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4:24 pm, Mar 13, 2012

Alameda County
Environmental Health

Mr. Keith Nowell
Alameda County Environmental Health
Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502-6577

Re: Former Exxon Station

5175 Broadway
Oakland, California
ACEH File No. 139
SFRWQCB Site No. 01-0958
UST Fund Claim No. 3406

Dear Mr. Nowell:

I, Mr. Ernie Nadel, have retained Pangea Environmental Services, Inc. (Pangea) as the environmental consultant for the project referenced above. Pangea is submitting the attached report on my behalf.

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

Sincerely,



Ernie Nadel
Rockridge Heights, LLC



March 6, 2012

VIA ALAMEDA COUNTY FTP SITE

Mr. Keith Nowell
Alameda County Environmental Health
1331 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Re: **Groundwater Monitoring and Remediation Report – Fourth Quarter 2011**
5175 Broadway Street
Oakland, California
ACEH Fuel Leak Case No. RO#0000139

Dear Mr. Nowell:

On behalf of Rockridge Heights LLC, Pangea Environmental Services, Inc., has prepared this *Groundwater Monitoring and Remediation Report – Fourth Quarter 2011*. The report describes groundwater monitoring, site remediation, and planned future activities. On January 31, 2012, Pangea temporarily shutdown the DPE/AS system due to low removal rates and to allow for potential concentration rebound prior to groundwater monitoring in March 2012. The dramatic contaminant reduction in site wells achieved by site remediation is illustrated on Figures 5 and 6.

Following the March 2012 groundwater monitoring event, Pangea plans to restart the DPE/AS system to check for rebounding hydrocarbon removal rates. A workplan to enhance DPE/AS effectiveness and accelerate biodegradation of any residual hydrocarbons was submitted to ACEH on January 18, 2012 and again on March 6, 2012. As summarized herein, Pangea anticipates that approximately 1 to 2 additional months of active DPE/AS with enhanced remediation will provide sufficient contaminant source removal to justify termination of remediation and commencement of post-remediation monitoring.

This report also proposes soil gas sampling to confirm cleanup effectiveness and evaluate risk associated with residual compounds prior to case closure. If you have any questions or comments, please call me at (510) 435-8664.

Sincerely,
Pangea Environmental Services, Inc.

A handwritten signature in blue ink that reads "Bob Clark-Riddell".

Bob Clark-Riddell, P.E.
Principal Engineer

Attachment: *Groundwater Monitoring and Remediation Report – Fourth Quarter 2011*

cc: Rockridge Heights, LLC, C/O Ernie Nadel, 6100 Pinewood Road, Oakland, California 94611
SWRCB Geotracker (Electronic copy)

PANGEA Environmental Services, Inc.

1710 Franklin St, Suite 200, Oakland, CA 94612 Phone 510.836.3700 Facsimile 510.836.3709 www.pangeaenv.com



**GROUNDWATER MONITORING AND REMEDIATION REPORT
– FOURTH QUARTER 2011**

**5175 Broadway
Oakland, California**

March 6, 2012

Prepared for:

Rockridge Heights, LLC
C/O Ernie Nadel
6100 Pinewood Road
Oakland, California 94611


Prepared by:

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

Written by:




Morgan Gillies
Project Manager


Bob Clark-Riddell, P.E.
Principal Engineer

PANGEA Environmental Services, Inc.

INTRODUCTION

On behalf of Rockridge Heights, LLC, Pangea Environmental Services, Inc. (Pangea) conducted groundwater monitoring and sampling, and remediation system operation and sampling during this quarter at the subject site (Figure 1). The purpose of the monitoring and sampling is to evaluate dissolved contaminant concentrations, determine the groundwater flow direction, and inspect site wells for separate-phase hydrocarbons (SPH). The purpose of the remediation is to clean up petroleum hydrocarbons from a historic fuel release. Current groundwater analytical results and elevation data are shown on Figures 2 and 3. Current and historical groundwater data are summarized on Table 1. Site remediation data are summarized on Tables 3 and 4. This report also discusses recent remediation system shutdown for rebound testing due to low removal rates and our workplan to enhance DPE/AS effectiveness and accelerate biodegradation of any residual hydrocarbons. Finally, this report proposes soil gas sampling to confirm cleanup effectiveness and evaluate risk associated with residual compounds prior to case closure.

SITE BACKGROUND

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 and the majority of the ground surface is paved with concrete and/or asphalt, although the former tank location is not paved. 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 subject site and adjacent properties are shown on Figure 2.

Environmental compliance work commenced when the site USTs were removed in January 1990. Three 8,000-gallon steel single-walled USTs, associated piping, and a 500-gallon steel single-walled waste oil tank were removed. Tank Project Engineering, Inc. (TPE) conducted the tank removal and observed holes in all four tanks. 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. In June 2006, the property was purchased by Rockridge Heights, LLC. Pangea commenced quarterly groundwater monitoring at the site in July 2006. MTBE is not considered to be a contaminant of concern because use of the site for fuel sales predates widespread use of MTBE in gasoline and because analytical results have not shown significant detections of MTBE.

In January and March 2007, Pangea installed twelve wells (MW-2C, MW-3A, MW-3C, MW-4A, MW-5A, MW-5B, MW-5C, MW-6A, MW-7B, MW-7C, MW-8A and MW-8C) and three offsite soil borings to help define the vertical and lateral extent of groundwater contamination. Pangea also abandoned four monitoring wells (MW-2, MW-3, STMW-4 and STMW-5) to reduce the risk of vertical contaminant migration and improve the quality of monitoring data. New wells installed at the site were categorized according to the depths of their screen intervals. Shallow (A-zone) wells have screen intervals of approximately 10 to 15 feet bgs, which generally straddle the top of the water table and are generally screened in surficial fill and alluvium. Intermediate-depth (B-zone) wells are screened at approximately 15 to 20 feet bgs, either in surficial strata or underlying fractured bedrock, while deep (C-zone) wells are generally screened at approximately 20 to 25 feet bgs and into fractured bedrock. Well MW-1 is screened across both the A-zone and B-zone.

In April 2007, Pangea performed a dual-phase extraction (DPE) pilot test to evaluate whether DPE is an appropriate remedial technology to remove residual hydrocarbons from beneath the site. In July 2007, Pangea submitted an Interim Remedial Action Plan for site corrective action.

In August 2007, Pangea installed three offsite monitoring wells (MW-9A, MW-9C and MW-10A) and conducted subslab vapor sampling in the commercial building located immediately south of the site. The purpose of the offsite well installation was to determine the downgradient extent of contaminant migration, and to help evaluate downgradient effects of any future remediation conducted onsite. The purpose of the subslab vapor sampling was to determine whether vapor migrating from underlying groundwater had impacted soil vapor. Soil gas sampling was also conducted near the southern and western edge of the property. Soil gas sampling and offsite monitoring well installation is described in Pangea's *Soil Gas Sampling and Well Installation Report* dated October 23, 2007. Further subslab/soil gas sampling was conducted at the two adjacent properties in June 2008 and reported in Pangea's *Additional Soil Gas Sampling Report* dated July 14, 2008.

In a June 2009 letter, ACEH approved insitu site remediation using dual-phase extraction (DPE) and air sparging (AS) techniques. Operation of the DPE system began on December 8, 2010 and operation of the AS system began on March 16, 2011. The DPE/AS system has been very effective for site remediation.

GROUNDWATER MONITORING AND SAMPLING

On December 29 and 30, 2011, Pangea conducted groundwater monitoring and sampling at the site in accordance with the groundwater monitoring program in Appendix A. The monitoring was performed approximately 7 days after the DPE/AS system was temporarily shutdown for groundwater sampling. Site monitoring wells were gauged for depth-to-water and inspected for separate-phase hydrocarbons (SPH). To obtain water levels representative of the piezometric surface, technicians removed all well caps approximately one hour prior to measuring water levels.

Before well purging, the dissolved oxygen (DO) concentration was measured in each well scheduled for sampling. DO was measured by lowering a downwell sensor to the approximate middle of the water column, and allowing the reading to stabilize during gentle height adjustment. Prior to sample collection, approximately three casing volumes of water were purged using disposable bailers, an electric submersible pump, or a clean PVC bailer (although fewer casing volumes were purged if the well dewatered). During well purging, field technicians measured the pH, temperature, conductivity, and oxidation reduction potential (ORP) of the water. A groundwater sample was collected from each well with a disposable bailer and decanted into the appropriate containers supplied by the analytical laboratory. Groundwater samples were labeled, placed in protective plastic bags, and stored on crushed ice at or below 4° C. All samples were transported under chain-of-custody to the State-certified analytical laboratory. Purge water was stored onsite in DOT-approved 55-gallon drums. Groundwater monitoring field data sheets, including purge volumes and field parameter measurements, are presented in Appendix B.

MONITORING RESULTS

Current and historical groundwater elevation and analytical data are described below and summarized on Table 1, Figure 2 and Figure 3. To facilitate data evaluation, well construction details are summarized on Table 2. Groundwater samples were analyzed for total petroleum hydrocarbons as diesel (TPHd) by EPA Method 8015C with silica gel cleanup; total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015C; and benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8021B. Samples were analyzed by McCampbell Analytical, Inc., of Pittsburg, California, a State-certified laboratory. The laboratory analytical report is included in Appendix C.

Groundwater Flow Direction

Based on depth-to-water data collected on December 29, 2011, shallow groundwater (A-zone) generally flows *southwards to southwestwards* beneath the site, as shown on Figure 2. Shallow groundwater flow direction south of the site could not be determined because these wells were inaccessible for monitoring due to a locked fence around the property. The current inferred flow direction in shallow groundwater is generally consistent with previous monitoring results. In addition, groundwater flow direction may be affected by dual-phase extraction (DPE) from site wells.

Groundwater flow in deep groundwater (C-zone) is generally *southwards to southeastwards* beneath the site, as shown on Figure 3. Generally, the elevation of the piezometric surface for C-zone wells is lower than elevations for A-zone wells, indicating that a downward gradient is present.

Hydrocarbon Distribution in Groundwater

Current Distribution: The dramatic contaminant reduction in site wells achieved by site remediation is illustrated on Figures 5 and 6. This monitoring was performed 7 days following temporary remediation system shutdown to allow subsurface equilibration and contaminant rebound. This quarter the maximum TPHg concentration detected was 950 µg/L (well MW-1) and the maximum benzene concentration detected was 30 µg/L (source area well MW-3A). The maximum TPHd concentration detected this quarter was 3,400 µg/L, in well MW-8A. Hydrocarbon concentrations were generally within historic ranges and trends in most site wells, except for *historic low* concentrations described below. No measurable thickness of separate-phase hydrocarbons (SPH) was observed in any monitoring wells this quarter.

Most importantly, *historic low* concentrations of TPHg and benzene were detected in shallow wells MW-3A and MW-8A, deep wells MW-3C, MW-7B, and MW-7C, and remediation wells DPE-2, DPE-3 and DPE-4. These historic low concentrations are attributed to DPE and AS remediation at the site. For the first time, no hydrocarbons were detected in key deep wells MW-7C or MW-3C (except for 0.90 µg/L xylenes). Benzene concentrations in key well MW-3A have decreased from 1,800 µg/L in March 2010 (prior to DPE remediation startup) to 30 µg/L in December 2011, while TPHg concentrations in well MW-3A were similarly reduced from 16,000 µg/L to 510 µg/L in the same time frame. TPHg and benzene concentration trends for key shallow and deep wells are illustrated on Figures 5 and 6, respectively.

Historic Distribution: Shallow (A-zone) groundwater contained petroleum hydrocarbons at elevated concentrations in two primary areas near the former UST excavation: a northern area in the vicinity of well MW-4A, and a southwestern area in the vicinity of wells MW-3A and MW-8A. Prior shallow grab groundwater sampling data also indicates that the southern area of contamination extended to the southern site boundary in the vicinity of wells MW-7B and MW-7C. The non-detect concentrations of hydrocarbons in

wells MW-9A and MW-10A indicate that any offsite migration of petroleum hydrocarbons in shallow groundwater is minimal. The historic distribution of hydrocarbons in A-zone groundwater was presumably due to plume migration radially away from the excavation area, likely caused by mounding of groundwater within the uncapped former UST excavation during the rainy season.

Contaminant distribution in deeper groundwater differed from the distribution of hydrocarbons in shallow groundwater. Elevated contaminant concentrations within deeper groundwater (B-zone and C-zone) were present in the vicinity of wells MW-3C, MW-7B and MW-7C in the central and southern portions of the site. Site remediation has improved site conditions. Well screen intervals for shallow and deep wells are summarized on Table 2.

Fuel Oxygenate Distribution in Groundwater

No MTBE was detected above reporting limits in any samples obtained from site monitoring wells this monitoring event. MTBE is not a contaminant of concern at this site both due to the lack of detections, and because the USTs were removed in 1990 prior to widespread use of MTBE as a fuel oxygenate.

REMEDIATION SYSTEM SUMMARY

Dual Phase Extraction/Air Sparging System

The dual phase extraction (DPE) remediation system simultaneously extracts groundwater and soil vapor from site remediation wells. The remediation system layout is shown on Figure 4. Extraction and treatment is performed using a 25 hp liquid ring vacuum pump with a 400 cubic foot per minute (cfm) electric catalytic oxidizer. To maximize groundwater depression, a “stinger” (vacuum tube inserted below the water table) is used to both depress the water table and extract soil vapor in each of the 10 remediation wells (DPE-1 through DPE-6 and MW-3A, MW-4A, MW-7B and MW-8A). Extracted vapors are routed through an air/water separator and then treated by the electric catalytic oxidizer. The treated vapor is discharged to the atmosphere in accordance with Bay Area Air Quality Management District (BAAQMD) requirements. Groundwater captured within the air/water separator is pumped through two 200-lb canisters of granular activated carbon plumbed in series. The treated groundwater is discharged into the sewer in accordance with East Bay Municipal Utility District’s (EBMUD) requirements.

The air sparging (AS) system consists of a 5 hp Ingersoll-Rand rotary-screw air compressor capable of injecting 16 cfm of air and reaching pressures of 125 psig. Injection into the seven air sparge wells (AS-1, MW-1, MW-2C, MW-3C, MW-5B, MW-7C and MW-8C) is controlled by timer-activated solenoid valves and individual valves on the well flow meters. The remediation system layout is shown on Figure 4.

Operation and Performance

DPE and AS system operation commenced on December 8, 2010 and March 16, 2011, respectively. The DPE system was initially operated to target elevated impact within the northern portion of the site (wells DPE-1, MW-3A, MW-4A and MW-8A). After initial contaminant mass removal rates decreased, DPE remediation was focused on the southern portion of the site, and AS was commenced soon thereafter. AS was initiated on wells MW-2C and MW-3C near the center of the site, and later expanded to include well MW-7C and well MW-8C. System operation and performance data is summarized on Tables 3 and 4. Subsequent DPE/AS targets wells across the site to optimize hydrocarbon removal. Pangea periodically optimizes hydrocarbon removal by checking influent vapor concentrations within individual wells.

As of December 22, 2011, the DPE system operated for a total of about 6,343 hours (approximately 264 days). Laboratory analytical and performance data indicates that soil vapor removal rates observed during this reporting period ranged from 0.8 to 4.3 lbs/day TPHg and 0.01 to 0.03 lbs/day benzene. As of December 22, 2011, the vapor-phase portion of the DPE system removed a total of approximately 1,334 lbs TPHg and 9.2 lbs benzene. The groundwater portion of the DPE system has removed a total of approximately 0.27 lbs TPHg and 0.006 lbs benzene. Additional hydrocarbon removal is provided by biodegradation stimulated by oxygenation from DPE/AS processes.

The DPE/AS system is monitored in accordance with air permit requirements of the *Authority to Construct Permit* issued by the Bay Area Air Quality Management District (BAAQMD) and groundwater discharge requirements of the *Wastewater Discharge Permit* issued by East Bay Municipal Utility District.

Evaluation of Remediation Effectiveness

The calculated hydrocarbon mass removal and reported concentration reduction in groundwater suggest that the DPE/AS system is effectively remediating the site subsurface. Hydrocarbon mass removal and concentration reduction are illustrated on Figures 5 and 6. Rebound testing and a workplan for enhanced site remediation is discussed below.

FUTURE SITE ACTIVITY

Current DPE/AS Remediation

On January 31, 2012, Pangea temporarily shutdown the DPE/AS system due to low removal rates and to allow for potential concentration rebound prior to groundwater monitoring in March 2012. Following the March 2012 groundwater monitoring event, Pangea plans to restart the DPE/AS system to check for rebounding hydrocarbon removal rates. A workplan to enhance DPE/AS was submitted to ACEH in January 2012 and is summarized below.

Workplan for Enhanced Site Remediation

To help accelerate cleanup of residual hydrocarbons during rebound testing of the DPE/AS system, Pangea submitted a workplan for enhanced site remediation to ACEH on January 18, 2012. The workplan proposes using a bio-organic catalyst (BOC), non-toxic surfactant-like material to help desorb and remove residual hydrocarbons with the DPE/AS system. The BOC will also help accelerate natural biodegradation of any residual hydrocarbons during post-remediation groundwater monitoring. Pangea anticipates that approximately 1 to 2 additional months of active DPE/AS will provide sufficient contaminant source removal to improve groundwater quality and justify regulatory case closure.

As detailed in the workplan, Pangea proposes the following schedule for enhanced remediation and groundwater sampling:

- March/April 2012 – Resume DPE/AS After 6+ Week Rebound Test. Add BOC to initial wells.
- April 2012 – Expand BOC to final wells after BOC capture monitoring
- May 2012 – System Shutdown for Final Rebound Test
- June 2012 – Sample All Site Wells after 4 Weeks of Subsurface Equilibrium.

As discussed with case worker Keith Nowell on March 5, 2012, this site represents an excellent opportunity to test the effectiveness of this inexpensive and ‘green’ BOC technology for remediating residual petroleum hydrocarbon impact.

Post Remediation Groundwater Monitoring

The next routine quarterly monitoring event is scheduled for March 5, 2012, following a five week shutdown period for subsurface equilibration. During this March 2012 event, Pangea plans to modify the sampling program to further evaluate remedial progress and control cost as follows: 1) sampling remediation wells DPE-1, DPE-5 and DPE-6 (limited data for these wells), and 2) reduction of monitoring to annual frequency for wells MW-8C and MW-9C due to limited impact in these wells. The revised monitoring program is shown in Appendix A. Caseworker Keith Nowell tentatively approved this revision in March 5, 2012 discussion.

In June 2012 (second quarter 2012), after completion of planned DPE/AS with enhancement from BOC addition, Pangea anticipates discontinuance of DPE/AS and commencing post-remediation verification groundwater monitoring. If soil gas sampling (proposed below) suggests no significant risk of vapor intrusion into indoor areas within the adjacent buildings, and one full year of post-remediation monitoring is not required by ACEH, Pangea will respectfully request case closure after one or two rounds of favorable quarterly groundwater monitoring results. However, if required by ACEH, three additional quarters of post-remediation groundwater monitoring will be performed through first quarter 2013. In the absence of any significant concentration rebound or other issues of concern, Pangea anticipates receipt of regulatory case closure following the first quarter 2013 monitoring event.

Proposed Soil Gas Sampling

Pangea anticipates ACEH will require soil gas sampling to confirm cleanup effectiveness and evaluate risk associated with residual compounds before issuing case closure. Therefore, Pangea proposes the soil gas sampling from the following locations shown on Figure 7:

- The two existing subslab points (SS-1 and SS-2) installed within the concrete floor slab at the adjacent building on 5151 Broadway (former Poppy Fabric);
- Two subslab points (proposed SS-3 and SS-4) to be installed in the bottom floor of the adjacent residential complex at 5230 Coronado Avenue; and
- Three existing wells (MW-3A, MW-4A and MW-8A) screened in the vadose zone where elevated soil gas concentrations were detected during prior DPE testing in April 2007, and from one existing dual phase extraction well (DPE-3) located near former soil gas probe location SG-1 where benzene was previously detected in soil gas. The top of the well screen for these wells is approximately 8 or 9 ft below grade surface. Onsite soil gas sampling will help evaluate onsite conditions with respect to future site development, which may include excavation of shallow onsite soil.

Soil gas sampling will be conducted in general accordance with Pangea's Standard Operating Procedures and the California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC) *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (Cal/EPA, October 2011) and *Advisory – Active Soil Gas Investigation* (Cal/EPA, March 2010). The sampling will be performed consistent with procedures presented in the following prior soil gas sampling reports: *Addendum to Preliminary Results of Site Characterization: Proposed Additional Activities* dated November 8, 2006, *Soil Gas Sampling and Well Installation Report* dated October 23, 2007, and *Additional Soil Gas Sampling Report* dated July 14, 2008.

For subslab gas sampling, Pangea will wait at least five days after subslab probe installation before sampling. Purging and sampling from subslab soil gas probes will be performed using Summa canisters and a shrouded enclosure. The sampling will be performed at approximately 200ml/min and approximately 10 probe volumes will be purged prior to sample collection.

To sample the existing site wells, Pangea plans to slowly purge soil gas from each well using a small Thomas Industries vacuum pump while monitoring extracted vapor with a Horiba organic vapor analyzer. A Tedlar bag sample will be collected after purging approximately one, three, five and seven pore volumes. The bag sample corresponding to the highest reading from the organic vapor analyzer will be submitted for analysis. Pangea proposes sampling from existing wells rather than installing new soil gas probes for cost control.

Electronic Reporting

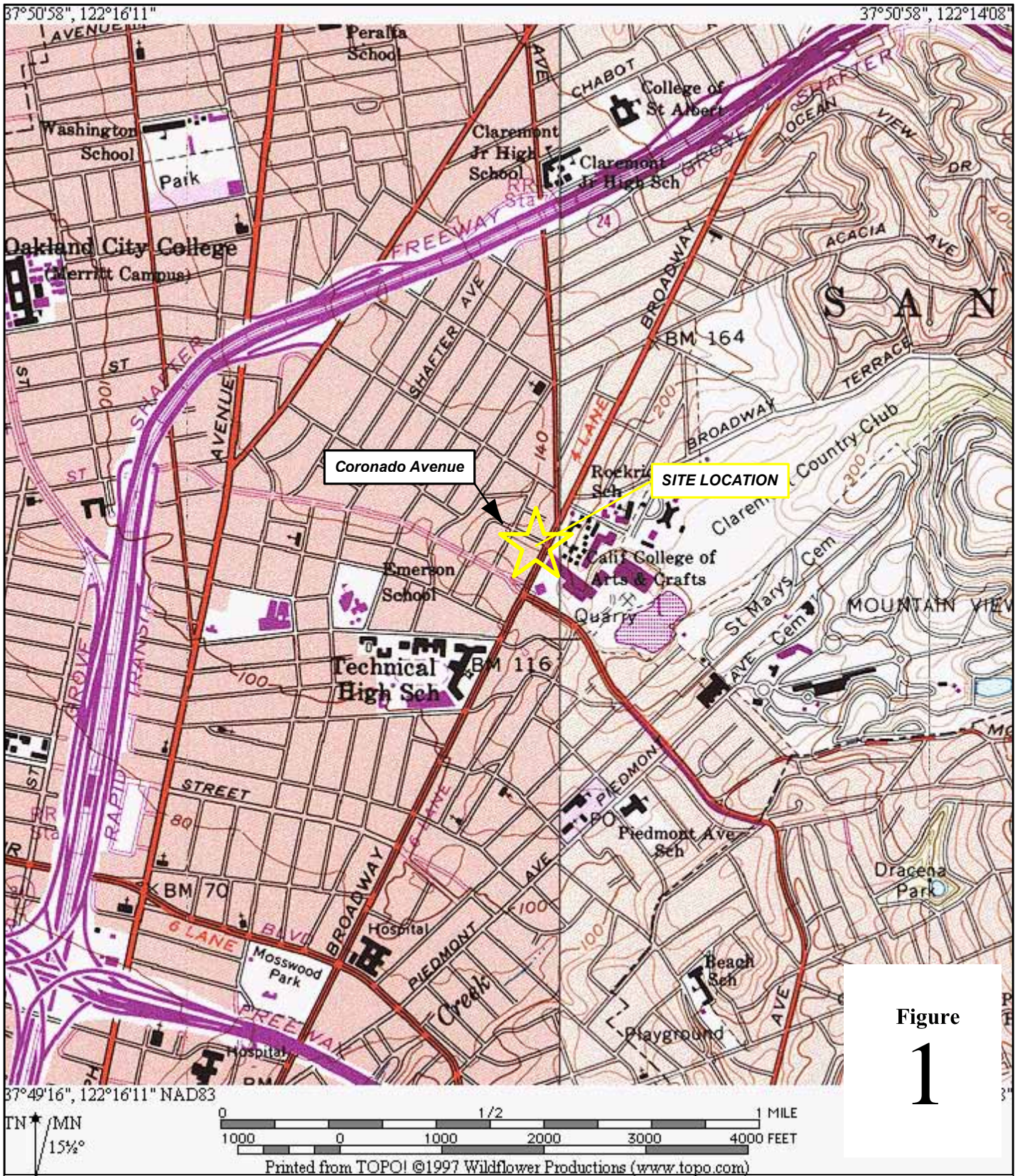
This report will be uploaded to the Alameda County FTP site. The report, laboratory data, and other applicable information will also be uploaded to the State Water Resource Control Board's Geotracker database. As requested, report hard copies will no longer be provided to the local agencies.

ATTACHMENTS

Figure 1 – Site Location Map
Figure 2 – Groundwater Elevation Contour and Hydrocarbon Concentration Map (Shallow)
Figure 3 – Groundwater Elevation Contour and Hydrocarbon Concentration Map (Deep)
Figure 4 – Remediation System Layout
Figure 5 – TPHg and Benzene Concentration Trends in Shallow Groundwater
Figure 6 – TPHg and Benzene Concentration Trends in Deep Groundwater
Figure 7 – Proposed Soil Gas Sampling Locations

Table 1 – Groundwater Analytical Data
Table 2 – Well Construction Details
Table 3 – SVE System Performance Data
Table 4 – GWE System Performance Data

Appendix A – Groundwater Monitoring Program
Appendix B – Groundwater Monitoring Field Data Sheets
Appendix C – Laboratory Analytical Reports



Feiner/Broadway site loc.ai 8/30/06

Former Exxon Station
5175 Broadway
Oakland, California



Site Location Map

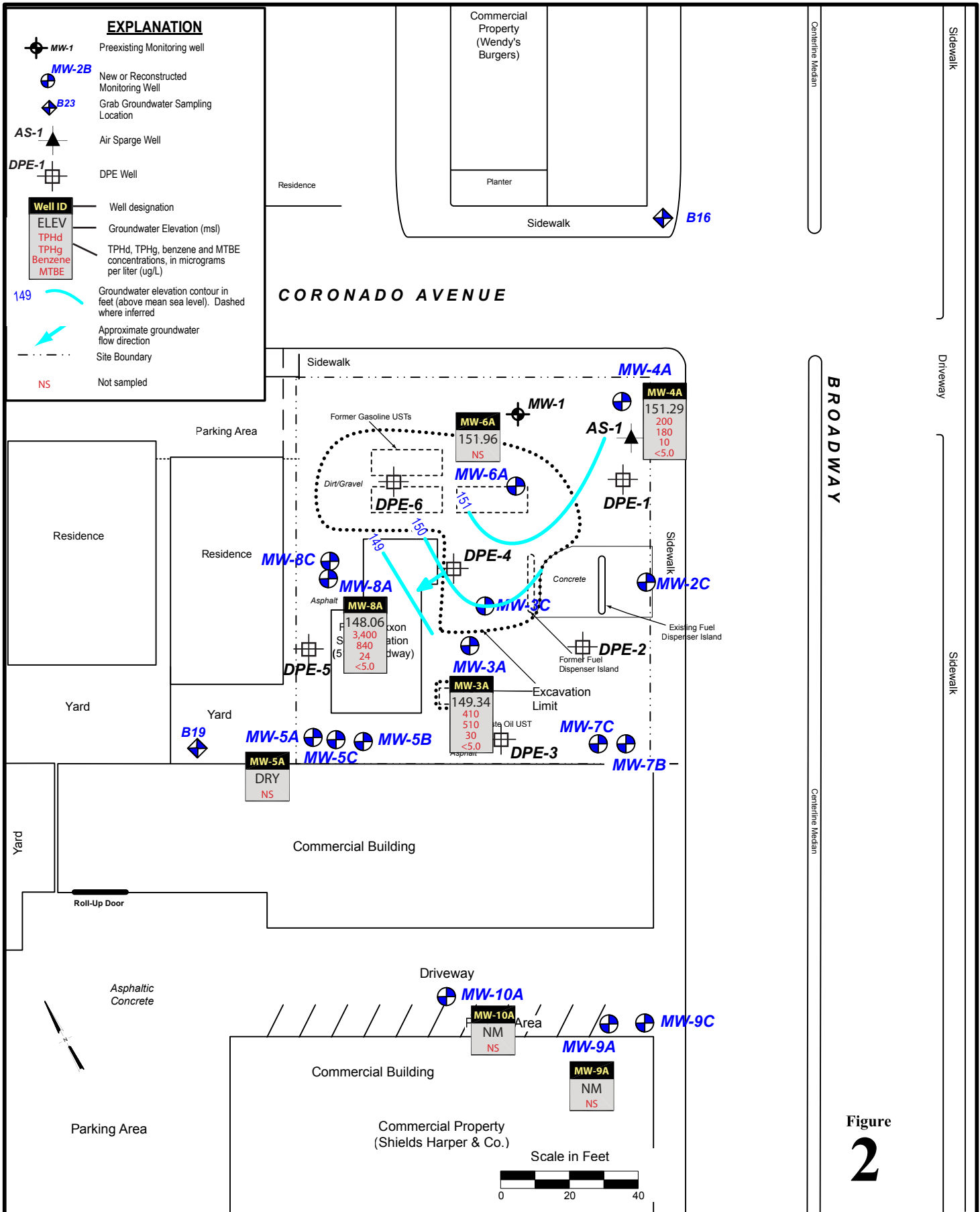


Figure
2

Former Exxon Station
5175 Broadway
Oakland, California

Groundwater Elevation Contour and
Hydrocarbon Concentration Map (Shallow)
December 29-30, 2011



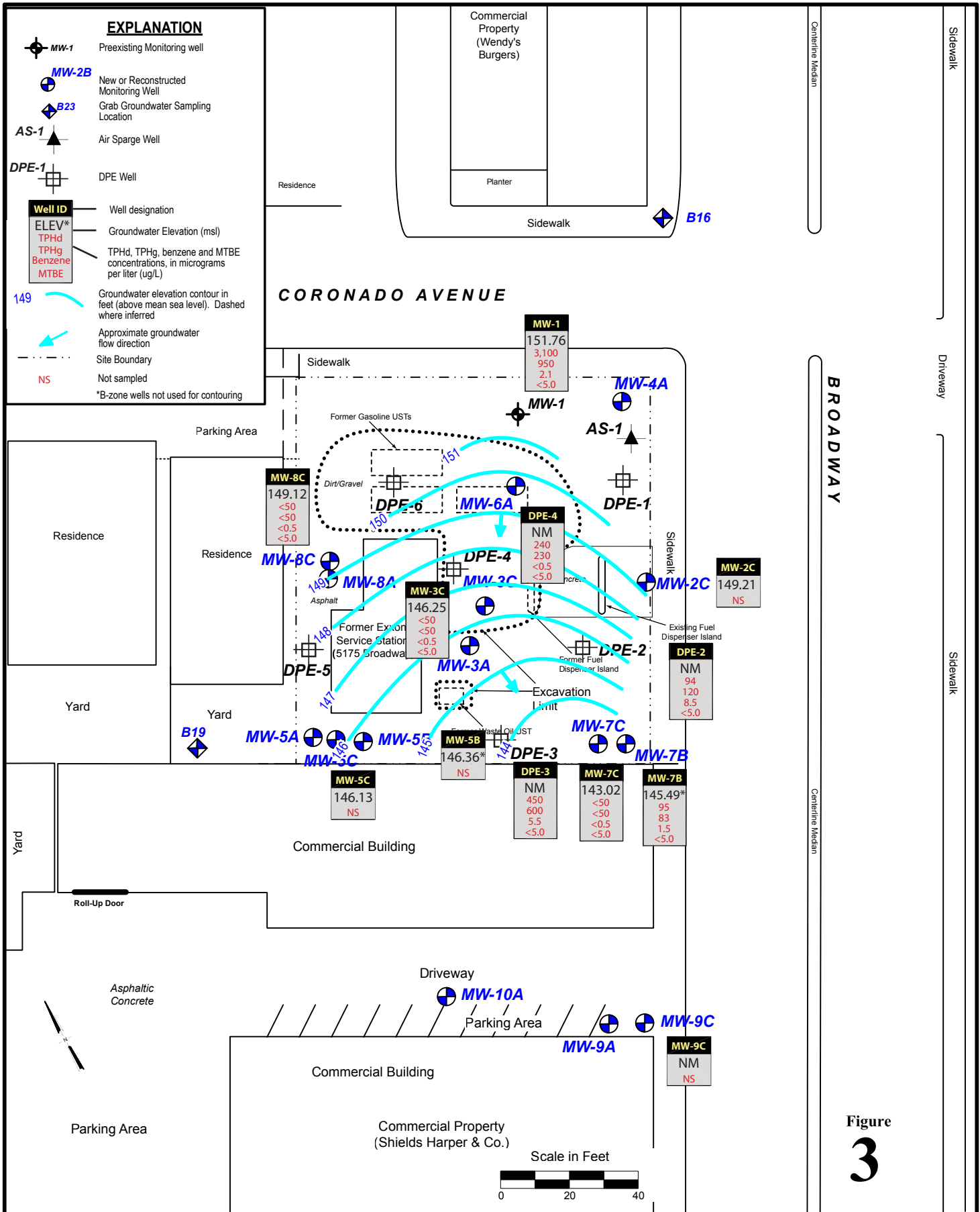


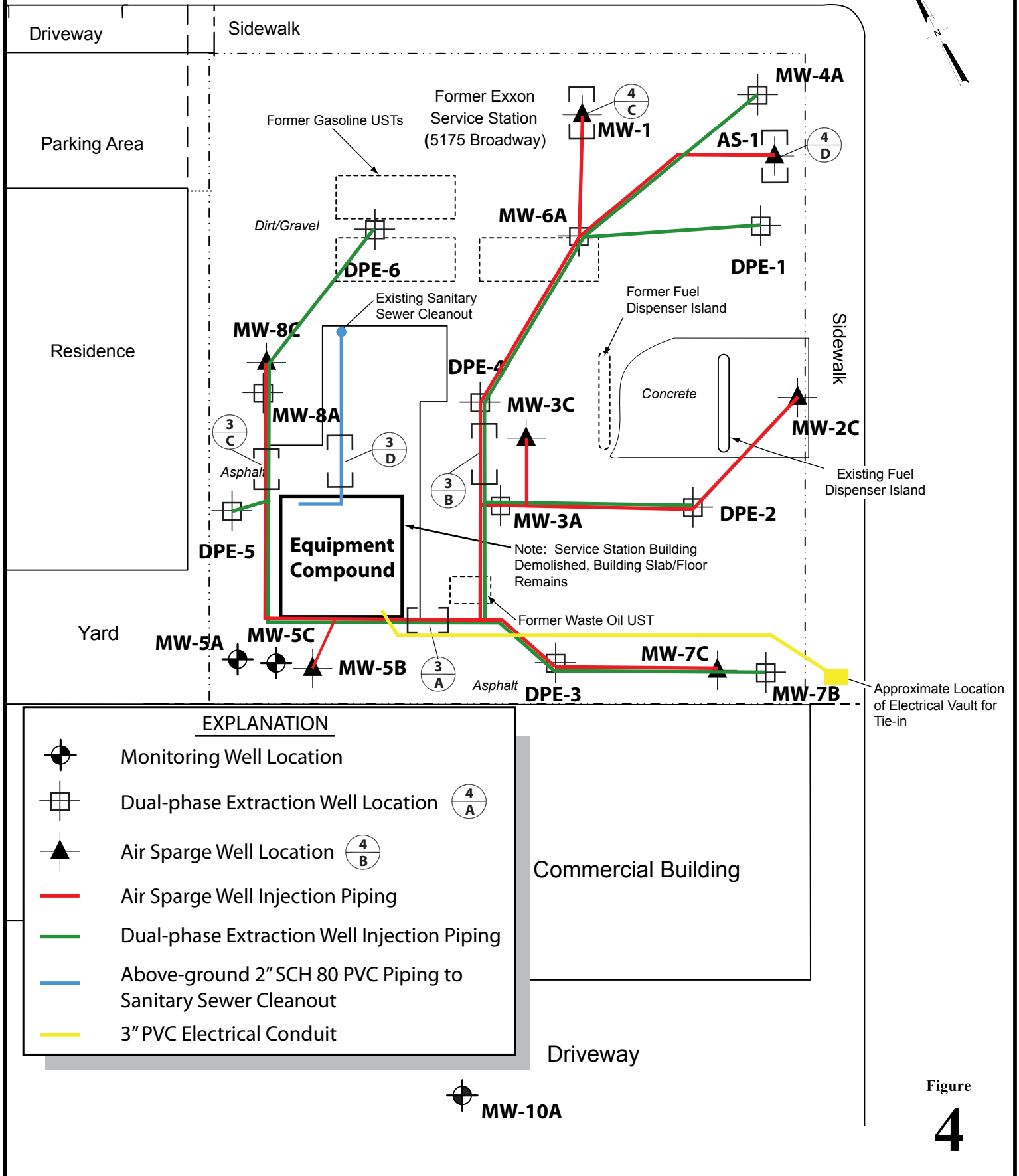
Figure
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Former Exxon Station
5175 Broadway
Oakland, California








Groundwater Elevation Contour and
Hydrocarbon Concentration Map (Deep)
December 29-30, 2011



CORONADO AVENUE



EXPLANATION

-  Monitoring Well Location
-  Dual-phase Extraction Well Location (4/A)
-  Air Sparge Well Location (4/B)
-  Air Sparge Well Injection Piping
-  Dual-phase Extraction Well Injection Piping
-  Above-ground 2" SCH 80 PVC Piping to Sanitary Sewer Cleanout
-  3" PVC Electrical Conduit

 MW-10A

Figure

4

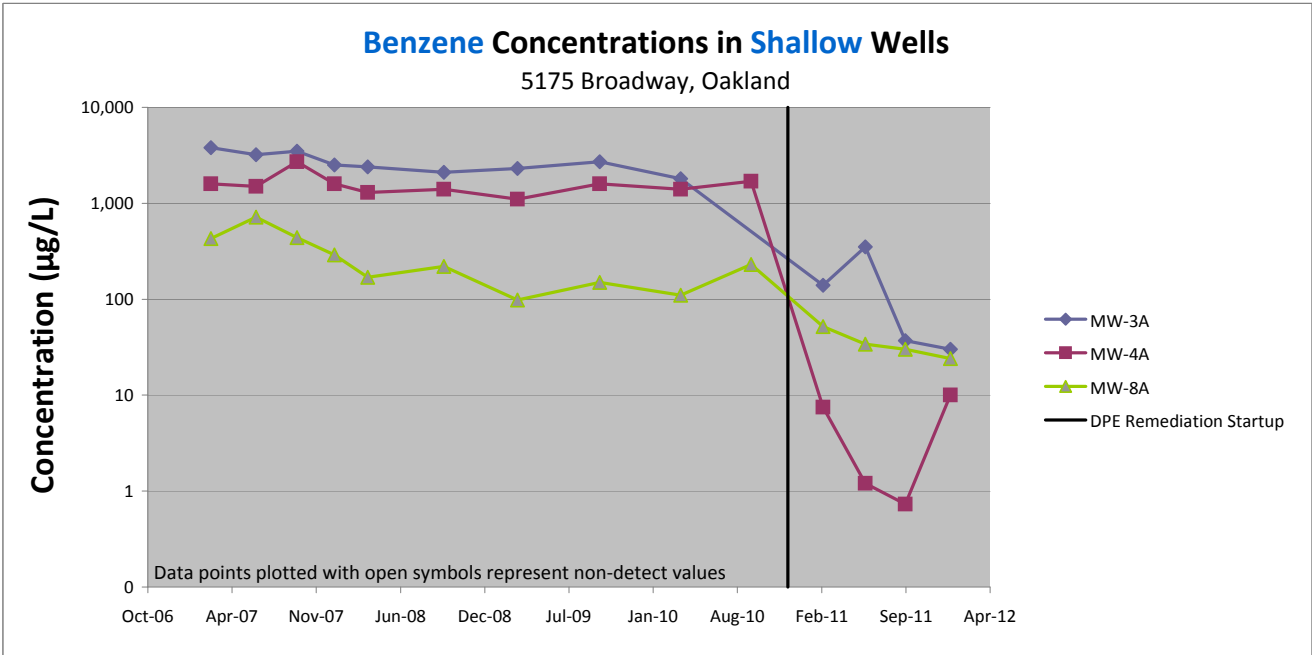
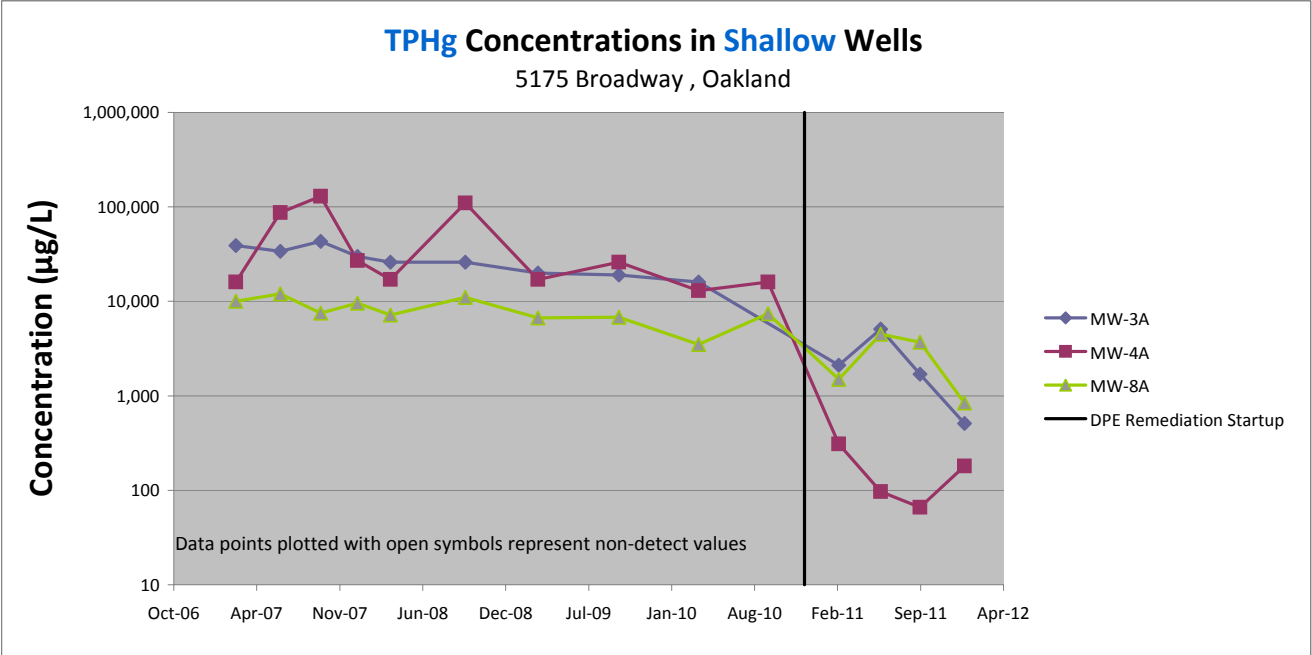


Figure 6. TPHg and Benzene Concentration Trends in Deep Groundwater

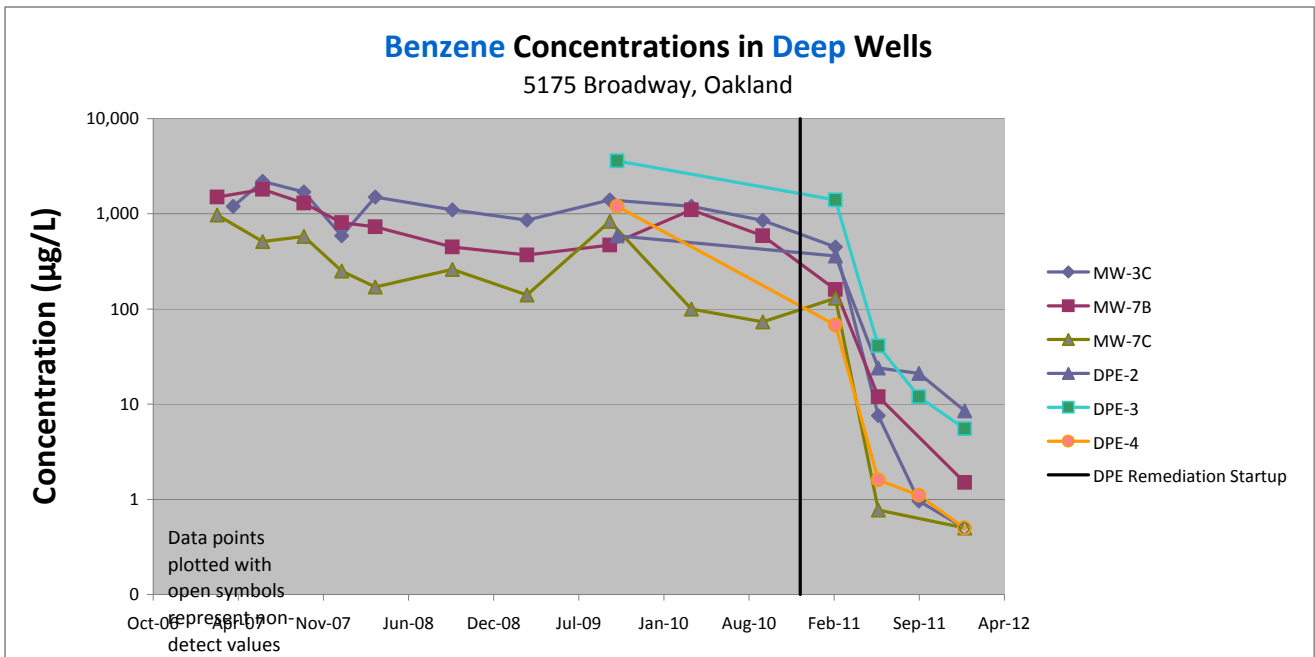
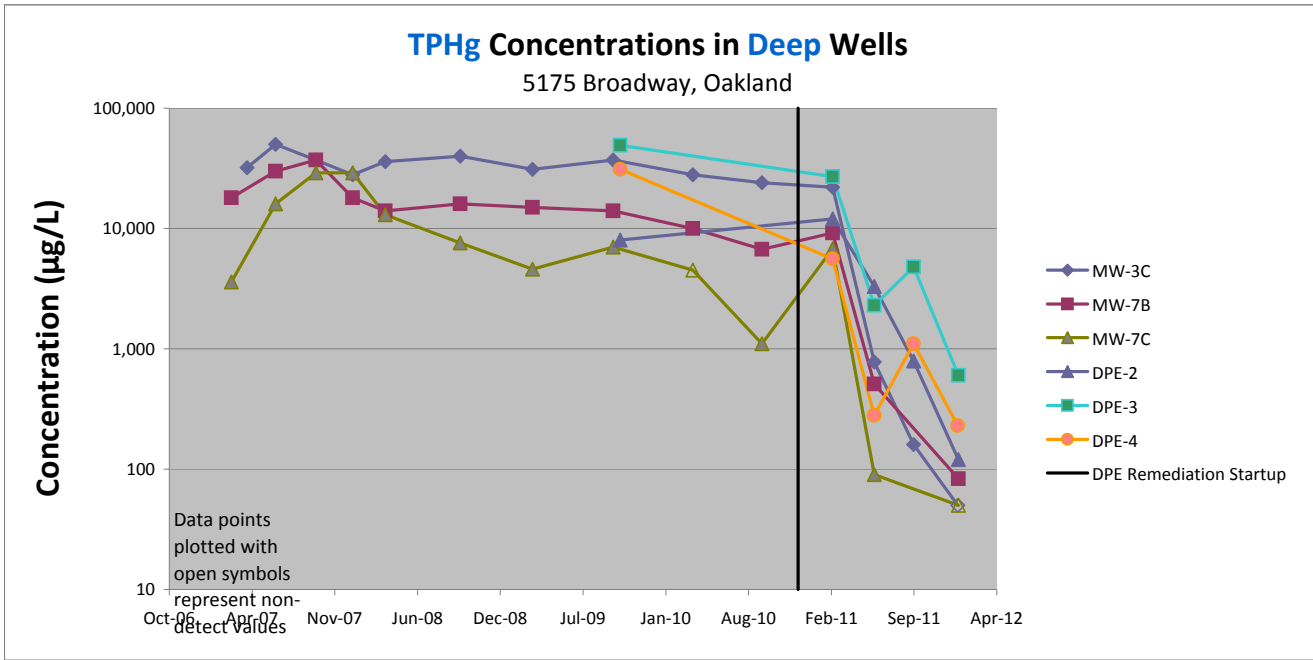
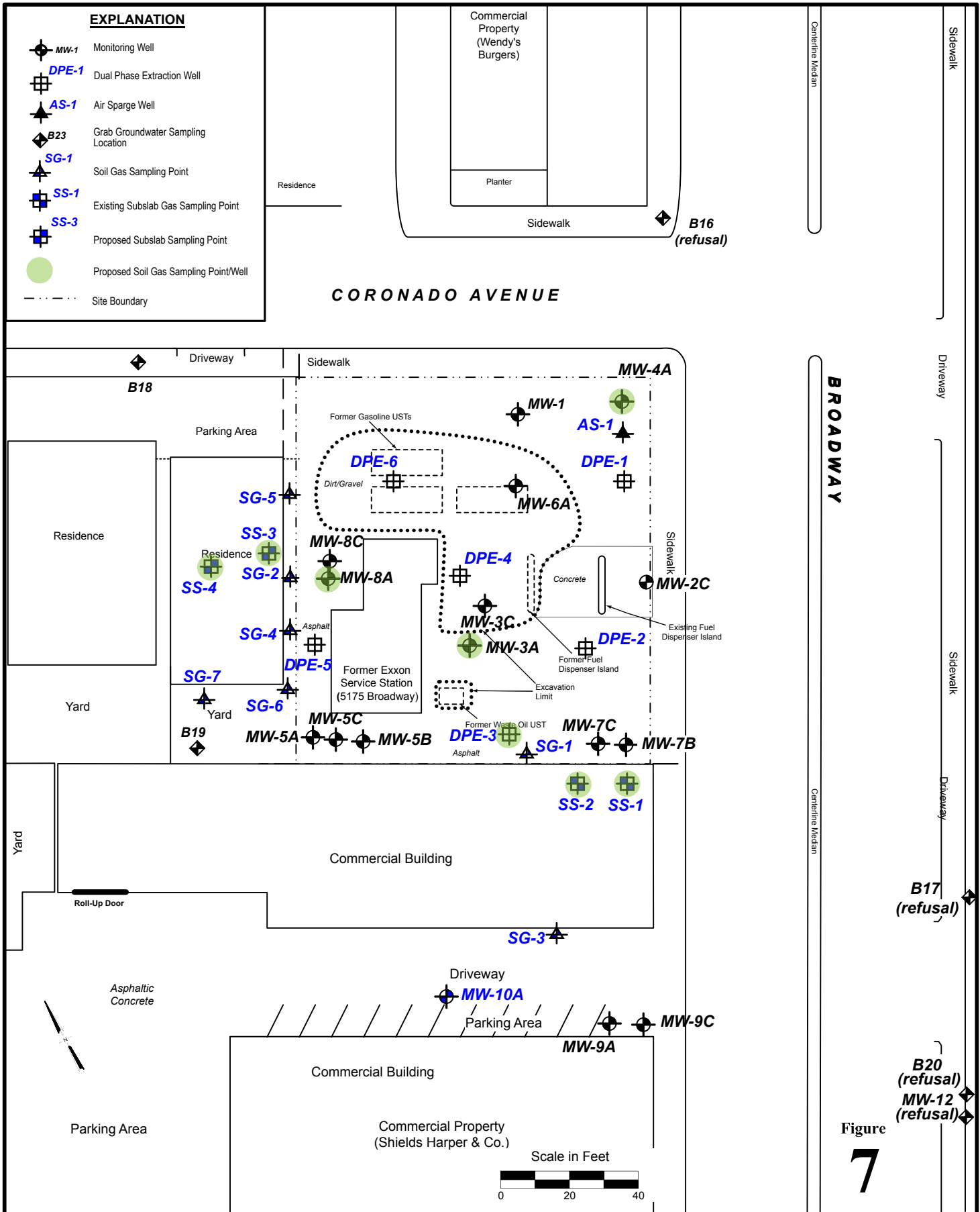


Figure 6. TPHg and Benzene Concentration Trends in Deep Groundwater



Former Exxon Station
5175 Broadway
Oakland, California

Proposed Soil Gas Sampling
Locations



Pangea

Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved
TOC Elev (ft)	Sampled	SPH (ft)	Elevation (ft)	to Water (ft)	←----- μg/L -----→								Oxygen mg/L
SHALLOW WELLS													
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	--	--	--	--	--	--	--	--	--
(161.57)	06/24/07	--	151.61	9.94	11,000	34,000	3,200	330	990	3,200	<250	--	--
	09/29/07	--	150.21	11.36	11,000	43,000	3,500	150	730	2,200	<1,000	--	--
	12/27/07	--	150.20	11.37	8,700	30,000	2,500	24	520	930	<100	--	--
	03/15/08	--	152.27	9.30	10,000	26,000	2,400	110	700	1,200	<250	--	--
	09/12/08	--	149.57	12.00	9,000	26,000	2,100	29	560	280	<100	--	--
	03/06/09	--	152.66	8.91	6,500	20,000	2,300	59	740	410	<180	--	--
	09/17/09	--	149.47	12.10	6,900	19,000	2,700	33	660	110	<250	--	--
	03/28/10	--	152.50	9.07	4,300	16,000	1,800	38	220	340	<100	--	--
	09/11/10	--	149.44	12.13					Insufficient water to sample			--	--
	03/01/11	--	150.01	11.56	2,200	2,100	140	10	37	97	<10	--	--
	06/10/11	--	151.89	9.68	1,400	5,100	350	140	110	490	<80	--	--
	09/13/11	--	150.95	10.62	400	1,700	37	38	17	110	<15	--	0.36
	12/29/11	--	149.34	12.23	410	510	30	1.0	2.1	24	<5.0	--	0.83
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	--	--
	12/27/07	--	152.33	10.11	19,000	27,000	1,600	31	100	320	<90	--	--
	03/15/08	--	152.51	9.93	38,000	17,000	1,300	<50	120	380	<500	--	--
	09/12/08	--	151.72	10.72	120,000	110,000	1,400	<50	210	660	<500	--	--
	03/06/09	--	153.84	8.60	32,000	17,000	1,100	15	<10	190	<100	--	--
	09/17/09	--	151.44	11.00	25,000	26,000	1,600	63	140	320	<350	--	--
	03/28/10	--	152.69	9.75	9,200	13,000	1,400	29	16	160	<100	--	--
	09/11/10	--	151.34	11.10	23,000	16,000	1,700	43	140	330	<250	--	--
	03/01/11	--	148.94	13.50	270	310	7.5	1.0	<0.5	7.7	<5.0	--	--
	06/10/11	--	152.32	10.12	110	97	1.2	<0.5	<0.5	1.7	<5.0	--	--
	09/13/11	--	148.27	14.17	130	66	0.73	<0.5	<0.5	<0.5	<5.0	--	0.48
	12/29/11	--	151.29	11.15	200	180	10	<0.5	<0.5	<0.5	<5.0	--	0.83
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	--	--	--	--	--	--	--	--	--
	12/27/07	--	148.40	12.42	--	--	--	--	--	--	--	--	--
	03/15/08	--	149.96	10.86	<50	180	0.91	<0.5	<0.5	<0.5	<5.0	--	--
	09/12/08	--	147.50	13.32					Insufficient water to sample			--	--
	03/06/09	--	151.33	9.49	230	460	2.0	3.0	0.68	1.9	<5.0	--	--
	09/17/09	--	148.02	12.80					Insufficient water to sample			--	--
	03/28/10	--	150.30	10.52	<50	69	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	09/11/10	--	147.72	13.10					Insufficient water to sample			--	--
	03/01/11	--	150.98	9.84	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	06/10/11	--	149.95	10.87	--	--	--	--	--	--	--	--	--
	09/13/11	--	148.30	12.52	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	0.36
	12/29/11	--						Well Dry					

Pangea

Table 1. 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 μg/L	Xylenes	MTBE	DIPE	1,2-DCA →	Dissolved Oxygen mg/L	
MW-6A (161.58)	03/09/07	--	154.91	6.67	380	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	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	--	--	--	
	12/27/07	--	154.27	7.31	170	94	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/15/08	--	154.42	7.16	150	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/12/08	--	152.92	8.66	510	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/06/09	--	155.76	5.82	110	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/17/09	--	152.89	8.69	280	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/28/10	--	154.55	7.03	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/11/10	--	152.99	8.59	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/01/11	--	154.57	7.01	67	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	06/10/11	--	154.11	7.47	--	--	--	--	--	--	--	--	--	--	
	09/13/11	--	151.67	9.91	74	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.23	
	12/29/11	--	151.96	9.62	--	--	--	--	--	--	--	--	--	--	
MW-8A (161.57)	03/09/07	--	152.05	9.52	4,200	10,000	430	18	<10	88	<100	--	--	--	
	03/26/07	--	151.74	9.83	--	--	--	--	--	--	--	--	--	--	
	06/24/07	--	151.40	10.17	17,000	12,000	720	500	230	880	<300	--	--	--	
	09/29/07	--	150.64	10.95	5,300	7,500	440	67	26	240	<90	--	--	--	
	12/27/07	--	152.00	9.59	13,000	9,600	290	100	90	360	<100	--	--	--	
	03/15/08	--	152.00	9.59	7,500	7,200	170	28	270	110	<100	--	--	--	
	09/12/08	--	150.27	11.32	9,900	11,000	220	31	110	180	<50	--	--	--	
	03/06/09	--	153.01	8.58	5,500	6,700	98	17	57	63	<50	--	--	--	
	09/17/09	--	150.83	10.76	5,200	6,800	150	19	10	35	<25	--	--	--	
	03/28/10	--	151.86	9.73	2,600	3,500	110	7.2	<1.7	19	<17	--	--	--	
	09/11/10	--	150.43	11.16	4,800	7,400	230	25	15	40	<90	--	--	--	
	03/01/11	--	152.80	8.79	1,000	1,500	52	3.5	24	11	<10	--	--	--	
	06/10/11	--	151.80	9.79	5,100	4,500	34	11	42	240	<50	--	--	--	
	09/13/11	--	150.69	10.90	7,400	3,700	30	4.3	12	99	<10	--	--	0.23	
	12/29/11	--	148.06	13.53	3,400	840	24	2.5	2.6	16	<5.0	--	--	0.51	
MW-9A (155.37)	09/29/07	--	142.76	12.61	86	<50	2.6	<0.5	<0.5	<0.5	<5.0	--	--	--	
	12/27/07	--	143.51	11.86	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/15/08	--	143.35	12.02	<50	<50	0.85	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/12/08	--	142.60	12.77	<50	<50	1.2	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/06/09	--	144.18	11.19	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/17/09	--	142.91	12.46	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/28/10	--	143.49	11.88	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	09/11/10	--	142.71	12.66	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	03/01/11	--	143.86	11.51	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
	06/10/11	--	143.63	11.74	--	--	--	--	--	--	--	--	--	--	
	09/13/11	--	142.79	12.58	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.42	
	12/29/11	--													
	Well Inaccessible														
	MW-10A (154.88)	09/29/07	--	144.35	10.53	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
		12/27/07	--	145.50	9.38	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
03/15/08		--	145.96	8.92	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
09/12/08		--	143.82	11.06	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
03/06/09		--	147.45	7.43	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
09/17/09		--	144.11	10.77	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	
03/28/10	--	146.25	8.63	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--		

Pangea

Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved
TOC Elev	Sampled	SPH	Elevation	to Water									Oxygen
(ft)	(ft)	(ft)	(ft)	(ft)	← μg/L →								mg/L
MW-10A	09/11/10	--	144.19	10.69	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
(cont.)	03/01/11	--	147.12	7.76	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	06/10/11	--	146.11	8.77	--	--	--	--	--	--	--	--	--
	09/13/11	--	144.21	10.67	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	0.42
	12/29/11				Well Inaccessible								
DEEP 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
	10/16/06	--	151.98	9.05	110	390	16	<0.5	1.5	2.2	<0.5	41	1.6
(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	--	--
	12/27/07	--	152.60	8.50	200	290	10	0.65	1.2	3.0	<5.0	--	--
	03/15/08	--	152.72	8.38	340	680	24	1.1	1.9	2.9	<1.0	--	--
	09/12/08	--	151.86	9.24	320	1,000	13	<0.5	0.61	1.4	<5.0	--	--
	03/06/09	--	154.40	6.70	2,700	2,500	28	3.2	4.8	10	<1.7	--	--
	09/17/09	--	151.67	9.43	170	300	4.4	<0.5	<0.5	2.3	<5.0	--	--
	03/28/10	--	153.05	8.05	290	1,000	16	1.2	1.1	4.2	<5.0	--	--
	09/11/10	--	151.50	9.60	190	270	6.9	<0.5	0.75	2.1	<5.0	--	--

Pangea

Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date	SPH	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved
TOC Elev	Sampled		Elevation	to Water										Oxygen
(ft)	(ft)	(ft)	(ft)	(ft)					µg/L					mg/L
MW-1 (cont.)	03/01/11	--	152.61	8.49	1,600	940	<0.5	<0.5	0.55	2.0	<5.0	--	--	--
	06/10/11	--	152.89	8.21	1,900	1,500	2.4	<0.5	0.84	7.9	<5.0	--	--	--
	09/13/11	--	150.96	10.14	320	1,400	<0.5	<0.5	<0.5	6.3	<5.0	--	--	0.66
	12/29/11	--	151.76	9.34	3,100	950	2.1	<0.5	<0.5	2.9	<5.0	--	--	0.53
MW-2C (160.65)	03/09/07	--	152.24	8.41	140	450	40	9.3	2.9	16	<10	--	--	--
	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	--	--	--
	12/27/07	--	151.42	9.23	83	190	13	0.83	<0.5	1.9	<5.0	--	--	--
	03/15/08	--	151.83	8.82	120	250	24	2.2	5.2	4.5	<5.0	--	--	--
	09/12/08	--	150.73	9.92	<50	130	7.1	<0.5	1.2	0.83	<5.0	--	--	--
	03/06/09	--	153.21	7.44	95	180	8.0	1.1	1.5	2.8	<5.0	--	--	--
	09/17/09	--	150.57	10.08	<50	64	4.3	<0.5	0.62	0.88	<5.0	--	--	--
	03/28/10	--	152.02	8.63	<50	94	4.6	<0.5	0.77	1.2	<5.0	--	--	--
	09/11/10	--	150.31	10.34	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/01/11	--	146.88	13.77	66	670	9.9	<0.5	0.92	0.58	<5.0	--	--	--
	06/10/11	--	150.19	10.46	--	--	--	--	--	--	--	--	--	--
	09/13/11	--	140.39	20.26	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	3.24
12/29/11	--	149.21	11.44	--	--	--	--	--	--	--	--	--	--	
MW-3C (161.79)	03/26/07	--	151.15	10.64	--	--	--	--	--	--	--	--	--	--
	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	--	--	--
	12/27/07	--	149.79	12.00	29,000	28,000	590	900	630	2,000	<500	--	--	--
	03/15/08	--	150.70	11.09	21,000	36,000	1,500	2,400	570	3,700	<500	--	--	--
	09/12/08	--	148.37	13.42	11,000	40,000	1,100	1,200	600	3,000	<500	--	--	--
	03/06/09	--	152.04	9.75	13,000	31,000	860	420	540	2,200	<500	--	--	--
	09/17/09	--	148.59	13.20	14,000	37,000	1,400	690	400	4,300	<1,200	--	--	--
	03/28/10	--	151.15	10.64	10,000	28,000	1,200	540	750	3,200	<150	--	--	--
	09/11/10	--	148.48	13.31	13,000	24,000	850	390	550	3,100	<1,000	--	--	--
	03/01/11	--	148.27	13.52	19,000	22,000	450	110	600	1,500	<300	--	--	--
	06/10/11	--	147.89	13.90	530	780	7.6	3.4	2.7	16	<5.0	--	--	--
	09/13/11	--	139.35	22.44	130	160	0.96	0.51	<0.5	0.99	<5.0	--	--	3.32
12/29/11	--	146.25	15.54	<50	<50	<0.5	<0.5	<0.5	0.90	<5.0	--	--	0.62	
MW-5B (161.50)	03/09/07	--	146.42	15.08	59	140	1.3	0.77	<0.5	1.6	<5.0	--	--	--
	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	--	--	--
	12/27/07	--	148.41	13.09	<50	58	1.4	<0.5	0.60	<0.5	<5.0	--	--	--
	03/15/08	--	148.95	12.55	<50	61	2.6	1.1	1.1	3.0	<5.0	--	--	--
	09/12/08	--	146.35	15.15	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/06/09	--	150.36	11.14	<50	67	2.0	1.4	1.3	3.3	<5.0	--	--	--
	09/17/09	--	146.94	14.56	<50	58	0.66	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/28/10	--	149.38	12.12	<50	110	2.7	0.78	<0.5	1.6	<5.0	--	--	--
	09/11/10	--	145.55	15.95	<50	110	0.56	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/01/11	--	149.53	11.97	97	120	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	06/10/11	--	148.26	13.24	--	--	--	--	--	--	--	--	--	--
	09/13/11	--	147.08	14.42	<50	550	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.33
12/29/11	--	146.36	15.14	--	--	--	--	--	--	--	--	--	--	

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Table 1. 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
MW-5C (161.03)	03/09/07	--	148.12	12.91	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	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	--	--	--
	12/27/07	--	148.10	12.93	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/15/08	--	148.48	12.55	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/12/08	--	146.04	14.99	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/06/09	--	149.73	11.30	<50	<50	0.52	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/17/09	--	146.60	14.43	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/28/10	--	148.68	12.35	<50	<50	1.3	<0.5	<0.5	<0.5	<5.0	--	--	--
	09/11/10	--	146.22	14.81	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	03/01/11	--	148.95	12.08	66	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--
	06/10/11	--	147.51	13.52	--	--	--	--	--	--	--	--	--	--
	09/13/11	--	146.31	14.72	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	0.27
	12/29/11	--	146.13	14.90	--	--	--	--	--	--	--	--	--	--
MW-7B (159.15)	03/09/07	--	147.97	11.18	930	18,000	1,500	1,600	140	1,800	<600	--	--	--
	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	--	--	--
	09/29/07	--	146.91	12.11	16,000	37,000	1,300	1,500	180	2,700	<500	--	--	--
	12/27/07	--	147.37	11.65	7,700	18,000	810	880	38	1,600	<50	--	--	--
	03/15/08	--	147.66	11.36	7,900	14,000	730	820	110	1,200	<250	--	--	--
	09/12/08	--	146.87	12.15	27,000	16,000	450	340	19	1,300	<120	--	--	--
	03/06/09	--	147.90	11.12	15,000	15,000	370	270	13	1,000	<150	--	--	--
	09/17/09	--	146.94	12.08	10,000	14,000	470	330	44	1,100	<170	--	--	--
	03/28/10	--	148.17	10.85	2,300	10,000	1,100	750	46	1,100	<300	--	--	--
	09/11/10	--	146.81	12.21	2,900	6,700	590	260	84	550	<210	--	--	--
	03/01/11	--	147.28	11.74	31,000	9,200	160	96	53	510	<50	--	--	--
	06/10/11	--	145.90	13.12	780	510	12	5.5	1.4	28	<5.0	--	--	--
	09/13/11	--						Well Dry				--	--	--
	12/30/11	--	145.49	13.53	95	83	1.5	0.67	<0.5	2.3	<5.0	--	--	0.61
MW-7C (158.53)	03/09/07	--	145.44	13.09	190	3,600	970	100	12	90	<120	--	--	--
	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	--	--	--
	12/27/07	--	146.74	11.79	56,000	29,000	250	410	430	3,300	<50	--	--	--
	03/15/08	--	147.45	11.08	7,000	13,000	170	58	170	1,300	<100	--	--	--
	09/12/08	--	146.02	12.51	2,600	7,600	260	38	76	330	<50	--	--	--
	03/06/09	--	147.65	10.88	1,900	4,600	140	21	15	93	<15	--	--	--
	09/17/09	--	146.23	12.30	2,200	7,000	830	38	23	90	<100	--	--	--
	03/28/10	--	147.32	11.21	940	4,500	<100	79	2.0	59	66	--	--	--
	09/11/10	--	145.77	12.76	350	1,100	73	3.6	2.0	5.2	<15	--	--	--

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Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved
TOC Elev (ft)	Sampled	SPH (ft)	Elevation (ft)	to Water (ft)	← μg/L →								Oxygen mg/L
MW-7C (cont.)	03/01/11	--	146.11	12.42	1,400	6,800	130	9.6	3.1	8.0	<10	--	--
	06/10/11	--	143.45	15.08	190	90	0.77	1.1	<0.5	1.1	<5.0	--	--
	09/13/11	--						Well Dry					
	12/30/11	--	143.02	15.51	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	0.59
MW-8C (161.33)	03/09/07	--	149.18	12.15	<50	150	9.8	1.3	2.0	3.9	<5.0	--	--
	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	--	--
	12/27/07	--	149.84	11.49	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	03/15/08	--	149.94	11.39	<50	110	6.0	1.7	2.4	2.4	<5.0	--	--
	09/12/08	--	148.18	13.15	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	03/06/09	--	151.25	10.08	<50	<50	2.1	<0.5	0.87	0.76	<5.0	--	--
	09/17/09	--	148.63	12.70	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	03/28/10	--	149.94	11.39	<50	84	6.6	0.89	2.9	2.7	<5.0	--	--
	09/11/10	--	148.33	13.00	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	03/01/11	--	150.45	10.88	65	280	16	3.7	7.9	6.2	<10	--	--
	06/10/11	--	149.56	11.77	<50	110	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	09/13/11	--	146.53	14.80	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	3.07
12/29/11	--	149.12	12.21	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	3.97	
MW-9C (154.94)	09/29/07	--	142.67	12.27	390	68	2.2	0.88	<0.5	<0.5	<5.0	--	--
	12/27/07	--	143.40	11.54	<50	<50	0.84	<0.5	<0.5	<0.5	<5.0	--	--
	03/15/08	--	143.98	10.96	<50	<50	0.55	<0.5	<0.5	<0.5	<5.0	--	--
	09/12/08	--	142.53	12.41	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	03/06/09	--	144.09	10.85	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	09/17/09	--	142.84	12.10	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	03/28/10	--	143.34	11.60	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	09/11/10	--	139.13	15.81	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	03/01/11	--	143.74	11.20	480	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	06/10/11	--	142.48	12.46	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	09/13/11	--	142.11	12.83	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
	12/29/11	--						Well Inaccessible					
	REMEDIATION WELLS												
AS-1	10/04/09	--	--	11.38	--	<50	3.6	<0.5	<0.5	<0.5	<5.0	--	--
DPE-1	10/04/09	--	--	10.38	--	1,600	210	4.4	5.1	34	<35	--	--
DPE-2	10/04/09	--	--	11.33	--	8,000	590	220	92	760	<250	--	--
	03/01/11	--	--	16.10	14,000	12,000	360	130	96	1,700	<50	--	--
	06/10/11	--	--	12.41	3,100	3,300	24	40	16	340	<10	--	--
	09/13/11	--	--	9.68	290	790	21	7.0	2.3	44	<30	--	0.34
	12/30/11	--	--	13.38	94	120	8.5	0.65	<0.5	4.6	<5.0	--	0.59
DPE-3	10/04/09	--	--	11.85	--	49,000	3,600	4,400	1,300	6,500	<2,500	--	--
	03/01/11	--	--	11.37	51,000	27,000	1,400	810	870	3,300	<700	--	--
	06/10/11	--	--	15.34	1,100	2,300	41	19	16	130	<15	--	--
	09/13/11	--	--	17.91	25,000	4,800	12	13	9.1	180	<15	--	0.33
	12/30/11	--	--	14.76	450	600	5.5	2.0	0.90	15	<5.0	--	0.51

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Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID <i>TOC Elev</i>	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															
DPE-4	10/04/09	--	--	11.50	--	31,000	1,200	2,900	530	4,700	<1,200	--	--	--	
	03/01/11	--	--	13.88	5,100	5,600	68	100	42	350	<50	--	--	--	
	06/10/11	--	--	11.07	280	280	1.6	4.2	2.5	25	<5.0	--	--	--	
	09/13/11	--	--	15.71	930	1,100	1.1	3.4	2.4	58	<5.0	--	--	0.29	
	12/30/11	--	--	12.22	240	230	<0.5	1.9	0.84	17	<5.0	--	--	--	
DPE-5	10/04/09	--	--	14.46	--	2,900	78	71	29	260	<50	--	--	--	
DPE-6	10/04/09	--	--	11.05	--	1,800	6.7	5.2	2.6	34	<5.0	--	--	--	
DESTROYED WELLS															
MW-2 (97.78)	04/30/89	--	--	--	--	230	39	18	5	23	--	--	--	--	
	05/17/90	--	87.78	10.00	--	--	--	--	--	--	--	--	--	--	
(102.02)	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	--	--	--	--	
	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	--	--	--	
(160.98)	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	--	--	--	
	07/01/02	--	151.34	9.64	940	2,600	300	29	45	27	<10	--	--	--	
(160.98)	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 Destroyed	

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Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved
TOC Elev (ft)	Sampled	SPH (ft)	Elevation (ft)	to Water (ft)	←----- μg/L -----→								Oxygen mg/L
MW-3 (98.14)	04/30/90	--	--	--	--	56,000	3,600	8,600	1,300	7,200	--	--	--
	05/17/90	--	85.72	12.42	--	--	--	--	--	--	--	--	--
(102.46)	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	--	--	--
(102.18)	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	--	--	--
(97.94)	03/04/92	--	91.92	10.26	--	57,000	720	870	81	3,100	--	--	--
	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	--	--	--
	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	--	--
(161.43)	01/11/02	--	88.36	9.58	1,900	9,300	230	200	290	580	<25	--	--
	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 Destroyed								
STMW-4 (103.58)	07/03/91	--	92.58	11.00	--	3,100	610	62	39	150	--	--	--
	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	--	--	--
	06/02/92	--	88.48	10.32	--	13,000	140	45	63	210	--	--	--
(98.80)	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	--	--

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Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved	
TOC Elev (ft)	Sampled	SPH (ft)	Elevation (ft)	to Water (ft)	µg/L								Oxygen mg/L	
STMW-4 (cont.)	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 Destroyed								0.24				
	STMW-5 (101.99) (101.36)	07/03/91	--	88.70	13.29	--	690	99	81	19	98	--	--	--
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	--	--	--	
01/11/93		--	89.75	11.61	--	800	1.8	3	3.1	9.4	--	--	--	
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 Destroyed													

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Table 1. Groundwater Analytical Data - Former Exxon Station, 5175 Broadway, Oakland, CA

Well ID	Date	Groundwater	Depth	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	DIPE	1,2-DCA	Dissolved	
<i>TOC Elev</i>	<i>Sampled</i>	<i>SPH</i>	<i>Elevation</i>	<i>to Water</i>									<i>Oxygen</i>	
<i>(ft)</i>		<i>(ft)</i>	<i>(ft)</i>	<i>(ft)</i>	←----- μg/L -----→								<i>mg/L</i>	
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	<2.5	--
B15-W	02/01/06	--	--	8.75	<620	2,700	(3.2)	(2.7)	(22)	(4.3)	<5.0	<25	<2.5	--

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).

Groundwater elevation is calculated according to the relationship: groundwater elevation = TOC (elevation) - (depth to water) + (0.8)(SPH thickness).

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

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

BTEX = Benzene, toluene, ethylbenzene, xylenes by EPA Method 8021B.

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.

Table 2 – Well Use and Construction Details–5175 Broadway, Oakland, CA

Well ID	Total Depth of Well (feet bgs)	Screened Interval (ft bgs)	Well Casing Nominal Diameter (inches)	Sand & Slot Size
DPE – Existing Wells				
MW-3A (DPE)	14	9-14	2	#2/12 – 0.01 Slot
MW-4A (DPE)	15	8-15	2	#2/12 – 0.01 Slot
MW-6A (DPE)	17	8-17	2	#2/12 – 0.01 Slot
MW-7B (DPE)	18.5	15.5-18.5	2	#2/12 – 0.01 Slot
MW-8A (DPE)	15	8-15	2	#2/12 – 0.01 Slot
DPE – New Wells				
DPE 1 – DPE 6	19 – 20	10-13/19-20	2	#2/12 – 0.01 Slot
AIR SPARGING – Existing Wells				
MW-1 (AS)	23	13-23	4	8x20 – 0.02 Slot
MW-2C (AS)	23	18-23	2	#2/12 – 0.01 Slot
MW-3C (AS)	27	22-27	2	#2/12 – 0.01 Slot
MW-5B (AS)	20	17-20	2	#2/12 – 0.01 Slot
MW-7C (AS)	25	20-25	2	#2/12 – 0.01 Slot
MW-8C (AS)	25	20-25	2	#2/12 – 0.01 Slot
AIR SPARGING –New Well				
AS-1	20	16-20	1	#2/12 – 0.01 Slot
GROUNDWATER MONITORING ONLY				
MW-5A	14	10-14	2	#2/12 – 0.01 Slot
MW-5C	27	22-27	2	#2/12 – 0.01 Slot
MW-9A	15.5	7.5-15.5	2	#2/12 – 0.01 Slot
MW-9C	21	17-21	2	#2/12 – 0.01 Slot
MW-10A	18	8-18	2	#2/12 – 0.01 Slot

bgs = below ground surface

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Table 3. SVE (DPE) Performance Data - 5175 Broadway, Oakland, CA											Removal				Emission Reporting						Notes
Date	Wells	Oxidizer Hr Meter Reading (hours)	Interval Time (days)	System Vapor Flow Rate (cfm)	Lab Applied Vacuum ("Hg)	Sample ID	Influent TPHg Data (ppmv)	Influent Benzene Data (ppmv)	Influent OVA Reading (ppmv)	SVE Removal Rate (lbs/day)	TPHg Removal Rate (lbs/day)	SVE Removal Rate (lbs/day)	Cumulative SVE Removal (lbs)	Cumulative Benzene Removal (lbs)	Effluent TPHg Lab (ppmv)	Effluent Benzene Lab (ppmv)	TPHg Abatement Efficiency (lbs/day)	Benzene Abatement Efficiency (lbs/day)	Benzene Emission Rate (lbs/day)	Cumulative Vapor Flow (cf)	
12/08/10	DPE-1, MW-3A, 4A, 8A	5040.8	0.0	65	22	INF-V	1,300	6.4	1,270	27.1	0.12	0.0	0	---	---	---	---	---	0	Startup Test	
12/10/10	DPE-1, MW-3A, 4A, 8A	5051.8	0.5	65	22	---	900	5.7	916	18.8	0.11	8.6	0.05	---	---	---	---	---	42,900	Off. Start.	
12/13/10	DPE-1, MW-3A, 4A, 8A	5120.8	2.9	93	20	INF-V	430	1.7	---	12.8	0.05	45.5	0.18	< 7.0	< 0.077	> 98.4	> 95.5	0.002	427,920	On.	
12/22/10	DPE-1, MW-3A, 4A, 8A	5337.2	9.0	125	17	INF-V	460	5.2	758	18.4	0.19	211.8	1.89	---	---	---	---	---	2,050,920	On. Shutdown due to noise. Restart 12/29.	
01/07/11	DPE-1, 4	5585.0	10.3	31	25	INF-V	640	6.1	1,000	6.4	0.06	277.5	2.46	---	---	---	---	---	2,511,828	Shutdown 1/14 due to noise. Restart 1/19.	
02/02/11	DPE-1, 4	6019.4	18.1	31	18	INF-V	1,200	6.1	1,168	11.9	0.06	493.6	3.45	---	---	---	---	---	3,319,812	Off on arrival, restart. Add oil.	
02/22/11	DPE-1, 2, 4, MW-4A	6490.1	19.6	30	18	INF-V	370	1.8	632	3.6	0.02	563.4	3.76	---	---	---	---	---	4,167,072	On. Add oil.	
02/28/11	DPE-1, 2, 4, MW-4A	6633.6	6.0	30	26	---	370	1.8	---	3.6	0.02	584.7	3.85	---	---	---	---	---	4,425,372	On. Shutdown for GWM and restarted.	
03/09/11	DPE-1, 2, 4, MW-4A	6797.1	6.8	86	18	INF-V	77	0.12	54	2.1	0.00	599.2	3.87	---	---	---	---	---	5,269,032	On.	
03/15/11	DPE-1, 2, 4, MW-4A	6940.7	6.0	31	21	---	77	0.12	63	0.8	0.00	603.8	3.88	---	---	---	---	---	5,536,128	On.	
03/16/11	DPE-2, 3, 4, MW-7B	6966.5	1.1	31	22	---	160	0.12	200	1.6	0.00	605.5	3.88	---	---	---	---	---	5,584,116	On.	
03/21/11	DPE-2, 3, 4, MW-7B	7081.1	4.8	53	23	INF-V	420	4.8	760	7.1	0.07	639.6	4.23	---	---	---	---	---	5,948,544	Start Air Sparging (AS)	
03/31/11	DPE-2, 3, 4, MW-7B	7131.3	2.1	98	26	---	350	3.5	603	11.0	0.10	662.6	4.57	---	---	---	---	---	6,243,720	Off. Install additional soundproofing. Restart.	
04/06/11	DPE-2, 3, 4, MW-7B	7272.9	5.9	77	24	---	350	3.5	---	8.6	0.08	713.6	4.86	---	---	---	---	---	6,897,912	On. Optimize.	
04/12/11	DPE-2, 3, 4, MW-7B	7293.0	0.8	73	17	---	350	3.5	---	8.2	0.07	720.5	5.07	---	---	---	---	---	6,985,950	Off on arrival, restart.	
04/26/11	DPE-2, 3, 4, MW-7B, 8A	7626.9	13.9	130	20	INF-V	240	2.5	259	10.0	0.09	859.7	6.26	---	---	---	---	---	9,590,370	On.	
05/04/11	DPE-2, 3, 4, MW-7B, 8A	7818.0	8.0	110	18	---	200	2.0	213	7.1	0.06	915.9	6.77	---	---	---	---	---	10,851,630	Off on arrival, restart.	
05/24/11	DPE-2, 3, 4, MW-7B, 8A	8278.0	19.2	104	18	INF-V	160	0.97	235	5.3	0.03	1018.3	7.33	< 7.0	< 0.077	> 95.6	> 92.1	0.002	13,722,030	On. Add oil.	
06/02/11	DPE-1,2,3,4, MW-4A,7B,8A	8488.2	8.8	90	18	---	100	0.50	130	2.9	0.01	1043.5	7.44	---	---	---	---	---	14,857,110	On.	
06/06/11	DPE-1,2,3,4, MW-4A,7B,8A	8529.1	1.7	90	18	---	100	0.50	130	2.9	0.01	1048.5	7.47	---	---	---	---	---	15,077,970	Off on arrival. AS shutdown. Off on departure.	
06/27/11	DPE-1,2,3,4, MW-4A,7B,8A	8661.0	5.5	90	18	---	100	0.50	130	2.9	0.01	1064.3	7.54	---	---	---	---	---	15,790,230	Off on arrival, blown fuso. Off on departure.	
07/11/11	DPE-1,2,3,4, MW-4A,7B,8A	8730.7	2.9	90	18	---	90	0.40	116	2.6	0.01	1071.9	7.57	---	---	---	---	---	16,166,610	Off on arrival, overheating, restart.	
07/18/11	DPE-1, 2, 3, MW-4A, 7B, 8A	8874.8	6.0	90	18	---	90	0.40	116	2.6	0.01	1087.5	7.63	---	---	---	---	---	16,944,750	Off on arrival, overheating, restart.	
07/19/11	DPE-1, 2, 3, MW-4A, 7B, 8A	8876.3	0.1	87	19	---	100	0.50	127	2.8	0.01	1087.7	7.63	---	---	---	---	---	16,952,580	Off on arrival, overheating, restart.	
07/21/11	DPE-1, 2, 3, MW-4A, 7B, 8A	8903.6	1.1	82	22	---	100	0.50	132	2.6	0.01	1090.7	7.65	---	---	---	---	---	17,087,060	Off on arrival, restart.	
07/26/11	DPE-1, 3, 4, MW-4A, 7B	9020.9	4.9	75	19	---	100	0.50	117	2.4	0.01	1102.5	7.70	---	---	---	---	---	17,617,725	On.	
07/28/11	DPE-1, 3, 4, MW-4A, 7B	9069.3	2.0	76	18	---	100	0.50	123	2.4	0.01	1107.4	7.72	---	---	---	---	---	17,839,010	On.	
08/08/11	DPE-1, 3, 4, MW-4A, 7B	9216.3	6.1	79	19	---	100	0.50	131	2.5	0.01	1122.9	7.79	---	---	---	---	---	18,533,849	Off on arrival, restart.	
08/18/11	DPE-1, 3, 4, MW-4A, 7B	9457.8	10.1	79	21	---	100	0.50	119	2.5	0.01	1148.4	7.91	---	---	---	---	---	19,678,559	On.	
08/31/11	DPE-1, 3, 4, MW-4A, 7B	9579.9	5.1	97	15	---	50	0.50	53	1.6	0.01	1156.3	7.98	---	---	---	---	---	20,392,478	Off on arrival, overheating, restart.	
09/22/11	DPE-1, 3, 4, MW-4A, 7B	9843.7	11.0	97	14	---	25	0.50	25	0.8	0.01	1164.9	8.13	---	---	---	---	---	21,927,794	Off on arrival, restart.	
09/26/11	DPE-4, 5, MW-8A	9863.5	0.8	101	20	INF-V	450	1.9	427	14.5	0.06	1176.9	8.18	---	---	---	---	---	22,047,331	Off on arrival, restart.	
10/05/11	DPE- 3, MW-7B, 8A	10063.0	8.3	98	18	---	100	0.50	72	3.1	0.01	1202.9	8.30	---	---	---	---	---	23,215,842	On.	
10/11/11	DPE- 3, MW-7B, 8A	10065.2	0.1	91	19	---	70	0.50	58	2.0	0.01	1203.1	8.30	---	---	---	---	---	23,227,882	Off on arrival, restart.	
10/18/11	DPE- 3, MW-7B, 8A	10115.6	2.1	93	22	---	100	0.50	79	3.0	0.01	1209.4	8.33	---	---	---	---	---	23,509,749	Off on arrival, restart.	
11/02/11	DPE- 3, MW-7B, 8A	10473.7	14.9	89	21	---	150	1.0	117	4.3	0.03	1273.5	8.72	---	---	---	---	---	25,428,878	On.	
11/15/11	DPE- 3, MW-7B, 8A	10525.4	2.2	86	18	---	100	0.50	106	2.8	0.01	1279.5	8.74	---	---	---	---	---	25,696,364	Off on arrival, restart.	
11/22/11	DPE- 3, MW-7B, 8A	10690.3	6.9	76	18	---	100	0.50	---	2.4	0.01	1296.2	8.82	---	---	---	---	---	26,448,308	On.	
11/23/11	DPE- 3, 4, 5, MW-8A	10717.5	1.1	83	18	---	30	0.50	39	0.8	0.01	1297.1	8.83	---	---	---	---	---	26,583,764	On.	
11/29/11	DPE- 3, 4, 5, MW-8A	10855.9	5.8	83	16	---	60	0.50	63	1.6	0.01	1306.4	8.90	---	---	---	---	---	27,272,996	On.	
12/08/11	DPE- 3, 4, 5, MW-8A	11075.6	9.2	76	18	---	40	0.50	49	1.0	0.01	1315.3	9.00	---	---	---	---	---	28,277,464	On.	
12/16/11	DPE- 3, 4, 5, MW-8A	11263.7	7.8	77	18	---	60	0.50	61	1.5	0.01	1326.9	9.09	---	---	---	---	---	29,145,358	On.	
12/22/11	DPE- 3, 4, 5, MW-8A	11383.5	5.0	77	18	---	60	0.50	---	1.5	0.01	1334.3	9.15	---	---	---	---	---	29,698,834	Off. Leave off for QM event on 12/29.	

Notes:
 ALL = Wells DPE-1 through DPE-6, MW-3A, MW-4A, MW-7B and MW-8A
 NA = not analyzed; NM = not measured; --- = not available
 System data estimated when specific data not available.
 cfm = actual cubic feet (cf) per minute based on anemometer readings (from vacuum side of vacuum pump during SVE). Flow rate is estimated on select days when anemometer measurements are anomalous (anemometer repair was required 2nd Qtr 2011).
 ppmv = parts per million on volume to volume basis. Actual lab data shown in **bold**. Lab data estimated for dates without lab data to allow mass removal calculation.
 lbs = Pounds
 "Hg = Inches of mercury vacuum
 SVE = Soil Vapor Extraction

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Table 3. SVE (DPE) Performance Data - 5175 Broadway, Oakland, CA								Removal				Emission Reporting							
Date	Wells	Oxidizer	System	Lab	Influent	Influent	Influent	SVE TPHg	SVE Benzene	Cumulative	Cumulative	Effluent	Effluent	TPHg	Benzene	Benzene	Cumulative	Notes	
		Hr Meter Reading (hours)	Interval Time (days)	Vapor Flow Rate (cfm)	Applied Vacuum ("Hg)	Sample ID	TPHg Data (ppmv)	Benzene Data (ppmv)	OVA Reading (ppmv)	Removal Rate (lbs/day)	Removal Rate (lbs/day)	SVE Removal (lbs)	TPHg Removal (lbs)	TPHg Lab (ppmv)	Benzene Lab (ppmv)	Abatement Efficiency (lbs/day)	Abatement Efficiency (lbs/day)		Emission Rate (lbs/day)
<p>OVA = Organic Vapor Analyzer (Horiba Model MEXA 324JU)</p> <p>TPHg and Benzene Removal Rates = For dates where no laboratory analytical data was collected, the lab data is estimated based on prior lab data and OVA readings to calculate period and cumulative mass removal.</p> <p>Hydrocarbon Removal/Emission Rate = Rate based on Bay Area Air Quality Management District's Manual of Procedures for Soil Vapor Extraction dated July 17, 1991.</p> <p>Rate = lab concentration (ppmv) x system flowrate (scfm) x (1lb-mole/386 ft³) x molecular weight (86 lb/lb-mole for TPH-Gas hexane) x 1440 min/day x 1/1,000,000.</p>																			

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Table 4. GWE (DPE) System Performance Summary - 5175 Broadway, Oakland, California

Well ID	Date	Totalizer Reading ¹ (gallons)	Interval Flow Volume (gallons)	Interval Duration (days)	Average Flow Rate (gpm)	TPHg Concentration (ug/L)	Benzene Concentration (ug/L)	MTBE Concentration (ug/L)	TPHg Removed (Lbs)	Benzene Removed (Lbs)	MTBE Removed (Lbs)	Comments
System	12/08/10	0	0	0	--	--	--	--	0.000	0.000	0.000	System startup testing, water not discharged to sewer yet.
Influent	12/10/10	248	248	2	0.09	--	--	--	0.000	0.000	0.000	Off; restart.
	12/14/10	1,120	872	4	0.15	300	4.6	ND (<5.0)	0.002	0.000	0.000	Startup water sampling of influent (12/14)
	12/22/10	3,585	2,465	8	0.21	--	--	--	0.006	0.000	0.000	On. Shutdown due to noise, restarted 12/29.
	01/07/11	7,622	4,037	16	0.18	--	--	--	0.010	0.000	0.000	On. System off 1/14 due to noise, restart 1/19.
	02/02/11	16,840	9,218	26	0.25	1,300	52	ND (<10)	0.100	0.004	0.000	Off on arrival; add oil and restart.
	02/22/11	25,427	8,587	20	0.30	680	8.4	ND (<5.0)	0.049	0.001	0.000	On. Add more oil.
	02/28/11	28,855	3,428	6	0.40	--	--	--	0.019	0.000	0.000	On. Shutdown for GWM and restarted.
	03/09/11	31,981	3,126	9	0.24	--	--	--	0.018	0.000	0.000	On.
	03/15/11	34,398	2,417	6	0.28	--	--	--	0.014	0.000	0.000	On.
	03/16/11	34,961	563	1	0.39	--	--	--	0.003	0.000	0.000	On.
	03/31/11	36,763	1,802	15	0.08	--	--	--	0.010	0.000	0.000	Off. Add more soundproofing and restart.
	04/06/11	39,571	2,808	6	0.33	--	--	--	0.016	0.000	0.000	On.
	04/12/11	39,671	100	6	0.01	240	4.8	ND (<5.0)	0.000	0.000	0.000	See NOTE below.
	04/26/11	41,195	1,524	14	0.08	--	--	--	0.003	0.000	0.000	On.
	05/04/11	41,703	508	8	0.04	--	--	--	0.001	0.000	0.000	Off. Pump overheating. Restart
	05/24/11	42,965	1,262	20	0.04	66	0.92	ND (<5.0)	0.001	0.000	0.000	Off. Restart
	06/02/11	43,908	943	9	0.07	--	--	--	0.001	0.000	0.000	On.
	06/06/11	47,392	3,484	4	0.60	--	--	--	0.002	0.000	0.000	Off on arrival; restart. Off on departure
	07/13/11	48,851	1,459	37	0.03	--	--	--	0.001	0.000	0.000	Off on arrival; restart.
	07/21/11	51,271	2,420	8	0.21	--	--	--	0.001	0.000	0.000	Off. Restart.
	07/26/11	53,411	2,140	5	0.30	68	0.51	ND (<5.0)	0.001	0.000	0.000	On.
	07/28/11	54,069	658	2	0.23	--	--	--	0.000	0.000	0.000	On.
	08/08/11	55,829	1,760	11	0.11	--	--	--	0.001	0.000	0.000	Off. Restart.
	08/18/11	60,036	4,207	10	0.29	--	--	--	0.002	0.000	0.000	On.
	08/31/11	61,771	1,735	13	0.09	--	--	--	0.001	0.000	0.000	Off. Restart.
	09/22/11	65,179	3,408	22	0.11	--	--	--	0.002	0.000	0.000	Off. Restart.
	09/26/11	65,389	210	4	0.04	--	--	--	0.000	0.000	0.000	Off. Restart.
	10/05/11	65,650	261	9	0.02	--	--	--	0.000	0.000	0.000	On.
	10/11/11	65,743	93	6	0.01	--	--	--	0.000	0.000	0.000	Off. Restart.
	10/18/11	65,881	138	7	0.01	--	--	--	0.000	0.000	0.000	Off. Restart.
	11/02/11	66,589	708	15	0.03	--	--	--	0.000	0.000	0.000	On.
	11/15/11	66,684	95	13	0.01	--	--	--	0.000	0.000	0.000	Off on arrival, restart.
	11/22/11	67,082	398	7	0.04	--	--	--	0.000	0.000	0.000	On.
	11/23/11	67,161	79	1	0.05	--	--	--	0.000	0.000	0.000	On.
	11/29/11	67,810	649	6	0.08	--	--	--	0.000	0.000	0.000	On.
	12/08/11	68,695	885	9	0.07	--	--	--	0.001	0.000	0.000	On.
	12/16/11	69,431	736	8	0.06	--	--	--	0.000	0.000	0.000	On.
	12/22/11	69,481	50	6	0.01	ND (<50)	ND (<0.5)	ND (<5.0)	0.000	0.000	0.000	Off. Leave off for QM event 12/29.
									0.266	0.006	0.000	Total Cumulative Removal (Lbs)
System	04/12/11	--	--	--	--	ND (<50)	ND (<0.5)	ND (<5.0)	--	--	--	See NOTE below.
Midpoint	05/24/11	--	--	--	--	ND (<50)	ND (<0.5)	ND (<5.0)	--	--	--	
	07/26/11	--	--	--	--	ND (<50)	ND (<0.5)	ND (<5.0)	--	--	--	
	12/22/11	--	--	--	--	ND (<50)	ND (<0.5)	ND (<5.0)	--	--	--	
System	12/08/10	--	--	--	--	--	--	--	--	--	--	
Effluent	12/14/10	--	--	--	--	ND (<50)	ND (<0.5)	ND (<5.0)	--	--	--	Startup water sampling of effluent (12/14)
	02/22/11	--	--	--	--	ND (<50)	ND (<0.5)	ND (<5.0)	--	--	--	
	05/24/11	--	--	--	--	ND (<50)	ND (<0.5)	ND (<5.0)	--	--	--	
	07/26/11	--	--	--	--	ND (<50)	ND (<0.5)	ND (<5.0)	--	--	--	
	12/22/11	--	--	--	--	ND (<50)	ND (<0.5)	ND (<5.0)	--	--	--	

<i>Discharge Limits (ug/L):</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>
	<i>Benzene</i>	<i>Toluene</i>	<i>Ethylbenzene</i>	<i>Total Xylenes</i>

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Table 4. GWE (DPE) System Performance Summary - 5175 Broadway, Oakland, California

Well ID	Date	Totalizer Reading ¹ (gallons)	Interval Flow Volume (gallons)	Interval Duration (days)	Average Flow Rate (gpm)	TPHg Concentration (ug/L)	Benzene Concentration (ug/L)	MTBE Concentration (ug/L)	TPHg Removed (Lbs)	Benzene Removed (Lbs)	MTBE Removed (Lbs)	Comments
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ABBREVIATIONS AND NOTES:

NOTE = Based on previous and subsequent analytical results Pangea switched the 4/12/11 analytical results for System Influent and Midpoint. Pangea suspects that the samples were accidentally switched by the lab or mislabeled by the technician.

1 = Initial totalizer reading was 23,559. Therefore, shown reading above 0 is actual reading minus 23,559. The 12/10/10 reading of 23,807 less 23,559 equals 248 gallons discharged.

gpm = Gallons per minute

TPHd = Total Petroleum Hydrocarbon as Diesel analyzed by EPA Method 8015B with silica gel cleanup

TPHg = Total Petroleum Hydrocarbon as Gasoline analyzed by EPA Method 8015B

Benzene analyzed by EPA Method 8021B

MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8021 Cm

Toulene, Ethylbenzene and Total Xylenes analyzed by EPA Method 8015B

-- = not measured/not available

* Estimated contaminant mass calculated by multiplying average concentration detected during period (Table 1) by volume of extracted groundwater. Uses most recent lab data.

**Unless noted Toulene, Ethylbenzene and Total Xylenes non-detect (<0.5)

APPENDIX A

Groundwater Monitoring Program

Table A. Quarterly Groundwater Monitoring Program During Active Remediation - 1Q2012

Rockridge Heights, 5175 Broadway, Oakland, CA

Well ID	Well Type	Screened Interval (ft bgs)	Well Location for Monitoring	Casing Diam. (in)	Gauge Frequency	Sample Frequency ¹
Shallow Wells						
MW-3A	Mon + DPE	9-14	Downgradient (Onsite)	2	Q	Q
MW-4A	Mon + DPE	8-15	NE Corner, Upgradient (Onsite)	2	Q	Q
MW-5A	Mon	10-14	SW Corner, Downgradient (Onsite)	2	Q	A
MW-6A	Mon + DPE	8-17	Source Area, Upgradient (Onsite)	2	Q	A
MW-8A	Mon + DPE	8-15	W Boundary, Downgradient (Onsite)	2	Q	Q
MW-9A	Mon	7.5-15.5	Downgradient (Offsite)	2	Q	A
MW-10A	Mon	7.5-15.5	Downgradient (Offsite)	2	Q	A
Deep Wells						
MW-1	Mon + AS	13-23	N Boundary, Upgradient (Onsite)	2	Q	Q
MW-2C	Mon + AS	18-23	E Boundary, Downgradient (Onsite)	2	Q	A
MW-3C	Mon + AS	22-27	Source Area, Downgradient (Onsite)	2	Q	Q
MW-5B	Mon + AS	17-20	SW Corner, Downgradient (Onsite)	2	Q	A
MW-5C	Mon	22-27	SW Corner, Downgradient (Onsite)	2	Q	A
MW-7B	Mon + DPE	15.5-18.5	SE Corner, Downgradient (Onsite)	2	Q	Q
MW-7C	Mon + AS	20-25	SE Corner, Downgradient (Onsite)	2	Q	Q
MW-8C	Mon + AS	20-25	W Boundary, Crossgradient (Onsite)	2	Q	A
MW-9C	Mon	17-21	Downgradient (Offsite)	2	Q	A
AS-1	AS	16-20	NE Corner, Upgradient (Onsite)	1	---	---
DPE-1	DPE	9-19	NE Corner, Upgradient (Onsite)	4	---	1Q12
DPE-2	DPE	9-19	E Boundary, Downgradient (Onsite)	4	Q	Q
DPE-3	DPE	10-20	S Boundary, Downgradient (Onsite)	4	Q	Q
DPE-4	DPE	13-18	Source Area, Downgradient (Onsite)	4	Q	Q
DPE-5	DPE	9-19	W Boundary, Crossgradient (Onsite)	4	---	1Q12
DPE-6	DPE	14-19	Source Area (Onsite)	4	---	1Q12

Notes and Abbreviations:

I= Sample Analytes: Total Petroleum Hydrocarbons as Gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8015Cm/8021B and Total Petroleum Hydrocarbons as Diesel (TPHd) by EPA Method 8015C with silica gel clean-up.

Bold =Revised sampling frequency from prior program.

Q = Quarterly (Typically March, June, September and December)

A = Annually (Typically September)

Mon = Groundwater Monitoring Well

N, S, W, E = Cardinal directions North, South, West, East and other directions (e.g., Northeast = NE)


DPE = Dual Phase Extraction Well

AS = Air Sparge Well

APPENDIX B

Groundwater Monitoring Field Data Sheets

Well Gauging Data Sheet

Project.Task: 1145.001.229				Project Name: Rockridge Heights			
Address: 5175 Broadway, Oakland, CA						Date: 12/29/11	
Name: Steve Hunter				Signature: 			
Well ID	Well Size (in.)	Time	Depth to Immiscible Liquid (ft)	Thickness of Immiscible Liquid (ft)	Depth to Water (ft)	Total Depth (ft)	Measuring Point
MW-3A	2	1050	-	-	12.23	13.90	TOC
MW-4A	2	1025	-	-	11.15	14.76	↓
MW-5A	2	0953	-	-	Dry	13.65	
MW-6A	2	1007	-	-	9.62	14.95	
MW-8A	2	1053	-	-	13.53	14.60	
MW-1	2	1020	-	-	9.34	22.87	
MW-2C	2	1013	-	-	11.44	23.51	
MW-3C	2	1057	-	-	15.54	26.60	
MW-5B	2	1001	-	-	15.14	19.01	
MW-5C	2	0957	-	-	14.90	26.83	
MW-7B	2	1036	-	-	13.53	18.18	

Comments: System shut down on 12/21/11
 All wells opened at least 1 hour prior to monitoring
 Not able to access MW-9A, MW-9C, MW-10. Area fenced in and locked.

Well Gauging Data Sheet

Project Task: 1145.001.229				Project Name: Rockridge Heights			
Address: 5175 Broadway, Oakland, CA						Date: 12/29/11	
Name: Steve Hunter				Signature: <i>Steve Hunter</i>			
Well ID	Well Size (in.)	Time	Depth to Immiscible Liquid (ft)	Thickness of Immiscible Liquid (ft)	Depth to Water (ft)	Total Depth (ft)	Measuring Point
MW-7C	2	1041	—	—	15.51	24.41	TOC
MW-8C	2	1045	—	—	12.21	22.65	↓
DPE-2	4	1031	—	—	13.38	19.23	
DPE-3	4	1103	—	—	14.76	19.45	
DPE-4	4	1108	—	—	12.22	16.72	

Comments:

MONITORING FIELD DATA SHEET

Well ID: MW-3A

Project.Task #: <u>1145.001.228-229</u>		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: <u>12-29-11</u>		Weather: <u>Clear</u>						
Well Diameter: <u>2"</u>		Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47			
			2" = 0.16	4" = 0.65	radius ² * 0.163			
Total Depth (TD): <u>13.90</u>		Depth to Product: <u>—</u>						
Depth to Water (DTW): <u>12.23</u>		Product Thickness: <u>—</u>						
Water Column Height: <u>1.67</u>		1 Casing Volume: <u>0.26</u>			gallons			
Reference Point: N.T.O.C.		3 Casing Volumes: <u>0.75</u>			gallons			
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
<u>1439</u>					<u>0.33</u>		<u>0</u>	
<u>1447</u>	<u>18.3</u>	<u>6.92</u>	<u>1142</u>			<u>-51</u>	<u>1.25</u>	
<u>1453</u>	<u>18.5</u>	<u>6.94</u>	<u>1151</u>			<u>-50</u>	<u>1.50</u>	
<u>(Deaerated at .50)</u>								

Comments:

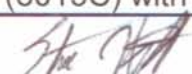
Sample ID: <u>MW-3A</u>		Sample Time: <u>1500</u>	
Laboratory: McCampbell		Sample Date: <u>12-29-11</u>	
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)			
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up			
Sampler Name: Steve Hunter		Signature: <u>[Signature]</u>	

MONITORING FIELD DATA SHEET

Well ID: MW-4A

Project.Task #: 1145.001.228-229		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: 12-29-11				Weather: Clear				
Well Diameter: 2"		Volume/ft.		1" = 0.04	3" = 0.37	6" = 1.47		
				2" = 0.16	4" = 0.65	radius ² * 0.163		
Total Depth (TD): 14.76		Depth to Product: —						
Depth to Water (DTW): 11.15		Product Thickness: —						
Water Column Height: 3.61		1 Casing Volume: 0.5				gallons		
Reference Point: N.T.O.C.		3 Casing Volumes: 1.5				gallons		
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp (°C)	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1342					0.83	-81	0	
1349	18.3	6.92	947			-81	0.5	
1358	18.5	6.99	952			-79	1	
(Well dewatered at 1.25 gallons)								

Comments:

Sample ID: <u>MW-4A</u>	Sample Time: <u>1425</u>
Laboratory: <u>McC Campbell</u>	Sample Date: <u>12-29-11</u>
Containers/Preservative: <u>3 Voas (HCL), 1-One Liter Ambers (HCL)</u>	
Analyzed for: <u>TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up</u>	
Sampler Name: <u>Steve Hunter</u>	Signature: 

MONITORING FIELD DATA SHEET

Well ID: *MW-8A*

Project.Task #: 1145.001. 228 <i>229</i>		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: <i>12-29-11</i>		Weather: <i>Clear</i>						
Well Diameter: <i>2"</i>	Volume/ft.							
	1" = 0.04	3" = 0.37	6" = 1.47					
	2" = 0.16	4" = 0.65	radius ² * 0.163					
Total Depth (TD): <i>14.60</i>	Depth to Product: <i>-</i>							
Depth to Water (DTW): <i>13.53</i>	Product Thickness: <i>-</i>							
Water Column Height: <i>1.53</i>	1 Casing Volume: <i>0.24</i>		gallons					
Reference Point: N.T.O.C.	3 Casing Volumes: <i>0.75</i>		gallons					
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp (°C)	pH	Cond (µs)	NTU	DO (mg/L)	ORP (mV)	Vol (gal)	DTW
<i>1137</i>					<i>0.51</i>			
<i>1145</i>	<i>18.7</i>	<i>8.03</i>	<i>2341</i>			<i>76</i>	<i>0.25</i>	
<i>1149</i>	<i>18.5</i>	<i>8.01</i>	<i>2206</i>			<i>72</i>	<i>0.50</i>	
<i>1152</i>	<i>18.4</i>	<i>7.93</i>	<i>2243</i>			<i>70</i>	<i>0.75</i>	

Comments:

Sample ID: <i>MW-8A</i>	Sample Time: <i>1205</i>
Laboratory: McCampbell	Sample Date: <i>12-29-11</i>
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: Steve Hunter	Signature: <i>[Signature]</i>

MONITORING FIELD DATA SHEET

Well ID: *MW-1*

Project.Task #: 1145.001.228 <i>229</i>		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: <i>12-29-11</i>				Weather: <i>Clear</i>				
Well Diameter: <i>2"</i>		Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	2" = 0.16	4" = 0.65	radius ² * 0.163
Total Depth (TD): <i>22.87</i>		Depth to Product: <i>—</i>						
Depth to Water (DTW): <i>9.34</i>		Product Thickness: <i>—</i>						
Water Column Height: <i>13.63</i>		1 Casing Volume: <i>2.18</i>			gallons			
Reference Point: N.T.O.C.		3 Casing Volumes: <i>6.5</i>			gallons			
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
<i>1247</i>					<i>0.53</i>			
<i>1254</i>	<i>19.0</i>	<i>7.70</i>	<i>1037</i>			<i>-38</i>	<i>2</i>	
<i>1259</i>	<i>19.3</i>	<i>7.30</i>	<i>1033</i>			<i>-53</i>	<i>4</i>	
<i>1307</i>	<i>19.5</i>	<i>7.28</i>	<i>1027</i>			<i>-47</i>	<i>6.5</i>	

Comments:

Sample ID: <i>MW-1</i>	Sample Time: <i>1325</i>
Laboratory: McCampbell	Sample Date: <i>12-29-11</i>
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: Steve Hunter	Signature: <i>[Signature]</i>

MONITORING FIELD DATA SHEET

Well ID: *MW-3C*

Project.Task #: 1145.001. 228 <i>229</i>		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: <i>12-29-11</i>				Weather: <i>Clear</i>				
Well Diameter: <i>2"</i>		Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47			
			2" = 0.16	4" = 0.65	radius ² * 0.163			
Total Depth (TD): <i>26.60</i>		Depth to Product: <i>—</i>						
Depth to Water (DTW): <i>15.54</i>		Product Thickness: <i>—</i>						
Water Column Height: <i>11.06</i>		1 Casing Volume: <i>1.7</i>			gallons			
Reference Point: N.T.O.C.		3 Casing Volumes: <i>5.5</i>			gallons			
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
<i>1533</i>					<i>0.62</i>		<i>0</i>	
<i>1540</i>	<i>18.3</i>	<i>6.93</i>	<i>1242</i>			<i>-52</i>	<i>2</i>	
<i>1546</i>	<i>18.0</i>	<i>6.91</i>	<i>1253</i>			<i>-47</i>	<i>4</i>	
<i>1551</i>	<i>17.9</i>	<i>6.90</i>	<i>1249</i>			<i>-48</i>	<i>5.5</i>	

Comments:

Sample ID: <i>MW-3C</i>	Sample Time: <i>1610</i>
Laboratory: McCampbell	Sample Date: <i>12-29-11</i>
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)	
Analyzed for:TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up	
Sampler Name: Steve Hunter	Signature: <i>[Signature]</i>

MONITORING FIELD DATA SHEET

Well ID: *MW-7B*

Project.Task #: <i>1145.001.228-229</i>		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: <i>12-30-11</i>		Weather: <i>Clear</i>						
Well Diameter: <i>2"</i>		Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	2" = 0.16	4" = 0.65	radius ² * 0.163
Total Depth (TD): <i>18.18</i>		Depth to Product: <i>—</i>						
Depth to Water (DTW): <i>13.53</i>		Product Thickness: <i>—</i>						
Water Column Height: <i>4.65</i>		1 Casing Volume: <i>0.85</i>			gallons			
Reference Point: N.T.O.C.		3 Casing Volumes: <i>2.5</i>			gallons			
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
<i>11:20</i>					<i>0.61</i>			
<i>11:27</i>	<i>17.1</i>	<i>7.42</i>	<i>828</i>			<i>-107</i>	<i>1</i>	
<i>(Well dewatered at 1.5 gallons)</i>								

Comments:

Sample ID: <i>MW-7B</i>	Sample Time: <i>1150</i>
Laboratory: McCampbell	Sample Date: <i>12-30-11</i>
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: Steve Hunter	Signature: <i>Steve Hunter</i>

MONITORING FIELD DATA SHEET

Well ID: *MW-7C*

Project.Task #: 1145.001. 228 <i>229</i>		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: <i>12-30-11</i>				Weather: <i>Clear</i>				
Well Diameter: <i>2"</i>		Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	2" = 0.16	4" = 0.65	radius ² * 0.163
Total Depth (TD): <i>24.41</i>		Depth to Product: <i>—</i>						
Depth to Water (DTW): <i>15.51</i>		Product Thickness: <i>—</i>						
Water Column Height: <i>8.90</i>		1 Casing Volume: <i>1.5</i>			gallons			
Reference Point: N.T.O.C.		3 Casing Volumes: <i>4.5</i>			gallons			
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
<i>1201</i>					<i>0.59</i>		<i>0</i>	
<i>1206</i>	<i>18.7</i>	<i>7.43</i>	<i>1004</i>			<i>-91</i>	<i>1.5</i>	
<i>1212</i>	<i>18.5</i>	<i>7.41</i>	<i>998</i>			<i>-87</i>	<i>3.0</i>	
<i>1217</i>	<i>18.3</i>	<i>7.39</i>	<i>996</i>			<i>-81</i>	<i>4.5</i>	

Comments:

Sample ID: <i>MW-7C</i>	Sample Time: <i>1225</i>
Laboratory: McCampbell	Sample Date: <i>12-30-11</i>
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: Steve Hunter	Signature: <i>[Signature]</i>

MONITORING FIELD DATA SHEET

Well ID: *MW-8C*

Project.Task #: 1145.001.228 <i>229</i>		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: <i>12-29-11</i>				Weather: <i>Clear</i>				
Well Diameter: <i>2"</i>		Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47			
			2" = 0.16	4" = 0.65	radius ² * 0.163			
Total Depth (TD): <i>22-65</i>		Depth to Product: <i>—</i>						
Depth to Water (DTW): <i>12-21</i>		Product Thickness: <i>—</i>						
Water Column Height: <i>10.44</i>		1 Casing Volume: <i>1.67</i>			gallons			
Reference Point: N.T.O.C.		3 Casing Volumes: <i>5</i>			gallons			
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
<i>1211</i>					<i>3.97</i>		<i>∅</i>	
<i>1217</i>	<i>18.6</i>	<i>7.55</i>	<i>1071</i>			<i>-120</i>	<i>1.5</i>	
<i>1221</i>	<i>18.8</i>	<i>7.49</i>	<i>1086</i>			<i>-75</i>	<i>3</i>	
1221		<i>(Dewatered at 3 gallons)</i>					3	

Comments:

Sample ID: <i>MW-8C</i>		Sample Time: <i>1235</i>	
Laboratory: McCampbell		Sample Date: <i>12-29-11</i>	
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)			
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up			
Sampler Name: Steve Hunter		Signature: <i>[Signature]</i>	

MONITORING FIELD DATA SHEET

Well ID: DPE-2

Project.Task #: <u>1145.001.228-229</u>				Project Name: <u>Rockridge Heights</u>				
Address: <u>5175 Broadway, Oakland, CA</u>								
Date: <u>12-30-11</u>				Weather: <u>overcast</u>				
Well Diameter: <u>4"</u>				Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47	
					2" = 0.16	4" = 0.65	radius ² * 0.163	
Total Depth (TD): <u>19.23</u>				Depth to Product:				
Depth to Water (DTW): <u>13.38</u>				Product Thickness:				
Water Column Height: <u>5.85</u>				1 Casing Volume: <u>4</u>		gallons		
Reference Point: <u>N.T.O.C.</u>				3 Casing Volumes: <u>12</u>		gallons		
Purging Device: <u>Disposable Bailer</u>								
Sampling Device: <u>Disposable Bailer</u>								
Time	Temp (°C)	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
<u>1043</u>					<u>0.59</u>		<u>0</u>	
<u>1047</u>	<u>18.1</u>	<u>7.03</u>	<u>493</u>			<u>-42</u>	<u>4</u>	
<u>1051</u>	<u>18.3</u>	<u>6.99</u>	<u>501</u>			<u>-51</u>	<u>8</u>	
<u>1055</u>	<u>18.5</u>	<u>6.92</u>	<u>511</u>			<u>-49</u>	<u>12</u>	

Comments:

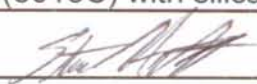
Sample ID: <u>DPE-2</u>		Sample Time: <u>1110</u>	
Laboratory: <u>McC Campbell</u>		Sample Date: <u>12-30-11</u>	
Containers/Preservative: <u>3 Voas (HCL), 1-One Liter Ambers (HCL)</u>			
Analyzed for: <u>TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up</u>			
Sampler Name: <u>Steve Hunter</u>		Signature: <u>[Signature]</u>	

MONITORING FIELD DATA SHEET

Well ID: DPE-3

Project.Task #: 1145.001.228-229		Project Name: Rockridge Heights						
Address: 5175 Broadway, Oakland, CA								
Date: 12-30-11		Weather: clear						
Well Diameter: 4"		Volume/ft. 1" = 0.04 3" = 0.37 6" = 1.47 2" = 0.16 4" = 0.65 radius ² * 0.163						
Total Depth (TD): 19.45		Depth to Product: —						
Depth to Water (DTW): 14.76		Product Thickness: —						
Water Column Height: 4.74		1 Casing Volume: 3 gallons						
Reference Point: N.T.O.C.		3 Casing Volumes: 9 gallons						
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1239					0.51		φ	
1246	18.3	6.69	936			-67	3	
1252	18.1	6.73	942			-71	6	
1258	18.0	6.77	951			-73	9	

Comments:

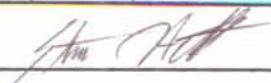
Sample ID: <u>DPE-3</u>	Sample Time: <u>1315</u>
Laboratory: McCampbell	Sample Date: <u>12-30-11</u>
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)	
Analyzed for:TPHg/BTEX/MTBE(8015Cm/8021),TPHd (8015C) with silica gel clean-up	
Sampler Name: Steve Hunter	Signature: 

MONITORING FIELD DATA SHEET

Well ID: DPE-41

Project.Task #: 1145.001. 228 <u>229</u>				Project Name: Rockridge Heights				
Address: 5175 Broadway, Oakland, CA								
Date: <u>12-30-11</u>			Weather: <u>clear</u>					
Well Diameter: <u>4"</u>		Volume/ft.	1" = 0.04	3" = 0.37	6" = 1.47			
			2" = 0.16	4" = 0.65	radius ² * 0.163			
Total Depth (TD): <u>16.72</u>			Depth to Product: <u>-</u>					
Depth to Water (DTW): <u>12.22</u>			Product Thickness: <u>-</u>					
Water Column Height: <u>4.50</u>			1 Casing Volume: <u>3</u>		gallons			
Reference Point: N.T.O.C.			3 Casing Volumes: <u>9</u>		gallons			
Purging Device: Disposable Bailer								
Sampling Device: Disposable Bailer								
Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
<u>0955</u>							<u>Ø</u>	
<u>1003</u>	<u>17.7</u>	<u>7.43</u>	<u>1164</u>			<u>42</u>	<u>3</u>	
<u>1011</u>	<u>17.8</u>	<u>7.38</u>	<u>1182</u>			<u>36</u>	<u>6</u>	
<u>1018</u>	<u>17.9</u>	<u>7.32</u>	<u>1199</u>			<u>28</u>	<u>9</u>	

Comments:

Sample ID: <u>DPE-41</u>	Sample Time: <u>1035</u>
Laboratory: McCampbell	Sample Date: <u>12-30-11</u>
Containers/Preservative: 3 Voas (HCL), 1-One Liter Ambers (HCL)	
Analyzed for: TPHg/BTEX/MTBE(8015Cm/8021), TPHd (8015C) with silica gel clean-up	
Sampler Name: Steve Hunter	Signature: 

APPENDIX C

Laboratory Analytical Report



Analytical Report

Pangea Environmental Svcs., Inc. 1710 Franklin Street, Ste. 200 Oakland, CA 94612	Client Project ID: #5175 Broadway; Rockridge Height	Date Sampled: 12/29/11-12/30/11
		Date Received: 12/30/11
	Client Contact: Tina De La Fuente	Date Reported: 01/06/12
	Client P.O.:	Date Completed: 01/06/12

WorkOrder: 1112820

January 06, 2012

Dear Tina:

Enclosed within are:

- 1) The results of the **11** analyzed samples from your project: **#5175 Broadway; Rockridge Height**,
- 2) QC data for the above samples, and
- 3) A copy of the chain of custody.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.

The analytical results relate only to the items tested.

112820

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? Coef (Normal) No Write On (DW) No

Report To: **Tiña de la Fuente** Bill To: **Pangea**
Company: **Pangea Environmental Services, Inc.**
1710 Franklin Street, Suite 200, Oakland, CA 94612
E-Mail: tdelafuente@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: *Sto. Horta*

Analysis Request										Other	Comments
<i>TPH₄ / BTEX / MTBE (2015 CM / 2011) w/ since a del TPH₄ (2015C) Clean-UP</i>											Filter Samples for Metals analysis: Yes / No

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED							
		Date	Time			Water	Soil	Air	Sludge	Other	ICE	HCL	HNO ₃	Other				
MW-1		12-29-11	1325	4	Vac 4mbos	X					X	X						
MW-3A		12-29-11	1520	1		X					X	X						
MW-3C		12-29-11	1610	1		X					X	X						
MW-4A		12-29-11	1425	1		X					X	X						
MW-7B		12-30-11	1150	1		X					X	X						
MW-7C		12-30-11	1225	1		X					X	X						
MW-8C		12-29-11	1235	1		X					X	X						
MW-8A		12-29-11	1205	1		X					X	X						
DPE-2		12-30-11	1110	1		X					X	X						
DPE-3		12-30-11	1315	1		X					X	X						
DPE-4		12-30-11	1035	1		X					X	X						

Relinquished By: *Sto. Horta* Date: 12-31-11 Time: 1500 Received By: *[Signature]*
 Relinquished By: *[Signature]* Date: 12/31/11 Time: 1500 Received By: *Muna*
 Relinquished By: _____ Date: _____ Time: _____ Received By: _____

ICE/r" *3.2*
 GOOD CONDITION
 HEAD SPACE ABSENT
 DECHLORINATED IN LAB
 APPROPRIATE CONTAINERS
 PRESERVED IN LAB
 VOAS O&G METALS OTHER
 PRESERVATION pH<2

COMMENTS:

McC Campbell Analytical, Inc.



1534 Willow Pass Rd
 Pittsburg, CA 94565-1701
 (925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1112820

ClientCode: PEO

WaterTrax
 WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:

Tina De La Fuente
 Pangea Environmental Svcs., Inc.
 1710 Franklin Street, Ste. 200
 Oakland, CA 94612
 (510) 836-3700 FAX: (510) 836-3709

Email: tdelafuente@pangeaenv.com
 cc:
 PO:
 ProjectNo: #5175 Broadway; Rockridge Height

Bill to:

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

Requested TAT:

5 days

Date Received: 12/30/2011

Date Printed: 12/30/2011

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1112820-001	MW-1	Water	12/29/2011 13:25	<input type="checkbox"/>	A	A	B										
1112820-002	MW-3A	Water	12/29/2011 15:30	<input type="checkbox"/>	A		B										
1112820-003	MW-3C	Water	12/29/2011 16:10	<input type="checkbox"/>	A		B										
1112820-004	MW-4A	Water	12/29/2011 14:25	<input type="checkbox"/>	A		B										
1112820-005	MW-7B	Water	12/30/2011 11:50	<input type="checkbox"/>	A		B										
1112820-006	MW-7C	Water	12/30/2011 12:25	<input type="checkbox"/>	A		B										
1112820-007	MW-8C	Water	12/29/2011 12:35	<input type="checkbox"/>	A		B										
1112820-008	MW-8A	Water	12/29/2011 12:05	<input type="checkbox"/>	A		B										
1112820-009	DPE-2	Water	12/30/2011 11:10	<input type="checkbox"/>	A		B										
1112820-010	DPE-3	Water	12/30/2011 13:15	<input type="checkbox"/>	A		B										
1112820-011	DPE-4	Water	12/30/2011 10:35	<input type="checkbox"/>	A		B										

Test Legend:

1	G-MBTX_W	2	PREFD REPORT	3	TPH(D)WSG_W	4		5	
6		7		8		9		10	
11		12							

Prepared by: Maria Venegas

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
 Hazardous samples will be returned to client or disposed of at client expense.



Sample Receipt Checklist

Client Name: **Pangea Environmental Svcs., Inc.**

Date and Time Received: **12/30/2011 3:35:04 PM**

Project Name: **#5175 Broadway; Rockridge Height**

Checklist completed and reviewed by: **Maria Venegas**

WorkOrder N°: **1112820** Matrix: Water

Carrier: Rob Pringle (MAI Courier)

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: 3.2°C NA
- Water - VOA vials have zero headspace / no bubbles? Yes No No VOA vials submitted
- Sample labels checked for correct preservation? Yes No
- Metal - pH acceptable upon receipt (pH<2)? Yes No NA
- Samples Received on Ice? Yes No

(Ice Type: WET ICE)

* NOTE: If the "No" box is checked, see comments below.

 Comments:



Pangea Environmental Svcs., Inc. 1710 Franklin Street, Ste. 200 Oakland, CA 94612	Client Project ID: #5175 Broadway; Rockridge Height	Date Sampled: 12/29/11-12/30/11
	Client Contact: Tina De La Fuente	Date Received: 12/30/11
	Client P.O.:	Date Extracted: 01/03/12-01/05/12
		Date Analyzed: 01/03/12-01/05/12

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

Extraction method: SW5030B

Analytical methods: SW8021B/8015Bm

Work Order: 1112820

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
001A	MW-1	W	950	ND	2.1	ND	ND	2.9	1	110	d7,d9
002A	MW-3A	W	510	ND	30	1.0	2.1	24	1	112	d1
003A	MW-3C	W	ND	ND	ND	ND	ND	0.90	1	103	
004A	MW-4A	W	180	ND	10	ND	ND	ND	1	119	d1
005A	MW-7B	W	83	ND	1.5	0.67	ND	2.3	1	103	d1,b1
006A	MW-7C	W	ND	ND	ND	ND	ND	ND	1	104	
007A	MW-8C	W	ND	ND	ND	ND	ND	ND	1	103	
008A	MW-8A	W	840	ND	24	2.5	2.6	16	1	105	d1,b1
009A	DPE-2	W	120	ND	8.5	0.65	ND	4.6	1	106	d1
010A	DPE-3	W	600	ND	5.5	2.0	0.90	15	1	118	d1
011A	DPE-4	W	230	ND	ND	1.9	0.84	17	1	116	d2

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	0.5	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	0.005	mg/Kg

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

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference. %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

- b1) aqueous sample that contains greater than ~1 vol. % sediment
- d1) weakly modified or unmodified gasoline is significant
- d2) heavier gasoline range compounds are significant (aged gasoline?)
- d7) strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
- d9) no recognizable pattern



Pangea Environmental Svcs., Inc. 1710 Franklin Street, Ste. 200 Oakland, CA 94612	Client Project ID: #5175 Broadway; Rockridge Height	Date Sampled: 12/29/11-12/30/11
	Client Contact: Tina De La Fuente	Date Received: 12/30/11
	Client P.O.:	Date Extracted 12/30/11
		Date Analyzed 12/30/11-01/04/12

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up*

Extraction method: SW3510C/3630C

Analytical methods: SW8015B

Work Order: 1112820

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	DF	% SS	Comments
1112820-001B	MW-1	W	3100	1	102	e11
1112820-002B	MW-3A	W	410	1	96	e7,e4,e2
1112820-003B	MW-3C	W	ND	1	98	
1112820-004B	MW-4A	W	200	1	94	e2,e4
1112820-005B	MW-7B	W	95	1	86	e4,e2,b1
1112820-006B	MW-7C	W	ND	1	94	
1112820-007B	MW-8C	W	ND	1	90	
1112820-008B	MW-8A	W	3400	1	88	e7,e11,e2,b1
1112820-009B	DPE-2	W	94	1	95	e7,e4,e2
1112820-010B	DPE-3	W	450	1	95	e4,e2
1112820-011B	DPE-4	W	240	1	86	e4

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

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

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract/matrix interference.

%SS = Percent Recovery of Surrogate Standard. DF = Dilution Factor

The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

- b1) aqueous sample that contains greater than ~1 vol. % sediment
- e2) diesel range compounds are significant; no recognizable pattern
- e4) gasoline range compounds are significant.
- e7) oil range compounds are significant
- e11) stoddard solvent/mineral spirit (?)



QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 63752

WorkOrder: 1112820

EPA Method: SW8021B/8015Bm		Extraction: SW5030B					Spiked Sample ID: 1112821-007A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS	
TPH(btex) £	ND	60	113	116	2.74	112	70 - 130	20	70 - 130	
MTBE	ND	10	89.6	92.6	3.32	91.6	70 - 130	20	70 - 130	
Benzene	ND	10	97.5	111	12.6	97.4	70 - 130	20	70 - 130	
Toluene	ND	10	96.6	108	11.2	97	70 - 130	20	70 - 130	
Ethylbenzene	ND	10	93.4	108	14.3	94.3	70 - 130	20	70 - 130	
Xylenes	ND	30	96.4	110	12.9	96.9	70 - 130	20	70 - 130	
%SS:	107	10	102	112	8.91	102	70 - 130	20	70 - 130	

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
 NONE

BATCH 63752 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1112820-001A	12/29/11 1:25 PM	01/05/12	01/05/12 12:11 AM	1112820-002A	12/29/11 3:30 PM	01/04/12	01/04/12 7:11 PM
1112820-003A	12/29/11 4:10 PM	01/03/12	01/03/12 5:36 PM	1112820-004A	12/29/11 2:25 PM	01/04/12	01/04/12 8:12 PM
1112820-005A	12/30/11 11:50 AM	01/04/12	01/04/12 8:42 PM	1112820-006A	12/30/11 12:25 PM	01/03/12	01/03/12 7:03 PM
1112820-007A	12/29/11 12:35 PM	01/03/12	01/03/12 7:33 PM	1112820-008A	12/29/11 12:05 PM	01/05/12	01/05/12 6:11 PM
1112820-009A	12/30/11 11:10 AM	01/04/12	01/04/12 9:11 PM	1112820-010A	12/30/11 1:15 PM	01/04/12	01/04/12 10:39 PM
1112820-011A	12/30/11 10:35 AM	01/03/12	01/03/12 11:27 PM				

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.
 N/A = not enough sample to perform matrix spike and matrix spike duplicate.
 NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.



QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 63701

WorkOrder: 1112820

EPA Method: SW8015B		Extraction: SW3510C/3630C					Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS	
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	108	N/A	N/A	70 - 130	
%SS:	N/A	625	N/A	N/A	N/A	95	N/A	N/A	70 - 130	

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
 NONE

BATCH 63701 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1112820-001B	12/29/11 1:25 PM	12/30/11	12/31/11 5:10 AM	1112820-002B	12/29/11 3:30 PM	12/30/11	12/31/11 6:20 AM
1112820-003B	12/29/11 4:10 PM	12/30/11	01/04/12 12:22 PM	1112820-004B	12/29/11 2:25 PM	12/30/11	12/31/11 10:02 AM
1112820-005B	12/30/11 11:50 AM	12/30/11	12/31/11 11:17 AM	1112820-006B	12/30/11 12:25 PM	12/30/11	12/31/11 11:17 AM
1112820-007B	12/29/11 12:35 PM	12/30/11	12/30/11 10:02 PM	1112820-008B	12/29/11 12:05 PM	12/30/11	12/30/11 11:14 PM
1112820-009B	12/30/11 11:10 AM	12/30/11	12/30/11 11:14 PM	1112820-010B	12/30/11 1:15 PM	12/30/11	12/30/11 10:02 PM
1112820-011B	12/30/11 10:35 AM	12/30/11	12/31/11 2:48 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.
 N/A = not enough sample to perform matrix spike and matrix spike duplicate.
 NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.