October 23, 2007

VIA ALAMEDA COUNTY FTP SITE

Ms. Donna Drogos
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Soil Gas Sampling and Well Installation Report**
Former Exxon Station
5175 Broadway Street
Oakland, California
ACEH Fuel Leak Case No. RO0000139

Dear Ms. Drogos:

On behalf of Rockridge Heights, LLC, Pangea Environmental Services, Inc. has prepared this *Soil Gas Sampling and Well Installation Report* for the subject site. This report describes offsite subslab gas sampling, onsite and offsite soil gas sampling, and the installation of three offsite monitoring wells.

If you have any questions or comments, please call me at (510) 435-8664 or email briddell@pangeaenv.com.

Sincerely,
Pangea Environmental Services, Inc.

Bob Clark-Riddell, P.E.
Principal Engineer

Attachment: *Soil Gas Sampling and Well Installation Report*

cc: Rockridge Heights, LLC, C/O Gary Feiner, 34 Schooner Hill, Oakland, California 94618
Vera Stanovich, 1956 Stratton Circle, Walnut Creek, California 94598
SWRCB Geotracker (Electronic copy)

SOIL GAS SAMPLING AND WELL INSTALLATION REPORT

Former Exxon Station
5175 Broadway
Oakland, California

October 23, 2007

Prepared for:

Rockridge Heights, LLC
C/O Gary Feiner
34 Schooner Hill
Oakland, California 94618

Prepared by:

Pangea Environmental Services, Inc.
1710 Franklin Street, Suite 200
Oakland, California 94612

Written by:

REGISTERED PROFESSIONAL ENGINEER
ROBERT G. CLARK-RIDDELL
No. C 049629
Exp. SEPT 2008
CIVIL
STATE OF CALIFORNIA

David S. Diamond, Ph.D., C.Hg.
Senior Hydrogeologist

Bob Clark-Riddell, P.E.
Principal Engineer

INTRODUCTION

On behalf of Rockridge Heights, LLC, Pangea Environmental Services, Inc. (Pangea) prepared this *Soil Gas Sampling and Well Installation Report* (report) for the subject site. The scope of work was outlined in Pangea's *Addendum to Preliminary Results of Site Characterization: Proposed Additional Activities* (Addendum) dated November 8, 2006. The well locations proposed in the Addendum were modified in Pangea's *Site Investigation Report* dated July 17, 2007. Two subslab sampling locations were added to the original scope of work, which included three soil gas sampling locations, to further evaluate the potential risk from volatilization of hydrocarbon vapors from the subsurface into indoor air of nearby buildings. The purpose of the offsite well installation is to determine the extent of contaminant migration in the downgradient direction, and to help evaluate the downgradient effects of any future remediation conducted onsite. The site background, soil gas sampling, monitoring well installation, and our conclusions and recommendations are described below.

SITE BACKGROUND

Site Location and Description

The subject property is located at 5175 Broadway Street, at the southwest corner of the intersection of Broadway and Coronado Avenue in Oakland, California in Alameda County (Figure 1). The site is approximately 0.6 miles south-southeast of Highway 24 and approximately 2.3 miles east of Interstate 80 and the San Francisco Bay. The property is relatively flat lying, with a slight slope to the south-southwest, and lies at an elevation of approximately 160 feet above mean sea level. Topographic relief in the area surrounding the site also slopes generally towards the south-southwest. The western site boundary is the top of an approximately 10 foot high retaining wall that separates the site from an adjacent apartment complex.

The property has been vacant since 1979 and was formerly occupied by an Exxon Service Station used for fuel sales and automobile repair. The site is approximately 13,200 square feet in area with about 10% of the area occupied by a vacant station/garage structure. The majority of the ground surface is paved with concrete and/or asphalt. Land use to the west and northwest is residential, including apartment buildings and single family homes. Properties to the northeast, east and south of the site are commercial. The site and adjacent properties are shown on Figure 2.

Summary of Previous Environmental Investigations

Environmental compliance work commenced when three 8,000-gallon steel single-walled USTs, associated piping, and a 500-gallon steel single-walled waste oil tank were removed in January 1990. Tank Protect Engineering, Inc. (TPE) conducted the tank removal and observed holes in all four tanks. Groundwater was reportedly observed to stabilize in the UST excavation between 10.5 and 11 feet bgs. Approximately 700 tons of contaminated soil was excavated during tank removal and was subsequently remediated and reused for onsite backfill by TPE. In April 1990, TPE installed and sampled monitoring wells MW-1, MW-2 and MW-3. In June 1991, Soil Tech Engineering (STE), subsequently renamed Environmental Soil Tech Consultants (ESTC), installed monitoring wells STMW-4 and STMW-5. Groundwater monitoring was conducted on the site intermittently until October 2002. Golden Gate Tank Removal (GGTR) performed additional assessment in January and February 2006, including collection of soil and/or groundwater samples from ten onsite soil borings. In June 2006, the property was purchased by Rockridge Heights, LLC. Pangea commenced quarterly groundwater monitoring at the site in July 2006. Additional assessment was performed by Pangea in January, March and April 2007, including the destruction of four monitoring wells and installation of twelve new wells to help define the vertical and lateral extent of groundwater contamination. In April 2007, Pangea conducted a dual phase extraction/air sparging test (DPE/AS) to evaluate potentially applicable remedial alternatives for remediating residual site contaminants. Details of the additional assessment are included in Pangea's *Site Investigation Report* dated July 17, 2007, while the DPE/AS testing findings are reported in Pangea's *Feasibility Test Report and Interim Remedial Action Plan* (IRAP) dated July 20, 2007.

SOIL GAS SAMPLING

To evaluate shallow subsurface gas conditions near and beneath offsite buildings, Pangea conducted soil gas sampling from five temporary probe locations on September 12, 2007. The sampling locations, shown on Figure 2, included three shallow soil gas locations (SG-1 through SG-3) and two subslab gas locations (SS-1 and SS-2). Sample depth intervals and soil gas analytical results are summarized on Table 1. The sampling procedures are described below.

Temporary soil gas probe (SGP) SG-2 was installed adjacent to the eastern side of the apartment building (5230 Coronado Avenue), west of the site near impacted onsite well MW-8A. SGPs SG-1 and SG-3 were installed immediately north and south, respectively, of the commercial building located south of the site at 5151 Broadway (Figure 3). The subslab gas probe (SS) sampling locations were located inside the commercial building at 5151 Broadway on the northern side of the building near impacted onsite wells MW-7B and MW-7C (Figure 3). All of the SGP and SS locations were downgradient of the source as the shallow groundwater appears to have mounded in the former UST excavation, and the apparent gradient radiates outwards towards the east, south and west as shown on Figure 4.

To prepare for the soil gas sampling, access agreements were obtained from the owners of the offsite private properties to allow site assessment activity. The proposed SGP locations were marked and Underground Service Alert was notified of Pangea's Site activities to identify utilities in the Site vicinity at least 48 hours prior to field activities. Drilling permits were obtained from Alameda County Public Works Agency (ACPWA) (Appendix A) and a site safety plan (SSP) was prepared to protect site workers. Fieldwork was performed by Pangea staff scientists Greg Bentley and Stewart Dalie under the supervision of Bob Clark-Riddell, a California Registered Professional Civil Engineer.

The subslab/soil gas sampling was conducted in general accordance with procedures described in Pangea's Standard Operating Procedures (SOPs) for Subslab and Soil Gas Sampling (Appendix B). The overall procedure involved using a rotohammer and solid extensions to drill a hole to approximately 4 ft depth (SGP-1 and SGP-2), 2.7 ft depth (SGP-3) and 0.7 ft depth (SS-1 and SS-2), removing the extensions and installing the hollow extensions with new sample tubing and sampling tip, pulling the sample tip open 2 inches to expose the subsurface formation, removing the hollow extensions, placing approximately 2 inches of sand around the sample tip and a bentonite seal from the top of the sand to the surface. The sample tubing was then sealed with a swagelock fitting and the temporary sample points were left overnight to equilibrate. Note that Pangea used a sampling tip for the subslab probes instead of the drilling void described in Pangea's SOP. The use of a sampling tip allowed subslab sample probe construction to be similar to soil gas sampling point construction.

Pangea installed the sample probes with an AMS gas vapor probe kit and collected soil gas samples using laboratory-supplied equipment. K-Prime provided sampling assemblies and certified Summa canisters for sampling and purging. The Summa canisters were supplied under a vacuum of approximately 30 inches of mercury. The day after probe installation, and prior to sample collection from the probes, vacuum/leak tests were conducted on the sampling assembly with a purging Summa canister. The vacuum/leak tests confirmed no leakage and maintained the initial vacuum in the sampling manifold system. After a minimum of 10 minutes of vacuum/leak testing, the purging Summa canister was opened to purge the manifold/probe assembly. Upon completion of purging of approximately five times the ambient volume of air in the assembly/probe, the sampling Summa canister was opened for sample collection. The pre-set valve regulated the vapor flow to approximately 150 to 200 milliliters of air per minute. After approximately 35 or more minutes, the vacuum within the Summa canisters decreased to below 5 inches of mercury but not below 1 inch of mercury and the canister valve was closed.

To further evaluate potential leakage within the sampling system, an air tight leak-check enclosure was placed over the sampling point and sampling assembly (summa canisters and manifold). Isopropyl alcohol was applied to gauze placed inside the leak-check enclosure along with an additional leak-check summa canister for collection of air from within the enclosure, facilitating comparison to any isopropyl alcohol concentrations detected in the sampling summa canister. The air flow regulators for the sample and leak check summa canisters were calibrated and set identically. Additionally, the enclosure was monitored for isopropyl alcohol

with a photo ionization detector (PID) to ensure that there was a sufficient concentration of isopropyl alcohol in the air inside the enclosure. After sample collection, SGP locations SG-1 through SG-3 were drilled out and filled with neat cement, and subslab probes SS-1 and SS-2 were capped and left for future sampling, if merited.

Soil Gas Analytical Results

Soil gas samples were collected within Summa canisters and submitted for analysis to K-Prime, Inc. of Santa Rosa, California, a State-certified laboratory. Soil gas samples were analyzed by Total Organics Method 3 (TO-3) for total petroleum hydrocarbons as gasoline (TPHg) and by Total Organics Method 15 (TO-15) for benzene, toluene, ethylbenzene, xylene(s) (BTEX) and isopropanol. The soil gas samples were collected from approximately 4 ft bgs for samples SG-1 and SG-2, from approximately 2.7 ft bgs for SG-3, and approximately 0.7 ft bgs for subslab locations SS-1 and SS-2. Soil gas analytical results and sample depth intervals are summarized on Table 1 and Figure 3. The laboratory analytical report is included in Appendix C.

No TPHg was detected above reporting limits in any of the samples, while select BTEX compounds were detected in all five of the analyzed samples. Contaminant concentrations detected in the soil gas probes were compared to the shallow soil gas Environmental Screening Levels (ESLs) established by the San Francisco Regional Water Quality Control Board (RWQCB). The subslab sample results were compared to the ESL for indoor air multiplied by 100 (multiplying the indoor air ESL by 100 is to compensate for subslab air having to travel through the concrete slab to reach potential receptors) in accordance with Department of Toxic Substances Control/Cal – EPA, *Vapor Intrusion Guidance Document – Final Interim*, December 15, 2004.

The only compound detected above RWQCB ESLs was benzene at two sample locations. The detected benzene concentrations in these two sample locations were less than one order of magnitude above the conservative ESLs. The soil gas probe SG-2 benzene concentration of 174 $\mu g/m^3$ slightly exceeds the shallow soil gas ESL for residential site use of 85 $\mu g/m^3$. The subslab probe SS-1 benzene concentration of 24.1 $\mu g/m^3$ exceeds the calculated subslab ESLs of 8.5 $\mu g/m^3$ for residential site use and 14 $\mu g/m^3$ for commercial site use.

Isopropanol was detected in samples SS-1 and SG-1 through SG-3 so the leak check summa canisters for these samples were also analyzed for isopropanol. Since the air flow regulators on the sampling and leak check summa canisters were calibrated and set identically, the percentage of sample that leaked from ambient air within the leak-check enclosure into the sample probe can be determined by dividing the concentration of isopropanol in the sample canister by the concentration of isopropanol in the leak-check canister. The highest concentration of isopropanol was detected in sample SG-3 at 21,300 $\mu g/m^3$, while the isopropanol concentration in the leak-check canister for SG-3 was 3,020,000 $\mu g/m^3$. The calculated apparent ambient air leak of 0.7% is negligible according to the laboratory. The calculated percentage of ambient air in the other

sample canisters was well below 0.01%. Therefore, the soil gas results appear representative of subsurface conditions.

MONITORING WELL INSTALLATION

Pre-Drilling Activities

A comprehensive Site Safety Plan was prepared to protect site workers and the plan was kept onsite during all field activities. Well installation permits were obtained from the Alameda County Public Works Agency (ACPWA), and an access agreement was obtained from nearby property owners south of the site. Copies of the permits are presented in Appendix A. The proposed drilling locations were marked and Underground Service Alert was notified at least 48 hours before the proposed field activities. Additionally, Pangea cleared the monitoring well locations using a private line locator.

Drilling Procedures

All monitoring wells were installed in general accordance with the procedures described in Pangea's Addendum dated November 8, 2006. All locations were hand-augered to 3 ft below ground surface (bgs), when feasible, to help avoid subsurface utilities. Pangea retained RSI Drilling (RSI) of Woodland, California, to install the monitoring wells. The drilling was observed in the field by Pangea hydrologist Bryce Taylor, and supervised by Bob Clark-Riddell, a California Registered Civil Professional Engineer (P.E.). Soil characteristics such as color, texture, and relative water contents were described in the field using the Unified Soil Classification System (USCS) and entered onto a field boring log. Field screening of groundwater for potential hydrocarbons and volatile organic compounds included visual and olfactory observations and photo-ionization detector (PID) readings.

Well Drilling Activities

On August 28, 2007, Pangea installed three monitoring wells (MW-9A, MW-9C and MW-10A) to help define the vertical and lateral extent of groundwater contamination offsite. All three wells were installed in the parking area south of the commercial building (5151 Broadway) adjacent to the site in the southern direction. Wells MW-9A and MW-9C were installed near Broadway, while MW-10A was installed further east as shown on Figure 2. All monitoring wells were drilled with a CME-75 drill rig equipped with eight-inch hollow-stem auger to facilitate the installation of the well. Due to the prevalence of sandstone bedrock at the site soil samples were not collected and drilling was difficult and time consuming.

Well MW-10A was installed first. After the borehole for well MW-10A was advanced to 18 ft depth, the augers were pulled back one ft to allow grab groundwater sampling to screen for the presence of hydrocarbons with a PID meter. Pangea conducted this initial screening to determine if groundwater at the

planned well location was highly impacted and merited relocating the well further to the west. No signs of hydrocarbons were observed so the well was constructed at the planned location.

Well MW-9C was drilled to approximately 21 ft bgs, where refusal was reached, and the augers were left in the ground to cool prior to well construction. While the augers in well MW-9C were cooling, well MW-9A was hand augered. Well MW-9C was then constructed, followed by the drilling and construction of well MW-9A. To evaluate if proposed deeper well MW-10C was merited, grab groundwater samples were collected from wells MW-9C and MW-10A after well construction and sent to the laboratory for rush analyses. No hydrocarbons were detected in the grab sample from well MW-10A, and only low concentrations of TPHg (73 µg/L), benzene (4.4 µg/L), toluene (2.1 µg/L) and xylenes (0.75 µg/L) were detected in the grab sample from well MW-9C. Based on these analytical results, Pangea concluded that well MW-10C was not merited at this time.

Well Construction

The monitoring wells were constructed of 2-inch diameter, 0.010-inch slotted and blank PVC casing. Monitoring wells MW-9A and MW-10A were screened from 7.5 to 15.5 ft bgs and 8 to 18 ft bgs, respectively, in the shallow water-bearing zone, which is composed of sandstone. Well MW-9A was installed shallower than originally planned due to drilling refusal. Monitoring well MW-9C was screened from approximately 17 to 21 ft bgs in deeper sandstone bedrock to provide assessment of deeper contamination. Well MW-9C was also installed shallower than originally planned due to drilling refusal. The wells were protected by traffic-rated vaults and locking well caps. The soil characteristics and hydrogeology are detailed in the boring logs (Appendix D). Additional soil logging and sampling procedures are presented in Pangea's Standard Operating Procedures for soil borings in Appendix B.

Well Development & Sampling Procedures

Pangea conducted well development by surge block agitation and evacuation on September 5, 2007. Groundwater evacuation continued until each well dewatered. All of the wells dewatered during development and were slow to recharge. The investigation-derived waste generated during drilling and development was temporarily stored onsite in DOT approved 55-gallon drums pending analysis. Additional well installation and development procedures are presented in Pangea's Standard Operating Procedures for monitoring wells in Appendix B. The well development field data sheets are presented in Appendix E. Groundwater samples from the newly installed and developed wells were collected for analysis on September 30, 2007. Field data forms and the laboratory analytical report for this event will be included in the third quarter monitoring report.

Groundwater Analytical Results

As shown on Table 2, the results from well grab sampling on August 28, 2007 were very similar to well sampling on September 30, 2007, conducted a few days after well development. No hydrocarbons were

detected in well MW-10A, and relatively low hydrocarbon concentrations were detected in new wells MW-9A and MW-9C. The maximum detected hydrocarbon concentrations in groundwater (after well development) were 390 µg/L TPHd, 68 µg/L TPHg and 2.6 µg/L benzene. Comparison of analytical results from shallow well MW-9A and deeper well MW-9C suggests that the groundwater quality is similar in shallow and deeper water, while slightly more impacted in deeper water. Future monitoring results will help determine if this data is representative.

The distribution of TPHg and benzene concentrations in *shallow* groundwater is shown on Figures 5 and 6, respectively. The distribution of TPHg concentrations in *deeper* groundwater is shown on Figure 7. Groundwater elevation contours and analytical results from shallow and deeper groundwater from the September 30 sampling event are summarized on Figures 4 and 7, respectively.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our soil gas and groundwater sampling, Pangea offers the following conclusions and recommendations:

- Subsurface soil and subslab gas is impacted by hydrocarbons, although only benzene concentrations at two locations slightly exceed conservative RWQCB ESLs. To further evaluate subsurface soil gas conditions near the two ESL exceedances for benzene, Pangea recommends conducting additional soil gas sampling along the eastern edge of the residential building at 5230 Coronado Avenue. Pangea also recommends resampling subslab locations SS-1 and SS-2 using the existing sampling probes, which were retained to facilitate additional testing cost effectively. If contaminant concentrations are detected above ESLs in the subslab locations, Pangea would conduct additional subslab sampling at step-out locations to delineate the extent of elevated contaminant concentrations. The proposed soil gas sampling locations and step-out subslab sampling locations are shown on Figure 8.

- The offsite extent of contaminants in groundwater appears adequately defined, as shown on Figures 5, 6 and 7. Hydrocarbon concentrations in new offsite wells MW-9A, MW-9C and MW-10A were either below method reporting limits ('non-detect') or were below the final RWQCB ESLs, with the exception of the TPHd concentration of 390 µg/L in well MW-9C. This TPHd concentration, however, is below the ESL of 640 µg/L for non-drinking water, which is the more applicable ESL for this site since groundwater is not used for drinking water. While the lateral extent of hydrocarbons in groundwater is delineated to the west, southwest and south of the site, additional offsite characterization is not practical north and east of the site due to bedrock and drilling refusal. Pangea attempted to drill well MW-12 across Broadway on the Safeway property with a CME-75 in April 2007, but reached refusal at approximately 8.5 ft bgs. Drilling refusal was also reached at

locations B-16, B-17 and B-20. Pangea proposes conducting additional groundwater monitoring and implementing site remediation. Additional offsite characterization does not appear merited or cost effective at this time.

- The relatively low concentrations detected in offsite soil gas and groundwater suggest that the hydrocarbon impact is primarily limited to the 5175 Broadway property. Pangea recommends implementing site remediation at the 5175 property. Pangea understands that ACEH commented on Pangea's IRAP on September 11, 2007 to Rockridge Heights, LLC representative Lucy Armentrout. The ACEH requested preparation of a Corrective Action Plan (CAP) for public comment and requested more aggressive remediation than the long-term biosparging proposed in the IRAP. Therefore, Pangea will prepare a CAP to address these ACEH comments.

ATTACHMENTS

Figure 1 – Site Location Map
Figure 2 – Site Map
Figure 3 – Soil Gas Hydrocarbon Concentration Map
Figure 4 – Groundwater Elevation Contour and Hydrocarbon Concentration Map (Shallow)
Figure 5 – Distribution of TPHg in Groundwater (Shallow)
Figure 6 – Distribution of Benzene in Groundwater (Shallow)
Figure 7 – Distribution of TPHg in Groundwater (Deep)
Figure 8 – Proposed Soil Gas Probe and Subslab Sampling Locations

Table 1 – Soil Gas Analytical Results
Table 2 – Groundwater Elevation and Analytical Data

Appendix A – Permits
Appendix B – Standard Operating Procedures
Appendix C – Laboratory Analytical Reports
Appendix D – Boring Logs
Appendix E – Well Development Field Data Sheets

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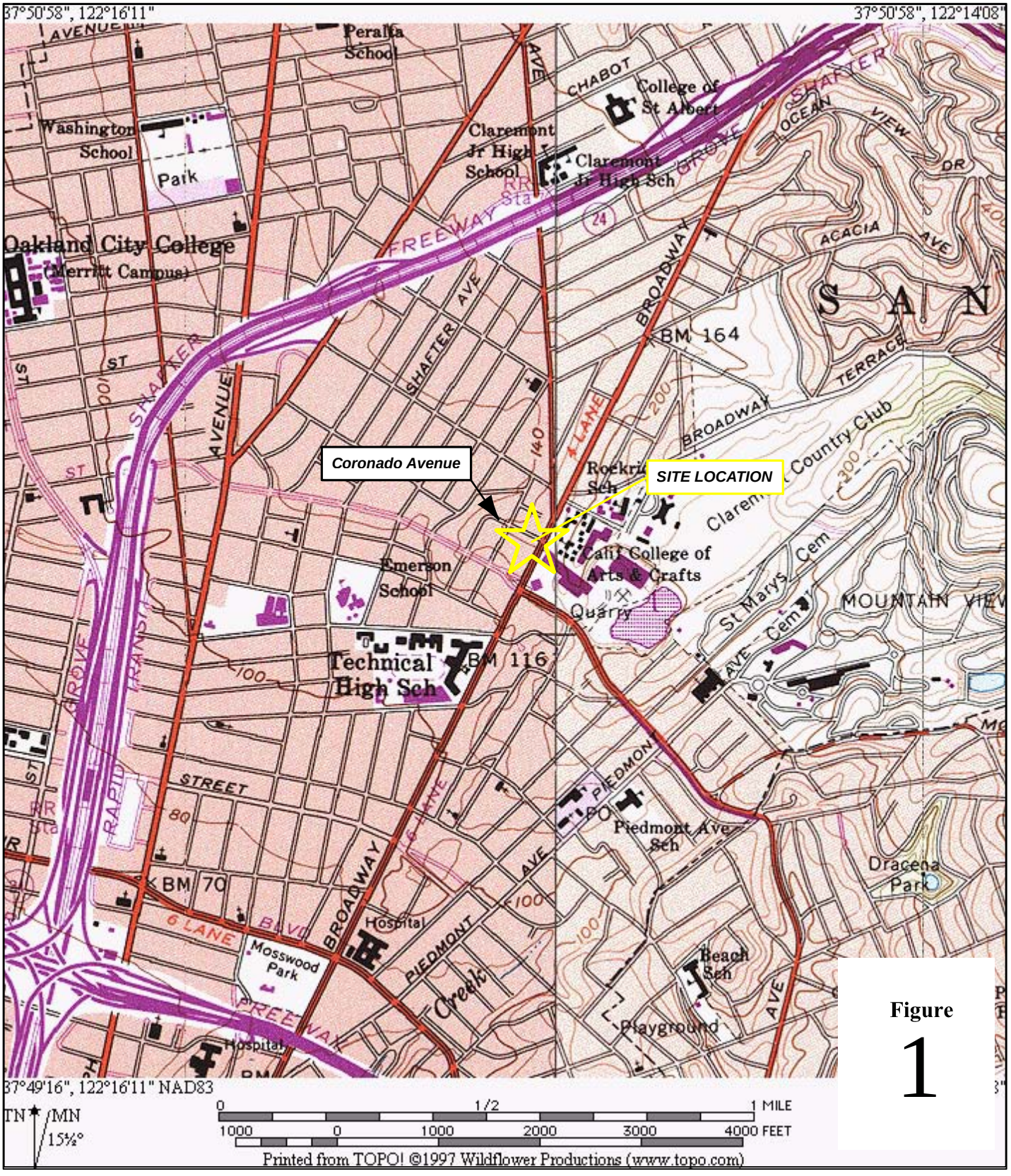

Figure 1

Former Exxon Station
5175 Broadway
Oakland, California

PANGEA

Site Location Map

FeinerBroadway site loc.ai 8/30/06

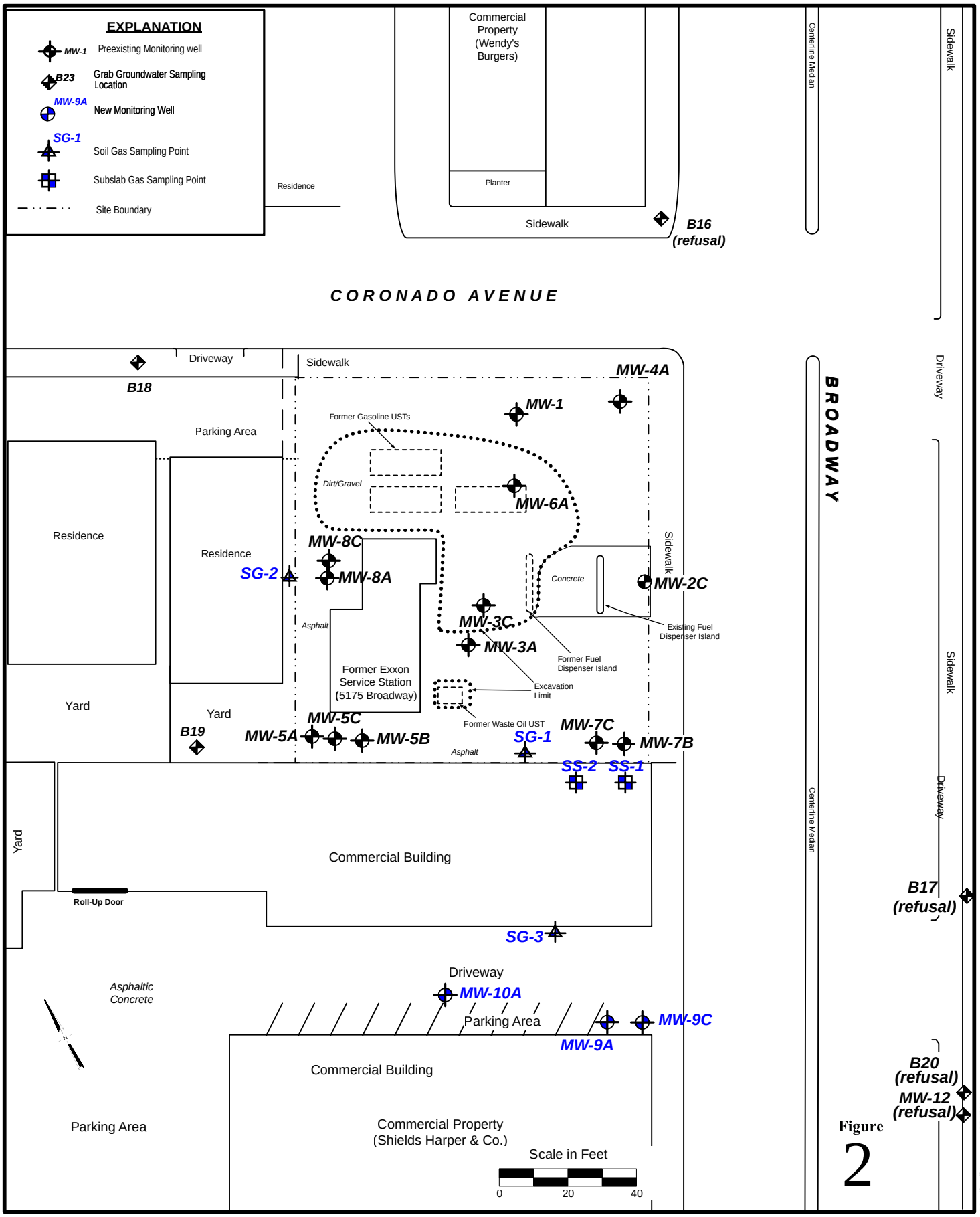

Figure 2

Site Map

Former Exxon Station
5175 Broadway
Oakland, California

PANGEA

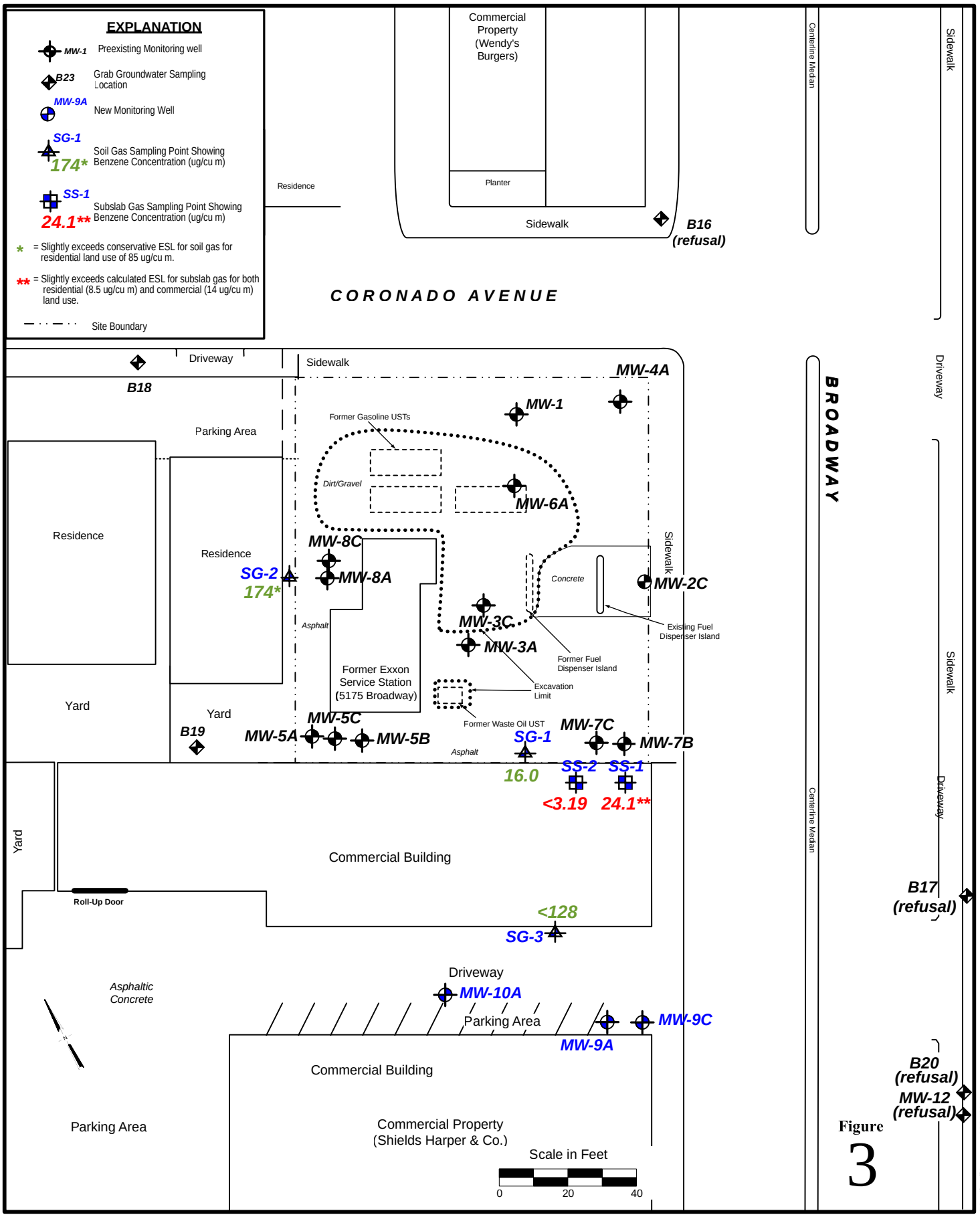

Figure 3

SG soil well inst map.ai 8/24/2007

Former Exxon Station
5175 Broadway
Oakland, California

Soil Gas Concentration Map

PANGEA

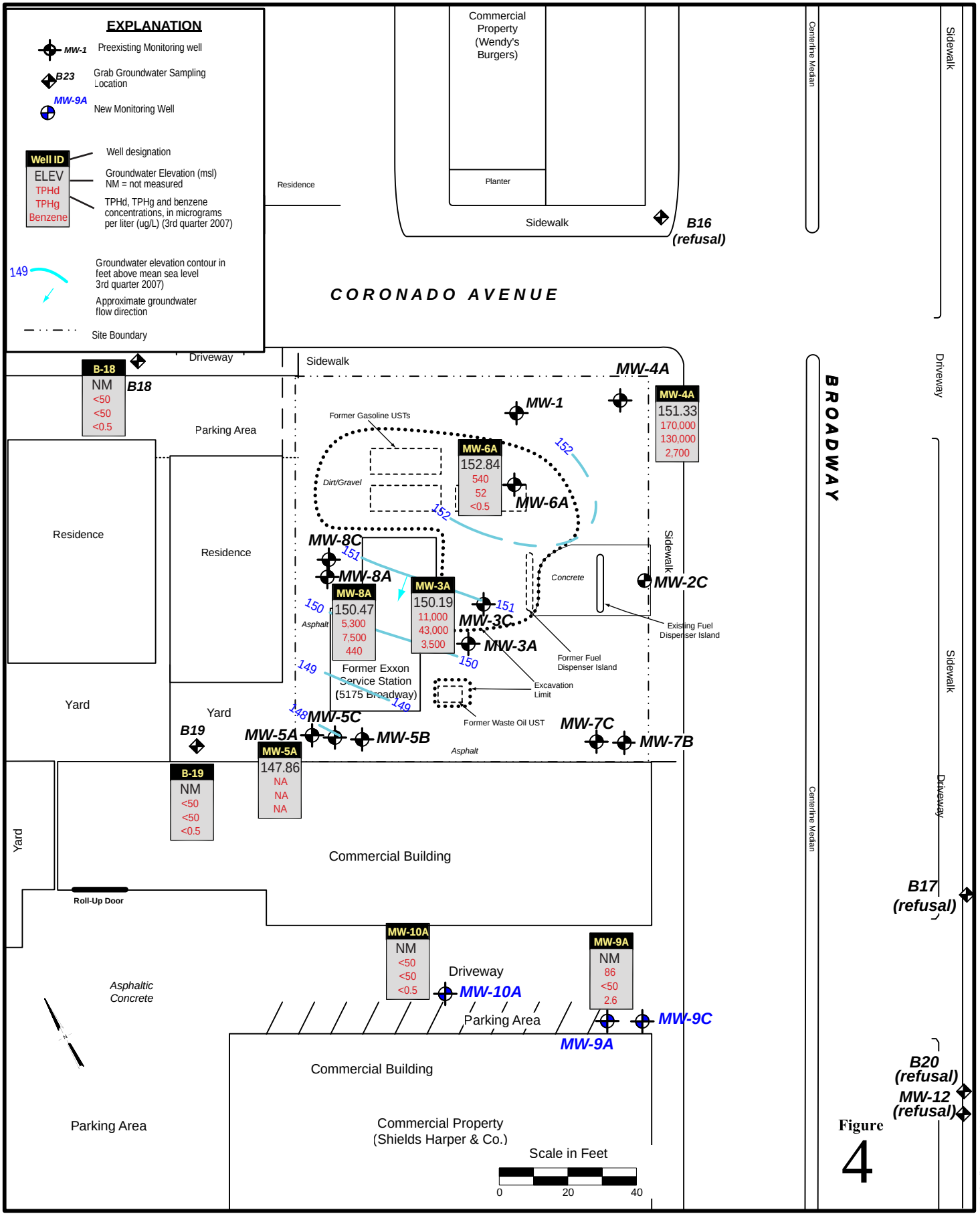

Figure 4

Former Exxon Station
5175 Broadway
Oakland, California

Groundwater Elevation and Hydrocarbon Concentration Map (Shallow)

PANGEA

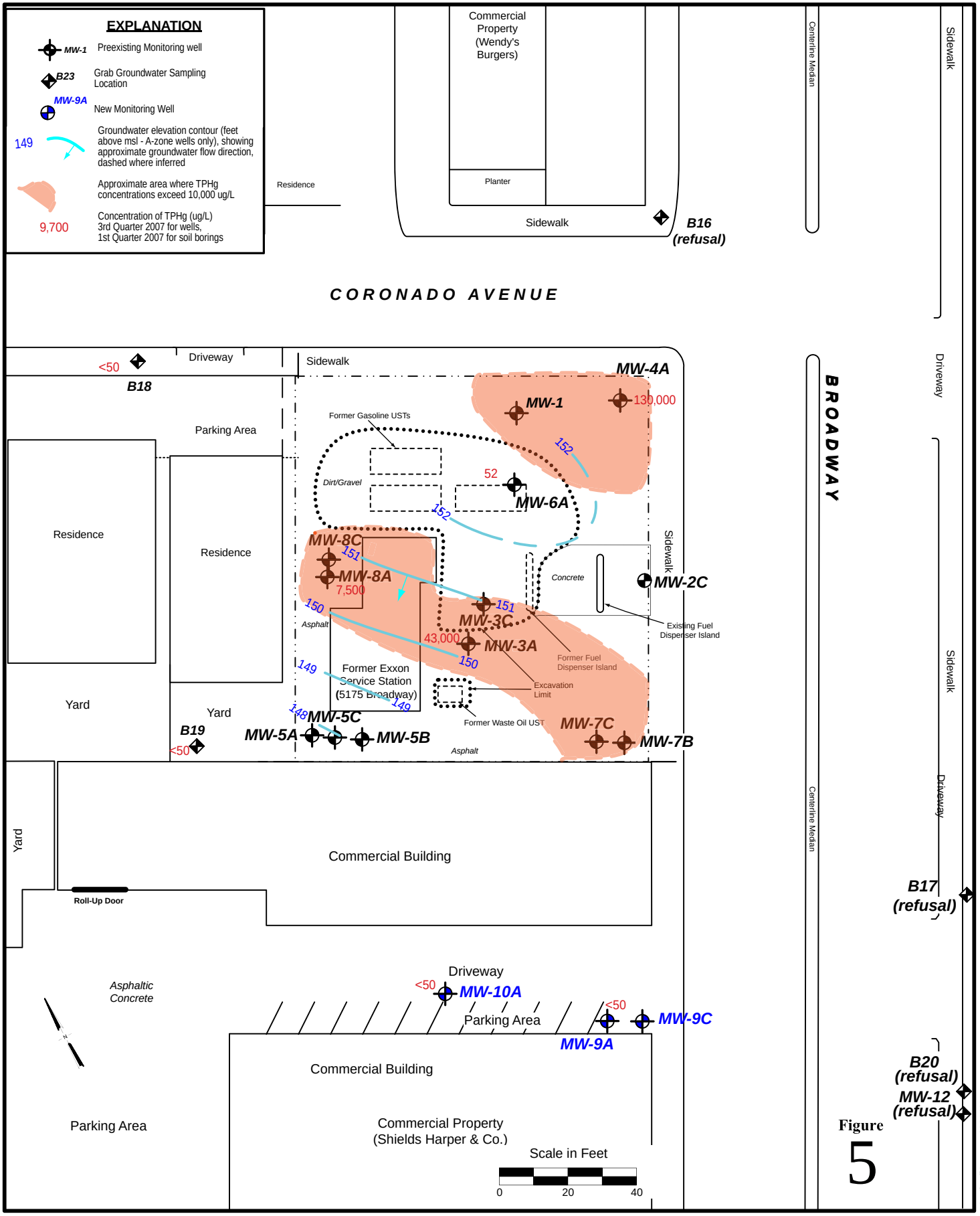

Figure 5

SG soil well instr map.ai 8/24/2007

Former Exxon Station
5175 Broadway
Oakland, California

Distribution of TPHg in Shallow Groundwater

PANGEA

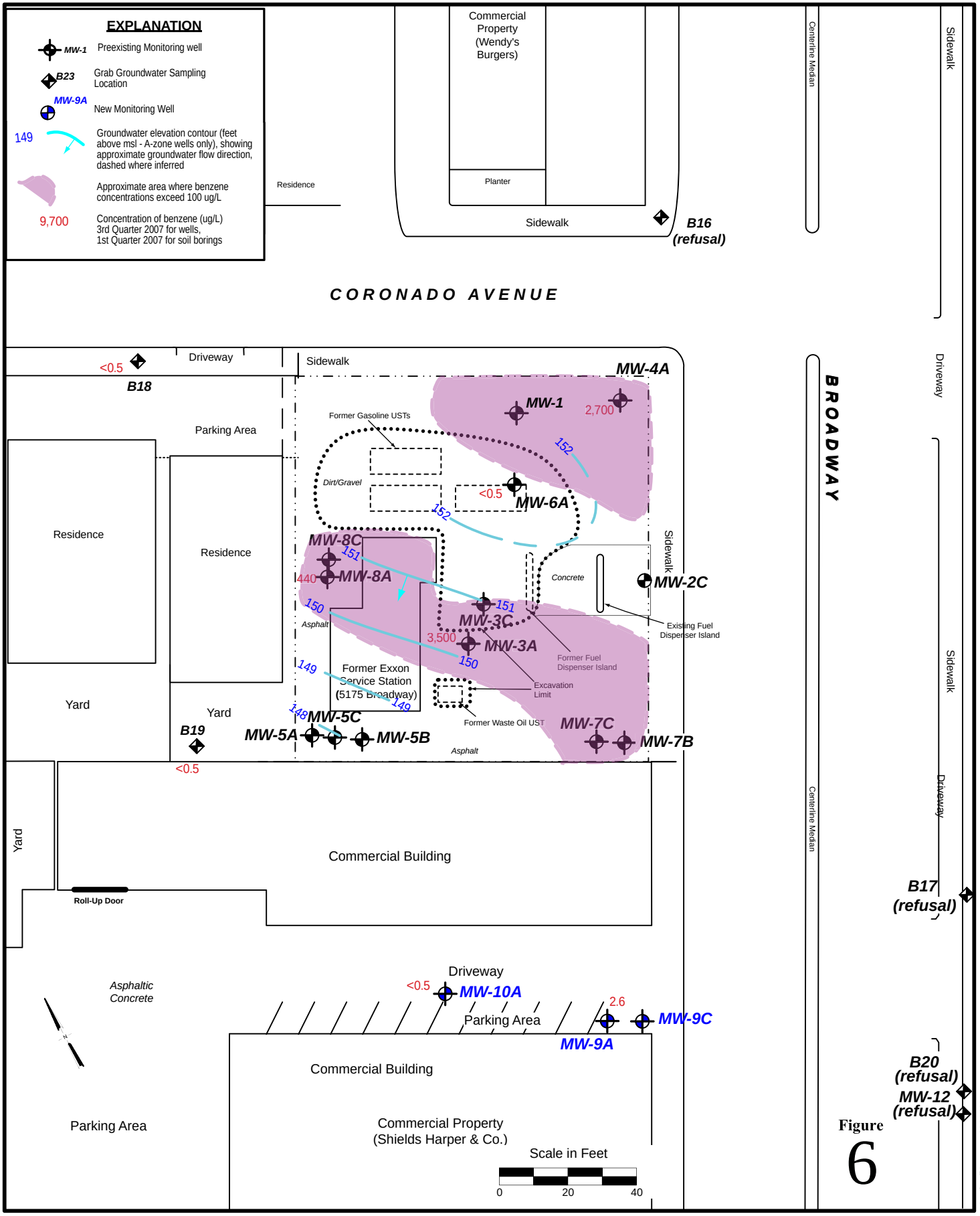

Figure 6

Distribution of Benzene in Shallow Groundwater

Former Exxon Station
5175 Broadway
Oakland, California

PANGEA

SG soil well iinst map.ai 8/24/2007

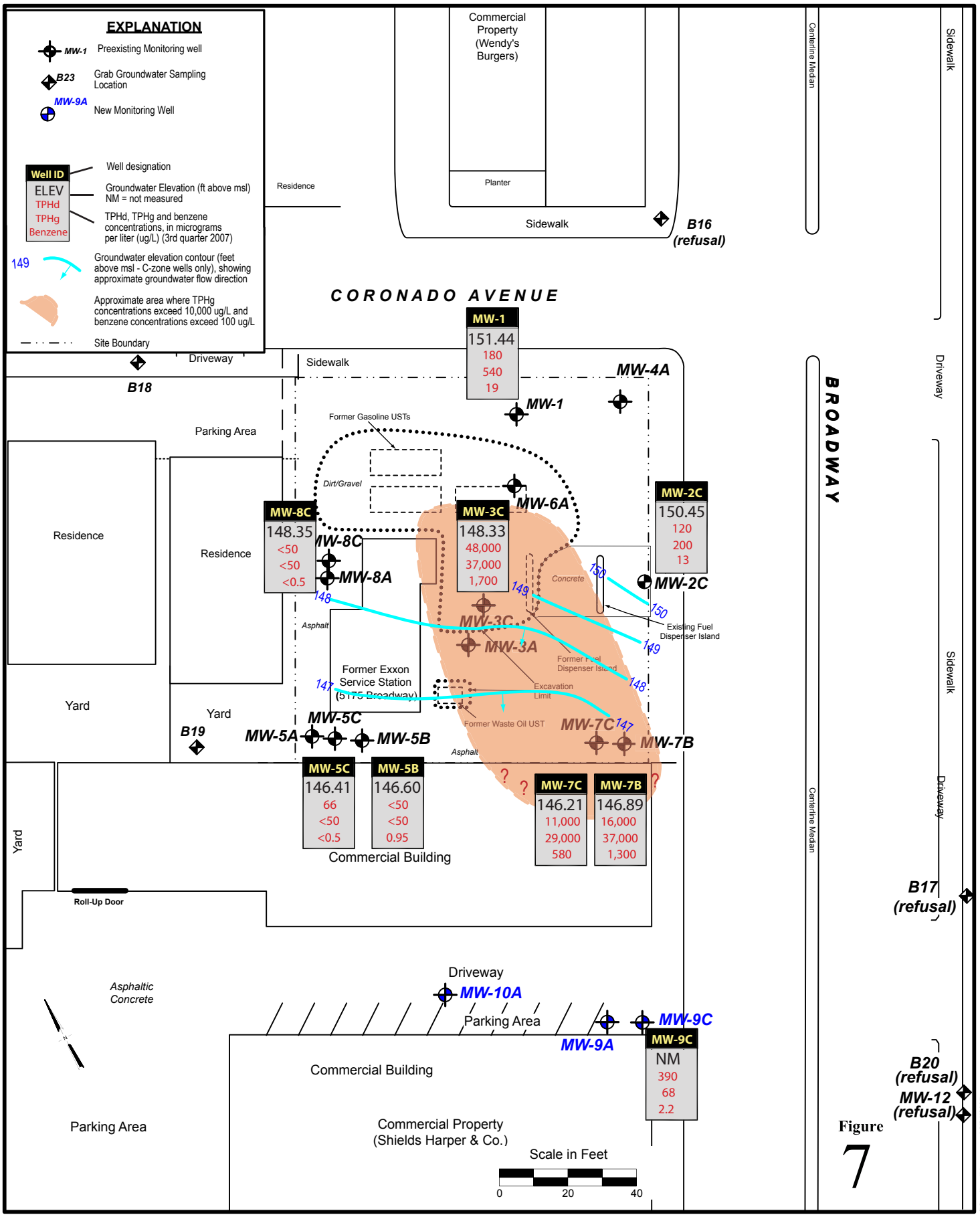

Figure 7

SG soil well inst map.ai 8/24/2007

Former Exxon Station
5175 Broadway
Oakland, California

Groundwater Elevations, Hydrocarbon Concentrations and TPHg Distribution in Deep Groundwater

PANGEA

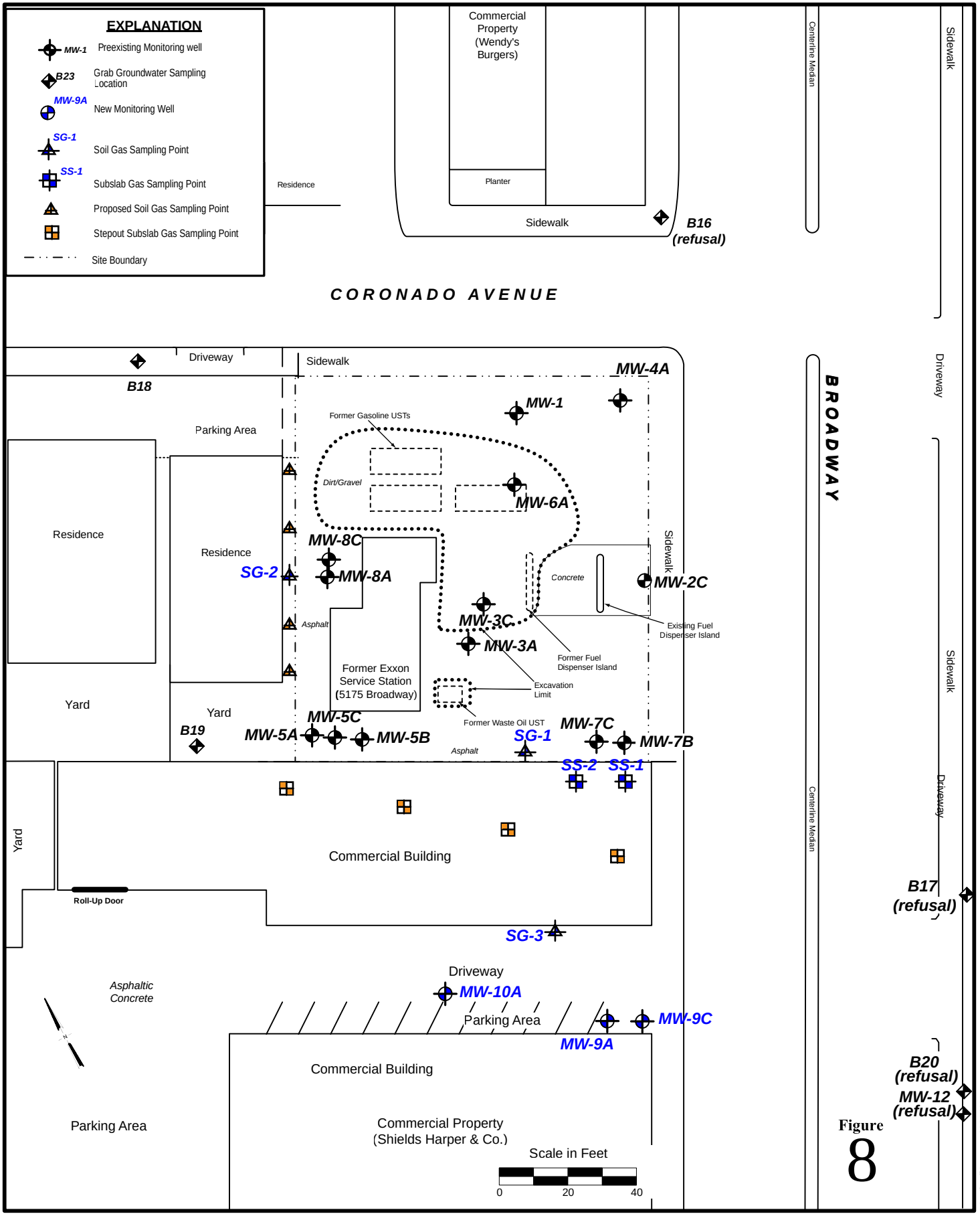

Figure 8

Proposed Soil Gas and Subslab Vapor Sampling Points

Former Exxon Station
5175 Broadway
Oakland, California

PANGEA

SG soil well inst map.ai 8/24/2007

Pangea

Table 1. Soil Gas Analytical Data - Rockridge Heights, 5175 Broadway, Oakland, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft - ft bgs)	Benzene	Toluene	Ethylbenzene	Xylene (M+P)	Xylene (O)	TPH Gasoline (C2-C10)	Isopropanol	Notes
			ug/m^3							
Residential ESL for shallow soil gas:			85	63,000	420,000	150,000	150,000	26,000	--	For SG samples
Commercial ESL for shallow soil gas:			290	180,000	1,200,000	410,000	410,000	72,000	--	For SG samples
Residential ESL for subslab gas (indoor air X 100):			8.5	6,300	42,000	15,000	15,000	2,600	--	For SS samples
Commercial ESL for subslab gas (indoor air X 100):			14	8,800	58,000	20,000	20,000	3,600	--	For SS samples
Soil Gas Probe Samples										
SG-1	9/12/2007	3.8-4.0	16.0	294	6.21	19.6	5.91	<2000	85.4	
SG-2	9/12/2007	3.8-4.0	**174**	200	93.6	77.2	<21.7	14,000	70.1	
SG-3	9/12/2007	2.5-2.7	<128	151	<174	<174	<174	<2000	21,300	Isoproponal = 0.7% of total sample volume*
Subslab Gas Samples										
SS-1	9/12/2007	0.5-0.7	**24.1**	187	5.38	16.8	5.91	<2000	11.2	
SS-2	9/12/2007	0.5-0.7	<3.19	5.24	<4.34	<4.34	<4.34	<2000	<4.92	Leak Check Sample not analyzed - no detected Isopropanol.
Leak Check Samples										
SS-1 Check	9/12/2007	--	--	--	--	--	--	--	622,000	
SG-1 Check	9/12/2007	--	--	--	--	--	--	--	5,900,000	
SG-2 Check	9/12/2007	--	--	--	--	--	--	--	1,070,000	
SG-3 Check	9/12/2007	--	--	--	--	--	--	--	3,020,000	

Abbreviations:

SG-1 = Soil Gas Sample

SS-1 = Subslab Sample

ug/m3 = Micrograms per cubic meter of air results calculated by laboratory from parts per billion results using normal temperature and pressure (NPT).

ft - ft bgs = Depth interval below ground surface (bgs) in feet.

Volatile organic compounds by EPA Method TO-15 (partial list), uses GC/MS scan.

< n = Chemical not present at a concentration in excess of detection limit shown.

MRL = Method reporting limit. Laboratory reporting limit based on parts per billion on volume to volume basis (ppbv/v) and converted to ug/m3.

ESL = Environmental Screening Level for Shallow Soil Gas with Residential and Commercial/Industrial Land Use, for samples less than five feet below a building foundation or ground surface (Table E).

ESL for indoor air multiplied by 100 for samples collected below foundation concrete slab per Department of Toxic Substances Control/Cal - EPA *Vapor Intrusion Guidance Document - Final Interim* December 15, 2004.

ESL established by the SFBRWQCB, Interim Final - February 2005, and amended in November 2006.

Bold = Concentrations above ESLs for Residential and/or Commercial Land Use for shallow soil gas (SG samples) and for indoor air multiplied by 100 (SS samples).

* = Since the air flow regulators on the sampling and leak check summa canisters were setup identically, the percentage of sample that leaked from ambient air within the leak-check enclosure into the sample probe can be determined by dividing the concentration of isopropanol in the sample canister by the concentration of isopropanol in the leak-check canister.

Table 2. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID *TOC Elev* *(ft)*	Date Sampled	SPH (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved Oxygen mg/L
					←				µg/L				→	
ESL, drinking water		--	--	--	**100**	**100**	**1**	**40**	**30**	**20**	**5**	**--**	**0.50**	**--**
ESL, non-drinking water		--	--	--	640	500	46	130	290	100	1,800	--	200	--
ESL, vapor pathway		--	--	--	NV	NV	540	380,000	170,000	160,000	24,000	--	200	--
GROUNDWATER MONITORING WELLS														
MW-1	04/30/89	--	--	--	--	200	18	5	2	12	--	--	--	--
(97.71)	05/17/90	--	88.45	9.26	--	--	--	--	--	--	--	--	--	--
	09/26/90	--	87.79	9.92	--	1,300	55	31	120	100	--	--	--	--
	01/14/91	--	88.17	9.54	--	3,100	350	83	86	130	--	--	--	--
(102.04)	07/03/91	--	92.62	9.42	--	580	32	41	40	55	--	--	--	--
	11/11/91	--	92.59	9.45	--	330	20	2	2	11	--	--	--	--
(101.83)	03/04/92	--	93.90	7.93	--	810	11	5	10	23	--	--	--	--
	06/02/92	--	92.85	8.98	--	2,200	93	32	40	120	--	--	--	--
	09/28/92	--	92.54	9.29	--	2,900	24	78	19	37	--	--	--	--
	01/11/93	--	94.27	7.56	--	1,700	5.7	6	11	28	--	--	--	--
	08/15/94	--	92.64	9.19	--	2,000	120	3	6	16	--	--	--	--
(97.50)	11/07/96	--	88.77	8.73	270	1,200	3	1.1	1.5	3.8	<0.5	--	--	--
	02/12/97	--	89.58	7.92	<50	1,800	13	5.7	4.8	17	<0.5	--	--	--
	06/16/97	--	88.46	9.04	<50	330	27	<0.5	<0.5	1.2	<0.5	--	--	--
	09/30/97	--	89.94	7.56	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
(97.50)	01/27/98	--	89.54	7.96	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	04/24/98	--	89.52	7.98	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	08/17/98	--	88.52	8.98	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	11/16/98	--	88.60	8.90	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	02/16/99	--	88.86	8.64	<50	110	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	05/17/99	--	89.00	8.50	--	280	1.1	0.6	<0.5	<0.5	<0.5	--	--	--
	08/17/99	--	88.26	9.24	86	790	5.6	4.3	4.5	11	<5.0	--	--	--
	11/17/99	--	87.06	10.44	--	1,300	3.6	1.9	2.7	6.6	<1.0	--	--	--
	02/17/00	--	89.02	8.48	--	580	1.1	2.3	3.6	4.9	<5.0	--	--	--
	05/17/00	--	89.26	8.24	--	1,500	130	6.8	6.1	<5.0	<5.0	--	--	--
	08/17/00	--	88.73	8.77	--	550	160	<25	<25	<25	<25	--	--	--
	11/15/00	--	88.46	9.04	--	130	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	--
	02/16/01	--	89.90	7.60	--	400	26	<5.0	<5.0	<5.0	<5.0	--	--	--
	01/11/02	--	89.42	8.08	160	600	74	53	14	52	110	--	--	--
(161.03)	07/01/02	--	152.01	9.02	280	670	25	<5.0	<5.0	<5.0	<5.0	--	--	--
	10/04/02	--	151.29	9.74	520	1,800	130	7.8	8.1	14	<5.0	--	--	--
	07/28/06	--	151.93	9.10	86	250	42	1.7	1.4	3.1	<1.0	51	1.5	0.21
	10/16/06	--	151.98	9.05	110	390	16	<0.5	1.5	2.2	<0.5	41	1.6	0.17
(161.10)	01/09/07	--	152.90	8.20	160	530	21	1.7	2.8	5.1	--	--	--	0.22
	03/26/07	--	152.84	8.26	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	152.12	8.98	220	500	24	1.1	2.2	4.2	<5.0	--	--	--
	09/29/07	**--**	**151.44**	**9.66**	**180**	**540**	**19**	**1.2**	**2.3**	**5.3**	**<5.0**	**--**	**--**	**--**

Table 2. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date		Groundwater	Depth									Dissolved
TOC Elev	Sampled	SPH	Elevation	to Water	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Oxygen
(ft)		(ft)	(ft)	(ft)	←				µg/L				→	mg/L
ESL, drinking water		--	--	--	**100**	**100**	**1**	**40**	**30**	**20**	**5**	**--**	**0.50**	--
ESL, non-drinking water		--	--	--	640	500	46	130	290	100	1,800	--	200	--
ESL, vapor pathway		--	--	--	NV	NV	540	380,000	170,000	160,000	24,000	--	200	--
MW-2	04/30/89	--	--	--	--	230	39	18	5	23	--	--	--	--
(97.78)	05/17/90	--	87.78	10.00	--	--	--	--	--	--	--	--	--	--
	09/29/90	--	86.95	10.83	--	850	970	5	25	47	--	--	--	--
	01/14/91	--	87.15	10.63	--	3,100	30	52	24	34	--	--	--	--
(102.02)	07/03/91	--	91.94	10.08	--	1,590	30	52	24	34	--	--	--	--
	11/11/91	--	91.81	10.21	--	960	320	15	4	29	--	--	--	--
	03/04/92	--	93.32	8.70	--	1,500	9.5	8.4	9.8	22	--	--	--	--
	06/02/92	--	92.50	9.52	--	2,800	84	41	59	95	--	--	--	--
	09/28/92	--	91.93	10.09	--	1,600	47	20	47	97	--	--	--	--
	01/11/93	--	93.50	8.52	--	2,500	8.6	10	17	32	--	--	--	--
(97.49)	08/15/94	--	87.58	9.91	--	6,000	450	60	100	95	--	--	--	--
	11/07/96	--	87.47	10.02	780	4,200	25	4.9	8.1	14	<0.5	--	--	--
	02/12/97	--	88.58	8.91	5,700	1,800	16	3.1	3.4	8.8	<0.5	--	--	--
	06/16/97	--	87.74	9.75	<50	2,500	22	5.1	7.8	11	<0.5	--	--	--
	09/30/97	--	89.60	7.89	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	01/27/98	--	89.11	8.38	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	04/24/98	--	88.81	8.68	1,400	2,100	18	6.5	4.8	21	<0.5	--	--	--
	08/17/98	--	87.75	9.74	<50	2,900	5.1	4.5	5.8	17	<0.5	--	--	--
	11/16/98	--	87.35	10.14	<50	1,400	2.1	1.9	2.3	4.8	<0.5	--	--	--
	02/16/99	--	88.57	8.92	<50	1,600	82	16	<2.5	40	59	--	--	--
	05/17/99	--	88.23	9.26	--	8,200	43	73	140	100	<250	--	--	--
	08/17/99	--	87.45	10.04	260	2,900	20	81	17	38	<5.0	--	--	--
	11/17/99	--	85.97	11.52	<50	2,600	7	3.7	5.3	12.9	<1.0	--	--	--
	02/17/00	--	87.99	9.50	--	1,700	3.2	6.8	11	12.3	<5.0	--	--	--
	05/17/00	--	88.65	8.84	--	3,800	450	65	110	80	<25	--	--	--
	08/17/00	--	88.99	8.50	--	4,300	440	<50	78	<50	<50	--	--	--
	11/15/00	--	87.55	9.94	--	5,800	320	41	78	64	<25	--	--	--
	02/16/01	--	88.97	8.52	--	2,200	110	20	38	33	<5.0	--	--	--
	01/11/02	--	88.67	8.82	620	3,100	280	86	84	110	<50	--	--	--
(160.98)	07/01/02	--	151.34	9.64	940	2,600	300	29	45	27	<10	--	--	--
	10/04/02	--	150.46	10.52	390	4,000	440	66	140	120	<25	--	--	--
	07/28/06	--	150.96	10.02	340	1,300	150	9.9	6	18	<0.5	3.6	<0.5	0.17
	10/16/06	--	150.45	10.53	76	150	16	1.0	3.5	2.2	<0.5	1.2	<0.5	0.19
	01/09/07	--	151.65	9.33	84	210	27	2.6	8.1	6.8	--	--	--	0.14
	01/25/07	--				Well Abandoned								

Table 2. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID *TOC Elev* *(ft)*	Date Sampled	SPH (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved Oxygen mg/L
					←				µg/L				→	
ESL, drinking water		--	--	--	**100**	**100**	**1**	**40**	**30**	**20**	**5**	**--**	**0.50**	**--**
ESL, non-drinking water		--	--	--	640	500	46	130	290	100	1,800	--	200	--
ESL, vapor pathway		--	--	--	NV	NV	540	380,000	170,000	160,000	24,000	--	200	--
MW-3	04/30/90	--	--	--	--	56,000	3,600	8,600	1,300	7,200	--	--	--	--
(98.14)	05/17/90	--	85.72	12.42	--	--	--	--	--	--	--	--	--	--
	09/26/90	--	84.64	13.50	--	54,000	5,100	420	1,600	8,000	--	--	--	--
	01/14/91	--	85.56	12.58	--	35,000	2,600	6,600	1,500	5,700	--	--	--	--
(102.46)	07/03/91	--	90.38	12.08	--	33,000	4,120	4,300	1,400	4,800	--	--	--	--
	11/11/91	--	90.17	12.29	--	57,000	3,900	8,400	2,100	14,000	--	--	--	--
(102.18)	03/04/92	--	91.92	10.26	--	57,000	720	870	81	3,100	--	--	--	--
(97.94)	06/02/92	--	86.54	11.40	--	50,000	240	240	220	740	--	--	--	--
	09/28/92	--	85.30	12.64	--	64,000	110	93	97	250	--	--	--	--
	01/11/93	--	87.84	10.10	--	68,000	210	280	360	990	--	--	--	--
	08/15/94	--	85.74	12.20	--	50,000	870	1,200	1,300	3,000	--	--	--	--
	11/07/96	--	85.54	12.40	470	68,000	33	27	63	120	<0.5	--	--	--
	02/12/97	--	87.71	10.23	3,500	25,000	39	43	15	91	<0.5	--	--	--
	06/16/97	--	86.15	11.79	<50	9,700	26	29	45	81	<0.5	--	--	--
	09/30/97	--	88.54	9.40	1,600	6,000	43	36	12	11	<0.5	--	--	--
	01/27/98	--	88.14	9.80	560	380	5.7	4.1	1.7	9.1	<0.5	--	--	--
	04/24/98	--	88.04	9.90	680	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	08/17/98	--	86.48	11.46	<50	16,000	200	18	31	82	<0.5	--	--	--
	11/16/98	--	85.54	12.40	<50	68,000	86	54	69	130	<0.5	--	--	--
	02/16/99	--	87.22	10.72	<50	33,000	270	110	<5.0	770	170	--	--	--
	05/17/99	--	87.40	10.54	--	72,000	280	230	320	890	<250	--	--	--
	08/17/99	--	85.99	11.95	1,800	20,000	51	41	61	130	<5.0	--	--	--
	11/17/99	--	84.34	13.60	--	1,700	39	22	31	84	<1.0	--	--	--
	02/17/00	--	87.26	10.68	--	8,800	16	39	74	90	<5.0	--	--	--
	05/17/00	--	87.69	10.25	--	22,000	300	260	410	940	<5.0	--	--	--
	08/17/00	--	86.10	11.84	--	15,000	230	140	470	750	<50	--	--	--
	11/15/00	--	86.12	11.82	--	12,000	250	210	390	700	<25	--	--	--
	02/16/01	--	88.26	9.68	--	7,400	40	72	700	250	<25	--	--	--
	01/11/02	--	88.36	9.58	1,900	9,300	230	200	290	580	<25	--	--	--
(161.43)	07/01/02	--	150.29	11.14	5,200	13,000	230	220	450	890	<13	--	--	--
	10/04/02	--	148.61	12.82	4,900	11,000	280	170	450	730	<25	--	--	--
	07/28/06	--		Not Sampled - Unable to locate well										
	10/16/06	--		Not Sampled - Unable to locate well										
	01/09/07	--		Not Sampled - Unable to locate well										
	01/22/07	--	149.81	11.62	93,000	34,000	770	250	760	2,000	<1,000	--	--	--
	03/16/07	--					Well Abandoned							

Table 2. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date		Groundwater	Depth									Dissolved
TOC Elev	Sampled	SPH	Elevation	to Water	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Oxygen
(ft)		(ft)	(ft)	(ft)	←				µg/L				→	mg/L
ESL, drinking water		--	--	--	**100**	**100**	**1**	**40**	**30**	**20**	**5**	**--**	**0.50**	**--**
ESL, non-drinking water		--	--	--	640	500	46	130	290	100	1,800	--	200	--
ESL, vapor pathway		--	--	--	NV	NV	540	380,000	170,000	160,000	24,000	--	200	--
STMW-4	07/03/91	--	92.58	11.00	--	3,100	610	62	39	150	--	--	--	--
(103.58)	11/11/91	--	92.50	11.08	--	3,600	990	15	2.6	180	--	--	--	--
(101.08)	03/04/92	--	91.64	9.44	--	5,000	35	20	22	71	--	--	--	--
(98.80)	06/02/92	--	88.48	10.32	--	13,000	140	45	63	210	--	--	--	--
	09/28/92	--	88.04	10.76	--	40,000	35	20	48	110	--	--	--	--
	01/11/93	--	89.52	9.28	--	24,000	26	88	92	280	--	--	--	--
	08/15/94	--	88.26	10.54	--	9,000	500	34	46	130	--	--	--	--
	11/07/96	--	88.43	10.37	180	13,000	40	2.9	7.8	19	<0.5	--	--	--
	02/12/97	--	89.44	9.36	5,700	5,300	95	5.3	5.9	18	<0.5	--	--	--
	06/16/97	--	88.40	10.40	<50	5,300	37	6.2	1.7	11	<0.5	--	--	--
	09/30/97	--	90.30	8.50	<50	2,700	42	7.7	5.7	26	<0.5	--	--	--
	01/27/98	--	89.90	8.90	300	3,000	60	17	12	49	<0.5	--	--	--
	04/24/98	--	89.30	9.50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	08/17/98	--	88.44	10.36	<50	29,000	36	24	59	160	<0.5	--	--	--
	11/16/98	--	88.24	10.56	<50	13,000	26	21	20	41	--	--	--	--
	02/16/99	--	89.16	9.64	<50	32,000	660	16	16	150	<100	--	--	--
	05/17/99	--	88.84	9.96	--	13,000	1600	30	45	78	<250	--	--	--
	08/17/99	--	88.16	10.64	990	12,000	260	22	33	72	<5.0	--	--	--
	11/17/99	--	86.78	12.02	--	7,900	21	12	17	40	<1.0	--	--	--
	02/17/00	--	89.48	9.32	--	4,900	8.9	21	38	50	<5.0	--	--	--
	05/17/00	--	89.15	9.65	--	9,600	840	<50	61	<50	<50	--	--	--
	08/17/00	--	88.46	10.34	--	5,100	680	<50	62	<50	<50	--	--	--
	11/15/00	--	88.28	10.52	--	3,900	640	<25	26	27	<25	--	--	--
	02/16/01	--	89.60	9.20	--	5,700	560	<25	<25	<25	<25	--	--	--
	01/11/02	--	89.22	9.58	930	4,900	560	59	25	<25	<250	--	--	--
(162.13)	07/01/02	--	151.85	10.28	6,700	6,700	470	18	32	45	<13	--	--	--
	10/04/02	--	151.05	11.08	2,900	13,000	590	26	65	110	<25	--	--	--
	07/28/06	0.04	151.53	10.60	39,000	25,000	960	21	73	130	<5.0	65	<5.0	0.22
	10/16/06	0.06	151.30	10.83	14,000	14,000	790	28	81	130	<5.0	30	<5.0	0.26
	01/09/07	0.03	152.20	9.93			Not Sampled - SPH							0.24
	01/26/07						Well Abandoned							0.24
STMW-5	07/03/91	--	88.70	13.29	--	690	99	81	19	98	--	--	--	--
(101.99)	11/11/91	--	87.99	14.00	--	410	61	2.4	1.4	20	--	--	--	--
(101.36)	03/04/92	--	89.56	11.80	--	460	13	6.5	11	18	--	--	--	--
	06/02/92	--	88.30	13.06	--	1,800	27	20	21	43	--	--	--	--
	09/28/92	--	87.32	14.04	--	1,500	14	6.1	18	22	--	--	--	--

Table 2. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID *TOC Elev* *(ft)*	Date Sampled	SPH (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved Oxygen mg/L
					←				µg/L				→	
ESL, drinking water		--	--	--	**100**	**100**	**1**	**40**	**30**	**20**	**5**	**--**	**0.50**	**--**
ESL, non-drinking water		--	--	--	640	500	46	130	290	100	1,800	--	200	--
ESL, vapor pathway		--	--	--	NV	NV	540	380,000	170,000	160,000	24,000	--	200	--
STMW-5	01/11/93	--	89.75	11.61	--	800	1.8	3	3.1	9.4	--	--	--	--
(continued)	08/15/94	--	87.51	13.85	--	3,000	320	62	34	220	--	--	--	--
(97.14)	11/07/96	--	83.47	13.67	330	1,200	11	1.7	4.4	13	<0.5	--	--	--
	02/17/97	--	85.07	12.07	3,700	1,000	11	17	1.7	9.7	<0.5	--	--	--
	06/19/97	--	83.81	13.33	2,300	950	7.4	1	1	7.2	<0.5	--	--	--
	09/30/97	--	85.90	11.24	1,100	710	5.8	4	1	1	<0.5	--	--	--
	01/27/98	--	85.50	11.64	1,100	340	2	1.8	1.6	8.2	<0.5	--	--	--
	04/24/98	--	85.30	11.84	<50	3,300	12	9.4	8.5	37	<0.5	--	--	--
	08/17/98	--	83.94	13.20	<50	5,300	26	17	14	39	<0.5	--	--	--
	11/16/98	--	83.40	13.74	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
	02/16/99	--	84.92	12.22	<50	950	150	3.8	1.4	14	11	--	--	--
	05/17/99	--	84.56	12.58	--	2,800	67	9.4	<2.5	16	30	--	--	--
	08/17/99	--	83.66	13.48	230	2,800	18	17	18	36	<5.0	--	--	--
	11/17/99	--	82.26	14.88	--	1,600	3.9	2.3	3.2	7.5	<1.0	--	--	--
	02/17/00	--	84.58	12.56	--	770	1.5	3.2	5.8	7	<5.0	--	--	--
	05/17/00	--	85.06	12.08	--	4,500	<25	<25	<25	<25	<25	--	--	--
	08/17/00	--	83.58	13.56	--	2,900	170	64	100	250	<10	--	--	--
	11/15/00	--	83.86	13.28	--	2,100	120	24	40	54	<5.0	--	--	--
	02/16/01	--	85.54	11.60	--	850	58	9.8	9.4	18	<5.0	--	--	--
	01/11/02	--	85.42	11.72	<50	920	76	16	16	28	13	--	--	--
(160.65)	07/01/02	--	147.51	13.14	1,500	4,300	71	14	14	36	<5.0	--	--	--
	10/04/02	--	146.13	14.52	60	1,400	71	17	26	35	<5.0	--	--	--
	07/28/06	--	147.30	13.35	370	700	22	4.3	1.2	6.6	<0.5	<0.5	<0.5	0.24
	10/16/06	--	146.91	13.74	240	590	14	1.6	1.3	3.2	<0.5	<0.5	<0.5	0.21
	01/09/07	--	148.19	12.46	180	390	30	3.2	1.8	3.2	--	--	--	0.17
	01/18/07							Well Abandoned						
GROUNDWATER MONITORING WELLS - 2007														
MW-2C	03/09/07	--	152.24	8.41	140	450	40	9.3	2.9	16	<10	--	--	--
(160.65)	03/26/07	--	151.93	8.72	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	151.21	9.44	160	440	30	1.8	5.9	7.4	<5.0	--	--	--
	09/29/07	**--**	**150.45**	**10.20**	**120**	**200**	**13**	**<0.5**	**<0.5**	**2.0**	**<5.0**	**--**	**--**	**--**
MW-3A	03/09/07	--	152.20	9.35	4,500	39,000	3,800	220	830	2,800	<500	--	--	--
(161.55)	03/26/07	--	152.33	9.22	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	151.61	9.94	11,000	34,000	3,200	330	990	3,200	<250	--	--	--
	09/29/07	**--**	**150.19**	**11.36**	**11,000**	**43,000**	**3,500**	**150**	**730**	**2,200**	**<1,000**	**--**	**--**	**--**

Table 2. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date		Groundwater	Depth									Dissolved
TOC Elev	Sampled	SPH	Elevation	to Water	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Oxygen
(ft)		(ft)	(ft)	(ft)	←				µg/L				→	mg/L
ESL, drinking water		--	--	--	**100**	**100**	**1**	**40**	**30**	**20**	**5**	**--**	**0.50**	**--**
ESL, non-drinking water		--	--	--	640	500	46	130	290	100	1,800	--	200	--
ESL, vapor pathway		--	--	--	NV	NV	540	380,000	170,000	160,000	24,000	--	200	--
MW-3C	03/26/07	--	151.15	10.64	--	--	--	--	--	--	--	--	--	--
(161.79)	04/16/07	--	150.87	10.92	36,000	32,000	1,200	710	600	1,900	<500	--	--	--
	06/24/07	--	149.43	12.36	200,000	50,000	2,200	4,100	860	6,100	<500	--	--	--
	09/29/07	**--**	**148.33**	**13.46**	**48,000**	**37,000**	**1,700**	**3,300**	**830**	**4,800**	**<1,000**	**--**	**--**	**--**
MW-4A	03/09/07	--	152.88	9.56	3,600	16,000	1,600	36	37	150	<250	--	--	--
(162.44)	03/26/07	--	152.56	9.88	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	152.02	10.42	110,000	87,000	1,500	59	290	800	<500	--	--	--
	09/29/07	**--**	**151.33**	**11.11**	**170,000**	**130,000**	**2,700**	**69**	**400**	**1,400**	**<240**	**--**	**--**	**--**
MW-5A	03/09/07	--	150.40	10.42	56	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
(160.82)	03/26/07	--	150.00	10.82	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	148.94	11.88	<50	180	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/29/07	**--**	**147.86**	**12.96**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-5B	03/09/07	--	146.42	15.08	59	140	1.3	0.77	<0.5	1.6	<5.0	--	--	--
(161.50)	03/26/07	--	148.88	12.62	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	147.98	13.52	53	52	1.1	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/29/07	**--**	**146.60**	**14.90**	**<50**	**<50**	**0.95**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	**--**	**--**	**--**
MW-5C	03/09/07	--	148.12	12.91	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
(161.03)	03/26/07	--	148.41	12.62	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	147.58	13.45	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/29/07	**--**	**146.41**	**14.62**	**66**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	**--**	**--**	**--**
MW-6A	03/09/07	--	154.91	6.67	380	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
(161.58)	03/26/07	--	154.41	7.17	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	153.79	7.79	590	140	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/29/07	**--**	**152.84**	**8.74**	**540**	**52**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	**--**	**--**	**--**
MW-7B	03/09/07	--	147.97	11.18	930	18,000	1,500	1,600	140	1,800	<600	--	--	--
(159.15)	03/26/07	--	148.10	11.05	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	147.54	11.61	40,000	30,000	1,800	2,400	240	2,800	<700	--	--	--
*(159.00)***	**09/29/07**	**--**	**146.89**	**12.11**	**16,000**	**37,000**	**1,300**	**1,500**	**180**	**2,700**	**<500**	**--**	**--**	**--**
MW-7C	03/09/07	--	145.44	13.09	190	3,600	970	100	12	90	<120	--	--	--
(158.53)	03/26/07	--	147.53	11.00	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	146.65	11.88	7,100	16,000	510	520	190	1,300	<100	--	--	--
	09/29/07	**--**	**146.21**	**12.32**	**11,000**	**29,000**	**580**	**1,400**	**600**	**4,800**	**<1,000**	**--**	**--**	**--**

Table 2. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID *TOC Elev* *(ft)*	Date Sampled	SPH (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved Oxygen mg/L
					←				µg/L				→	
ESL, drinking water		--	--	--	**100**	**100**	**1**	**40**	**30**	**20**	**5**	**--**	**0.50**	**--**
ESL, non-drinking water		--	--	--	640	500	46	130	290	100	1,800	--	200	--
ESL, vapor pathway		--	--	--	NV	NV	540	380,000	170,000	160,000	24,000	--	200	--
MW-8A	03/09/07	--	152.05	9.52	4,200	10,000	430	18	<10	88	<100	--	--	--
(161.57)	03/26/07	--	151.74	9.83	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	151.40	10.17	17,000	12,000	720	500	230	880	<300	--	--	--
*(161.42)***	**09/29/07**	**--**	**150.47**	**10.95**	**5,300**	**7,500**	**440**	**67**	**26**	**240**	**<90**	**--**	**--**	**--**
MW-8C	03/09/07	--	149.18	12.15	<50	150	9.8	1.3	2.0	3.9	<5.0	--	--	--
(161.33)	03/26/07	--	149.56	11.77	--	--	--	--	--	--	--	--	--	--
	06/24/07	--	148.96	12.37	<50	<50	0.57	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/29/07	**--**	**148.35**	**12.98**	**<50**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	**--**	**--**	**--**
MW-9A	**09/29/07**	**--**	**--**	**12.61**	**86**	**<50**	**2.6**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	**--**	**--**	**--**
MW-9C	**8/28/2007***	**--**	**--**	**19.20**	**--**	**73**	**4.4**	**2.1**	**<0.5**	**0.75**	**<5.0**	**--**	**--**	**--**
	09/29/07	**--**	**--**	**12.27**	**390**	**68**	**2.2**	**0.88**	**<0.5**	**<0.5**	**<5.0**	**--**	**--**	**--**
MW-10A	**8/28/2007***	**--**	**--**	**14.00**	**--**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	**--**	**--**	**--**
	09/29/07	**--**	**--**	**10.53**	**<50**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	**--**	**--**	**--**
GRAB GROUNDWATER SAMPLING - 2007														
B-18	01/23/07	--	--	7.1	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
B-19	03/19/07	--	--	4	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--
GRAB GROUNDWATER SAMPLING - 2006														
B1-W	02/01/06	--	--	9.5	<84	710	(0.52)	(0.59)	(<0.50)	(0.66)	<1.0	<5.0	<0.50	--
B3-W	02/08/06	--	--	9.63	<280	23,000	(3,300)	(660)	(170)	(910)	<50	380	<25	--
B4-W	02/08/06	--	--	8.24	--	9,700	(320)	(13)	(200)	(180)	<20	1,300	12	--
B5-W	02/08/06	--	--	6.96	--	10,000	(150)	(11)	(210)	(190)	<10	<50	<5.0	--
B6-W	02/06/06	--	--	12.1	--	5,600	(3.9)	(3.1)	(54)	(61)	<5.0	<25	<2.5	--
B7-W	02/08/06	--	--	11.72	--	8,000	(2,200)	(300)	(240)	(830)	<20	<100	53	--
B8-W	02/08/06	--	--	9.97	--	18,000	(330)	(53)	(440)	(1,200)	<20	<100	11	--
B10-W	02/06/06	--	--	13.3	--	6,800	(<5.0)	(5.7)	(170)	(69)	<10	<50	<5.0	--
B11-W	02/10/06	--	--	14.3	--	230,000	(13,000)	(19,000)	(960)	(20,000)	<200	<1,000	150	--
B12-W	02/03/06	--	--	7.92	--	460	(1.6)	(2.1)	(1.6)	(3.5)	<1.0	<5.0	0.62	--
B13-W	02/03/06	--	--	11.67	<60	1,700	(12)	(9.4)	(18)	(22)	<5.0	<25	<2.5	--
B14-W	02/06/06	--	--	13.1	--	38,000	(410)	(25)	(290)	(95)	<50	<250	<25	--
B15-W	02/01/06	--	--	8.75	<620	2,700	(3.2)	(2.7)	(22)	(4.3)	<5.0	<25	<2.5	--

Table 2. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date		Groundwater	Depth									Dissolved
TOC Elev	Sampled	SPH	Elevation	to Water	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Oxygen
(ft)		(ft)	(ft)	(ft)	←				µg/L				→	mg/L
ESL, drinking water		--	--	--	**100**	**100**	**1**	**40**	**30**	**20**	**5**	--	**0.50**	--
ESL, non-drinking water		--	--	--	640	500	46	130	290	100	1,800	--	200	--
ESL, vapor pathway		--	--	--	NV	NV	540	380,000	170,000	160,000	24,000	--	200	--

Abbreviations:

µg/L = micrograms per liter - approximately equal to parts per billion = ppb

mg/L = milligrams per liter - approximately equal to parts per million = ppm

SPH = Separate-phase hydrocarbons encountered in well (value in parentheses is thickness in feet)

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015Cm.

TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015C.

BTEX by EPA Method 8021B. (Concentrations in parentheses are by EPA Method 8260B).

MTBE = Methyl tertiary-butyl ether by EPA Method 8021B. (Concentrations in parentheses are by EPA Method 8260B).

DIPE = Diisopropyl ether by EPA Method 8260B.

1,2-DCA = 1,2-Dichloroethane by EPA Method 8260B.

ESL established by the SFBRWQCB, Interim Final - February 2005, and amended in November 2006.

ESL, drinking water = Environmental Screening Level for Groundwater where groundwater is a current or potential drinking water resource (Table F-1a).

ESL, non-drinking water = Environmental Screening Level for Groundwater where groundwater is a current or potential drinking water resource (Table F-1b).

ESL, vapor pathway = Environmental Screening Level for Groundwater where groundwater is/is not a current or potential drinking water resource (Table E-1a).

* = Grab sample collected after well installation, prior to development.

** = Approximate elevation, pending re-survey.

APPENDIX A

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: 01/09/2007 By jamesy

Permit Numbers: W2007-0010 to W2007-0020
Permits Valid from 01/17/2007 to 02/28/2007

Application Id: 1167786724530
City of Project Site: Oakland
Site Location: 5175 Broadway
5230 Coronado
5151 Broadway
5130 Broadway
Project Start Date: 01/17/2007
Completion Date: 02/28/2007

Applicant: Pangea Environmental Services, Inc. - Morgan Gillies
1710 Franklin Street, Suite 200, Oakland, CA 94612
Phone: 408-910-1783

Property Owner: Heights, LLC Rockridge
34 Shooner Hill, Oakland, CA 94618
Phone: --

Client: ** same as Property Owner **

Total Due: $3200.00
Receipt Number: WR2007-0010 **Total Amount Paid:** $3200.00
Payer Name : Robert Clark-Riddell Paid By: VISA **PAID IN FULL**

Works Requesting Permits:

Well Construction-Monitoring-Monitoring - 7 Wells
Driller: RSI Drilling, Inc. - Lic #: 802334 - Method: hstem **Work Total: $2100.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2007-0010	01/09/2007	04/17/2007	MW-10A	8.00 in.	2.00 in.	9.00 ft	15.00 ft
W2007-0011	01/09/2007	04/17/2007	MW-2B	8.00 in.	2.00 in.	17.00 ft	23.00 ft
W2007-0012	01/09/2007	04/17/2007	MW-4A-(MW-4)	8.00 in.	2.00 in.	7.00 ft	15.00 ft
W2007-0013	01/09/2007	04/17/2007	MW-5A-(MW-5)	8.00 in.	2.00 in.	8.00 ft	14.00 ft
W2007-0014	01/09/2007	04/17/2007	MW-5B	8.00 in.	2.00 in.	15.00 ft	20.00 ft
W2007-0015	01/09/2007	04/17/2007	MW-5C	8.00 in.	2.00 in.	21.00 ft	27.00 ft
W2007-0016	01/09/2007	04/17/2007	MW-9A	8.00 in.	2.00 in.	9.00 ft	15.00 ft

Specific Work Permit Conditions

1. 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.

2. Permitte, 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.

3. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

4. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Including permit number and site map.

5. Drill out & Replace with New Well

6. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.

7. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 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.

8. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.

9. Minimum surface seal thickness is two inches of cement grout placed by tremie

10. Minimum seal (Neat Cement seal) depth for monitoring wells is 5 feet below ground surface(BGS) or the maximum depth practicable or 20 feet.

11. 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.

12. Well MW-4 (Destroy) Replace MW-4A-Condition #5
Well MW-5 (Destroy) Replace MW-5A-Condition #5
Note: Two State DWR-188 forms needed.

Borehole(s) for Investigation-Environmental/Monitorinig Study - 5 Boreholes
Driller: RSI Drilling, Inc. - Lic #: 802334 - Method: hstem **Work Total: $200.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2007-0017	01/09/2007	04/17/2007	5	6.25 in.	25.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or

with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site.

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 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. 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.

6. 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.

Well Destruction-Monitoring - 3 Wells
Driller: RSI Drilling, Inc. - Lic #: 802334 - Method: hstem **Work Total: $900.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2007-0018	01/09/2007	04/17/2007	MW-2	10.00 in.	4.00 in.	6.00 ft	23.00 ft			
W2007-0019	01/09/2007	04/17/2007	STMW-4	8.00 in.	4.00 in.	6.00 ft	19.50 ft			
W2007-0020	01/09/2007	04/17/2007	STMW-5	8.00 in.	2.00 in.	7.00 ft	24.00 ft			

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the

Alameda County Public Works Agency, Water Resources Section, within 60 days. Including permit number and site map.

4. 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 and liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.

5. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 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.

6. Permitte, 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.

7. Remove the Christy box or similar structure.

Destroy well by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil.

After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

8. Remove well by excavation. After the seal has set, backfill the remaining hole with concrete or compacted material to match existing.

Alameda County Public Works Agency - Water Resources Well Permit

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

Application Approved on: 01/09/2007 By jamesy

Permit Numbers: W2007-0010 to W2007-0020
Permits Valid from 08/28/2007 to 08/28/2007

Application Id: 1167786724530
City of Project Site: Oakland
Site Location: 5175 Broadway
5230 Coronado
5151 Broadway
5130 Broadway
Project Start Date: 01/17/2007
Completion Date: 02/28/2007
Extension Start Date: 08/28/2007
Extension End Date: 08/28/2007
Extension Count: 2
Extended By: vickyh1

Applicant: Pangea Environmental Services, Inc. - Morgan Gillies
1710 Franklin Street, Suite 200, Oakland, CA 94612
Phone: 408-910-1783

Property Owner: Heights, LLC Rockridge
34 Shooner Hill, Oakland, CA 94618
Phone: --

Client: ** same as Property Owner **

Total Due: $3200.00
Receipt Number: WR2007-0010 **Total Amount Paid:** $3200.00
Payer Name : Robert Clark-Riddell Paid By: VISA **PAID IN FULL**

Works Requesting Permits:

Well Construction-Monitoring-Monitoring - 7 Wells
Driller: RSI Drilling, Inc. - Lic #: 802334 - Method: hstem **Work Total: $2100.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2007-0010	01/09/2007	04/17/2007	MW-10A	8.00 in.	2.00 in.	9.00 ft	15.00 ft
W2007-0011	01/09/2007	04/17/2007	MW-2C-(2B)	8.00 in.	2.00 in.	17.00 ft	23.00 ft
W2007-0012	01/09/2007	04/17/2007	MW-4A-(MW-4)	8.00 in.	2.00 in.	6.00 ft	19.50 ft
W2007-0013	01/09/2007	04/17/2007	MW-5A-(MW-5)	8.00 in.	2.00 in.	8.50 ft	14.00 ft
W2007-0014	01/09/2007	04/17/2007	MW-5B	8.00 in.	2.00 in.	15.50 ft	20.00 ft
W2007-0015	01/09/2007	04/17/2007	MW-5C	8.00 in.	2.00 in.	20.00 ft	27.00 ft
W2007-0016	01/09/2007	04/17/2007	MW-9A	8.00 in.	2.00 in.	9.00 ft	15.00 ft

Specific Work Permit Conditions

1. 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.

2. Permitte, 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.

3. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

4. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Including permit number and site map.

5. Drill out & Replace with New Well

6. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.

7. 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.

8. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.

9. Minimum surface seal thickness is two inches of cement grout placed by tremie

10. Minimum seal (Neat Cement seal) depth for monitoring wells is 5 feet below ground surface(BGS) or the maximum depth practicable or 20 feet.

11. 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.

12. Well MW-4 (Destroy) Replace MW-4A-Condition #5
Well MW-5 (Destroy) Replace MW-5A-Condition #5
Note: Two State DWR-188 forms needed.

Borehole(s) for Investigation-Environmental/Monitorinig Study - 5 Boreholes
Driller: RSI Drilling, Inc. - Lic #: 802334 - Method: hstem **Work Total: $200.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2007-0017	01/09/2007	04/17/2007	5	6.25 in.	25.00 ft

Alameda County Public Works Agency - Water Resources Well Permit

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.

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. 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.

6. 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.

Well Destruction-Monitoring - 3 Wells

Driller: RSI Drilling, Inc. - Lic #: 802334 - Method: hstem **Work Total: $900.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2007-0018	01/09/2007	04/17/2007	MW-2	10.00 in.	4.00 in.	6.00 ft	23.00 ft	0	0	0
W2007-0019	01/09/2007	04/17/2007	STMW-4	8.00 in.	4.00 in.	6.00 ft	19.50 ft	0	0	0
W2007-0020	01/09/2007	04/17/2007	STMW-5	8.00 in.	2.00 in.	7.00 ft	24.00 ft	0	0	0

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Including permit number and site map.

4. 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 and liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.

5. 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.

6. Permitte, 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.

7. Remove the Christy box or similar structure.

Destroy well by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil.

After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

8. Remove well by excavation. After the seal has set, backfill the remaining hole with concrete or compacted material to match existing.

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: 08/23/2007 By jamesy

Permit Numbers: W2007-0926 to W2007-0927
Permits Valid from 08/28/2007 to 09/28/2007

Application Id: 1187306444583
City of Project Site: Oakland
Site Location: 5151 Broadway
Project Start Date: 08/28/2007
Completion Date: 09/28/2007

Applicant: Pangea Environmental Services, Inc. - Morgan Gillies
1710 Franklin St., Suite 200, Oakland, CA 94612
Phone: 408-910-1783

Property Owner: Union Bank of California, N.A., as Trustee
Phone: --

Client: Sharman Noguchi
350 California Street, Suite 1700, San Francisco, CA 94104
Rockridge Heights, LLC
34 Schooner Hill, Oakland, CA 94618
Phone: --

Total Due: $600.00
Receipt Number: WR2007-0376 **Total Amount Paid:** $600.00
Payer Name : Robert Clark-Riddell Paid By: VISA **PAID IN FULL**

Works Requesting Permits:

Well Construction-Monitoring-Monitoring - 2 Wells
Driller: RSI Drilling, Inc. - Lic #: 802334 - Method: hstem **Work Total: $600.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2007-0926	08/23/2007	11/26/2007	MW-10C	8.00 in.	2.00 in.	19.00 ft	25.00 ft
W2007-0927	08/23/2007	11/26/2007	MW-9C	8.00 in.	2.00 in.	19.00 ft	25.00 ft

Specific Work Permit Conditions

1. 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.

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7. Minimum surface seal thickness is two inches of cement grout placed by tremie

8. Minimum seal (Neat Cement seal) depth for monitoring wells is 5 feet below ground surface(BGS) or the maximum depth practicable or 20 feet.

9. 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.

APPENDIX B

Standard Operating Procedures

STANDARD OPERATING PROCEDURE FOR SUBSLAB VAPOR SAMPLING

1.0 PURPOSE

This standard operating procedure (SOP) describes the procedures for collecting subslab vapor samples using evacuated, stainless-steel Summa canisters for the purpose of assessing risk to building occupants. The SOP is modified from procedures and information presented in Cal/EPA 2004; DiGiulio and others, 2006; DiGiulio, 2003; and discussions (September 2006) with K Prime (Santa Rosa, California) laboratory staff.

2.0 REQUIRED EQUIPMENT

- Hammer drill with 1" bit and smaller bits (slightly larger than vapor probe tip)
- Tubing for cleaning boring
- Stainless-steel or Teflon vapor probe tubing with Swagelok threaded compression fitting and vapor-tight cap.
- Rubber stopper or Teflon disk
- Powdered bentonite or expanding Portland cement
- 6-Liter Summa canister (evacuated with approximately 30" Hg vacuum) with vacuum gauge for purging and leak testing
- 6-Liter Summa canister with vacuum gauge for each sample (including duplicates)
- 1-Liter Summa canister for leak-check compound
- K Prime Inc. stainless-steel sampling manifold (see Figure 2) (request that laboratory leak-check manifold prior to mobilization)
- Leak-check compound (e.g. isopropyl alcohol) and absorbent material (e.g. gauze)
- Photoionization detector (PID)
- Isobutylene for PID calibration
- Tedlar bags for sampling leak-check compound
- Leak-check enclosure (plastic container with flexible weatherstripping and openings for vapor probe tubing and for sampling enclosure atmosphere)
- Record-keeping materials
- Latex or nitrile gloves

3.0 PROCEDURES

3.1 Boring Clearance

Prior to installing subslab vapor probes, ensure that a utility clearance has been conducted to ensure that subsurface utility and rebar locations have been identified and marked.

3.2 Vapor Probe Construction

1. To protect interior surfaces, lay plastic sheeting around the probe location.
2. Use a rotary hammer drill to create an approximately 2-inch deep, 1-inch diameter hole that *partially* penetrates the slab. Use a piece of flexible tubing to blow or vacuum concrete debris and dust from the hole. Do not blow or vacuum after the slab has been completely penetrated.
3. Drill a smaller diameter *inner hole* in the center of the outer hole, periodically blowing dust and debris from the hole until the slab is penetrated. The diameter of the inner hole

should exceed the diameter of the vapor probe tip by approximately 1/16". The inner hole should be drilled completely through the slab and several inches into the subslab material (baserock or soil) to form a cavity (see Figure 1).

4. Place a tightly fitting rubber stopper or a Teflon disk with a pass-through for the vapor probe at the bottom of the outer hole. The purpose of the stopper is to stop moisture from the annular seal from leaking into subslab materials. If a lubricant is needed, use only high-vacuum silicone grease.
5. Insert the capped vapor probe tubing through the stopper. The fitting may either be constructed flush, or may protrude above the slab, depending on location and susceptibility to damage. The vapor probe tubing should be cut prior to insertion so that the tip does not protrude below the concrete slab.
6. Mix quick-drying Portland expanding cement with water and backfill the annulus of the vapor probe boring to the surface with the cement mixture. A hydrated bentonite mixture (mix bentonite and water outside the hole) may be used in lieu of cement if the probe is temporary and will not be disturbed prior to sampling

3.3 Vapor Sampling

During vapor sampling, record all valve open/close times and canister/manifold vacuum readings at each step.

Setup

1. Ensure that at least two weeks have elapsed since installation of the subslab vapor probe(s) and that at least 5 days have elapsed since measurable precipitation or irrigation of areas adjacent to the building.
2. Calculate and record the volume of the sampling assembly, tubing and vapor probe.

   Volume =3.14 x (1/2*ID) x (1/2*ID) *L,

   where ID = tubing or manifold inside diameter and L = length of tubing/manifold segment.
3. Wear latex or nitrile gloves while handling sampling equipment. Change gloves whenever a new sample is collected and after handling leak-check compound.
4. Replace the vapor probe cap with a closed Swagelok valve. Connect the sampling manifold to the vapor probe, sample Summa canister and purge Summa canister using Swagelok fittings and stainless-steel, Teflon or Tygon tubing. Check all fittings for tightness (do not overtighten).
5. Close all valves. Record pre-test vacuum readings on both canisters.

Flow and Leak Check

1. Open both manifold valves and valve on purge Summa canister. Do *not* open valve on sample port. Allow manifold/tubing vacuum to stabilize at approximately 30" Hg.
2. Close purge canister valve and wait at least 10 minutes. Monitor manifold vacuum gauge to test for leaks. If the vacuum decreases, rectify the leak before proceeding.
3. If vacuum is stable, open purge canister valve and open vapor probe valve. After approximately *5 seconds*, close the canister valve and estimate flow rate by recording the elapsed time after valve closure for manifold vacuum to drop to 5" vacuum, as indicated on the following chart (specific to K-Prime sampling manifold)

K PRIME, INC. SOIL GAS MANIFOLD FLOW RATE AND VACUUM LEVEL ESTIMATES

T (seconds)	PV	F (ml/minute)
5	0	135
10	5	115
15	10	90
30	15	60
120	20	40
480	25	20

Source: K Prime, Inc. – July 24, 2006

NOTES:
T = Time duration from full vacuum to less than 5" vacuum after closing purge canister.
PV = Approximate vapor probe vacuum level based on measured T
F = Approximate sampling Flow rate based on measured T

4. This procedure should also be conducted several times at the beginning of sampling to ensure that flow rate is sufficient. If no significant flow is attained, either the sampling line is plugged or the vapor probe is positioned in an impermeable or saturated layer. Such a situation should be rectified before sample collection.
5. Place absorbent materials (e.g., gauze) *lightly* moistened (e.g., five drops) with leak-check compound (isopropyl alcohol) around each connection at the vapor probe/slab interface. Do not allow liquid to come in direct contact with tubing or sampling assembly.
6. Place leak-check enclosure over vapor probe and seal to floor using weatherstripping or duct tape. Ensure that PID has been calibrated with isobutylene gas. Note that the isopropyl alcohol response factor is approximately 5.6 (i.e. a reading of 2 ppm on the PID indicates 5.6 x 2 = 11.2 ppm of isopropyl alcohol in the sample). Record both the observed PID reading and the calculated isopropyl alcohol concentration. If the PID reading is below 10 ppm, slowly reapply leak-check compound.
7. Record PID reading for leak-check enclosure at least once every 5 minutes during purging and sampling. Slowly reapply leak-check compound if PID reading drops more than 20% below initial readings in an attempt to return to the initial readings.

Purge and Sample

1. Open purge canister valve and vapor probe valve and purge approximately 5 purge volumes of the tubing and sampling assembly (DeGiulio and others, 2006). Do *not* over-purge. Include the purging conducted during the leak-check step above in the purge volume.
2. Close purge canister valve and open sample canister valve. Sampling should take approximately 30 minutes for a 6-liter Summa canister.
3. During sampling, the integrated flow rate should be checked periodically by closing the sample canister valve and checking the elapsed time versus the sampling volume. Sampling volume for a 6-liter canister can be estimated based on the following table.

Relationship between Final Canister Vacuum and Volume Sampled

Final Vacuum ("Hg)	0	2.5	5	7.5	10	12.5	15	17.5	20
Volume Sampled (L)	6	5.5	5	4.5	4	3.5	3	2.5	2

Source: Air Toxics, Inc.

4. Close sampling canister valve when vacuum decreases to between 1" and 5" mercury. Do *not* allow vacuum to fall below this range.
5. Use a 1-liter Summa canister to collect a sample from the leak-check enclosure. Submit canister for analysis of leak-check compound only.
6. Disassemble sampling assembly, and cap (or remove and restore) vapor sampling point.
7. Fill out chain-of-custody form, including analysis for chemicals of concern and leak-check compound. Also analyze for oxygen, carbon dioxide and methane. Include final vacuum reading and serial numbers of canister and flow restrictor.
8. Collect at least one duplicate sample per site per sampling event from the sampling point with the anticipated highest vapor concentrations. The duplicate sample should be collected by attaching a fresh sample canister following collection of the initial sample. If a new manifold is used, follow the same purging and sampling procedures used for the original sample. If the same manifold is used, collect a sample without further purging, using the same sampling procedures used for the original sample

Decontamination

9. Use separate sampling assembly and tubing for each sample location. Return equipment to laboratory for decontamination.

REFERENCES

Cal/EPA, 2004, Interim final guidance for the evaluation and mitigation of subsurface vapor intrusion to indoor air, California Environmental Protection Agency, Department of Toxic Substances Control,December 15 (revised February 7, 2005).

Dominic DiGiulio, 2003, Standard Operating Procedure (SOP) for installation of sub-slab vapor probes and sampling using EPA Method TO-15 to support vapor intrusion investigations, U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory, Ground-Water and Ecosystem Restoration Division, Ada, Oklahoma (included as Appendix C of Colorado Department of Public Health and Environment, 2004, Draft Indoor Air Guidance, Hazardous Materials and Waste Division), September

DiGiulio, D.C., and Cynthia J. Pau, C., Cody, R., Willey, R., Clifford, S., Kahn, P., Mosley R., Lee, A., and Christensen, K., 2006, Assessment of vapor intrusion in homes near the Raymark Superfund Site using basement and sub-slab air samples, U.S. Environmental Protection Agency, Office Of Research and Development, National Risk Management Research Laboratory, Cincinnati, OH 45268, March.

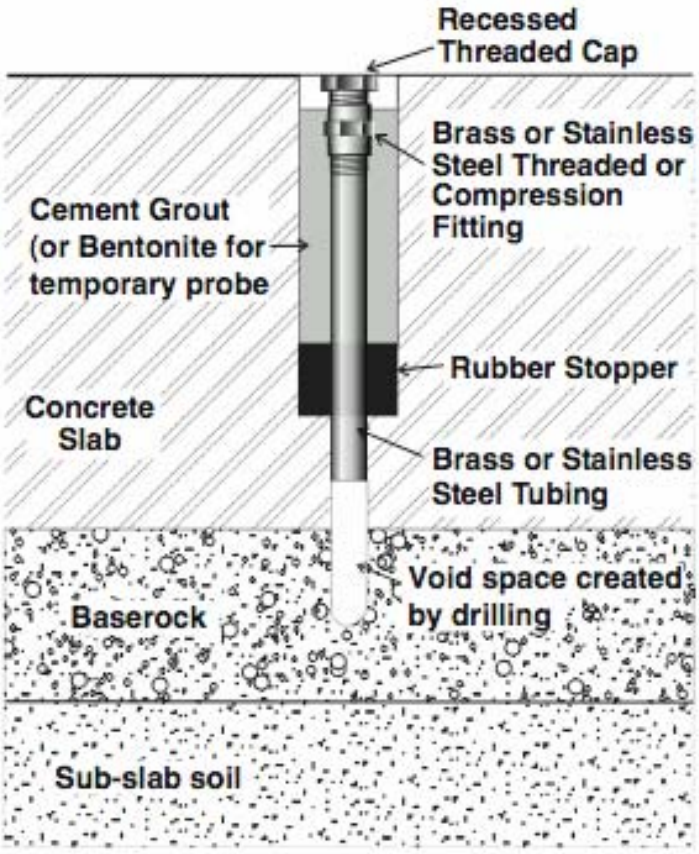

Figure
1

Subslab Vapor Probe Schematic

PANGEA

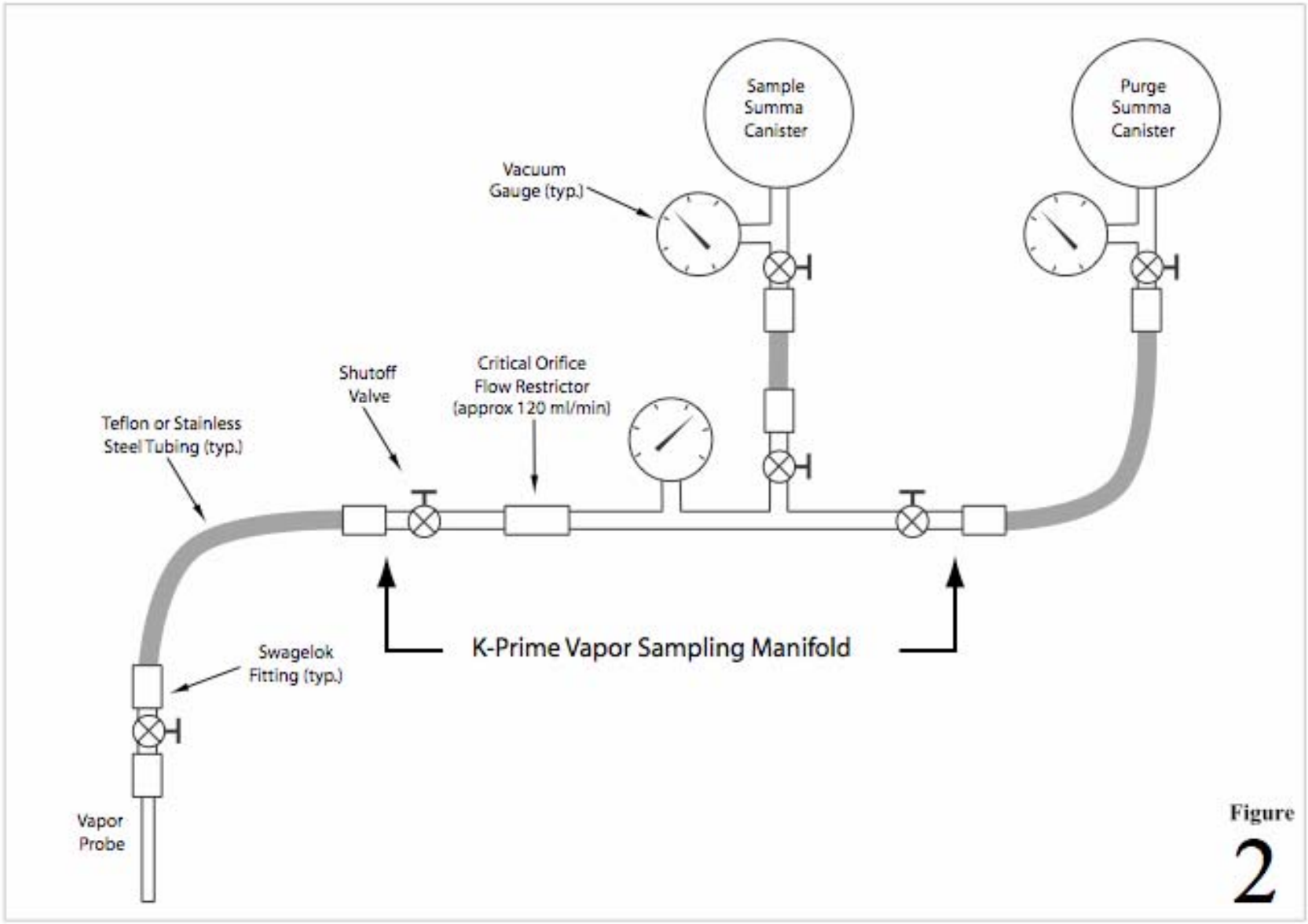

Figure
2

Subslab and Soil Vapor Sampling Manifold Schematic

PANGEA

STANDARD OPERATING PROCEDURES FOR SOIL GAS SAMPLING

1.0 PURPOSE

This standard operating procedure (SOP) describes the procedures for collecting shallow soil gas vapor samples using temporary vapor probes and evacuated, stainless-steel Summa canisters. The SOP is modified from procedures and information presented in California Regional Water Quality Control Board – Los Angeles Region (LARWQCB), 1997, Cal/EPA 2004, and discussions (September 2006) with K Prime (Santa Rosa, California) laboratory staff.

2.0 REQUIRED EQUIPMENT

- Drill rig or hammer drill with 1" bit and smaller bits (slightly larger than vapor probe tip)
- Tubing for cleaning boring
- Vapor probes and tubing with Swagelok threaded compression fitting and vapor-tight cap.
- Rubber stopper or Teflon disk
- Powdered bentonite or expanding Portland cement
- 6-Liter Summa canister (evacuated with approximately 30" Hg vacuum) with vacuum gauge for purging and leak testing
- 6-Liter Summa canister with vacuum gauge for each sample (including duplicates)
- 1-Liter Summa canister for leak-check compound
- K Prime Inc. stainless-steel sampling manifold (see Figure 2) (request that laboratory leak-check manifold prior to mobilization)
- Leak-check compound (e.g. isopropyl alcohol) and absorbent material (e.g. gauze)
- Photoionization detector (PID)
- Isobutylene for PID calibration
- Tedlar bags for sampling leak-check compound
- Leak-check enclosure (plastic container with flexible weatherstripping and openings for vapor probe tubing and for sampling enclosure atmosphere)
- Record-keeping materials
- Latex or nitrile gloves

3.0 PROCEDURES

3.1 Boring Clearance

Prior to installing temporary soil vapor probes, ensure that a utility clearance has been conducted to ensure that subsurface utility and rebar locations have been identified and marked.

3.2 Vapor Probe Installation

1. To protect surfaces, lay plastic sheeting around the probe location.
2. Use a rotary hammer drill or concrete-coring equipment to create an approximately 1-inch or greater diameter hole that penetrates the slab.
3. In general, the drive rod is driven to a predetermined depth and then pulled back to expose the inlets of the soil gas probe either by exposing a short screened section or by leaving a disposable drop-off tip in the hole. After sample collection, both the drive rod and tubing are removed.

4. During installation of the probe, hydrated bentonite should be used to seal around the drive rod at ground surface to prevent ambient air intrusion from occurring.
5. The inner soil gas pathway from probe tip to the surface should be continuously sealed (e.g., a sampling tube attached to a screw adapter fitted with an o-ring and connected to the probe tip) to prevent infiltration.
6. Equilibration Time: During probe emplacement, subsurface conditions are disturbed. To allow for subsurface conditions to equilibrate, the following equilibration times are recommended:

   For probes installed with the direct push method where the drive rod remains in the ground, purge volume test, leak test, and soil gas sampling should not be conducted for at least 20 minutes following probe installation.

   For probes installed with the direct push method where the drive rod does not remain in the ground, purge volume test, leak test, and soil gas sampling should not be conducted for at least 30 minutes following probe installation.

   For probes installed with hollow stem drilling methods, purge volume test, leak test, and soil gas sampling should not be conducted for at least 48 hours (depending on site lithologic or drilling conditions) after the soil gas probe installation.
7. Probe installation time should be recorded in the field log book.
8. Decontamination: After each use, drive rods and other reusable components should be properly decontaminated to prevent cross contamination. These methods include:

   3-stage wash and rinse (e.g., wash equipment with a non-phosphate detergent, rinse with tap water, and finally rinse with distilled water); and/or

   Steam-cleaning.

3.3 Vapor Sampling

During vapor sampling, record all valve open/close times and canister/manifold vacuum readings at each step.

Setup

1. Calculate and record the volume of the sampling assembly, tubing vapor probe, and any permeable annular space around the vapor probe tip.

   Volume =3.14 x (1/2*ID) x (1/2*ID) *L,

   where ID = tubing or manifold inside diameter and L = length of tubing/manifold segment.
2. Wear latex or nitrile gloves while handling sampling equipment. Change gloves whenever a new sample is collected and after handling leak-check compound.
3. Replace the vapor probe cap with a closed Swagelok valve. Connect the sampling manifold to the vapor probe, sample Summa canister and purge Summa canister using Swagelok fittings and stainless-steel, Teflon or Tygon tubing. Check all fittings for tightness (do not overtighten).
4. Close all valves. Record pre-test vacuum readings on both canisters.

Flow and Leak Check

1. Open both manifold valves and valve on purge Summa canister. Do *not* open valve on sample port. Allow manifold/tubing vacuum to stabilize at approximately 30” Hg.

2. Close purge canister valve and wait at least 10 minutes. Monitor manifold vacuum gauge to test for leaks. If the vacuum decreases, rectify the leak before proceeding.

3. If vacuum is stable, open purge canister valve and open vapor probe valve. After approximately *5 seconds*, close the canister valve and estimate flow rate by recording the elapsed time after valve closure for manifold vacuum to drop to 5" vacuum, as indicated on the following chart (specific to K-Prime sampling manifold)

K PRIME, INC. SOIL GAS MANIFOLD FLOW RATE AND VACUUM LEVEL ESTIMATES

T (seconds)	PV	F (ml/minute)
5	0	135
10	5	115
15	10	90
30	15	60
120	20	40
480	25	20

Source: K Prime, Inc. – July 24, 2006

NOTES:
T = Time duration from full vacuum to less than 5" vacuum after closing purge canister.
PV = Approximate vapor probe vacuum level based on measured T
F = Approximate sampling flow rate based on measured T

4. This procedure should also be conducted several times at the beginning of sampling to ensure that flow rate is sufficient. If no significant flow is attained, either the sampling line is plugged or the vapor probe is positioned in an impermeable or saturated layer. Such a situation should be rectified before sample collection.

5. Place absorbent materials (e.g., gauze) *lightly* moistened (e.g., five drops) with leak-check compound (isopropyl alcohol) inside the leak-check enclosure. Do not allow liquid to come in direct contact with tubing or sampling assembly.

6. Place leak-check enclosure over vapor probe and seal to floor using weatherstripping or duct tape. Ensure that PID has been calibrated with isobutylene gas. Note that the isopropyl alcohol response factor is approximately 5.6 (i.e. a reading of 2 ppm on the PID indicates 5.6 x 2 = 11.2 ppm of isopropyl alcohol in the sample). Record both the observed PID reading and the calculated isopropyl alcohol concentration. If the PID reading is below 10 ppm, slowly reapply leak-check compound.

7. Record PID reading for leak-check enclosure at least once every 5 minutes during purging and sampling. Slowly reapply leak-check compound if PID reading drops more than 20% below initial readings in an attempt to return to the initial readings.

Purge and Sample

1. Open purge canister valve and vapor probe valve and purge the appropriate number of purge volumes. For vapor sampling in support of risk-assessments for regulatory review, a step-purge test should be conducted at a "worst case" sampling point, using 1, 3 and 7 purge volumes to determine the appropriate purge volume that yields the highest target compound concentration. For soil gas screening, or where a purge test is not feasible, purge approximately 3 to 5 purge volumes of the tubing and sampling assembly. Do *not* over-purge. Include the purging conducted during the leak-check step above in the purge

volume.

2. Close purge canister valve and open sample canister valve. Sampling should take approximately 30 minutes for a 6-liter Summa canister.
3. During sampling, the integrated flow rate should be checked periodically by closing the sample canister valve and checking the elapsed time versus the sampling volume. Sampling volume for a 6-liter canister can be estimated based on the following table.

Relationship between Final Canister Vacuum and Volume Sampled

Final Vacuum ("Hg)	0	2.5	5	7.5	10	12.5	15	17.5	20
Volume Sampled (L)	6	5.5	5	4.5	4	3.5	3	2.5	2

Source: Air Toxics, Inc.

4. Close sampling canister valve when vacuum decreases to between 1" and 5" mercury. Do *not* allow vacuum to fall below this range.
5. Use a 1-liter Summa canister to collect a sample from the leak-check enclosure. Submit canister for analysis of leak-check compound only.
6. Disassemble sampling assembly, and cap (or remove and restore) vapor sampling point.
7. Fill out chain-of-custody form, including analysis for chemicals of concern and leak-check compound. Also analyze for oxygen, carbon dioxide and methane. Include final vacuum reading and serial numbers of canister and flow restrictor.
8. Collect at least one duplicate sample per site per sampling event from the sampling point with the anticipated highest vapor concentrations. The duplicate sample should be collected by attaching a fresh sample canister following collection of the initial sample. If a new manifold is used, follow the same purging and sampling procedures used for the original sample. If the same manifold is used, collect a sample without further purging, using the same sampling procedures used for the original sample

Decontamination and Decommissioning

9. Use separate sampling manifold and tubing for each sample location. Return equipment to laboratory for decontamination.
10. Backfill soil vapor probe holes with bentonite slurry.

REFERENCES

California Regional Water Quality Control Board – Los Angeles Region (LARWQCB), 1997, Interim guidance for active soil gas investigation, February 25.

Cal/EPA, 2003, Advisory – Active soil gas investigations, California Environmental Protection Agency, Department of Toxic Substances Control, January 28.

Cal/EPA, 2004, Interim final guidance for the evaluation and mitigation of subsurface vapor intrusion to indoor air, California Environmental Protection Agency, Department of Toxic Substances Control, December 15 (revised February 7, 2005).

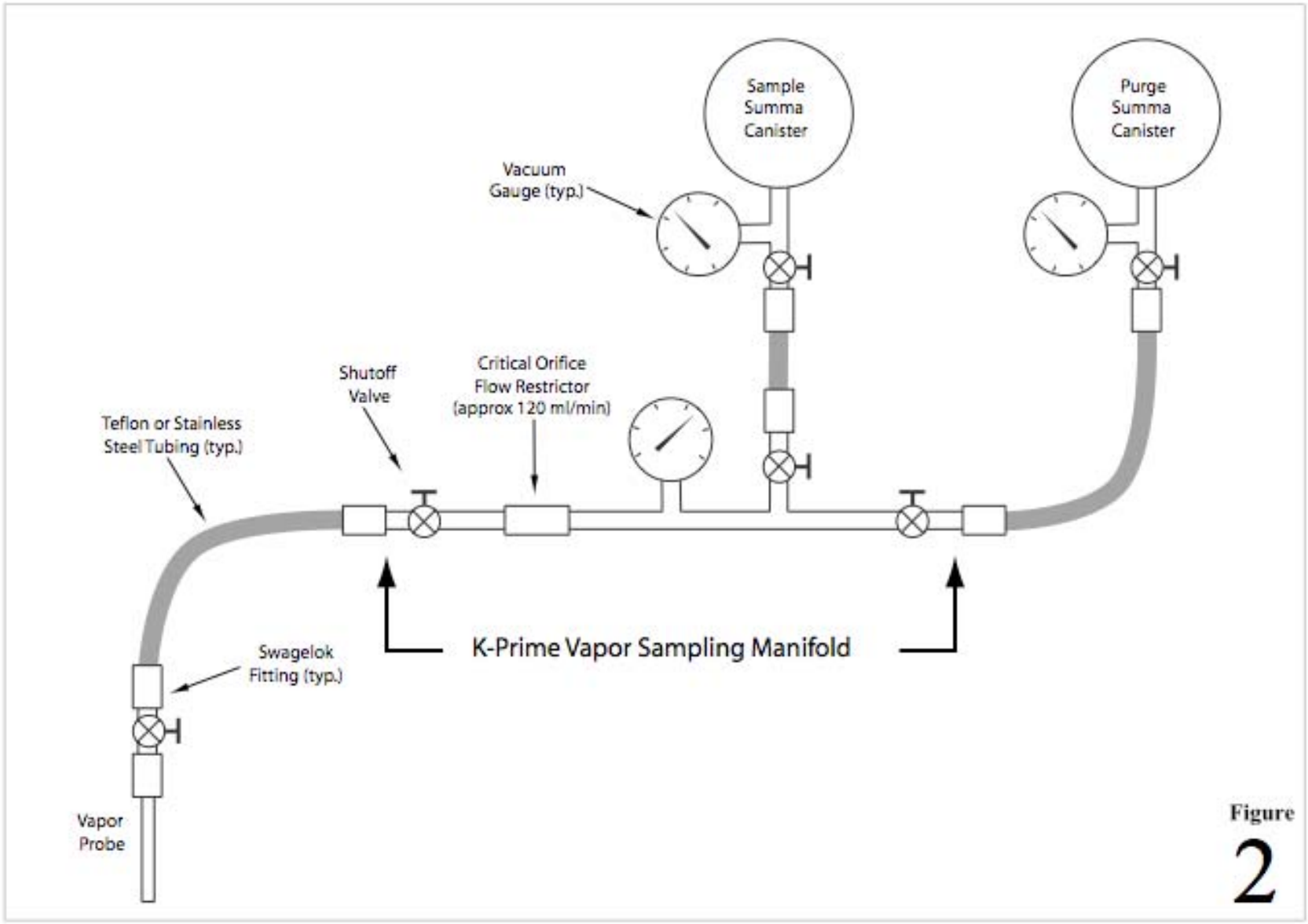

Figure
2

Subslab and Soil Vapor Sampling Manifold Schematic

PANGEA

STANDARD FIELD PROCEDURES FOR MONITORING WELLS

This document describes Pangea Environmental Services' standard field methods for drilling, installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Well Construction and Surveying

Groundwater monitoring wells are installed in soil borings to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I, II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security. The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Pangea Environmental Services' standard field methods for drilling and sampling soil borings. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality, and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist, scientist or engineer working under the supervision of a California Registered Engineer, California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic-push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples are collected near the water table and at lithologic changes. With hollow-stem drilling, samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the borehole. With hydraulic-push drilling, samples are typically collected using acetate liners. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes or cut acetate liners chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

Soil samples collected during drilling will be analyzed in the field for ionizable organic compounds using a photo-ionization detector (PID) with a 10.2 eV lamp. The screening procedure will involve placing an undisturbed soil sample in a sealed container (either a zip-lock bag, glass jar, or a capped soil tube). The container will be set aside, preferably in the sun or warm location. After approximately fifteen minutes, the head space within the container will be tested for total organic vapor, measured in parts per million on a volume to volume basis (ppmv) by the PID. The PID instrument will be calibrated prior to boring using hexane or isobutylene. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples collected from borings are either collected from the open borehole, from within screened PVC inserted into the borehole, or from a driven Hydropunch-type sampler. Groundwater is typically extracted using a bailer, check valve and/or a peristaltic pump. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Pangea often performs electrical conductivity (EC) logging and/or continuous coring to identify potential water-bearing zones. Hydropunch-type sampling is then performed to provide discrete-depth grab groundwater sampling within potential water-bearing zones for vertical contaminant delineation. Hydropunch-type sampling typically involves driving a cylindrical sheath of hardened steel with an expendable drive point to the desired depth within undisturbed soil. The sheath is retracted to expose a stainless steel or PVC screen that is sealed inside the sheath with Neoprene O-rings to prevent infiltration of formation fluids until the desired depth is attained. The groundwater is extracted using tubing inserted down the center of the rods into the screened sampler.

Duplicates and Blanks

Blind duplicate water samples are collected usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

APPENDIX C

Laboratory Analytical Reports

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Pangea Environmental Svcs., Inc. 1710 Franklin Street, Ste. 200 Oakland, CA 94612	Client Project ID: #5175 Broadway; Rockridge Heights	Date Sampled: 08/28/07
		Date Received: 08/28/07
	Client Contact: Morgan Gillies	Date Reported: 08/29/07
	Client P.O.:	Date Completed: 08/29/07

WorkOrder: 0708784

August 29, 2007

Dear Morgan:

Enclosed are:

1). the results of **2** analyzed samples from your **#5175 Broadway; Rockridge Heights project,**

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Best regards,

Angela Rydelius, Lab Manager

0708784

RUSH

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd.
Pittsburg, CA 94565
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (925) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☒ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAY
EDF Required? Coelt (Normal) (No) Write On (DW) No

Report To: Morgan Gillies Bill To: Pangea
Company: Pangea Environmental Services, Inc.
1710 Franklin Street, Suite 200, Oakland, CA 94612
E-Mail: mgillies@pangeaenv.com
Tele: (510) 836-3702 Fax: (510) 836-3709
Project #: 5175 Broadway Project Name: Rockridge Heights
Project Location: 5175 Broadway, Oakland, CA
Sampler Signature:

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX & TPH as Gas (602/8020 + 8015)/MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010 / 8021	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8081	EPA 608 / 8082 PCB's ONLY	EPA 8140 / 8141	EPA 8150 / 8151	EPA 524.2 / 624 / 8260	EPA 525 / 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals (6010 / 6020)	*LUFT 5 Metals (6010 / 6020)	Lead (200.8 / 200.9 / 6010)	5 Oxygenates(TAME, TBA, DIPE, ETBE, MTBE) by 8260.	Other	Other	Other	Comments
MW-10A		8/28	1300	3	VOAs	X					X	X			X																				
MW-9C		8/28	1600	3	↓	X					X	X			X																				

Relinquished By:	Date:	Time:	Received By:
Stacy Angelo	8/28/07	1725	Environtech T.L.
Environtech SR.	8/28	1914	Vicky Daly
Vicky Daly	8-28-07	7:10pm	Ana Venz

ICE/t° 18.9
GOOD CONDITION ✓
HEAD SPACE ABSENT
DECHLORINATED IN LAB
APPROPRIATE CONTAINERS ✓
PRESERVED IN LAB

COMMENTS: Results by noon 8/29 if possible,

PRESERVATION VOAS O&G METALS OTHER pH<2

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0708784 **ClientID: PEO**

☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty

Report to:
Morgan Gillies
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612

Email: mgillies@pangeaenv.com
TEL: (510) 836-370 FAX: (510) 836-370
ProjectNo: #5175 Broadway; Rockridge Heights
PO:

Bill t
Bob Clark-Riddell
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612

Requested TAT: 1 day

Date Received **08/28/2007**
Date Printed: **08/28/2007**

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0708784-001	MW-10A	Water	8/28/2007 1:00:00	☐	A											
0708784-002	MW-9C	Water	8/28/2007 4:00:00	☐	A											

Test Legend:

1	G-MBTEX_W	2		3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Ana Venegas

Comments: 24 hr rush

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

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Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **Pangea Environmental Svcs., Inc.**
Date and Time Received: **8/28/2007 7:39:55 PM**

Project Name: **#5175 Broadway; Rockridge Heights**
Checklist completed and reviewed by: Ana Venegas

WorkOrder N°: **0708784** Matrix Water
Carrier: rick

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 18.9°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
TTLC Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑

Client contacted: Date contacted: Contacted by:

Comments:

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Telephone: 877-252-9262 Fax: 925-252-9269

Pangea Environmental Svcs., Inc. 1710 Franklin Street, Ste. 200 Oakland, CA 94612	Client Project ID: #5175 Broadway; Rockridge Heights	Date Sampled: 08/28/07
		Date Received: 08/28/07
	Client Contact: Morgan Gillies	Date Extracted: 08/29/07
	Client P.O.:	Date Analyzed 08/29/07

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0708784

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-10A	W	ND	ND	ND	ND	ND	ND	1	93
002A	MW-9C	W	73,a,i	ND	4.4	2.1	ND	0.75	1	94

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern; n) TPH(g) range non-target isolated peaks subtracted out of the TPH(g) concentration at the client's request; p) see attached narrative.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder 0708784

EPA Method SW8021B/8015Cm Extraction SW5030B BatchID: 30253 Spiked Sample ID: 0708784-001A

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	75	73.7	1.68	92.3	91.7	0.655	70 - 130	30	70 - 130	30
MTBE	ND	10	107	113	5.87	111	112	1.35	70 - 130	30	70 - 130	30
Benzene	ND	10	86	88.6	3.02	104	98.2	5.44	70 - 130	30	70 - 130	30
Toluene	ND	10	89.8	90.5	0.832	93.1	88.8	4.82	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	89.4	93.9	4.84	101	98	3.01	70 - 130	30	70 - 130	30
Xylenes	ND	30	90.3	91.3	1.10	100	96.7	3.39	70 - 130	30	70 - 130	30
%SS:	93	10	92	89	2.88	106	96	9.77	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 30253 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0708784-001A	08/28/07 1:00 PM	08/29/07	08/29/07 2:38 AM	0708784-002A	08/28/07 4:00 PM	08/29/07	08/29/07 3:16 AM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

DHS ELAP Certification N° 1644

QA/QC Officer

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 10/02/07

TO: MR. GREG BENTLEY
PANGEA ENVIRONMENTAL SERVICES
1710 FRANKLIN ST., STE. 200
OAKLAND, CA 94612

Phone: 510-435-8664
Fax: 510-836-3709
Email: gbentley@pangeaenv.com

ACCT: 4525
PROJ: 1145.001

FROM: Richard A. Kagel, Ph.D. RAK 10/2/07
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT 1145.001

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
SS-1	AIR	09/12/07	N/A	63466
SS-2	AIR	09/12/07	N/A	63467
SG-1	AIR	09/12/07	N/A	63468
SG-2	AIR	09/12/07	N/A	63469
SG-3	AIR	09/12/07	N/A	63470
SS-1 LEAK CHECK	AIR	09/12/07	N/A	63471
SS-2 LEAK CHECK	AIR	09/12/07	N/A	63472
SG-1 LEAK CHECK	AIR	09/12/07	N/A	63473
SG-2 LEAK CHECK	AIR	09/12/07	N/A	63474
SG-3 LEAK CHECK	AIR	09/12/07	N/A	63475

The above listed sample group was received on 09/14/07 and tested as requested on the chain of custody document.

Please note that the TPH value for KPI Lab # 63470 was below reporting limit after subtracting out the 2-propanol (leak check compound) contribution to the result.

Also, please note that the 2-propanol results using EPA TO 3 are reported in units of PPM-V rather than PPB-V as is the case for EPA Method TO 15 results.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4525
CLIENT PROJECT: 1145.001

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO15 (GC-MS-SCAN)

SAMPLE ID:	SS-1
LAB NO:	63466
SAMPLE TYPE:	AIR
DATE SAMPLED:	9/12/07
TIME SAMPLED:	N/A
BATCH ID:	100107A01
DATE ANALYZED:	10/1/07

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	µg/cu. m MRL	µg/cu. m SAMPLE CONC
BENZENE	71-43-2	1.00	7.54	3.19	24.1
TOLUENE	108-88-3	1.00	49.7	3.77	187
ETHYLBENZENE	100-41-4	1.00	1.24	4.34	5.38
XYLENE (M+P)	1330-20-7	1.00	3.86	4.34	16.8
XYLENE (O)	95-47-6	1.00	1.36	4.34	5.91
ISOPROPANOL	67-63-0	2.00	4.54	4.92	11.2

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATUR AND PRESSURE (NPT).

APPROVED BY: MC
DATE: 10/2/07

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4525
CLIENT PROJECT: 1145.001

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO15 (GC-MS-SCAN)

SAMPLE ID:	SS-2
LAB NO:	63467
SAMPLE TYPE:	AIR
DATE SAMPLED:	9/12/07
TIME SAMPLED:	N/A
BATCH ID:	100107A01
DATE ANALYZED:	10/1/07

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
BENZENE	71-43-2	1.00	ND	3.19	ND
TOLUENE	108-88-3	1.00	1.39	3.77	5.24
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
ISOPROPANOL	67-63-0	2.00	ND	4.92	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATUR AND PRESSURE (NPT).

APPROVED BY: MK
DATE: 10/2/07

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4525
CLIENT PROJECT: 1145.001

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO15 (GC-MS-SCAN)

SAMPLE ID:	SG-1
LAB NO:	63468
SAMPLE TYPE:	AIR
DATE SAMPLED:	9/12/07
TIME SAMPLED:	N/A
BATCH ID:	100107A01
DATE ANALYZED:	10/1/07

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
BENZENE	71-43-2	1.00	5.01	3.19	16.0
TOLUENE	108-88-3	1.00	78.1	3.77	294
ETHYLBENZENE	100-41-4	1.00	1.43	4.34	6.21
XYLENE (M+P)	1330-20-7	1.00	4.51	4.34	19.6
XYLENE (O)	95-47-6	1.00	1.36	4.34	5.91
ISOPROPANOL	67-63-0	2.00	34.7	4.92	85.4

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATUR AND PRESSURE (NPT).

APPROVED BY: _____
DATE: 10/2/07

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4525
CLIENT PROJECT: 1145.001

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO15 (GC-MS-SCAN)

SAMPLE ID:	SG-2
LAB NO:	63469
SAMPLE TYPE:	AIR
DATE SAMPLED:	9/12/07
TIME SAMPLED:	N/A
BATCH ID:	100107A01
DATE ANALYZED:	10/1/07

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
BENZENE	71-43-2	5.00	54.4	16.0	174
TOLUENE	108-88-3	5.00	53.0	18.8	200
ETHYLBENZENE	100-41-4	5.00	21.6	21.7	93.6
XYLENE (M+P)	1330-20-7	5.00	17.8	21.7	77.2
XYLENE (O)	95-47-6	5.00	ND	21.7	ND
ISOPROPANOL	67-63-0	10.0	28.5	24.6	70.1

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATUR AND PRESSURE (NPT).

APPROVED BY: _____
DATE: 10/2/07

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4525
CLIENT PROJECT: 1145.001

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO15 (GC-MS-SCAN)

SAMPLE ID:	SG-3
LAB NO:	63470
SAMPLE TYPE:	AIR
DATE SAMPLED:	9/12/07
TIME SAMPLED:	N/A
BATCH ID:	100107A01
DATE ANALYZED:	10/1/07

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
BENZENE	71-43-2	40.0	ND	128	ND
TOLUENE	108-88-3	40.0	40.1	151	151
ETHYLBENZENE	100-41-4	40.0	ND	174	ND
XYLENE (M+P)	1330-20-7	40.0	ND	174	ND
XYLENE (O)	95-47-6	40.0	ND	174	ND
ISOPROPANOL	67-63-0	80.0	8660	197	21300

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATUR AND PRESSURE (NPT).

APPROVED BY: _____
DATE: 10/2/07

K PRIME, INC.

LABORATORY METHOD BLANK REPORT

METHOD BLANK ID: B10010701
SAMPLE TYPE: AIR

BATCH ID: 100107A01
DATE ANALYZED: 10/1/07

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO15 (GC-MS-SCAN)

COMPOUND NAME	CAS NO.	PPB (V/V)		µg/cu. m	
		MRL	SAMPLE CONC	MRL	SAMPLE CONC
BENZENE	71-43-2	0.50	ND	1.60	ND
TOLUENE	108-88-3	0.50	ND	1.88	ND
ETHYLBENZENE	100-41-4	0.50	ND	2.17	ND
XYLENE (M+P)	1330-20-7	0.50	ND	2.17	ND
XYLENE (O)	95-47-6	0.50	ND	2.17	ND
ISOPROPANOL	67-63-0	1.00	ND	2.46	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATUR AND PRESSURE (NPT).

K PRIME, INC.
LABORATORY QUALITY CONTROL REPORT

LAB CONTROL ID: L100107A01
LAB CONTROL DUPLICATE ID: D100107A01

SAMPLE TYPE: AIR
BATCH ID: 100107A01
DATE ANALYZED: 10/1/07

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

COMPOUND NAME	SPIKE ADDED (PPB)	REPORTING LIMIT (PPB)	SAMPLE CONC (PPB)	SPIKE CONC (PPB)	SPIKE REC (%)	REC LIMITS (%)
1,1-DICHLOROETHENE	10.0	0.50	ND	10.2	102	60 - 140
TRICHLOROETHENE	10.0	0.50	ND	9.61	96.1	60 - 140
BENZENE	10.0	0.50	ND	11.2	112	60 - 140
TOLUENE	10.0	0.50	ND	11.5	115	60 - 140
TETRACHLOROETHENE	10.0	0.50	ND	10.3	103	60 - 140

COMPOUND NAME	SPIKE ADDED (PPB)	SPIKE DUP CONC (PPB)	SPIKE DUP REC (%)	RPD (%)	QC LIMITS RPD (%)	QC LIMITS REC (%)
1,1-DICHLOROETHENE	10.0	10.0	100	1.29	25	60 - 140
TRICHLOROETHENE	10.0	9.17	91.7	4.69	25	60 - 140
BENZENE	10.0	10.5	105	7.11	25	60 - 140
TOLUENE	10.0	10.2	102	11.9	25	60 - 140
TETRACHLOROETHENE	10.0	9.47	94.7	8.20	25	60 - 140

NOTES:
NA - NOT APPLICABLE OR AVAILABLE
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4525
CLIENT PROJECT: 1145.001

BATCH ID: 092807A01

METHOD: TPH C2-C10 AS HEXANE
REFERENCE: EPA TO 3

UNITS: UG/M3

SAMPLE ID	LAB NO.	SAMPLE TYPE	DATE SAMPLED	TIME SAMPLED	DATE ANALYZED	MRL	SAMPLE CONC
SS-1	63466	AIR	9/12/07	N/A	9/28/07	20000	ND
SS-2	63467	AIR	9/12/07	N/A	9/28/07	20000	ND
SG-1	63468	AIR	9/12/07	N/A	9/28/07	20000	ND
SG-2	63469	AIR	9/12/07	N/A	9/28/07	20000	ND
SG-3	63470	AIR	9/12/07	N/A	9/28/07	20000	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
MRL - METHOD REPORTING LIMIT

APPROVED BY: [signature]
DATE: 10/2/07

K PRIME, INC.
LABORATORY QC REPORT

METHOD BLANK ID: B09280701
LAB CONTROL SAMPLE ID: L09280701
LAB CONTROL DUPLICATE ID: D09280701
BATCH ID: 092807A01

METHOD: TPH C2-C10 AS HEXANE
REFERENCE: EPA TO 3

SAMPLE TYPE: AIR
UNITS: UG/M3

METHOD BLANK

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
TPH AS C6	20000	ND

ACCURACY (LAB CONTROL SAMPLE)

COMPOUND NAME	EXPECTED CONC	MEASURED CONC	PERCENT RECOVERY	LIMITS (PERCENT)
TPH AS C6	586000	497000	84.8	60-140

PRECISION (LAB CONTROL DUPLICATE)

COMPOUND NAME	SAMPLE RESULT	DUPLICATE RESULT	RPD (PERCENT)	LIMITS (PERCENT)
TPH AS C6	497000	536000	7.6	±30

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 4525
CLIENT PROJECT: 1145.001

BATCH ID: 092807A01

METHOD: 2-PROPANOL
REFERENCE: EPA TO 3

UNITS: PPM-V

SAMPLE ID	LAB NO.	SAMPLE TYPE	DATE SAMPLED	TIME SAMPLED	DATE ANALYZED	MRL	SAMPLE CONC
SS-1 LEAK CHECK	63471	AIR	9/12/07	N/A	9/28/07	2.00	253
SG-1 LEAK CHECK	63473	AIR	9/12/07	N/A	9/28/07	2.00	2400
SG-2 LEAK CHECK	63474	AIR	9/12/07	N/A	9/28/07	2.00	435
SG-3 LEAK CHECK	63475	AIR	9/12/07	N/A	9/28/07	2.00	1230

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
MRL - METHOD REPORTING LIMIT

APPROVED BY: AK
DATE: 10/2/07

Pangea Environmental Services, Inc.

1710 Franklin Street
Oakland, CA 94612
Website: www.pangeaenv.com
Telephone: (510) 836-3700 Fax: (510) 836-3709

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY Standard

EDF Required? Coelt (Normal) No Write On (DW) No

Report To: Greg Bentley	**Bill To:** Pangea
Company: Pangea Environmental Technology, Inc.	
1710 Franklin Street, Suite 200, Oakland, CA 94612	
	E-Mail: gbentley@pangeaenv.com
Tele: (510) 409-8980	**Fax:** (510) 836-3709
Project #: 1145.001	**Project Name:** Rockridge Heights
Project Location: 5175 Broadway Street, Oakland	
Sampler Signature:	

SAMPLE ID (Field Point Name)	~~LOCATION~~ KPI #	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other
SS-1	63466	9-12-07		1	Summa			X						
SS-2	63467													
SG-1	63468													
SG-2	63469													
SG-3	63470													
SS-1-Leak Check	63471													
SS-2-Leak Check	63472													
SG-1-Leak Check	63473													
SG-2-Leak Check	63474													
SG-3-Leak Check	63475													

Analysis Request	Other	Comments
BTEX & TPH as Gas (602/8020 + 8015)/MTBE	8260 (for BTEX) 703/705	Filter Samples for Metals analysis: Yes / No
TPH as Diesel (8015)	Isopropyl Alcohol	
Total Petroleum Oil & Grease (5520 E&F/B&F)		
Total Petroleum Hydrocarbons (418.1)		
EPA 601 / 8010 / 8021		
BTEX ONLY (EPA 602 / 8020)		
EPA 608 / 8081		
EPA 608 / 8082 PCB's ONLY		
EPA 8140 / 8141		
EPA 8150 / 8151		
EPA 524.2 / 624 / 8260		
EPA 525 / 625 / 8270		
PAH's / PNA's by EPA 625 / 8270 / 8310		
CAM-17 Metals (6010 / 6020)		
LUFT 5 Metals (6010 / 6020)		
Lead (200.8 / 200.9 / 6010)		
SS-1 X	X	
SS-2 X	X	
SG-1 X		
SG-2 X		
SG-3 X		
SS-1-Leak Check	X	HOLD
SS-2-Leak Check	X	
SG-1-Leak Check	X	
SG-2-Leak Check	X	
SG-3-Leak Check	X	

	Date:	Time:	
Relinquished By:	9/17/07		**Received By:** UPS
Relinquished By: UPS 12 96x W720364101413	**Date:** 9/14/07	**Time:** 1140	**Received By:**
Relinquished By:	**Date:**	**Time:**	**Received By:**

ICE/t° _____
GOOD CONDITION _____
HEAD SPACE ABSENT _____
DECHLORINATED IN LAB _____
APPROPRIATE CONTAINERS _____
PRESERVED IN LAB _____

PRESERVATION VOAS O&G METALS OTHER pH<2

COMMENTS: Only analyze Leak check canisters if Isopropyl Alcohol detected in samples SS-1+2, SG-1, 2+3.

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 10/18/07

TO: MR. GREG BENTLEY
PANGEA ENVIRONMENTAL SERVICES
1710 FRANKLIN ST., STE. 200
OAKLAND, CA 94612

Phone: 510-435-8664
Fax: 510-836-3709
Email: gbentley@pangeaenv.com

ACCT: 4525
PROJ: 1145.001
5175 BROADWAY
OAKLAND, CA

FROM: Richard A. Kagel, Ph.D. RAK 10/18/07
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT 1145.001

Enclosed please find revised K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
SS-1	AIR	09/12/07	N/A	63466
SS-2	AIR	09/12/07	N/A	63467
SG-1	AIR	09/12/07	N/A	63468
SG-2	AIR	09/12/07	N/A	63469
SG-3	AIR	09/12/07	N/A	63470
SS-1 LEAK CHECK	AIR	09/12/07	N/A	63471
SS-2 LEAK CHECK	AIR	09/12/07	N/A	63472
SG-1 LEAK CHECK	AIR	09/12/07	N/A	63473
SG-2 LEAK CHECK	AIR	09/12/07	N/A	63474
SG-3 LEAK CHECK	AIR	09/12/07	N/A	63475

The above listed sample group was received on 09/14/07 and tested as requested on the chain of custody document.

Please find a revised report for C2-C10 Hydrocarbons reflecting the lower reporting limit required for your project.

Please note that the TPH value for KPI Lab # 63470 was below reporting limit after subtracting out the 2-propanol (leak check compound) contribution to the result.

Also, please note that the 2-propanol results using EPA TO 3 are reported in units of PPM-V rather than PPB-V as is the case for EPA Method TO 15 results.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.

LABORATORY REPORT

K PRIME PROJECT: 4525
CLIENT PROJECT: 1145.001

BATCH ID: 092807A01

METHOD: TPH C2-C10 AS HEXANE
REFERENCE: EPA TO 3

UNITS: UG/M3

SAMPLE ID	LAB NO.	SAMPLE TYPE	DATE SAMPLED	TIME SAMPLED	DATE ANALYZED	MRL	SAMPLE CONC
SS-1	63466	AIR	9/12/07	N/A	9/28/07	2000	ND
SS-2	63467	AIR	9/12/07	N/A	9/28/07	2000	ND
SG-1	63468	AIR	9/12/07	N/A	9/28/07	2000	ND
SG-2	63469	AIR	9/12/07	N/A	9/28/07	2000	14000
SG-3	63470	AIR	9/12/07	N/A	9/28/07	2000	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
MRL - METHOD REPORTING LIMIT

APPROVED BY: [signature]
DATE: 10/18/07

Pangea Environmental Services, Inc.

1710 Franklin Street
Oakland, CA 94612
Website: www.pangeaenv.com
Telephone: (510) 836-3700 Fax: (510) 836-3709

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY Standard

EDF Required? Coelt (Normal) No Write On (DW) No

Report To: Greg Bentley	**Bill To:** Pangea
Company: Pangea Environmental Technology, Inc.	
1710 Franklin Street, Suite 200, Oakland, CA 94612	
	E-Mail: gbentley@pangeaenv.com
Tele: (510) 409-8980	**Fax:** (510) 836-3709
Project #: 1145.001	**Project Name:** Rockridge Heights
Project Location: 5175 Broadway Street, Oakland	
Sampler Signature:	

SAMPLE ID (Field Point Name)	~~LOCATION~~ KPI #	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX & TPH as Gas (602/8020 + 8015)/MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010 / 8021	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8081	EPA 608 / 8082 PCB's ONLY	EPA 8140 / 8141	EPA 8150 / 8151	EPA 524.2 / 624 / 8260	EPA 525 / 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals (6010 / 6020)	LUFT 5 Metals (6010 / 6020)	Lead (200.8 / 200.9 / 6010)	Other	Other	Other	Comments
																															TO3/TO15 (not BTEX)	Isopropyl Alcohol	
SS-1	63466	9-12-07		1	3 VOA			X																							X		
SS-2	63467	↓		↓	↓			↓																							X		
SG-1	63468																														X		
SG-2	63469																														X		
SG-3	63470																														X		
SS-1-Leak Check	63471																															X	HOLD
SS-2-Leak Check	63472																															X	↓
SG-1-Leak Check	63473																															X	
SG-2-Leak Check	63474																															X	
SG-3-Leak Check	63475	↓		↓	↓			↓																								X	

Relinquished By:	**Date:** 9/13/07	**Time:**	**Received By:** UPS	
Relinquished By: UPS 12 96x W720364101413	**Date:** 9/14/07	**Time:** 1140	**Received By:**	
Relinquished By:	**Date:**	**Time:**	**Received By:**	

ICE/t° _____
GOOD CONDITION _____
HEAD SPACE ABSENT _____
DECHLORINATED IN LAB _____
APPROPRIATE CONTAINERS _____
PRESERVED IN LAB _____

PRESERVATION VOAS O&G METALS OTHER pH<2

COMMENTS: Only analyze Leak check canisters if Isopropyl Alcohol detected in samples SS-1 & 2 and SG-1, 2 & 3.

APPENDIX D

Boring Logs

Pangea Environmental Services, Inc.
1710 Franklin Street, Suite 200
Oakland, CA 94612
Telephone: 510-836-3700
Fax: 510-836-3709

WELL NUMBER MW-9A

CLIENT Feiner
PROJECT NAME Rockridge
PROJECT NUMBER 1145.001
PROJECT LOCATION 5175 Broadway
DATE STARTED 8/28/07 **COMPLETED** 8/28/07
GROUND ELEVATION _____ **HOLE SIZE** 8"
DRILLING CONTRACTOR RSI
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING Dry
LOGGED BY Bryce Taylor **CHECKED BY** Bob Clark-Riddell
AT END OF DRILLING Dry
NOTES Hand Augered to 1' (bedrock)
AFTER DRILLING ---

DEPTH (ft bgs)	SAMPLE TYPE NUMBER	PID (ppm)	BLOW COUNTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0						0.5 Asphalt	Concrete
				GM		1.0 **Silty Gravel (GM)** with Jagged Bedrock.	
						Bedrock; friable shale (sandstone).	Cement
5							Bentonite
							Sand #2/12
10							0.010" Slotted 2" Schedule 40 PVC
15						15.5	
						Bottom of hole at 15.5 feet.	

Pangea Environmental Services, Inc.
1710 Franklin Street, Suite 200
Oakland, CA 94612
Telephone: 510-836-3700
Fax: 510-836-3709

WELL NUMBER MW-9C

CLIENT Feiner
PROJECT NAME Rockridge
PROJECT NUMBER 1145.001
PROJECT LOCATION 5175 Broadway
DATE STARTED 8/28/07 **COMPLETED** 8/28/07
GROUND ELEVATION _____ **HOLE SIZE** 8"
DRILLING CONTRACTOR RSI
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY Bryce Taylor **CHECKED BY** Bob Clark-Riddell
AT END OF DRILLING 19.2 ft
NOTES Hand augered to 1' (bedrock)
AFTER DRILLING ---

DEPTH (ft bgs)	SAMPLE TYPE NUMBER	PID (ppm)	BLOW COUNTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0						0.5 Asphalt	Concrete
				GM		1.0 **Silty Gravel (GM)**. Bedrock; friable shale (sandstone).	
5							Portland Cement
10							
15							Bentonite; Sand #2/12
20							.010" Slotted 2" Schedule 40 PVC
						21.0 Bottom of hole at 21.0 feet.	

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WELL NUMBER MW-10A

CLIENT Feiner **PROJECT NAME** Rockridge

PROJECT NUMBER 1145.001 **PROJECT LOCATION** 5175 Broadway

DATE STARTED 8/28/07 **COMPLETED** 8/28/07 **GROUND ELEVATION** _____ **HOLE SIZE** 8"

DRILLING CONTRACTOR RSI **GROUND WATER LEVELS:**

DRILLING METHOD Hollow Stem Auger **AT TIME OF DRILLING** ---

LOGGED BY Bryce Taylor **CHECKED BY** Bob Clark-Riddell **AT END OF DRILLING** 17.2 ft

NOTES Hand Augered to 3' (bedrock encountered) **AFTER DRILLING** 14.0 ft

DEPTH (ft bgs)	SAMPLE TYPE NUMBER	PID (ppm)	BLOW COUNTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0						0.5 Asphalt Jagged bedrock; silty gravel.	Concrete
						Bedrock; friable shale (sandstone).	Cement
5							Bentonite
							Sand #2/12
10							.010" Slotted 2" Schedule 40 PVC
15						18.0	
						Bottom of hole at 18.0 feet.	

APPENDIX E

Well Development Field Data Sheets

Pangea
ENVIRONMENTAL SERVICES INC

WELL DEVELOPMENT SHEET

Well ID: MW-9A

Project.Task #: 1145.001	Project Name: Exiner
Address: 5175 Broadway, Oakland, CA	
Date: 9/5/07	Weather: Sunny
Well Diameter: 2"	Volume/ft. 1" = 0.04 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 | 6" = 1.47 | radius² * 0.163
Total Depth (TD): 15.19	Depth to Product:
Depth to Water (DTW): 12.48	Product Thickness:
Water Column Height: 2.71	1 Casing Volume: 0.43 gallons
Reference Point: TOC	10 Casing Volumes: 4.33 gallons
Surging Device: Surge Block	
Purging Device: check valve tubing	

Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
10:25-10:40	surged							12.48
10:43	24.0	7.41	3401	very turbid, thick silty, brown			0.5	
10:44	23.1	7.51	3454	" "	"	"	1.0	13.56
10:45	Dewatered			" "	"	"		14.41
								Dewatered
10:55-11:00	surged							14.70
11:02	Dewatered			very turbid, silty brown			1.5	Dewatered
11:05								No recharge DTB: 15.21 Hard Bottom
12:00	No recharge							
	Development complete							

Sampler Name: Sanjiv Gill

Signature:

Pangea
ENVIRONMENTAL SERVICES, INC.

WELL DEVELOPMENT SHEET

Well ID: MW-10A

Project.Task #: 1145.001	Project Name: Feiner
Address: 5175 Broadway, Oakland, CA	
Date: 9/5/07	Weather: [redacted] Sunny
Well Diameter: 2"	Volume/ft. 1" = 0.04; 2" = 0.16; 3" = 0.37; 4" = 0.65; 6" = 1.47; radius² * 0.163
Total Depth (TD): 17.97	Depth to Product:
Depth to Water (DTW): 10.28	Product Thickness:
Water Column Height: 7.69	1 Casing Volume: 1.23 gallons
Reference Point: TOC	10 Casing Volumes: 12.30 gallons
Surging Device: Surgeblock	
Purging Device: check valve tubing	

Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
11:15-	11:30	surged						10.28
11:33	26.7	7.43	2319	very turbid, thick silty, brown			1	
11:35	23.9	7.41	2749	" " " "			2	10.85
11:37	23.5	7.26	2590	" " " "			3	12.37
11:39	23.3	7.26	2410	" " " "			4	13.65
11:40-	11:45	surged					[redacted]	
11:48	23.0	7.50	2032	very turbid, thick silty, brown			5.5	14.60
11:49			Dewatered				[redacted]	16.37
							6	Dewatered
12:10								17.04
12:30-	12:35	surged						16.61
[redacted]	24.1	8.41	1450	very turbid, silty, brown			7	16.80
12:39		Dewatered		" " " "			7.5	Dewatered
		Development completed						

DTB = 17.98 Hard Bottom

DTB = 17.98 Hard Bottom

Sampler Name: Sanjiv Gill

Signature:

Pangea
ENVIRONMENTAL SERVICES, INC.

WELL DEVELOPMENT SHEET

Well ID: MW-9C

Project.Task #: 1145.001	Project Name: Feiner
Address: 5175 Broadway, Oakland, CA	
Date: 9/5/07	Weather: Sunny
Well Diameter: 2"	Volume/ft. 1" = 0.04 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 | 6" = 1.47 | radius² * 0.163
Total Depth (TD): 20.45	Depth to Product:
Depth to Water (DTW): 13.63	Product Thickness:
Water Column Height: 6.82	1 Casing Volume: 1.09 gallons
Reference Point: TOC	10 Casing Volumes: 10.91 gallons
Surging Device: Surge Block	
Purging Device: Check valve tubing	

Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW	
9:15	9:30 Surged							13.63	
9:40	23.0	7.85	2995	very turbid, silty, grey			#1		
9:42	22.5	7.43	2794	"	"	"	#2	16.66	
9:44	22.6	7.32	3019	"	"	"	#3	17.60	
9:46	23.0	7.20	3466	"	"	"	#4	18.67	
9:47	Dewatered			"	"	"	#4.5	19.66	
9:50-10:00	Surged						[redacted]	19.34	
10:02	Dewatered			very turbid, silty, grey			#5	19.21	
							[redacted]	Dewatered	DTB=20.46 Hard Bottom
10:10	No recharge						#6		
10:15	No recharge								
11:57	Insufficient water for purging							19.93	DTB=20.46 Hard Bottom
	Development Completed								

Sampler Name: Sanjiv Gill

Signature: