ID: SB-5	
PROJECT NAME AND ADDRESS:			Palo Alto Housing Corporation -3703 - 3709 El Camino Real			Project No.: 01-PAHC-001	
BORING LOCATION (AT SITE):			Outside Bridal Shop Overhang			Logged By: Serene Daro	
CONTRACTOR AND EQUIPMENT:			Enprobe - Geoprobe 5410				
SAMPLING METHOD:			DPT		MONITORING DEVICE:		PID
START DATE/ (TIME):			1/23/13 10:30		FINISH DATE/ TIME		1/23/13 12:15
FIRST WATER (BGS):			27'		STABILIZED WATER LEVEL:		18'
SURFACE ELEVATION:			N/A		CASING TOP ELEVATION:		N/A
TOTAL BORING DEPTH(S):			28'		BORING DIAMETER/DEPTH:		1.5" / 28'

Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
16:30	0.0		X		20		Sandy clay (CL), reddish brown, moist, soft, medium plasticity.	
					21			
					22			
					23			
					24			
16:40	0.0		X		25		Well graded gravelly sand with silt and clay (SW), reddish brown, moist, loose.	
					26			
					27			
					28			
					29			
					30		Total Depth 28 feet bgs	
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								



THE SOURCE GROUP, INC.

BORING/WELL ID:

SV-1

PROJECT NAME AND ADDRESS:	Palo Alto Housing Corporation -3703 - 3709 El Camino Real		Project No.: 01-PAHC-001
BORING LOCATION (AT SITE):	Outside bridal shop, under overhang		Logged By: Andrew Tracy
CONTRACTOR AND EQUIPMENT:	Vironex Geoprobe		
SAMPLING METHOD:	DPT	MONITORING DEVICE:	PID
START DATE/ (TIME):	12/21/12 9:30	FINISH DATE/ TIME	12/21/12 0:00
FIRST WATER (BGS):	NA	STABILIZED WATER LEVEL:	NA
SURFACE ELEVATION:	NA	CASING TOP ELEVATION:	NA
TOTAL BORING DEPTH(S):	5'	BORING DIAMETER/DEPTH:	1.5"/5'

Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
9:30	0.0				0		~ 3" Asphalt.	
9:42	0.0				1		Gravelly silt (ML) (fill), (7.5 YR 3/2), dry, non-plastic, (35, 10, 55, 0).	Hydrated Bentonite
	0.0				2		Lean clay (CL), (7.5 YR 3/2), dry, low plasticity, (0, 0, 0, 100).	Teflon Tubing
9:58	0.0				3			Bentonite Dry
	0.0				4			Sand
					5		Total Depth 5 feet bgs	Probe Tip
					6			
					7			
					8			
					9			
					10			
					11			
					12			
					13			
					14			
					15			
					16			
					17			
					18			
					19			
					20			



THE SOURCE GROUP, Inc.

BORING/WELL ID:

SV-2

PROJECT NAME AND ADDRESS:	Palo Alto Housing Corporation -3703 - 3709 El Camino Real		Project No.: 01-PAHC-001
BORING LOCATION (AT SITE):	In parking lot, northwest of 3709 El Camino Real		Logged By: Andrew Tracy
CONTRACTOR AND EQUIPMENT:	Vironex Geoprobe		
SAMPLING METHOD:	DPT	MONITORING DEVICE:	PID
START DATE/ (TIME):	12/21/12 10:40	FINISH DATE/ TIME	12/21/12 0:00
FIRST WATER (BGS):	NA	STABILIZED WATER LEVEL:	NA
SURFACE ELEVATION:	NA	CASING TOP ELEVATION:	NA
TOTAL BORING DEPTH(S):	5'	BORING DIAMETER/DEPTH:	1.5"/5'

Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
10:58	0.0				0		~ 4" Asphalt.	
					1		Sandy silt (ML) (fill), (7.5 YR 3/2), dry, non plastic, fine-grained, (5, 30, 65, 0).	
11:04	0.0				2		Lean clay (CL), (7.5 YR 3/2), tight, dry, low plasticity, (0, 0, 0, 100).	
					3			
					4			
					5		Total Depth 5 feet bgs	
					6			
					7			
					8			
					9			
					10			
					11			
					12			
					13			
					14			
					15			
					16			
					17			
					18			
					19			
					20			

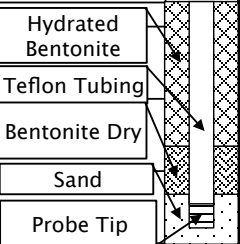


THE SOURCE GROUP, Inc.

BORING/WELL ID:

SV-3

PROJECT NAME AND ADDRESS:	Palo Alto Housing Corporation -3703 - 3709 El Camino Real		Project No.: 01-PAHC-001
BORING LOCATION (AT SITE):	NE of Carport		Logged By: Serene Daro
CONTRACTOR AND EQUIPMENT:	Enprobe/Geoprobe 5410		
SAMPLING METHOD:	DPT	MONITORING DEVICE:	PID
START DATE/ (TIME):	1/28/13 7:45	FINISH DATE/ TIME	1/28/13 8:25
FIRST WATER (BGS):	N/A	STABILIZED WATER LEVEL:	N/A
SURFACE ELEVATION:	N/A	CASING TOP ELEVATION:	N/A
TOTAL BORING DEPTH(S):	5'	BORING DIAMETER/DEPTH:	5'

Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
7:45					0		~ 4-6" Asphalt.	
	0.0				1		Gravelly silt with sand (ML) (fill/baseroack), dark brown, loose, dry, coarse sand and gravels up to 1.5"	
					2		Clay with few sand (CL), dark brown, medium dense, dry, medium plasticity.	
					3		Increasing gravel sub-angular up to 0.5".	
					4		Clayey silt (ML), reddish brown, dry, medium dense, organic material.	
8:25	0.0				5		Total Depth 5 feet bgs	
					6			
					7			
					8			
					9			
					10			
					11			
					12			
					13			
					14			
					15			
					16			
					17			
					18			
					19			
					20			

 THE SOURCE GROUP, Inc.							BORING/WELL ID: SV-4	
PROJECT NAME AND ADDRESS:			Palo Alto Housing Corporation -3703 - 3709 El Camino Real				Project No.: 01-PAHC-001	
BORING LOCATION (AT SITE):			Asphalst Parking Lot, Center				Logged By: Serene Daro	
CONTRACTOR AND EQUIPMENT:			Enprobe/Geoprovbe 5410					
SAMPLING METHOD:			DPT		MONITORING DEVICE:		PID	
START DATE/ (TIME):			1/28/13 9:30		FINISH DATE/ TIME		1/28/13 9:55	
FIRST WATER (BGS):			N/A		STABILIZED WATER LEVEL:		N/A	
SURFACE ELEVATION:			N/A		CASING TOP ELEVATION:		N/A	
TOTAL BORING DEPTH(S):			5'		BORING DIAMETER/DEPTH:		5'	

Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
9:30	9.0				0		6" Asphalt.	Hydrated Bentonite Teflon Tubing Bentonite Dry Sand Probe Tip
					1		Sandy gravel with silt (GW) (fill/baseroack), loose, dry, fine to coarse sand with gravels up to 1"	
					2		Sandy silt (ML), light brown, loose, dry, fine sand.	
	0.0				3		Lean clay with sand (CL), dark brown with organic matter, dense, dry, medium plasticity.	
9:55	0.0				4			
					5		Total Depth 5 feet bgs	
					6			
					7			
					8			
					9			
					10			
					11			
					12			
					13			
					14			
					15			
					16			
					17			
					18			
					19			
					20			



THE SOURCE GROUP, Inc.

BORING/WELL ID:
SV-5

PROJECT NAME AND ADDRESS:	Palo Alto Housing Corporation -3703 - 3709 El Camino Real		Project No.: 01-PAHC-001
BORING LOCATION (AT SITE):	Transformer Pad		Logged By: Serene Daro
CONTRACTOR AND EQUIPMENT:	Enprobe/Geoprobe 5410		
SAMPLING METHOD:	DPT	MONITORING DEVICE:	PID
START DATE/ (TIME):	1/28/13 8:40	FINISH DATE/ TIME	1/28/13 9:00
FIRST WATER (BGS):	N/A	STABILIZED WATER LEVEL:	N/A
SURFACE ELEVATION:	N/A	CASING TOP ELEVATION:	N/A
TOTAL BORING DEPTH(S):	5'	BORING DIAMETER/DEPTH:	5'

Time	PID Reading	Water Level	Sample Interval	Recovery (%)	Depth (feet)	Stratigraphy	LITHOLOGIC DESCRIPTION (classification, color, moisture, density, grain size/plasticity, other) ALL PERCENTAGES ARE APPROXIMATE UNLESS OTHERWISE STATED	Well construction details
9:40	9.0				0		4" Asphalt.	
					1		Gravelly sand (SW) (fill), loose, dry.	Hydrated Bentonite
					2		Lean clay (CL), dark brown with reddish mottling (organic), medium dense, moist, medium plasticity, some silt.	Teflon Tubing
	0.0				3			Bentonite Dry
					4			Sand
9:00	0.0				5		Total Depth 5 feet bgs	Probe Tip
					6			
					7			
					8			
					9			
					10			
					11			
					12			
					13			
					14			
					15			
					16			
					17			
					18			
					19			
					20			