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**ADDITIONAL  
SITE INVESTIGATION  
WORKPLAN**

7272 San Ramon Road  
Dublin, California 94568

Project No. 115876  
ACEHS Toxics Case # RO0002863

Prepared On Behalf Of

Gabriel Chui  
c/o Bruce Burrows  
Main Street Properties  
985 Moraga Road  
Lafayette, California 94549

Prepared By

**AEI Consultants**  
2500 Camino Diablo, Suite 200  
Walnut Creek, CA 94597  
(925) 283-6000

**AEI**

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## 1.0 INTRODUCTION

AEI Consultants (AEI) has been retained by Main Street Properties to provide environmental engineering and consulting services associated with a release of halogenated volatile organic compounds (HVOCs), particularly tetrachloroethylene (PCE), at the subject property. This work plan is in response to the Alameda County Environmental Health Services' (ACEHS) letter, dated August 22, 2006, requesting further site investigation. AEI will perform the activities proposed in this work plan to comply with the Alameda County Environmental Health Services' (ACEHS) request to further investigate the extent and magnitude of impacted soil, groundwater, and soil vapor at the site.

## 2.0 SITE DESCRIPTION AND HISTORY

The subject property (hereinafter referred to as the "site" or "property") is one suite (7272 San Ramon Road) in a commercial building located on the west side of San Ramon Road. The site is located in a mixed residential/commercial area of Dublin, California.

AEI performed a Phase I Environmental Site Assessment (ESA) of the shopping center 7214-7300 San Ramon Road in December 2004. Historical resources and site reconnaissance revealed that one of the units of the building (7272 San Ramon Road) has been occupied by a dry-cleaning facility since 1988. The dry-cleaning and solvent storage areas are located in the back of the building; however, no information was known as to previous solvent storage areas. Based on the duration of dry-cleaning on the property, the ESA recommended that a subsurface investigation be performed to determine if a release of hazardous materials, particularly PCE, had impacted the subsurface.

AEI performed a preliminary subsurface investigation at the property on January 27, 2005. A total of three (3) soil borings (SB-1 to SB-3) were advanced to a terminus depth of 12 feet below ground surface (bgs). Three shallow soil samples and three groundwater samples were analyzed for HVOCs by EPA Method 8260B. PCE was detected in all the soil and groundwater samples analyzed, up to 0.071 milligrams per kilogram (mg/kg) in soil and 22 micrograms per liter ( $\mu\text{g/L}$ ) in groundwater. In addition, TCE was detected in the groundwater up to 3.0  $\mu\text{g/L}$ . Please refer to AEI's *Phase II Subsurface Investigation Report* of the property, dated February 8, 2005, for more detailed information.

Based on the results of sampling, the ACEHS, in a letter dated August 30, 2005, requested that the release of HVOCs be investigated further.

AEI performed a soil, groundwater, and soil vapor investigation at the property during February 2, 3, and 6, 2006. A total of seven (7) soil borings (SB-4 to SB-10) were advanced throughout the property. Soil, groundwater, and soil vapor samples were collected and analyzed for HVOCs by EPA Method 8260B. Groundwater samples were collected from two aquifers: the uppermost (A-Zone) and the lowermost, deeper aquifer (B-Zone). PCE was detected in one soil sample at a

concentration of 0.013 mg/kg. PCE was detected in groundwater samples collected from the A and B-Zones, up to concentrations of 23 µg/L and 4.9 µg/L, respectively. PCE was detected in the soil vapor samples, up to a concentration of 16,000 µg/m<sup>3</sup>. Please refer to AEI's *Site Investigation Report*, dated February 8, 2005, for more detailed information.

Based on the results of February 2006 investigation, the ACEHS, in a letter dated August 22, 2006, requested further investigation of the HVOC release and to evaluate the potential for vapor intrusion at the adjacent Montessorri School.

### **3.0 GEOLOGY AND HYDROLOGY**

The United States Geology Survey (USGS) Contra Costa County Quaternary Geologic 1:100,000 (1997) and USGS Contra Costa County bedrock Geologic 1:75,000 (1994) maps were reviewed. The property sits on Holocene alluvial fan deposits overlying undivided Quaternary surficial deposits. The area is generally characterized by fine to coarse grain unconsolidated sediments. The topographic map shows the property located at approximately 365 feet above mean sea level. The surface of the property is relatively flat.

The stratigraphy of the site encountered so far can be characterized by three units of soils; silty clay overlying sandy clay with interbedded sandy gravel. These units are illustrated on Figures 8 and 9, two fence diagrams across the site. Fence Diagram A-A' (Figure 8) provides a west-east profile of the subsurface. Fence Diagram B-B' (Figure 9) provides a south-north profile through the center of the dry-cleaning machine area. Please note that ground elevation north of the site building and landscaping is approximately 5 feet higher than ground elevation within the site building and its parking lot.

Two permeable, water-bearing zones were identified within the stratigraphic column to the total depth explored (30 feet bgs). Both aquifers were found within permeable sandy gravels. The upper water-bearing zone (A-Zone), approximately 2 feet thick, consists of sandy gravel and is typically encountered at a depth of approximately 10 feet bgs. The deeper water-bearing zone (B-Zone), approximately 1.5 foot thick, similarly consists of sandy gravel encountered at a depth of approximately 25 feet bgs. These two water-bearing zones are separated by an approximately 12 foot thick sandy clay. The results of groundwater samples collected from the two zones indicate that there may be some connectivity between the two zones, although contaminant concentrations are much lower in the B-zone. The clay appears to be somewhat of an effective barrier.

The topography of the area is relatively flat, but overall slopes to the east. An unnamed creek is located to the north which appears to be at a slightly lower elevation. Groundwater is expected to flow in a southeasterly or northerly direction. A review of groundwater monitoring reports for nearby sites indicate a southeasterly flow direction.

## **4.0 SITE CONCEPTUAL MODEL**

### **4.1 Release Occurance**

The release of the PCE into soil and groundwater was likely the result of surface spillage from the dry-cleaning machine, or possible spills of waste PCE or condensate into drains or out the rear of the facility. The TCE detected in the groundwater may be the result of natural dechlorination of PCE. No information is known about documented, or reported spills, or about previous solvent storage areas or practices. Based on analytical data from the February 2006 investigation, it is possible that buried utilities within the vicinity of the site provide preferential pathways for contaminant migration.

### **4.2 Release Extent**

Chlorinated solvents are highly mobile chemicals. PCE is a toxic hazard by inhalation, adsorption, and ingestion. The highest detected concentrations of PCE reported since the commencement of site investigations has been 0.071 mg/kg in soil, 23 µg/L in groundwater, and 16,000 ug/m<sup>3</sup> in soil gas. Groundwater is expected to flow to the north and/or southeast.

The lack of HVOCs in groundwater from borings SB-4 through SB-8 indicate that the contamination plume appears to be limited. HVOCs appear to have impacted the A-Zone aquifer primarily and portions of the B-Zone aquifer, although the PCE concentrations detected in the B-zone are low. This indicates that the two water-bearing zones may have only limited connectivity. Additional groundwater samples collected from the south, southeast, and southwest of the release will fill existing data gaps on the groundwater extent.

Although one of the soil vapor samples had a high concentration of PCE, it was located outside of the building.

### **4.3 ESL Comparison**

As indicated by the ACEHS in the letter dated August 22, 2006, residential ESLs should be applied for all future evaluations due to the neighboring Montessorri School. The tables presented below re-evaluate previous analytical results to reflect residential ESLs. The primary HVOCs detected in soil, groundwater, and soil vapor consist of PCE and TCE. Maximum concentrations of these contaminants are summarized in the following table.

*Contaminant maximums for the three phases*

Contaminant	Max. Detected in Groundwater / Location (µg/L)	Max. Detected in Soil / Location (mg/kg)	Max. Detected in Soil Vapor / Location (µg/m <sup>3</sup> )
PCE	23 / SB-10-W-1	0.071 / SB-2	16,000 / SB-4
TCE	3.0 / SB-3-5'	<0.005	<2.7

To evaluate possible risk posed to occupants of commercial and residential structures near the source area of the release, the maximum concentrations of PCE and TCE are compared against the ESLs for both drinking water and indoor air impacts. The HVOC contaminants present are volatile, therefore an evaluation of the potential for volatilization of these contaminants from groundwater and shallow soil into building spaces is considered. The ESL guidance document includes ESLs for vapor intrusion into buildings based on the *Johnson and Ettinger Model for Vapor Intrusion Into Buildings* (1991). This model is considered valid for the site as a first order evaluation. Groundwater ESLs based on this model are presented for both coarse and fine grained sediments in a 10 foot thick vadose zone. Based on boring logs, the fine grained model results are considered appropriate for shallow soils present at this site.

*Groundwater ESL Comparison*

Contaminant	Maximum Detected (µg/L)	ESL - Drinking Water (µg/L)	ESL – Volatilization Potential (Residential Land Use)
PCE	23	5.0	500
TCE	3.0	5.0	2,000

\*From Tables E-1a, low to moderate permeability soils

Based on this comparison, maximum PCE concentrations at the site do not exceed ESLs for volatilization potential (Volatilization ESL) from groundwater for commercial use. ESLs for shallow soil gas are presented below.

*Soil Vapor ESL Comparison*

Contaminant	Max. Detected / Location (µg/m <sup>3</sup> )	Residential Land Use ESL (µg/m <sup>3</sup> )
PCE	16,000 / SB-4-V-D	410
TCE	<2.7	1,200

\*Shallow soil gas, Table E

The maximum site concentration for PCE (from SB-4) exceeds the ESL for soil gas in residential land use. It should be noted that the location of the maximum soil vapor concentration detected is outside of the building. Other soil vapor locations inside the building contained PCE concentrations below the residential land use soil gas ESL.

#### 4.4 Well Survey

Well records for all wells within a ½-mile radius of the site were collected from both the Alameda County Public Works Agency and the State of California Department of Water Resources. A map with the locations of the wells identified in the survey relative to the site is presented in Figure 1. The identified nearby wells are also presented in the table below.

*Exhibit 1: Nearby Wells*

Owner	Map ID #	Distance (ft)	Direction	Depth (ft)	Screen Interval (ft)	Use
Dublin Historical (2 wells)	1	~ 2,000	South	NA	NA	Water Supply
Dublin Historical (abandoned)	2	~ 2,000	Southwest	NA	NA	Water Supply
Dublin Historical (abandoned)	3	~1,330	Northwest	200	160-200	Water Supply
Unocal Corp (1 well?)	4	~1,300	South	20	4-16	Monitoring
Chevron U.S.A., Inc. (4 wells?)	5	~2,000	Southeast	36	21-36	Monitoring
Unknown (1 well)	6	~500	Northeast	NA	NA	Monitoring
Texaco (6 wells)	7	~1,300	Southeast	20	8-20	Monitoring
Tosco (Union) 76	8	~1,000	Southeast	25	10-25	Monitoring
Target Stores Inc. (6 wells)	9	~2,000	Northeast	14.5	4.5-14.5	Monitoring
Montgomery Ward (4 wells)	10	~2,400	Southeast	22	7-22	Monitoring

*NA – Information not available      Distances and direction from the site are approximate*

The two municipal well groups are the Dublin Historical Association. The screen intervals of these wells remain unknown, excluding Map ID # 3. Based on the location and distance of release at the site in relation to these water supply wells, they are not expected to represent preferential vertical conduits for contaminants at the site, nor are they expected to be threatened.

The remaining wells are monitoring and located at least ~1,000 ft. away from the site, with the exception of Map ID #5. However, based on the results of groundwater samples from borings SB-7 and SB-8, the Map ID #5 observation well is not expected to be impacted by this release and would not likely act as a vertical conduit for shallow impacted groundwater at the site.

In summary, based on the well survey and the magnitude of the site HVOC release, none of the identified wells appear to risk acting as preferential vertical conduits for migration of site contaminants nor does there appear to be active use of groundwater in the area that would be threatened by this release. The additional investigation will confirm the extent of PCE in groundwater and if additional information indicates the release is larger in extent, this could change.



#### **4.5 Utility Survey**

A utility survey was performed by Foresite, Inc. on September 24, 2006. The purpose of the survey was to evaluate all utility lines which could potentially act as preferential pathways for contaminant migration. Using reflective induction and ground-penetrating radar, several utilities were identified and traced. An illustration of the results of this survey is presented in Figure 3.

Based on the results of the survey, the possibility exists that the sewer line running underneath the site and adjacent Montessorri School could act as a preferential pathway for soil vapor.

#### **4.6 Sensitive Receptors**

Sensitive receptors such as schools, day care centers, and/or medical care facilities were surveyed within a 1,000 foot radius of the site. No medical care facilities or elementary/high schools were identified within the 1,000 foot radius. As already addressed in this work plan, Montessorri School was identified immediately adjacent to the site. In addition, Kinder Care Learning Center (indicated A on Figure 1) and Joy Pre-School and Day Care (indicated B on Figure 1) were identified roughly 150 feet north (across Amador Valley Road) and roughly 1,000 feet west of the site, respectively.

### **5.0 PROPOSED INVESTIGATION**

AEI will drill five (5) soil borings the subject property to further delineate the extent of the release. The soil borings will be advanced to a depth of approximately 12 feet bgs. Soil borings SB-14 and SB-15 will be drilled outside of the building, southeast of the dry cleaner facility. Borings SB-11 and SB-12 will be drilled at the rear of the building, southwest of the dry cleaner facility. Boring SB-13 will be drilled inside the Montessorri School, adjacent to the identified sewer line. Proposed boring locations (labeled SB-11 through SB-15) are shown on Figure 2. A summary of the proposed borings and analytical suite is listed below.

Proposed Borings at 7272 San Ramon Road, Dublin CA

<i>Boring ID</i>	<i>Purpose</i>	<i>Sample Analyses (HVOCs by EPA Method 8260+ TO 15)</i>		
		<i>Soil (8260 B)</i>	<i>Water (8260 B)</i>	<i>Vapor (TO – 15)</i>
SB-11	Rear of dry-clean facility, west of dry cleaning facility	0 samples	0 samples	1 sample
SB-12	Rear of dry-clean facility, southwest of dry cleaning facility	1-2 samples	2 samples	1 sample
SB-13	Within adjacent Montessorri School, near sewer line trace	1-2 samples	2 samples	1 sample
SB-14	Front of building, southeast of dry cleaning facility	0 samples	1 sample	0 samples
SB-15	Front of building, southeast of dry cleaning facility	0 samples	1 sample	1 samples

## 6.0 OPERATING PROCEDURES

### 6.1 Drilling

A drilling permit from Zone 7 Water Agency (Zone 7) in Alameda County will be obtained prior to drilling activities. Underground Service Alert will be notified to identify public utilities in the work area.

Direct push drilling work will be performed a by California C57 licensed drilling contractor. Drilling will be performed with a limited-access Geoprobe® direct-push drilling rig. The borings will be drilled to the target depths outlined above, unless field observations indicate the need to collect deeper samples. Upon completion of sampling, all drill rods and sampling equipment will be removed from the boring and they will be backfilled with cement grout in accordance with Zone 7 permit conditions.

### 6.2 Soil Sampling and Analyses

Drilling, borehole logging, and sample collection will be performed by AEI staff under the direction of an AEI California professional geologist. Soil will be continuously collected from selected borings in 2” diameter acrylic liners. Soil will be screened in the field with a portable photo-ionization detector (PID). Soil samples will be cut from the liners at selected depths based on field observations and PID measurements. Selected samples will be sealed with Teflon tape and end caps, labeled with a unique identifier, entered onto chain of custody, and place in a cooler with water-ice.

Laboratory work will be performed by a California Department of Health Services certified laboratory following current EPA analytical methodologies.

### 6.3 **Hydropunch® Groundwater Sampling**

This sampling method operates by advancing 1 ¾ inch hollow push rods with the filter tip in a closed configuration to the base of the desired sampling interval. Once at the desired sample depth, the push rods are retracted; exposing the encased filter screen and allowing groundwater to infiltrate hydrostatically from the formation into the inlet screen. A check valve or peristaltic pump is then used for sample collection. Upon completion of sample collection, the push rods and sampler, with the exception of the PVC screen and steel drop off tip are retrieved to the ground surface, decontaminated and prepared for the next sampling event. Groundwater samples will be collected into 40 ml volatile organic analysis (VOA) vials. The containers will be sealed so that no head-space or air bubbles are visible within the containers.

### 6.4 **Soil Vapor Sampling**

A vapor survey has been requested to investigate whether significant vapor concentrations exist in the shallow soils beneath the site. The purpose of the survey is determine if known PCE in soil vapor beneath the site is a potential concern for contaminant vapor intrusion into neighboring commercial spaces, particularly Montesorri School.

A total of three (3) vapor sampling locations are proposed (SB-11, SB-12, and SB-13). Each vapor probe location is expected to be advanced to approximately 5 feet bgs where a soil vapor sample will be collected. Soil gas sampling procedures, and sample analyses will be performed based on the *Advisory – Active Soil Gas Investigation*, January 28, 2005, issued by the Department of Toxic Substances Control (DTSC). Detailed operating procedures and practices are outlined below.

In order to obtain the soil gas samples, the temporary soil gas sampling probes will be installed in the proposed locations. The vapor probe consists of hollow ¾ inch stainless steel rods with an internally threaded bottom sub and sacrificial tip. At the desired depth, the rods are pulled back, dropping the sacrificial tip. The top of the borehole will be sealed with a temporary seal of hydrated Bentonite and an appropriate leak detection compound utilized. A ¼-inch disposable poly sampling line is then inserted inside the rods and screwed into the end sub. Air is then flushed from the rods prior to sample collection. Samples will be collected into 6-liter Summa canisters.

Should no flow conditions be encountered during vapor sampling or vacuum necessary to induce flow is too high [ $>10$  inches of mercury (in Hg)], a vapor sample will be attempted at a shallower depth. If extensive no flow conditions are encountered, soil matrix sampling in lieu of soil gas sampling may be performed.

## **6.5 Laboratory Analysis and Sample Storage**

All samples will be sealed and labeled immediately upon collection. Samples will be placed in a cooler with water ice. Chain of custody documentation will be initiated prior to leaving the site. All samples will be delivered to a state certified laboratory on the day of collection. Soil and groundwater samples will be analyzed for HVOCs by EPA Method 8260B. Soil vapor samples will be analyzed by EPA Method low-level TO 15.

## **6.6 Equipment Decontamination**

Sampling equipment, including sampling barrels, drilling rods, augers, and other equipment used to sample, will be decontaminated between samples using a triple rinse system containing Alconox™ or similar detergent. Rinse water will be contained in sealed labeled DOT approved 55-gallon drums in a secure location onsite pending proper disposal.

## **6.7 Waste Storage**

All investigation-derived waste (IDW) will be stored onsite in sealed, labeled 55-gallon drums. IDW will include soil cuttings, plastic sample liners, and other sampling disposables. Equipment rinse water will also be stored in a 55-gallon drum, separate from solid IDW. Upon receipt of analytical results, the waste will be profiled into appropriate disposal or recycling facilities and transported from the site under appropriate manifest. Copies of manifests will be made available once final copies are received from the disposal facility.

## **6.8 Site Safety**

AEI will prepare a site specific Health and Safety Plan conforming to Part 1910.120 (i) (2) of 29 CFR. Prior to commencement of field activities, a site safety meeting will be held at a designated command post near the working area. The Health and Safety Plan will be reviewed and emergency procedures will be outlined at this meeting, including an explanation of the hazards of the known or suspected chemicals of interest. All site personnel will be in Level D personal protection equipment, which is the anticipated maximum amount of protection needed. A working area will be established with barricades and warning tape to delineate the zone where hard hats, steel-toed shoes and safety glasses must be worn, and where unauthorized personnel will not be allowed. The site Health and Safety Plan will be on site at all times during the project.

## **7.0 REPORTING**

AEI will prepare and issue a final report upon receipt of all analytical data. The report will include logs of borings, tables or data, and figures of drilling and sampling locations, and copies of all laboratory analytical reports. A written discussion of the findings will be presented. The Site Conceptual Model and contamination risk evaluations will be updated with the forthcoming report.

If additional analyses or further investigation is deemed necessary, such recommendations may be made. If the findings of the additional soil and groundwater investigation indicate a very limited impact, the implementation of monitoring wells could be deemed unnecessary and case closure may be pursued. The project will be overseen and the reports signed by an AEI California registered professional geologist or engineer.

## **8.0 SCHEDULE**

Field work is anticipated to be scheduled within two weeks of approval of this work plan by the ACEHS. The ACEHS will be given adequate notification of the schedule should inspections be necessary. Drilling and sampling activities are expected to require one or two days. Laboratory analytical results will be available within approximately 1-2 week of sample collection. The final report will be completed within approximately 1 month of receipt of all data.

## **9.0 REFERENCES**

USGS Contra Costa County bedrock 1:75,000 Geologic Map (1994)

United States Geology Survey (USGS) Contra Costa County Quaternary 1:100,000 Geologic Map (1997)

AEI Consultants, *Phase I Environmental Site Assessment*, December 10, 2004

Department of Toxic Substances Control (DTSC) *Advisory – Active Soil Gas Investigation*, January 28, 2005

AEI Consultants, *Phase II Subsurface Investigation Report*, February 8, 2005

Alameda County Environmental Health Services, File # RO000263, Letter dated August 30, 2005

AEI Consultants, *Site Investigation Report*, April 14, 2006


Alameda County Environmental Health Services, File # RO000263, Letter dated August 22, 2006

## 10.0 SIGNATURES


This work plan has been prepared by AEI on behalf of Main Street Properties and outlines a scope of work to address the release of halogenated VOCs on the property located at 7272 San Ramon Road in the City of Dublin, Alameda County, California. The recommendations rendered in this report were based on previous field investigations and laboratory testing of material samples. This report does not reflect subsurface variations that may exist between sampling points. These variations cannot be anticipated, nor could they be entirely accounted for, in spite of exhaustive additional testing. This plan should not be regarded as a guarantee that no further contamination, beyond that which could have been detected within the scope of past investigations is present beneath the property or that all contamination present at the site will be identified, treated, or removed. Undocumented, unauthorized releases of hazardous material(s), the remains of which are not readily identifiable by visual inspection and/or are of different chemical constituents, are difficult and often impossible to detect within the scope of a chemical specific investigation and may or may not become apparent at a later time. All specified work will be performed in accordance with generally accepted practices in environmental engineering, geology, and hydrogeology and will be performed under the direction of appropriate registered professional(s).

Please contact either of the undersigned with any questions or comments at (925) 283-6000.

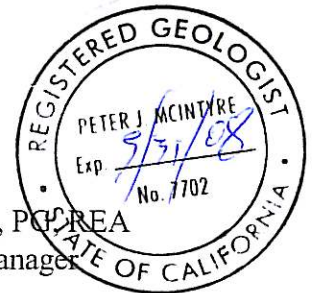
Sincerely,  
**AEI Consultants**



Adrian M. Angel  
Project Geologist



Peter J. McIntyre, PG-CREA  
Senior Project Manager



### Distribution:

Gaberiel Chui (2 hard copies)  
c/o Bruce Burrows  
Main Street Properties  
985 Moraga Road  
Lafayette, CA 94549

Alameda County Environmental Health Services (ACEHS) (electronic)  
Attn: Mr. Steven Plunkett  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502

GeoTracker (electronic)

# FIGURES





37°42.297' N, 121°56.195' W WGS84, Dublin, CA



TN MN  
15°

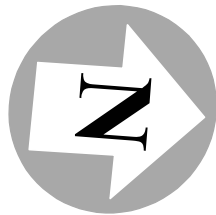
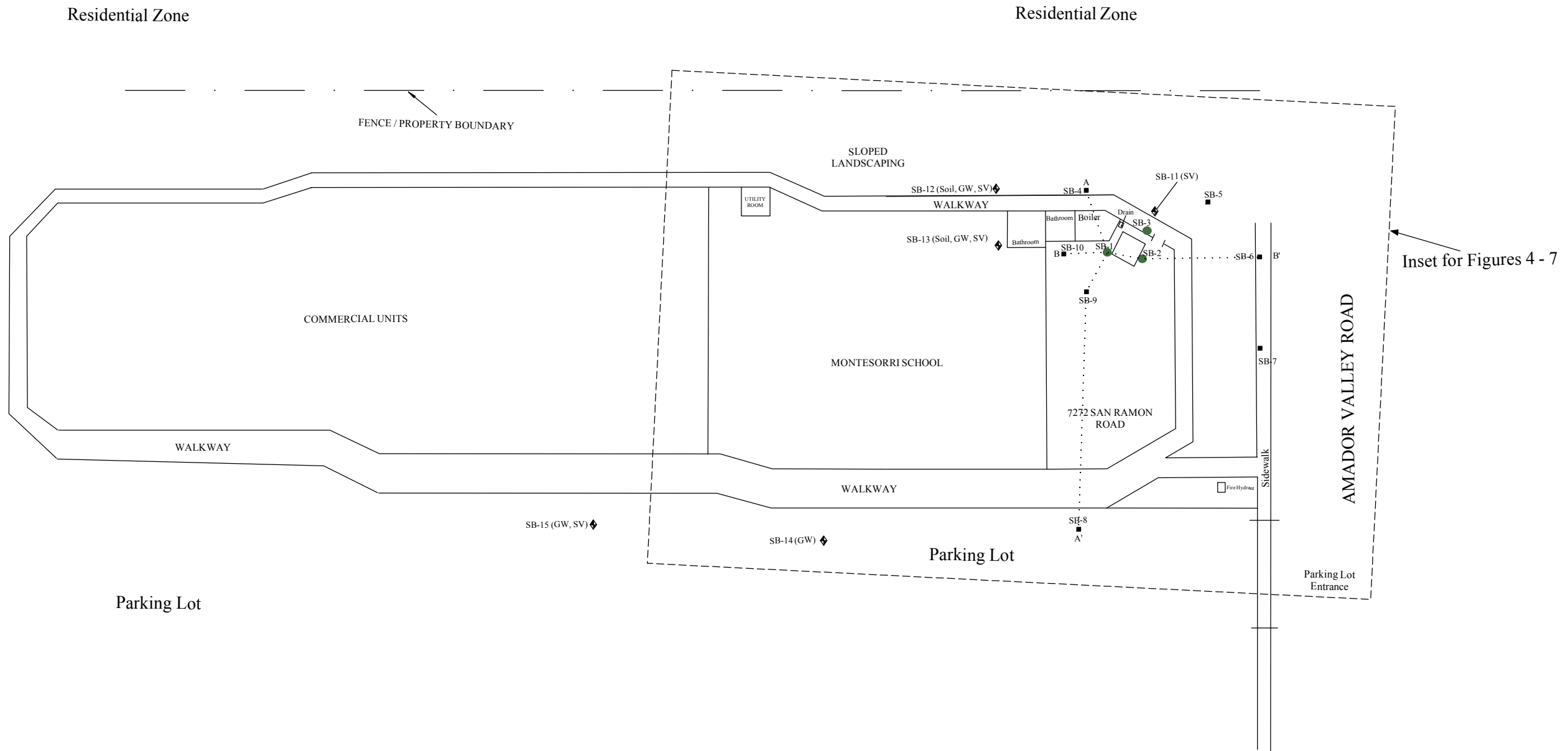
Map created with TOPO!® ©2003 National Geographic ([www.nationalgeographic.com/topo](http://www.nationalgeographic.com/topo))

# - Well Locations  
Letter - Child Day Care Locations

USGS TOPOGRAPHIC MAP  
DUBLIN WEST QUADRANGLE  
Created 1992

<b>AEI CONSULTANTS</b> 2500 Camino Diablo, Suite 200, Walnut Creek, CA 94597	
<b>SITE LOCATION PLAN</b>	
7272 San Ramon Road Dublin, CA	<b>FIGURE 1</b> Job No:115876



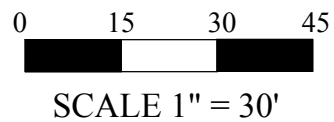
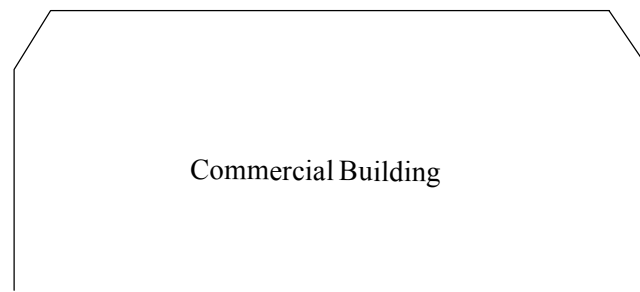


\*GW = Groundwater Sample(s), SV = Soil Vapor Sample

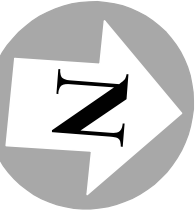
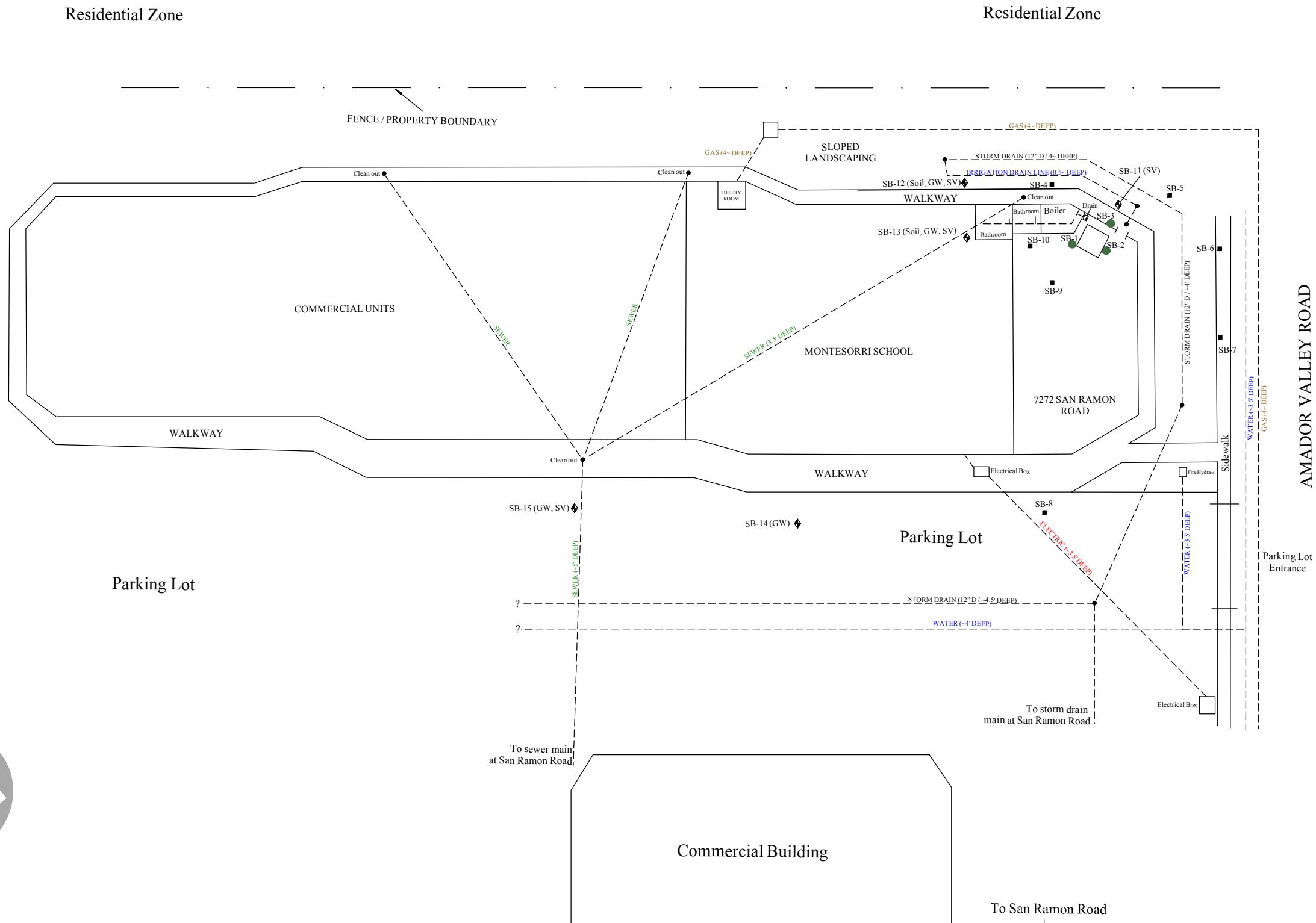
*Drafted By: Adrian Angel (October 2006)*

**Legend:**

- Soil Boring Locations (02/2-6/06)
- Soil Boring Locations (01/27/05)
- ◆ Proposed Soil Boring
- ..... Fence Line (See Figs 8 and 9)



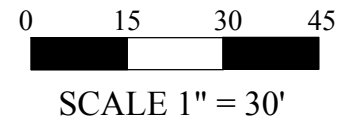
<b>AEI CONSULTANTS</b> 2500 CAMINO DIABLO BLVD, SUITE 200, WALNUT CREEK, CA	
<b>Site Plan w/ Proposed Borings</b>	
7272 San Ramon Road Dublin, CA 94568	<b>FIGURE 2</b> PROJECT NO. 115876



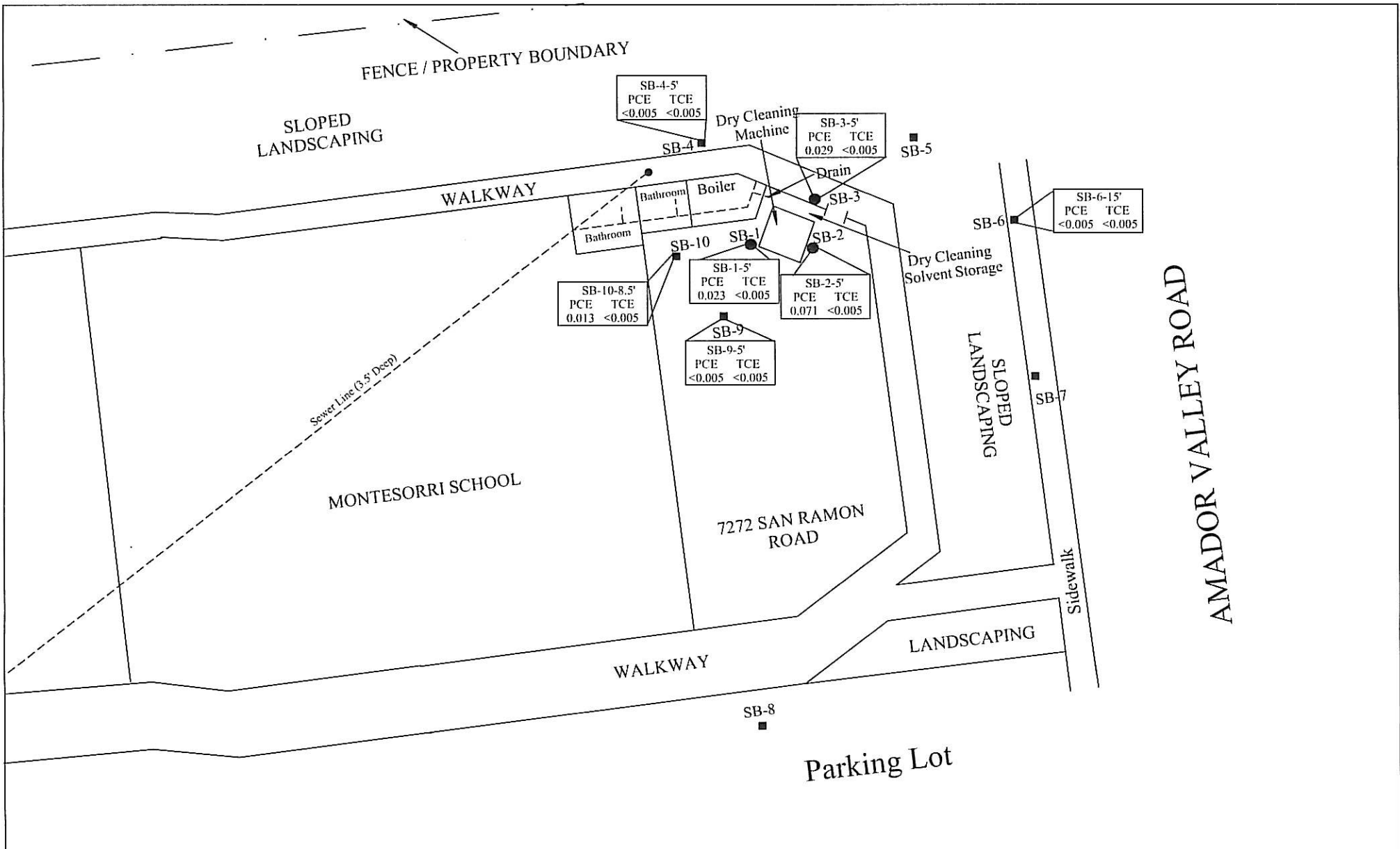
\*GW = Groundwater Sample(s), SV = Soil Vapor Sample

*Drafted By: Adrian Angel (October 2006)*

- Legend:**
- Soil Boring Locations (02/2-6/06)
  - Soil Boring Locations (01/27/05)
  - ◆ Proposed Soil Boring
  - Utility Line



<b>AEI CONSULTANTS</b> 2500 CAMINO DIABLO BLVD, SUITE 200, WALNUT CREEK, CA	
<b>Utility Site Map</b>	
7272 San Ramon Road Dublin, CA 94568	<b>FIGURE 3</b> PROJECT NO. 115876



**LEGEND:**

- Soil Boring Locations (2/2-6/06)
- Soil Boring Locations (01/27/05)
- Sewer Line
- - - - - Property Boundary

0' 10' 20'  
1 INCH = 20 FEET

TCE - Trichloroethene  
PCE - Tetrachloroethene

soil sample concentrations in units of  
milligrams per kilogram (mg/kg)

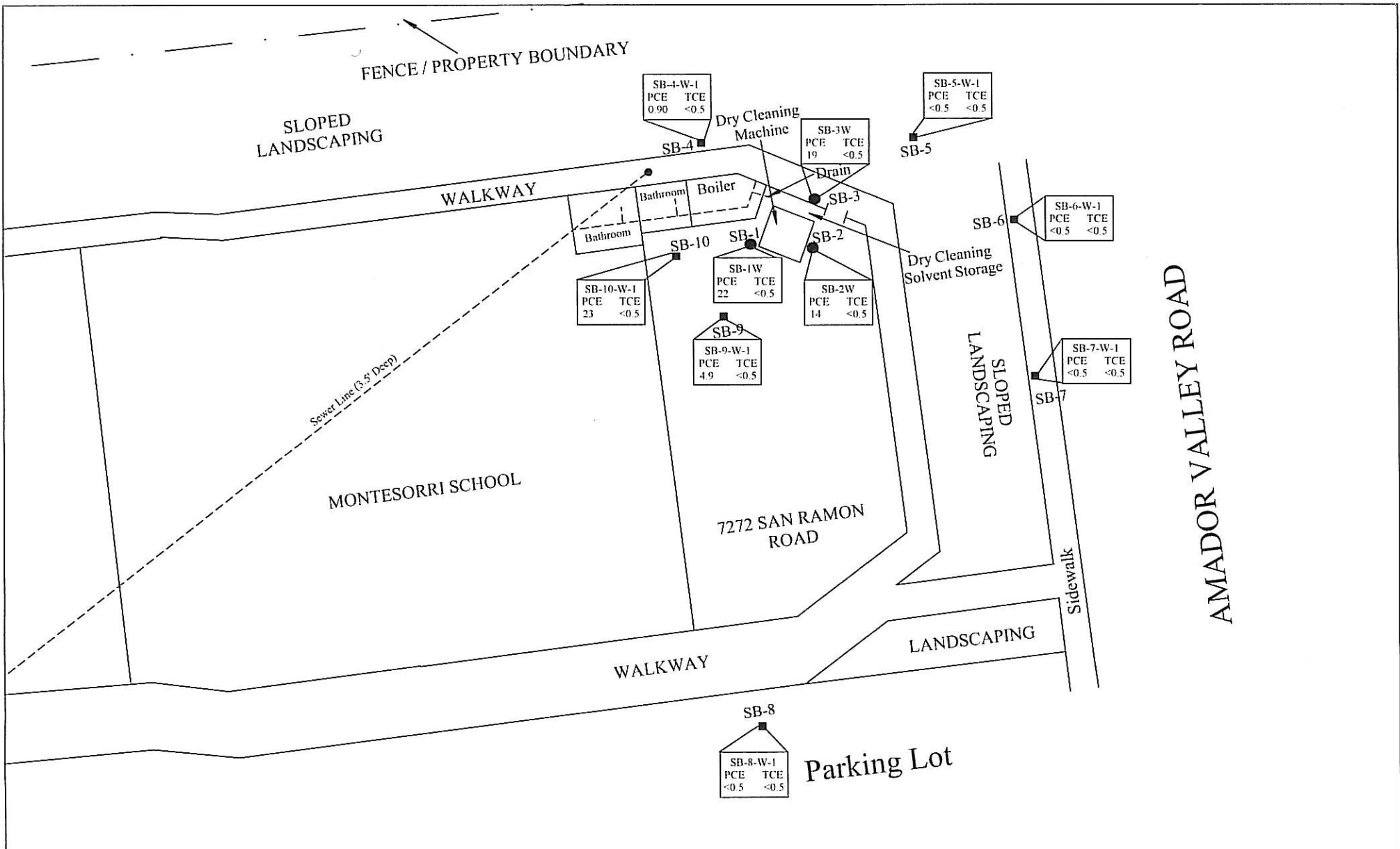
**AEI CONSULTANTS**  
2500 CAMINO DIABLO BLVD, SUITE 200, WALNUT CREEK, CA

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**SOIL ANALYTICAL DATA**

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7272 SAN RAMON ROAD DUBLIN, CA 94568	<b>FIGURE 4</b> PROJECT NO. 115876
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**LEGEND:**

- Soil Boring Locations (2/2-6/06)
- Soil Boring Locations (01/27/05)
- Sewer Line
- - - - - Property Boundary

0' 10' 20'  
1 INCH = 20 FEET

TCE - Trichloroethene  
PCE - Tetrachloroethene

A-Zone aquifer generally screened 9-12 feet  
bgs from floor of dry-cleaning unit

groundwater sample concentrations in units of  
micrograms per liter (ug/L)

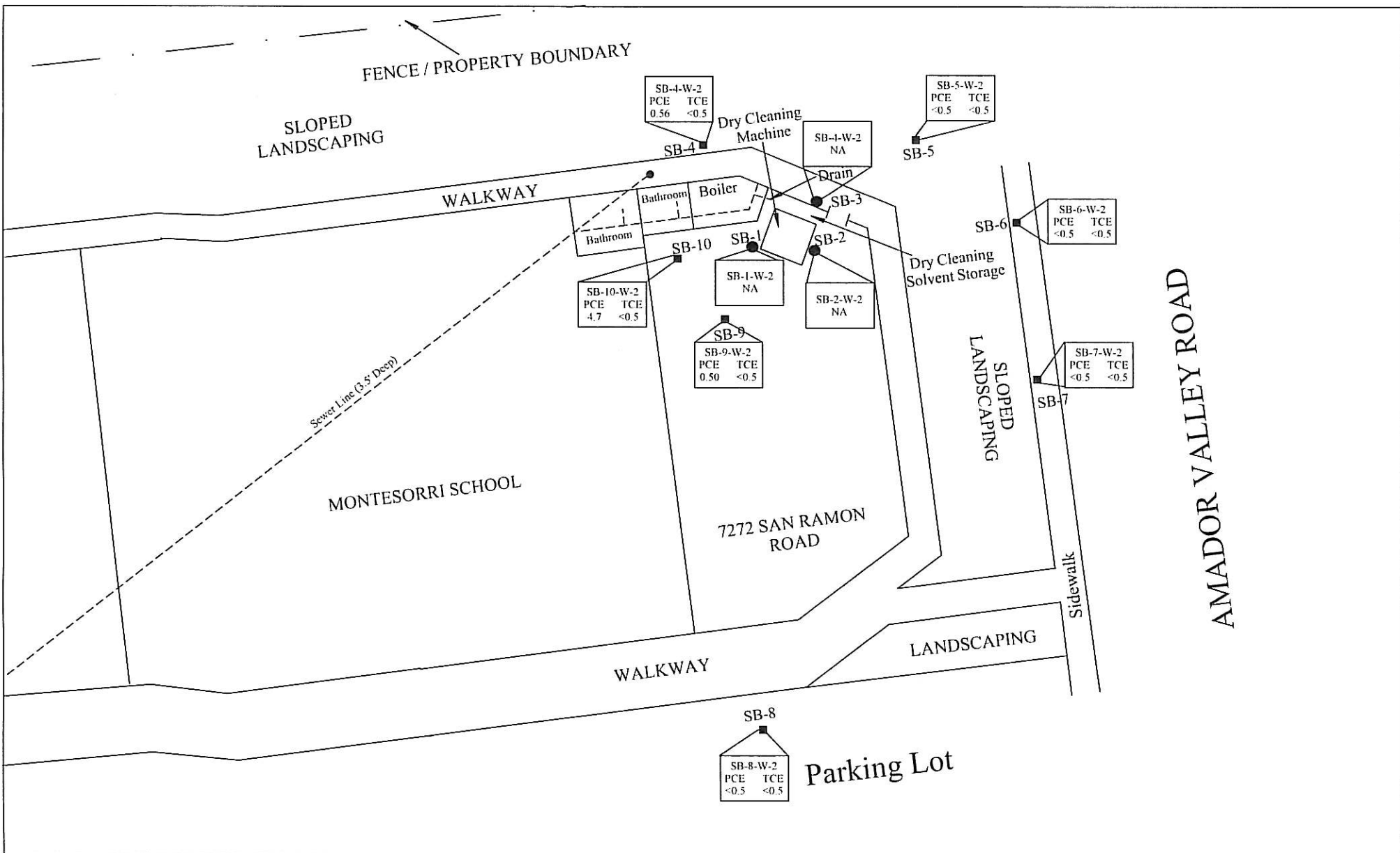
**AEI CONSULTANTS**  
2500 CAMINO DIABLO BLVD, SUITE 200, WALNUT CREEK, CA

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**A-ZONE GROUNDWATER DATA**

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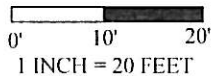
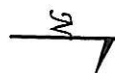
7272 SAN RAMON ROAD DUBLIN, CA 94568	<b>FIGURE 5</b> PROJECT NO. 115876
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**LEGEND:**

- Soil Boring Locations (2/2-6/06)
- Soil Boring Locations (01/27/05)

- Sewer Line
- - - - - Property Boundary



TCE - Trichloroethene  
PCE - Tetrachloroethene

B-Zone generally screened 28-32 feet bgs from floor of dry-cleaning unit

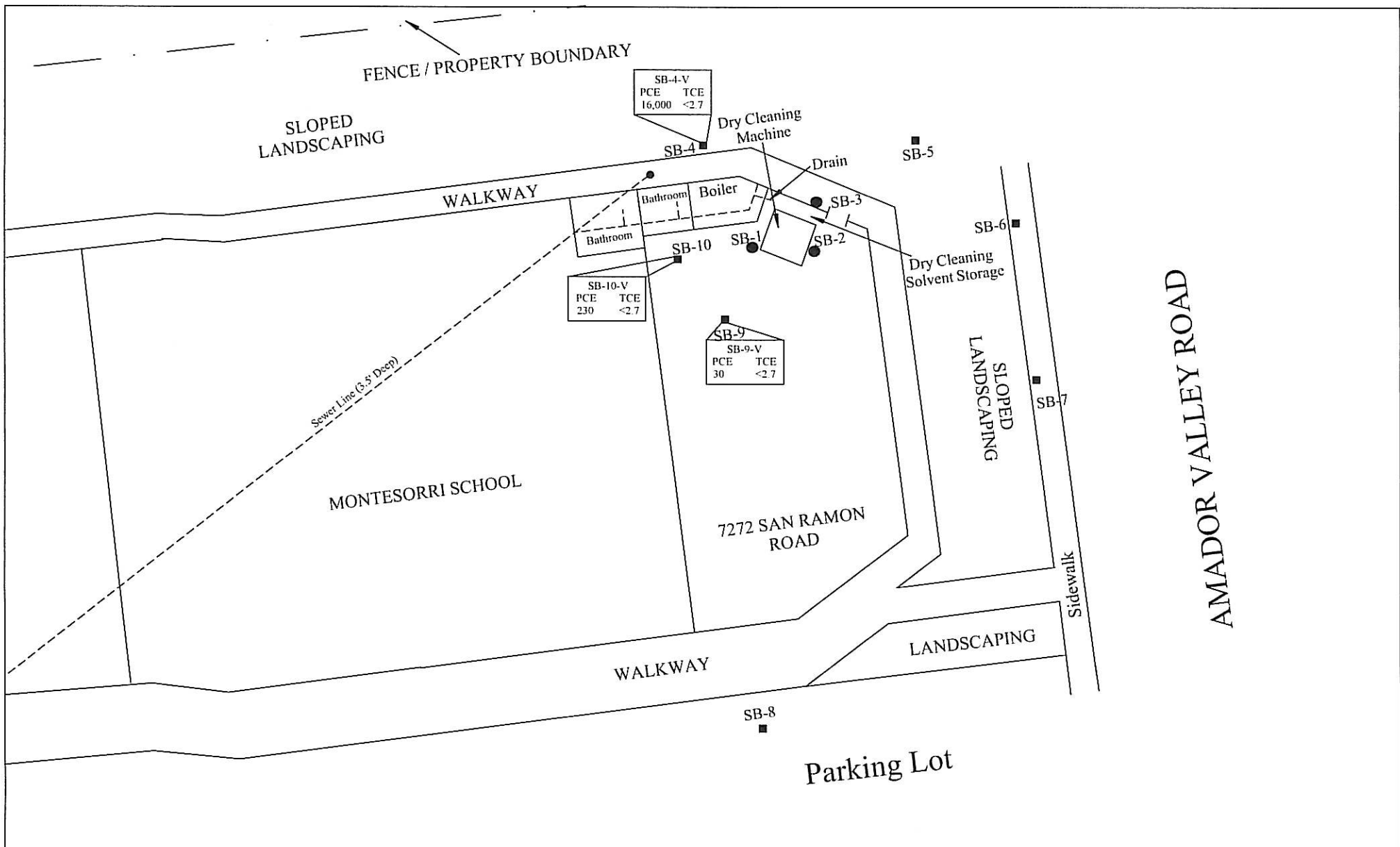
groundwater sample concentrations in units of micrograms per liter (ug/L)

**AEI CONSULTANTS**  
2500 CAMINO DIABLO BLVD, SUITE 200, WALNUT CREEK, CA

**B-ZONE GROUNDWATER DATA**

7272 SAN RAMON ROAD  
DUBLIN, CA 94568

**FIGURE 6**  
PROJECT NO. 115876



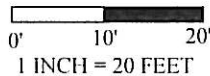
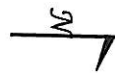
**LEGEND:**

■ Soil Boring Locations (2/2-6/06)

● Soil Boring Locations (01/27/05)

----- Sewer Line

- - - - - Property Boundary



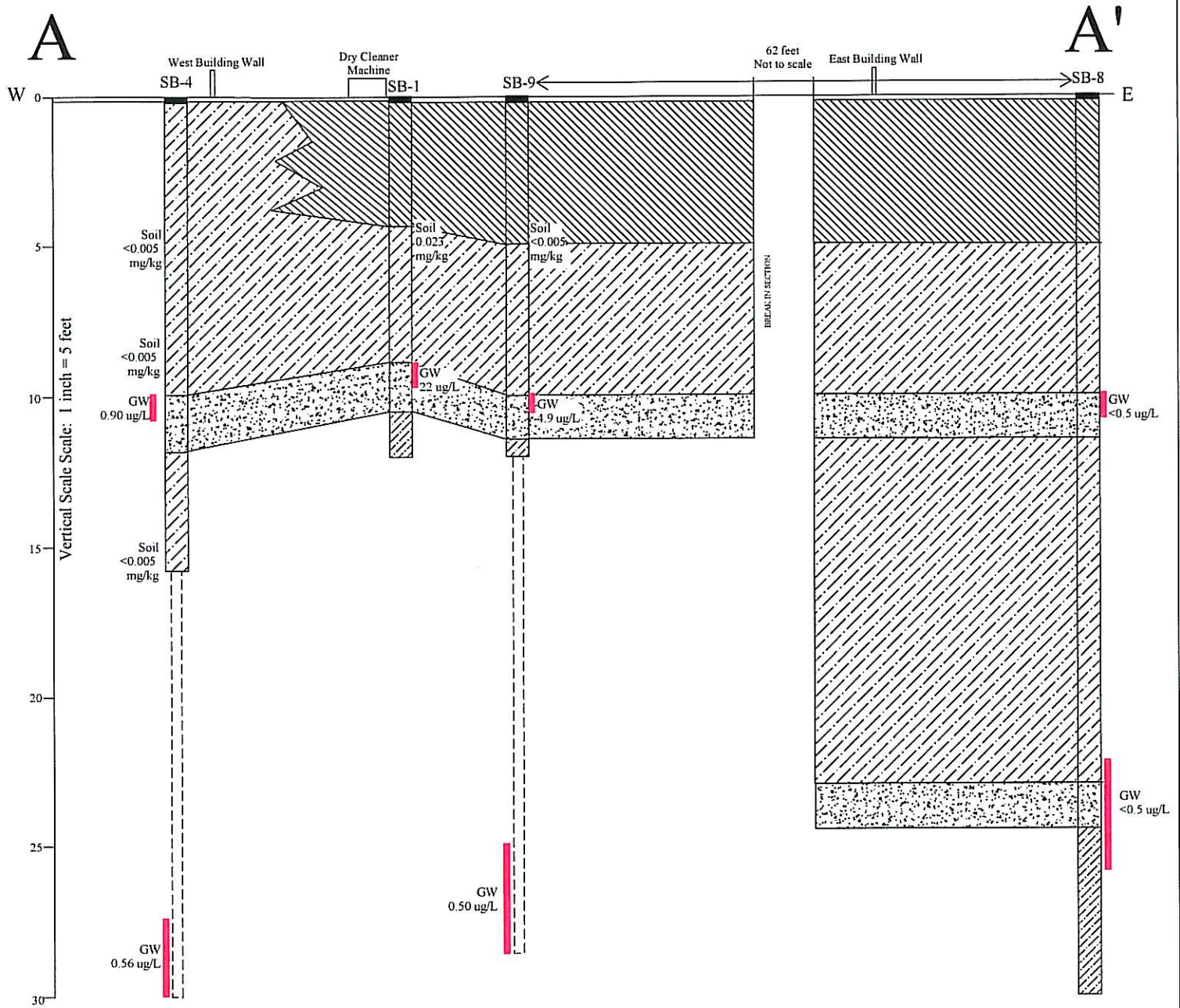
TCE - Trichloroethene  
 PCE - Tetrachloroethene

soil vapor sample concentrations in units of  
 micrograms per cubic meter (ug/m3)

all soil vapor samples collected at a depth of 5 feet bgs

<p><b>AEI CONSULTANTS</b>          2500 CAMINO DIABLO BLVD, SUITE 200, WALNUT CREEK, CA</p>	
<p><b>SOIL VAPOR SAMPLE DATA</b></p>	
<p>7272 SAN RAMON ROAD          DUBLIN, CA 94568</p>	<p><b>FIGURE 7</b>          PROJECT NO. 115876</p>





NOTE: All concentrations for PCE in Soil and Groundwater

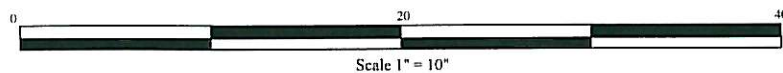
**AEI CONSULTANTS**

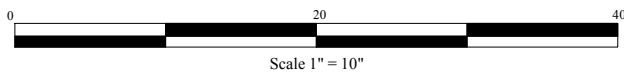
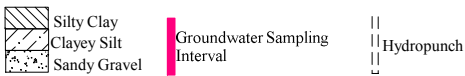
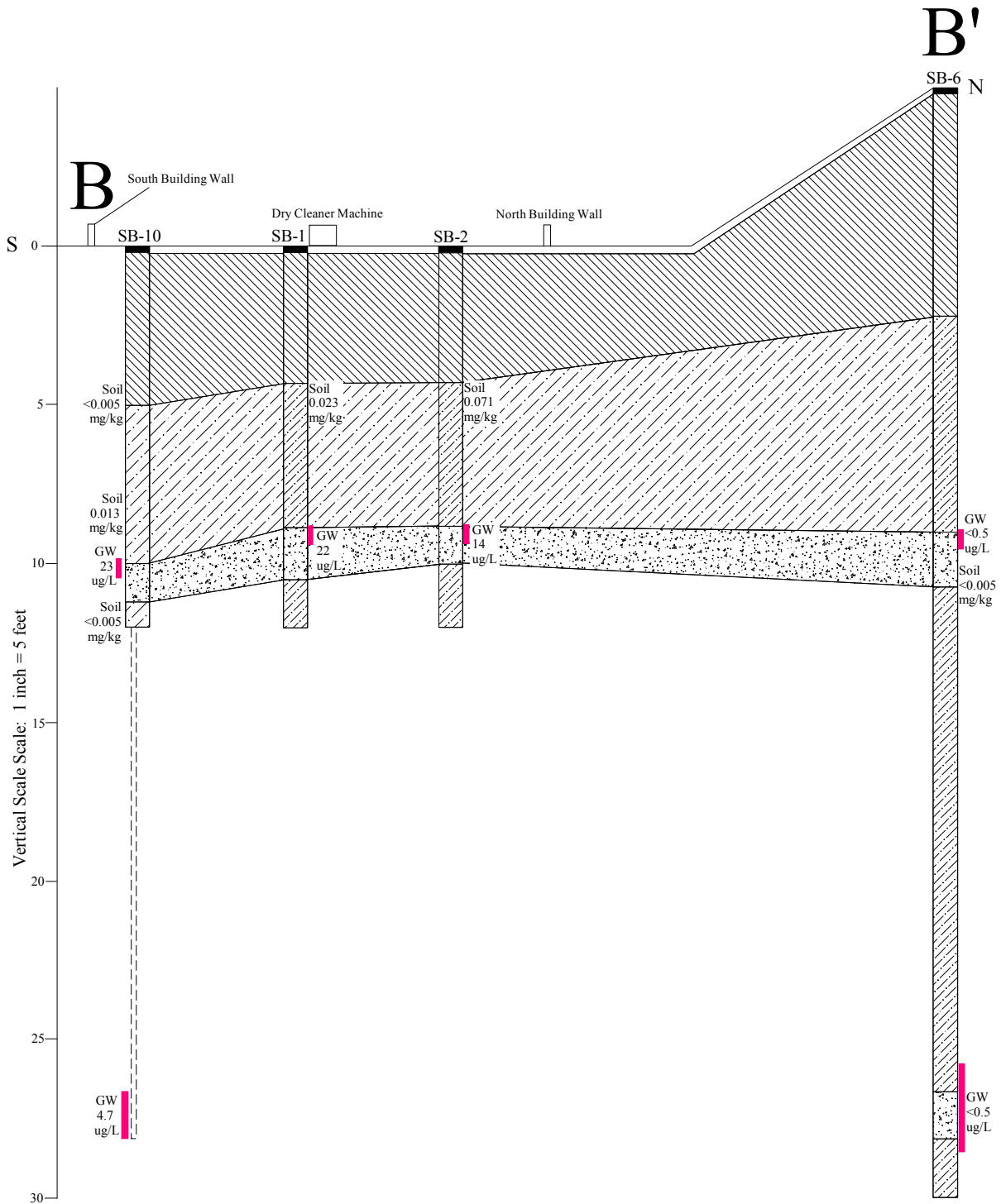
2500 CAMINO DIABLO, STE. 100, WALNUT CREEK, CA

**A - A' Fence Diagram**

7272 San Ramon Road  
Dublin, CA

**Figure 8**  
PROJECT NO. 115876





NOTE: All concentrations for PCE in Soil and Groundwater

**AEI CONSULTANTS**  
2500 CAMINO DIABLO, STE. 100, WALNUT CREEK, CA

**B - B' Fence Diagram**

7272 San Ramon Road  
Dublin, CA

**Figure 9**  
PROJECT NO. 115876



# TABLES



**Table 1**  
**Soil Sample Analytical Data**

<b>Sample ID</b>	<b>Date</b>	<b>Sample Depth feet bgs</b>	<b>PCE mg/kg</b>	<b>TCE mg/kg <i>EPA Method SW8260B</i></b>	<b>All other HVOCs mg/kg</b>
SB-1 5'	1/27/05	5	0.023	<0.005	<0.005
SB-2 5'	1/27/05	5	0.071	<0.005	<0.005
SB-3 5'	1/27/05	5	0.029	<0.005	<0.005
SB-4-5'	2/6/06	5	<0.005	<0.005	<0.005
SB-4-9'	2/6/06	9	<0.005	<0.005	<0.005
SB-4-16'	2/6/06	16	<0.005	<0.005	<0.005
SB-6-15'	2/2/06	15	<0.005	<0.005	<0.005
SB-9-5'	2/6/06	5	<0.005	<0.005	<0.005
SB-9-8'	2/6/06	8	<0.005	<0.005	<0.005
SB-10-5'	2/6/06	5	<0.005	<0.005	<0.005
SB-10-8.5'	2/6/06	8.5	0.013	<0.005	<0.005
SB-10-12'	2/6/06	12	<0.005	<0.005	<0.005
ESLs	-	-	0.25	0.46	-
RL	-	-	0.005	0.005	0.005

PCE = tetrachloroethylene

TCE = trichloroethylene

VC = vinyl chloride

ESLs = Environmental Screening Levels for shallow soils where groundwater is current or potential source of drinking water in commercial/industrial zones, California Regional Water Quality Control Board, February 2005

Soil values reported in milligrams per kilogram (mg/kg)

RL = laboratory reporting limit (with no dilution)

**Table 2**  
**Groundwater Sample Analytical Data**

Sample ID	Date	Screen Interval feet bgs	PCE	TCE	All other HVOCs
			μg/L	μg/L <i>EPA Method SW8260B</i>	μg/L
SB-1-W	1/27/05	-	22	<0.5	<MDL
SB-2-W	1/27/05	-	14	0.62	<MDL
SB-3-W	1/27/05	-	19	3.0	<MDL
SB-4-W-1	2/6/06	(11 - 13)	0.90	<0.5	<MDL
SB-4-W-2	2/6/06	(31 - 34)	0.56	<0.5	<MDL
SB-5-W-1	2/3/06	(9 - 12)	<0.5	<0.5	<MDL
SB-5-W-2	2/3/06	(37 - 39)	<0.5	<0.5	<MDL
SB-6-W-1	2/3/06	(11-14)	<0.5	<0.5	<MDL
SB-6-W-2	2/3/06	(31 - 34)	<0.5	<0.5	<MDL
SB-7-W-1	2/3/06	(9 - 12)	<0.5	<0.5	<MDL
SB-7-W-2	2/3/06	(37 - 39)	<0.5	<0.5	<MDL
SB-8-W-1	2/2/06	(9 - 12)	<0.5	<0.5	<MDL
SB-8-W-2	2/2/06	(23 - 26)	<0.5	<0.5	<MDL
SB-9-W-1	2/6/06	(9 - 12)	4.9	<0.5	<MDL
SB-9-W-2	2/6/06	(28 - 32)	0.50	<0.5	<MDL
SB-10-W-1	2/6/06	(9 - 12)	23	<0.5	<MDL
SB-10-W-2	2/6/06	(28 - 32)	4.7	<0.5	<MDL
ESLs	-	-	5.0	5.0	-
RL	-	-	0.5	0.5	varies

PCE = tetrachloroethylene

TCE = trichloroethylene

VC = vinyl chloride

ESLs = Environmental Screening Levels for shallow soils where groundwater is current or potential source of drinking water in commercial/industrial zones, California Regional Water Quality Control Board, February 2005

Groundwater values reported in micrograms per liter (ug/L)

RL = laboratory reporting limit (with no dilution)

Number following "W" designation indicates water-bearing zone (1 - A Zone, 2 - B Zone)

MDL = method detection limit

**Table 3**  
**Soil Vapor Sample Analytical Data**

Sample ID	Date	PCE	TCE	All other HVOCs
		$\mu\text{G}/\text{m}^3$	$\mu\text{G}/\text{m}^3$	$\mu\text{G}/\text{m}^3$
SB-4-V	2/6/06	13000	<2.7	<MDL
SB-4-V-D	2/6/06	16000	<2.7	<MDL
SB-9-V	2/6/06	30	<2.7	<MDL
SB-10-V	2/6/06	230	<2.7	<MDL
ESLs	-	1400	4100	-
RL		0.5	2.7	varies

PCE = tetrachloroethylene

TCE = trichloroethylene

ESLs = Environmental Screening Levels for shallow soil gas in commercial/industrial zones, California Regional Water Quality Control Board, February 2005

VC = vinyl chloride

Soil values reported in micrograms per cubic meter ( $\mu\text{G}/\text{m}^3$ )

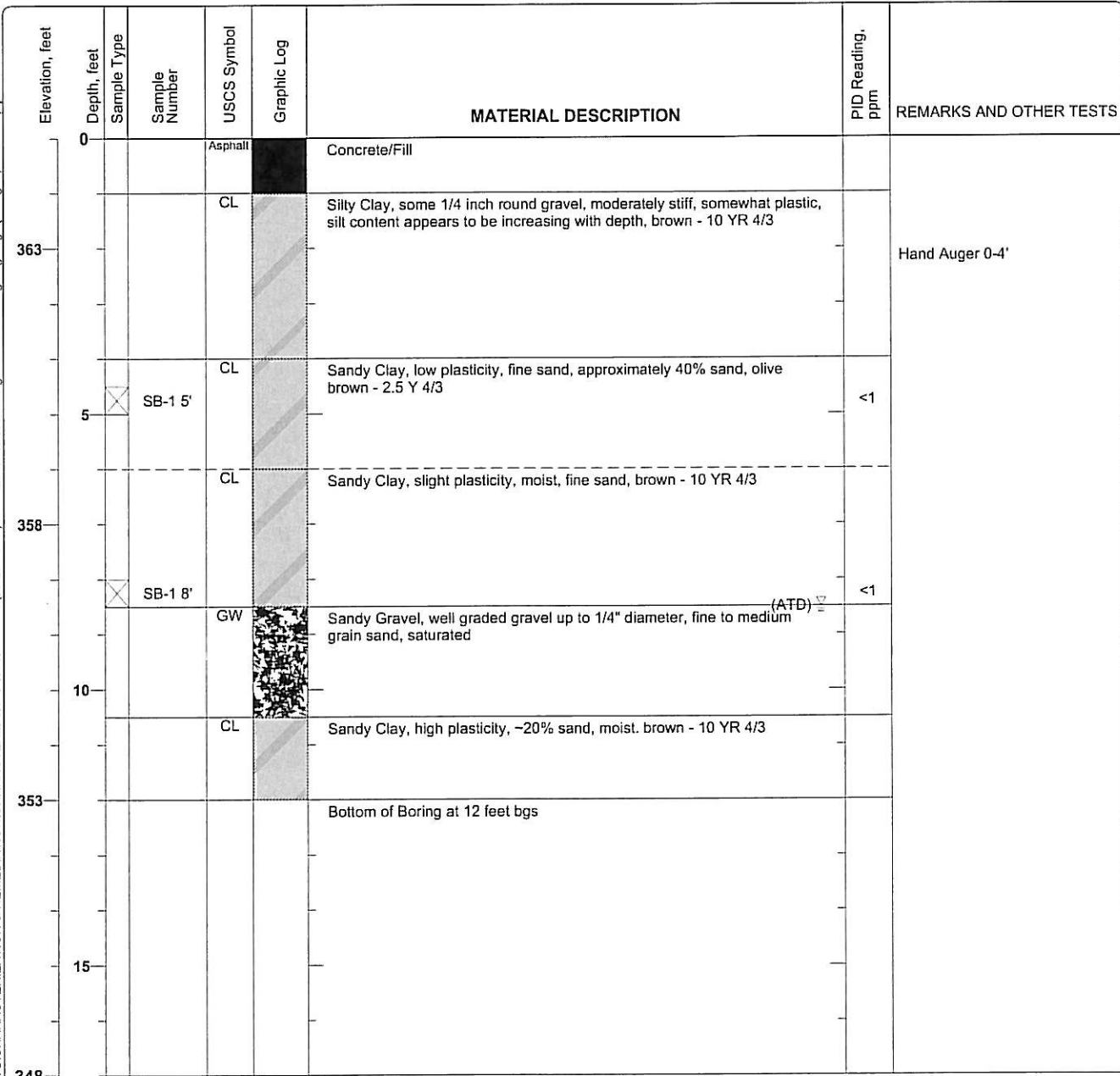
RL = laboratory reporting limit (with no dilution)

**APPENDIX A**  
**Soil Boring Logs**

Project: Gabriel Chiu  
 Project Location: 7272 San Ramon Road  
 Project Number: 10365

**Log of Boring SB-1**  
 Sheet 1 of 1

Date(s) Drilled	January 27, 2005	Logged By	JR	Checked By	PJM
Drilling Method	Direct Push	Drill Bit Size/Type		Total Depth of Borehole	12 feet bgs
Drill Rig Type	Pneumatic Hammer	Drilling Contractor	Vironex	Approximate Surface Elevation	365 feet
Groundwater Level and Date Measured	8.5 feet ATD	Sampling Method(s)	Tube	Well Permit.	
Borehole Backfill	Cement Slurry	Location			



Figure

X:\PROJECTS\CHARACTERIZATION & REMEDIATION\CHARACTERIZATION\1172 SGWI (Main Street) - Dublin - A\PH1 & Original PH I\Boring Logs.bgs [AEL geoprobe 12.ip]

Project: Gabriel Chiu  
 Project Location: 7272 San Ramon Road  
 Project Number: 10365

**Log of Boring SB-2**  
 Sheet 1 of 1

Date(s) Drilled	January 27, 2005	Logged By	JR	Checked By	PJM
Drilling Method	Direct Push	Drill Bit Size/Type	1 3/4 inch	Total Depth of Borehole	12 feet bgs
Drill Rig Type	Pneumatic Hammer	Drilling Contractor	Vironex	Approximate Surface Elevation	365 feet
Groundwater Level and Date Measured	8.5 feet ATD	Sampling Method(s)	Tube	Well Permit.	
Borehole Backfill	Cement Slurry	Location			

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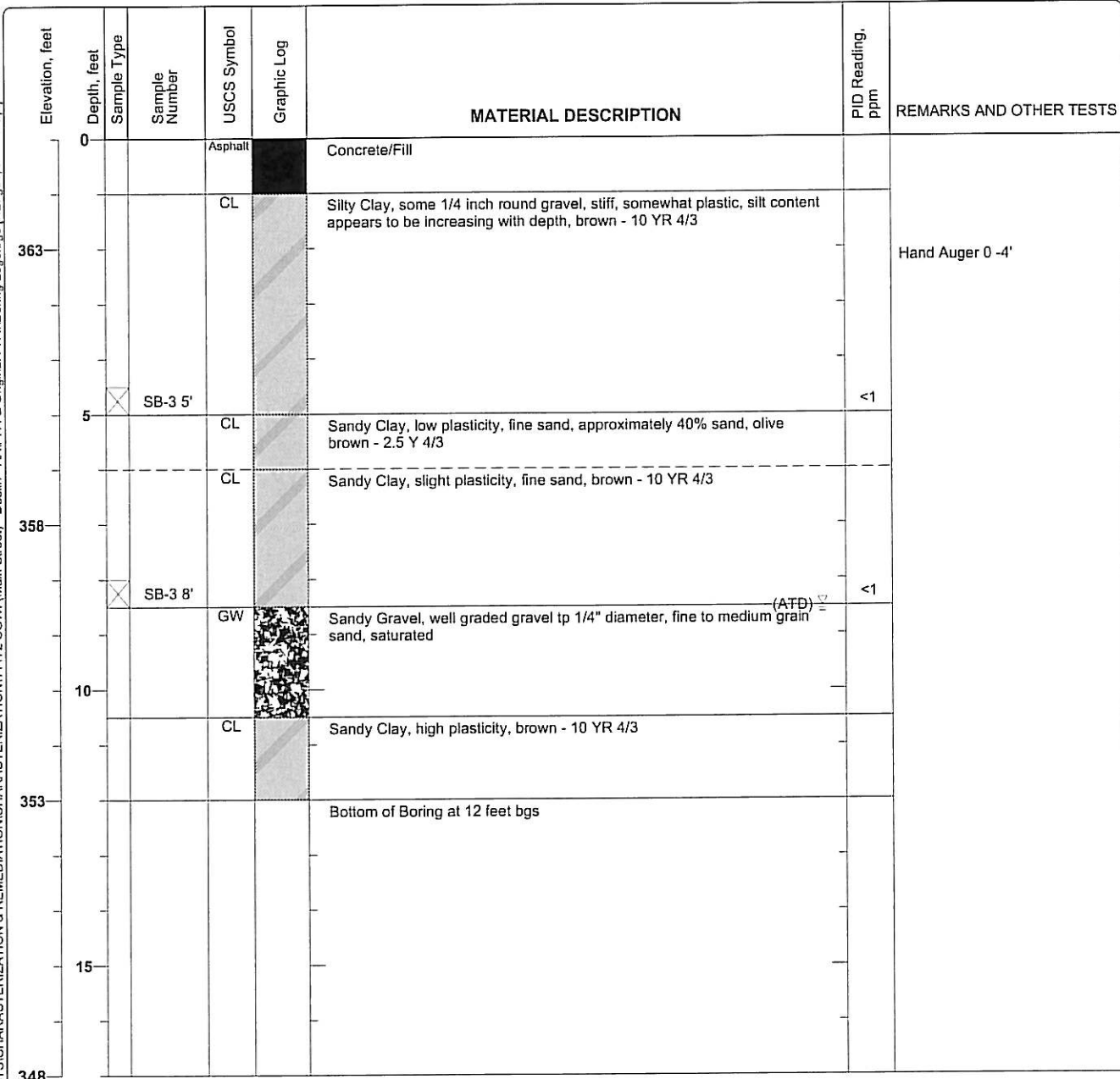
Elevation, feet	Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
0				Asphalt		Concrete/Fill		
363				CL		Silty Clay, some 1/4 inch round gravel, stiff, somewhat plastic, silt content appears to be increasing with depth, brown - 10 YR 4/3		Hand Auger 0-4'
5	5	SB-2 5'		CL		Sandy Clay, low plasticity, fine sand, approximately 40% sand, olive brown - 2.5 Y 4/3	<1	
358				CL		Sandy Clay, slight plasticity, fine sand, brown - 10 YR 4/3		
358		SB-2 8'		CL		Sandy Clay, slight plasticity, fine sand, brown - 10 YR 4/3	<1	
10				GW		Sandy Gravel, well graded gravel up to 1/4" diameter, fine to medium grain sand, saturated	(ATD) $\nabla$	
10				CL		Sandy Clay, high plasticity, brown - 10 YR 4/3		
353						Bottom of Boring at 12 feet bgs		
15								
348								

Figure

Project: Gabriel Chiu  
 Project Location: 7272 San Ramon Road  
 Project Number: 10365

**Log of Boring SB-3**  
 Sheet 1 of 1

Date(s) Drilled	January 27, 2005	Logged By	JR	Checked By	PJM
Drilling Method	Direct Push	Drill Bit Size/Type	1 3/4 inch	Total Depth of Borehole	12 feet bgs
Drill Rig Type	Pneumatic Hammer	Drilling Contractor	Vironex	Approximate Surface Elevation	365 feet
Groundwater Level and Date Measured	8.5 feet ATD	Sampling Method(s)	Tube	Well Permit.	
Borehole Backfill	Cement Slurry	Location			



Figure

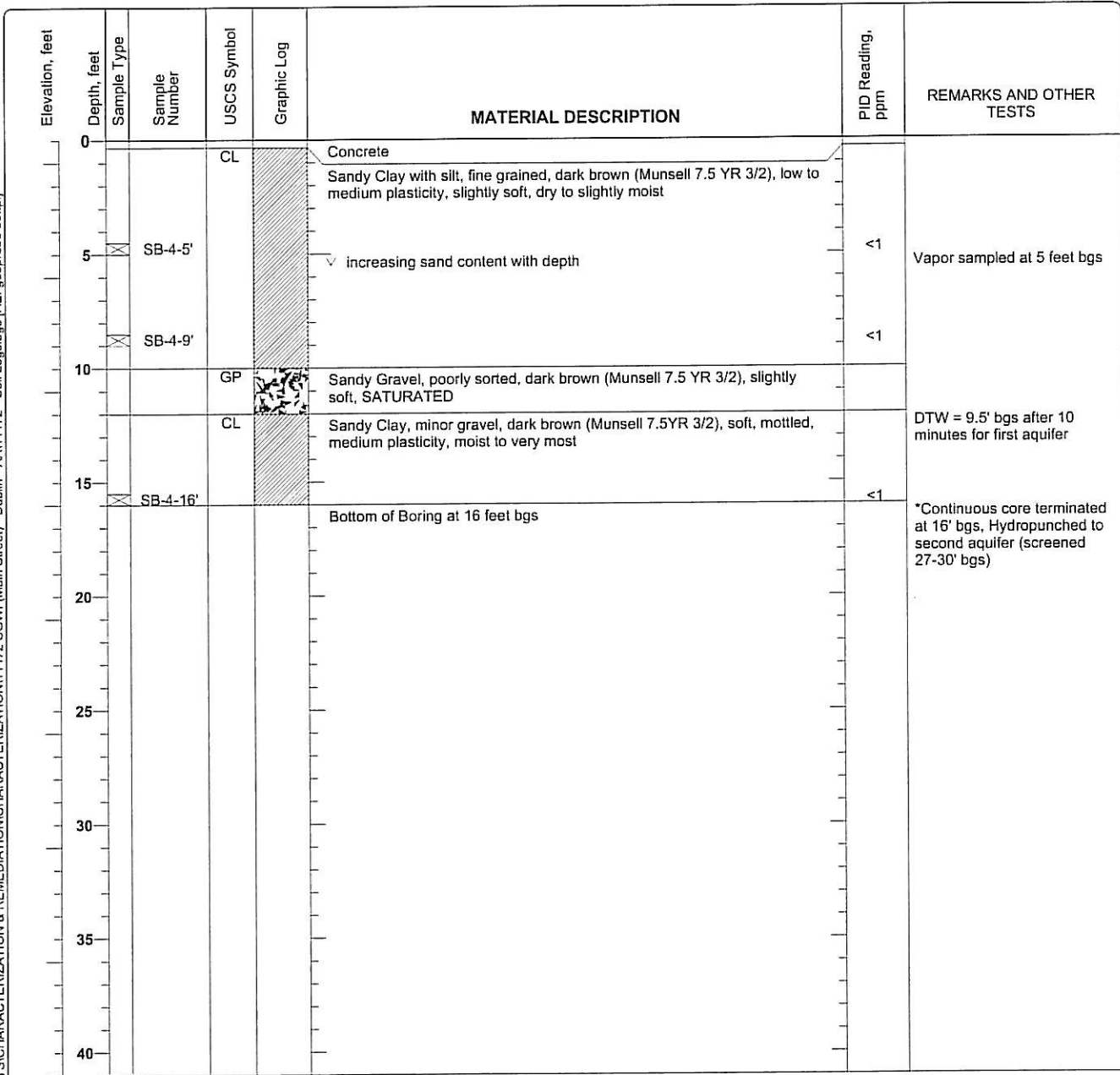
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Project: Main Street  
 Project Location: 7272 San Ramon Rd., Dublin CA  
 Project Number: 115876

**Log of Boring SB-4**  
 Sheet 1 of 1

Date(s) Drilled	February 6, 2006	Logged By	Adrian Angel	Checked By	Peter McIntyre
Drilling Method	Direct Push	Drill Bit Size/Type		Total Depth of Borehole	16 feet bgs
Drill Rig Type	Limited-Access Badger	Drilling Contractor	Vironex	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)	Tube	Well Permit.	
Borehole Backfill	Neat Cement Grout	Location			



Figure

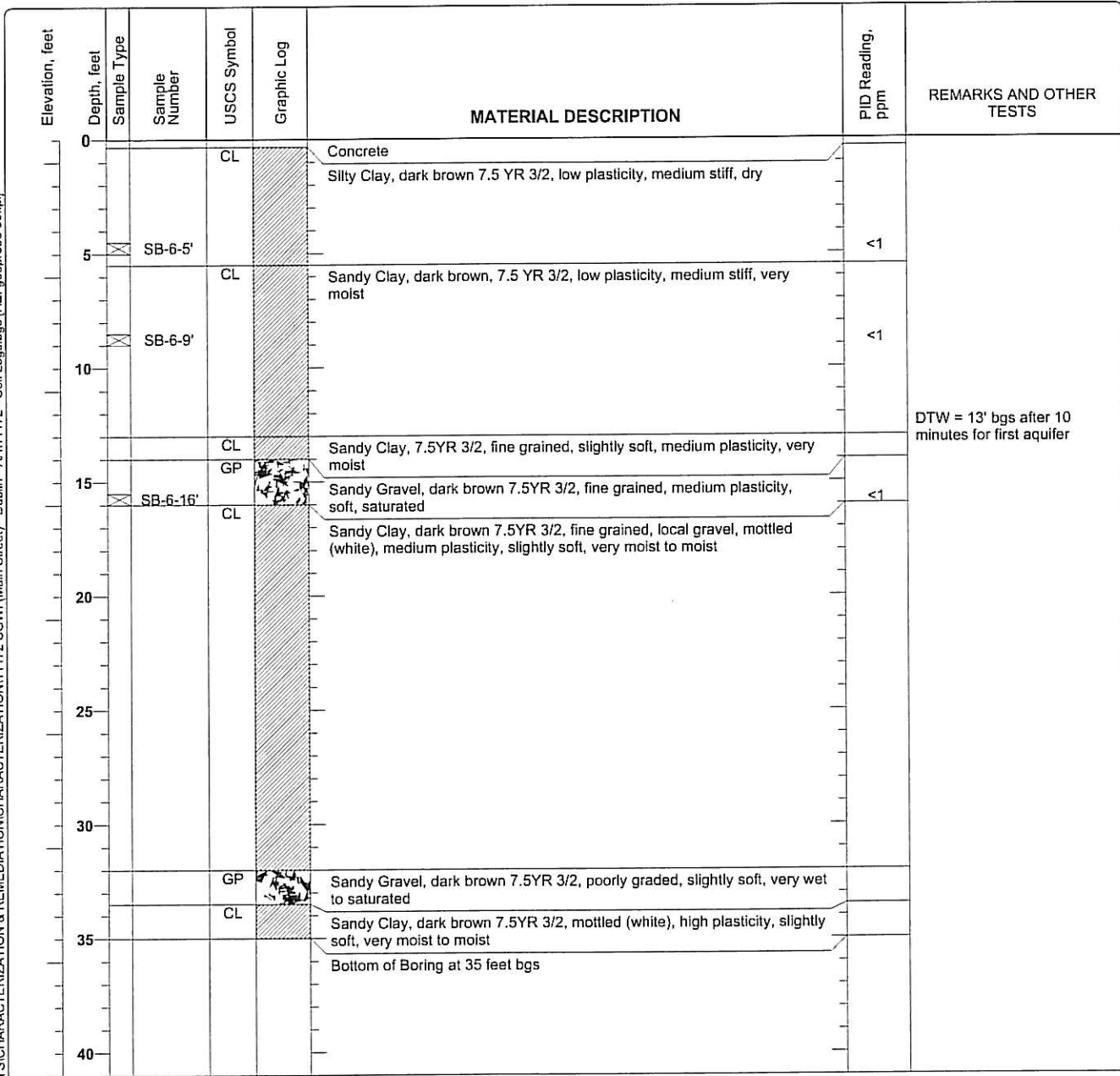
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Project: Main Street  
 Project Location: 7272 San Ramon Rd., Dublin CA  
 Project Number: 115876

## Log of Boring SB-6

Sheet 1 of 1

Date(s) Drilled: <b>February 6, 2006</b>	Logged By: <b>Adrian Angel</b>	Checked By: <b>Peter McIntyre</b>
Drilling Method: <b>Direct Push</b>	Drill Bit Size/Type: <b>2 3/4 inch</b>	Total Depth of Borehole: <b>35 feet bgs</b>
Drill Rig Type: <b>Limited-access Geoprobe 54DT</b>	Drilling Contractor: <b>Vironex</b>	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s): <b>Tube</b>	Well Permit.
Borehole Backfill: <b>Neat Cement Grout</b>	Location	



Figure

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Project: Main Street  
 Project Location: 7272 San Ramon Rd., Dublin CA  
 Project Number: 115876

**Log of Boring SB-8**  
 Sheet 1 of 1

Date(s) Drilled	February 6, 2006	Logged By	Adrian Angel	Checked By	Peter McIntyre
Drilling Method	Direct Push	Drill Bit Size/Type	2 3/4 inch	Total Depth of Borehole	30 feet bgs
Drill Rig Type	Limited-access Geoprobe 54DT	Drilling Contractor	Vironex	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)	Tube	Well Permit.	
Borehole Backfill	Neat Cement Grout	Location			

Elevation, feet	Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
0				CL		Concrete		
						Silty Clay, minor gravel, dark brown (7.5 YR 3/2), medium dense, poorly graded, dry to moist		
	5	SB-6-5'		CL		Sandy Clay, dark brown (7.5 YR 3/2), mottled (white), low plasticity, moist	<1	
						Sandy Clay, minor sand, dark brown (7.5 YR 3/2), dense, poorly graded, moist to very moist	<1	
	10	SB-6-9'		GP		Sandy Gravel, dark brown (7.5 YR 3/2), minor clay, poorly graded, saturated		
						Sandy Clay, minor clay, dark brown (7.5 YR 3/2), mottled (white), poorly graded, moist		DTW = 10' bgs after 10 minutes for first aquifer
	15	SB-6-16'		CL		Sandy Clay, dark brown 7.5YR 3/2, slightly soft, mottled (white) medium plasticity, moist	<1	
						Sandy Gravel, dark brown 7.5YR 3/2, minor gravel, slightly soft, medium to high plasticity, saturated		
	25			CL		Sandy Clay, dark brown 7.5YR 3/2, slightly soft, locally mottled (white), medium to high plasticity, very moist to moist		
30						Bottom of Boring at 30 feet bgs		
35								
40								

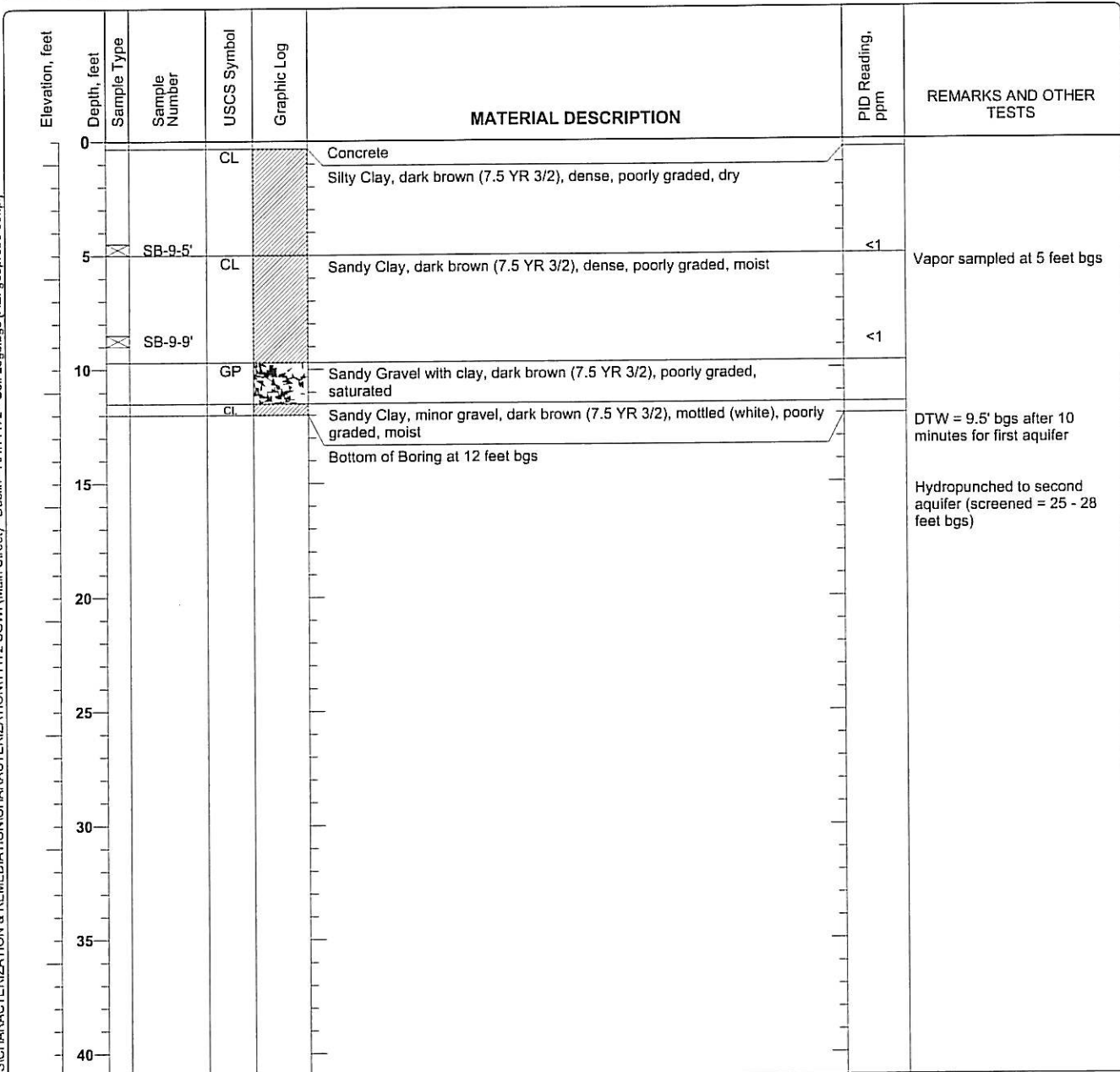
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Figure

Project: Main Street  
 Project Location: 7272 San Ramon Rd., Dublin CA  
 Project Number: 115876

**Log of Boring SB-9**  
 Sheet 1 of 1

Date(s) Drilled	February 6, 2006	Logged By	Adrian Angel	Checked By	Peter McIntyre
Drilling Method	Direct Push	Drill Bit Size/Type	2 3/4 inch	Total Depth of Borehole	12 feet bgs
Drill Rig Type	Limited-access Geoprobe 54DT	Drilling Contractor	Vironex	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)	Tube	Well Permit.	
Borehole Backfill	Neat Cement Grout	Location			



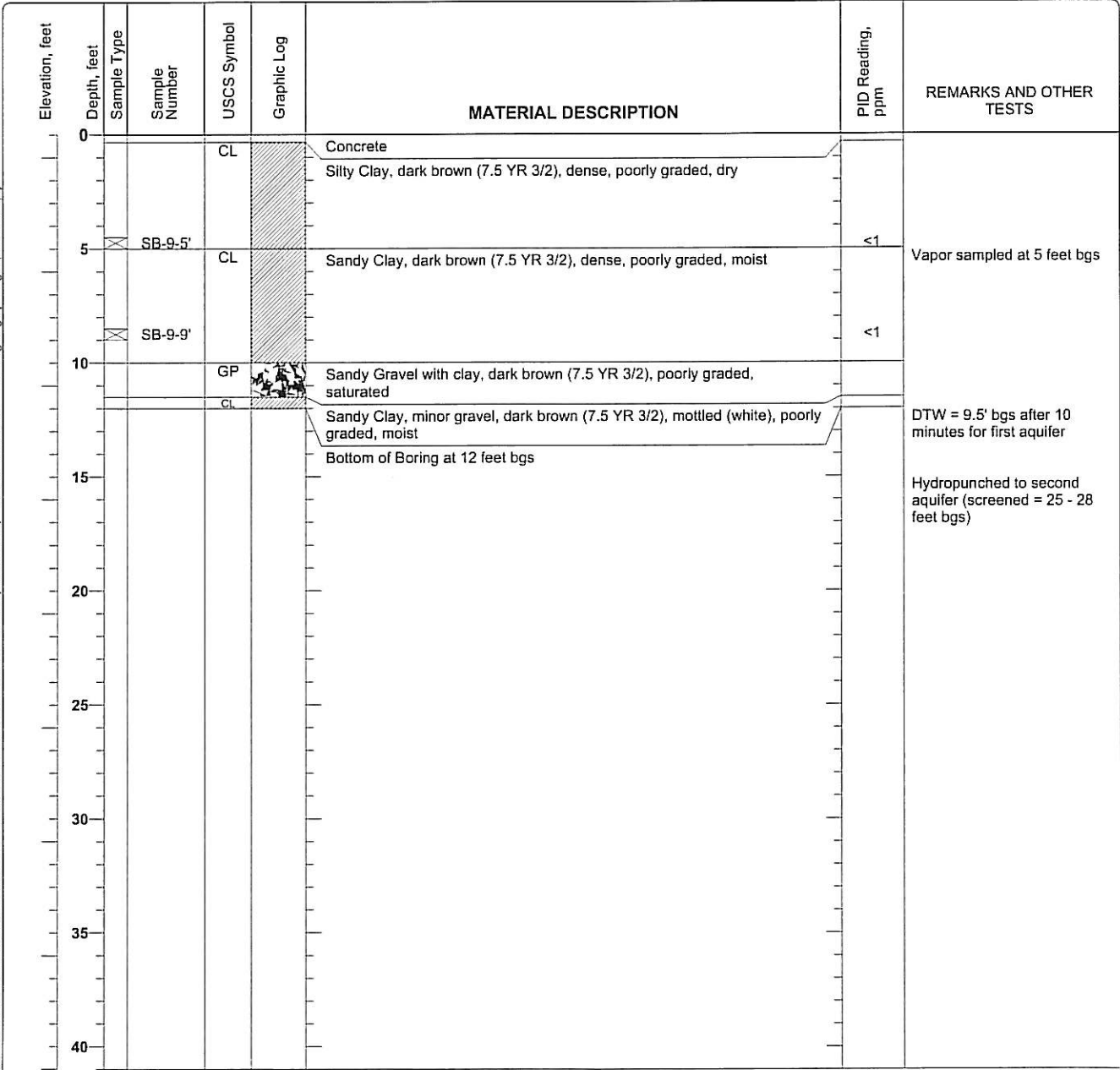
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Figure

Project: Main Street  
 Project Location: 7272 San Ramon Rd., Dublin CA  
 Project Number: 115876

**Log of Boring SB-10**  
 Sheet 1 of 1

Date(s) Drilled	February 6, 2006	Logged By	Adrian Angel	Checked By	Peter McIntyre
Drilling Method	Direct Push	Drill Bit Size/Type	2 3/4 inch	Total Depth of Borehole	12 feet bgs
Drill Rig Type	Limited-access Geoprobe 54DT	Drilling Contractor	Vironex	Approximate Surface Elevation	
Groundwater Level and Date Measured		Sampling Method(s)	Tube	Well Permit.	
Borehole Backfill	Neat Cement Grout	Location			



Figure

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