Declaration from the Responsible Party

Letter Report
Soilgas Monitoring Conducted 8 August 2011
2440 East Eleventh Street
Oakland CA
RO No. 29

Prepared by Streamborn, Dated 9 September 2011

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.

Jeffrey Eandi
Vice President
Eandi Metal Works
976 Twenty-Third Avenue
Oakland CA 94606

Signed _____

Dated 9-14-11

STREAMBORN

510.528.4234
Fax 528.2613

Jeffrey M. Eandi
Eandi Metal Works
976 Twenty-Third Avenue
Oakland CA 94606

9 September 2011

Project No. P279

Letter Report
Soilgas Monitoring Conduced 8 August 2011
2440 East Eleventh Street
Oakland CA
RO No. 29

Dear Mr. Eandi (hardcopy):

This letter report documents the results of soilgas monitoring conducted 8 August 2011 for three locations at/near the subject site.

Soilgas monitoring was conducted in accordance with Streamborn's workplan (Streamborn 2010). Soilgas monitoring was conducted pursuant to mandates, conditions, and approvals from the Alameda County Health Care Services Agency (ACHCSA 2010a and 2010b).

The results of soilgas monitoring are summarized in the following:

- Table 1 provides an environmental chronology.
- Table 2 provides a bibliography.
- Table 3 provides a summary of groundwater levels and interpreted groundwater gradients.
- Table 4 provides a hydrogeologic summary for the site.
- Table 5 provides groundwater analytical data from the wells.
- Table 6 provides a bibliography of guidance and reference documents related to soilgas monitoring.
- Table 7 summarizes the requirements for installation of the temporary soilgas monitoring points.
- Table 8 summarizes the requirements for sampling of the temporary soilgas monitoring points.
- Table 9 provides the analytical results of soilgas sampling.
- Figure 1 is a location map.
- Figure 2 is a vicinity map.

- Figure 3 is a site plan.
- Figure 4 shows groundwater levels and the interpreted groundwater gradient for the most recent groundwater-monitoring event (8 March 2010).
- Figure 5 shows the most recent interpretation of the extent of groundwater contamination (8 March 2010).
- Figure 6 shows the soilgas sampling locations.
- Figure 7 summarizes detectable soilgas results along with companion groundwater results; TPH-gasoline and xylenes were the only petroleum hydrocarbons detected in the soilgas samples.
- Attachment 1 contains schematics for the temporary soilgas sampling points, along with field forms related to the purge test and soilgas purging and sampling.
- Attachment 2 contains the laboratory report and chain-of-custody form.
- Attachment 3 contains information related to permits.
- Attachment 4 contains the standard operating procedure for soilgas sampling.

The results of soilgas monitoring revealed the following:

- **TPH-gasoline and xylenes were the only petroleum hydrocarbons detected in the soilgas samples.**
- **The measured concentrations of TPH-gasoline and xylenes were very low - significantly below applicable environmental screening levels and human health screening levels.**
- **Vapor intrusion risks at this site appear negligible.**

SOILGAS MONITORING

Fieldwork was conducted on 8 August 2011. RSI Drilling (Alameda CA) provided drilling services.

Prior to initiating fieldwork, the following activities were completed:

- A drilling permit was obtained from Alameda County Public Works Agency - Water Resources Division (attached). Vicky Hamlin of Alameda County Public Works Agency - Water Resources Division was present onsite to inspect the abandonment/decommissioning of the temporary soilgas sampling points.

- An excavation permit was obtained from the City of Oakland (attached). This permit covered all three soilgas sampling locations - all three were located in the street.
- A traffic control permit was obtained from the City of Oakland (attached).
- Underground service alert (811) was notified to clear the proposed drilling locations.

Rational for the Sampling Locations

Soilgas was sampled at three locations (SG1 through SG3) - the locations were selected according to the following rationale (Table 7):

- SG1 was installed adjacent to well MW3 where the highest benzene and TPH-gasoline concentrations had been measured in groundwater (as of the date of the workplan, 27 September 2010). SG1 was be installed ±10 feet outside of an occupied building (2440 East Eleventh Street).
- SG2 was installed adjacent to well MW5 where the second highest benzene and TPH-gasoline concentrations had been measured in groundwater (as of the date of the workplan, 27 September 2010). SG2 was installed ±10 feet outside of an occupied building (976 23rd Avenue).
- SG3 was installed immediately downgradient of the former 1,000-gallon underground gasoline tank - where the former fuel hydrocarbon release occurred. SG3 was installed at the request of Alameda County Environmental Health in order to evaluate vadose zone contamination at the source of the release. SG3 was installed ±10 feet outside of an occupied building (2440 East Eleventh Street).

Soilgas Implant Installation and Construction of the Temporary Soilgas Sampling Points

Boreholes for installing the soilgas implants and construction of the temporary soilgas sampling points were advanced using hand-augers. The following sequence of construction was employed:

- A direct-push drill rig was used to drill through pavement and aggregate base at each sampling location.
- Using hand-augers, the boreholes were drilled to a depth of approximately 6.5 feet. The boreholes were stable and did not require casing to stay open.
- Sand (#3 sand) was placed in the borehole, producing a plug of sandpack approximately nine inches thick, extending in depth from ±5.75-6.5 feet.

- Teflon tubing (3/16" ID, 1/4" OD) was fitted to the soilgas implant (SVPT91 polypropylene implant, purchased from Environmental Service Products).
- A 1-inch diameter PVC pipe was lowered inside the drill rod, and the soilgas implant (with tubing attached) was lowered inside the PVC pipe. A small amount of sand was placed in the borehole to hold the implant in place.
- Sand was placed while the PVC pipe was simultaneously lifted, producing another plug of sandpack approximately nine inches thick, extending in depth from ±5.0-5.75 feet.
- At this point in the construction process, approximately 18 inches of sandpack had been placed at the bottom of the borehole, with the soilgas implant centered inside the sandpack and the tubing leading to the ground surface.
- Dry granular bentonite was placed in the borehole, producing a plug of dry bentonite approximately six inches thick, extending in depth form ±4.5-5.0 feet.
- Dry granular bentonite was placed in the borehole, producing a plug of dry bentonite approximately 12 inches thick. Water (approximately 1.5 pints) was poured in the borehole to hydrate the underlying bentonite. Construction was interrupted for several minutes while the bentonite hydrated.
- This last step was repeated until the remainder of the borehole was backfilled with hydrated bentonite.

The initial borehole for SG1 hit an abandoned pipe and another borehole was drilled ±2 feet southeast of the originally-planned location. The abandoned pipe had the following characteristics:

- The top of the pipe at was at a depth of approximately 1 foot-9 inches (below pavement surface).
- The diameter of the pipe was approximately 4 inches.
- The pipe was made of cast iron.
- The interior of the pipe was dry.
- We concluded the pipe was likely an abandoned sanitary sewer lateral, leading from the adjacent residence to the municipal sanitary sewer line (located in the street).
- We had a resident of the nearby residence flush the toilet and we did not subsequently observe any water inside the pipe.
- The borehole was abandoned/decommissioned by placing cardboard over the break in the top of the pipe and backfilling the hole with concrete.

After completing each borehole, a shroud (decontaminated clear plastic storage container provided by Curtis & Tompkins, 18" x 12" x 7") was placed over the borehole. The sample tubing was connected to the appropriate fitting inside the shroud.

Schematics and construction notes related to the temporary soilgas sampling points, along with the standard operating procedures, are attached.

Purge Test

Prior to performing soilgas purging/sampling, a purge test was conducted for SG1. The purpose of the purge test was to evaluate the relationship between purge volume and soilgas concentration in order to determine the appropriate purge volume for soilgas sampling. SG1 was chosen because soilgas was expected to be at or near the highest concentration at this location.

The purge test consisted of the following:

- One standard purge volume (defined as the volume of the voids of the sandpack, recognizing the volume of the tubing was negligible) was purged using a vacuum pump. The purge line was fitted with a flow restrictor that limited the flowrate to 0.167 L/minute.
- A sample was collected using a hand-held vacuum pump and 1-liter tedlar bag. The atmosphere in the tedlar bag was measured using an field organic vapor meter. The field organic vapor meter was a Mini Rae 2000 organic vapor monitor, fitted with a 10.6 eV photoionization detector, calibrated to 100 ppm v/v isobutylene.
- The process was repeated for another standard purge volume.
- The measured concentration for the second purge volume was less than the first purge volume; accordingly, the purge test was terminated and one standard purge volume was selected as the appropriate purge volume for soilgas sampling.

The purge test log and the standard operating procedures are attached.

Tracer Gas Atmosphere and Soilgas Sample Collection

A tracer gas atmosphere was created inside the shroud by feeding helium into the shroud; helium was periodically reintroduced to keep the helium concentration between 20-25%.

Prior to purging and sampling, a leak test was performed for each soilgas sampling point. The leak test consisted of the following:

- A 300 mL syringe was connected to the purge port of the shroud.
- A helium detector was connected to the syringe.
- The initial/background helium concentration was recorded.

- The three-way valve was switched to "Purge".
- The plunger of the syringe was pulled to full volume, creating maximum vacuum.
- The plunger position was held until the syringe filled or for 5 minutes, whichever occurred first. The maximum helium concentration was recorded. Provided the maximum concentration of helium was less than 2%, the set up was determined suitable for purging and sampling.
- No leaks were discovered for any of the sampling points.

Purging was performed using a vacuum pump and flow restrictor (0.167 L/minute): approximately one standard purge volume was evacuated. After this, the three-way valve was switched to "Sample". A 1.4-liter Summa canister (the sample container) was subsequently filled; the duration of sampling corresponding to the theoretical time using the restricted flowrate of 0.167 L/minute. The initial and final sampling vacuums were recorded.

Leak test logs, purge/sample logs, and standard operating procedures are attached.

Borehole Abandonment/Decommission

Tubing was extracted (pulled) from the boreholes. The boreholes were then re-drilled using a hand-auger and the bentonite and sandpack were removed. The re-created boreholes were then backfilled with neat cement grout (94 pounds - one sack - Type I/II cement, 6 gallons of water) to a depth of approximately 1.5 feet. After the grout obtained an initial set, the remainder of the borehole was backfilled with concrete (colored as appropriate).

INVESTIGATION DERIVED WASTE

Soil cuttings and excess soil samples were contained onsite in a labeled 55-gallon drum. The drummed waste will be sampled and tested. Inert soil may be discharged onsite; otherwise, a specific determination regarding appropriate disposal will be made on the basis of the test results.

Waste sandpack, bentonite, and tubing were disposed of as municipal waste.

Decontamination wastewater was discharged to the sanitary sewer.

LABORATORY ANALYSES

The samples were transported to Curtis & Tompkins Laboratory (Berkeley CA) on 8 August 2011; the laboratory received the samples in good condition. The samples were analyzed for volatile organic compounds (Modified EPA Method TO-15), TPH-gasoline (modified EPA Method TO-3, C6-C12), and selected inert gasses (helium, carbon monoxide, carbon dioxide, oxygen, and methane).

RESULTS AND CONCLUSIONS

Soilgas analytical results are summarized in Table 9. The laboratory report is attached.

The results of the soilgas sampling revealed the following:

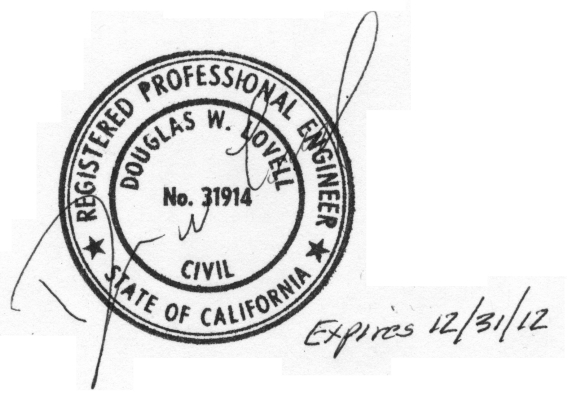
- The tracer gas (helium) was detected (only) in SG2, at a concentration of 9,900 ppm v/v. For SG2, the ratio of helium in the sample to helium in the shroud was approximately 4.4%; this result was within the "acceptable" range cited in the applicable guidance documents (Table 6). The detection of helium in the sample likely represented the "short-circuiting" of aboveground air into the sample along the outside of the sample tubing or along the borehole wall or through the bentonite; the leak test indicated the fittings were not leaking.
- TPH-gasoline was detected in all soilgas samples, at concentrations ranging from 20-55 ppb v/v, with the maximum concentration measured at SG3. The measured concentrations were significantly below the Environmental Screening Level (ESL) promulgated by the San Francisco Bay Regional Water Quality Control Board, based on residential land use.
- Xylenes were detected in the soilgas sample from SG2, at a concentration of 5.6 µg/m3. The detected concentration was significantly below the Environmental Screening Level (ESL) promulgated by the San Francisco Bay Regional Water Quality Control Board and the California Human Health Screening Level (CHHSL) promulgated by the California Department of Toxic Substance Control, both based on residential land use.
- For the remaining petroleum constituents, soilgas concentrations were nondetect.
- Carbon dioxide and oxygen were detected in all soilgas samples, at unremarkable concentrations.
- **Vapor intrusion risks at this site appear negligible.**

Please contact us with any questions or comments.

Sincerely,

STREAMBORN

Douglas W. Lovell, PE
Geoenvironmental Engineer



Attachments

cc: Jerry Wickham/Alameda County Health Care Services Agency, Alameda CA (ecopy)
Vicky Hamlin/Alameda County Public Works Agency (ecopy) (vickyh@acpwa.org)

This report was uploaded to the Alameda County Server

This report and the laboratory data were uploaded to Geotracker (www.geotracker.swrcb.ca.gov)

Table 1 (Page 1 of 3)

Environmental Chronology

2440 East Eleventh Street
Oakland CA

Date	Performed By	Event
Unknown	Unknown	• 1,000-gallon underground leaded gasoline tank was installed.
15 August 1991	Eandi Metal Works	• The 1,000-gallon tank was emptied of product. Use of the tank was discontinued.
11 May 1992	Unknown	• The 1,000-gallon tank was removed and soil and groundwater contamination was discovered.
10 July 1995	AGI Technologies	• Five soil borings were drilled. Soil samples were collected and analyzed for TPH-gasoline, BTEX, MtBE, and total metals. • Three of the borings were completed as monitoring wells (MW1, MW2, and MW3). The other two borings (E1 and E2) were grouted. • Water levels were measured in wells MW1, MW2, and MW3. • Wells MW1, MW2, and MW3 were developed and groundwater samples were collected. Samples were analyzed for TPH-gasoline, BTEX, MtBE, and total lead. • An elevation survey was conducted for wells MW1, MW2, and MW3.
17 July 1995	AGI Technologies	• Groundwater levels were measured in wells MW1, MW2, and MW3. • Groundwater samples were collected from wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, MtBE, and total lead.
20 October 1995	AGI Technologies	• Groundwater levels were measured in wells MW1, MW2, and MW3. • Groundwater samples were collected from wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, and total lead.
25 January 1996	AGI Technologies	• Groundwater levels were measured in wells MW1, MW2, and MW3. • Groundwater samples were collected from wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, MtBE, and total lead.
25 April 1996	AGI Technologies	• Groundwater levels were measured in wells MW1, MW2, and MW3. • Groundwater samples were collected from wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, MtBE, and total lead.
11 - 12 June 2001	Kleinfelder	• Groundwater levels were measured in wells MW1, MW2, and MW3. • Groundwater samples were collected from wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, and total lead.
5 February 2002	Kleinfelder	• Groundwater levels were measured in wells MW1, MW2, and MW3. • Groundwater samples were collected from wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, MtBE, and total lead.
9 June 2004	Streamborn	• Using a backhoe, the excavation for the former tank was partially re-excavated. • Soil samples were collected from the base (7.5-8 feet below ground surface) and each of the four sidewalls (5-5.5 feet below ground surface) by exposing native soil and driving a brass liner into the exposed soil. • Soil samples were analyzed for TPH-diesel/kerosene/stoddard solvent, TPH-gasoline, BTEX, fuel oxygenates, and total lead.
12 August 2004	Streamborn	• Groundwater levels were measured in wells MW1, MW2, and MW3. • Groundwater samples were collected from wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, fuel oxygenates, and total lead. • Seven geoprobe borings (B1-B7) were drilled to depths between 20 and 32 feet. Soil samples were collected continuously in the borings. • Two soil samples were retained from each of the borings for chemical analysis. One soil sample approximately coincided with the depth of groundwater observed during drilling and the other soil sample coincided with the bottom of the boring. Soil samples were analyzed for TPH-gasoline, BTEX, fuel oxygenates, and total lead. • Temporary casings were installed in the borings and water levels allowed to stabilize for at least one hour. Water levels were measured. • Purged groundwater samples were collected from the temporary casings. Samples were analyzed for TPH-gasoline, BTEX, fuel oxygenates, and total lead. • The temporary casings were removed from the borings and the borings were grouted.
17-23 September 2004	Streamborn	• Using a backhoe, the excavation for the former tank was completely re-excavated. The excavated soil was air-dried and replaced in the excavation using ±2-foot lifts. Each lift was compacted using a whacker. 6 inches of imported Class II aggregate base was placed as the final lift of soil. • The pavement and sidewalk were repaved with reinforced concrete. The concrete thickness was 8 inches. The reinforcement was #5 rebar on 12-inch centers.
2 March 2005	Streamborn	• Groundwater levels were measured in wells MW1, MW2, and MW3. • Groundwater samples were collected from wells MW1, MW2, and MW3. Samples were analyzed for TPH-gasoline, BTEX, and fuel oxygenates.

Table 1 (Page 2 of 3)

Environmental Chronology

2440 East Eleventh Street
Oakland CA

Date	Performed By	Event
28 September 2006	Streamborn	• Two direct push borings were drilled to 17 feet. Soil samples were collected continuously during drilling and selected samples were analyzed for TPH-gasoline, BTEX, fuel oxygenates, total lead, and lead scavengers (1,2-dichloroethane and ethylene dibromide). • Each boring was subsequently overdrilled using a hollow-stem auger and completed as a two-inch diameter, 17-foot deep monitoring well (MW4 and MW5). • The elevations of wells MW4 and MW5 were surveyed.
2 October 2006	Streamborn	• Wells MW4 and MW5 were developed. • Groundwater levels were measured in wells MW1, MW2, MW3, MW4, and MW5. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, and MW5. Samples were analyzed for TPH-gasoline/BTEX/fuel oxygenates (EPA Method 8260), total lead, and lead scavengers (1,2-dichloroethane and ethylene dibromide).
20 March 2007	Streamborn	• Groundwater levels were measured in wells MW1, MW2, MW3, MW4, and MW5. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, and MW5. Samples were analyzed for TPH-gasoline/BTEX/fuel oxygenates (EPA Method 8260).
10 September 2007	Streamborn	• Groundwater levels were measured in wells MW1, MW2, MW3, MW4, and MW5. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, and MW5. Samples were analyzed for TPH-gasoline/BTEX/fuel oxygenates (EPA Method 8260).
10 March 2008	Streamborn	• Groundwater levels were measured in wells MW1, MW2, MW3, MW4, and MW5. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, and MW5. Samples were analyzed for TPH-gasoline/BTEX/fuel oxygenates (EPA Method 8260).
8 September 2008	Streamborn	• Groundwater levels were measured in wells MW1, MW2, MW3, MW4, and MW5. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, and MW5. Samples were analyzed for TPH-gasoline/BTEX/fuel oxygenates (EPA Method 8260).
3 March 2009	Streamborn	• Groundwater levels were measured in wells MW1, MW2, MW3, MW4, and MW5. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, and MW5. Samples were analyzed for TPH-gasoline/BTEX/fuel oxygenates (EPA Method 8260).
28 August 2009	Streamborn	• Virgil Chavez Land Surveying (Vallejo CA) surveyed wells MW1 through MW5 to the NAD83 horizontal datum and the NAVD88 vertical datum.
1 September 2009	Streamborn	• Groundwater levels were measured in wells MW1, MW2, MW3, MW4, and MW5. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, and MW5. Samples were analyzed for TPH-gasoline/BTEX/fuel oxygenates (EPA Method 8260).
8 March 2010	Streamborn	• Groundwater levels were measured in wells MW1, MW2, MW3, MW4, and MW5. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, and MW5. Samples were analyzed for TPH-gasoline/BTEX/fuel oxygenates (EPA Method 8260).
10 September 2010	Streamborn	• Groundwater levels were measured in wells MW1, MW2, MW3, and MW5. • Groundwater samples were collected from wells MW1, MW2, MW3, and MW5. Samples were analyzed for TPH-gasoline/BTEX/fuel oxygenates (EPA Method 8260).

Table 1 (Page 3 of 3)

Environmental Chronology

2440 East Eleventh Street
Oakland CA

Date	Performed By	Event
8 September 2011	Streamborn	• Soilgas samples were collected at three locations as detailed below. • Three borings (SG1 through SG3) were drilled to depths of approximately 6.5 feet near 2440 East Eleventh Street. The borings were drilled using hand-auger equipment. The boreholes were approximately 3 inches in diameter. • Soilgas implants were installed in each borehole at a depth of approximately 5.75 feet. The implants were surrounded by sand, from a depth of approximately 5.0 to 6.5 feet. Teflon tubing (3/16" ID, 1/4" OD) connected the implants to the ground surface. Above the sandpack interval, the boreholes were backfilled with dry bentonite and hydrated bentonite. After constructing the temporary soilgas sampling points, the points were allowed to equilibrate for at least two hours prior to collecting soilgas samples. • A soilgas purge test was conducted in SG1 to determine the purge volume appropriate for sampling. The results of the purge test indicated that approximately 1 sandpack volume (sandpack volume = volume of the voids in the interval of the sandpack) should be purged prior to sampling. This corresponded to a purge time of approximately 2 minutes and 6 seconds at the purge flowrate = 0.167 liters/minute. The purge rate was controlled using a flow restrictor. • Soilgas samples were collected from SG1 through SG3. The samples were collected after purging 1 sandpack volume. The samples were collected using 1.4-liter summa canisters at a restricted flowrate = 0.167 liters/minute. Curtis & Tompkins (Berkeley CA) analyzed the soilgas samples for volatile organic compounds (EPA Method Modified TO-15), TPH-gasoline (C6-C12, gasoline range organics, EPA Method TO-3), and inert gasses (helium, carbon monoxide, carbon dioxide, oxygen, and methane, ASTM D1946). • During soilgas sampling, a shroud was placed on the ground surface over each borehole. A tracer gas (helium) was introduced inside the shroud and maintained at a concentration of approximately 20-25%. The tracer gas was introduced inside the shroud to check for leaks and to determine whether soilgas samples contained atmospheric air (for example, due to short-circuiting or leakage through the borehole or along the outside of the implant tubing). A leak check was performed prior to purging and sampling (no leaks were discovered). A very low concentration of the tracer gas was measured in the soilgas sample for SG2; the other samples were nondetect for the tracer gas. • The implant tubing was pulled. The sandpack and bentonite were removed using a hand-auger. The boreholes were then backfilled to the ground surface with neat cement grout and concrete.

General Notes

(a) TPH = total petroleum hydrocarbons.

(b) BTEX = benzene, toluene, xylenes, and total xylenes.

(c) MtBE = methyl tert-butyl ether.

Table 2 (Page 1 of 2)

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2440 East Eleventh Street
Oakland CA

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Table 2 (Page 2 of 2)

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Oakland CA

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Table 3

Groundwater Level and Gradient Data

2440 East Eleventh Street
Oakland CA

Location	MW1		MW2		MW3		MW4		MW5		Groundwater Gradient	
Ground Surface Elevation	24.51		24.21		23.06		23.12		22.59			
Casing Diameter (inches)	2		2		2		2		2			
Surveyed Latitude and Longitude (NAD83)	37.7801530 -122.2358181		37.7800499 -122.2358522		37.7800410 -122.2361722		37.7799066 -122.2361136		37.7800613 -122.2363355			
Measuring Point (NAV88)	**TOC N Side Elev = 24.14**		**TOC N Side Elev = 23.92**		**TOC N Side Elev = 22.69**		**TOC N Side Elev = 22.45**		**TOC N Side Elev = 21.94**			
Intercepted Interval	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev		
	9 to 20	4.5 to 15.5	9 to 20	4.2 to 15.2	9 to 20	3.1 to 14.1	6 to 17	6.1 to 17.1	6 to 17	5.6 to 16.6	Direction	Magnitude
14 July 1995	9.72	14.42	10.74	13.18	10.95	11.74						
17 July 1995	11.11	13.03	10.93	12.99	11.04	11.65						
20 October 1995	11.96	12.18	11.92	12.00	12.11	10.58						
25 January 1996	8.14	16.00	8.23	15.69	8.83	13.86						
11-12 June 2001	10.35	13.79	11.50	12.42	11.08	11.61						
5 February 2002	11.00	13.14	11.10	12.82	11.30	11.39						
12 August 2004	10.95	13.19	11.17	12.75	11.77	10.92					N 115° W	0.02
2 March 2005	8.25	15.89	8.44	15.48	9.36	13.33					N 120° W	0.03
2 October 2006	11.08	13.06	11.15	12.77	11.79	10.90	11.48	10.97	11.28	10.66	N 126° W	0.02
20 March 2007	10.96	13.18	10.78	13.14	10.91	11.78	10.57	11.88	10.41	11.53	N 127° W	0.01
10 September 2007	11.24	12.90	11.54	12.38	12.20	10.49	11.91	10.54	11.68	10.26	N 128° W	0.02
10 March 2008	10.74	13.40	10.89	13.03	10.60	12.09	10.28	12.17	10.16	11.78	N 114° W	0.01
8 September 2008	11.73	12.41	11.42	12.50	12.09	10.60	11.77	10.68	11.57	10.37	N 124° W	0.01
3 March 2009	8.31	15.83	8.22	15.70	9.30	13.39	8.98	13.47	8.93	13.01	N 117° W	0.02
1 September 2009	10.99	13.15	11.29	12.63	11.97	10.72	11.68	10.77	11.45	10.49	N 114° W	0.02
8 March 2010	9.00	15.14	8.98	14.94	9.84	12.85	9.48	12.97	9.43	12.51	N 116° W	0.02
10 September 2010	11.26	12.88	11.20	12.72	11.82	10.87			11.46	10.48		
8 August 2011	11.0	13.14										
Total Depth (Last Measurement)	19.9		19.8		19.6		17.3		17.2			

General Notes

(a) Elevations are cited in units of feet, relative to the NAVD88 datum (NOT Mean Sea Level).

(b) TOC = top of PVC casing. N = north. Measuring points were the top of the PVC casing, north side.

(c) The intercepted intervals correspond to the sand pack interval. The depths of the intercepted intervals were measured relative to ground surface.

(d) On 28 August 2009, Virgil Chavez Land Surveying (Vallejo CA) surveyed wells MW1 through MW5. Horizontal coordinates were surveyed relative to the NAD83 datum. Elevations were surveyed relative to the NAVD88 datum. According to Virgil Chavez Land Surveying, subtract 2.726 feet from the NAVD88 elevations to convert to NGVD29 (Mean Sea Level) datum. Previous surveys had been conducted by HTT Engineering (Oakland CA) and Streamborn; however, the data in this table are based solely on the survey by Virgil Chavez Land Surveying.

Table 4

Hydrogeologic Summary

2440 East Eleventh Street
Oakland CA

Subsurface lithology in the immediate vicinity of the contaminant source and plume

- The subsurface lithology has been observed in conventional borings along with borings to install monitoring wells.
- The maximum depth explored has been approximately 20 feet. Significant/regional water bearing zones (aquifers) likely occur at significantly greater depth.
- The observed subsurface soils have typically been fine-grained. Observed fine-grained soils have included lean and fat clay, silt, and mixtures of clay and silt with various but minor amounts of sand and gravel.
- Groundwater occurs within intermittent, continuous and discontinuous, coarse-grained lenses. The coarse-grained lenses appear to be more prevalent in the immediate vicinity of the former underground tank and less prevalent downgradient (southwest) of the former tank. Observed coarse-grained soils (lenses) have included sandy gravel, gravelly sand, and mixtures of sand and gravel with various but typically minor amounts of clay and silt.
- Specifically observed fine-grained soils have included lean clay, fat clay, silt, sandy silt, silt with sand, fat clay with sand, fat clay with gravel, sandy fat clay, sandy fat clay with gravel, sandy lean clay, lean clay with sand, and lean clay with gravel.
- Specifically observed coarse-grained soils (lenses) have included sandy gravel, gravelly sand, clayey sand, clayey sand with gravel, clayey gravel with sand, silty sand with gravel, well-graded sand with silt and gravel, well-graded sand with clay and gravel, poorly-graded sand with clay, and well-graded gravel with clay and sand.
- In the immediate vicinity of the former tank, fill materials, consisting of coarse-grained soils, were observed near ground surface.

Depth to groundwater and groundwater gradient in the immediate vicinity of the contaminant source and plume

- The depth to groundwater has typically been measured between ±8 to ±12 feet below ground surface.
- The groundwater gradient has typically been directed to the southwest (toward the Oakland-Alameda Estuary). The gradient direction has been measured between N 114˚ W and N 128˚ W (average N 120˚ W). The magnitude has typically varied between 0.01 and 0.03 (average 0.02).

Groundwater advection velocity (very approximate)

- The characteristic soil type within the groundwater lenses has consisted of a mixture of sand and gravel with minor amounts of silt or clay. This soil type may be expected to have a permeability of approximately 0.0005 centimeters per second (1.4 feet per day) (Cedegren 1967). Using the average measured groundwater gradient of 0.02 and assuming an effective porosity of 0.3, the average advection velocity through the coarse-grained lenses may be calculated as:

  $V_{ave} = (k)\ (i)\ /\ (n_e) = (1.4 \text{ feet per day})\ (0.02)\ /\ (0.3) = 0.09 \text{ feet per day (34 feet per year)}$

Table 5 (Page 1 of 2)

Groundwater Analytical Data from Monitoring Wells

2440 East Eleventh Street
Oakland CA

Location	Sample Date	Sample Type	Total Lead (µg/L)	TPH-Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	1,2-Dichloro-ethane (µg/L)	Ethylene Dibromide (µg/L)	MtBE (µg/L)	Other Fuel Oxygenates (EPA Method 8260) (µg/L)
MW1	17 Jul 1995	Grab	<40	22,000	390	2,000	800	5,300			<125	
	20 Oct 1995	Grab	<40	14,000	270	540	360	1,800				
	25 Jan 1996	Grab	<40	16,000	740	1,300	490	2,700			<500	
	25 Apr 1996	Grab	<40	4,600	180	450	190	1,000			<250	
	11 Jun 2001	Grab	14	7,100	14	35	240	720				
	5 Feb 2002	Grab	3.7	9,300	6.3	11	230	560			<0.70	
	12 Aug 2004	Grab	<5.0	2,900	9.1	6.0	130	160			0.72	<0.50 to <50
	2 Mar 2005	Grab		950	1.9	0.60	19	4.0			0.80	<0.50 to <50
	2 Oct 2006	Grab	<100	830	4.1	0.80	44	7.8	<0.50	<0.50	<0.50	<0.50 to <100
	20 Mar 2007	Grab		470	2.1	<0.50	8.5	1.8	<0.50		0.63	<0.50 to <100
	10 Sep 2007	Grab		3,400	18	6.4	170	43	<0.50		1.1	<0.50 to <100
	10 Mar 2008	Grab		950	2.9	0.66	19	1.9	<0.50		0.72	<0.50 to <100
	8 Sep 2008	Grab		3,600	14	6.5	200	19	<0.50		0.62	<0.50 to <100
	3 Mar 2009	Grab		1,600	5.2	2.1	68	9.7			0.56	<0.50 to <5.0
	1 Sep 2009	Grab		1,700	7.0	2.2	64	4.2			<0.50	<0.50 to <5.0
	8 Mar 2010	Grab		400	1.0	<0.50	17	1.2			<0.50	<0.50 to <4.0
	10 Sep 2010	Grab		350	4.6	0.76	12	1.0			<0.50	<0.50 to <4.0
MW2	17 Jul 1995	Grab	56.4	21,000	370	1,700	930	5,100			<125	<0.50 to <5.0
	20 Oct 1995	Grab	<40	730	18	27	26	7.9				
	25 Jan 1996	Grab	<40	14,000	74	660	1,000	2,600			670	
	25 Apr 1996	Grab	<40	13,000	370	440	1,000	2,900			<500	
	12 Jun 2001	Grab	7.7	3,200	11	6.2	170	270				
	5 Feb 2002	Grab	3.5	2,900	7.6	3.8	220	160			<0.70	
	12 Aug 2004	Grab	<5.0	3,100	2.6	1.8	<0.50	13			<0.50	<0.50 to <5.0
	2 Mar 2005	Grab		3,700	<5.0	<2.5	340	22			<2.5	<2.5 to <25
	2 Oct 2006	Grab	<100	7,200	<2.5	3.0	380	30	<2.5	<2.5	<2.5	<2.5 to <500
	20 Mar 2007	Grab		7,000	<5.0	<5.0	370	34	<5.0		<5.0	<5.0 to <1,000
	10 Sep 2007	Grab		9,300	<2.5	3.8	530	38	<2.5		<2.5	<2.5 to <500
	10 Mar 2008	Grab		6,500	<2.5	<2.5	200	13	<2.5		<2.5	<2.5 to <500
	8 Sep 2008	Grab		7,300	<2.5	<2.5	290	12	<2.5		<2.5	<2.5 to <500
	3 Mar 2009	Grab		3,700	<0.50	1.1	<0.50	4.7			<0.50	<0.50 to <5.0
	1 Sep 2009	Grab		5,100	1.4	1.8	140	9.2			<1.0	<1.0 to <10
	8 Mar 2010	Grab		2,400	1.7	2.3	100	7.7			<1.0	<1.0 to <8.0
	10 Sep 2010	Grab		3,000	1.7	2.1	160	10			<1.0	<1.0 to <8.0
MW3	17 Jul 1995	Grab	153	8,400	1,200	150	1,000	1,700			<125	
	20 Oct 1995	Grab	<40	5,800	600	590	43	340				
	25 Jan 1996	Grab	<40	10,000	1,200	290	870	1,300			<250	
	25 Apr 1996	Grab	<40	8,900	830	140	1,000	1,000			400	
	12 Jun 2001	Grab	7.4	1,800	37	4.5	98	19				
	5 Feb 2002	Grab	4.4	1,100	32	2.1	76	9.5			<0.50	
	12 Aug 2004	Grab	<50	1,100	4.5	<0.50	6.0	1.8			1.4	<0.50 to <5.0
	2 Mar 2005	Grab		3,000	27	3.0	76	22			<2.5	<2.5 to <25
	2 Oct 2006	Grab	<100	1,500	6.6	<0.50	5.0	2.5	<0.50	<0.50	<0.50	<0.50 to <100
	20 Mar 2007	Grab		2,200	15	1.6	14	12	<0.50		0.52	<0.50 to <100
	10 Sep 2007	Grab		1,000	4.2	<0.50	<0.50	0.82	<0.50		0.53	<0.50 to <100
	10 Mar 2008	Grab		4,000	13	1.1	7.0	7.4	<0.50		<0.50	TAME = 0.53 Others <0.50 to <100
	8 Sep 2008	Grab		1,100	9.7	0.75	7.7	5.9	<0.50		0.59	<0.50 to <100
	3 Mar 2009	Grab		2,100	14	1.6	16	14			<0.50	<0.50 to <5.0
	1 Sep 2009	Grab		1,400	4.7	<0.50	0.52	1.7			<0.50	<0.50 to <5.0
	8 Mar 2010	Grab		2,500	13	1.1	6.8	15			<0.50	<0.50 to <4.0
	10 Sep 2010	Grab		640	1.9	<0.50	<0.50	<1.0			<0.50	<0.50 to <4.0
MW4	2 Oct 2006	Grab	<100	<50	<0.50	<0.50	0.96	<0.50	<0.50	<0.5	<0.5	<0.50 to <100
	20 Mar 2007	Grab		<50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.5	<0.50 to <100
	10 Sep 2007	Grab		<50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.5	<0.50 to <100
	10 Mar 2008	Grab		<50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.5	<0.50 to <100
	8 Sep 2008	Grab		<50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.5	<0.50 to <100
	3 Mar 2009	Grab		<50	<0.50	<0.50	<0.50	<1.0			<0.5	<0.50 to <5.0
	1 Sep 2009	Grab		<50	<0.50	<0.50	<0.50	<1.0			<0.5	<0.50 to <5.0
	8 Mar 2010	Grab		<50	<0.50	<0.50	<0.50	<1.0			<0.50	<0.50 to <4.0

Table 5 (Page 2 of 2)

Groundwater Analytical Data from Monitoring Wells

2440 East Eleventh Street
Oakland CA

Location	Sample Date	Sample Type	Total Lead (µg/L)	TPH-Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	1,2-Dichloro-ethane (µg/L)	Ethylene Dibromide (µg/L)	MtBE (µg/L)	Other Fuel Oxygenates (EPA Method 8260) (µg/L)
MW5	2 Oct 2006	Grab	<100	3,000	20	0.97	69	130	<0.50	<0.50	2.6	<0.50 to <100
	20 Mar 2007	Grab		2,800	13	1.5	27	35	<0.50		1.6	<0.50 to <100
	10 Sep 2007	Grab		1,900	11	0.78	10	9.2	<0.50		2.5	<0.50 to <100
	10 Mar 2008	Grab		4,900	7.8	1.4	13	12	<0.50		1.2	<0.50 to <100
	8 Sep 2008	Grab		2,300	9.7	0.75	7.7	5.9	<0.50		2.3	<0.50 to <100
	3 Mar 2009	Grab		2,600	11	4	60	30			<2.5	<2.5 to <25
	1 Sep 2009	Grab		1,800	5.5	0.68	5.5	2.5			0.98	<0.50 to <5.0
	8 Mar 2010	Grab		2,100	6.0	1.8	14	9.4			<0.50	<0.50 to <4.0
	10 Sep 2010	Grab		1,800	5.7	0.65	3.6	2.3			<0.50	<0.50 to <4.0
Environmental Screening Level - California Maximum Contaminant Levels (drinking water criteria)			15		1.0	150	300	1,750	0.5	0.050		
Environmental Screening Level - Risk-Based Drinking Water Equivalent for Carcinogens, 10-6 Excess Cancer Risk (drinking water criteria)					0.35		3.2		0.38	0.0097		
Environmental Screening Level - California Office of Environmental Health Hazard Assessment (OEHHA), Public Health Goal (PHG) (drinking water criteria)			2.0		0.15	150	300	1,800	0.4			
Environmental Screening Level - Taste and Odor Threshold (drinking water criteria)			50,000	100	170	40	30	20	700	50,000		
Environmental Screening Level - Volatilization from Groundwater and Subsequent Vapor Intrusion, Residential Use				Measure Soilgas	540	380,000	170,000	160,000	200	150		
Environmental Screening Level - Volatilization from Groundwater and Subsequent Vapor Intrusion, Commercial Use				Measure Soilgas	1,800	530,000	170,000	160,000	690	510		
Environmental Screening Level - Gross Contamination Ceiling Value for Groundwater (nuisance odors, etc.)			50,000	5,000	20,000	400	300	5,300	50,000	50,000		
Environmental Screening Level - Estuarine Surface Water - Chronic Habitat Aquatic Toxicity			2.5	210	46	130	43	100	2,000	1,400		
Environmental Screening Level - Estuarine Surface Water - Bioaccumulation/Human Consumption					71	200,000	29,000		99			

General Notes

(a) TPH = total petroleum hydrocarbons. MtBE = methyl tert-butyl ether. TAME = tert-amyl methyl ether.

(b) Samples were collected using a Teflon bailer fitted with a bottom-emptying device.

(c) Environmental Screening Levels from: *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (Interim Final - November 2007, Revised May 2008).* Prepared by San Francisco Bay Regional Water Quality Control Board, Oakland CA. 27 May 2008. www.waterboards.ca.gov/sanfranciscobay/esl.shtml

Table 6

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Oakland CA

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Table 7

Requirements to Install the Temporary Soilgas Sampling Points

2440 East Eleventh Street
Oakland CA

Item	Requirement
Number of Sampling Points	• Three (SG1 through SG3).
Temporary Sampling Points	• The sampling points will be temporary. The sampling points will be installed, sampled, and abandoned/decommissioned in the same day.
Rationale for the Selected Locations	• SG1 will be installed adjacent to well MW3 where the highest benzene and TPH-gasoline concentrations have been recently measured in groundwater. SG1 will be installed ±10 feet outside of an occupied building (2440 East Eleventh Street). • SG2 will be installed adjacent to well MW5 where the second highest benzene and TPH-gasoline concentrations have been recently measured in groundwater. SG2 will be installed ±10 feet outside of an occupied building (976 23rd Avenue). • SG3 will be installed immediately downgradient of the former 1,000-gallon underground gasoline tank - where the former fuel hydrocarbon release occurred. SG3 will be installed at the request of Alameda County Environmental Health in order to evaluate vadose zone contamination at the source of the release. SG3 will be installed ±10 feet outside of an occupied building (2440 East Eleventh Street).
Prior to Drilling	• Depth to water will be measured in the nearby wells MW-1 prior to installation of the soilgas sampling points.
Drill Rig	• A hand-auger will be used to install the soilgas sampling points.
Soilgas Sampling Implant	• SVPT91 polypropylene implant (available from Environmental Service Products, www.envservprod.com).
Tubing	• 3/16-inch inside diameter, 1/4-inch outside diameter, Teflon.
Screened - Sandpack - Sample Interval	• The "screened" interval - sandpack interval - sampling interval, will extend from ±5.0-6.5 feet, with the implant installed at a depth of ±5.75 feet (in the middle of interval).
Implant Installation	• An uncased borehole is not expected to remain open at this site to a depth of ±6.5 feet. • A boring will be hand-augered to a depth of ±6.5 feet. • Sand will be placed in the borehole, producing a plug of sandpack ±0.75 feet in vertical thickness. • A 1-inch diameter PVC pipe will be lowered inside the borehole and the soilgas implant (with Teflon tubing attached) will be lowered inside the PVC pipe. A small amount of sand will be placed in the borehole to hold the implant in place. Additional sand will be placed as the PVC pipe is lifted, until the sandpack has been installed to a depth of ±5 feet.
Dry Bentonite Layer	• Dry granular bentonite will be placed in the borehole, producing a plug of dry bentonite ±0.5 feet in vertical thickness.
Hydrated Bentonite Seal	• Dry bentonite chips will be placed in the borehole, producing a layer of bentonite chips ±1 foot in vertical thickness. • ±1.5 pints of water will be poured into the borehole rods. • The bentonite will be allowed to hydrate for 3 minutes. • This process will be repeated until hydrated bentonite has been placed even with the ground surface.
Abandon - Decommission	• Teflon tubing will be pulled from the borehole. • Using a hand-auger, the bentonite and sandpack will be removed. • Neat cement grout (94 pounds - one sack - Type I/II cement, 6 gallons water) will be placed from to a depth of ±1.5 feet. • Concrete will be placed to the ground/pavement surface. As appropriate, the concrete will be colored to match the surrounding ground/pavement surface.
Decontamination	• Wash downhole equipment between locations. Wash with soap (Alconox or similar), rinse with tap water, and rinse with distilled water.
Investigation-Derived Waste	• Place waste sand and bentonite inside appropriate containers and dispose of as municipal waste. • Decontamination wastewater may be discharged to the sanitary sewer.

Table 8

Soilgas Sampling Requirements

2440 East Eleventh Street
Oakland CA

Item	Requirement
Equilibrate	• Wait at least 2 hours (after completing the soilgas borehole) before purging and sampling.
Purge Equipment	• Gast oil-less electric vacuum pump (Model DOA-9111-JH or similar). • Flow restrictor (preset to provide 0.167 liters/minute soilgas flow).
One Standard Purge Volume	• "One Standard Purge Volume" is defined as the volume of the air voids in the sandpack interval (this neglects the volume inside the tubing - approximately 0.05 liters for 8.5 feet of tubing - which is negligible). • Volume of voids in the sandpack interval = 1.5-foot length x 35-inch diameter x 0.3 void ratio = 0.0221 cubic feet = 0.626 liters.
Purge Test (1, 2, 3, and 5 standard purge volumes)	• Conduct purge test at SG1. • Evacuate 1, 2, 3, and 5 standard purge volumes = 0.626 L, 1.25 L, 1.88 L, and 3.13 L. Evacuating 3 standard purge volumes may not be necessary if the concentration peaked at 1 standard purge volumes. Evacuating 5 standard purge volumes may not be necessary if the concentration peaked at 1 or 2 standard purge volumes. It is typical to measure the peak concentration at 1 or 2 standard purge volumes. • During purge, control the flowrate using the flow restrictor. Purge time for 1 standard purge volume = 0.626 L / 0.167 L/min = 3.75 minutes = 3 minutes-45 seconds. Purge time for 2 standard purge volumes = 7 minutes-29 seconds. Purge time for 3 standard purge volumes = 11 minues-15 seconds. Purge time for 5 standard purge volumes = 18 minutes-45 seconds. • Samples will be collected using a hand-held vacuum pump and 1-liter tedlar bag. Concentrations will be measured using an organic vapor monitor (photoionization device fitted with a 10.6 eV lamp, calibrated to 100 ppm v/v isobutylene). • The purge volume providing the highest concentration will be selected for all soilgas samples. • Wait at least 2 hours (after completing the purge test) before purging and sampling SG1.
Tracer Gas Atmosphere (helium at 20-25%)	• A tracer gas atmosphere will be maintained over the top of the soilgas sampling point during the collection of each soilgas sample. • A shroud (a plastic storage container) will be placed over the top of the soilgas sampling point. The shroud will be fitted with weather stripping at the base. • Tracer gas = helium. Concentration range of helium inside the shroud will be maintained at 20-25%. Helium will be periodically introduced to maintain this concentration range. • A helium detector will be placed inside the shroud.
Leak Test Before Collecting Each Sample	• A leak test will be performed to verify the integrity of the connections inside and associated with the shroud and contained fittings.. • Place shroud over sampling point. Connect sample tubing to the appropriate fitting inside the shroud. Create and verify tracer gas atmosphere inside shroud. • Affix a 300-mL syringe to the purge port. Connect a helium detector to the syringe tubing. • Record the "background" helium concentration - the concentration before pulling the syringe plunger. • Switch the 3-way valve to "Purge". • Pull the syringe plunger to the 300 mL mark, creating a vacuum on the connections. Hold the plunger for 5 minutes or until the syringe is filled. Record the highest reading on the helium detector. Provided the maximum measured helium concentration <2%, proceed to purging and sampling. If the helium concentration >2%, investigate and correct the cause (leaky fitting) and retest. The easiest way to correct a leak is to substitute a new shroud/set of fittings.
Sample Equipment	• 1.4-liter Summa canister • Flow restrictor (preset to provide 0.167 liters/minute soilgas flow).
Purging and Sampling Procedures	• Create and maintain the tracer gas atmosphere inside the shroud. • Connect the flow restrictor and vacuum pump to the purge fitting. • Perform purging with the vacuum pump (number of standard purge volumes determined previously). • Turn the 3-way valve to sample. Record the initial vacuum. • Collect sample using the Summa canister. Sample time = 1.4 L / 0.167 L/min = 8 minutes-23 seconds. • Provided the final vacuum <5 inches mercury, complete sampling; otherwise, continue to collect the sample until the vacuum <5 inches mercury. • Label Summa canister with sample location, time and vacuum at start of fill, time and vacuum at end of fill.
Field Observations and Measurements During Purging and Sampling	• Refer to field forms.
Sample Handling	• Do not refrigerate the Summa canisters. Ship the canisters to the laboratory via overnight courier.
Analytical Testing	• Analyze soilgas samples for TPH-gasoline (C6-C12) using EPA TO-3, volatile organic compounds using EPA Method TO-15, and inert gasses (helium, carbon monoxide, carbon dioxide, oxygen, and methane) using ASTM D1946.
Frequency of Sampling	• Soilgas samples will be collected one time and then the boreholes will be abandoned/decommissioned.

Table 9

Analytical Results from Soilgas Sampling

2440 East Eleventh Street
Oakland CA

Location	Sample Date	Sample Interval (feet)	Purge Flowrate (liter/min)	Purge Volume (liter)	Number of Standard Purge Volumes (sandpack volumes)	Sample Flowrate (liter/min)	Sample Volume (liter)	Approximate Depth to Groundwater (feet)	TPH-gasoline (gasoline range organics, C6-C12) (ppb v/v)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethyl-benzene ($\mu g/m^3$)	Total Xylenes ($\mu g/m^3$)	Other Volatile Organic Compounds ($\mu g/m^3$)	Helium (ppm v/v)	Ratio of Helium in Sample to Helium in Shroud (%)	Carbon Monoxide (ppm v/v)	Carbon Dioxide (ppm v/v)	Oxygen (ppm v/v)	Methane (ppm v/v)
SG1	8 Aug 2011	5.0-6.5	0.167	.668	1.1	0.167	1.4	11.0	20 (1)	<2.8	<3.4	<3.9	<3.9	Propylene = 2.8 Acetone = 20 2-Buranone = 6.0 Others <1.5 to 9.5	<1,800	<1	<1,800	26,000	170,000	<1,800
SG2	8 Aug 2011	5.0-6.5	0.167	.668	1.1	0.167	1.4	11.0	47 (1)	<3.3	<3.8	<4.4	5.6	Propylene = 9.9 Acetone = 28 Carbon Disulfide = 15 n-Hexane = 16 2-Butanone = 9 Cyclohexane = 4.6 n-Heptane = 4.5 Tetrachloroethene = 120 Others <1.8 to 11	9,900	4.4	<2,000	59,000	120,000	<2,000
SG3	8 Aug 2011	5.0-6.5	0.167	.668	1.1	0.167	1.4	11.0	55	<3.3	<3.9	<4.5	<4.5	Freon 12 = 9.3 Trichlorofluoromethane = 61 Acetone = 26 2-Butanone = 7.1 Tetrachloroethene = 60 1,2,4-Trimethylbenzene = 9.9 Benzyl chloride = 6.5 1,2,4-Trichlorobenzene = 38 Hexachlorobutadiene = 24 Others <1.8 to 11	<2,100	<1	<2,100	110,000	62,000	<2,100

Environmental Screening Level - Shallow Soilgas (vapor intrusion), Residential Exposure	1,720 (2)	84	63,000	980	21,000								
California Human Health Screening Level (CHHSL) - Shallow Soilgas (vapor intrusion), Residential Land Use		36.2	135,000		315,000								

General Notes

(a) TPH-gasoline was analyzed by Method TO-3. Volatile organic compounds were analyzed by Method TO-15. Fixed gasses (helium, carbon monoxide, carbon dioxide, oxygen, methane) were analyzed by ASTM D-1946.

(b) The ratio of helium in the sample to helium in the shroud assumes the concentration inside the shroud = 22.5% (225,000 ppm v/v). The shroud concentration was maintained between 20% and 25% during purging and sampling.

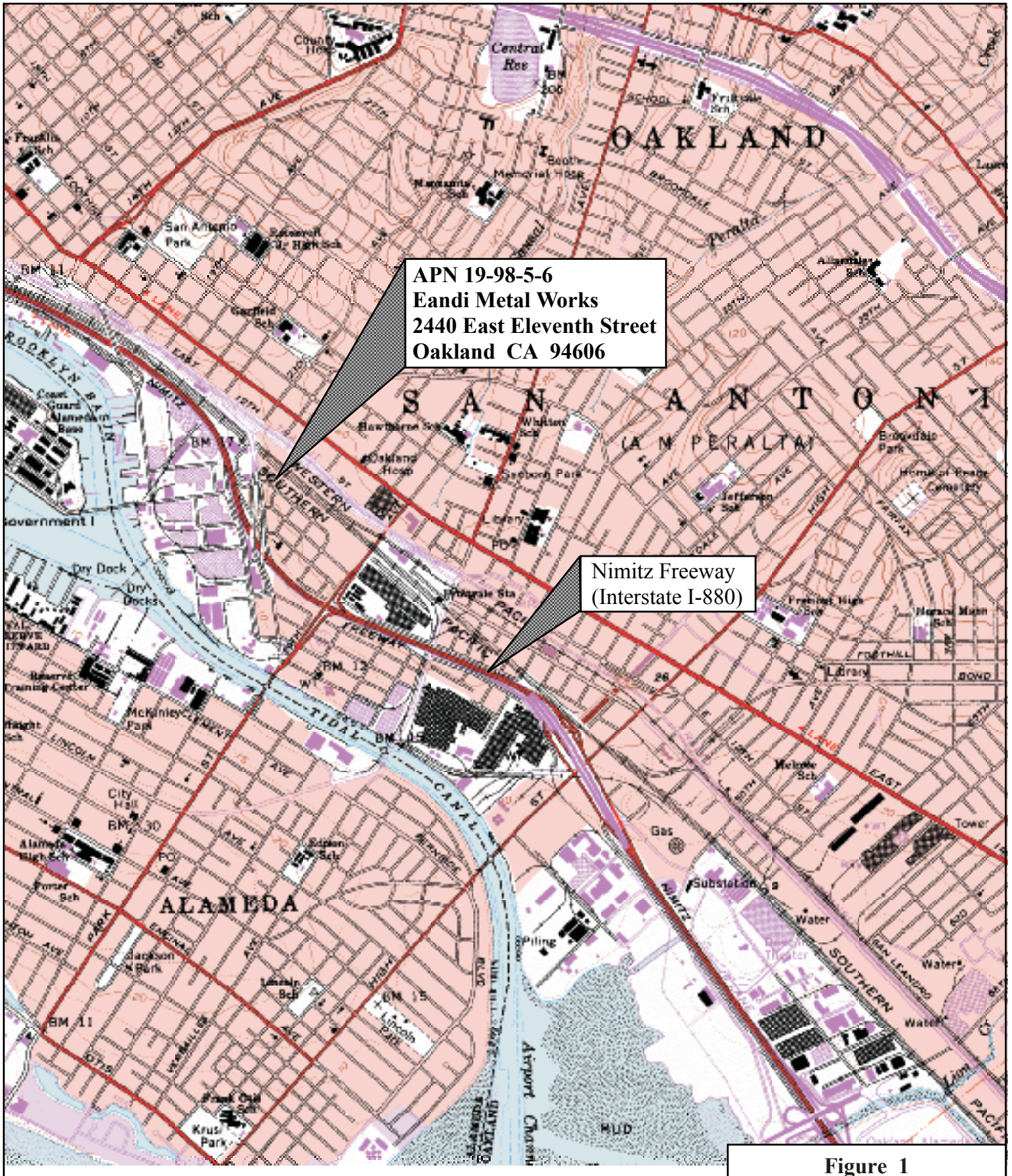
(c) California Human Health Screening Levels (CHHSL) from: *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties*. Prepared by California Environmental Protection Agency. November 2004, revised January 2005.

(d) Environmental Screening Levels (ESL) from: *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (Interim Final - November 2007, Revised May 2008)*. Prepared by San Francisco Bay Regional Water Quality Control Board, Oakland CA. November 2007, revised 27 May 2008. (www.waterboards.ca.gov/sanfranciscobay/esl.shtml)

Footnote

(1) The analytical result was below the method-specific reporting limit; accordingly, the analytical result should be considered an estimate.

(2) The environmental screening level was cited in $\mu g/m^3$. This was converted to ppb v/v assuming gasoline could be represented by the compound decane ($C_{10}H_{22}$) (molecular weight = 142.29).



Basemap: U.S. Geological Survey, 7.5 Minute Quadrangle, Oakland East CA. 1959 (Photorevised 1980)

Figure 1

Location Map

2440 East Eleventh Street
Oakland CA

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N

0 500 1,000

Approximate Scale in Feet

Basemap: Aerial photograph, flown 24 August 1998, photograph ALA-AV-6100-11-38. Pacific Aerial Surveys, Oakland CA.

Figure 2

Vicinity Map

2440 East Eleventh Street
Oakland CA

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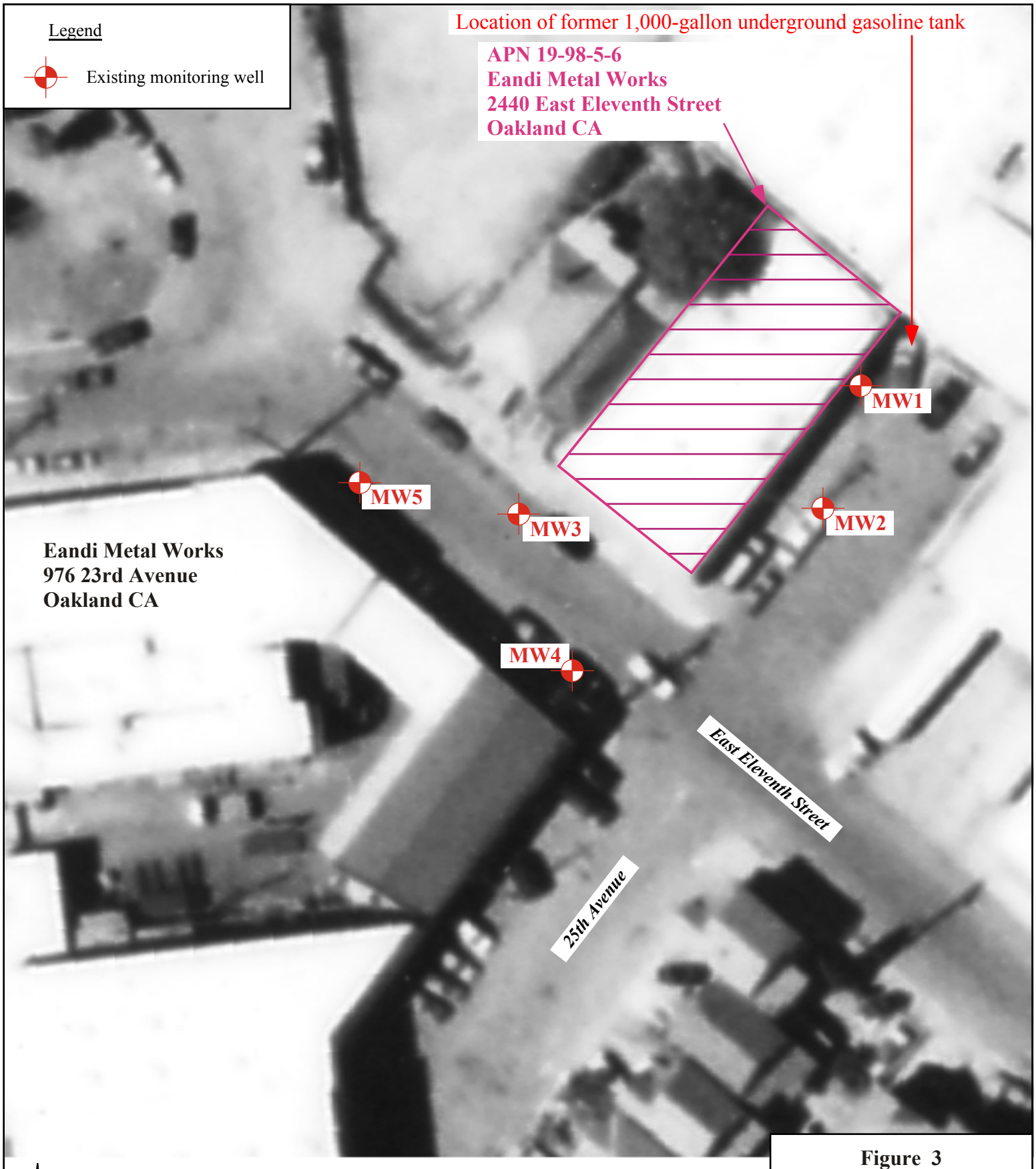

Basemap: Aerial photograph, flown 24 August 1998, photograph number ALA-AV-6100-11-38, original scale 1:12,000. Pacific Aerial Surveys, Oakland CA

Figure 3

Site Plan

2440 East Eleventh Street
Oakland CA

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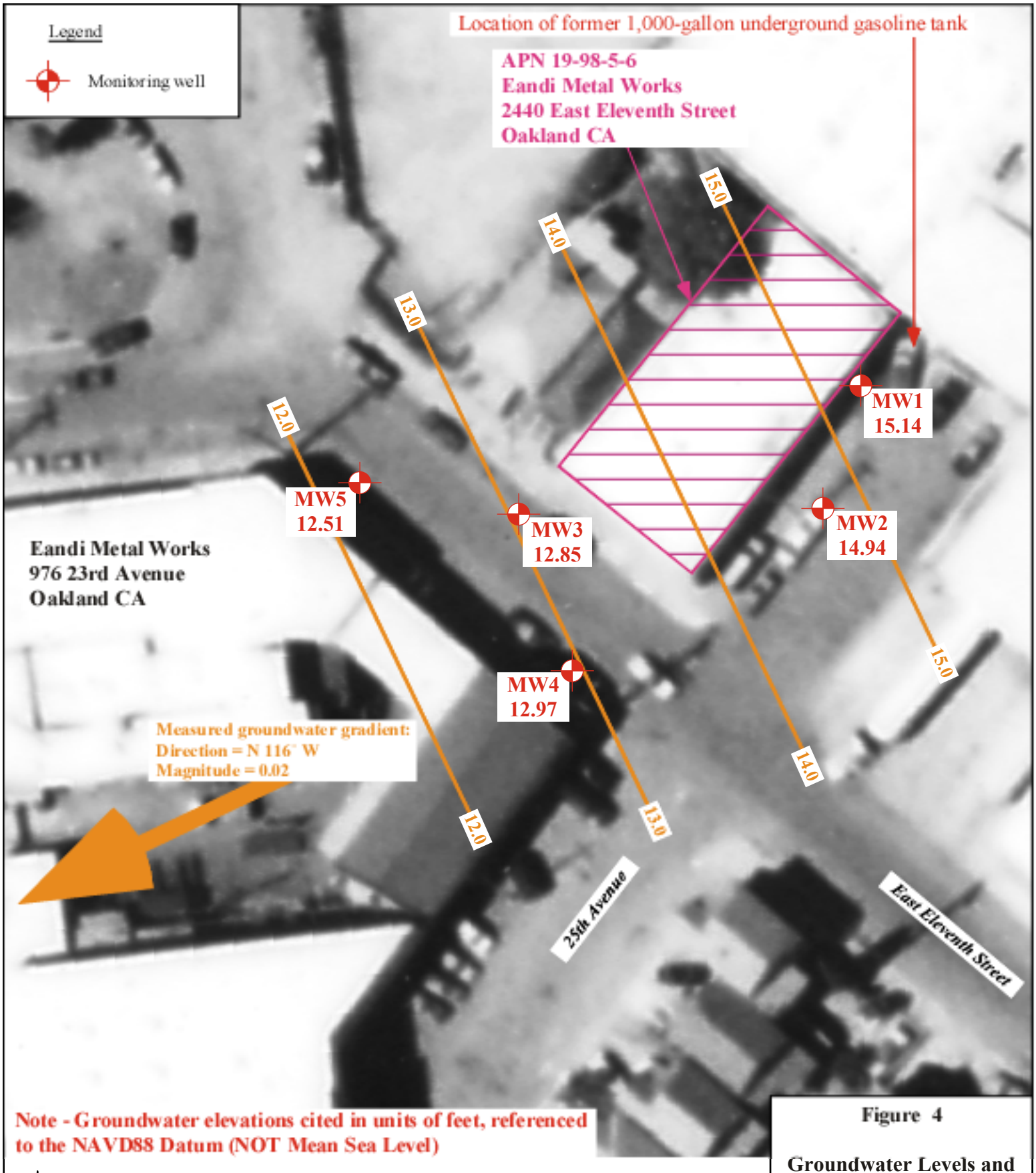

Basemap: Aerial photograph, flown 24 August 1998, photograph number ALA-AV-6100-11-38, original scale 1:12,000. Pacific Aerial Surveys, Oakland CA

Figure 4

Groundwater Levels and Gradient (8 March 2010)

2440 East Eleventh Street Oakland CA

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Legend

Monitoring well

Direct-push boring from which grab groundwater sample was collected while the borehole was temporarily-screened

Eandi Metal Works
2440 East Eleventh Street
Oakland CA

Location of former 1,000-gallon underground gasoline tank

Extent of TPH-gasoline exceeding 100 µg/L in groundwater

Eandi Metal Works
976 23rd Avenue
Oakland CA

Date	TPH-G
Oct 06	1,500
Mar 07	2,200
Sep 07	1,000
Mar 08	4,000
Sep 08	1,100
Mar 09	2,100
Sep 09	1,400
Mar 10	2,500

B-7

Date	TPH-G
Aug 04	81

Date	TPH-G
Aug 04	<50

B-5

B-6

Date	TPH-G
Aug 04	<50

MW-1

Date	TPH-G
Oct 06	830
Mar 07	470
Sep 07	3,400
Mar 08	950
Sep 08	3,600
Mar 09	1,600
Sep 09	1,700
Mar 10	400

MW5

Date	TPH-G
Oct 06	3,000
Mar 07	2,800
Sep 07	1,900
Mar 08	4,900
Sep 08	2,300
Mar 09	2,600
Sep 09	1,800
Mar 10	2,100

MW-3

MW-2

Date	TPH-G
Oct 06	7,200
Mar 07	7,000
Sep 07	9,300
Mar 08	6,500
Sep 08	7,300
Mar 09	3,700
Sep 09	5.100
Mar 10	2,400

MW4

B-4

Date	TPH-G
Aug 04	<50

B-3

Date	TPH-G
Aug 04	58

B-1

Date	TPH-G
Aug 04	<50

B-2

Date	TPH-G
Aug 04	<50

Date	TPH-G
Oct 06	<50
Mar 07	<50
Sep 07	<50
Mar 08	<50
Sep 08	<50
Mar 09	<50
Sep 09	<50
Mar 10	<50

25th Avenue

East Eleventh Street

Small arrows indicate the range in groundwater gradient direction since 2004. Large arrow indicates the average groundwater gradient direction since 2004.

N

0 50 100

Approximate Scale in Feet

Basemap: Google Earth, aerial photograph dated 2 October 2009.

lat 37.779863° lon -122.236028°

TPH-G = TPH-Gasoline. Concentrations cited in units of µg/L.

Figure 5

Estimated Extent of Groundwater Contamination (8 March 2010)

2440 East Eleventh Street
Oakland CA

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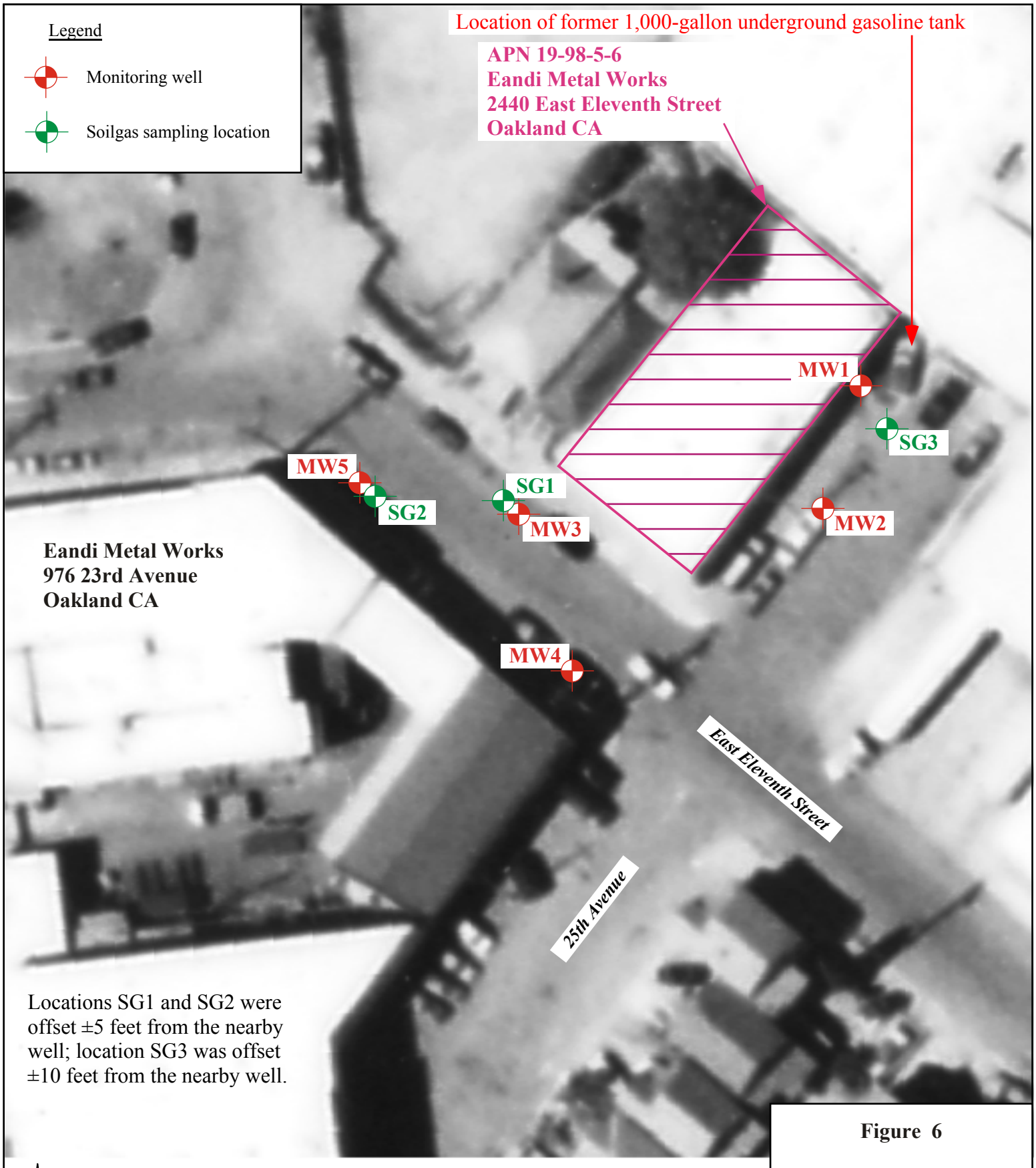

Basemap: Aerial photograph, flown 24 August 1998, photograph number ALA-AV-6100-11-38, original scale 1:12,000. Pacific Aerial Surveys, Oakland CA

Figure 6

Soilgas Sampling Locations

2440 East Eleventh Street Oakland CA

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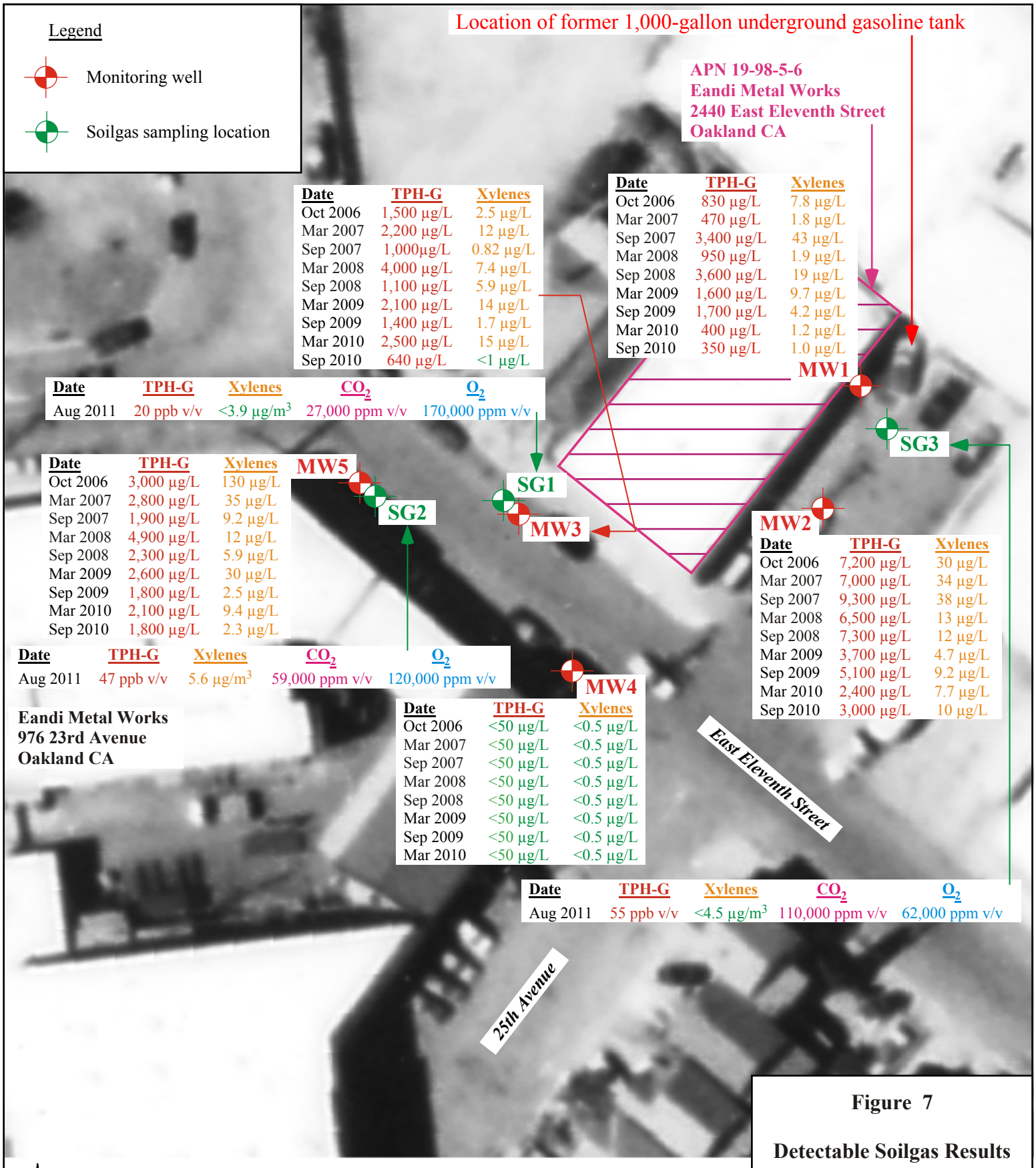

Date	TPH-G	Xylenes
Oct 2006	1,500 µg/L	2.5 µg/L
Mar 2007	2,200 µg/L	12 µg/L
Sep 2007	1,000µg/L	0.82 µg/L
Mar 2008	4,000 µg/L	7.4 µg/L
Sep 2008	1,100 µg/L	5.9 µg/L
Mar 2009	2,100 µg/L	14 µg/L
Sep 2009	1,400 µg/L	1.7 µg/L
Mar 2010	2,500 µg/L	15 µg/L
Sep 2010	640 µg/L	<1 µg/L

Date	TPH-G	Xylenes
Oct 2006	830 µg/L	7.8 µg/L
Mar 2007	470 µg/L	1.8 µg/L
Sep 2007	3,400 µg/L	43 µg/L
Mar 2008	950 µg/L	1.9 µg/L
Sep 2008	3,600 µg/L	19 µg/L
Mar 2009	1,600 µg/L	9.7 µg/L
Sep 2009	1,700 µg/L	4.2 µg/L
Mar 2010	400 µg/L	1.2 µg/L
Sep 2010	350 µg/L	1.0 µg/L

Date	TPH-G	Xylenes	CO_2	O_2
Aug 2011	20 ppb v/v	<3.9 µg/m^3	27,000 ppm v/v	170,000 ppm v/v

Date	TPH-G	Xylenes
Oct 2006	3,000 µg/L	130 µg/L
Mar 2007	2,800 µg/L	35 µg/L
Sep 2007	1,900 µg/L	9.2 µg/L
Mar 2008	4,900 µg/L	12 µg/L
Sep 2008	2,300 µg/L	5.9 µg/L
Mar 2009	2,600 µg/L	30 µg/L
Sep 2009	1,800 µg/L	2.5 µg/L
Mar 2010	2,100 µg/L	9.4 µg/L
Sep 2010	1,800 µg/L	2.3 µg/L

Date	TPH-G	Xylenes	CO_2	O_2
Aug 2011	47 ppb v/v	5.6 µg/m^3	59,000 ppm v/v	120,000 ppm v/v

Date	TPH-G	Xylenes
Oct 2006	7,200 µg/L	30 µg/L
Mar 2007	7,000 µg/L	34 µg/L
Sep 2007	9,300 µg/L	38 µg/L
Mar 2008	6,500 µg/L	13 µg/L
Sep 2008	7,300 µg/L	12 µg/L
Mar 2009	3,700 µg/L	4.7 µg/L
Sep 2009	5,100 µg/L	9.2 µg/L
Mar 2010	2,400 µg/L	7.7 µg/L
Sep 2010	3,000 µg/L	10 µg/L

Date	TPH-G	Xylenes
Oct 2006	<50 µg/L	<0.5 µg/L
Mar 2007	<50 µg/L	<0.5 µg/L
Sep 2007	<50 µg/L	<0.5 µg/L
Mar 2008	<50 µg/L	<0.5 µg/L
Sep 2008	<50 µg/L	<0.5 µg/L
Mar 2009	<50 µg/L	<0.5 µg/L
Sep 2009	<50 µg/L	<0.5 µg/L
Mar 2010	<50 µg/L	<0.5 µg/L

Date	TPH-G	Xylenes	CO_2	O_2
Aug 2011	55 ppb v/v	<4.5 µg/m^3	110,000 ppm v/v	62,000 ppm v/v

Basemap: Aerial photograph, flown 24 August 1998, photograph number ALA-AV-6100-11-38, original scale 1:12,000. Pacific Aerial Surveys, Oakland CA

Figure 7

Detectable Soilgas Results and Companion Groundwater Results

2440 East Eleventh Street Oakland CA

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ATTACHMENT 1

Soilgas Sampling Point Schematics and Field Forms

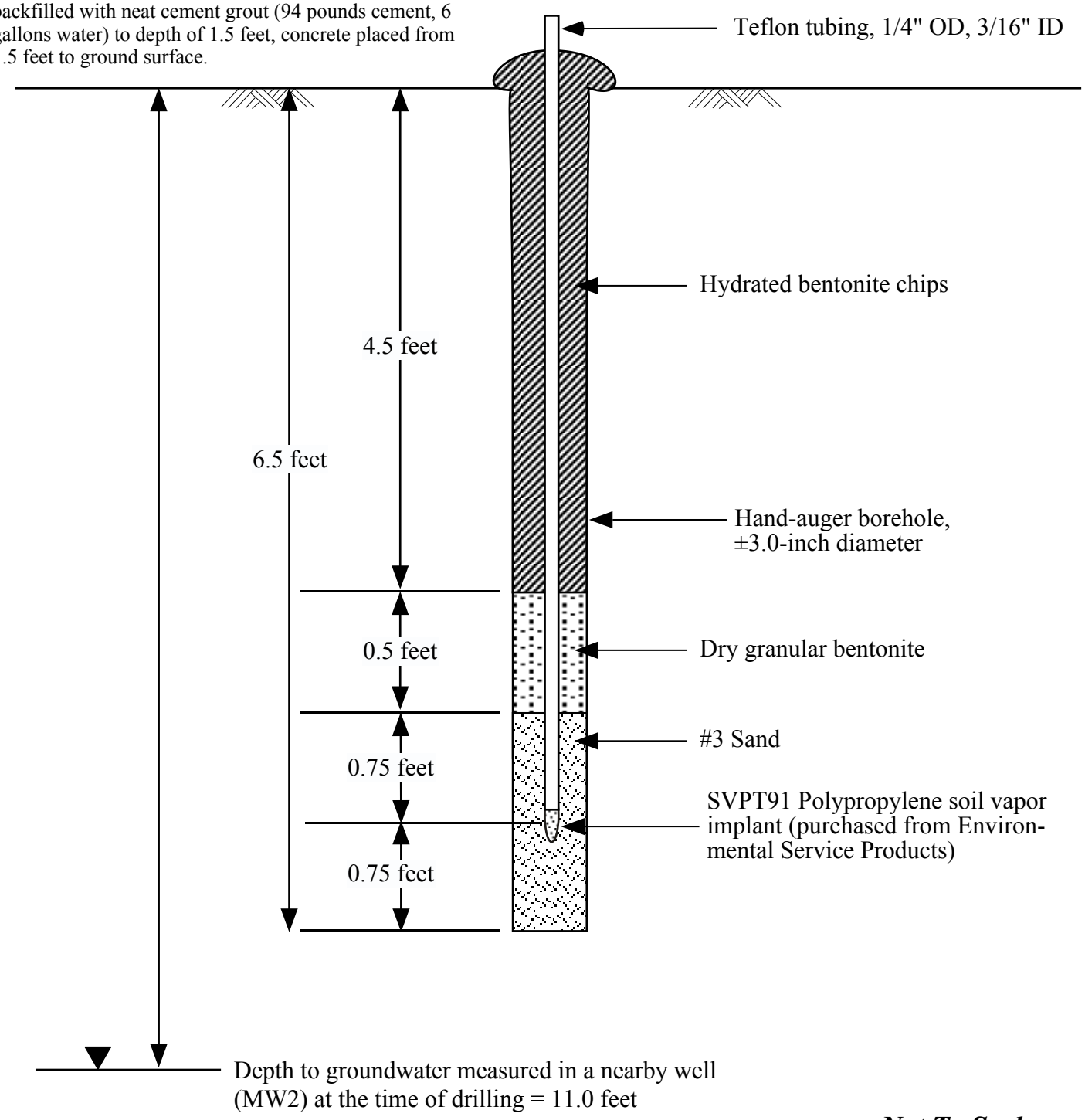
Latitude and Longitude (NAD83): 37.7800410
-122.2361722

Coordinates cited as those of the nearby well MW3 even though SG1 was offset ±5 feet from MW3.

Start Drilling 8 Sep 2011, 10:55 am
Complete Borehole Construction 8 Sep 2011, 11:10 am

Driller: Juan & Ernesto, RSI Drilling (Alameda CA)

Abandon/Decommission: Tubing extracted (pulled), bentonite and sand removed using hand auger, borehole backfilled with neat cement grout (94 pounds cement, 6 gallons water) to depth of 1.5 feet, concrete placed from 1.5 feet to ground surface.



Not To Scale

Schematic for SG1

2440 East Eleventh Street
Oakland CA

Measurements referenced from ground/pavement surface.

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SOILGAS PURGE VOLUME TEST LOG (IMPLANT, VACUUM PUMP, FLOWRATE = 0.167 L/MIN)

Project Name/Number:	2440 East 11th Street/P279	Logged By:	Kevin R Wildenberg
Project Address:	2440 East 11th Street, Oakland	Date of Leak Test and Purge/Sample:	8 Aug 2011
Location ID/Borehole ID:	SG1	Approximate Date of Last Rain Event:	28 June 2011
Observations (odor, stain) During Drilling:	None	Approximate Depth to Water at Site (ft):	11.0
Description of Borehole Backfill:	#3 Sand, Dry Granular Bentonite, Hydrated Bentonite Chips/Flakes	Time When Sampling Point Construction was Complete:	11:10 am
OVM Meter:	Mini RAE 2000	Total Depth Borehole (ft):	6.5
Implant Description:	SVPT91 polypropylene	Depth to Top of Sandpack Interval (ft):	5.0
Purge Equipment Description:	Vacuum Pump	Length of Sandpack Interval (ft):	1.5
Flow Regulator Description:	0.167 L/min Flow Restrictor	Borehole Diameter (in):	3.0 (hand-auger)
Comments:		Description of the Shroud:	C&T, 18" x 12" x 7"

Standard Purge Volume (volume of the voids of the sandpack)

Total Depth (feet)	-	Depth to Top of Sandpack (feet)	x	0.005 ft^2 for 1-inch borehole 0.022 ft^2 for 2-inch borehole 0.0276 ft^2 for 2.25-inch borehole 0.049 ft^2 for 3-inch borehole	x	28.32 L per cubic foot	x	0.3 (porosity)	=	"Standard Purge Volume" (L)
6.5	-	5.0	x	0.049	x	28.32	x	0.3	=	0.626

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Purge Volume Test

Clock Time (hours and minutes)	Duration (minutes)	Helium Meter Inside Shroud (%)	Restricted Flowrate (L/min)	Incremental Flow (duration x flowrate) (L)	Total Flow (duration x flowrate) (L)	Vacuum Applied to Soilgas Sampling Implant (inches of mercury)	OVM Reading (ppm v/v)	Comments
12:48	0	20-25	0.167	0	0	0	0	Before purge volume test.
12:51	3.75	20-25	0.167	0.626	0.626	27	4.2	One standard purge volume.
12:59	7.49	20-25	0.167	0.626	1.25	27	3.0	Two standard purge volumes.
	11.26	20-25	0.167	0.626	1.88			Three standard purge volumes.
	18.74	20-25	0.167	0.626	3.13			Five standard purge volumes.

Conclusion: Soilgas sampling points should be purged of ONE STANDARD PURGE VOLUME (0.626 L)

For 1 standard purge volume (0.626 L), purge duration = 0.626 L / 0.167 L/min = 3.75 min (3 min-45 sec).
For 2 standard purge volumes (2 x 0.626 L = 1.25 L), purge duration = 1.25 L / 0.167 L/min = 7.49 min (7 min-29 sec).
For 3 standard purge volumes (3 x 0.626 L = 1.88 L), purge duration = 1.88 L / 0.167 L/min = 11.26 min (11 min-15 sec).
For 5 standard purge volumes (5 x 0.626 L = 3.13 L), purge duration = 3.13 L / 0.167 L/min = 18.74 min (18 min-45 sec).
All depths measured from the ground surface.
Standard Purge Volume = volume of the voids of the sandpack.
The typical volume inside the Teflon tubing (3/16-inch ID, ¼-inch OD, ±8.5 feet long) = ±0.05 L. This may be neglected.
OVM = Organic Vapor Monitor, photoionization device, 10.6 eV lamp, calibrated to 100 ppm v/v isobutylene.
1 Liter = 0.264 gallons = 0.0353 cubic feet.

SOILGAS LEAK TEST AND PURGE/SAMPLE LOG (IMPLANT, SUMMA CANISTER, FLOWRATE = 0.167 L/MIN)

Project Name/Number:	2440 East 11th Street/P279	Logged By:	Kevin R Wildenberg
Project Address:	2440 East 11th Street, Oakland	Date of Leak Test and Purge/Sample:	8 Aug 2011
Location ID/Borehole ID:	SG1	Approximate Date of Last Rain Event:	28 June 2011
Observations (odor, stain) During Drilling:	None	Approximate Depth to Water at Site (ft):	11.0
Description of Borehole Backfill:	#3 Sand, Dry Granular Bentonite, Hydrated Bentonite Chips/Flakes	Time When Sampling Point Construction was Complete:	11:10 am
OVM Meter:	Mini RAE 2000	Total Depth Borehole (ft):	6.5
Implant Description:	SVPT91 polypropylene	Depth to Top of Sandpack Interval (ft):	5.0
Purge Equipment Description:	Vacuum Pump	Length of Sandpack Interval (ft):	1.5
Flow Regulator Description:	0.167 L/min Flow Restrictor	Borehole Diameter (in):	3.0 (hand-auger)
Comments:		Description of the Shroud:	C&T, 18" x 12" x 7"

Purge Volume

Total Depth (feet)	-	Depth to Top of Sandpack (feet)	x	0.005 ft^2 for 1-inch borehole 0.022 ft^2 for 2-inch borehole 0.0276 ft^2 for 2.25-inch borehole 0.049 ft^2 for 3-inch borehole	x	28.32 L per cubic foot	x	0.3 (porosity)	=	"Standard Purge Volume" (L)	x	Number of Standard Purge Volumes	=	Total Purge Volume (L)
6.5	-	5.0	x	0.049	x	28.32	x	0.3	=	0.626	x	1	=	0.626

After recording the basic information (above), proceed to perform a leak test: (1) attach the ¼-inch Teflon tubing and sample container (Summa canister) to the proper fittings inside the shroud, (2) place the shroud over the soilgas sampling point and "seal" the bottom lip of the shroud to prevent ventilation, (3) connect the helium source to the shroud, fill the shroud with helium gas until the atmosphere inside the shroud is ±20-25% helium, and maintain that same helium atmosphere by periodically adding helium to the shroud, (4) attach syringe to the purge port of the shroud and attach a helium meter to the syringe, (5) pull a vacuum on the syringe and hold the vacuum until the syringe fills with soilgas or until 5 minutes have elapsed, and (6) at durations of 0, 1, 3, and 5 minutes; record the highest helium reading from the meter attached to the syringe.

Leak Test

Clock Time (hours and minutes)	Duration (minutes)	Helium Meter Inside Shroud (%)	Helium Meter Attached to Syringe (%)	Syringe Size (mL)	Comments
2:28	0	20-25	0.5	300	Before starting leak test.
2:29	1	20-25	0.4	300	
2:31	3	20-25	0.4	300	
2:33	5	20-25	0.6	300	Final reading. **NO LEAK**

After completing the leak test and provided no significant leak is discovered, proceed to purge and sample the soilgas sampling point.

Purge and Sample

Clock Time (hours and minutes)	Duration (minutes)	Helium Meter Inside Shroud (%)	Restricted Flowrate (L/min)	Incremental Flow (duration x flowrate) (L)	Total Flow (duration x flowrate) (L)	Vacuum Applied to Soilgas Sampling Implant (inches of mercury)	Comments
2:36:00	0	20-25	0.167	0	0	24	Before purge.
2:38:00	2	20-25	0.167	0.334	0.334	24	Mid purge.
2:40:00	4	20-25	0.167	0.334	0.668	24	End purge.
2:40:00	0	20-25	0.167	0	0	30	Begin sample.
2:48:23	8.38	20-25	0.167	0.334	1.4	4	End sample.

For 1 L Summa, sample time = 1 / 0.167 L/min = 6.0 min (6 min-0 sec). For 1.4 L Summa, sample time = 1.4 / 0.167 = 8.38 min (8 min, 23 sec).
For 1 standard purge volume (0.626 L), purge duration = 0.626 L / 0.167 L/min = 3.75 min (3 min-45 sec).
For 2 standard purge volumes (2 x 0.626 L = 1.25 L), purge duration = 1.25 L / 0.167 L/min = 7.49 min (7 min-29 sec).
For 3 standard purge volumes (3 x 0.626 L = 1.88 L), purge duration = 1.88 L / 0.167 L/min = 11.26 min (11 min-15 sec).
For 5 standard purge volumes (5 x 0.626 L = 3.13 L), purge duration = 3.13 L / 0.167 L/min = 18.74 min (18 min-45 sec).
All depths measured from the ground surface.
Standard Purge Volume = volume of the voidspace of the sandpack.
The typical volume inside the Teflon tubing (3/16-inch ID, ¼-inch OD, ±8.5 feet long) = ±0.05 L. This may be neglected.
OVM = Organic Vapor Monitor, photoionization device, 10.6 eV lamp, calibrated to 100 ppm v/v isobutylene.
1 Liter = 0.264 gallons = 0.0353 cubic feet.

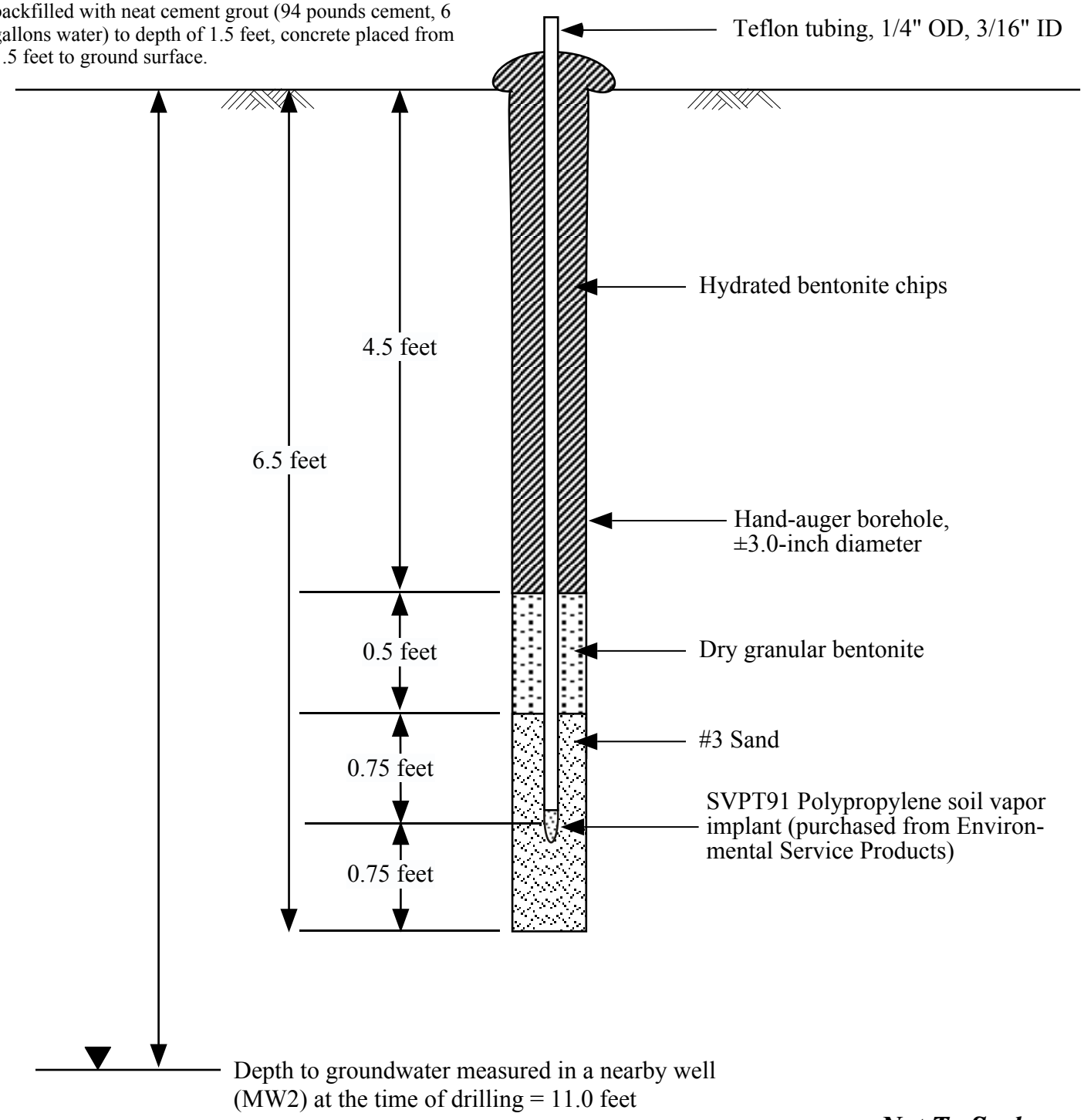
Latitude and Longitude (NAD83): 37.7800613
-122.2363355

Coordinates cited as those of the nearby well MW5 even though SG2 was offset ±5 feet from MW5.

Start Drilling 8 Sep 2011, 12:51 pm
Complete Borehole Construction 8 Sep 2011, 1:07 pm

Driller: Juan & Ernesto, RSI Drilling (Alameda CA)

Abandon/Decommission: Tubing extracted (pulled), bentonite and sand removed using hand auger, borehole backfilled with neat cement grout (94 pounds cement, 6 gallons water) to depth of 1.5 feet, concrete placed from 1.5 feet to ground surface.



Not To Scale

Schematic for SG2

2440 East Eleventh Street
Oakland CA

Measurements referenced from ground/pavement surface.

STREAMBORN

SOILGAS LEAK TEST AND PURGE/SAMPLE LOG (IMPLANT, SUMMA CANISTER, FLOWRATE = 0.167 L/MIN)

Project Name/Number:	2440 East 11th Street/P279	Logged By:	Kevin R Wildenberg
Project Address:	2440 East 11th Street, Oakland	Date of Leak Test and Purge/Sample:	8 Aug 2011
Location ID/Borehole ID:	SG2	Approximate Date of Last Rain Event:	28 June 2011
Observations (odor, stain) During Drilling:	None	Approximate Depth to Water at Site (ft):	11.0
Description of Borehole Backfill:	#3 Sand, Dry Granular Bentonite, Hydrated Bentonite Chips/Flakes	Time When Sampling Point Construction was Complete:	1:07 pm
OVM Meter:	Mini RAE 2000	Total Depth Borehole (ft):	6.5
Implant Description:	SVPT91 polypropylene	Depth to Top of Sandpack Interval (ft):	5.0
Purge Equipment Description:	Vacuum Pump	Length of Sandpack Interval (ft):	1.5
Flow Regulator Description:	0.167 L/min Flow Restrictor	Borehole Diameter (in):	3.0 (hand-auger)
Comments:		Description of the Shroud:	C&T, 18" x 12" x 7"

Purge Volume

Total Depth (feet)	-	Depth to Top of Sandpack (feet)	x	0.005 ft^2 for 1-inch borehole 0.022 ft^2 for 2-inch borehole 0.0276 ft^2 for 2.25-inch borehole 0.049 ft^2 for 3-inch borehole	x	28.32 L per cubic foot	x	0.3 (porosity)	=	"Standard Purge Volume" (L)	x	Number of Standard Purge Volumes	=	Total Purge Volume (L)
6.5	-	5.0	x	0.049	x	28.32	x	0.3	=	0.626	x	1	=	0.626

After recording the basic information (above), proceed to perform a leak test: (1) attach the ¼-inch Teflon tubing and sample container (Summa canister) to the proper fittings inside the shroud, (2) place the shroud over the soilgas sampling point and "seal" the bottom lip of the shroud to prevent ventilation, (3) connect the helium source to the shroud, fill the shroud with helium gas until the atmosphere inside the shroud is ±20-25% helium, and maintain that same helium atmosphere by periodically adding helium to the shroud, (4) attach syringe to the purge port of the shroud and attach a helium meter to the syringe, (5) pull a vacuum on the syringe and hold the vacuum until the syringe fills with soilgas or until 5 minutes have elapsed, and (6) at durations of 0, 1, 3, and 5 minutes; record the highest helium reading from the meter attached to the syringe.

Leak Test

Clock Time (hours and minutes)	Duration (minutes)	Helium Meter Inside Shroud (%)	Helium Meter Attached to Syringe (%)	Syringe Size (mL)	Comments
2:03	0	20-25	0.5	300	Before starting leak test.
2:04	1	20-25	0.6	300	
2:06	3	20-25	0.6	300	
2:08	5	20-25	0.6	300	Final reading. **NO LEAK**

After completing the leak test and provided no significant leak is discovered, proceed to purge and sample the soilgas sampling point.

Purge and Sample

Clock Time (hours and minutes)	Duration (minutes)	Helium Meter Inside Shroud (%)	Restricted Flowrate (L/min)	Incremental Flow (duration x flowrate) (L)	Total Flow (duration x flowrate) (L)	Vacuum Applied to Soilgas Sampling Implant (inches of mercury)	Comments
2:11:00	0	20-25	0.167	0	0	27	Before purge.
2:13:00	2	20-25	0.167	0.334	0.334	27	Mid purge.
2:15:00	4	20-25	0.167	0.334	0.668	27	End purge.
2:15:00	0	20-25	0.167	0	0	27	Begin sample.
2:23:23	8.38	20-25	0.167	0.334	1.4	4.5	End sample.

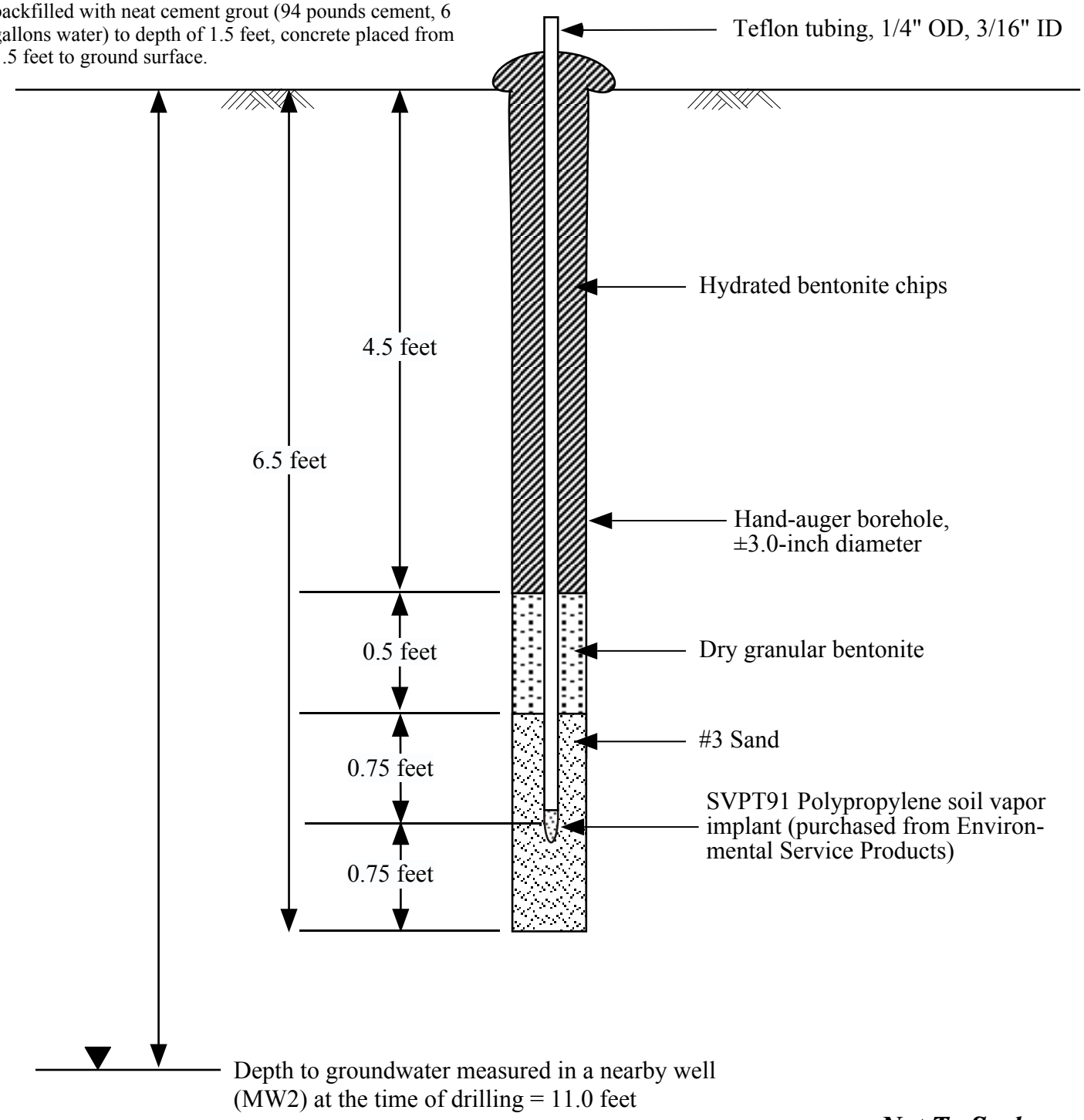
For 1 L Summa, sample time = 1 / 0.167 L/min = 6.0 min (6 min-0 sec). For 1.4 L Summa, sample time = 1.4 / 0.167 = 8.38 min (8 min, 23 sec).
For 1 standard purge volume (0.626 L), purge duration = 0.626 L / 0.167 L/min = 3.75 min (3 min-45 sec).
For 2 standard purge volumes (2 x 0.626 L = 1.25 L), purge duration = 1.25 L / 0.167 L/min = 7.49 min (7 min-29 sec).
For 3 standard purge volumes (3 x 0.626 L = 1.88 L), purge duration = 1.88 L / 0.167 L/min = 11.26 min (11 min-15 sec).
For 5 standard purge volumes (5 x 0.626 L = 3.13 L), purge duration = 3.13 L / 0.167 L/min = 18.74 min (18 min-45 sec).
All depths measured from the ground surface.
Standard Purge Volume = volume of the voidspace of the sandpack.
The typical volume inside the Teflon tubing (3/16-inch ID, ¼-inch OD, ±8.5 feet long) = ±0.05 L. This may be neglected.
OVM = Organic Vapor Monitor, photoionization device, 10.6 eV lamp, calibrated to 100 ppm v/v isobutylene.
1 Liter = 0.264 gallons = 0.0353 cubic feet.

Latitude and Longitude (NAD83): 37.7801530
-122.2358181
Coordinates cited as those of the nearby well MW1 even though SG3 was offset ±10 feet from MW1.

Start Drilling 8 Sep 2011, 9:33 am
Complete Borehole Construction 8 Sep 2011, 10:07 am

Driller: Juan & Ernesto, RSI Drilling (Alameda CA)

Abandon/Decommission: Tubing extracted (pulled), bentonite and sand removed using hand auger, borehole backfilled with neat cement grout (94 pounds cement, 6 gallons water) to depth of 1.5 feet, concrete placed from 1.5 feet to ground surface.



Not To Scale

Schematic for SG3

2440 East Eleventh Street
Oakland CA

Measurements referenced from ground/pavement surface.

STREAMBORN

SOILGAS LEAK TEST AND PURGE/SAMPLE LOG (IMPLANT, SUMMA CANISTER, FLOWRATE = 0.167 L/MIN)

Project Name/Number:	2440 East 11th Street/P279	Logged By:	Kevin R Wildenberg
Project Address:	2440 East 11th Street, Oakland	Date of Leak Test and Purge/Sample:	8 Aug 2011
Location ID/Borehole ID:	SG3	Approximate Date of Last Rain Event:	28 June 2011
Observations (odor, stain) During Drilling:	None	Approximate Depth to Water at Site (ft):	11.0
Description of Borehole Backfill:	#3 Sand, Dry Granular Bentonite, Hydrated Bentonite Chips/Flakes	Time When Sampling Point Construction was Complete:	10:07 am
OVM Meter:	Mini RAE 2000	Total Depth Borehole (ft):	6.5
Implant Description:	SVPT91 polypropylene	Depth to Top of Sandpack Interval (ft):	5.0
Purge Equipment Description:	Vacuum Pump	Length of Sandpack Interval (ft):	1.5
Flow Regulator Description:	0.167 L/min Flow Restrictor	Borehole Diameter (in):	3.0 (hand-auger)
Comments:		Description of the Shroud:	C&T, 18" x 12" x 7"

Purge Volume

Total Depth (feet)	-	Depth to Top of Sandpack (feet)	x	0.005 ft^2 for 1-inch borehole 0.022 ft^2 for 2-inch borehole 0.0276 ft^2 for 2.25-inch borehole 0.049 ft^2 for 3-inch borehole	x	28.32 L per cubic foot	x	0.3 (porosity)	=	"Standard Purge Volume" (L)	x	Number of Standard Purge Volumes	=	Total Purge Volume (L)
6.5	-	5.0	x	0.049	x	28.32	x	0.3	=	0.626	x	1	=	0.626

After recording the basic information (above), proceed to perform a leak test: (1) attach the ¼-inch Teflon tubing and sample container (Summa canister) to the proper fittings inside the shroud, (2) place the shroud over the soilgas sampling point and "seal" the bottom lip of the shroud to prevent ventilation, (3) connect the helium source to the shroud, fill the shroud with helium gas until the atmosphere inside the shroud is ±20-25% helium, and maintain that same helium atmosphere by periodically adding helium to the shroud, (4) attach syringe to the purge port of the shroud and attach a helium meter to the syringe, (5) pull a vacuum on the syringe and hold the vacuum until the syringe fills with soilgas or until 5 minutes have elapsed, and (6) at durations of 0, 1, 3, and 5 minutes; record the highest helium reading from the meter attached to the syringe.

Leak Test

Clock Time (hours and minutes)	Duration (minutes)	Helium Meter Inside Shroud (%)	Helium Meter Attached to Syringe (%)	Syringe Size (mL)	Comments
1:35	0	20-25	0.2	300	Before starting leak test.
1:36	1	20-25	0.2	300	
1:38	3	20-25	0.3	300	
1:40	5	20-25	0.2	300	Final reading. **NO LEAK**

After completing the leak test and provided no significant leak is discovered, proceed to purge and sample the soilgas sampling point.

Purge and Sample

Clock Time (hours and minutes)	Duration (minutes)	Helium Meter Inside Shroud (%)	Restricted Flowrate (L/min)	Incremental Flow (duration x flowrate) (L)	Total Flow (duration x flowrate) (L)	Vacuum Applied to Soilgas Sampling Implant (inches of mercury)	Comments
1:43:00	0	20-25	0.167	0	0	26	Before purge.
1:45:00	2	20-25	0.167	0.334	0.334	26	Mid purge.
1:47:00	4	20-25	0.167	0.334	0.668	26	End purge.
1:47:00	0	20-25	0.167	0	0	27	Begin sample.
1:55:23	8.38	20-25	0.167	0.334	1.4	3.5	End sample.

For 1 L Summa, sample time = 1 / 0.167 L/min = 6.0 min (6 min-0 sec). For 1.4 L Summa, sample time = 1.4 / 0.167 = 8.38 min (8 min, 23 sec).
For 1 standard purge volume (0.626 L), purge duration = 0.626 L / 0.167 L/min = 3.75 min (3 min-45 sec).
For 2 standard purge volumes (2 x 0.626 L = 1.25 L), purge duration = 1.25 L / 0.167 L/min = 7.49 min (7 min-29 sec).
For 3 standard purge volumes (3 x 0.626 L = 1.88 L), purge duration = 1.88 L / 0.167 L/min = 11.26 min (11 min-15 sec).
For 5 standard purge volumes (5 x 0.626 L = 3.13 L), purge duration = 3.13 L / 0.167 L/min = 18.74 min (18 min-45 sec).
All depths measured from the ground surface.
Standard Purge Volume = volume of the voidspace of the sandpack.
The typical volume inside the Teflon tubing (3/16-inch ID, ¼-inch OD, ±8.5 feet long) = ±0.05 L. This may be neglected.
OVM = Organic Vapor Monitor, photoionization device, 10.6 eV lamp, calibrated to 100 ppm v/v isobutylene.
1 Liter = 0.264 gallons = 0.0353 cubic feet.

ATTACHMENT 2

Laboratory Report and Chain-of-Custody Form

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

Laboratory Job Number 230065
ANALYTICAL REPORT

Streamborn Consulting Services	Project : P279
P.O. Box 8330	Location : 2440 East Eleventh St
Berkeley, CA 94709	Level : II

Sample ID	Lab ID
SG1	230065-001
SG2	230065-002
SG3	230065-003

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

Signature: _____ Date: 08/23/2011
Project Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**230065**
Client:	**Streamborn Consulting Services**
Project:	**P279**
Location:	**2440 East Eleventh St**
Request Date:	**08/08/11**
Samples Received:	**08/08/11**

This data package contains sample and QC results for three air samples, requested for the above referenced project on 08/08/11. The samples were received cold and intact.

Volatile Organics in Air by MS (EPA TO-15):
No analytical problems were encountered.

Volatile Organics in Air GC (ASTM D1946 and EPA TO-3):
No analytical problems were encountered.

230065

STREAMBORN

Chain-of-Custody Form - Soilgas Sampling

Project Name: 2440 East Eleventh St.	Project Location: 2440 East Eleventh Street, Oakland CA	Project Number: P279
Sampler:	Laboratory: Curtis and Tompkins	Laboratory Number: 510-486-0900

Sampling Information						Canister Pressure/Vacuum			Analysis Requested				
Sample Designation	Date	Time	Canister ID (Bar Code #)	Flow Controller ID	Sample Volume (Guage Reading)	Initial	Final	Turnaround (Rush or Standard)	TO-15	ASTMD1946 (He, O, CO, CO2, CH3)	TO-3	Sampler Comments	Laboratory Comments
SG1	8-Aug-11	2:48	00180		1.4	30	4		x	x	x		
SG2	8-Aug-11	2:23	00266		1.4	27	4.5		x	x	x		
SG3	8-Aug-11	1:55	00148		~~3.5~~ 1.4	27	3.5		x	x	x		

Note: Sampler and laboratory to observe preservative, condition, integrity, etc. of samples and record (under "Comments") any exceptions from standard protocols.

Relinquished By: [signature]	Received By: [signature]	Date: 8-8-11	Time: 16:15
Relinquished By:	Received By:	Date:	Time:

STREAMBORN Mail: PO Box 8330, Berkeley CA 94707-8330 Office: 900 Santa Fe Ave, Albany CA 94706 510-528-4234 Fax: 510-528-2613

Email results to: kevin@streamborn.com, information@streamborn.com

Prepare EDF for Geotracker Upload? Yes	Streamborn Log Code: SBA	Global ID: T0601300766

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 230765 Date Received 8/8/11 Number of coolers _____
Client Streamson Project 2440 East Eleventh St.

Date Opened 8/8/11 By (print) Vidia Ochi (sign) _____
Date Logged in ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES (NO)
   Shipping info _____

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many _____ Name _____ Date _____
2B. Were custody seals intact upon arrival? _____ YES NO (N/A)
3. Were custody papers dry and intact when received? _____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? _____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe) _____

☐ Bubble Wrap ☐ Foam blocks ☐ Bags ☐ None
☐ Cloth material ☒ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

   Type of ice used: ☐ Wet ☐ Blue/Gel ☒ None Temp(°C) _____

   ☐ Samples Received on ice & cold without a temperature blank

   ☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES (NO)
   If YES, what time were they transferred to freezer? _____
9. Did all bottles arrive unbroken/unopened? _____ (YES) NO
10. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
11. Are sample labels present, in good condition and complete? _____ (YES) NO
12. Do the sample labels agree with custody papers? _____ (YES) NO
13. Was sufficient amount of sample sent for tests requested? _____ (YES) NO
14. Are the samples appropriately preserved? _____ YES NO (N/A)
15. Did you check preservatives for all bottles for each sample? _____ YES NO (N/A)
16. Did you document your preservative check? _____ YES NO (N/A)
17. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO (N/A)
18. Are bubbles > 6mm absent in VOA samples? _____ YES NO (N/A)
19. Was the client contacted concerning this sample delivery? _____ YES (NO)
   If YES, Who was called? _____ By _____ Date: _____

COMMENTS

_____
_____
_____
_____
_____
_____

Rev 8, 6/11

Curtis & Tompkins, Ltd.

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Field ID:	SG1	Diln Fac:	1.780
Lab ID:	230065-001	Batch#:	177841
Matrix:	Air	Sampled:	08/08/11
Units (V):	ppbv	Received:	08/08/11
Units (M):	ug/m3	Analyzed:	08/16/11

Analyte	Result (V)	RL	Result (M)	RL
Propylene	1.6	0.89	2.8	1.5
Freon 12	ND	0.89	ND	4.4
Freon 114	ND	0.89	ND	6.2
Chloromethane	ND	0.89	ND	1.8
Vinyl Chloride	ND	0.89	ND	2.3
1,3-Butadiene	ND	0.89	ND	2.0
Bromomethane	ND	0.89	ND	3.5
Chloroethane	ND	0.89	ND	2.3
Trichlorofluoromethane	ND	0.89	ND	5.0
Acrolein	ND	3.6	ND	8.2
1,1-Dichloroethene	ND	0.89	ND	3.5
Freon 113	ND	0.89	ND	6.8
Acetone	8.3	3.6	20	8.5
Carbon Disulfide	ND	0.89	ND	2.8
Methylene Chloride	ND	0.89	ND	3.1
trans-1,2-Dichloroethene	ND	0.89	ND	3.5
MTBE	ND	0.89	ND	3.2
n-Hexane	ND	0.89	ND	3.1
1,1-Dichloroethane	ND	0.89	ND	3.6
Vinyl Acetate	ND	0.89	ND	3.1
cis-1,2-Dichloroethene	ND	0.89	ND	3.5
2-Butanone	2.0	0.89	6.0	2.6
Ethyl Acetate	ND	0.89	ND	3.2
Tetrahydrofuran	ND	0.89	ND	2.6
Chloroform	ND	0.89	ND	4.3
1,1,1-Trichloroethane	ND	0.89	ND	4.9
Cyclohexane	ND	0.89	ND	3.1
Carbon Tetrachloride	ND	0.89	ND	5.6
Benzene	ND	0.89	ND	2.8
1,2-Dichloroethane	ND	0.89	ND	3.6
n-Heptane	ND	0.89	ND	3.6
Trichloroethene	ND	0.89	ND	4.8
1,2-Dichloropropane	ND	0.89	ND	4.1
Bromodichloromethane	ND	0.89	ND	6.0
cis-1,3-Dichloropropene	ND	0.89	ND	4.0

ND= Not Detected
RL= Reporting Limit
Result M= Result in mass units
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Field ID:	SG1	Diln Fac:	1.780
Lab ID:	230065-001	Batch#:	177841
Matrix:	Air	Sampled:	08/08/11
Units (V):	ppbv	Received:	08/08/11
Units (M):	ug/m3	Analyzed:	08/16/11

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	0.89	ND	3.6
Toluene	ND	0.89	ND	3.4
trans-1,3-Dichloropropene	ND	0.89	ND	4.0
1,1,2-Trichloroethane	ND	0.89	ND	4.9
Tetrachloroethene	ND	0.89	ND	6.0
2-Hexanone	ND	0.89	ND	3.6
Dibromochloromethane	ND	0.89	ND	7.6
1,2-Dibromoethane	ND	0.89	ND	6.8
Chlorobenzene	ND	0.89	ND	4.1
Ethylbenzene	ND	0.89	ND	3.9
m,p-Xylenes	ND	0.89	ND	3.9
o-Xylene	ND	0.89	ND	3.9
Styrene	ND	0.89	ND	3.8
Bromoform	ND	0.89	ND	9.2
1,1,2,2-Tetrachloroethane	ND	0.89	ND	6.1
4-Ethyltoluene	ND	0.89	ND	4.4
1,3,5-Trimethylbenzene	ND	0.89	ND	4.4
1,2,4-Trimethylbenzene	ND	0.89	ND	4.4
1,3-Dichlorobenzene	ND	0.89	ND	5.4
1,4-Dichlorobenzene	ND	0.89	ND	5.4
Benzyl chloride	ND	0.89	ND	4.6
1,2-Dichlorobenzene	ND	0.89	ND	5.4
1,2,4-Trichlorobenzene	ND	0.89	ND	6.6
Hexachlorobutadiene	ND	0.89	ND	9.5

Surrogate	%REC	Limits
Bromofluorobenzene	98	74-136

ND= Not Detected
RL= Reporting Limit
Result M= Result in mass units
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Field ID:	SG2	Diln Fac:	2.040
Lab ID:	230065-002	Batch#:	177841
Matrix:	Air	Sampled:	08/08/11
Units (V):	ppbv	Received:	08/08/11
Units (M):	ug/m3	Analyzed:	08/16/11

Analyte	Result (V)	RL	Result (M)	RL
Propylene	5.7	1.0	9.9	1.8
Freon 12	ND	1.0	ND	5.0
Freon 114	ND	1.0	ND	7.1
Chloromethane	ND	1.0	ND	2.1
Vinyl Chloride	ND	1.0	ND	2.6
1,3-Butadiene	ND	1.0	ND	2.3
Bromomethane	ND	1.0	ND	4.0
Chloroethane	ND	1.0	ND	2.7
Trichlorofluoromethane	ND	1.0	ND	5.7
Acrolein	ND	4.1	ND	9.4
1,1-Dichloroethene	ND	1.0	ND	4.0
Freon 113	ND	1.0	ND	7.8
Acetone	12	4.1	28	9.7
Carbon Disulfide	4.8	1.0	15	3.2
Methylene Chloride	ND	1.0	ND	3.5
trans-1,2-Dichloroethene	ND	1.0	ND	4.0
MTBE	ND	1.0	ND	3.7
n-Hexane	4.4	1.0	16	3.6
1,1-Dichloroethane	ND	1.0	ND	4.1
Vinyl Acetate	ND	1.0	ND	3.6
cis-1,2-Dichloroethene	ND	1.0	ND	4.0
2-Butanone	3.2	1.0	9.4	3.0
Ethyl Acetate	ND	1.0	ND	3.7
Tetrahydrofuran	ND	1.0	ND	3.0
Chloroform	ND	1.0	ND	5.0
1,1,1-Trichloroethane	ND	1.0	ND	5.6
Cyclohexane	1.3	1.0	4.6	3.5
Carbon Tetrachloride	ND	1.0	ND	6.4
Benzene	ND	1.0	ND	3.3
1,2-Dichloroethane	ND	1.0	ND	4.1
n-Heptane	1.1	1.0	4.5	4.2
Trichloroethene	ND	1.0	ND	5.5
1,2-Dichloropropane	ND	1.0	ND	4.7
Bromodichloromethane	ND	1.0	ND	6.8
cis-1,3-Dichloropropene	ND	1.0	ND	4.6

ND= Not Detected
RL= Reporting Limit
Result M= Result in mass units
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Field ID:	SG2	Diln Fac:	2.040
Lab ID:	230065-002	Batch#:	177841
Matrix:	Air	Sampled:	08/08/11
Units (V):	ppbv	Received:	08/08/11
Units (M):	ug/m3	Analyzed:	08/16/11

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.0	ND	4.2
Toluene	ND	1.0	ND	3.8
trans-1,3-Dichloropropene	ND	1.0	ND	4.6
1,1,2-Trichloroethane	ND	1.0	ND	5.6
Tetrachloroethene	18	1.0	120	6.9
2-Hexanone	ND	1.0	ND	4.2
Dibromochloromethane	ND	1.0	ND	8.7
1,2-Dibromoethane	ND	1.0	ND	7.8
Chlorobenzene	ND	1.0	ND	4.7
Ethylbenzene	ND	1.0	ND	4.4
m,p-Xylenes	1.3	1.0	5.6	4.4
o-Xylene	ND	1.0	ND	4.4
Styrene	ND	1.0	ND	4.3
Bromoform	ND	1.0	ND	11
1,1,2,2-Tetrachloroethane	ND	1.0	ND	7.0
4-Ethyltoluene	ND	1.0	ND	5.0
1,3,5-Trimethylbenzene	ND	1.0	ND	5.0
1,2,4-Trimethylbenzene	ND	1.0	ND	5.0
1,3-Dichlorobenzene	ND	1.0	ND	6.1
1,4-Dichlorobenzene	ND	1.0	ND	6.1
Benzyl chloride	ND	1.0	ND	5.3
1,2-Dichlorobenzene	ND	1.0	ND	6.1
1,2,4-Trichlorobenzene	ND	1.0	ND	7.6
Hexachlorobutadiene	ND	1.0	ND	11

Surrogate	%REC	Limits
Bromofluorobenzene	97	74-136

ND= Not Detected
RL= Reporting Limit
Result M= Result in mass units
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Field ID:	SG3	Diln Fac:	2.080
Lab ID:	230065-003	Batch#:	177841
Matrix:	Air	Sampled:	08/08/11
Units (V):	ppbv	Received:	08/08/11
Units (M):	ug/m3	Analyzed:	08/16/11

Analyte	Result (V)	RL	Result (M)	RL
Propylene	ND	1.0	ND	1.8
Freon 12	1.9	1.0	9.3	5.1
Freon 114	ND	1.0	ND	7.3
Chloromethane	ND	1.0	ND	2.1
Vinyl Chloride	ND	1.0	ND	2.7
1,3-Butadiene	ND	1.0	ND	2.3
Bromomethane	ND	1.0	ND	4.0
Chloroethane	ND	1.0	ND	2.7
Trichlorofluoromethane	11	1.0	61	5.8
Acrolein	ND	4.2	ND	9.5
1,1-Dichloroethene	ND	1.0	ND	4.1
Freon 113	ND	1.0	ND	8.0
Acetone	11	4.2	26	9.9
Carbon Disulfide	ND	1.0	ND	3.2
Methylene Chloride	ND	1.0	ND	3.6
trans-1,2-Dichloroethene	ND	1.0	ND	4.1
MTBE	ND	1.0	ND	3.7
n-Hexane	ND	1.0	ND	3.7
1,1-Dichloroethane	ND	1.0	ND	4.2
Vinyl Acetate	ND	1.0	ND	3.7
cis-1,2-Dichloroethene	ND	1.0	ND	4.1
2-Butanone	2.4	1.0	7.1	3.1
Ethyl Acetate	ND	1.0	ND	3.7
Tetrahydrofuran	ND	1.0	ND	3.1
Chloroform	ND	1.0	ND	5.1
1,1,1-Trichloroethane	ND	1.0	ND	5.7
Cyclohexane	ND	1.0	ND	3.6
Carbon Tetrachloride	ND	1.0	ND	6.5
Benzene	ND	1.0	ND	3.3
1,2-Dichloroethane	ND	1.0	ND	4.2
n-Heptane	ND	1.0	ND	4.3
Trichloroethene	ND	1.0	ND	5.6
1,2-Dichloropropane	ND	1.0	ND	4.8
Bromodichloromethane	ND	1.0	ND	7.0
cis-1,3-Dichloropropene	ND	1.0	ND	4.7

ND= Not Detected
RL= Reporting Limit
Result M= Result in mass units
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Field ID:	SG3	Diln Fac:	2.080
Lab ID:	230065-003	Batch#:	177841
Matrix:	Air	Sampled:	08/08/11
Units (V):	ppbv	Received:	08/08/11
Units (M):	ug/m3	Analyzed:	08/16/11

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.0	ND	4.3
Toluene	ND	1.0	ND	3.9
trans-1,3-Dichloropropene	ND	1.0	ND	4.7
1,1,2-Trichloroethane	ND	1.0	ND	5.7
Tetrachloroethene	8.9	1.0	60	7.1
2-Hexanone	ND	1.0	ND	4.3
Dibromochloromethane	ND	1.0	ND	8.9
1,2-Dibromoethane	ND	1.0	ND	8.0
Chlorobenzene	ND	1.0	ND	4.8
Ethylbenzene	ND	1.0	ND	4.5
m,p-Xylenes	ND	1.0	ND	4.5
o-Xylene	ND	1.0	ND	4.5
Styrene	ND	1.0	ND	4.4
Bromoform	ND	1.0	ND	11
1,1,2,2-Tetrachloroethane	ND	1.0	ND	7.1
4-Ethyltoluene	ND	1.0	ND	5.1
1,3,5-Trimethylbenzene	ND	1.0	ND	5.1
1,2,4-Trimethylbenzene	2.0	1.0	9.9	5.1
1,3-Dichlorobenzene	ND	1.0	ND	6.3
1,4-Dichlorobenzene	ND	1.0	ND	6.3
Benzyl chloride	1.3	1.0	6.5	5.4
1,2-Dichlorobenzene	ND	1.0	ND	6.3
1,2,4-Trichlorobenzene	5.2	1.0	38	7.7
Hexachlorobutadiene	2.2	1.0	24	11

Surrogate	%REC	Limits
Bromofluorobenzene	97	74-136

ND= Not Detected
RL= Reporting Limit
Result M= Result in mass units
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	177841
Units (V):	ppbv	Analyzed:	08/15/11
Diln Fac:	1.000		

Type: BS Lab ID: QC604384

Analyte	Spiked	Result (V)	%REC	Limits
Propylene	10.00	10.43	104	70-130
Freon 12	10.00	10.37	104	70-130
Freon 114	10.00	10.42	104	70-130
Chloromethane	10.00	9.888	99	70-130
Vinyl Chloride	10.00	9.169	92	70-130
1,3-Butadiene	10.00	10.32	103	70-130
Bromomethane	10.00	9.898	99	70-130
Chloroethane	10.00	9.603	96	70-130
Trichlorofluoromethane	10.00	10.26	103	70-130
Acrolein	10.00	9.307	93	70-136
1,1-Dichloroethene	10.00	10.74	107	70-130
Freon 113	10.00	9.877	99	70-130
Acetone	10.00	9.758	98	70-130
Carbon Disulfide	10.00	9.694	97	70-130
Methylene Chloride	10.00	11.42	114	70-130
trans-1,2-Dichloroethene	10.00	11.19	112	70-130
MTBE	10.00	9.711	97	70-130
n-Hexane	10.00	9.582	96	70-130
1,1-Dichloroethane	10.00	9.191	92	70-130
Vinyl Acetate	10.00	7.745	77	70-130
cis-1,2-Dichloroethene	10.00	9.807	98	70-130
2-Butanone	10.00	9.036	90	70-130
Ethyl Acetate	10.00	9.001	90	70-130
Tetrahydrofuran	10.00	9.663	97	70-130
Chloroform	10.00	9.961	100	70-130
1,1,1-Trichloroethane	10.00	9.337	93	70-130
Cyclohexane	10.00	9.185	92	70-130
Carbon Tetrachloride	10.00	9.334	93	70-130
Benzene	10.00	9.250	93	70-130
1,2-Dichloroethane	10.00	8.892	89	70-130
n-Heptane	10.00	8.238	82	70-130
Trichloroethene	10.00	9.174	92	70-130
1,2-Dichloropropane	10.00	9.538	95	70-130
Bromodichloromethane	10.00	9.304	93	70-130

RPD= Relative Percent Difference
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	177841
Units (V):	ppbv	Analyzed:	08/15/11
Diln Fac:	1.000		

Analyte	Spiked	Result (V)	%REC	Limits
cis-1,3-Dichloropropene	10.00	9.451	95	70-130
4-Methyl-2-Pentanone	10.00	7.143	71	70-130
Toluene	10.00	8.174	82	70-130
trans-1,3-Dichloropropene	10.00	9.050	91	70-130
1,1,2-Trichloroethane	10.00	9.425	94	70-130
Tetrachloroethene	10.00	7.447	74	70-130
2-Hexanone	10.00	7.663	77	70-134
Dibromochloromethane	10.00	9.041	90	70-130
1,2-Dibromoethane	10.00	8.756	88	70-130
Chlorobenzene	10.00	8.747	87	70-130
Ethylbenzene	10.00	9.524	95	70-130
m,p-Xylenes	20.00	19.27	96	70-130
o-Xylene	10.00	9.545	95	70-130
Styrene	10.00	9.108	91	70-130
Bromoform	10.00	8.454	85	70-130
1,1,2,2-Tetrachloroethane	10.00	7.101	71	70-130
4-Ethyltoluene	10.00	9.259	93	70-130
1,3,5-Trimethylbenzene	10.00	9.445	94	70-130
1,2,4-Trimethylbenzene	10.00	9.366	94	70-130
1,3-Dichlorobenzene	10.00	9.183	92	70-130
1,4-Dichlorobenzene	10.00	8.862	89	70-130
Benzyl chloride	10.00	9.246	92	70-130
1,2-Dichlorobenzene	10.00	8.928	89	70-130
1,2,4-Trichlorobenzene	10.00	7.877	79	70-130
Hexachlorobutadiene	10.00	9.035	90	70-130

Surrogate	%REC	Limits
Bromofluorobenzene	97	70-136

RPD= Relative Percent Difference
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	177841
Units (V):	ppbv	Analyzed:	08/15/11
Diln Fac:	1.000		

Type: BSD Lab ID: QC604385

Analyte	Spiked	Result (V)	%REC	Limits	RPD	Lim
Propylene	10.00	10.05	101	70-130	4	20
Freon 12	10.00	10.15	101	70-130	2	20
Freon 114	10.00	9.732	97	70-130	7	20
Chloromethane	10.00	9.376	94	70-130	5	20
Vinyl Chloride	10.00	8.817	88	70-130	4	20
1,3-Butadiene	10.00	10.03	100	70-130	3	20
Bromomethane	10.00	9.675	97	70-130	2	20
Chloroethane	10.00	9.279	93	70-130	3	20
Trichlorofluoromethane	10.00	10.18	102	70-130	1	20
Acrolein	10.00	9.213	92	70-136	1	20
1,1-Dichloroethene	10.00	10.39	104	70-130	3	20
Freon 113	10.00	9.761	98	70-130	1	20
Acetone	10.00	9.313	93	70-130	5	20
Carbon Disulfide	10.00	9.395	94	70-130	3	20
Methylene Chloride	10.00	11.20	112	70-130	2	20
trans-1,2-Dichloroethene	10.00	10.84	108	70-130	3	20
MTBE	10.00	9.686	97	70-130	0	20
n-Hexane	10.00	9.591	96	70-130	0	20
1,1-Dichloroethane	10.00	9.153	92	70-130	0	20
Vinyl Acetate	10.00	7.573	76	70-130	2	20
cis-1,2-Dichloroethene	10.00	9.672	97	70-130	1	20
2-Butanone	10.00	9.113	91	70-130	1	20
Ethyl Acetate	10.00	9.043	90	70-130	0	20
Tetrahydrofuran	10.00	9.563	96	70-130	1	20
Chloroform	10.00	9.755	98	70-130	2	20
1,1,1-Trichloroethane	10.00	9.398	94	70-130	1	20
Cyclohexane	10.00	9.251	93	70-130	1	20
Carbon Tetrachloride	10.00	9.334	93	70-130	0	20
Benzene	10.00	9.342	93	70-130	1	20
1,2-Dichloroethane	10.00	8.979	90	70-130	1	20
n-Heptane	10.00	8.264	83	70-130	0	20
Trichloroethene	10.00	9.138	91	70-130	0	20
1,2-Dichloropropane	10.00	9.417	94	70-130	1	20
Bromodichloromethane	10.00	9.163	92	70-130	2	20

RPD= Relative Percent Difference
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	177841
Units (V):	ppbv	Analyzed:	08/15/11
Diln Fac:	1.000		

Analyte	Spiked	Result (V)	%REC	Limits	RPD	Lim
cis-1,3-Dichloropropene	10.00	9.344	93	70-130	1	20
4-Methyl-2-Pentanone	10.00	7.139	71	70-130	0	20
Toluene	10.00	8.102	81	70-130	1	20
trans-1,3-Dichloropropene	10.00	8.868	89	70-130	2	20
1,1,2-Trichloroethane	10.00	9.416	94	70-130	0	20
Tetrachloroethene	10.00	7.436	74	70-130	0	20
2-Hexanone	10.00	7.732	77	70-134	1	20
Dibromochloromethane	10.00	8.731	87	70-130	3	20
1,2-Dibromoethane	10.00	8.622	86	70-130	2	20
Chlorobenzene	10.00	8.572	86	70-130	2	20
Ethylbenzene	10.00	9.414	94	70-130	1	20
m,p-Xylenes	20.00	19.01	95	70-130	1	20
o-Xylene	10.00	9.422	94	70-130	1	20
Styrene	10.00	8.922	89	70-130	2	20
Bromoform	10.00	8.310	83	70-130	2	20
1,1,2,2-Tetrachloroethane	10.00	7.033	70	70-130	1	20
4-Ethyltoluene	10.00	9.200	92	70-130	1	20
1,3,5-Trimethylbenzene	10.00	9.216	92	70-130	2	20
1,2,4-Trimethylbenzene	10.00	9.205	92	70-130	2	20
1,3-Dichlorobenzene	10.00	9.009	90	70-130	2	20
1,4-Dichlorobenzene	10.00	8.866	89	70-130	0	20
Benzyl chloride	10.00	9.168	92	70-130	1	20
1,2-Dichlorobenzene	10.00	8.921	89	70-130	0	20
1,2,4-Trichlorobenzene	10.00	7.610	76	70-130	3	20
Hexachlorobutadiene	10.00	8.876	89	70-130	2	20

Surrogate	%REC	Limits
Bromofluorobenzene	96	70-136

RPD= Relative Percent Difference
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Type:	BLANK	Units (M):	ug/m3
Lab ID:	QC604386	Diln Fac:	1.000
Matrix:	Air	Batch#:	177841
Units (V):	ppbv	Analyzed:	08/15/11

Analyte	Result (V)	RL	Result (M)	RL
Propylene	ND	0.50	ND	0.86
Freon 12	ND	0.50	ND	2.5
Freon 114	ND	0.50	ND	3.5
Chloromethane	ND	0.50	ND	1.0
Vinyl Chloride	ND	0.50	ND	1.3
1,3-Butadiene	ND	0.50	ND	1.1
Bromomethane	ND	0.50	ND	1.9
Chloroethane	ND	0.50	ND	1.3
Trichlorofluoromethane	ND	0.50	ND	2.8
Acrolein	ND	2.0	ND	4.6
1,1-Dichloroethene	ND	0.50	ND	2.0
Freon 113	ND	0.50	ND	3.8
Acetone	ND	2.0	ND	4.8
Carbon Disulfide	ND	0.50	ND	1.6
Methylene Chloride	ND	0.50	ND	1.7
trans-1,2-Dichloroethene	ND	0.50	ND	2.0
MTBE	ND	0.50	ND	1.8
n-Hexane	ND	0.50	ND	1.8
1,1-Dichloroethane	ND	0.50	ND	2.0
Vinyl Acetate	ND	0.50	ND	1.8
cis-1,2-Dichloroethene	ND	0.50	ND	2.0
2-Butanone	ND	0.50	ND	1.5
Ethyl Acetate	ND	0.50	ND	1.8
Tetrahydrofuran	ND	0.50	ND	1.5
Chloroform	ND	0.50	ND	2.4
1,1,1-Trichloroethane	ND	0.50	ND	2.7
Cyclohexane	ND	0.50	ND	1.7
Carbon Tetrachloride	ND	0.50	ND	3.1
Benzene	ND	0.50	ND	1.6
1,2-Dichloroethane	ND	0.50	ND	2.0
n-Heptane	ND	0.50	ND	2.0
Trichloroethene	ND	0.50	ND	2.7
1,2-Dichloropropane	ND	0.50	ND	2.3
Bromodichloromethane	ND	0.50	ND	3.4
cis-1,3-Dichloropropene	ND	0.50	ND	2.3

ND= Not Detected
RL= Reporting Limit
Result M= Result in mass units
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Batch QC Report

Volatile Organics in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	EPA TO-15
Type:	BLANK	Units (M):	ug/m3
Lab ID:	QC604386	Diln Fac:	1.000
Matrix:	Air	Batch#:	177841
Units (V):	ppbv	Analyzed:	08/15/11

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	0.50	ND	2.0
Toluene	ND	0.50	ND	1.9
trans-1,3-Dichloropropene	ND	0.50	ND	2.3
1,1,2-Trichloroethane	ND	0.50	ND	2.7
Tetrachloroethene	ND	0.50	ND	3.4
2-Hexanone	ND	0.50	ND	2.0
Dibromochloromethane	ND	0.50	ND	4.3
1,2-Dibromoethane	ND	0.50	ND	3.8
Chlorobenzene	ND	0.50	ND	2.3
Ethylbenzene	ND	0.50	ND	2.2
m,p-Xylenes	ND	0.50	ND	2.2
o-Xylene	ND	0.50	ND	2.2
Styrene	ND	0.50	ND	2.1
Bromoform	ND	0.50	ND	5.2
1,1,2,2-Tetrachloroethane	ND	0.50	ND	3.4
4-Ethyltoluene	ND	0.50	ND	2.5
1,3,5-Trimethylbenzene	ND	0.50	ND	2.5
1,2,4-Trimethylbenzene	ND	0.50	ND	2.5
1,3-Dichlorobenzene	ND	0.50	ND	3.0
1,4-Dichlorobenzene	ND	0.50	ND	3.0
Benzyl chloride	ND	0.50	ND	2.6
1,2-Dichlorobenzene	ND	0.50	ND	3.0
1,2,4-Trichlorobenzene	ND	0.50	ND	3.7
Hexachlorobutadiene	ND	0.50	ND	5.3

Surrogate	%REC	Limits
Bromofluorobenzene	98	70-136

ND= Not Detected
RL= Reporting Limit
Result M= Result in mass units
Result V= Result in volume units

Curtis & Tompkins, Ltd.

Fixed Gas Analysis

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	ASTM D1946
Matrix:	Air	Sampled:	08/08/11
Units:	ppmv	Received:	08/08/11
Units (Mol %):	MOL %		

Field ID: SG1 Lab ID: 230065-001
Type: SAMPLE Diln Fac: 1.780

Analyte	Result	RL	Result (Mol %)	RL	Batch#	Analyzed
Helium	ND	1,800	ND	0.18	177812	08/15/11
Carbon Monoxide	ND	1,800	ND	0.18	177754	08/12/11
Carbon Dioxide	26,000	1,800	2.6	0.18	177754	08/12/11
Oxygen	170,000	1,800	17	0.18	177754	08/12/11
Methane	ND	1,800	ND	0.18	177754	08/12/11

Field ID: SG2 Lab ID: 230065-002
Type: SAMPLE Diln Fac: 2.040

Analyte	Result	RL	Result (Mol %)	RL	Batch#	Analyzed
Helium	9,900	2,000	4.8	0.20	177812	08/15/11
Carbon Monoxide	ND	2,000	ND	0.20	177754	08/12/11
Carbon Dioxide	59,000	2,000	5.9	0.20	177754	08/12/11
Oxygen	120,000	2,000	12	0.20	177754	08/12/11
Methane	ND	2,000	ND	0.20	177754	08/12/11

Field ID: SG3 Lab ID: 230065-003
Type: SAMPLE Diln Fac: 2.080

Analyte	Result	RL	Result (Mol %)	RL	Batch#	Analyzed
Helium	ND	2,100	ND	0.21	177812	08/15/11
Carbon Monoxide	ND	2,100	ND	0.21	177754	08/12/11
Carbon Dioxide	110,000	2,100	11	0.21	177754	08/12/11
Oxygen	62,000	2,100	6.2	0.21	177754	08/12/11
Methane	ND	2,100	ND	0.21	177754	08/12/11

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit
Result Mol %= Result in Mole Percent

Curtis & Tompkins, Ltd.

Fixed Gas Analysis

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	ASTM D1946
Matrix:	Air	Sampled:	08/08/11
Units:	ppmv	Received:	08/08/11
Units (Mol %):	MOL %		

Type: BLANK
Lab ID: QC604024
Diln Fac: 1.000

Batch#: 177754
Analyzed: 08/12/11

Analyte	Result	RL	Result (Mol %)	RL
Helium	NA			
Carbon Monoxide	ND	1,000	ND	0.10
Carbon Dioxide	ND	1,000	ND	0.10
Oxygen	ND	1,000	ND	0.10
Methane	ND	1,000	ND	0.10

Type: BLANK
Lab ID: QC604261
Diln Fac: 1.000

Batch#: 177812
Analyzed: 08/15/11

Analyte	Result	RL	Result (Mol %)	RL
Helium	ND	1,000	ND	0.10
Carbon Monoxide	NA			
Carbon Dioxide	NA			
Oxygen	NA			
Methane	NA			

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit
Result Mol %= Result in Mole Percent

Curtis & Tompkins, Ltd.

Aromatic / Petroleum Hydrocarbons in Air

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Analysis:	EPA TO-3
Project#:	P279		
Analyte:	Gasoline Range Organics C6-C12	Sampled:	08/08/11
Matrix:	Air	Received:	08/08/11
Units:	ppbv	Analyzed:	08/19/11
Batch#:	178041		

Field ID	Type	Lab ID	Result	RL	MDL	Diln Fac
SG1	SAMPLE	230065-001	20 J	45	10	1.780
SG2	SAMPLE	230065-002	47 J	51	11	2.040
SG3	SAMPLE	230065-003	55	52	12	2.080
	BLANK	QC605205	ND	25	5.6	1.000

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Fixed Gas Analysis

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	ASTM D1946
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC604023	Batch#:	177754
Matrix:	Air	Analyzed:	08/12/11
Units:	ppmv		

Analyte	Spiked	Result	%REC	Limits
Helium		NA		
Carbon Monoxide	2,000	1,821	91	70-130
Carbon Dioxide	2,000	1,898	95	70-130
Oxygen	2,000	1,893	95	70-130
Methane	2,000	1,951	98	70-130

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Batch QC Report

Fixed Gas Analysis

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	ASTM D1946
Field ID:	ZZZZZZZZZZ	Units (Mol %):	MOL %
Type:	SDUP	Diln Fac:	1.860
MSS Lab ID:	230063-001	Batch#:	177754
Lab ID:	QC604134	Sampled:	08/08/11
Matrix:	Air	Received:	08/08/11
Units:	ppmv	Analyzed:	08/12/11

Analyte	MSS Result	Result	RL	Result (Mol %)	RL	RPD	Lim
Helium		NA					
Carbon Monoxide	<1,860	ND	1,860	ND	0.1860	NC	30
Carbon Dioxide	171,100	170,800	1,860	17.08	0.1860	0	30
Oxygen	17,490	17,460	1,860	1.746	0.1860	0	30
Methane	231,800	231,900	1,860	23.19	0.1860	0	30

NA= Not Analyzed
NC= Not Calculated
ND= Not Detected
RL= Reporting Limit
RPD= Relative Percent Difference
Result Mol %= Result in Mole Percent

Curtis & Tompkins, Ltd.

Batch QC Report

Fixed Gas Analysis

Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Prep:	METHOD
Project#:	P279	Analysis:	ASTM D1946
Matrix:	Air	Batch#:	177812
Units:	ppmv	Analyzed:	08/15/11
Diln Fac:	1.000		

Type: BS Lab ID: QC604259

Analyte	Spiked	Result	%REC	Limits
Helium	10,000	9,893	99	49-135
Carbon Monoxide		NA		
Carbon Dioxide		NA		
Oxygen		NA		
Methane		NA		

Type: BSD Lab ID: QC604260

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Helium	10,000	9,881	99	49-135	0	32
Carbon Monoxide		NA				
Carbon Dioxide		NA				
Oxygen		NA				
Methane		NA				

NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Aromatic / Petroleum Hydrocarbons in Air

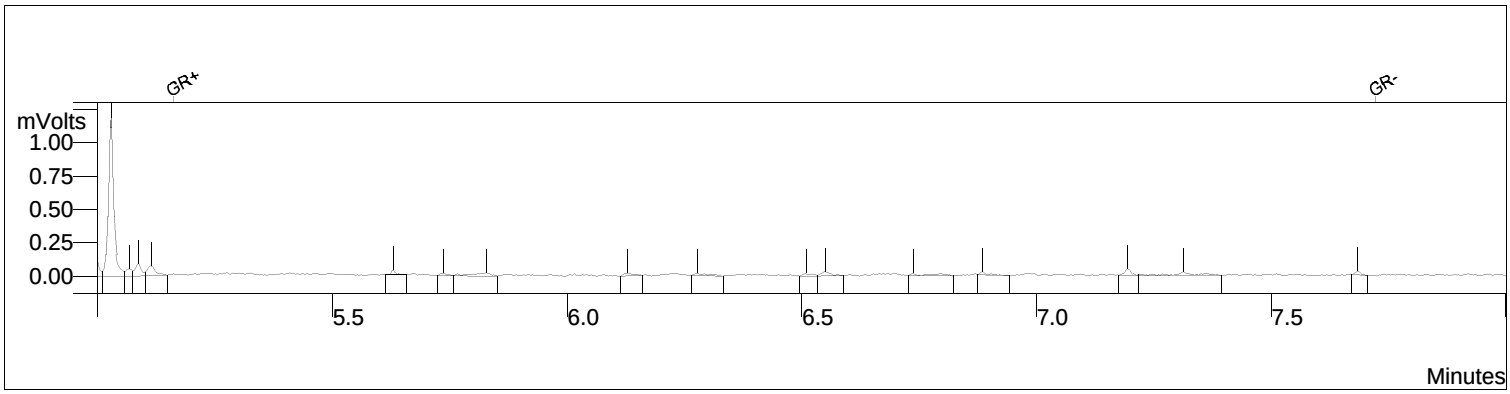
Lab #:	230065	Location:	2440 East Eleventh St
Client:	Streamborn Consulting Services	Analysis:	EPA TO-3
Project#:	P279		
Analyte:	Gasoline Range Organics C6-C12	Diln Fac:	1.000
Matrix:	Air	Batch#:	178041
Units:	ppbv	Analyzed:	08/19/11

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC605206	2,100	1,748	83	70-130		
BSD	QC605207	2,100	1,701	81	70-130	3	25

RPD= Relative Percent Difference

GRO by TO-3

Sample ID:	230065-001,178019		
Data File:	c:\varianws\data\081911\231_008.run		
Sample List:	c:\varianws\081911.smp		
Method:	c:\varianws\to3_081811.mth		
Acquisition Date:	08/19/2011 14:15:06		
Calculation Date:	08/19/2011 16:55:43		
Instrument ID:	MSAIR03	Operator:	TO-3
Injection Notes:	1.78x,c00180		
Multiplier:	1.000	Divisor:	1.000



Channel: **Front = FID** **RESULTS**

#	RT (min)	Peak Name	Area	Result (ppbv)
1	6.443	GRO:6-12	427	11.474
		Totals	**427**	**11.474**

Integration Parameters

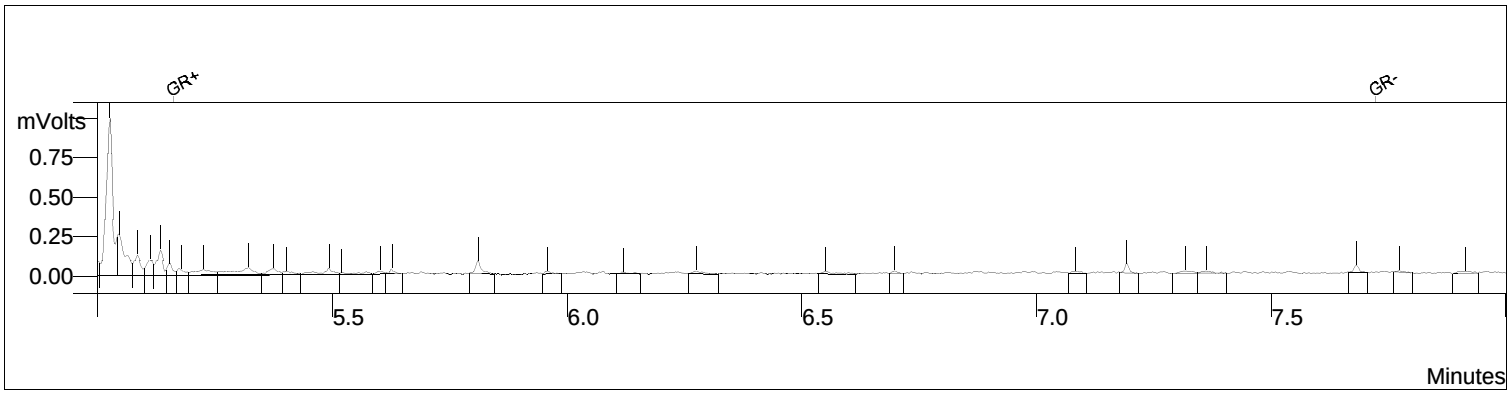
Initial Tangent %:	0
Initial Peak Width (sec):	4
Initial Peak Reject Value:	50.000
Initial S/N Ratio:	3

Data Handling Time Events

Time (min)	Event
0.009	II on
4.801	II off
5.163	GR on
7.723	GR off

GRO by TO-3

Sample ID:	230065-002,178019		
Data File:	c:\varianws\data\081911\231_009.run		
Sample List:	c:\varianws\081911.smp		
Method:	c:\varianws\to3_081811.mth		
Acquisition Date:	08/19/2011 14:30:01		
Calculation Date:	08/19/2011 16:55:43		
Instrument ID:	MSAIR03	Operator:	TO-3
Injection Notes:	2.04x,c00266		
Multiplier:	1.000	Divisor:	1.000



Channel: Front = FID RESULTS

#	RT (min)	Peak Name	Area	Result (ppbv)
1	6.443	GRO:6-12	863	23.197
		Totals	**863**	**23.197**

Integration Parameters

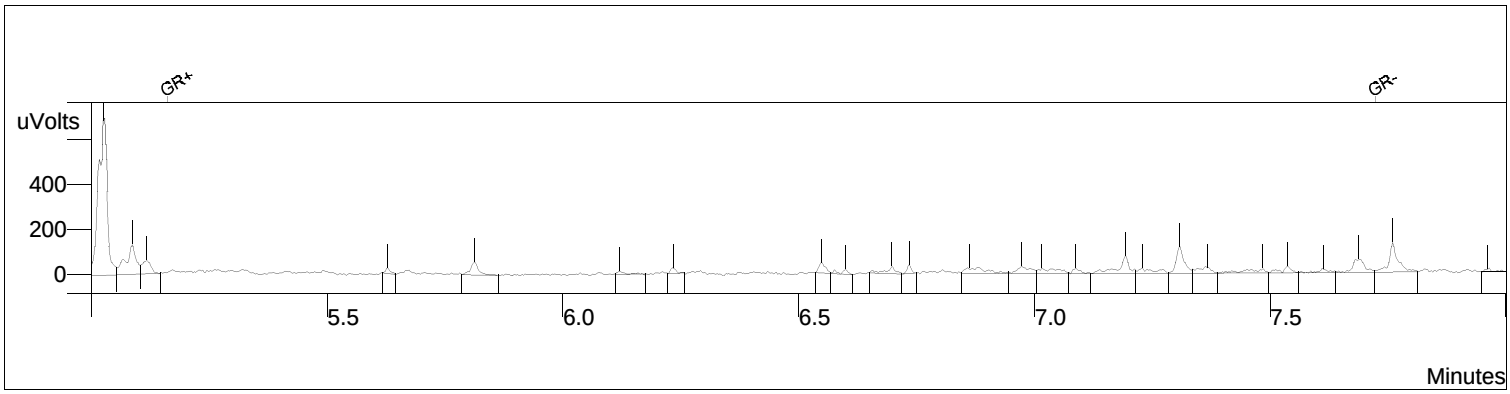
Initial Tangent %:	0
Initial Peak Width (sec):	4
Initial Peak Reject Value:	50.000
Initial S/N Ratio:	3

Data Handling Time Events

Time (min)	Event
0.009	II on
4.801	II off
5.163	GR on
7.723	GR off

GRO by TO-3

Sample ID:	230065-003,178019		
Data File:	c:\varianws\data\081911\231_010.run		
Sample List:	c:\varianws\081911.smp		
Method:	c:\varianws\to3_081811.mth		
Acquisition Date:	08/19/2011 14:45:14		
Calculation Date:	08/19/2011 16:55:43		
Instrument ID:	MSAIR03	Operator:	TO-3
Injection Notes:	2.08x,c00148		
Multiplier:	1.000	Divisor:	1.000



Channel: **Front = FID** **RESULTS**

#	RT (min)	Peak Name	Area	Result (ppbv)
1	6.443	GRO:6-12	985	26.483
		Totals	**985**	**26.483**

Integration Parameters

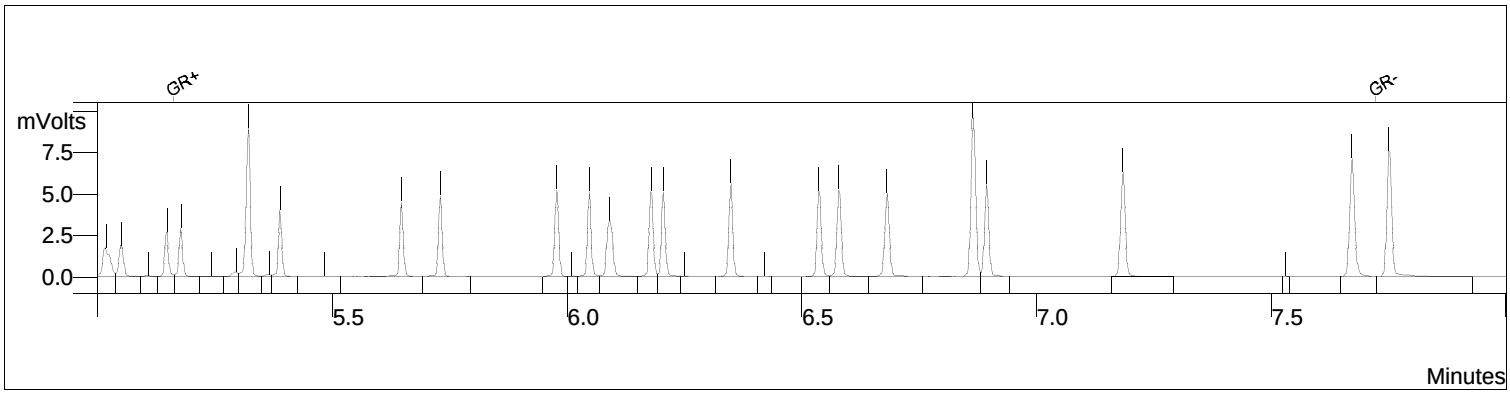
Initial Tangent %:	0
Initial Peak Width (sec):	4
Initial Peak Reject Value:	50.000
Initial S/N Ratio:	3

Data Handling Time Events

Time (min)	Event
0.009	II on
4.801	II off
5.163	GR on
7.723	GR off

GRO by TO-3

Sample ID:	ccv/bs,qc605206		
Data File:	c:\varianws\data\081911\231_001.run		
Sample List:	c:\varianws\081911.smp		
Method:	c:\varianws\to3_081811.mth		
Acquisition Date:	08/19/2011 12:28:57		
Calculation Date:	08/19/2011 16:53:25		
Instrument ID:	MSAIR03	Operator:	TO-3
Injection Notes:	178041,S17992,1x		
Multiplier:	1.000	Divisor:	1.000



Channel: **Front = FID** **RESULTS**

#	RT (min)	Peak Name	Area	Result (ppbv)
1	6.443	GRO:6-12	65043	1748.314
		Totals	**65043**	**1748.314**

Integration Parameters

Initial Tangent %:	0
Initial Peak Width (sec):	4
Initial Peak Reject Value:	50.000
Initial S/N Ratio:	3

Data Handling Time Events

Time (min)	Event
0.009	II on
4.801	II off
5.163	GR on
7.723	GR off

ATTACHMENT 3

Permits

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: 07/20/2011 By jamesy

Permit Numbers: W2011-0482
Permits Valid from 08/08/2011 to 08/08/2011

Application Id:	1311184282693	**City of Project Site:**	Oakland
Site Location:	2440 E 11th St, Oakland, CA		
Project Start Date:	08/01/2011	**Completion Date:**	08/01/2011
Assigned Inspector:	Contact Vicky Hamlin at (510) 670-5443 or vickyh@acpwa.org		
Extension Start Date:	08/08/2011	**Extension End Date:**	08/08/2011
Extension Count:	1	**Extended By:**	vickyh1
Applicant:	Streamborn - PO Box 8330, Berkeley, CA 94707	**Phone:**	510-528-4234
Property Owner:	Eandi Metal Works 976 23rd Ave, Oakland, CA 94606	**Phone:**	510-532-8311
Client:	** same as Property Owner **		

	Total Due:	$265.00
Receipt Number: WR2011-0223	**Total Amount Paid:**	$265.00
Payer Name : Streamborn	Paid By: CHECK	**PAID IN FULL**

Works Requesting Permits:

Borehole(s) for Geo Probes-Sampling 24 to 72 hours only - 3 Boreholes
Driller: RSI - Lic #: 802334 - Method: other **Work Total: $265.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2011-0482	07/20/2011	10/30/2011	3	2.30 in.	6.50 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. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 or email to vickyh@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

5. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no

case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

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.

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund more than 180 days after expiration or final.

Appl# X1100772 Job Site 2440 E 11TH ST Parcel# 19 - 98 - 05 - 6

Descr Excavate for Soilgas sampling and grout borings at three loc Permit Issued 07/22/11
ations, two along East 11th St. and one on 25th Ave. Parking
lane only. August 1, 2011 start and end date.
Work Type EXCAVATION-PRIVATE P

USA # Util Co. Job # Acctg#:
Util Fund #:

		Applcnt	Phone#	Lic#	--License Classes--
Owner					
Contractor	RESONANTSONIC	X	(530)668-2424	802334	C57 A
Arch/Engr					
Agent					

Applic Addr 220 N EAST ST., WOODLAND CA, 95776

JOB SITE

$436.05	FEES TO BE PAID AT ISSUANCE		
$71.00	Applic	$309.00	Permit
$.00	Process	$36.10	Rec Mgmt
$.00	Gen Plan	$.00	Invstg
$.00	Other	$19.95	Tech Enh

Permit Issued By Chris Candell Date: 7/22/11

Finaled By _____ Date: _____

ADDRESS:

DIST:

CITY OF OAKLAND

PAID
SMK 7/28/11

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund more than 180 days after expiration or final.

Permit No. X1100772 Parcel #:
Project Address: 2440 E 11TH ST

Licensed Contractors' Declaration
I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Construction Lending Agency Declaration
I hereby affirm under penalty of perjury that there is a construction-lending agency for the performance of the work for which this permit is issued, as provided by Section 3097 of the Business and Professions Code. N/A under Lender implies No Lending Agency.

Lender_____ Address_____

Workers' Compensation Declaration

I hereby affirm under penalty of perjury one of the following declarations:

[ ] I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

[ ] I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

CARRIER:_____POLICY NO. _____

[ ] I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS, IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3707 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

Hazardous Materials Declaration

I hereby affirm that the intended occupancy [ ] WILL [ ] WILL NOT use, handle or store any hazardous, or acutely hazardous, materials. (Checking "WILL" acknowledges that Sections 25505, 25533, & 25534 of the Health & Safety Code, as well as filing instructions, were made available to you.)

I HEREBY CERTIFY THE FOLLOWING: That I have read this document; that the above information is correct; and that I have truthfully affirmed all applicable declarations contained in this document. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection. I am fully authorized by the owner and to perform the work authorized by this permit.

DIST:_____ ADDRESS:_____

PRINT NAME _____ Signature [ ] Contractor, or [ ] Agent _____ Date

STREAMBORN

510.528.4234
Fax 528.2613

City of Oakland
Permit Center
250 Frank H. Ogawa Plaza, 2nd Floor
Oakland CA 94612

18 July 2011

Project P279

Application for Excavation Permit
Drill and Grout Borings for Soilgas Sampling
2440 East Eleventh Street
Oakland CA

To Whom It May Concern:

We are required by the Alameda County Environmental Health Department and the San Francisco Bay Regional Water Quality Control Board to sample soilgas at two locations in the parking lane of East Eleventh Street and one location in the parking lane of 25th Avenue, Oakland CA. The soilgas samples will be collected immediately adjacent to existing groundwater monitoring wells - wells that had been previously permitted with the City of Oakland.

The work will consist of the following:

- Drilling permits will be obtained from Alameda County Public Works.
- The proposed drilling locations will be marked for utility clearance by 811/USA.
- Using a direct-push drill rig (Geoprobe rig), 2.3-inch diameter boreholes will be advanced to a depth of 6.5 feet. We do not expect to encounter groundwater at this depth.
- Sand will be placed in the bottom 1.5-feet of each boring and a porous vapor sampling probe will embedded in sand. 0.25-inch diameter plastic tubing will lead from the probe to the ground surface.
- The remainder of each borehole will be backfilled with bentonite chips and the chips will be hydrated with water.
- After an approximate 2-hour rest, soilgas samples will be collected using a vacuum pump and Summa canisters.
- Each borehole will re-drilled (direct-push or hand-auger) to ±5 feet and the bentonite and tubing will be removed.
- The borehole will be backfilled to a depth of 1.5 feet with neat cement grout (94 pounds Type I/II cement to 6 gallons of water).

Mail: PO Box 8330, Berkeley CA 94707-8330 **Office: 900 Santa Fe Avenue, Albany CA 94706**

- The remainder of the borehole will be backfilled with concrete (or otherwise restored according to the requirements of the City of Oakland).

We have have attached the following:

- The excavation permit application.
- Letter of Agency from the driller, naming Streamborn/Douglas W. Lovell as agent for the permits.
- Copies of the workers compensation certificate and Oakland business license for the driller.
- Table and figures detailing the sample locations and procedures.
- Application for traffic control plan and figure detailing the traffic control plan.
- Check in the amount of $436.05 for the excavation permit.
- Check in the amount of $200.24 for the traffic control plan.

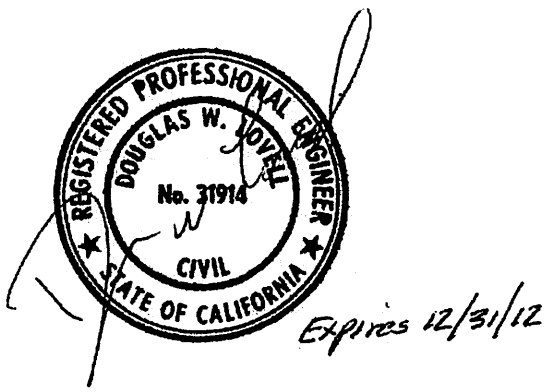
Please contact us with any questions or comments.

Sincerely,

STREAMBORN

Douglas W. Lovell, PE
Geoenvironmental Engineer

Attachments



250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, California 94612

EXCAVATION

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK **CIVIL ENGINEERING**

VALID FOR 90 DAYS FROM DATE OF ISSUANCE

PERMIT NUMBER		SITE ADDRESS
X1100772		2440 East Eleventh Street
APPROX START DATE	APPROX END DATE	24-HOUR EMERGENCY PHONE NUMBER
1 August 2011	1 August 2011	510-520-3146
CONTRACTOR'S LICENSE NUMBER AND CLASS		CITY BUSINESS TAX #
C-57 802334 802334		2649225

ATTENTION:

- State law requires that the contractor/owner call Underground Service Alert (USA) two working days before excavating. This permit is not valid unless applicant has secured an inquiry identification number issued by USA. The USA telephone number is 811. Underground Service Alert (USA) #: 233016 and 233024
- 48 hours prior to starting work, you must **call 510-238-3651** to schedule an inspection.
- 48 hours prior to re-paving, a compaction certificate is required (waived for approved slurry backfill).

OWNER/BUILDER

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec.7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to it's issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License Law Chapter 9 (commencing with Sec. 7000) of Division 3 of the Business and Professions Code, or that he is exempt there from and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than $500):

- ð I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended offered for sale (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale).
- ð I, as owner of the property, am exempt from the sale requirements of the above due to: (1) I am improving my principal place of residence or appurtenances thereto, (2) the work will be performed prior to sale, (3) I have resided in the residence for the 12 months prior to completion of the work, and (4) I have not claimed exemption in this subdivision on more that two structures more than once during any three-year period. (Sec. 7044, Business and Professions Code).
- ð I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractor's License law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law).
- ð I am exempt under Sec. _____, B&PC for this reason_____

WORKER'S COMPENSATION

I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3800, Lab C).

Policy # 22WBVLH8609 Company Name RSI Drilling

I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California (not required for work valued at one hundred dollars ($100) or less).

NOTICE TO APPLICANT

If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked. This permit is issued pursuant to all provisions of Title 12, Chapter 12.12 of the Oakland Municipal Code. It is granted upon the express condition that the permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street maintenance. The permittee shall, and by acceptance of the permit agrees to defend, indemnify, save and hold harmless the City, it officers and employees, from and against any and all suits, claims, or actions brought by any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property sustained or arising in the construction of the work performed under the permit or in consequence of permittee's failure to perform the obligations with respect to street maintenance. This permit is void 90 days from the date of issuance unless an extension is granted by the Director of the Office of Planning and Building.

I hereby affirm that I am licensed under provisions of Chapter 9 of Division 3 of the Business and Professions Code and my license is in full force and effect (if contractor), that I have read this permit and agree to its requirements, and that the above information is true and correct under penalty of law.

X Don Winglewich (Don Winglewich, Vice President, RSI Drilling) Date 18 July 2011

Signature of Permittee / Contractor

DATE STREET LAST RESURFACED	SPECIAL PAVING DETAIL REQUIRED ð YES ð NO	HOLIDAY RESTRICTION? (NOV 1 - JAN 1) ð YES ð NO	LIMITED OPERATION AREA? (7AM - 9AM & 4 PM - 6PM) ð YES ð NO

ISSUED BY	DATE ISSUED
	7/27/11

RSI DRILLING

RSIdrilling.com

City of Oakland
Permit Center
250 Frank H. Ogawa Plaza. 2nd Floor
Oakland CA 94612

18 July 2011

Designation of Streamborn/Douglas W. Lovell as Agent for Excavation Permit
Drill and Grout Borings for Soilgas Sampling
2440 East Eleventh Street
Oakland CA

To Whom It May Concern:

We designate Streamborn/Douglas W. Lovell as our agent for securing the excavation permit for this project.

Please contact us with any questions or comments.

Sincerely,

Don Winglewich
Vice President
Licensed CA Contractor - 802334

CITY OF OAKLAND

BUSINESS TAX CERTIFICATE

ACCOUNT NUMBER
2649225

The issuing of a Business Tax Certificate is for revenue purposes only. It does not relieve the taxpayer from the responsibility of complying with the requirements of any other agency of the City of Oakland and/or any other ordinance, law or regulation of the State of California, or any other governmental agency. The Business Tax Certificate expires on December 31st of each year. Per Section 5.04.190A, of the O.M.C. you are allowed a renewal grace period until March 1st the following year.

EXPIRATION DATE
12/31/2011

RSI DRILLING/RESONANT SONIC INTERNATIONAL INC

BUSINESS LOCATION: 220 N EAST ST
WOODLAND, CA 95776-5904

BUSINESS TYPE: H Construction Contractors

NAME: RESONANT SONIC INTERNATIONAL INC

MAILING ADDRESS: 220 N EAST ST
WOODLAND, CA 95776-5904

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 11/30/2010

PRODUCER (530) 668-2777
Armstrong & Associates Insurance Services
License # 0B50501
P.O. Box 1270
Woodland, CA 95776-1270

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED ResonantSonic International, Inc.
RSI Drilling
220 N. East Street
Woodland, CA 95776-

INSURERS AFFORDING COVERAGE NAIC #
INSURER A: Hartford Casualty Insurance Company
INSURER B:
INSURER C:
INSURER D:
INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
		GENERAL LIABILITY				EACH OCCURRENCE	$
		COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occurrence)	$
		CLAIMS MADE OCCUR				MED EXP (Any one person)	$
						PERSONAL & ADV INJURY	$
						GENERAL AGGREGATE	$
		GEN'L AGGREGATE LIMIT APPLIES PER: POLICY PRO- JECT LOC				PRODUCTS - COMP/OP AGG	$
		AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$
		ANY AUTO					
		ALL OWNED AUTOS				BODILY INJURY (Per person)	$
		SCHEDULED AUTOS					
		HIRED AUTOS				BODILY INJURY (Per accident)	$
		NON-OWNED AUTOS					
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
		ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
		EXCESS/UMBRELLA LIABILITY				EACH OCCURRENCE	$
		OCCUR CLAIMS MADE				AGGREGATE	$
							$
		DEDUCTIBLE					$
		RETENTION $					$
A		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	22WBVLH8609	12/1/2010	12/1/2011	X WC STATU- TORY LIMITS OTH- ER	
		ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED?				E.L. EACH ACCIDENT	$ 1,000,000
		(If yes, describe under SPECIAL PROVISIONS below)				E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
						E.L. DISEASE - POLICY LIMIT	$ 1,000,000
		OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Blanket Waiver of Subrogation hereby applies.

***Except 10 days notice of cancellation for non-payment of premium or non-report of payroll.**

CERTIFICATE HOLDER

Proof of Coverage

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

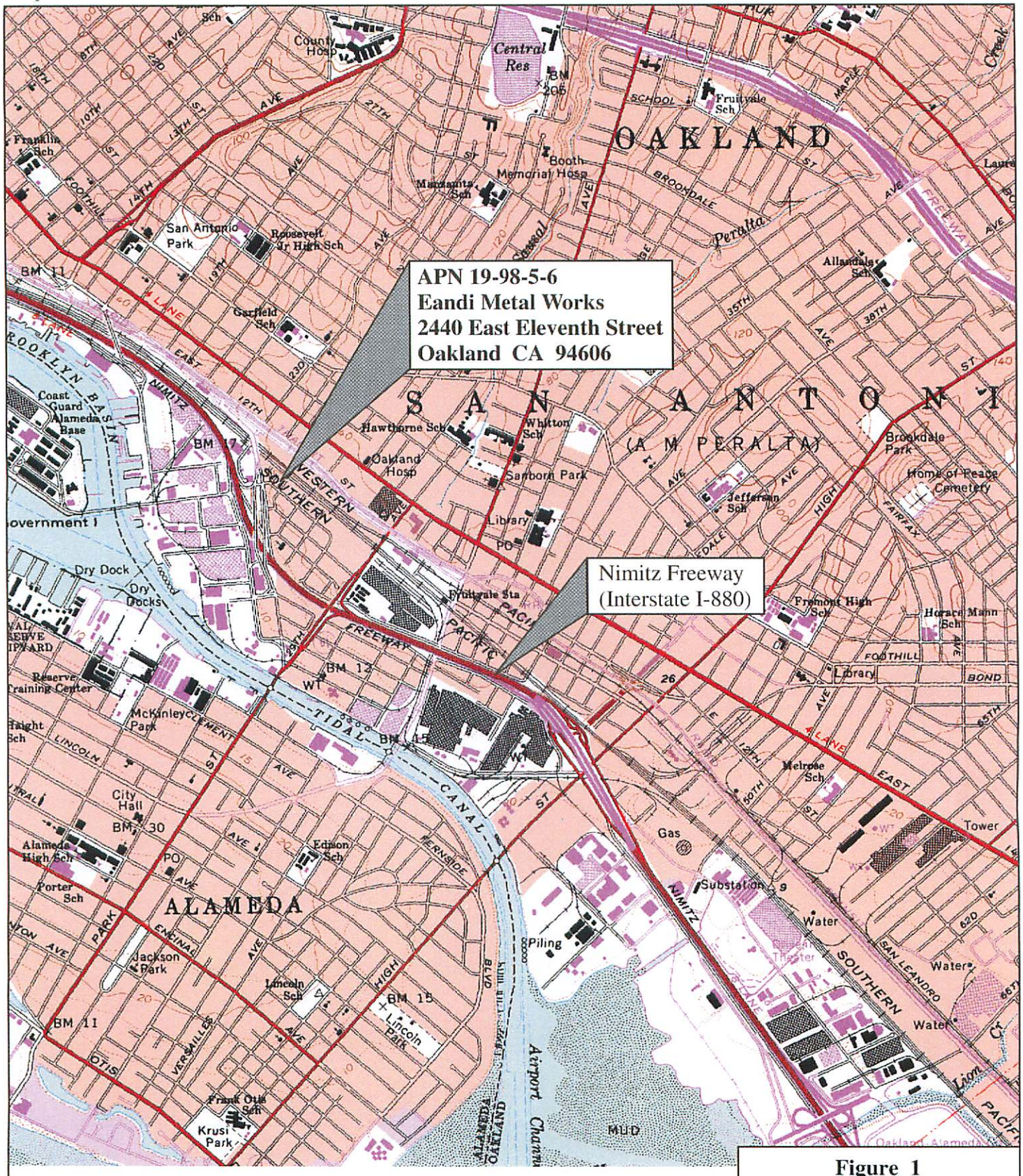
AUTHORIZED REPRESENTATIVE Martin Armstrong

Table 7

Requirements to Install the Soilgas Sampling Points

2440 East Eleventh Street
Oakland CA

Item	Requirement
Number of Sampling Points	• Three (SG1 through SG3).
Permanent of Temporary Sampling Points	• The sampling points will be temporary. The sampling points will be installed, sampled, and abandoned in the same day.
Rationale for the Selected Locations	• SG1 is proposed adjacent to well MW3 where the highest benzene and TPH-gasoline concentrations have been recently measured in groundwater. SG1 is proposed approximately 8 feet outside of an occupied building (2440 East Eleventh Street). • SG2 is proposed adjacent to well MW5 where the second highest benzene and TPH-gasoline concentrations have been recently measured in groundwater. SG2 is proposed approximately 8 feet outside of an occupied building (976 23rd Avenue). • SG3 is proposed immediately downgradient of the former 1,000-gallon underground gasoline tank - where the former fuel hydrocarbon release occurred. SG3 is proposed at the specific request of Alameda County Environmental Health in order to evaluate vadose zone contamination at the source of the release. SG3 is proposed approximately 8 feet outside of an occupied building (2440 East Eleventh Street).
Prior to Drilling	• Depth to water will be measured in the nearby wells MW-1, MW-3, and MW-5 prior to installation of the soilgas sampling points.
Drill Rig	• A direct-push drill rig will be used to install the soilgas sampling points.
Soilgas Sampling Implant	• SVPT91 polypropylene implant (available from Environmental Service Products, www.envservprod.com).
Tubing	• 3/16-inch inside diameter, 1/4-inch outside diameter, Teflon.
Screened - Sandpack - Sample Interval	• The "screened" interval - sandpack interval - sampling interval, will extend from ±5.0-6.5 feet, with the implant installed at a depth of ±5.75 feet (in the middle of interval).
Implant Installation	• An uncased borehole to a depth of ±6.5 feet is not expected to remain open at this site. The drill rod will serve as the casing for constructing the soilgas sampling points. • A 2.375-inch outside diameter expendable tip (steel drive point) will be fitted to the base of ±2.25-inch outside diameter drill rod. • The drill rod (with expendable tip) will be pushed to a depth of ±6.5 feet. • The drill rods will be lifted (backed out) ±0.5 feet. The inside of the drill rods will be sounded to verify that the expendable tip has been released from the end of the drill rods and embedded in the soil. • Sand will be poured through the inside of the drill rods while the drill rods are simultaneously lifted, producing a plug of sandpack ±0.75 feet in vertical thickness. • A 1-inch diameter PVC pipe will be lowered inside the drill rods and the soilgas implant (with Teflon tubing attached) will be lowered inside the PVC pipe. A small amount of sand will be poured inside the drill rods to hold the implant in place. The PVC pipe will be removed. • Sand will be poured through the inside of the drill rods while the drill rods are simultaneously lifted, producing another plug of sandpack ±0.75 feet in vertical thickness.
Dry Bentonite Layer	• Dry granular bentonite will be poured through the inside of the drill rods while the drill rods are simultaneously lifted, producing a plug of dry bentonite ±0.5 feet in vertical thickness.
Hydrated Bentonite Seal	• Dry granular bentonite will be poured through the inside of the drill rods while the drill rods are simultaneously lifted, producing a layer of dry bentonite ±1 foot in vertical thickness. • ±1.5 pints of water will be poured through the inside of the drill rods. • The bentonite will be allowed to hydrate for 3 minutes. • This process will be repeated until hydrated bentonite has been placed even with the ground surface.
Abandon - Decommission	• Teflon tubing will be pulled from the borehole. • Using either a hand auger or the direct-push drill rig, the boring will be re-drilled to a depth of ±5 feet and the tubing and bentonite will be removed. • Neat cement grout (94 pounds cement, 6 gallons water) will be placed to a depth of 1.5 feet. • The remained of the borehole will be backfilled with concrete.
Decontamination	• Wash downhole equipment between locations. Wash with soap (Alconox or similar), rinse with tap water, and rinse with distilled water.
Investigation-Derived Waste	• Place waste hydrated bentonite inside plastic trash bags. Dispose of waste hydrated bentonite as municipal waste. • Decontamination wastewater may be discharged to the sanitary sewer.



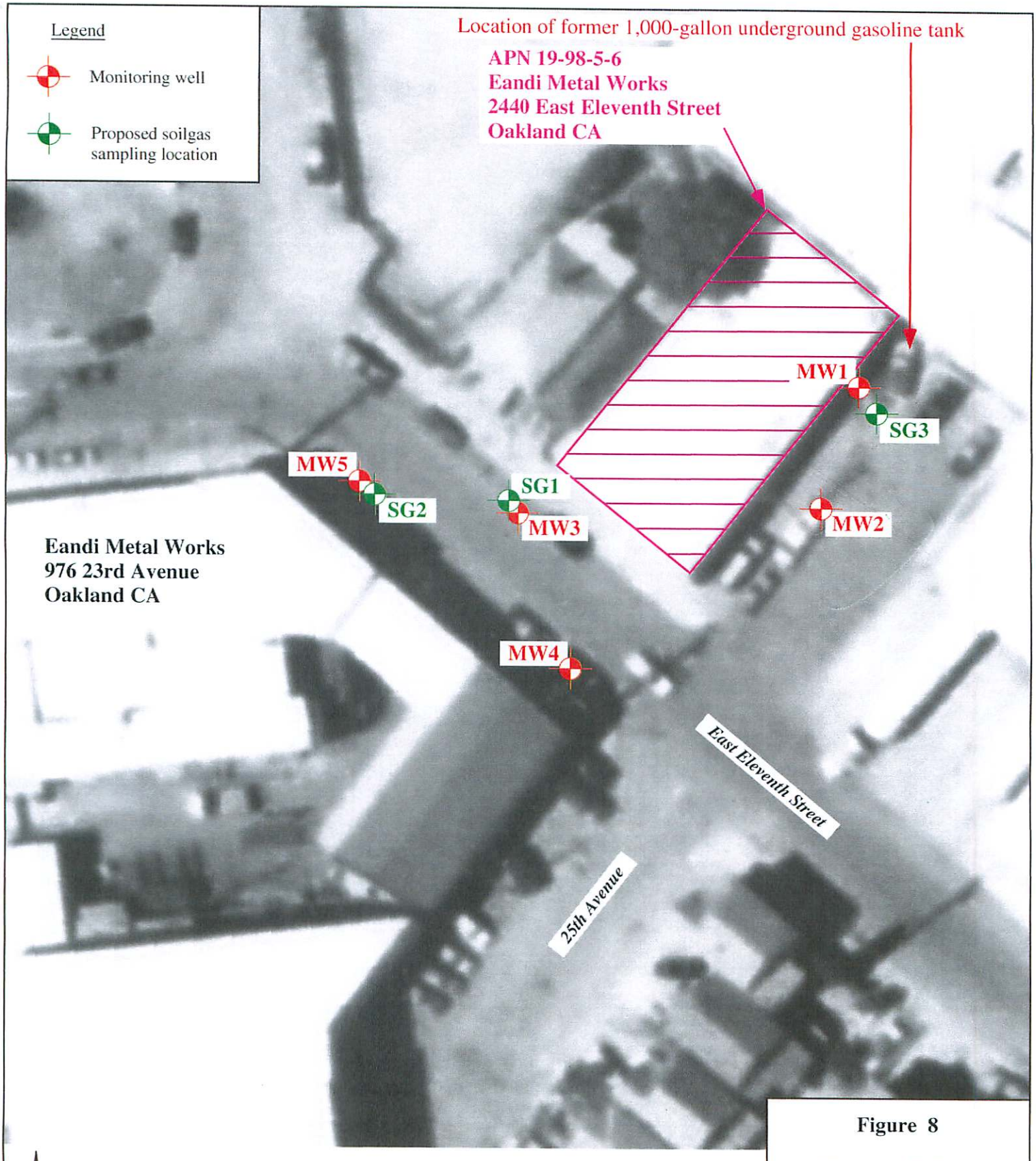
Basemap: U.S. Geological Survey, 7.5 Minute Quadrangle, Oakland East CA. 1959 (Photorevised 1980)

Figure 1

Location Map

2440 East Eleventh Street
Oakland CA

STREAMBORN



Basemap: Aerial photograph, flown 24 August 1998, photograph number ALA-AV-6100-11-38, original scale 1:12,000. Pacific Aerial Surveys, Oakland CA

Figure 8

Proposed Soilgas Sampling Locations

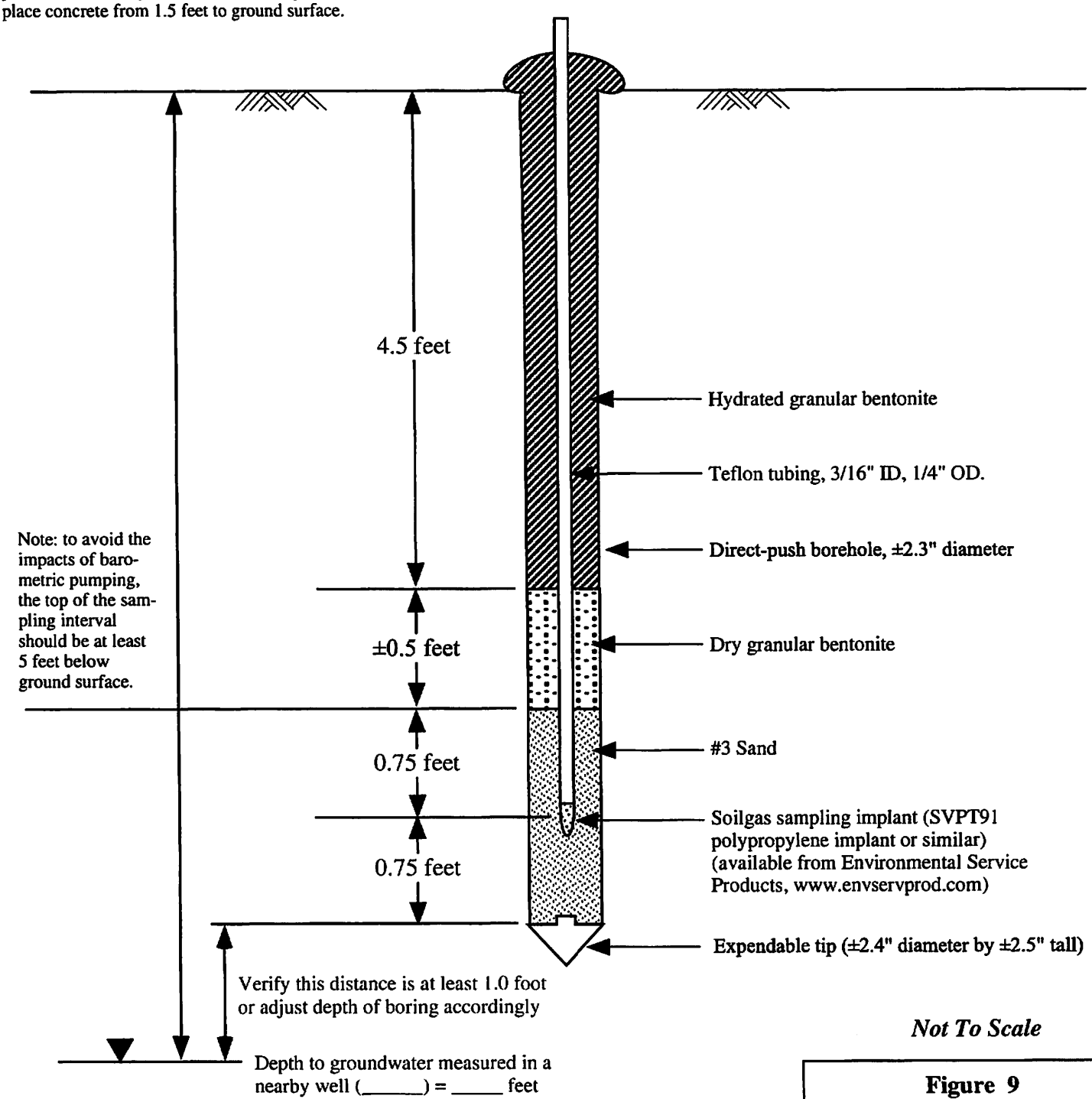
2440 East Eleventh Street Oakland CA

STREAMBORN

GPS Coordinates N_____
W_____

Start Drilling _____
Complete Borehole Construction _____
Driller _____

Abandon/Decommission: Extract (pull) tubing, re-drill to ±5 feet and remove bentonite, place neat cement grout (94 pounds cement, 6 gallons water) to a depth of 1.5 feet, place concrete from 1.5 feet to ground surface.



Not To Scale

Figure 9

Schematic of the Temporary Soilgas Sampling Points

2440 East Eleventh Street Oakland CAA

Measurements referenced from ground surface.

STREAMBORN

APPLICATION FOR TRAFFIC CONTROL PLAN

City of Oakland

Public Works Agency
Transportation Services Division

Requests may be faxed to (510) 238-7415
Please Print. All items **MUST** be completed.
Incomplete applications will be returned.

Transportation Services Fee: $100/hour

Contact Person: **Douglas W. Lovell** Phone: **510-528-4234**

Name of Company: **Streamborn** Fax: **510-528-2613**

Address of Company: **PO Box 8330, Berkeley CA 94707** **Site Name = 2440 East Eleventh St.**

Describe type of work to be performed: **Drill 3 borings to a depth of 6.5 feet. At each location, 2 parking spaces will be occupied (6 spaces total). The parking is not metered. Work will be completed in one day.**

Location of work: **East Eleventh St** Between* **Miller Ave** And* **25th Ave**

Location of work: **25th Ave** Between* **East Eleventh St** And* **Dead end of 25th Ave**

Work date (s): **1 August 2011** ☒ Mon-Fri ☐ Sat-Sun Work Hours: **8 am** to **5 pm**

Please Follow these Steps in Order to Complete a Traffic Control Plan:

a. **Drawing Area**: The full width of all streets adjacent to the site MUST be included in the drawing. Include the entire block in which your work is located for every street that is adjacent to your site.

b. **Include Street Names, Direction of One Way Streets and North Arrow**

c. **Show Existing Number of Lanes in all Directions** (with any pavement arrows)

d. **Does Your Work Include:**
☐ Lane Closures ☐ Side Walk Closures ☐ Use of a Median
☐ Street Closures (if yes include detour plan) ☒ Use of parking lane
All checked items MUST be shown on the drawing

e. **Show Dimensions** of street widths (curb to curb), lane widths, and sidewalk widths

f. **Show the Name and Locations** of all advanced warning devices, flaggers, delineators, warning and construction signs to be used.

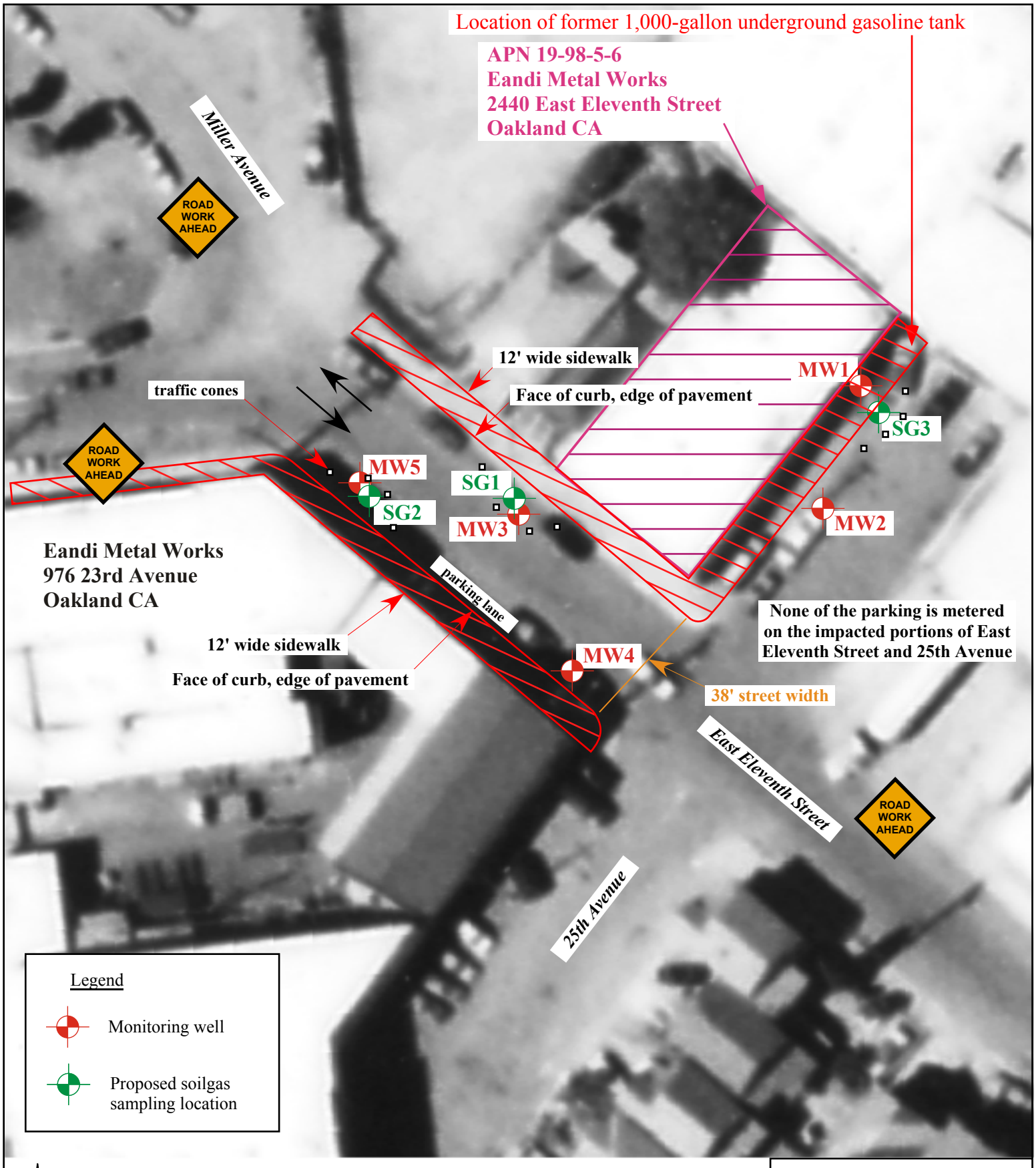
Note: Processing Time for Applications is a minimum of 5 working days. The day the application must be picked up please call ahead of time for confirmation. Buisnesses and Residences adjacent to the work area must be provided 72 hour advanced notice.

RENEWALS: edit and fax your old approved plan

FOR HELP in constructing a traffic control plan please refer to the "WATCH" hand book or chapter 5 of the MUTCD manual available online at: http://www.dot.ca.gov/hq/traffops/signtech/signdel/chp5/chap5.htm

For our Website: http://www.oaklandpw.com/transportation/traffic_control_plan.htm

* Name the streets that are the boundaries of your work area.



Basemap: Aerial photograph, flown 24 August 1998, photograph number ALA-AV-6100-11-38, original scale 1:12,000. Pacific Aerial Surveys, Oakland CA

Traffic Control Plan for Drilling

2440 East Eleventh Street Oakland CA

STREAMBORN

ATTACHMENT 4

Standard Operating Procedure for Soilgas Sampling

STREAMBORN

Table of Content

Figures & Diagrams

Introduction

Sampling soil gas wells using Helium leak tracer is not inherently difficult using C&T's equipment, it is relatively unforgiving of mistakes. The equipment has been field tested and through these tests we've learned that good results necessitate reviewing this document and following the procedures specified here. We strongly encourage practicing set-up, Helium charging the shroud, using the detectors, and breakdown. We've seen a very strong correlation between a thorough equipment orientation and successful sampling events. User errors related to a lack of orientation and preparation are the primary root cause of sampling errors and equipment failures.

The equipment supplied by C&T has been critically cleaned, assembled, and leak tested using both pressurized Helium and vacuum decay methods. The preparation of all sampling equipment and media has been thoroughly documented.

If you suspect the sampling equipment is damaged or not functional, before using it please inform your project manager by calling the lab at 510-486-0900. Used and returned damaged equipment will be assessed cost for repair and replacement. Please do not disassemble and reassemble sampling trains and shrouds. They have been critically cleaned, assembled and leak checked for your use without further need for alteration. By breaking connections in sampling trains, users invalidate the lab's cleaning and prep effort.

Use of and Care for the C&T Helium Detectors

When used properly, C&T's diffusion cell He sensors provide real time measurement of Helium concentration in air from 1% to 99% Helium to accuracies of 0.1%. Prior to delivery, C&T He sensors are calibrated and performance verified. If, upon initial check, you discover the He gauge is apparently not working properly, call your C&T project manager immediately; repair and replacement costs will be assessed for all sensors returned damaged to the lab.

Figure 1: Diffusion Cell (left) and flow through cell (right) Helium Detectors

Battery Charges last 4 hours: Helium Detectors using rechargeable NiCd batteries are fully charged before leaving the lab and hold a charge for 4 hours of use. Turn detectors on for use and off immediately after use and you'll make it through a day's sampling event without losing charge. The lab does not supply rechargers to users because the Diffusion and Flow through types use employ different voltages, using the wrong charger damages the detectors.

3 position switch: **On** is up, **Off** is neutral and down.

Required use technique for accurate Helium tracer measurements: These He sensors are sufficiently durable for portable field use; however they are precision measurement devices unforgiving of mistreatment or abuse, accordingly;

- Keep the He sensor clean at all times, particularly around the white diffusion membrane cell opening. Dirt on, or in the diffusion cell well will compromise calibration and result in extra fees for cleaning and recalibration.
- The C&T He sensors are shock sensitive. Dropping the gauges onto a hard surface from a height of 2' or more can compromise calibration and may irreversibly damage the sensor and cause replacement or maintenance cost assessments. Please store and transport the gauges in the foam lined box provided.
- Helium detectors are moisture sensitive, don't get them wet

Accepting C&T He sensors binds your firm to the following conditions of use.
Replacement costs are $900 + applicable shipping costs and sales tax. Minimum diagnostic, recalibration, and maintenance charges for damaged sensors are $120.

1.0 Setting Up

Equipment: The following equipment should be present in the supply kit provided from the lab:

1) Integral shroud box and sampling train with 3 port valve
2) Helium supply components a) Helium bottle(s) (one bottle supplies enough for 4 wells), b) Braided steel Helium transfer tube with male QT connectors and; 3) Helium supply regulator with female QT connector
3) Helium Detector: Diffusion cell type (4 hours use on one charge)
4) Helium Detector: Flow through type (4 hours use on one charge)
5) Male QT ¼" OD Teflon tubing connector for connecting in port on flow through Helium detector to Purge port on Shroud
6) QT Vacuum gauge
7) 1.4 liter Sample canisters, one for each sample to be taken, some users request an extra to cover any aborted sampling events, well relocations etc…
8) Graphite or Ceramic ferules for joining ¼" OD Teflon tubing to well, one provided in each shroud/train inside the nut in the open port of the 3 port valve used to connect the soil gas well to the train.

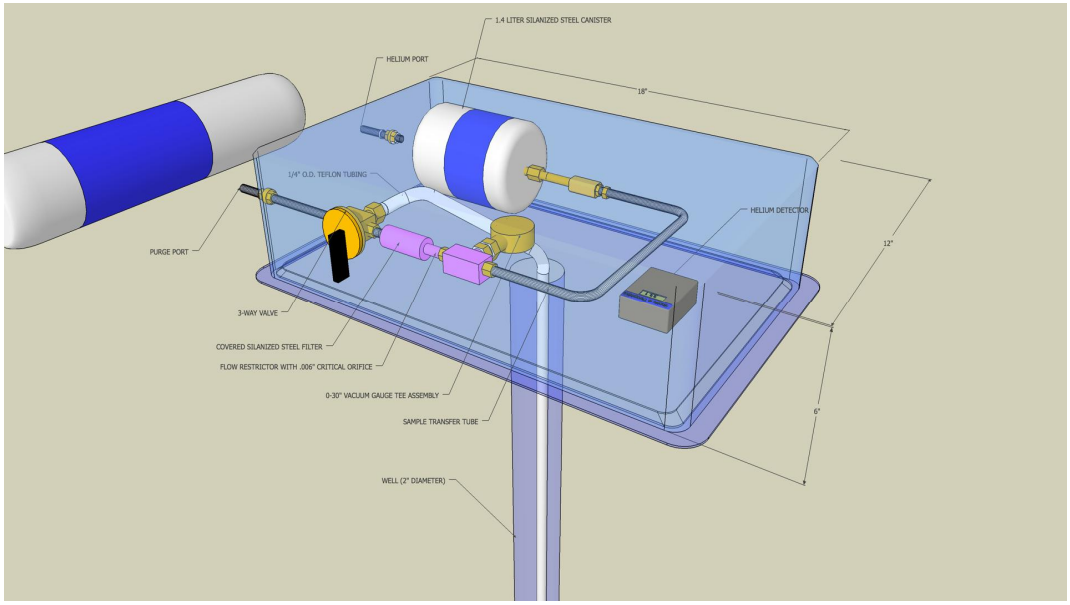
Equipment not Supplied by C&T: You will need the following items to complete your work; these items are not supplied by C&T unless specially requested:

1) Well purge suction source, alternatives available from the lab are: a) 50 ml disposable syringe with tubing adapters, b) evacuated 6 liter summa canister with 180 ml/min flow restrictor and filter, c) battery powered vacuum pump, d) 110V VAC powered vacuum pump
2) ½" x 9/16" open end combination wrench and one small crescent wrench. These are the tools needed to make compression fitting connections. C&T does not rent wrenches.
3) Extra Graphite or ceramic ferules as needed to insure you make a good well to train connection
4) ¼ OD Teflon tubing…Typically the well drillers have a lot of this stuff, if you need it
5) Knife (for cutting Teflon tubing)

Position the shroud lid over the well. Consistent Helium concentrations arise when the shrouds are used with the wellhead box lids provided. Some user protocols specify no box lid, in these cases, piling dirt around the edges of the box works to keep Helium inside the shroud. On windy days, a plastic windscreen employed either as a cover over the shroud or as an "air dam" has provided good results. We've experimented with using yoga mat material as "gaskets" for subslab sampling with mixed results.

If you're using the lid, and we recommend you do, position the lid over the wellhead with the tubing arising through the hole in the lid. There is an audible snap when the lid is optimally attached.

Figure 2: Helium Tracer Shroud Components



Once the shroud lid is positioned over the well, check that the 3 way valve is in the ***off*** position and the train pressure gauge showing a vacuum. This is your indication that the train is leak free since leaving the lab and all you need do is make a tight connection from the well to the open port on the 3 way valve. If the 3 way valve is not in the ***off*** position as a result of some error in shipment, there may be no

vacuum on the gauge. At this point, your sampling protocols will determine whether the train can be used or not.

All trains leave the lab holding vacuum with decay rates less than 5" in 12 hours. Many shroud trains have inconsequentially slow leaks; trains are stored more than 3 days since being shipped from the lab may have no vacuum showing on the gauge. In these cases, you can check the vacuum decay rate by connecting an extra canister to the train and observing the vacuum decay rate.

2.0 Connecting the Well to the Train 3-port valve

To connect the soil gas well to the sampling train, you will be joining ¼" Teflon tubing to the 3 port valve. Either a ceramic or graphite ferule has been provided inside the nut on the open port of the 3 port valve for you to make this connection. The most important component in a compression fitting is the ferrule, which is prone to damage. Care should be used when installing it although if ceramic or graphite ferules become defective, it is easy to install a replacement.

A "straight" even tubing end in the ¼" OD Teflon tubing from the well to the 3 port valve is important to making a "tight" connection. Use a knife rather than scissors to cut the tubing at a 90 degree angle to the tube axis. Remove any "burrs" or irregularities in the tubing end before attempting the connection. Slip the nut over the tubing, then the ferule. The ferule should "point" toward the 3-port valve. Usually, it is not possible to install ferules "backwards".

Keeping the 3 way valve in the ***off*** position, attach the well tubing to the open 3 way valve port. Avoid excessive force when tightening the nut. If the nut is over-tightened, the ceramic or graphite ferrule frequently deforms improperly causing the joint to fail. Over-tightening is the most common cause of leaks in compression fittings. A good way to make these connections is to tighten the nut first by hand until it is too difficult to continue and then tightened the nut a full 360 degree turn with a 9/16" open end wrench; no more than a 1 and 1/4 turn should be needed to create a leak tight connection.

3.0 Attaching the Sample Canister to the Train

Check the vacuum in the sample canister using the QT Vacuum gauge, it should read -30" of Hg (full vacuum) if it reads less, use another sample canister. While keeping the 3 way valve in the ***off*** position, attach the canister to the female QT fitting at the rear of the sampling train as follows:

Pull the external sleeve of the female QT connector back to its stop, insert the male valve stem and allow the sleeve to return to its spring loaded position. When the QT connection is made the canister (male) valve is open to the train. Try to pull the canister off the train without retracting the female QT sleeve. A correctly made QT connection cannot be broken without retracting the sleeve on the female valve stem.

A word about Micro QT Fittings: Micro Quick connect valves (QT) offer superior performance and ease of use compared to alternative tubing connections and valves. QT fittings provide highly reliable leak free connections without tools especially for fittings that are made and broken frequently.

Fine sand and/or grit (such as dry bentonite) damages male and female QT valves and connections. Keep both male and female QT valve components scrupulously clean. Please use the orange or red plastic caps provided for the male QT fittings, they protect the valve stem while shipping and protect your sample during return shipment to the lab.

When removing or replacing orange plastic protective caps on the male QT fittings, push them straight on and pull then straight off the valve stem. Twisting the cap counterclockwise while removing or replacing on the valve stem can dissemble the valve stem causing vacuum and/or sample loss.

4.0 Positioning the Shroud over the Well

Position the diffusion Helium gauge out of the way on a portion of the lid that allows you a good view of the display with the shroud in place. Then invert the shroud assembly over the lid and snap lid into position.

With the shroud assembled in place, you should be able to view the vacuum gauge well enough to verify that vacuum is holding and you can see the Helium detector display. Our apologies for the opaque portions of the boxes, if you know of hard plastic boxes, with clear panels we'd love to learn about them.

5.0 Charging the Shroud with Helium

C&T provides Aluminum lecture bottles filled with 300 psi Helium; each bottle of Helium contains 48 liters at atmospheric pressure, enough to easily supply 20% Helium atmospheres to 6 single Shrouds and 3 double shrouds. The amount of Helium used depends predominantly on wind and time required to sample the well, with experience, you'll use less Helium. Your protocol will specify the Helium concentration in the shroud. The following guidance is based on sampling under a 20-25% Helium in air atmosphere. Regardless of your target helium concentration, your objective should be to maintain a steady concentration of Helium during the sampling event at levels above 10% Helium in air.

Locate and assemble the Lecture bottle, Helium transfer line, and the gas supply regulator. Tighten the brass nut attaching the regulator to the bottle one half turn past finger tight with a crescent or 9/16" open end wrench. The regulator is preset to deliver Helium at ideal pressure; ***you need not adjust the regulator***. Add Helium to the shroud by opening and closing the valve at the top of the bottle. Attach the Helium transfer line using the QT fittings at the regulator and at the Helium port on the shroud.

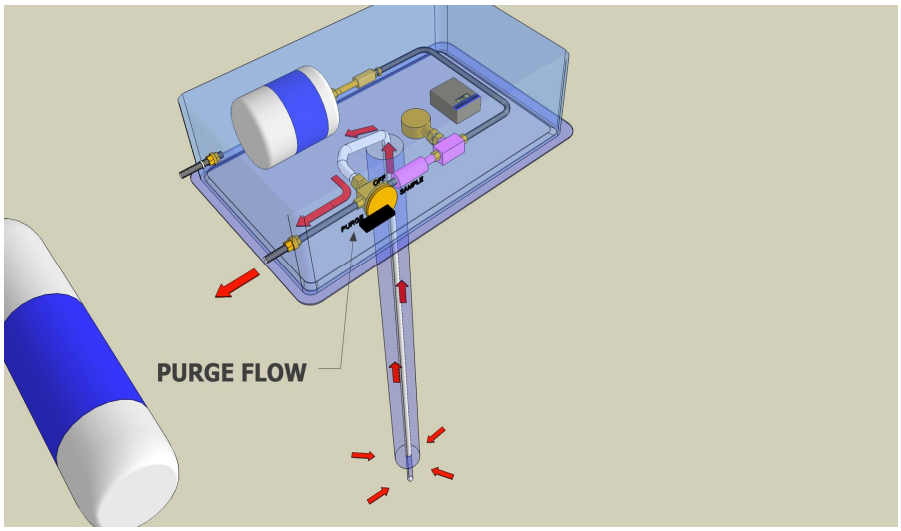
To provide Helium flow, slowly open the lecture bottle valve by twisting ***counterclockwise*** about ¼ turn.

Deliver 10 lbs of Helium at a time to the ***single*** shroud and 20 lbs to the ***double***. The diffusion cell Helium detector will respond in about 30 seconds to the new concentration. Unstable Helium detector readings reflect turbulent gas mixing inside the shroud. Plug holes between the shroud and the surface, use plastic sheeting to create an "air dam" or take other measures to air movement around the shroud and thus turbulence inside the shroud.

Monitor the Helium concentration displayed on the gauge in the shroud for about a minute in single shrouds, 90 seconds or longer in doubles. Under ideal conditions, 40 psi from the bottle will charge a

single shroud to 25% helium concentration; double shrouds will require 80 psi. 25% Helium concentrations are maintained in the lab (zero wind) for 6-10 minutes. You may add more helium while purging and sampling. We suggest 10 psi increments for singles and 20 psi for doubles by opening the lecture bottle valve ¼ turn. We suggest users record/document the Helium concentration in the shroud at a minimum of 2 minute intervals during sampling.

Figure 3: Purge Flow Diagram



6.0 Purge Testing the Well under Helium

This test will help you establish the integrity of the well and the train to well connection. If no Helium is detected in the purge gas flow using this technique, one can assume the well is tight to breakthrough, and the train connections are all tight, and thus there will be no Helium detected in the sample that goes to the lab.

While getting the Helium concentration established, assemble the well purge train. Place the inline Helium detector between the shroud and whatever device (evacuated canister, syringe, or vacuum pump) that you're using to provide purge suction.

With the Helium atmosphere established in the shroud at 20% or more, and the purge system ready to operate, begin purging by moving the 3 way valve selector position to ***Purge*** and then establishing suction on the purge line.

Observe the inline Helium detector display while applying suction on the purge line. If you've purged enough vapors from the well to represent the entire volume of the path from the surface (under Helium atmosphere) to the distal end of the sampling tube and back up the tube and through the detector without detecting any Helium, your well shows signs of integrity and you may have a good leak free sample.

CA-DTSC guidance provides the opinion that a 5% ambient air dilution is inconsequential to sample integrity. When sampling under a 20% Helium in air atmosphere, 1% Helium detected in the purge gas represents a 5% ambient air sample dilution.

7.0 Sampling the Well under Helium

After you've completed purging the well, verify the reading on the Vacuum gauge of the train is -30 inches and that you have a steady state concentration of Helium between 20-25%, and then begin sampling by moving the 3 way selector valve to the ***Sample*** position.

Monitor the Helium concentration in the shroud by recording the reading on the diffusion cell detector inside the shroud every other minute or so. Add Helium from the bottle as needed to maintain a steady state concentration of Helium under the shroud.

Figure 4: Sampling Flow Diagram

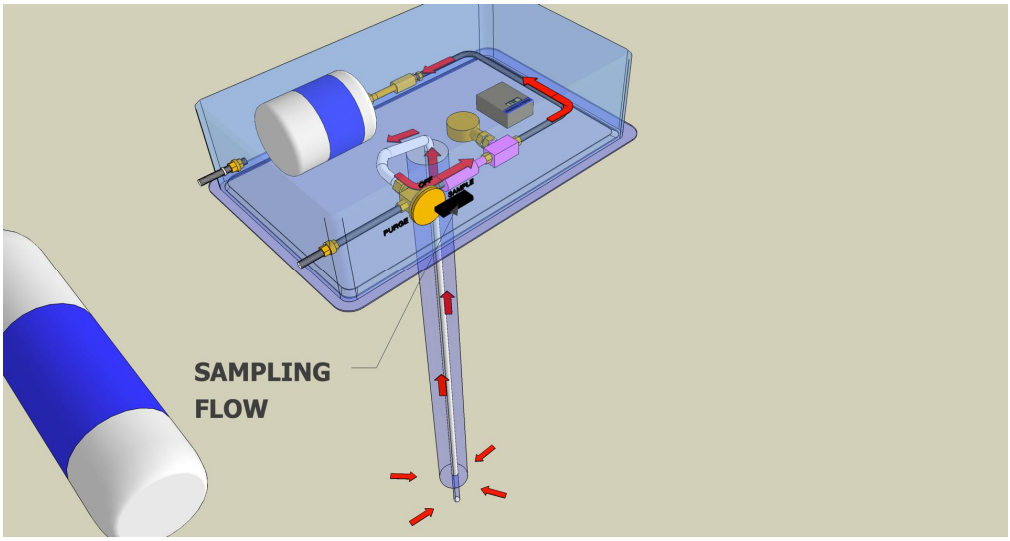


Figure 5**: Dual Depth Well Sampling Shroud**