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March 5, 2013

Mr. Mark Detterman
Alameda County Health Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

RECEIVED

By Alameda County Environmental Health at 2:12 pm, May 23, 2013

Re: Additional Soil Investigation
San Lorenzo High School
50 E. Lewelling Blvd
San Lorenzo, California

Dear Mr. Detterman:

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

Sincerely,

Paul Dixon, AIA
Director
Facilities and Operations
San Lorenzo Unified School District
15510 Usher Street
San Lorenzo, CA 94580-1641
Office: (510) 317-4841
pdixon@slzusd.org



Mr. Mark Detterman
Alameda County Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

March 13, 2013
Project 409-01.03

RE: **Additional Soil Investigation**
San Lorenzo High School
50 E. Lewelling Blvd.
San Lorenzo, California

Dear Mr. Detterman,

EquoLogic, on behalf of the San Lorenzo Unified School District (SLUSD), presents this additional soil investigation report for San Lorenzo High School, San Lorenzo, California. The work was requested by Alameda County Health Services Agency (ACHSA) in a letter to SLUSD dated October 10, 2012. A work plan prepared by EquoLogic was approved by ACHSA in a letter to SLUSD dated December 17, 2012.

BACKGROUND

On August 18, 2010, a 6,000-gallon heating oil underground storage tank (UST) was removed from San Lorenzo High School. The location of San Lorenzo High School (Site) is shown on **Figure 1**. The excavation and tank removal were documented in a report by Golden Gate Tank Removal, Inc. (GGTR) titled *Closure Report for Underground Storage Tank, 50 E Lowelling Boulevard, San Lorenzo, CA 94580* dated October 19, 2010. After removal of the UST, confirmation soil samples were collected at a depth of 12 feet below grade (bg). Samples were analyzed for total petroleum hydrocarbons as diesel (TPH-d) and as motor oil (TPH-mo). TPH in either TPH-d or TPH-mo carbon range could be heating oil. TPH-d concentrations were found up to 3,470 milligrams per kilogram (mg/kg) in soil and is assumed to represent heating oil. TPH-mo was not detected in soil samples. Additionally benzene, toluene, ethylbenzene, and xylene (BTEX) and fuel oxygenates were analyzed for, however, all were non-

detectable at varying limits of detection. A grab groundwater was collected from the UST excavation. The sample was analyzed for TPH-d and TPH-mo, BTEX, and fuel oxygenates. TPH-d was detected at 12.1 parts per million (ppm). All other parameters were below the method detection limit. Approximately 1,000-gallons was pumped from the tank excavation and disposed of off-site.

Four soil borings (B-1 through B-4) were drilled in June 2012. One boring (B-1) was placed adjacent to the remote fill location. Borings B-2 through B-4 were drilled adjacent to the former UST pit (see **Figure 2**). Soil and groundwater samples were collected from each boring. Heating oil (mixture of diesel and motor oil) was identified in only one soil sample – Boring B-1 at 5 feet bg. Hydrocarbons were quantified by the laboratory as 1760 milligrams per kilogram (mg/kg) TPH-d and 1610 mg/kg TPH-mo. BTEX and MTBE were below the method detection limit in all samples with the exception of 17.2 mg/kg xylene in B-1 at 5 feet bgs.

Heating oil was not identified in any of the four groundwater samples. BTEX compounds and MTBE were all below the method detection limit with the exception of ethylbenzene at 0.25 micrograms per liter (ug/l) and xylene at 0.78 ug/l in the water sample from boring B-3.

SCOPE OF WORK

EquoLogic sampled soil within the foot-print of the former UST (B-5) and the area of the remote fill port (borings B-6 through B-9) in order to establish the lateral and vertical extent of petroleum hydrocarbons. The following section lists the tasks performed.

Pre-field

- Selection and scheduling of drilling company (Vironex)
- Preparation of Health and Safety Plan
- Obtained drilling permit from County (**Attachment A**)
- Notified ACHSA of work schedule/inspection
- Notified Underground Service Alert (USA)

Field Work

- Marked boring locations in the field
 - Performed underground utility survey
 - Drilled five direct-push borings (B-5 through B-9) to a depth of approximately 15 to 25 feet bgs
- Boring locations are shown on **Figure 2**. Boring logs are provided as **Attachment B**.

- Collected soil samples using a steel drive sampler equipped with a five-foot long acetate liner. Samples were cut from the liner and sealed with tight fitting plastic caps. Samples were placed on ice for transportation to the laboratory under chain of custody documentation.
- Obtained photo-ionization detector (PID) readings for soil samples collected. Readings are shown on the boring logs in **Attachment B**.
- Analyzed all collected soil samples for a broad range of petroleum hydrocarbons including diesel (silica gel cleanup), motor oil, BTEX compounds, MTBE, and polynuclear aromatic hydrocarbons (PAHs). The laboratory reported that there is no specific test for heating oil. Heating oil is recognized by a chromatographic spike between diesel and motor oil.
- Upon completion of sampling, boreholes were backfilled with concrete grout. All borehole completions were inspected by Ms. Vicky Hamlin of the Alameda County Public Works Agency.

RESULTS

The following section presents the results of the soil investigation.

Soil

Borings encountered primarily clay (see boring logs). Approximately 12 feet of gravel backfill was found in the former UST pit. Groundwater was encountered at a depth of approximately 12 feet bgs.

Soil Analytical Results

PID readings for soil samples were typically less than 5 parts per million (ppm). The maximum PID reading was 6.3 ppm for the 15-foot sample from Boring B-7. A thin approximately 6 inch thick layer of petroleum hydrocarbon impacted soil was encountered at the base of the former UST pit.

Soil analytical data are summarized on **Table 1** and on boring logs. The highest concentrations of TPH-d and TPH-mo were detected in the shallow 2.5-foot samples from borings B-6 and B-7. The maximum concentration of TPH-d was 69.7 mg/kg for the 2.5-foot sample from boring B-7 and the maximum concentration of TPH-mo was 375 mg/kg in the 2.5-foot sample from boring B-6. BTEX, MTBE, PAHs were below the method detection limit in all samples with the exception of ethylbenzene and xylene in the 5- and 10-foot samples from boring B-6. Ethylbenzene was detected at 2.2 ug/kg and 7.9 ug/kg, respectively. Xylene was detected at 13.4 ug/kg and 53.5 ug/l.

Water Analytical Results

A summary of historic water analytical data is summarized on **Table 2**. Heating oil was not identified in any of the four groundwater samples collected in June 2012. BTEX compounds and MTBE were all below the method detection limit with the exception of ethylbenzene at 0.25 micrograms per liter (ug/l) and xylene at 0.78 ug/l in the water sample from boring B-3.

CONCLUSIONS

Heating oil is confined to a thin zone at the base of the former UST pit (12.5 feet) and near surface soil in the area of the remote fill port. Clay soil has limited the horizontal and vertical migration of petroleum hydrocarbons. Groundwater in the area of the former UST and fill port is impacted at only very low concentrations. EquoLogic recommends the UST case be closed and no further action required.

The site meets the general criteria that must be satisfied for low threat case closure:

- a. The unauthorized release is located within the service area of a public water system;
- b. The unauthorized release consists only of petroleum;
- c. the UST was removed in August 2010. The unauthorized ("primary") release from the UST system has been stopped.
- d. No free product has been detected;
- e. A conceptual site model that assesses the nature, extent, and mobility of the release has been developed;
- f. Secondary source has been removed to the extent practicable;
- g. Soil or groundwater has been tested for methyl tert-butyl ether (MTBE) and results reported in accordance with Health and Safety Code section 25296.15; and
- h. Nuisance as defined by Water Code section 13050 does not exist at the site.

LIMITATIONS

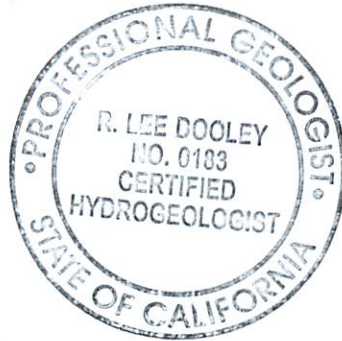
The descriptions, conclusions, and recommendations contained in this report represent EquoLogic's professional opinions based upon the currently available information and are arrived at in accordance with currently acceptable professional standards. For any reports cited that were not generated by EquoLogic, the data from those reports is used "as is" and is assumed to be accurate. This report is based upon a specific scope of work requested by the client. The Contract between EquoLogic and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were conducted. This report is intended only for the use of EquoLogic's Client and anyone else specifically listed on this report. EquoLogic will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, EquoLogic makes no express or implied warranty as to the contents of this report.

You can contact me at (408) 656-2505 or by email at ldooley@equologicgroup.com.

Sincerely,



Lee Dooley
Senior Hydrogeologist
CHG 183



Attachments

Table 1 – Summary of Soil Analytical Data

Table 2 – Summary of Groundwater Analytical Data

Figure 1 – Site Location Map

Figure 2 – Boring Location Map

Attachment A – Boring Permit

Attachment B – Boring Logs

Attachment C – Laboratory Report

**Table 1 - Summary of Soil Analytical Data
San Lorenzo High School**

Boring	Date	Depth (feet)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	Xylene (ug/kg)	MTBE (ug/kg)	PAHs (ug/kg)
B-1	6/12/2012	5	1760	1610	<2.4	<2.4	<2.4	17.2	<4.7	NA
		10	<5.0	<10.0	<0.50	<0.50	<0.50	<0.99	<0.99	NA
		15	<5.0	<10.0	<0.50	<0.50	<0.50	<0.99	<0.99	NA
		20	<5.0	<9.9	<0.50	<0.50	<0.50	<0.99	<0.99	NA
B-2	6/12/2012	5	<5.0	39.7	<0.49	<0.49	<0.49	<0.98	<0.98	NA
		10	<4.9	<9.9	<0.49	<0.49	<0.49	<0.99	<0.99	NA
		15	<5.0	<10.0	<0.49	<0.49	<0.49	<0.98	<0.98	NA
		20	<5.0	41	<0.50	<0.50	<0.50	<1.0	<1.0	NA
		24	<5.0	<10.0	<0.50	<0.50	<0.50	<0.99	<0.99	NA
B-3	6/12/2012	10	<5.0	<10.0	<0.50	<0.50	<0.50	<0.99	<0.99	NA
		15	5	<9.9	<0.49	<0.49	<0.49	<0.98	<0.98	NA
		20	<4.9	<9.8	<0.50	<0.50	<0.50	<1.0	<1.0	NA
		24	5.8	<9.9	<0.49	<0.49	<0.49	<0.98	<0.98	NA
B-4	6/12/2012	5	<5.0	<9.9	<0.49	<0.49	<0.49	<0.97	<0.97	NA
		10	<5.0	<10.0	<0.48	<0.48	<0.48	<0.97	<0.97	NA
		15	<4.9	<9.9	<0.50	<0.50	<0.50	<1.0	<1.0	NA
		20	<5.0	<9.9	<0.49	<0.49	<0.49	<0.98	<0.98	NA
B-5	1/26/2013	5	<5.0	19.0	<0.50	<0.50	<0.50	<0.99	<0.99	ND
		15	<5.0	<9.9	<0.49	<0.49	<0.49	<0.98	<0.98	ND
		20	<4.9	<9.9	<0.49	<0.49	<0.49	<0.98	<0.98	ND
		25	8.69	<9.9	<0.50	<0.50	<0.50	<1.0	<1.0	ND

Boring	Date	Depth (feet)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	Xylene (ug/kg)	MTBE (ug/kg)	PAHs (ug/kg)
B-6	1/26/2013	2.5	<50.0	375	<0.48	<0.48	<0.48	<0.97	<0.97	ND
		5	<5.0	<10	<0.49	<0.49	2.2	13.4	<0.98	ND
		10	<5.0	<10	<0.49	<0.49	7.9	53.5	<0.97	ND
		15	<5.0	<9.9	<0.48	<0.48	<0.48	<0.96	<0.96	ND
B-7	1/26/2013	2.5	69.7	183	<0.50	<0.50	<0.50	<0.99	<0.99	ND
		5	<5.0	55.6	<0.50	<0.50	<0.50	<1.0	<1.0	ND
		10	<5.0	30.2	<0.50	<0.50	<0.50	<1.0	<1.0	ND
		15	<5.0	18.4	<0.49	<0.49	<0.49	<0.98	<0.98	ND
B-8	1/26/2013	2.5	<5.0	<9.9	<0.50	<0.50	<0.50	<1.0	<1.0	ND
		5	<5.0	22.5	<0.49	<0.49	<0.49	<0.99	<0.99	ND
		10	<5.0	17.9	<0.50	<0.50	<0.50	<1.0	<1.0	ND
		15	<5.0	15.7	<0.49	<0.49	<0.49	<0.97	<0.97	ND
B-9	1/26/2013	2.5	<15	138	<0.50	<0.50	<0.50	<0.99	<0.99	ND
		5	<5.0	<9.9	<0.49	<0.49	<0.49	<0.98	<0.98	ND
		10	<5.0	<9.9	<0.50	<0.50	<0.50	<0.99	<0.99	ND
		15	<5.0	<9.9	<0.50	<0.50	<0.50	<1.0	<1.0	ND

Notes

TPH-d = Total petroleum hydrocarbons as diesel

TPH-mo = Total petroleum hydrocarbons as motor oil

Heating oil is not a unique pattern. Historically heating oil has been various petroleum hydrocarbon mixtures from C10-C40; this includes the diesel and motor oil ranges. Therefore, TPH in either range could be heating oil.

MTBE = Methyl tert-butyl ether

PAHs = Polynuclear aromatic hydrocarbons

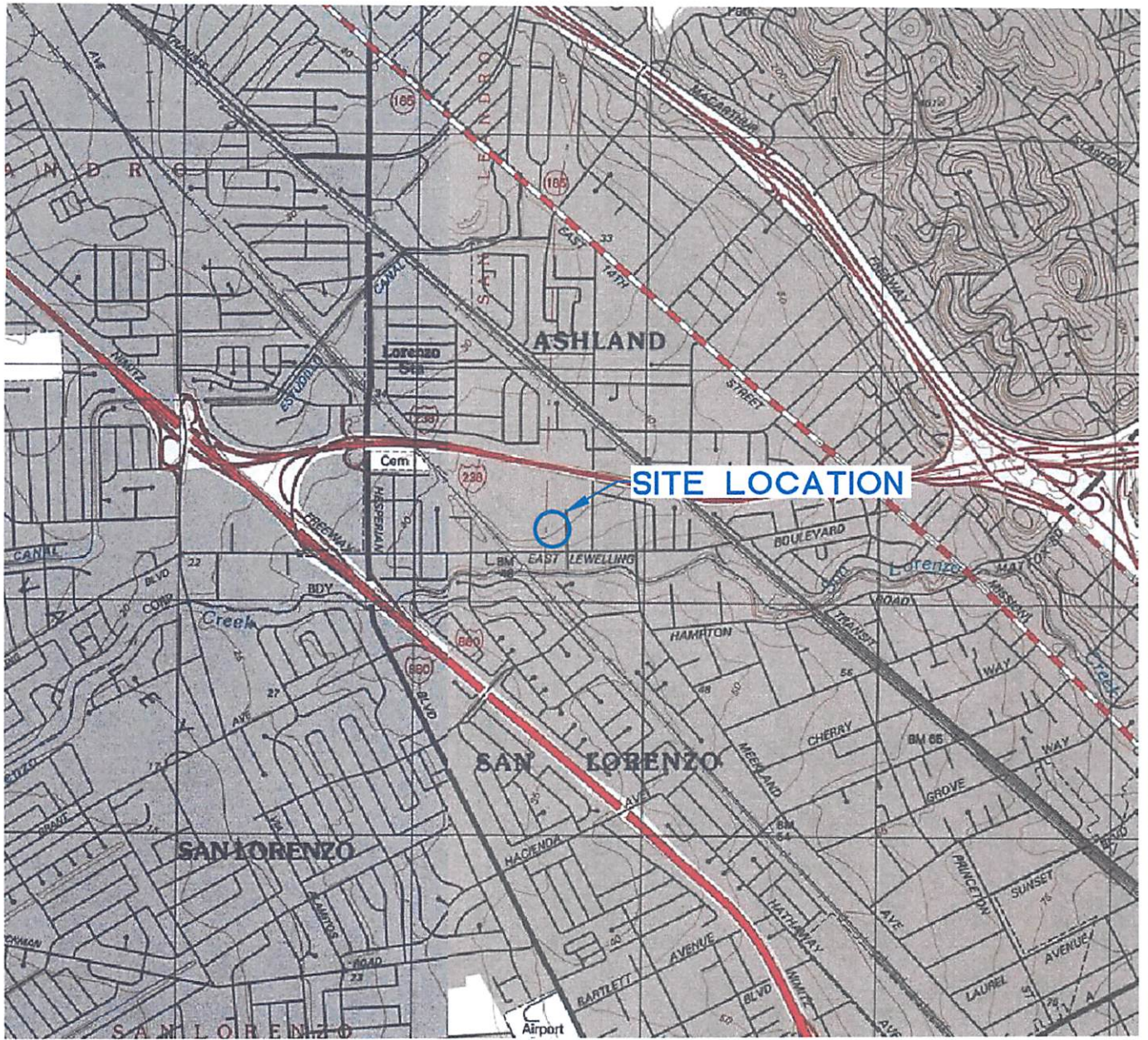
NA = Not analyzed

ND = No PAHs detected

**Table 2 - Summary of Groundwater Analytical Data
San Lorenzo High School**

Boring	Date	TPH-d (mg/l)	TPH-mo (mg/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylene (ug/l)	MTBE (ug/l)
B-1	6/12/2012	0.157	<0.10	<0.20	<0.20	<0.20	<0.46	<0.20
B-2	6/12/2012	<0.053	<0.11	<0.20	<0.20	<0.20	<0.46	<0.20
B-3	6/12/2012	0.0588	<0.11	<0.20	<0.20	0.25	0.78	<0.20
B-4	6/12/2012	<0.063	<0.13	<0.20	<0.20	<0.20	<0.46	<0.20

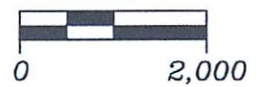
Notes
 TPH-d = Total petroleum hydrocarbons as diesel
 TPH-mo = Total petroleum hydrocarbons as motor oil
Heating oil is not a unique pattern. Historically heating oil has been various petroleum hydrocarbon mixtures from C10-C40; this includes the diesel and motor oil ranges. Therefore, TPH in either range could be heating oil.
 MTBE = Methyl tert-butyl ether




QUADRANGLE LOCATION

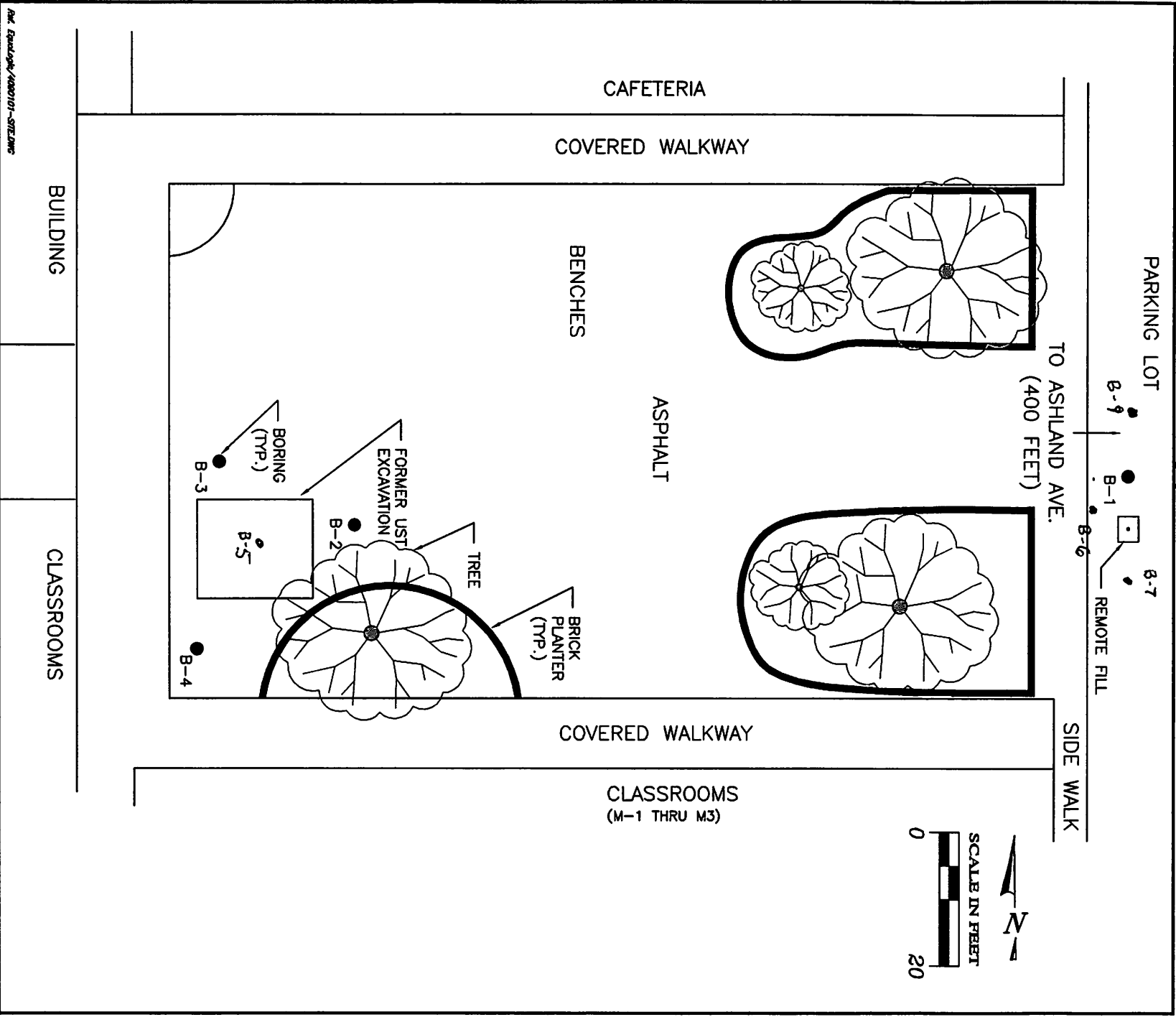


SCALE IN FEET



Ref. 4544/409.01.01/4090101-SLM.DWG

	SITE LOCATION MAP	FIGURE: 1 PROJECT: 409.01.01
	SAN LORENZO HIGH SCHOOL 50 E. LOWELLING BLVD SAN LORENZO, CALIFORNIA	



File: Equologic/4009.01.01-STREZAMS

BUILDING

CLASSROOMS

BORING LOCATION MAP

SAN LORENZO HIGH SCHOOL
 50 EAST LOWELLING BLVD.
 SAN LORENZO, CALIFORNIA

FIGURE:

2

PROJECT:
 409.01.01



ATTACHMENT A

BORING PERMIT

Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 01/10/2013 By jamesy

Permit Numbers: W2013-0032
Permits Valid from 01/26/2013 to 01/28/2013

Application Id: 1357671245740
Site Location: 50 E Lewelling Blvd
Project Start Date: 01/26/2013
Assigned Inspector: Contact Vicky Hamlin at (510) 670-5443 or vickyh@acpwa.org

City of Project Site: San Lorenzo

Completion Date: 01/28/2013

Applicant: EquoLogic - Lee Dooley
15936 Barry Ln, Monte Sereno, CA 95030
Property Owner: San Lorenzo Unified School District
15510 Usher St., San Lorenzo, CA 94580
Client: ** same as Property Owner **

Phone: 408-656-2505

Phone: 510-317-4600

	Total Due:	\$265.00
Receipt Number: WR2013-0012	Total Amount Paid:	\$265.00
Payer Name : Equo Logic	Paid By: CHECK	PAID IN FULL

Works Requesting Permits:

Borehole(s) for Investigation-Contamination Study - 4 Boreholes
Driller: Vironex - Lic #: 705927 - Method: DP

Work Total: \$265.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2013-0032	01/10/2013	04/26/2013	4	2.00 in.	25.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.
2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.
5. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 or email to vickyh@acpwa.org at least five

Alameda County Public Works Agency - Water Resources Well Permit

(5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

6. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.

7. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

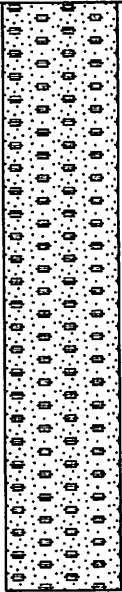
ATTACHMENT B

BORING LOGS

B-5

SLHSD

Project Number 409.01.03	Drill Rig Direct Push
Geologist Lee Dooley	Ground Elevation Feet
Date Drilled 1-26-13	Total Depth of Borehole 25 Feet
Borehole Diameter 2 Inches	Depth to Water 12 Feet

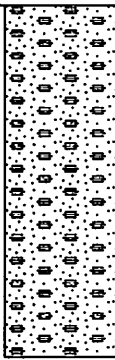
Graphic Log	Description	Depth	Sample	PID (ppm)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Completion
Asphalt	Asphalt Well graded GRAVEL with sand, gray, moist (Fill)	5	█	0.8	<5	19	
GW		10	█	no sample			
CL	Lean CLAY, brown, moist to wet, hydrocarbon odor (wet, slight odor)	15	█	1.7	<5	<9.9	
CL		20	█		<4.9	<9.9	
CL		25	█	1.1	8.69	<9.9	
		30					
		35					
		40					
		45					
		50					

C:\Program Files (x86)\Porpoise Media\Well Logger\Logs\San Lorenzo High School.w12

B-6

SLHSD

Project Number 409.01.03	Drill Rig Direct Push
Geologist Lee Dooley	Ground Elevation Feet
Date Drilled 1-26-13	Total Depth of Borehole 15 Feet
Borehole Diameter 2 Inches	Depth to Water Feet

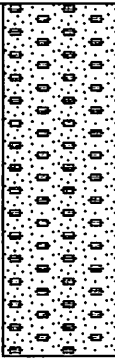
Graphic Log	Description	Depth	Sample	PID (ppm)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Completion
Asphalt	Asphalt Lean CLAY, brown, damp, no hydrocarbon odor	5	█	1.5	<50	375	
CL	(silty, light brown, moist)	10	█	5.1	<5	<10	
CL	(silty, light brown, moist)	15	█	5.4	<5	<9.9	
		20					
		25					
		30					
		35					
		40					
		45					
		50					

C:\Program Files (x86)\Perpointe Media\Well Logger\Legend\San Lorenzo High School.w12

B-7

SLHSD

Project Number 409.01.03	Drill Rig Direct Push
Geologist Lee Dooley	Ground Elevation Feet
Date Drilled 1-26-13	Total Depth of Borehole 15 Feet
Borehole Diameter 2 Inches	Depth to Water 12.5 Feet

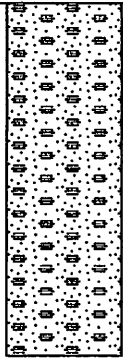
Graphic Log	Description	Depth	Sample	PID (ppm)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Completion
Asphalt	Asphalt Lean CLAY, silty, brown, damp to moist, no petroleum hydrocarbon odor	5	█	4	69.7	183	
CL		10	█	4.7	<5	55.6	
CL	(moist to wet)	15	█	6.3	<5	30.2	
		15				18.4	
		20					
		25					
		30					
		35					
		40					
		45					
		50					

C:\Program Files (x86)\Porpoise Media\Well Logger\Legend\San Lorenzo High School.w12

B-8

SLHSD

Project Number 409.01.03	Drill Rig Direct Push
Geologist Lee Dooley	Ground Elevation Feet
Date Drilled 1-26-13	Total Depth of Borehole 15 Feet
Borehole Diameter 2 Inches	Depth to Water 13 Feet

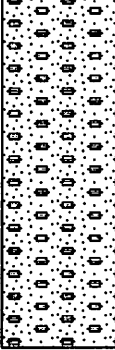
Graphic Log	Description	Depth	Sample	PID (ppm)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Completion
Asphalt	Asphalt		█		<5	<9.9	
CL	Lean CLAY, silty, brown, damp to moist, no petroleum hydrocarbon odor	5	█	1.6	<5	22.5	
CL	(moist to wet)	10	█	2.3	<5	17.9	
CL	(moist to wet)	15	█	1.0	<5	15.7	
		20					
		25					
		30					
		35					
		40					
		45					
		50					

C:\Program Files (x86)\Paripaise Media\Well Logget\Legend\San Lorenzo High School.wl2

B-9

SLHSD

Project Number 409.01.03	Drill Rig Direct Push
Geologist Lee Dooley	Ground Elevation Feet
Date Drilled 1-26-13	Total Depth of Borehole 15 Feet
Borehole Diameter 2 Inches	Depth to Water 14 Feet

Graphic Log	Description	Depth	Sample	PID (ppm)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Completion
Asphalt	Asphalt		█		<15	138	
CL	Lean CLAY, silty, brown, damp to moist, no petroleum hydrocarbon odor	5	█	0.7	<5	<9.9	
CL		10	█	2.9	<5	<9.9	
CL	(fine sandy, wet)	15	█	2.3	<5	<9.9	
		20					
		25					
		30					
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C:\Program Files (x86)\Porpoise Media\Well Logger\Legends\San Lorenzo High School.w12

ATTACHMENT C
LABORATORY REPORT