



February 16, 2017

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By Alameda County Environmental Health 9:15 am, Feb 22, 2017

**VIA ALAMEDA COUNTY FTP SITE**

Ms. Karel Detterman  
Alameda County Environmental Health  
1131 Harbor Bay Parkway, 2<sup>nd</sup> Floor  
Alameda, California 94502

Re: **Groundwater Monitoring Report – Second Half 2016**  
Douglas Parking Company  
1721 Webster Street  
Oakland, California  
ACEH File No. 129

Dear Ms. Detterman:

On behalf of the Douglas Parking Company, Pangea Environmental Services, Inc. has prepared this *Groundwater Monitoring Report – Second Half 2016* for the above referenced site. The report describes groundwater monitoring at the site.

If you have any questions, please call me at (510) 435-8664.

Sincerely,  
**Pangea Environmental Services, Inc.**

Bob Clark-Riddell, P.E.  
Principal Engineer

Attachment: *Groundwater Monitoring Report – Second Half 2016*

cc: Mr. Lee Douglas, Douglas Parking Company, 1721 Webster Street, Oakland, California 94612  
SWRCB Geotracker Database (electronic copy)

**PANGEA Environmental Services, Inc.**

1710 Franklin Street, Suite 200, Oakland, CA 94612 Telephone 510.836.3700 Facsimile 510.836.3709  
[www.pangeaenv.com](http://www.pangeaenv.com)



## GROUNDWATER MONITORING REPORT - SECOND HALF 2016

**Douglas Parking Company  
1721 Webster Street  
Oakland, California  
File No. 4070**

**February 16, 2017**

*Prepared for:*

Mr. Lee Douglas  
1721 Webster Street  
Oakland, California 94612


*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

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## **INTRODUCTION**

On behalf of Douglas Parking Company, Pangea Environmental Services, Inc. (Pangea), performed groundwater monitoring and sampling during this half year at the subject site (Figure 1). Current groundwater analytical results and elevation data are shown on Figure 2. Current and historical groundwater data are summarized on Table 1. Site remediation data is summarized on Table 2.

## **SITE BACKGROUND**

The site is currently being utilized as a parking garage, and is located between 17th and 19th Streets in downtown Oakland, California, approximately four miles east of San Francisco Bay and one quarter of a mile west of Lake Merritt (Figure 1). The site is relatively flat with an elevation of approximately 30 feet (ft) above mean sea level (msl).

Several former underground storage tank (UST) sites are located close to the site, including Prentiss Properties to the northeast at 1750 Webster Street, a former gas station to the east at 1700 Webster, and a former Chevron service station which is located approximately 400 feet to the southwest on the corner of 17<sup>th</sup> Street and Harrison Street.

## **UST Removal and Initial Assessment and Remediation**

On August 3 and 6, 1992, Parker Environmental Services removed one 1,000-gallon and two 500-gallon gasoline underground storage tanks (USTs) from the site. Up to 1,500 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPHg) and up to 12 mg/kg benzene were detected in the soil samples collected from the UST excavation.

Several investigations have been completed at the site. On July 8 and September 8, 1994, Gen Tech/Piers Environmental, Inc. (Gen Tech) of San Jose, California drilled six exploratory borings and installed three groundwater monitoring wells (MW-1 through MW-3). In February and May 1996, Cambria Environmental Technology (Cambria) of Emeryville, California advanced seven geoprobe soil borings and installed two groundwater monitoring wells (MW-4 and MW-5). On August 8, 2000, *Conduit Study and File Review Report* was submitted by Cambria Environmental Technology. The report provided significant information about offsite hydrocarbon impact and offsite sources, and concluded that there were no identified conduits for contaminant migration in groundwater. On June 27, 2003 Cambria installed two additional offsite monitoring wells (MW-6 and MW-7) to facilitate additional plume delineation.

Initial limited site remediation commenced in 1998. In January 1998, Cambria installed ORC socks in well MW-2 to enhance the natural attenuation of dissolved-phase hydrocarbons. Dissolved oxygen (DO)

concentrations temporarily increased in well MW-2 following the ORC sock installation. In February and March 1999, a total of 120 gallons of 7.5% hydrogen peroxide solution was added to monitoring wells MW-2 and MW-3 to oxidize hydrocarbons and to increase DO levels to enhance biodegradation of dissolved-phase hydrocarbons. The hydrogen peroxide *temporarily* increased groundwater DO levels, but hydrocarbon concentrations remained at elevated levels.

On March 4, 2003, Cambria installed a co-axial air sparging/soil vapor extraction well (SV-1/AS-1) and two angled air sparging wells (AS-2 and AS-3) to approximately 30 ft bgs (Figure 3). The wells were installed to facilitate feasibility testing and future site remediation. Site remediation via soil vapor extraction and air sparging began in October 2007. To improve system performance and further evaluate site conditions, Pangea submitted an *Investigation and Remediation Workplan* dated March 5, 2009, which proposed additional investigation, remediation system expansion, and evaluation of groundwater geochemistry.

On November 19, 2010, ACEH issued a letter requesting a cross section, additional information regarding a potential offsite source and a preferential pathway survey. In December 2010, Pangea informed the ACEH that significant information about the offsite hydrocarbon impact was presented in the August 8, 2000 *Conduit Study and File Review Report* prepared by Cambria. In December 2010, the UST Cleanup Fund prepared a 5 Year Review that recommended a site conceptual model (SCM), risk assessment, and sensitive receptor survey to help facilitate selection of a remediation technique. In March 2011, Pangea provided information requested by the ACEH and proposed remediation and assessment tasks to help facilitate regulatory case closure. In a letter dated June 17, 2011, ACEH requested a site conceptual model with a preferential pathway evaluation. The UST Cleanup Fund 5-Year Review of March 12, 2012 also requested an SCM prior to any system modification. Pangea submitted a *Sensitive Receptor Survey, Conduit Study and Site Conceptual Model* dated March 26, 2012. In a letter dated December 21, 2012, ACEH requested a workplan to evaluate vapor intrusion and to investigate secondary source near well MW-2. Pangea submitted a *Workplan for Additional Assessment and Soil Gas Sampling* dated April 4, 2013. Following a meeting with ACEH on May 28, 2013, Pangea submitted a *Revised Data Gap Workplan* dated July 25, 2013.

### **Soil Vapor Extraction and Air Sparge Remediation**

A SVE system operated from October 2007 to October 2010 with periodic cycling for rebound testing. The soil vapor extraction (SVE) remediation system consisted of a blower that extracted soil vapor from well SVE-1. Extracted vapors were routed through a moisture separator then treated by two 2,000-lb canisters of granular activated carbon plumbed in series. The treated vapor was discharged to the atmosphere in accordance with Bay Area Air Quality Management District (BAAQMD) requirements. The air sparging (AS) system consisted of a compressor for injecting air into wells AS-1, AS-2 and/or AS-3. Injection into AS wells was controlled by timer-activated solenoid valves. Wells SVE-1 and AS-1 are constructed as vertical co-axial

wells, with angled wells AS-2 and AS-3 located in the same vault. A cross section of the remediation wells is included as Figure 7. The remediation system layout is shown on Figure 8.

By November 23, 2010, the SVE system operated for a total of about 19,396 hours (approximately 808 days) and the system removed a total of approximately 3,212 lbs TPHg and 6.9 lbs benzene. The AS system operated from November 2007 to April 2010, when the AS compressor broke down. From August 2008 to April 2010, air sparge wells AS-1 and AS-3 were disconnected to focus air sparging on well AS-2 to target hydrocarbons in nearby key monitoring well MW-2. System operation and performance data is summarized on Table 2.

At client request, on August 20 and 21 and December 7, 2015, Pangea removed the SVE/AS equipment and enclosure that occupied valuable space at the facility.

### **Additional Site Assessment and Groundwater Monitoring**

Following approval of the workplan, Pangea installed two confirmation soil borings (CB-1 and CB-2) near the former UST excavation areas and three soil gas probes (SS-1 through SS-3). Pangea detailed the findings of this data gap investigation in the *Data Gap Site Assessment Report* dated January 22, 2014. Included in the report was an updated SCM in tabular format.

Pangea submitted a *Data Gap Workplan* (Workplan) dated June 21, 2016 as requested in an ACEH email dated April 20, 2016. The Workplan was approved in an email ACEH dated August 22, 2016. The Workplan included a sensitive receptor survey, and a workplan for subslab/soil gas sampling. The goal for implementation of this Workplan is to facilitate regulatory case closure in the very near future. Pangea completed the data gap sampling in September 2016 and a data gap assessment report will be submitted separately.

In a September 8, 2016, 2016 letter, ACDEH and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) requested a groundwater monitoring and sampling event at 1700, 1710, 1721, and 1750 Webster Street properties to provide a “snapshot” of the groundwater flow direction and groundwater quality at the subject site and nearby properties. This sampling event on October 12, 2016 included groundwater collection from three key wells (MW-2, MW-3 and MW-6) at the subject site. This sampling event was conducted by GeoDesign Inc. and is documented in the *Groundwater Monitoring Report: October 2016* report dated November 14, 2016, available on Geotracker. Site data from this monitoring event is summarized on Table 1.

## **GROUNDWATER MONITORING AND SAMPLING**

On August 3, 2016, Pangea coordinated groundwater monitoring and sampling at the site (this was not associated with the subsequent monitoring requested by the September 8, 2016 agency letter). All accessible program monitoring wells were gauged for depth to water. Following the sampling protocol presented in Appendix A, groundwater samples were collected from select site monitoring wells. Wells MW-4 and MW-7 were apparently paved over during street resurfacing work and were not accessible.

Before well purging, dissolved oxygen (DO) and oxygen reduction potential (ORP) were measured in each well. 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 new polyethylene tubing with a check valve. During well purging field technicians measured pH, temperature and conductivity. 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. Field data sheets are presented as Appendix B.

### **Monitoring Results**

Groundwater elevation and analytical data are described below and summarized on Table 1 and Figure 2. Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015C; and benzene, toluene, ethylbenzene and 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 as Appendix C.

### **Groundwater Flow Direction**

Based on depth-to-water measurements collected on August 3, 2016, groundwater beneath the site flowed northwards (Figure 2). The groundwater depth measurements and inferred flow direction during this event are generally consistent with historical site conditions. Groundwater depths at the site have historically ranged from approximately 14 to 23 ft below ground surface (bgs), equivalent to a groundwater elevation range from 5 to 13 feet above msl (Table 1).

## Hydrocarbon and MTBE Distribution in Groundwater

TPHg, benzene and MTBE concentrations detected in site groundwater during this monitoring event are shown on Figure 2. The maximum TPHg and benzene concentrations were detected in well MW-6 at 12,000 µg/L and 710 µg/L, respectively.

TPHg and benzene concentration trends in key source area wells MW-2 and MW-3 are graphed on Figure 3. Benzene concentrations have dramatically decreased in source area well MW-2 since the commencement of SVE/AS remediation in October 2007. TPHg concentrations remain elevated but exhibit a long term declining trend in wells MW-2 and MW-3. As requested during a May 28, 2013 meeting at the ACEH office, TPHg and benzene concentration trends for key offsite wells (MW-4 and MW-6) and key remediation wells (AS-1 and AS-2) are graphed on Figures 4 and 5, respectively.

MTBE was detected in site wells MW-3 (27 µg/L) and MW-6 (450 µg/L). The last time MTBE was detected in site groundwater was July 21, 2003 (48 µg/L in well MW-3 by EPA Method 8020). However, this result was interpreted to be a false positive based on confirmation testing using EPA Method 8260. Since the tank was removed in 1992 and because of the lack of confirmed detectable historical MTBE, MTBE is not a compound of concern at this site. Based on the lack of historical MTBE concentrations on site, the detected concentrations in groundwater from wells MW-3 and MW-6 are likely from an offsite source.

## OTHER SITE ACTIVITIES

### ‘Snapshot’ Groundwater Monitoring at Several Properties

In a September 8, 2016, 2016 letter, ACDEH and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) requested a groundwater monitoring and sampling event at 1700, 1710, 1721, and 1750 Webster Street properties to provide a “snapshot” of the groundwater flow direction and groundwater quality at the subject site and nearby properties. This sampling event on October 12, 2016 included groundwater collection from three key wells (MW-2, MW-3 and MW-6) at the subject site. These site wells were gauged for depth to water, and groundwater samples were analyzed for TPH (full scan) and VOCs including BTEX and MTBE. This sampling event was conducted by GeoDesign Inc. and is documented in the *Groundwater Monitoring Report: October 2016* report dated November 14, 2016, and available on Geotracker. Site data from this monitoring event is summarized on Table 1.

Based on depth-to-water measurements collected on October 12, 2016, groundwater flowed northwards with a northwest flow direction specifically between site wells MW-3 and MW-6. This northwest flow direction towards the site has not been observed in previous monitoring events. Dissolved-phase petroleum hydrocarbon concentrations in key site wells (MW-2, MW-3 and MW-6) were generally consistent with historical sampling data.



### **Semi-Annual Groundwater Monitoring**

Unless otherwise directed, Pangea will continue semi-annual groundwater monitoring at the site in accordance with the approved monitoring program shown in Appendix A. All monitoring wells will be gauged for depth to water. Groundwater samples from program wells will be analyzed for TPHg, BTEX and MTBE by EPA Method 8015Cm/8021B.

### **Subslab and Soil Gas Sampling**

Pangea has completed in the assessment work scope specified in the *Data Gap Workplan* (Workplan) dated June 21, 2016. The Workplan was approved in an email ACDEH dated August 22, 2016. To further evaluate shallow soil gas conditions, the work scope included the installation and sampling of two soil gas probes (SG-1 and SG-2), and soil gas sampling from two existing subslab vapor probes (SS-2 and SS-3). This sampling was conducted on September 23, 2016. Investigation procedures and results will be described in an upcoming report.

### **ELECTRONIC REPORTING**

This report will be submitted to Alameda County Environmental Health via upload to the County's ftp site. Applicable data, maps, and reports for groundwater monitoring and other activities will be uploaded to the State Water Resource Control Board's Geotracker database. As requested, report hard copies will no longer be provided to local agencies.



## REFERENCES

CalEPA/DTSC, 2011, (CalEPA, 2011) *Vapor Intrusion Mitigation Advisory (VIMA)*, October 2011

CalEPA/DTSC, 2012, (CalEPA, 2012) *Advisory – Active Soil Gas Investigations*, April 2012

## ATTACHMENTS

Figure 1 – Vicinity Map

Figure 2 – Groundwater Elevations and Hydrocarbon Concentration Map

Figure 3 – TPHg and Benzene Trends in Groundwater in Key Site Wells

Figure 4 – TPHg and Benzene Trends in Groundwater in Key Offsite Wells

Figure 5 – TPHg and Benzene Trends in Groundwater in Key Remediation Wells

Figure 6 – Boring and Subslab Probe Location Map

Figure 7 – Cross Section of Remediation Wells

Figure 8 – Remediation System Layout

Table 1 – Groundwater Elevation and Analytical Data

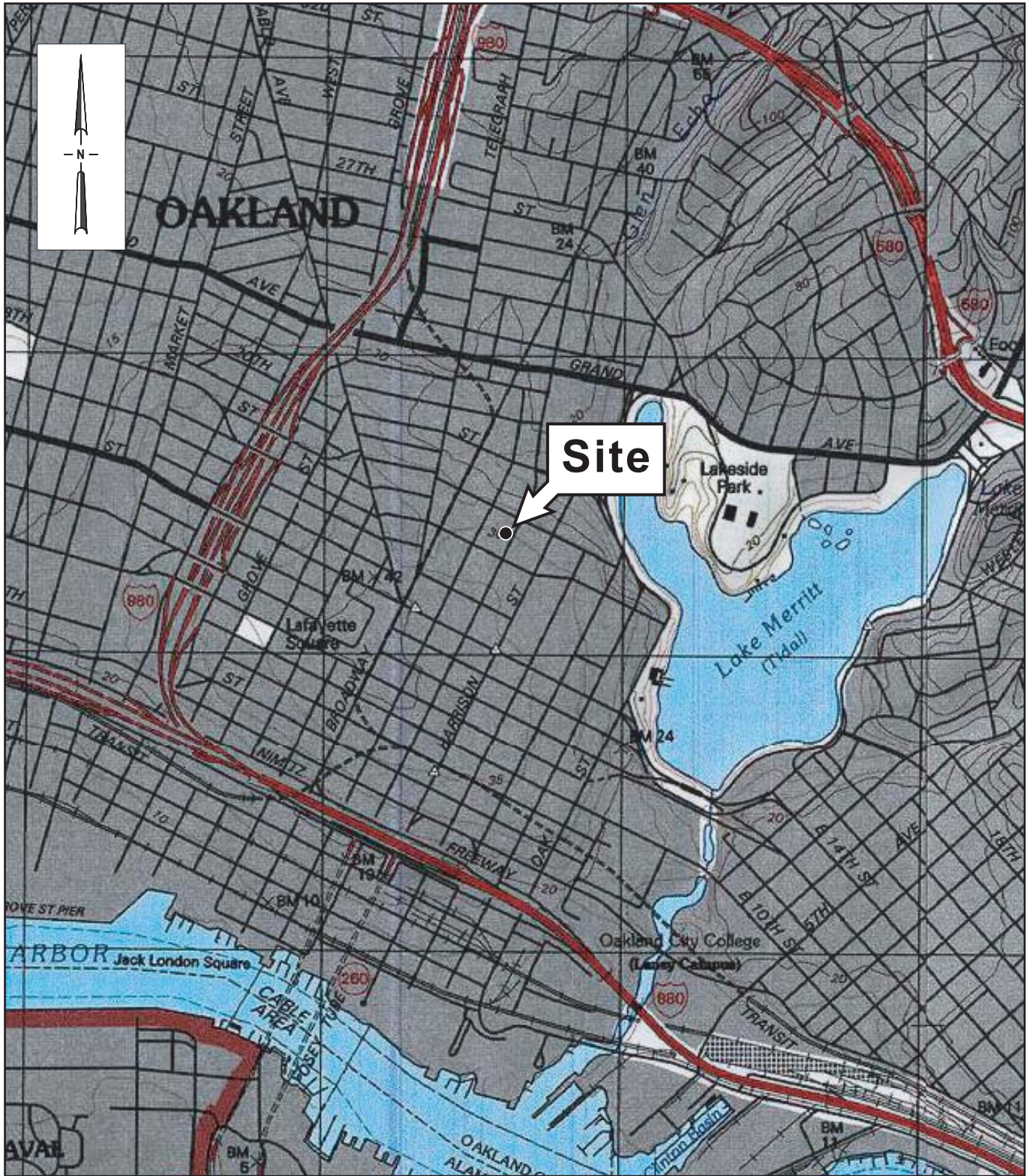
Table 2 – Subslab Gas Analytical Data

Table 3 – SVE System Performance Summary

Appendix A – Groundwater Monitoring Program

Appendix B – Groundwater Monitoring Field Data Sheets

Appendix C – Laboratory Analytical Report



SOURCE: TOPOI MAPS



SCALE : 1" = 1/4 MILE

Figure

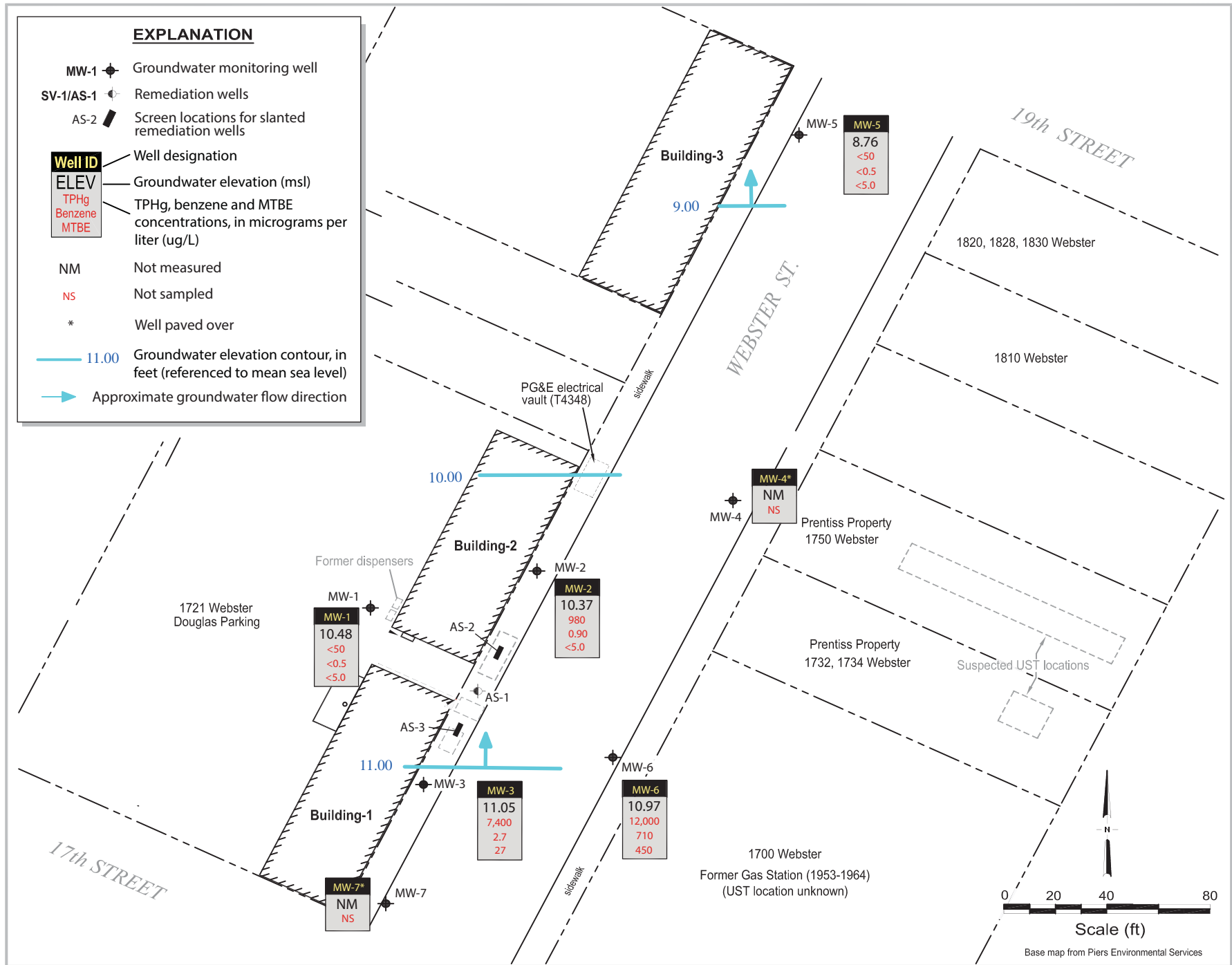
1

**Douglas Parking Facility**  
 1721 Webster Street  
 Oakland, California



Vicinity Map





**Douglas Parking**  
 1721 Webster Street  
 Oakland, California



**Groundwater Elevations and  
 Hydrocarbon Concentration Map**  
 August 3, 2016

**FIGURE  
 2**

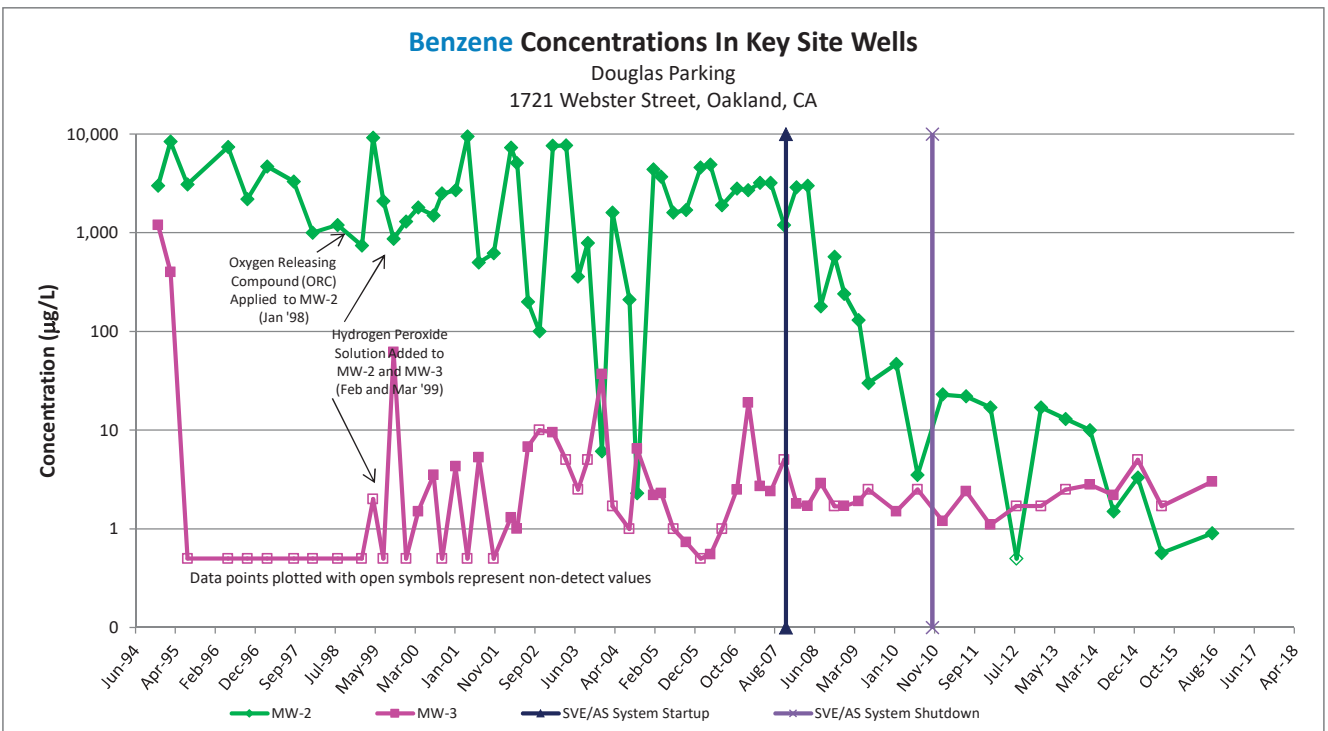
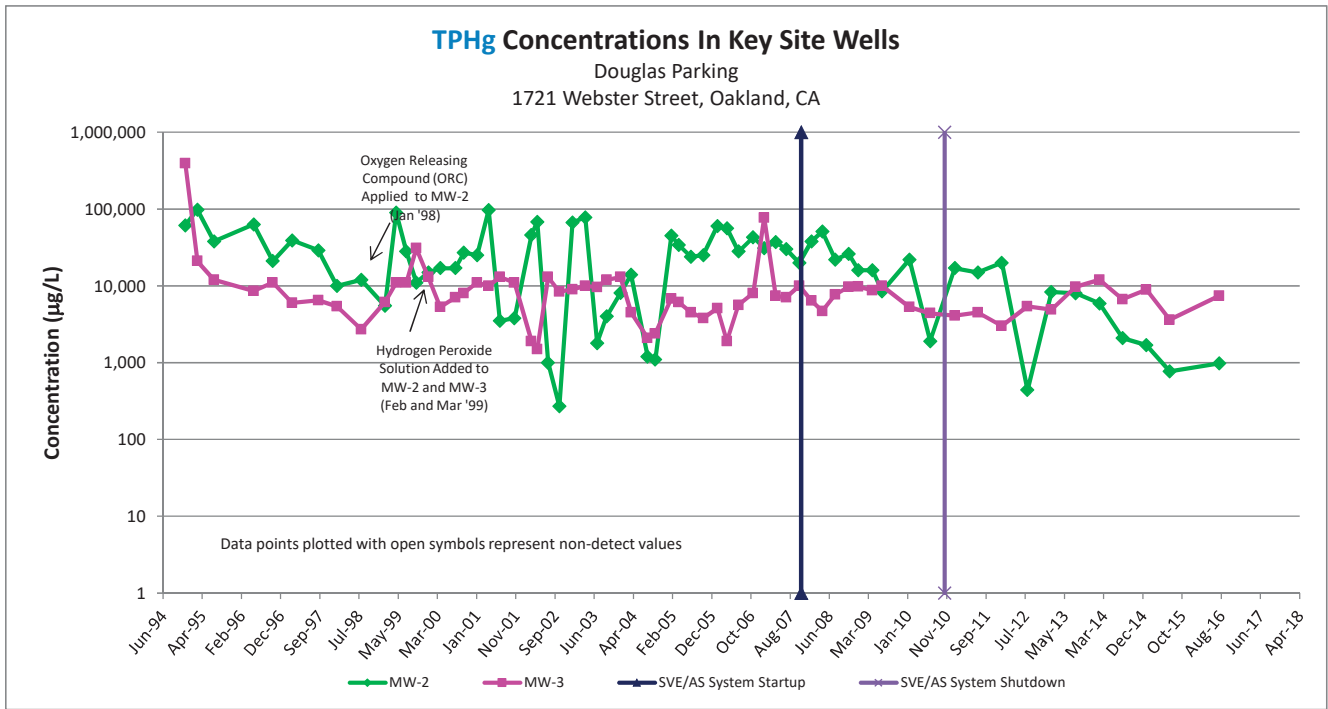


Figure 3 - TPHg and Benzene Trends in Key Onsite Wells

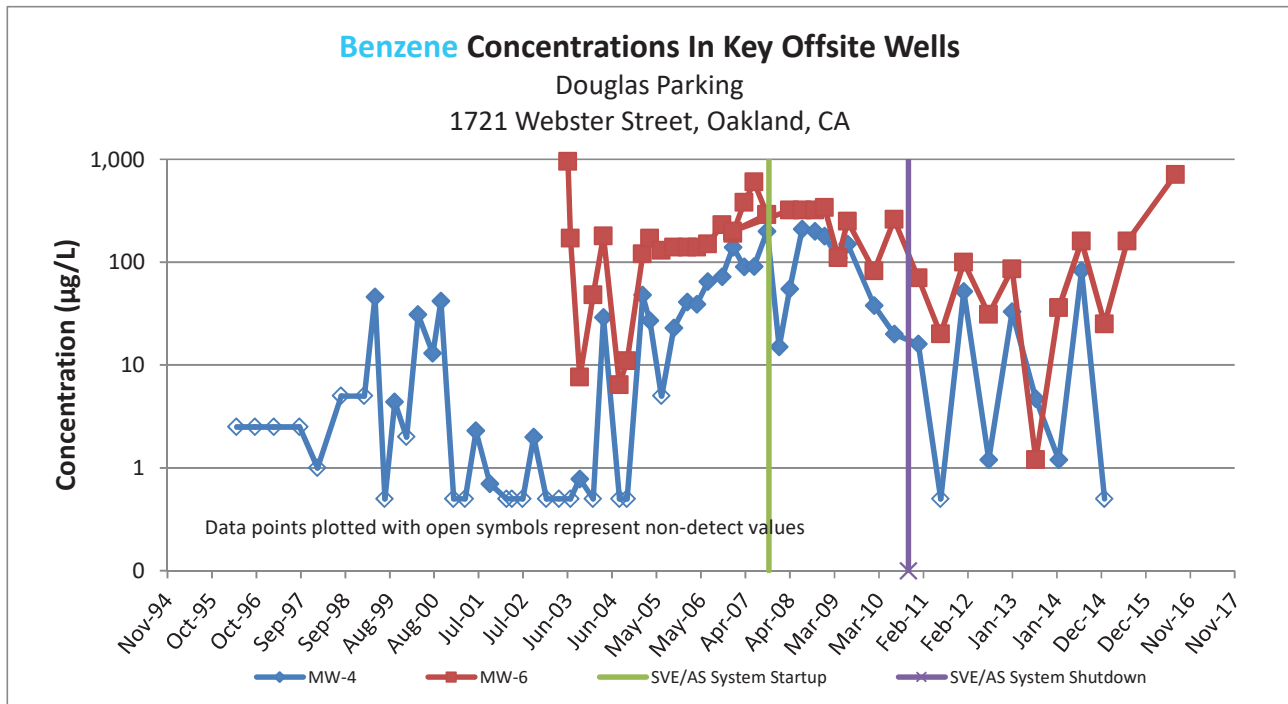
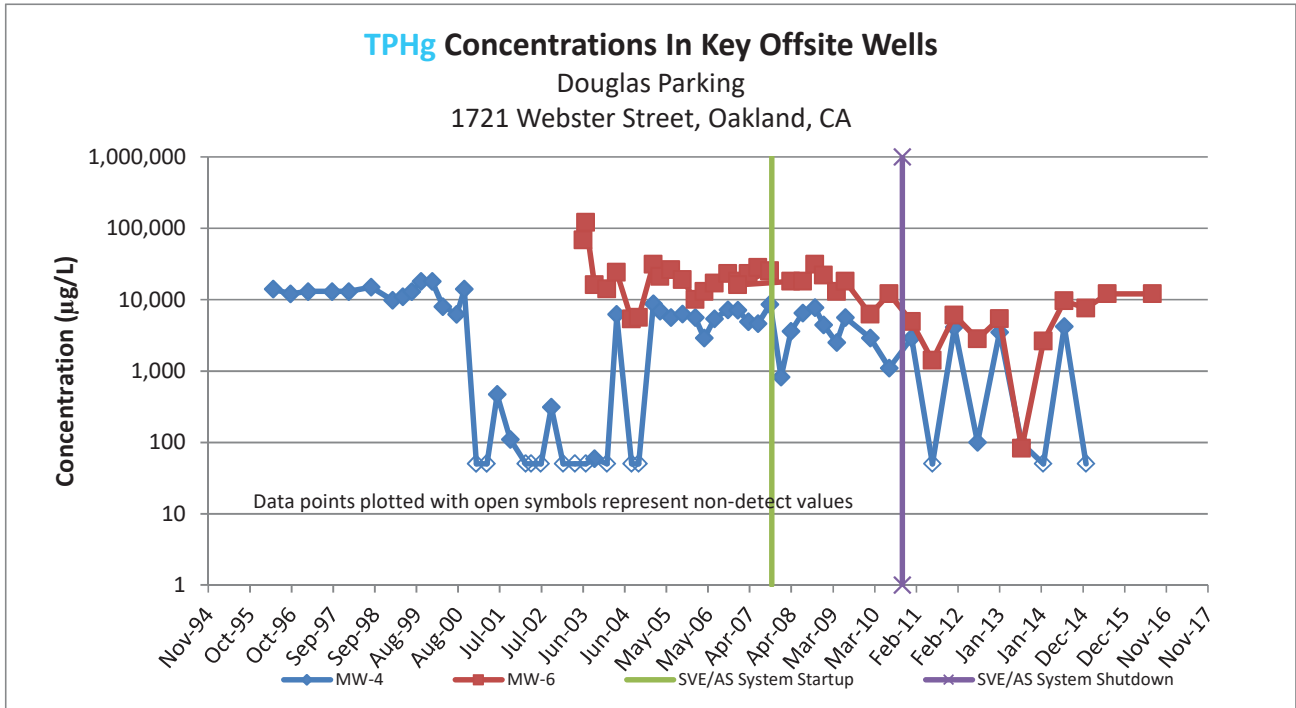


Figure 4 - TPHg and Benzene Trends in Key Offsite Wells

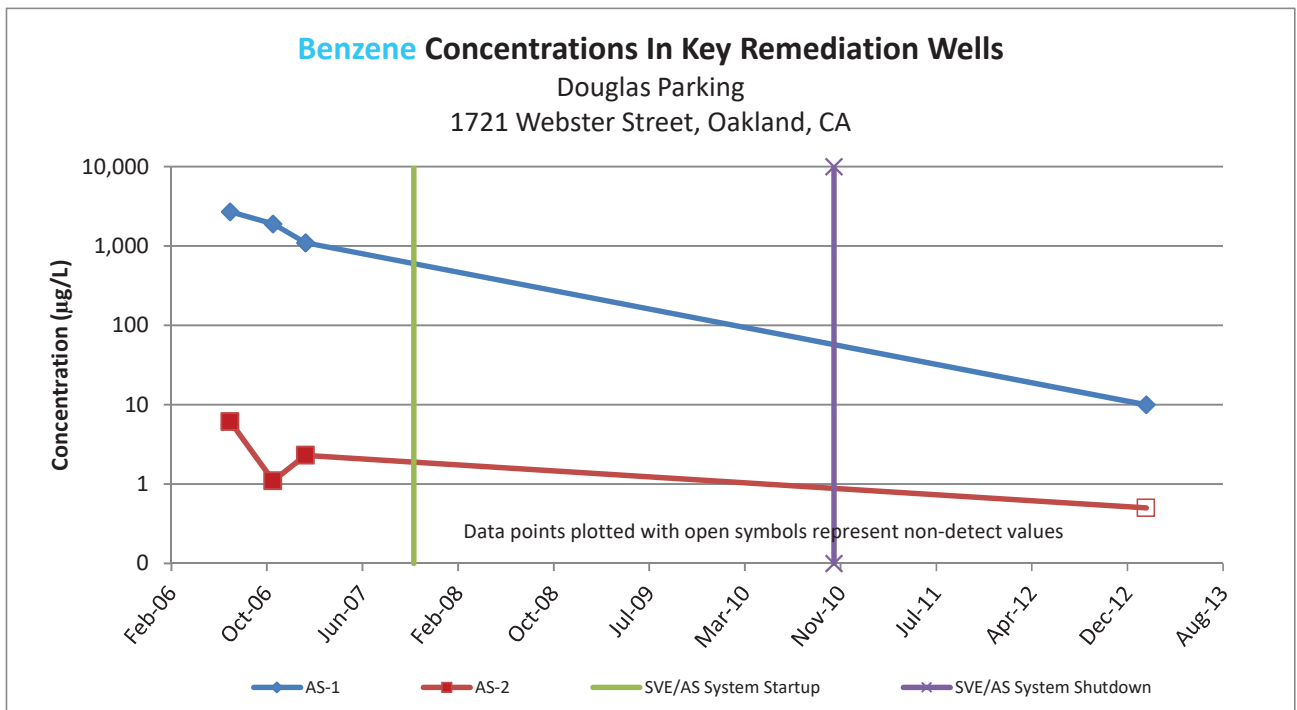
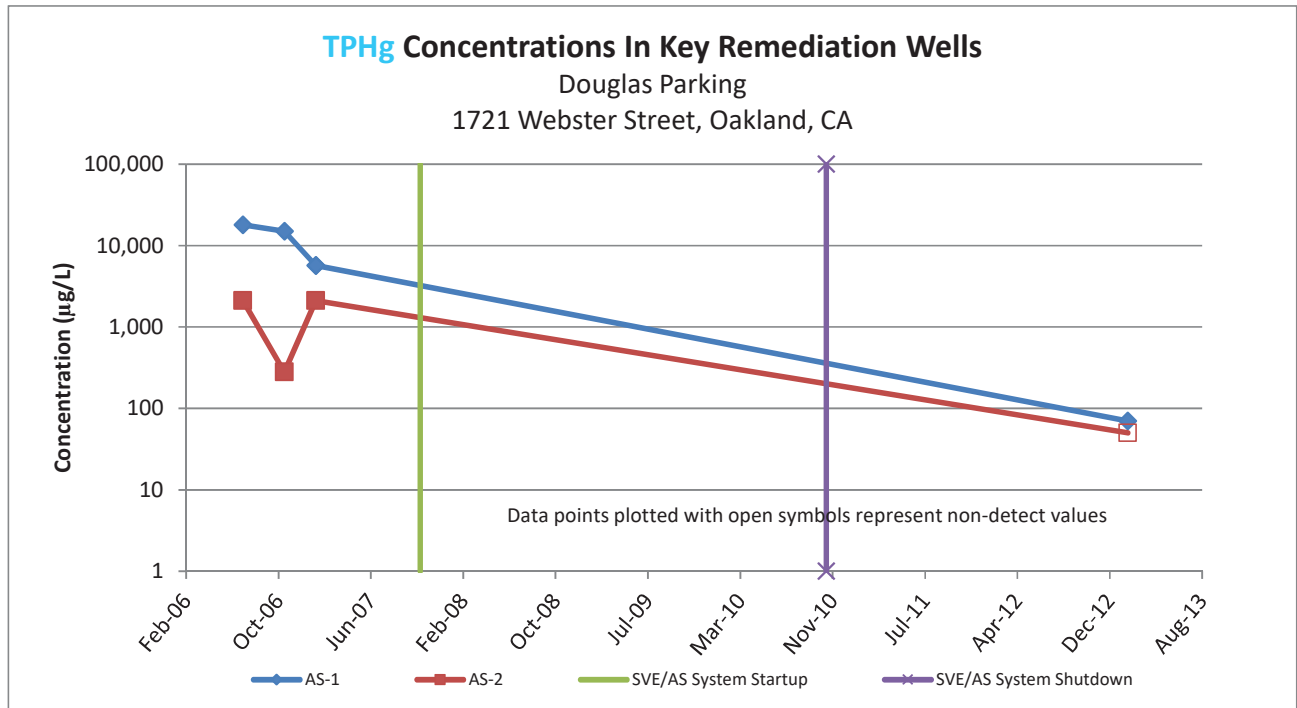
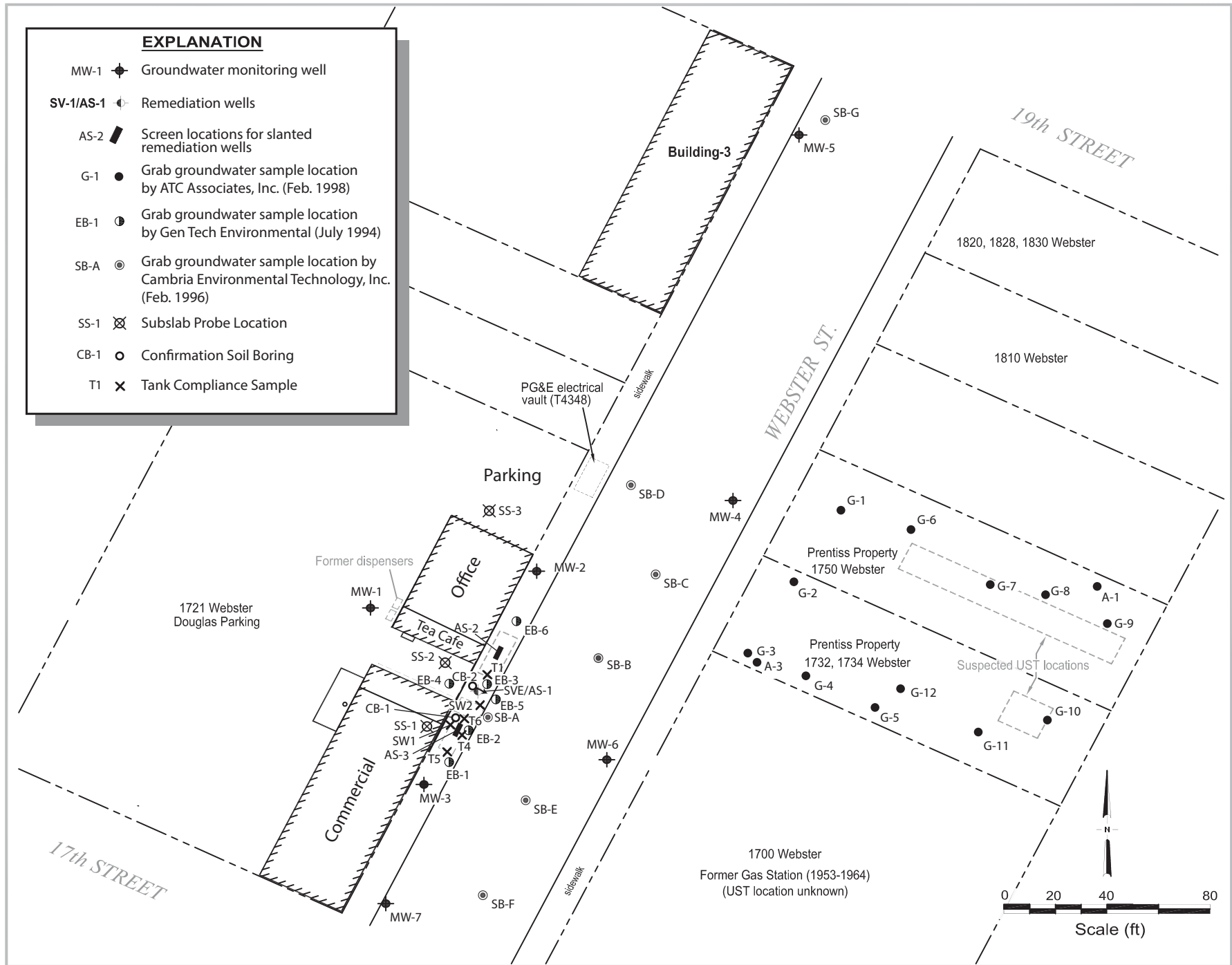


Figure 5 - TPHg and Benzene Trends in Key Remediation Wells



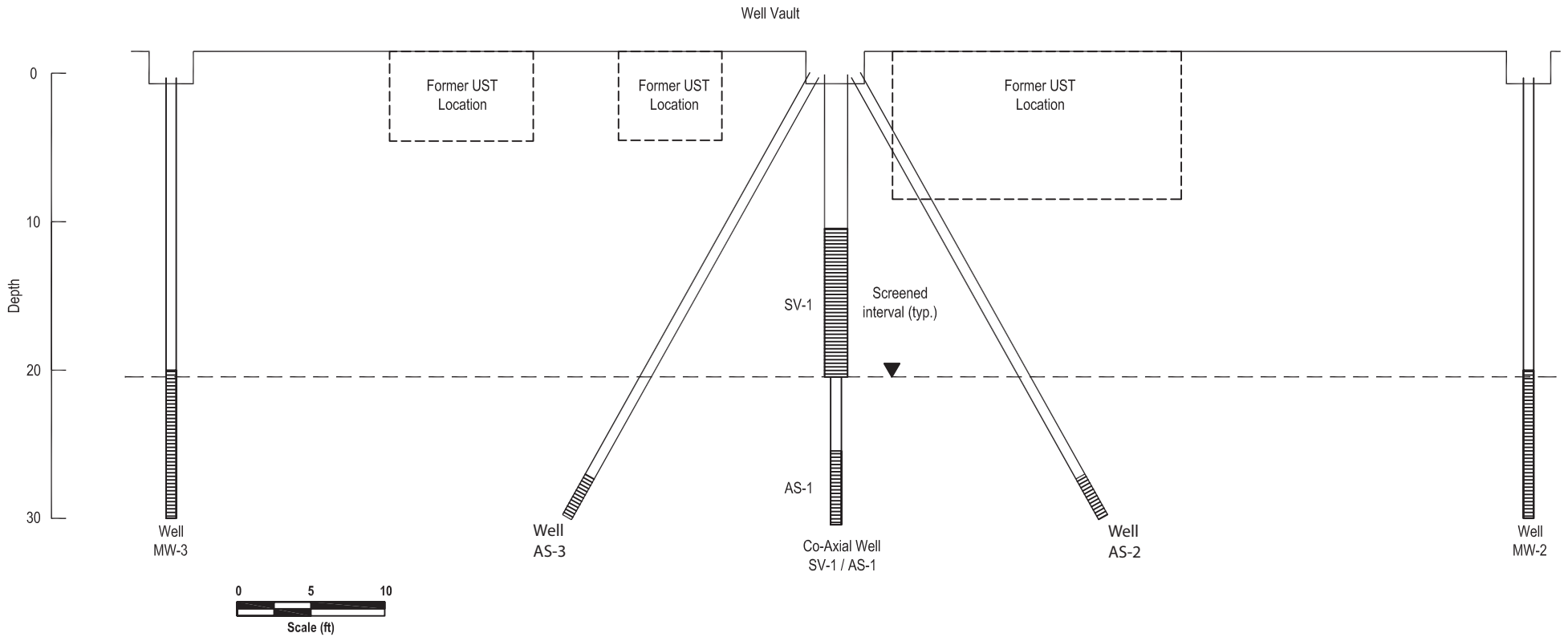
**Douglas Parking**  
 1721 Webster Street  
 Oakland, California



**Boring & Subslab  
 Probe Location Map**

FIGURE





Figure

7

EXPLANATION	
MW-1	Groundwater monitoring well
SV-1, AS-1	Remediation well
[Dashed Box]	Former Underground Storage Tanks/Dispensers
AS-2	Screen locations for slanted remediation wells

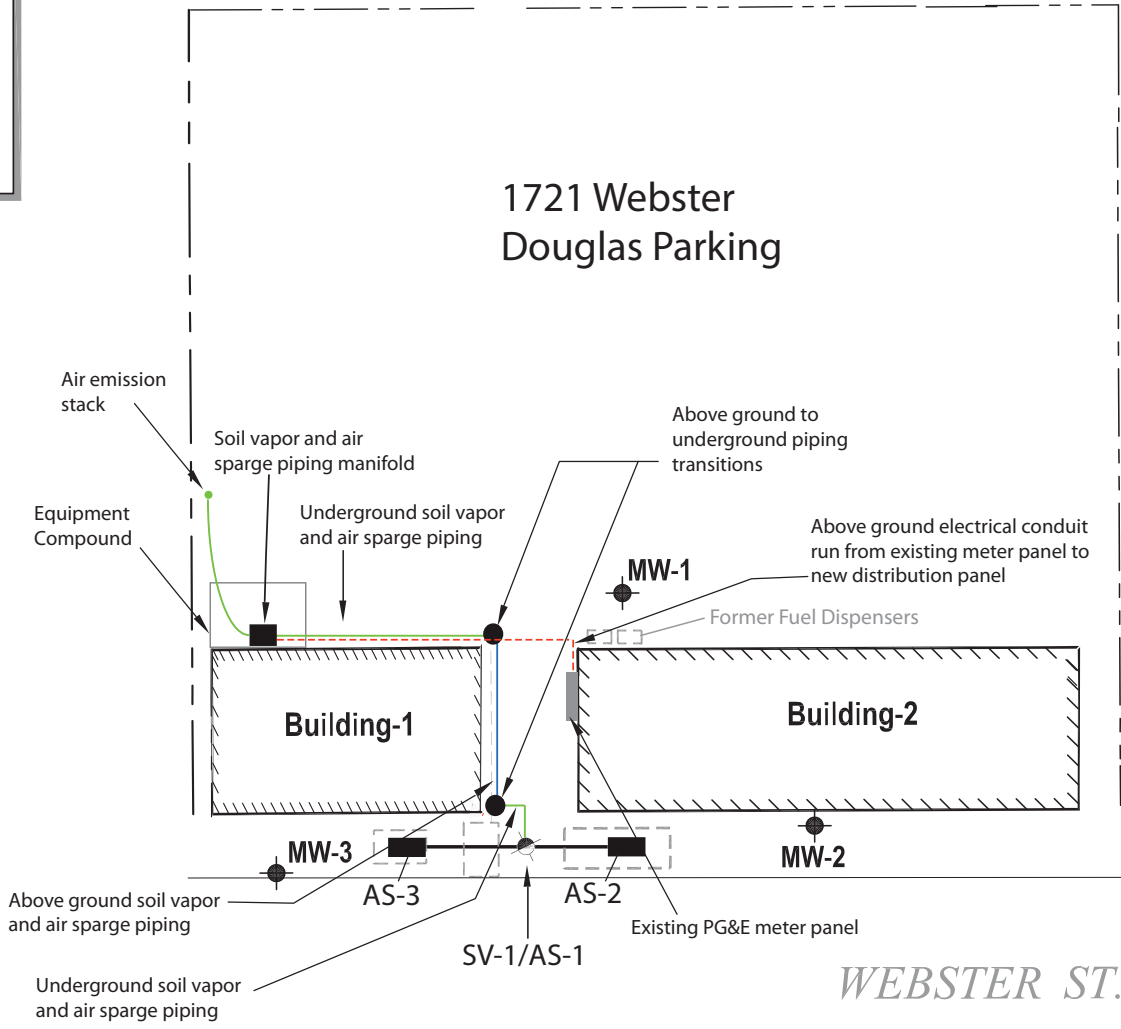


Figure 8

**Douglas Parking**  
 1721 Webster Street  
 Oakland, California



Remediation System  
 Layout

# PANGEA

**Table 1 - Groundwater Elevation and Analytical Data.**

Douglas Parking Company, 1721 Webster Street, Oakland, California

Boring / Well ID TOC	Date	Depth to Water (ft)	Groundwater Elevation (ft amsl)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
				(µg/L)					
<b>Monitoring Wells</b>									
MW-1	12/2/1994	19.42	9.83	ND	ND	ND	ND	ND	-
29.25	3/6/1995	20.69	9.04	ND	ND	ND	ND	ND	-
29.73	7/11/1995	20.65	9.16	ND	ND	ND	ND	ND	-
29.81	5/10/1996	20.80	9.01	ND	ND	ND	ND	ND	-
	10/2/1996	21.35	8.46	--	--	--	--	--	--
	2/28/1997	20.57	9.24	--	--	--	--	--	--
	9/16/1997	21.50	8.31	--	--	--	--	--	--
	2/5/1998	20.91	8.90	--	--	--	--	--	--
	8/11/1998	20.50	9.31	--	--	--	--	--	--
	2/8/1999	21.42	8.39	--	--	--	--	--	--
	2/24/1999	22.99	6.82	--	--	--	--	--	--
	3/3/1999	20.84	8.97	--	--	--	--	--	--
	3/10/1999	20.89	8.92	--	--	--	--	--	--
	3/17/1999	20.84	8.97	--	--	--	--	--	--
	5/4/1999	20.80	9.01	--	--	--	--	--	--
	7/20/1999	21.25	8.56	--	--	--	--	--	--
	10/5/1999	21.37	8.44	--	--	--	--	--	--
	1/7/2000	21.65	8.16	--	--	--	--	--	--
	4/6/2000	21.05	8.76	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/31/2000	21.13	8.68	--	--	--	--	--	--
	10/3/2000	21.69	8.12	--	--	--	--	--	--
	1/12/2001	22.00	7.81	--	--	--	--	--	--
	4/11/2001	22.16	7.65	--	--	--	--	--	--
	7/6/2001	22.57	7.24	--	--	--	--	--	--
	10/25/2001	22.71	7.10	--	--	--	--	--	--
	3/4/2002	22.53	7.28	--	--	--	--	--	--
	4/18/2002	22.81	7.00	--	--	--	--	--	--
	7/9/2002	22.95	6.86	--	--	--	--	--	--
	10/4/2002	23.13	6.68	--	--	--	--	--	--
	1/12/2003	22.05	7.76	--	--	--	--	--	--
	4/21/2003	21.17	8.64	--	--	--	--	--	--
32.75	7/21/2003	21.39	11.36	--	--	--	--	--	--
	10/2/2003	21.64	11.11	--	--	--	--	--	--
	1/15/2004	21.10	11.65	--	--	--	--	--	--
	4/5/2004	21.20	11.55	--	--	--	--	--	--
	8/9/2004	22.97	9.78	--	--	--	--	--	--
	10/7/2004	23.55	9.20	--	--	--	--	--	--
	2/7/2005	20.90	11.85	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/5/2005	20.60	12.15	--	--	--	--	--	--
	7/6/2005	20.66	12.09	--	--	--	--	--	--
	10/10/2005	21.16	11.59	--	--	--	--	--	--
	1/26/2006	20.73	12.02	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/10/2006	20.05	12.70	--	--	--	--	--	--
	7/6/2006	20.90	11.85	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/26/2006	21.80	10.95	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/19/2007	22.02	10.73	--	--	--	--	--	--
	4/17/2007	22.13	10.62	--	--	--	--	--	--
	7/6/2007	21.83	10.92	--	--	--	--	--	--
	10/15/2007	22.28	10.47	--	--	--	--	--	--
	1/17/2008	22.33	10.42	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/9/2008	22.11	10.64	--	--	--	--	--	--

# PANGEA

**Table 1 - Groundwater Elevation and Analytical Data.**

Douglas Parking Company, 1721 Webster Street, Oakland, California

Boring / Well ID TOC	Date	Depth to Water (ft)	Groundwater Elevation (ft amsl)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
				(µg/L)					
MW-1	7/17/2008	22.50	10.25	--	--	--	--	--	--
(cont'd)	10/27/2008	22.75	10.00	--	--	--	--	--	--
	1/9/2009	22.89	9.86	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/27/2009	22.40	10.35	--	--	--	--	--	--
	7/9/2009	22.55	10.20	--	--	--	--	--	--
	2/3/2010	22.08	10.67	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/13/2010	21.20	11.55	--	--	--	--	--	--
	1/17/2011			Well Inaccessible					
	7/12/2011	20.72	12.03	--	--	--	--	--	--
	1/11/2012	21.33	11.42	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/25/2012	20.94	11.81	--	--	--	--	--	--
	1/25/2013	21.41	11.34	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/29/2013	22.14	10.61	--	--	--	--	--	--
	1/28/2014	22.75	10.00	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/24/2014	22.84	9.91	--	--	--	--	--	--
	1/22/2015	22.45	10.30	<50	<0.5	<0.5	<0.5	<1.5	<5.0
	7/20/2015	22.87	9.88	--	--	--	--	--	--
	<b>8/3/2016</b>	<b>22.27</b>	<b>10.48</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;1.5</b>	<b>&lt;5.0</b>
MW-2	12/2/1994	19.50	7.60	61,300	3,000	3,900	160	4,500	--
27.10	3/6/1995	18.49	8.61	98,000	8,400	16,000	2,000	2,600	--
27.40	7/11/1995	18.45	8.95	38,000	3,100	7,500	940	3,700	--
	5/10/1996	18.56	8.84	63,000	7,400	16,000	1,500	6,000	--
	10/2/1996	19.15	8.25	21,000	2,200	3,400	430	1,600	--
	2/28/1997	18.43	8.97	39,000	4,700	9,600	950	4,200	ND
	9/16/1997	19.26	8.14	29,000	3,300	5,800	690	2,900	<620
	2/5/1998	18.66	8.74	10,000	1,000	2,000	170	860	<330
	8/11/1998	18.41	8.99	12,000	1,200	2,300	260	1,400	300
	2/8/1999	19.84	7.56	5,500	740	1,200	150	780	60
	2/17/1999	18.94	8.46	--	--	--	--	--	--
	2/24/1999	20.76	6.64	--	--	--	--	--	--
	3/3/1999	18.55	8.85	--	--	--	--	--	--
	3/10/1999	20.74	6.66	--	--	--	--	--	--
	3/17/1999	18.57	8.83	--	--	--	--	--	--
	5/4/1999	18.55	8.85	90,000	9,200	21,000	1,600	10,000	560
	7/20/1999	18.98	8.42	28,000	2,100	3,700	900	4,200	<860
	10/5/1999	19.10	8.30	11,000	870	180	30	1,400	<110
	1/7/2000	19.41	7.99	15,000	1,300	2,100	440	1,800	<14
	4/6/2000	18.80	8.60	17,000	1,800	3,100	500	2,200	<50
	7/31/2000	18.87	8.53	17,000	1,500	2,700	430	2,100	<200
	10/3/2000	19.45	7.95	27,000	2,500	4,000	660	2,900	<50
	1/12/2001	19.80	7.60	25,000	2,700	4,100	670	3,000	<200
	4/11/2001	20.03	7.37	97,000	9,500	21,000	2,200	7,900	<200
	7/6/2001	20.19	7.21	3,500	500	150	11	420	<5.0
	10/25/2001	20.35	7.05	3,800	620	230	70	400	<50
	3/4/2002	20.37	7.03	46,000	7,300	12,000	870	3,200	<500
	4/18/2002	20.15	7.25	68,000	5,100	8,900	1,100	4,000	<1,000
	7/9/2002	21.09	6.31	1,000	200	8.9	0.67	82	<10
	10/4/2002	21.28	6.12	270	100	3.4	0.53	10	<5.0
	1/12/2003	20.59	6.81	67,000	7,600	13,000	1,400	5,600	<500
	4/21/2003	19.98	7.42	78,000	7,700	12,000	1,900	6,900	<500
30.40	7/21/2003	20.08	10.32	1,800	360	16	<5.0	190	<50
	10/2/2003	20.41	9.99	4,000	790	110	60	350	<50

# PANGEA

**Table 1 - Groundwater Elevation and Analytical Data.**

Douglas Parking Company, 1721 Webster Street, Oakland, California

Boring / Well ID TOC	Date	Depth to Water (ft)	Groundwater Elevation (ft amsl)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
				(µg/L)					
<b>MW-2</b>	1/15/2004	19.93	10.47	8,100	6.1	23	44	530	<50
<i>(cont'd)</i>	4/5/2004	18.99	11.41	14,000	1,600	2,100	550	2,500	<500
	8/9/2004	19.79	10.61	1,200	210	16	14	100	<20
	10/7/2004	20.26	10.14	1,100	2.3	9.8	2.9	36	<5.0
	2/7/2005	18.80	11.60	45,000	4,400	4,800	1,400	5,800	<200
	4/5/2005	18.40	12.00	34,000	3,700	3,600	1,200	5,300	<500 (<5.0)
	7/6/2005	18.48	11.92	24,000	1,600	1,700	570	2,800	<500
	10/10/2005	19.00	11.40	25,000	1,700	2,100	710	3,200	<500
	1/26/2006	18.58	11.82	60,000	4,600	7,200	1,600	6,900	<1,000
	4/10/2006	17.84	12.56	56,000	4,900	7,500	1,200	7,400	<500
	7/6/2006	18.76	11.64	28,000	1,900	1,700	720	2,900	<500
	10/26/2006	19.60	10.80	43,000	2,800	2,500	1,700	7,600	<500
	1/19/2007	19.84	10.56	31,000	2,700	2,400	1,400	5,800	<150
	4/17/2007	19.90	10.50	37,000	3,200	2,900	1,600	6,400	<400
	7/6/2007	19.63	10.77	30,000	3,200	2,000	1,500	5,200	<250
	10/15/2007	20.11	10.29	20,000	1,200	990	650	2,300	<500
	1/17/2008	20.10	10.30	38,000	2,900	5,100	1,200	5,000	<210
	4/9/2008	20.12	10.28	51,000	3,000	6,400	1,700	6,500	<250
	7/17/2008	20.01	10.39	22,000	180	500	660	2,100	<250
	10/27/2008	20.61	9.79	26,000	570	2,100	670	3,400	<50
	1/9/2009	20.80	9.60	16,000	240	680	460	3,000	<100
	4/27/2009	20.17	10.23	16,000	130	660	570	3,600	<500
	7/9/2009	20.36	10.04	8,500	30	110	250	1,400	<100
	2/3/2010	19.84	10.56	22,000	47	140	500	3,000	<100
	7/13/2010	19.08	11.32	1,900	3.5	5.8	38	110	<5.0
	1/17/2011	19.02	11.38	17,000	23	100	330	2,200	<100
	7/12/2011	18.52	11.88	15,000	22	30	190	740	<50
	1/12/2011	19.18	11.22	20,000	17	47	250	2,100	<84
	7/25/2012	18.83	11.57	440	<0.5	2.2	1.0	39	<5.0
	1/25/2013	19.21	11.19	8,300	17	11	140	510	<50
	7/29/2013	19.94	10.46	8,000	13	13	200	100	<25
	1/28/2014	20.56	9.84	5,900	10	7.3	100	80	<50
	7/24/2014	20.61	9.79	2,100	1.5	3.1	21	37	<5.0
	1/22/2015	20.24	10.16	1,700	3.3	3.0	8.0	25	<10
	7/20/2015	20.66	9.74	770	0.57	0.69	9.2	10	<5.0
	<b>8/3/2016</b>	<b>20.03</b>	<b>10.37</b>	<b>980</b>	<b>0.9</b>	<b>1.9</b>	<b>9.4</b>	<b>9.9</b>	<b>&lt;5.0</b>
	<b>10/12/2016</b>	<b>20.26</b>	<b>10.14</b>	<b>391</b>	<b>&lt;1.00</b>	<b>5.42</b>	<b>&lt;5.00</b>	<b>3.08</b>	<b>&lt;1.00</b>
MW-3	12/2/1994	22.15	7.35	394,000	1,200	ND	1,800	4,000	-
29.50	3/6/1995	20.09	9.16	21,000	400	150	24	62	-
29.25	7/11/1995	19.99	9.57	12,000	ND	10	16	99	-
29.56	5/10/1996	20.24	9.32	8,600	ND	7.6	16	84	-
	10/2/1996	20.90	8.66	11,000	ND	7.4	19	92	-
	2/28/1997	20.12	9.44	6,000	ND	4.4	17	88	50
	9/16/1997	20.97	8.59	6,500	<0.5	0.69	1.2	6.7	<5.0
	2/5/1998	20.39	9.17	5,400	<0.5	6.3	15	86	<63
	8/11/1998	19.95	9.61	2,700	<0.5	3.5	3.2	12	<10
	2/8/1999	20.58	8.98	6,100	<0.5	8.1	18	80	<140
	2/17/1999	20.53	9.03	--	--	--	--	--	--
	2/24/1999	22.53	7.03	--	--	--	--	--	--
	3/3/1999	20.28	9.28	--	--	--	--	--	--
	3/10/1999	22.45	7.11	--	--	--	--	--	--
	3/17/1999	20.26	9.30	--	--	--	--	--	--

# PANGEA

**Table 1 - Groundwater Elevation and Analytical Data.**

Douglas Parking Company, 1721 Webster Street, Oakland, California

Boring / Well ID TOC	Date	Depth to Water (ft)	Groundwater Elevation (ft amsl)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
				← (µg/L) →					
MW-3	5/4/1999	20.24	9.32	11,000	<2	<2	9.8	140	<10
(cont'd)	7/20/1999	20.68	8.88	11,000	<0.5	3.1	13	88	<80
	10/5/1999	20.81	8.75	31,000	62	<0.5	21	170	<90
	1/7/2000	21.09	8.47	13,000	<0.5	<2	21	140	<80
	4/6/2000	20.48	9.08	5,300	1.5	1.4	9.8	60	<30
	7/31/2000	20.62	8.94	7,100	3.5	1.0	12	66	<5.0
	10/3/2000	21.13	8.43	8,000	<0.5	3.3	11	70	<40
	1/12/2001	21.45	8.11	11,000	4.3	6.7	11	73	<70
	4/11/2001	21.69	7.87	10,000	<0.5	<0.5	11	65	<10
	7/6/2001	21.60	7.96	13,000	5.3	1.6	11	58	<5.0
	10/25/2001	21.70	7.86	11,000	<0.5	3.0	15	70	<10
	3/4/2002	21.65	7.91	1,900	1.3	0.8	<0.5	15	<5.0
	4/18/2002	21.77	7.79	1,500	1.0	0.97	1.3	5.8	<5
	7/9/2002	22.03	7.53	13,000	6.8	5.7	13	59	<90
	10/4/2002	22.15	7.41	8,400	<10	<10	<10	42	<100
	1/12/2003	21.13	8.43	9,000	9.5	5.1	8.5	46	<90
	4/21/2003	20.63	8.93	10,000	<5.0	<5.0	8.5	32	<50
32.56	7/21/2003	20.68	11.88	9,600	<2.5	<2.5	7.4	39	48 (<1.0)
	10/2/2003	20.99	11.57	12,000	<5.0	<5.0	10	40	<90
	1/15/2004	20.74	11.82	13,000	37	41	78	930	<50
	4/5/2004	20.59	11.97	4,500	<1.7	<1.7	<1.7	12	<17
	8/9/2004	22.18	10.38	2,100	<1.0	3.7	<1.0	8.1	<10
	10/7/2004	22.79	9.77	2,400	6.5	26	7.5	89	<15
	2/7/2005	20.35	12.21	6,800	2.2	5.6	2.0	12	<30
	4/5/2005	19.95	12.61	6,100	2.3	2.6	1.3	8.3	<45 (<0.5)
	7/6/2005	19.93	12.63	4,500	<1.0	1.5	1.0	8.3	<10
	10/10/2005	20.45	12.11	3,800	0.73	<0.5	0.98	5.7	<15
	1/26/2006	20.05	12.51	5,100	<0.5	1.1	<0.5	6.6	<15
	4/10/2006	19.39	13.17	1,900	0.55	1.6	0.51	4.1	<10
	7/6/2006	20.25	12.31	5,600	<1.0	2.3	<1.0	6.4	<20
	10/26/2006	21.07	11.49	8,000	2.5	1.0	2.3	12	<35
	1/19/2007	21.38	11.18	77,000	19	40	9.5	130	<300
	4/17/2007	21.45	11.11	7,400	2.7	6.6	1.1	12	<40
	7/6/2007	21.29	11.27	7,100	2.4	5.6	0.85	10	<30
	10/15/2007	21.62	10.94	10,000	<5.0	<5.0	<5.0	14	<50
	1/17/2008	21.68	10.88	6,400	1.8	<0.5	1.0	8.4	23
	4/9/2008	21.42	11.14	4,700	1.7	2.2	<0.5	3.8	<18
	7/17/2008	22.10	10.46	7,700	2.9	3.1	1.4	11	<60
	10/27/2008	22.13	10.43	9,700	<1.7	1.8	2.3	11	<17
	1/9/2009	22.27	10.29	9,800	1.7	2.0	3.0	14	<17
	4/27/2009	21.74	10.82	8,700	1.9	3.3	<1.7	11	<50
	7/9/2009	21.92	10.64	10,000	<2.5	4.1	2.6	11	<60
	2/3/2010	21.55	11.01	5,300	1.5	2.3	<0.5	2.7	<25
	7/13/2010	21.31	11.25	4,400	<2.5	9.0	<2.5	4.6	<25
	1/17/2011	20.75	11.81	4,100	1.2	1.8	<0.5	2.7	<20
	7/12/2011	20.14	12.42	4,500	2.4	2.8	<0.5	5.0	<25
	1/11/2012	20.80	11.76	3,000	1.1	1.6	<0.5	1.9	<15
	7/25/2012	20.44	12.12	5,400	<1.7	<1.7	<1.7	4.1	<17
	1/25/2013	20.84	11.72	4,900	<1.7	2.7	<1.7	3.5	<17
	7/29/2013	21.48	11.08	9,700	<2.5	<2.5	<2.5	<2.5	<25
	1/28/2014	22.08	10.48	12,000	2.8	2.8	<2.5	4.6	<25
	7/24/2014	22.15	10.41	6,700	2.2	<1.7	1.9	5.2	<35
	1/22/2015	21.76	10.80	8,900	<5.0	<5.0	<5.0	<5.0	<50

# PANGEA

**Table 1 - Groundwater Elevation and Analytical Data.**

Douglas Parking Company, 1721 Webster Street, Oakland, California

Boring / Well ID TOC	Date	Depth to Water (ft)	Groundwater Elevation (ft amsl)	Groundwater Concentrations (µg/L)						
				TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	
MW-3 (cont'd)	7/20/2015	22.14	10.42	3,600	<1.7	<1.7	<1.7	3.5	<17	
	8/3/2016	21.51	11.05	7,400	3.0	3.5	<2.5	<7.5	27	
	10/12/2016	21.76	10.80	2,460	<1.00	<1.00	<5.00	<3.00	<1.00	
MW-4 25.29	5/10/1996	16.98	8.31	14,000	ND	1,200	720	3,100	-	
	10/2/1996	17.65	7.64	12,000	ND	650	580	2,200	-	
	2/28/1997	16.80	8.49	13,000	ND	1,100	750	2,700	110	
	9/17/1997	17.93	7.36	13,000	<2.5	820	750	2,900	<190	
	2/5/1998	16.78	8.51	13,000	<1.0	690	690	2,900	<170	
	8/11/1998	16.59	8.70	15,000	<5	360	520	1,900	280	
	2/8/1999	17.10	8.19	9,800	<5	680	770	2,200	300	
	2/24/1999	18.95	6.34	--	--	--	--	--	--	
	3/3/1999	16.80	8.49	--	--	--	--	--	--	
	3/10/1999	16.86	8.43	--	--	--	--	--	--	
	3/17/1999	16.82	8.47	--	--	--	--	--	--	
	5/4/1999	16.86	8.43	11,000	46	600	620	1,900	<100	
	7/20/1999	17.30	7.99	13,000	<0.5	470	7.0	2,000	<150	
	10/5/1999	17.43	7.86	18,000	4.4	720	800	2,100	<120	
	1/7/2000	17.78	7.51	18,000	<2	930	990	2,700	<30	
	4/6/2000	17.17	8.12	8,000	31	390	530	1,300	<10	
	7/31/2000	17.21	8.08	6,200	13	170	460	850	<10	
	10/3/2000	18.00	7.29	14,000	42	820	730	2,000	<50	
	1/12/2001	18.20	7.09	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	4/11/2001	18.31	6.98	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	7/6/2001	18.35	6.94	470	2.3	1.6	0.81	43	<5.0	
	10/25/2001	18.47	6.82	110	0.70	<0.5	<0.5	3.3	<5.0	
	3/4/2002	18.43	6.86	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	4/18/2002	18.61	6.68	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	7/9/2002	19.50	5.79	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	10/4/2002	19.83	5.46	310	2.0	2.9	13	16	<0.5	
	1/12/2003	19.07	6.22	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	4/21/2003	18.71	6.58	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	28.29	7/21/2003	18.81	9.48	<50	<0.5	<0.5	<0.5	<0.5	<5.0
		10/2/2003	19.02	9.27	59	0.78	<0.5	1.1	0.91	<5.0
		1/15/2004	18.68	9.61	<50	<0.5	<0.5	<0.5	<0.5	<5.0
		4/5/2004	17.41	10.88	6,200	29	250	450	730	<100
		8/9/2004	19.07	9.22	<50	<0.5	<0.5	<0.5	<0.5	<5.0
		10/7/2004	19.65	8.64	<50	<0.5	<0.5	<0.5	<0.5	<5.0
		2/7/2005	17.21	11.08	8,700	48	340	550	720	<100
4/5/2005		16.78	11.51	6,900	27	290	520	660	<170 (<0.5)	
7/6/2005		16.98	11.31	5,600	<5.0	130	470	480	<50	
10/10/2005		17.59	10.70	6,300	23	78	530	430	<50	
1/26/2006		17.08	11.21	5,600	41	68	400	290	<120	
4/10/2006		16.27	12.02	2,900	39	32	200	140	<60	
7/6/2006		17.20	11.09	5,400	65	59	340	150	<120	
10/26/2006		18.06	10.23	7,200	72	46	460	200	<150	
1/19/2007		18.29	10.00	7,100	140	35	520	150	<200	
4/17/2007	18.30	9.99	4,900	90	32	290	89	<110		
7/6/2007	18.00	10.29	4,600	91	30	210	55	<90		
10/15/2007	18.52	9.77	8,600	200	62	480	110	<210		
1/17/2008	18.46	9.83	820	15	3.7	25	9.3	<10		
4/9/2008	18.23	10.06	3,600	55	20	160	64	<60		
7/17/2008	18.72	9.57	6,500	210	47	510	180	<180		





# PANGEA

**Table 1 - Groundwater Elevation and Analytical Data.**

Douglas Parking Company, 1721 Webster Street, Oakland, California

Boring / Well ID TOC	Date	Depth to Water (ft)	Groundwater Elevation (ft amsl)	<div style="display: flex; align-items: center; justify-content: center;"> <span style="margin-right: 5px;">←</span> <span style="margin-left: 5px;">→</span> </div>					
				TPHg	Benzene	Toluene	Ethylbenzene (µg/L)	Xylenes	MTBE
MW-5	4/5/2005	14.45	10.54	<50	<0.5	<0.5	<0.5	<0.5	<5.0 (<0.5)
(cont'd)	7/6/2005	14.85	10.14	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/10/2005	15.44	9.55	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/26/2006	14.96	10.03	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/10/2006	14.01	10.98	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/6/2006	15.17	9.82	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/26/2006	15.94	9.05	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/19/2007	16.05	8.94	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/17/2007	15.99	9.00	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/6/2007	15.50	9.49	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/15/2007	16.27	8.72	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/17/2008	15.10	9.89	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/9/2008	15.96	9.03	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/17/2008	16.44	8.55	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/27/2008	16.78	8.21	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/9/2009	16.75	8.24	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/27/2009	16.21	8.78	--	--	--	--	--	--
	7/9/2009	16.48	8.51	--	--	--	--	--	--
	2/3/2010	15.77	9.22	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/13/2010	15.34	9.65	--	--	--	--	--	--
	1/17/2011	14.93	10.06	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/12/2011	14.81	10.18	--	--	--	--	--	--
	1/11/2012	15.44	9.55	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/25/2012	14.79	10.20	--	--	--	--	--	--
	1/25/2013	15.21	9.78	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/29/2013	16.03	8.96	--	--	--	--	--	--
	1/28/2014	16.65	8.34	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/24/2014	16.75	8.24	--	--	--	--	--	--
	1/22/2015	16.25	8.74	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/20/2015	16.82	8.17	--	--	--	--	--	--
	<b>8/3/2016</b>	<b>16.23</b>	<b>8.76</b>	<b>&lt;50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;1.5</b>	<b>&lt;5.0</b>
MW-6	6/30/2003	19.60	11.39	68,000	950	6,000	2,400	10,000	<1,000
30.99	7/21/2003	19.67	11.32	120,000	170	1,400	1,100	10,000	<1,000
	10/2/2003	19.97	11.02	16,000	7.6	200	38	1,800	<100
	1/15/2004	19.55	11.44	14,000	48	51	94	1,100	<50
	4/5/2004	19.17	11.82	24,000	180	900	430	1,800	<500
	8/9/2004	20.98	10.01	5,300	6.4	25	5.3	69	<17 (<0.5)
	10/7/2004	21.52	9.47	5,600	11	58	18	210	<50 (<0.5)
	2/7/2005	19.00	11.99	31,000	120	620	310	1,200	<500
	4/5/2005	18.60	12.39	21,000	170	1,100	350	1,300	<500 (<5.0)
	7/6/2005	18.56	12.43	26,000	130	920	320	1,200	<500
	10/10/2005	19.99	11.00	19,000	140	840	250	980	<500
	1/26/2006	18.70	12.29	10,000	140	1,100	270	1,200	<170
	4/10/2006	18.04	12.95	13,000	140	1,000	280	1,000	<250
	7/6/2006	18.80	12.19	17,000	150	1,000	290	1,000	<250
	10/26/2006	19.62	11.37	23,000	230	660	470	1,500	<500
	1/19/2007	19.92	11.07	18,000	190	620	350	1,100	<150
	4/17/2007	19.97	11.02	23,000	380	1,400	590	2,000	<450
	7/6/2007	19.81	11.18	28,000	600	3,000	900	2,700	<500
	10/15/2007	20.15	10.84	25,000	290	680	410	1,100	<250
	10/15/2007	20.15	10.84	25,000	290	680	410	1,100	<250
	1/17/2007	20.22	10.77	16,000	200	130	130	460	<150

# PANGEA

**Table 1 - Groundwater Elevation and Analytical Data.**

Douglas Parking Company, 1721 Webster Street, Oakland, California

Boring / Well ID TOC	Date	Depth to Water (ft)	Groundwater Elevation (ft amsl)	<div style="display: flex; align-items: center; justify-content: center;"> <span style="margin-right: 5px;">←</span> <span style="margin-left: 5px;">→</span> </div>					
				TPHg	Benzene	Toluene	Ethylbenzene (µg/L)	Xylenes	MTBE
MW-6 (cont'd)	4/9/2008	19.86	11.13	18,000	320	870	480	1,500	<250
	7/17/2008	20.36	10.63	18,000	320	510	420	1,200	<500
	10/27/2008	20.69	10.30	31,000	320	320	410	990	<350
	1/9/2009	20.83	10.16	22,000	340	390	560	1,400	<250
	4/27/2009	20.27	10.72	13,000	110	97	380	1,100	<350
	7/9/2009	20.43	10.56	18,000	250	520	470	1,300	<450
	2/3/2010	20.14	10.85	6,200	82	180	190	550	<150
	7/13/2010	19.29	11.70	12,000	260	420	480	1,600	<450
	1/17/2011	19.31	11.68	4,900	70	52	210	500	<50
	7/12/2011	18.73	12.26	1,400	20	8.5	64	130	<30
	1/11/2012	19.39	11.60	6,000	100	38	310	700	<210
	7/25/2012	19.02	11.97	2,800	31	13	140	240	<75
	1/25/2013	19.35	11.64	5,400	86	34	310	620	<100
	7/29/2013	19.97	11.02	82	1.2	<0.5	<0.5	<0.5	<5.0
	1/28/2014	20.60	10.39	2,600	36	11	52	53	<50
	7/24/2014	20.70	10.29	9,600	160	53	410	590	<70
	1/22/2015	20.31	10.68	7,600	25	13	53	86	<50
	7/20/2015	20.68	10.31	12,000	160	73	540	650	<450
	<b>8/3/2016</b>	<b>20.02</b>	<b>10.97</b>	<b>12,000</b>	<b>710</b>	<b>67</b>	<b>3,800</b>	<b>3,100</b>	<b>450</b>
	<b>10/12/2016</b>	<b>20.30</b>	<b>10.69</b>	<b>9,570</b>	<b>51.9</b>	<b>507</b>	<b>&lt;100</b>	<b>461</b>	<b>&lt;20</b>
MW-7 33.11	6/30/2003	21.40	11.71	170	<0.5	2.1	2.0	8.7	<5.0
	7/21/2003	21.44	11.67	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/2/2003	21.73	11.38	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/15/2004	21.57	11.54	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/5/2004	20.84	12.27	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/9/2004	22.68	10.43	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/7/2004	23.27	9.84	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/7/2005	20.60	12.51	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/5/2005	20.22	12.89	<50	<0.5	0.75	<0.5	<0.5	<5.0 (<0.5)
	7/6/2005	20.25	12.86	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/10/2005	20.70	12.41	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/26/2006	20.32	12.79	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/10/2006	19.62	13.49	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/6/2006	20.47	12.64	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/26/2006	21.30	11.81	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/19/2007	21.62	11.49	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/17/2007		11.49	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/6/2007	21.59	11.52	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/15/2007	21.85	11.26	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/17/2007	21.90	11.21	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/9/2008	21.61	11.50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/17/2008	22.09	11.02	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/27/2008	22.39	10.72	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/9/2009	22.52	10.59	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/27/2009	21.98	11.13	--	--	--	--	--	--
	7/9/2009	22.18	10.93	--	--	--	--	--	--
	2/3/2010	21.87	11.24	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/13/2010	21.01	12.10	---	---	---	---	---	---
	1/17/2011	21.07	12.04	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/12/2011	20.72	12.39	<50	<0.5	<0.5	<0.5	<0.5	<5.0
1/11/2012	21.13	11.98	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
7/25/2012	20.75	12.36	--	--	--	--	--	--	

# PANGEA

**Table 1 - Groundwater Elevation and Analytical Data.**

Douglas Parking Company, 1721 Webster Street, Oakland, California

Boring / Well ID TOC	Date	Depth to Water (ft)	Groundwater Elevation (ft amsl)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
				←----- (µg/L) ----->					
MW-7 (cont'd)	1/25/2013	21.10	12.01	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/29/2013	21.70	11.41	--	--	--	--	--	--
	1/28/2014	22.34	10.77	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/24/2014	22.41	10.70	--	--	--	--	--	--
	1/22/2015	21.99	11.12	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/20/2015	--	--	--	--	--	--	--	--
	<b>8/3/2016</b>	--	--	--	--	--	--	--	--
AS-1	7/6/2006	19.53	--	18,000	2,700	570	700	1,900	<500
	10/26/2006	20.33	--	15,000	1,900	340	360	1,400	<250
	1/19/2007	20.64	--	5,700	1,100	110	88	630	<50
	1/19/2007	20.64	--	5,700	1,100	110	88	630	<50
	4/17/2007	20.71	--	--	--	--	--	--	--
	7/16/2007	--	--	--	--	--	--	--	--
	10/15/2007	--	--	--	--	--	--	--	--
	1/17/2008	--	--	--	--	--	--	--	--
	4/9/2008	--	--	--	--	--	--	--	--
	1/25/2013	--	--	70	10	<0.5	<0.5	<0.5	<5.0
AS-2	7/6/2006	22.26	--	2,100	6.1	<0.5	33	200	<20
	10/26/2006	23.25	--	280	1.1	<0.5	<0.5	6.0	<15
	1/19/2007	23.61	--	2,100	2.3	<0.5	96	310	<35
	4/17/2007	23.70	--	--	--	--	--	--	--
	7/16/2007	--	--	--	--	--	--	--	--
	10/15/2007	--	--	--	--	--	--	--	--
	1/17/2008	--	--	--	--	--	--	--	--
	4/9/2008	--	--	--	--	--	--	--	--
1/25/2013	22.02	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
AS-3	7/6/2006	21.77	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/26/2006	22.66	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	1/19/2007	22.97	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/17/2007	23.06	--	--	--	--	--	--	--
	7/16/2007	--	--	--	--	--	--	--	--
	10/15/2007	--	--	--	--	--	--	--	--
	1/17/2008	--	--	--	--	--	--	--	--
	4/9/2008	--	--	--	--	--	--	--	--
1/25/2013	22.60	--	<50	<0.5	<0.5	0.55	<0.5	<5.0	
Trip Blank	1/12/2001	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	4/11/2001	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	7/6/2001	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	3/4/2002	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/2/2003	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	10/15/2007	--	--	--	--	--	--	--	--

# PANGEA

**Table 1 - Groundwater Elevation and Analytical Data.**

Douglas Parking Company, 1721 Webster Street, Oakland, California

Boring / Well ID TOC	Date	Depth to Water (ft)	Groundwater Elevation (ft amsl)	TPHg ←	Benzene	Toluene	Ethylbenzene (µg/L)	Xylenes	MTBE →
<b>Grab Groundwater</b>									
SB-A	2/22/1996	--	--	16,000	38	16	180	620	--
SB-B	2/22/1996	--	--	20,000	100	29	320	590	--
SB-C	2/22/1996	--	--	1,200	130	100	68	230	--
SB-D	2/22/1996	--	--	7,400	550	110	160	89	--
SB-E	2/23/1996	--	--	16,000	31	160	390	1,400	--
SB-F	2/23/1996	--	--	<50	<0.5	1.4	<0.5	2.3	--
SB-G	2/23/1996	--	--	5,200	1.3	<0.5	0.7	<0.5	--
EB-1GWS	7/8/1994	--	--	62,000	<0.5	26	850.0	8,900	--
EB-2GWS	7/8/1994	--	--	160,000	5,300	20,000	2,100	17,000	--
EB-3GWS	7/8/1994	--	--	87,000	1,400	21,000	1,700	19,000	--
EB-4GWS	7/8/1994	--	--	350,000	290	1,300	3,200	31,000	--
EB-5GWS	7/8/1994	--	--	120,000	2,100.0	13,000	1,300.0	16,000	--
EB-6GWS	7/8/1994	--	--	230,000	10,000	34,000	2,300	16,000	--

**Notes and Abbreviations:**

TOC = Top of casing elevations in feet above mean sea level.

ft amsl = Measured in feet above mean sea level

µg/L = Micrograms per liter.

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

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

MTBE = Methyl tertiary butyl ether by EPA Method 8021B, and by EPA Method 8260 in parenthesis.

<0.5 = Concentration not detected above specific laboratory reporting limit.

-- = Not analyzed, not sampled, or not applicable.

ND = Not detected.

Data prior to 7/11/95 from Gen Tech and Piers Environmental Quarterly Groundwater Monitoring Reports dated December 2, 1994 and March 6, 1995, respectively.

On July 31, 2003, Virgil Chavez Land Surveying of Vallejo, California surveyed monitoring wells using a benchmark in the top of the curb near the SW return of the NW corner of 34th and Broadway.

# Pangea

**Table 2. Subslab Gas Analytical Data** - Douglas Parking, 1721 Webster Street, Oakland, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft - ft bgs)	Benzene	Toluene	Ethylbenzene	Xylenes	TPH Gasoline	MTBE	Naphthalene	Isopropenol	Methane	Helium	Oxygen	Notes
			ug/m <sup>3</sup>										%	
Residential ESL for shallow soil gas:			48	160,000	560	52,000	300,000	5,400	41	--	--	--	--	For SG/SS samples
Commercial ESL for shallow soil gas:			420	1,300,000	4,900	440,000	2,500,000	47,000	360	--	--	--	--	For SG/SS samples
No Bio-Attenuation Zone, <b>Residential</b> (LTCP)			85	--	1,100	--	--	--	93	--	--	--	--	
No Bio-Attenuation Zone, <b>Commercial</b> (LTCP)			280	--	3,600	--	--	--	310	--	--	--	--	
With Bio-Attenuation Zone, <b>Residential</b> (LTCP)			85,000	--	1,100,000	--	--	--	93,000	--	--	--	--	
With Bio-Attenuation Zone, <b>Commercial</b> (LTCP)			280,000	--	3,600,000	--	--	--	310,000	--	--	--	--	

**Soil Gas Samples**

SG-1	9/23/2016	5 - 6	<3.3	5.7	<4.4	13.6	<7,170	<3.7	--	<13	<5,100	--	17.7	
SG-2	9/23/2016	5 - 6	12	<3.8	<4.4	23.9	<7,170	<3.7	--	<13	<5,100	--	19.8	

**Subslab Gas Samples**

SS-1	11/14/2013	0.5 - 0.7	<1.6	<1.9	<2.2	<6.6	2,300	<1.8	<5.3	--	--	0.13	17	For other VOC detections see the lab report.
	6/23/2015	0.5 - 0.7					--floor refinished, probe covered--							
SS-2	11/13/2013	0.5 - 0.7	58	2.7	<2.2	<6.6	2,000	<1.8	<5.3	--	--	0.48	16	For other VOC detections see the lab report.
	6/23/2015	0.5 - 0.7	<1.6	3.7	2.3	14	<720	<1.8	<5.3	<50	--	--	--	For other VOC detections see the lab report.
	9/23/2016	0.5 - 0.7	<3.3	<3.8	<4.4	<13.2	<7,170	<3.7	--	<13	<5,400	--	20.4	For other VOC detections see the lab report.
SS-3	11/13/2013	0.8 - 1.0	71	2.6	<2.2	<6.6	1,400	<1.8	<5.3	--	--	0.13	17	For other VOC detections see the lab report.
	6/23/2015	0.8 - 1.0	<1.6	3.3	<2.2	13	1,100	<1.8	<5.3	<50	--	--	--	For other VOC detections see the lab report.
	9/23/2016	0.8 - 1.0	<3.3	4.0	<4.4	13	<7,170	<3.7	--	<13	<5,000	--	20.5	For other VOC detections see the lab report.

**Abbreviations:**

SG-1 = Soil Gas Sample

SS-1 = Subslab Sample

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

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

% = Percent of total sample volume.

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

Oxygen by Modified ASTM Method D-1946, uses GC/TCD scan.

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

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

ESL = Environmental Screening Level for Shallow Soil Gas with Residential and Commercial/Industrial Land Use, for samples less than five feet below a building foundation or ground surface, established by the SFBRWQCB, Interim Final - November 2007, and amended in December 2013 (Table E-2).

ESL = Environmental Screening Level, from California Regional Water Quality Control Board - San Francisco Bay Region, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Revised February 2016 (Revision 3).

LTCP = Low Threat Closure Policy

**Bold** = Concentrations above Lowest ESLs for Commercial Land Use for shallow soil gas (SG & SS samples).

**Table 3. SVE/AS System Performance Summary - 1721 Webster Street, Oakland, California**

Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Vapor Applied Vacuum ("H2O)	FID Reading (ppm)	TPHg Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE TPHg Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)		
10/29/07	N/A	1.0	0	0	0	0	0	0	0	0	0	no	System start up
10/29/07	SYS-INF SYS-MID SYS-EFF	1.5	104	68	3,400	9,600	76	320.3	6.7	2.30	0.05	no	
					8	23	ND<0.077						
					0	27	0.15						
10/30/07	SYS-INF SYS-MID SYS-EFF	24.3	50	27	37,000	9,000	74	144.4	143.8	1.08	1.07	no	Readings upon arrival
					635	ND<7.0	ND<0.077						
					700	60	0.29						
10/30/07	SYS-INF SYS-MID SYS-EFF	25.2	45	27	3,200	1,500	11	21.7	144.6	0.14	1.08	no	readings after dilution air introduced to reduce noise and limit hydrocarbon loading on carbon (prevent thermal excursion/fire).
					620	ND<7.0	ND<0.077						
					530	ND<7.0	ND<0.077						
10/31/07	SYS-INF SYS-MID SYS-EFF	48.8	40	27	922*	880	8.6	11.3	155.7	0.10	1.17	no	Dilution airflow set at ~25% of total flow
					0*	ND<7.0	ND<0.077						
					0*	ND<7.0	ND<0.077						
11/01/07	SYS-INF SYS-MID SYS-EFF	78.8	39	27	1,475	---	---	11.0	169.5	0.10	1.30	no	
					14	---	---						
					9	---	---						
11/02/07	SYS-INF SYS-MID SYS-EFF	100.2	40	27	736	---	---	11.3	179.6	0.10	1.39	no	Shut system down at 100.5 hours for weekend
					19	---	---						
					10	---	---						
11/05/07	SYS-INF SYS-MID SYS-EFF	100.9	38	27	1,546	---	---	10.7	179.9	0.10	1.39	no	Restart system at 100.5 hours on 11/5/07
					30	---	---						
					4	---	---						
11/06/07	SYS-INF SYS-MID SYS-EFF	126.7	38	27	213	---	---	10.7	191.4	0.10	1.49	no	
					0	---	---						
					0	---	---						
11/07/07	SYS-INF SYS-MID SYS-EFF	154.7	45	27	170	---	---	12.7	206.2	0.11	1.62	no	
					0	---	---						
					0	---	---						



**Table 3. SVE/AS System Performance Summary - 1721 Webster Street, Oakland, California**

Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments	
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Applied Vacuum ("H2O)	FID Reading (ppm)	TPHg Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE TPHg Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)			
11/08/07	SYS-INF SYS-MID SYS-EFF	178.2	47	27	160 0 0	--- --- ---	---	---	13.3	219.2	0.12	1.74	no	Lab analysis performed for methane; 2.4 ul/L detected in SYS EFF
11/09/07	SYS-INF SYS-MID SYS-EFF	200.3	45	31	163 0 0	--- --- ---	---	---	12.7	230.9	0.11	1.84	no	Shut system down at 200.3 hours for weekend
11/12/07	SYS-INF SYS-MID SYS-EFF	206.3	42	28	211 0 2	--- --- ---	---	---	11.9	233.9	0.11	1.87	yes	Restart system at 200.3 hours on 11/12/07; start air sparge system
11/13/07	SYS-INF SYS-MID SYS-EFF	225.6	46	28	2,937 0 4	--- --- ---	---	---	13.0	244.3	0.12	1.96	yes	
11/14/07	SYS-INF SYS-MID SYS-EFF	253.0	45	28	4,113 0 0	--- --- ---	---	---	12.7	258.9	0.11	2.09	yes	
11/15/07	SYS-INF SYS-MID SYS-EFF	278.4	45	28	2,810 0 0	--- --- ---	---	---	12.7	272.3	0.11	2.21	yes	
11/16/07	SYS-INF SYS-MID SYS-EFF	301.4	43	28	2,570 0 0	--- --- ---	---	---	12.1	283.9	0.11	2.31	yes	
11/17/07	SYS-INF SYS-MID SYS-EFF	327.1	42	41	11 0 0	--- --- ---	---	---	11.9	296.6	0.11	2.42	yes	
11/18/07	SYS-INF SYS-MID SYS-EFF	352.1	44	41	530 0 0	--- --- ---	---	---	12.4	309.6	0.11	2.54	yes	
11/19/07	SYS-INF SYS-MID SYS-EFF	375.2	42	41	24 0 0	22 --- ---	<0.077 --- ---	---	0.3	309.9	0.00	2.54	yes	

**Table 3. SVE/AS System Performance Summary - 1721 Webster Street, Oakland, California**

Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Vapor Applied Vacuum ("H2O)	FID Reading (ppm)	TPHg Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)		
11/20/07	SYS-INF SYS-MID SYS-EFF	398.8	49	68	660 0 0	--- --- ---	---	0.3	310.2	0.00	2.54	yes	Increased system vacuum by closing off recirculation valve on blower.
11/26/07	SYS-INF SYS-MID SYS-EFF	426.3	49	68	1,800 0 0	--- --- ---	---	0.3	310.6	0.00	2.54	yes	Received verbal approval from BAAQMD to decrease monitoring from daily to weekly.
12/03/07	SYS-INF SYS-MID SYS-EFF	593.5	48	61	1,300 0 0	--- --- ---	---	0.3	313.0	0.00	2.54	yes	
12/14/07	SYS-INF SYS-MID SYS-EFF	853.0	52	54	280 0 0	280 <7.0 <7.0	0.17 <0.077 <0.077	4.7	363.5	0.003	2.57	yes	
12/21/07	SYS-INF SYS-MID SYS-EFF	1,021.5	58	54	0 0 0	170 <7.0 <7.0	0.14 <0.077 <0.077	3.2	385.7	0.00	2.58	yes	SVE shutdown after reading, restarted
12/27/07	SYS-INF SYS-MID SYS-EFF	1,163.5	40	54	NM NM NM	--- --- ---	---	2.2	398.6	0.00	2.59	yes	SVE shutdown on arrival, restart and monitor
12/28/07	SYS-INF SYS-MID SYS-EFF	1,188.5	50	54	14 0 0	14 <7.0 <7.0	<0.077 <0.077 <0.077	0.2	398.8	0.00	2.59	yes	
01/03/08	SYS-INF SYS-MID SYS-EFF	1,329.5	51	54	50 0 0	50 15 <7.0	<0.077 <0.077 <0.077	0.8	403.6	0.00	2.59	yes	
01/10/08	SYS-INF SYS-MID SYS-EFF	1,430.2	50	54	0 0 0	16 13 <7.0	<0.077 <0.077 <0.077	0.3	404.7	0.00	2.59	no	AS system off while sampling
1/15/2008*	SYS-INF SYS-MID SYS-EFF	1,546.0	50	81	--	1,200 7.7 <7.0	2.1 <0.077 <0.077	19.2	497.6	0.03	2.74	yes	

**Table 3. SVE/AS System Performance Summary - 1721 Webster Street, Oakland, California**

Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Vapor Applied Vacuum ("H2O)	FID Reading (ppm)	TPHg Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)		
1/23/2008*	SYS-INF SYS-MID SYS-EFF	1,694.5	50	95	--	1,300 11 <7.0	1.6 <0.077 <0.077	20.9	626.6	0.02	2.88	yes	
01/30/08	SYS-INF SYS-MID SYS-EFF	1,864.6	49	81	--	2,300 24 <7.0	2.6 <0.077 <0.077	36.2	882.9	0.04	3.15	yes	
02/06/08	SYS-INF SYS-MID SYS-EFF	2,027.5	50	81	--	1,700 43 <7.0	2.9 <0.077 <0.077	27.3	1,068.0	0.04	3.43	yes	
02/12/08	SYS-INF SYS-MID SYS-EFF	2,173.3	60	95	--	1,500 520 28	1.7 1.1 <0.077	28.9	1,243.4	0.03	3.61	yes	
02/21/08	SYS-INF SYS-MID SYS-EFF	2,394.1	65	95	--	---	---	31.3	1,531.2	0.03	3.91	yes	Samples not picked up by the courier before hold time expired.
02/29/08	SYS-INF SYS-MID SYS-EFF	2,580.5	27	95	--	1,100 890 <7.0	1.4 5.3 <0.077	9.5	1,605.2	0.01	3.99	yes	System shut down for future changeout of carbon in first vessel.
04/07/08	SYS-INF SYS-MID SYS-EFF	2,581.4	44	7.5	--	1,100 ---	1.4 ---	15.5	1,605.8	0.02	3.99	yes	Restart system after carbon changeout
04/10/08	SYS-INF SYS-MID SYS-EFF	2,650.3	26	7	--	1,200 <7.0 <7.0	3.6 <0.077 <0.077	10.0	1,634.5	0.03	4.07	yes	
04/17/08	SYS-INF SYS-MID SYS-EFF	2,826.1	28	8	962 3 3	---	---	10.8	1,713.5	0.03	4.29	yes	
04/23/08	SYS-INF SYS-MID SYS-EFF	2,969.4	26	7.5	--	1,100 <7.0 <7.0	1.5 <0.077 <0.077	9.2	1,768.2	0.01	4.36	yes	

**Table 3. SVE/AS System Performance Summary - 1721 Webster Street, Oakland, California**

Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Applied Vacuum ("H2O)	FID Reading (ppm)	TPHg Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE TPHg Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)		
04/30/08	SYS-INF SYS-MID SYS-EFF	3,136.8	23	7.5	--	780 <7.0 <7.0	1.4 <0.077 <0.077	5.8	1,808.4	0.01	4.42	yes	
05/07/08	SYS-INF SYS-MID SYS-EFF	3,304.6	28	8	378 0 0	--- --- ---	--- --- ---	7.0	1,857.4	0.01	4.50	yes	
05/14/08	SYS-INF SYS-MID SYS-EFF	3,472.2	26	8	523 6 0	--- --- ---	--- --- ---	6.5	1,902.8	0.01	4.57	yes	
05/23/08	SYS-INF SYS-MID SYS-EFF	3,690.2	28	7	264 0 0	--- --- ---	--- --- ---	7.0	1,966.5	0.01	4.68	yes	
05/30/08	SYS-INF SYS-MID SYS-EFF	3,859.2	36	7	317 1 0	--- --- ---	--- --- ---	9.0	2,029.9	0.01	4.78	yes	
06/05/08	SYS-INF SYS-MID SYS-EFF	3,999.6	38	7	350 0 0	--- --- ---	--- --- ---	9.5	2,085.5	0.02	4.87	yes	
06/13/08	SYS-INF SYS-MID SYS-EFF	4,193.1	38	7	--	700 <7.0 <7.0	1.6 <0.077 <0.077	8.5	2,154.3	0.02	5.01	yes	
06/19/08	SYS-INF SYS-MID SYS-EFF	4336.7	25	7	349 -- 0	--- --- ---	--- --- ---	5.6	2,187.9	0.01	5.08	yes	
06/27/08	SYS-INF SYS-MID SYS-EFF	4,529.7	25	7	335 0 0	--- --- ---	--- --- ---	5.6	2,233.1	0.01	5.18	yes	
07/10/08	SYS-INF SYS-MID SYS-EFF	4,839.0	56	8	256 40 0	--- --- ---	--- --- ---	12.6	2,395.2	0.03	5.51	yes	

**Table 3. SVE/AS System Performance Summary - 1721 Webster Street, Oakland, California**

Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Vapor Applied Vacuum ("H2O)	FID Reading (ppm)	TPHg Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE Removal Rate (lbs/day)	TPHg Cumulative Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)		
07/18/08	SYS-INF	5,032.0	33	8	330	---	7.4	2,454.8	0.02	5.64	yes		
	SYS-MID				174	---							
	SYS-EFF				0	---							
7/24/2008**	SYS-INF	5,178.0	33	8	360	---	7.4	2,499.8	0.02	5.73	yes		
	SYS-MID				187	---							
	SYS-EFF				0	---							
8/1/2008**	SYS-INF	5,368.0	33	8	248	---	7.4	2,558.5	0.02	5.85	yes		
	SYS-MID				193	---							
	SYS-EFF				0	---							
8/8/2008**	SYS-INF	5,536.7	17	4.5	146	---	3.8	2,585.3	0.01	5.91	yes		
	SYS-MID				153	---							
	SYS-EFF				0	---							
8/18/2008**	SYS-INF	5,774.1	17	4.5	365	840	4.6	2,630.7	0.01	5.96	yes		
	SYS-MID				170	140							
	SYS-EFF				0	<7.0							
08/22/08	SYS-INF	5,873.9	17	4	325	---	4.6	2,649.7	0.01	5.98	yes		
	SYS-MID				207	---							
	SYS-EFF				0	---							
09/05/08	SYS-INF	6,208.4	14	5	385	---	3.6	2,700.4	0.004	6.05	yes		
	SYS-MID				219	---							
	SYS-EFF				23	---							
10/06/08	SYS-INF	6,211.0	13	5	443	1,000	3.4	2,700.8	0.004	6.05	yes		
	SYS-MID				23	---							
	SYS-EFF				0	<7.0							
10/14/08	SYS-INF	6,405.0	15	5	215	---	4.7	2,738.4	0.00	6.05	yes		
	SYS-MID				0	---							
	SYS-EFF				0	---							
10/23/08	SYS-INF	6,615.7	14	5	205	---	4.5	2,777.8	0.01	6.11	yes		
	SYS-MID				0	---							
	SYS-EFF				0	---							

**Table 3. SVE/AS System Performance Summary - 1721 Webster Street, Oakland, California**

Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Vapor Applied ("H2O)	FID Reading (ppm)	TPHg Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)		
10/29/08	SYS-INF	6,760.3	21	5	160	---	---	6.6	2,817.5	0.01	6.17	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
11/17/08	SYS-INF	7,221.4	20	5	98	---	---	6.3	2,937.6	0.01	6.37	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
11/25/08	SYS-INF	7,413.9	19	5	24	---	---	6.1	2,986.5	0.01	6.45	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
12/05/08	SYS-INF	7,652.3	15	5	74	---	---	4.8	3,034.3	0.01	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
12/16/08	SYS-INF	7,915.0	15	5	21	77	<0.077	0.4	3,038.4	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	<7.0	<0.077						
12/23/08	SYS-INF	8,079.4	20	5	22	---	---	0.5	3,041.7	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
12/31/08	SYS-INF	8,277.1	30	5	24	---	---	0.7	3,047.8	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
01/06/09	SYS-INF	8,416.9	27	5	28	---	---	0.7	3,051.6	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
01/20/09	SYS-INF	8,756.6	27	5	NM	---	---	0.7	3,061.1	0.00	6.53	yes	
	SYS-MID				---	---	---						
	SYS-EFF				---	---	---						
02/06/09	SYS-INF	8,756.6	25	5	50	50	<0.077	0.4	3,061.1	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						

**Table 3. SVE/AS System Performance Summary - 1721 Webster Street, Oakland, California**

Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Vapor Applied Vacuum ("H2O)	FID Reading (ppm)	TPH <sub>g</sub> Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE TPH <sub>g</sub> Removal Rate (lbs/day)	Cumulative SVE TPH <sub>g</sub> Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)		
02/26/09	SYS-INF	9,002.6	22	5	13	---	---	0.3	3,064.6	0.00	6.53	yes	Restart system, off on arrival
	SYS-MID				1	---	---						
	SYS-EFF				0	---	---						
03/06/09	SYS-INF	9,197.4	23	5	5	---	---	0.4	3,067.6	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
03/13/09	SYS-INF	9,360.4	22	5	NM	20	<0.077	0.1	3,068.5	0.00	6.53	yes	
	SYS-MID				NM	<7.0	<0.077						
	SYS-EFF				NM	<7.0	<0.077						
03/18/09	SYS-INF	9,480.4	21	5	5	---	---	0.1	3,069.2	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
03/26/09	SYS-INF	9,675.1	21	5	5	---	---	0.1	3,070.3	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
04/03/09	SYS-INF	9,868.7	21	5	4	---	---	0.1	3,071.4	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
04/10/09	SYS-INF	10,035.7	22	5	1	---	---	0.1	3,072.4	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
04/17/09	SYS-INF	10,203.7	21	5	4	---	---	0.1	3,073.3	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
04/24/09	SYS-INF	10,366.7	19	5	4	---	---	0.1	3,074.2	0.00	6.53	yes	Shut AS/SVE off for upcoming QM
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
05/01/09	SYS-INF	10,366.7	20	5	3	---	---	0.1	3,074.2	0.00	6.53	yes	Restart SVE/AS
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
05/08/09	SYS-INF	10,543.3	21	5	15	---	---	0.1	3,075.1	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						
05/15/09	SYS-INF	10,711.8	20	5	32	---	---	0.1	3,076.0	0.00	6.53	yes	
	SYS-MID				0	---	---						
	SYS-EFF				0	---	---						

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Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments	
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Applied Vacuum ("H2O)	FID Reading (ppm)	TPHg Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE TPHg Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)			
05/22/09	SYS-INF SYS-MID SYS-EFF	10,879.5	0	0	NM NM NM	--- --- ---	---	---	0.0	3,076.0	0.00	6.53	no	AS compressor down; shut SVE off
09/18/09	SYS-INF SYS-MID SYS-EFF	10,879.5	22	5	41 0 0	--- --- ---	---	---	0.1	3,076.0	0.00	6.53	yes	Restart AS and SVE after repairing AS comp
10/30/09	SYS-INF SYS-MID SYS-EFF	11,889.8	20	5	35 0 0	--- --- ---	---	---	0.1	3,081.5	0.00	6.53	no	SVE on, AS comp has blown fuse
11/30/09	SYS-INF SYS-MID SYS-EFF	12,631.8	20	5	31 0 0	--- --- ---	---	---	0.1	3,085.4	0.00	6.53	yes	Replace fuse, restart AS
12/16/09	SYS-INF SYS-MID SYS-EFF	13,017.6	22	5	22 0 0	--- --- ---	---	---	0.1	3,087.7	0.00	6.53	yes	
01/18/10	SYS-INF SYS-MID SYS-EFF	13,808.6	24	5	27 0 0	--- --- ---	---	---	0.2	3,092.8	0.00	6.53	yes	
02/03/10	SYS-INF SYS-MID SYS-EFF	14,193.0	12	4	34 0 0	72 <7.0 <7.0	0.25 <0.077 <0.077	---	0.3	3,097.2	0.00	6.53	yes	Serviced SVE blower, collected lab samples
04/07/10	SYS-INF SYS-MID SYS-EFF	15,701.1	12	5	45 0 0	--- --- ---	---	---	0.3	3,114.6	0.00	6.58	no	AS off, compressor non-op
05/07/10	SYS-INF SYS-MID SYS-EFF	16,425.2	27	0	43 0 0	--- --- ---	---	---	0.6	3,133.4	0.00	6.64	no	AS off, compressor non-op
06/07/10	SYS-INF SYS-MID SYS-EFF	17,168.0	27	0	46 0 0	84 <7.0 <7.0	0.29 <0.077 <0.077	---	0.7	3,155.5	0.00	6.71	no	AS off, compressor non-op
07/15/10	SYS-INF SYS-MID SYS-EFF	18,075.8	23	0	4 2 0	--- --- ---	---	---	0.6	3,179.1	0.00	6.79	no	AS off, compressor non-op
08/18/10	SYS-INF SYS-MID SYS-EFF	18,434.1	30	0	26 2 0	--- --- ---	---	---	0.8	3,191.3	0.00	6.82	no	Restart system, off on arrival



**Table 3. SVE/AS System Performance Summary - 1721 Webster Street, Oakland, California**

Date	Sample ID	FIELD MEASUREMENTS				ANALYTICAL RESULTS		REMOVAL				Air Sparge Unit on? (yes/no)	Comments
		Hour Meter Reading (hours)	System Vapor Flow Rate (cfm)	Applied Vacuum ("H2O)	FID Reading (ppm)	TPHg Lab Data (ppmv)	Benzene Lab Data (ppmv)	SVE TPHg Removal Rate (lbs/day)	Cumulative SVE TPHg Removal (lbs)	SVE Benzene Removal Rate (lbs/day)	Cumulative SVE Benzene Removal (lbs)		
09/22/10	SYS-INF	19,173.6	25	0	17	66	0.21	0.5	3,208.0	0.00	6.87	no	Restart system, off on arrival
	SYS-MID				2	<7.0	<0.077						
	SYS-EFF				0	<7.0	<0.077						
10/22/10	SYS-INF	19,345.1	25	0	14	---	---	0.5	3,211.8	0.00	6.88	no	Restart system, off on arrival
	SYS-MID				1	---	---						
	SYS-EFF				0	---	---						
11/23/10	SYS-INF	19,395.5	0	0	NM	---	---	0.0	3,211.8	0.00	6.88	no	Off on arrival, system shutdown October 26, 2010 for rainy season.
	SYS-MID				NM	---	---						
	SYS-EFF				NM	---	---						

Notes:

NM = not measured

cfm = cubic feet per minute.

ppmv = Parts per million by volume

lbs = Pounds

"H2O = Inches of water

SVE/AS = Soil vapor extraction and air sparge

FID = Flame Ionization Detector.

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.

Rate = vapor analytical concentration (ppmv) x system flowrate (scfm) x (1lb-mole/386 ft<sup>3</sup>) x molecular weight (86 lb/lb-mole for TPH-Gas hexane) x 1440 min/day x 1/1,000,000.

\* = Subtracted carbon tip readings of 28, 17, and 10, respectively, from influent, midpoint and effluent readings without carbon tip to account for methane.

(--) = not sampled

\*Soil vapor flow rates were not measured on 1/15/08 and 1/23/08 due to equipment breakage. For hydrocarbon mass removal calculation purposes, the flow rate recorded during the 1/10/08 visit was used.

\*\*Vapor flow meter being serviced from 7-24-2008 through 8-18-2008. Flow rates assumed from previous data, field observations, and adjustments made to system.

## **APPENDIX A**

### Groundwater Monitoring Program

**Table A - Groundwater Monitoring Program**  
Douglas Parking Company, 1721 Webster Street, Oakland, CA.

Well ID	Well Type	Screened Interval (ft bgs)	Well Location for Monitoring	Casing Diam. (in)	Gauge Frequency	Sample Frequency	TPHg/BTEX/MTBE	TAME/TBA/DIPE/ETBE/MTBE
<b>Onsite Monitoring and Remediation Wells</b>								
MW-1	Mon	17-30	Source Area	2	1st, 3rd	1st	1st	---
MW-2	Mon	19.5-29.5	Downgradient	2	1st, 3rd	1st, 3rd	1st, 3rd	---
MW-3	Mon	20-30	Upgradient	2	1st, 3rd	1st, 3rd	1st, 3rd	---
AS-1	Rem	27-30	Source Area	1	---	---	---	---
AS-2	Rem	27-30	Source Area	2	---	---	---	---
AS-3	Rem	27-30	Source Area	2	---	---	---	---
<b>Offsite Monitoring Wells</b>								
MW-4	Mon	15-30	Mid-Downgradient	2	1st, 3rd	1st, 3rd	1st, 3rd	---
MW-5	Mon	10-25	Downgradient	2	1st, 3rd	1st	1st	---
MW-6	Mon	15-30	Crossgradient	2	1st, 3rd	1st, 3rd	1st, 3rd	---
MW-7	Mon	15-30	Upgradient	2	1st, 3rd	1st	1st	---

Notes and Abbreviations:

1st = Sampled during the 1st quarter, typically January

1st, 3rd = Sampled during the 1st and 3rd quarters, typically January and July

Mon = Groundwater Monitoring Only

Rem= Remediation Well Only

--- = None or not applicable

AS-1 = Air Sparging Well

## **APPENDIX B**

Groundwater Monitoring Field Data Sheets

Well Gauging Data Sheet

Project Task #: <u>1135.001.246</u>			Project Name: <u>Douglas Parking</u>				
Address: <u>1721 Webster St, Oakland</u>						Date: <u>8-3-16</u>	
Name: <u>Erik Lervaag</u>			Signature: <u>[Signature]</u>				
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
<u>mw-1</u>	<u>2</u>	<u>1023</u>	<u>—</u>	<u>—</u>	<u>22.27</u>		<u>NTOC</u>
<u>mw-2</u>	<u>2</u>	<u>1030</u>	<u>—</u>	<u>—</u>	<u>20.03</u> <u>21.51</u>		<u>NTOC</u>
<u>mw-3</u>	<u>2</u>	<u>1028</u>	<u>—</u>	<u>—</u>	<u>21.51</u>		<u>NTOC</u>
<u>mw-5</u>	<u>2</u>	<u>1032</u>	<u>—</u>	<u>—</u>	<u>16.23</u>		<u>NTOC</u>
<u>mw-6</u>	<u>2</u>	<u>1035</u>	<u>—</u>	<u>—</u>	<u>20.02</u>		<u>NTOC</u>

Comments:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## MONITORING FIELD DATA SHEET

Well ID: mw-1

Project Task #: 1135.001.246	Project Name: Douglas Parking
Address: 1721 Webster St, Oakland CA	
Date: <u>8</u> 3.16	Weather: <u>Sunny, Warm</u>
Well Diameter: <u>2"</u>	Volume/ft. $\begin{matrix} 1" = 0.04 & 3" = 0.37 & 6" = 1.47 \\ 2" = 0.16 & 4" = 0.65 & \text{radius}^2 * 0.163 \end{matrix}$
Total Depth (TD): <u>30'</u>	Depth to Product: <u>—</u>
Depth to Water (DTW): <u>22.27</u>	Product Thickness: <u>—</u>
Water Column Height: <u>7.7</u>	1 Casing Volume: <u>1.25</u> gallons
Reference Point: NTOC	<u>3</u> Casing Volumes: <u>3.7</u> gallons

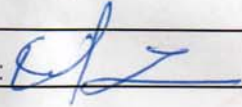
Purging Device: Bailer

Sampling Device: Same

TDS

Time	Temp (°C)	pH	Cond (µs)	NTU	DO (mg/L)	ORP (mV)	Vol (gal)	DTW
<u>1125</u>	<u>Initial</u>	<u>DO</u>			<u>1.59 @ 25' bgs</u>			
<u>1131</u>	<u>20.1</u>	<u>7.36</u>	<u>586.7</u>	<u>409</u>		<u>159</u>	<u>168</u>	
<u>1135</u>	<u>19.2</u>	<u>6.92</u>	<u>540.6</u>	<u>315.5</u>			<u>161</u>	
<u>1140</u>	<u>19.4</u>	<u>6.65</u>	<u>548.3</u>	<u>378.8</u>			<u>142</u>	
<u>1144</u>	<u>19.1</u>	<u>6.61</u>	<u>542.8</u>	<u>377.1</u>			<u>189</u>	
<u>1145</u>	<u>Sample Collected</u>							

Comments:

Sample ID: <u>mw-1</u>	Sample Time: <u>1145</u>
Laboratory: MCCampbell	Sample Date: <u>8-3-16</u>
Containers/Preservative: 3 VOAs w/HCl	
Analyzed for: TPHg/BTEX/MTBE by 8015	
Sampler Name: E. Lervaag	Signature: 



## MONITORING FIELD DATA SHEET

Well ID: MW-2

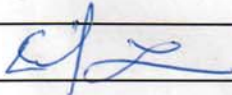
Project.Task #: 1135.001.246		Project Name: Douglas Parking	
Address: 1721 Webster St, Oakland CA			
Date: <sup>08</sup> 07.3.16		Weather:	
Well Diameter: <u>2</u>	Volume/ft.	1" = 0.04 2" = 0.16	3" = 0.37 4" = 0.65 6" = 1.47 radius <sup>2</sup> * 0.163
Total Depth (TD): <u>29.5</u>	Depth to Product: <u>-</u>		
Depth to Water (DTW): <u>20.03</u>	Product Thickness: <u>-</u>		
Water Column Height: <u>9.47</u>	1 Casing Volume: <u>1.5</u>		gallons
Reference Point: NTOC	3 Casing Volumes: <u>4.5</u>		gallons

Purging Device: Bailer

Sampling Device: Same

Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1205		Initial DO			0.85	@ 25'	bgs	
1209	20.5	6.84	640.4	445.0		112	Ø	
1213	20.6	6.68	687.0	479.4		-41	1.5	
1219	20.6	6.72	697.5	486.1		-59	3.0	
1230	Sample Collected							

Comments:

Sample ID: <u>MW-2</u>	Sample Time: <u>1230</u>
Laboratory: MCCampbell	Sample Date: <u>8.3.16</u>
Containers/Preservative: 3 VOAs w/HCl	
Analyzed for: TPHg/BTEX/MTBE by 8015	
Sampler Name: E. Lervaag	Signature: 

m



## MONITORING FIELD DATA SHEET

Well ID: MW-3

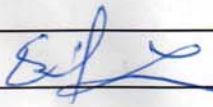
Project.Task #: 1135.001.246		Project Name: Douglas Parking	
Address: 1721 Webster St, Oakland CA			
Date: <sup>08</sup> 07.3.16		Weather:	
Well Diameter: <u>2</u>	Volume/ft.	1" = 0.04 2" = 0.16	3" = 0.37 4" = 0.65 6" = 1.47 radius <sup>2</sup> * 0.163
Total Depth (TD): <u>30</u>	Depth to Product: <u>—</u>		
Depth to Water (DTW): <u>21.5'</u>	Product Thickness: <u>—</u>		
Water Column Height:	1 Casing Volume: <u>1.4</u>	gallons	
Reference Point: NTOC	3 Casing Volumes: <u>4.0</u>	gallons	

Purging Device: Bailer

Sampling Device: Same

Time	Temp (°C)	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1243		Initial	DO		0.76	@ 25' bgs		
1248	21.1	6.81	422.9	2781		-76	1.0	
1252	20.9	6.67	411.2	2802		-75	1.5	
1257	20.8	6.64	411.2	280.1		-60	3.0	
1301	20.9	6.65	421.0	287.7		-53	4.0	
1310	Sample Collected							

Comments:

Sample ID: <u>MW-3</u>	Sample Time: <u>1310</u>
Laboratory: MCCampbell	Sample Date: <u>8.3.16</u>
Containers/Preservative: 3 VOAs w/HCl	
Analyzed for: TPHg/BTEX/MTBE by 8015	
Sampler Name: E. Lervaag	Signature: 

**MONITORING FIELD DATA SHEET**

Well ID: mw-5

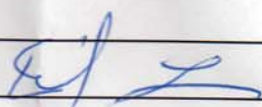
Project Task #: 1135.001.246		Project Name: Douglas Parking	
Address: 1721 Webster St, Oakland CA			
Date: <sup>08</sup> 8.3.16		Weather:	
Well Diameter: <u>2</u>		Volume/ft. 1" = 0.04   3" = 0.37   6" = 1.47 2" = 0.16   4" = 0.65   radius <sup>2</sup> * 0.163	
Total Depth (TD): <u>25</u>		Depth to Product: <u>—</u>	
Depth to Water (DTW): <u>16.23</u>		Product Thickness: <u>—</u>	
Water Column Height: <u>8.77</u>		1 Casing Volume: <u>1.4</u> gallons	
Reference Point: NTOC		3 Casing Volumes: <u>4.2</u> gallons	

Purging Device: Bailer

Sampling Device: Same

Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1316		Initial DO			0.80	23	logs	
1321	21.0	7.02	598.5	415.5		37	φ	
1326	20.7	6.82	596.9	413.7		50	1.5	
1329	20.6	6.78	595.4	414.2		61	3.0	
1333	20.6	6.76	596.2	414.3		70	4.5	
<del>1340</del>								
1335	Sample Collected							

Comments:

Sample ID: <u>mw-5</u>	Sample Time: <u>1335</u>
Laboratory: MCCampbell	Sample Date: <u>8.3.16</u>
Containers/Preservative: 3 VOAs w/HCl	
Analyzed for: TPHg/BTEX/MTBE by 8015	
Sampler Name: E. Lervaag	Signature: 



## MONITORING FIELD DATA SHEET

Well ID: mw-6


Project Task #: 1135.001.246		Project Name: Douglas Parking	
Address: 1721 Webster St, Oakland CA			
Date: <u>8.3.16</u>		Weather:	
Well Diameter: <u>2"</u>		Volume/ft. $1" = 0.04$ $3" = 0.37$ $6" = 1.47$ $2" = 0.16$ $4" = 0.65$ radius <sup>2</sup> * 0.163	
Total Depth (TD): <u>30</u>		Depth to Product: <u>—</u>	
Depth to Water (DTW): <u>20.02</u>		Product Thickness: <u>—</u>	
Water Column Height: <u>109.98</u>		1 Casing Volume: <u>1.6</u> gallons	
Reference Point: NTOC		<u>3</u> Casing Volumes: <u>4.8</u> gallons	

Purging Device: Bailer

Sampling Device: Same

Time	Temp ©	pH	Cond (µs)	TDS NTU	DO(mg/L)	ORP (mV)	Vol(gal)	DTW
1350		Initial	DO		0.62	@ 25' bgs		
1356	20.9	6.66	662.7	462.5		-95	Φ	
1401	20.7	6.64	694.4	484.1		-89	1.5	
1404	20.6	6.65	699.2	489.7		-87	3.0	
1412	20.6	6.69	705.1	492.0		-69	5.0	
1415	Sample collected							

Comments:

Sample ID: <u>mw-6</u>	Sample Time: <u>1415</u>
Laboratory: MCCampbell	Sample Date: <u>8.3.16</u>
Containers/Preservative: 3 VOAs w/HCl	
Analyzed for: TPHg/BTEX/MTBE by 8015	
Sampler Name: E. Lervaag	Signature: 

## **APPENDIX C**

Laboratory Analytical Reports



# McC Campbell Analytical, Inc.

"When Quality Counts"

## Analytical Report

**WorkOrder:** 1608144

**Report Created for:** Pangea Environmental Svcs., Inc.

1710 Franklin Street, Ste. 200  
Oakland, CA 94612

**Project Contact:** Elizabeth Avery

**Project P.O.:**

**Project Name:** Douglas Parking

**Project Received:** 08/03/2016

Analytical Report reviewed & approved for release on 08/09/2016 by:

Angela Rydelius,  
Laboratory Manager

*The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.*





## Glossary of Terms & Qualifier Definitions

**Client:** Pangea Environmental Svcs., Inc.  
**Project:** Douglas Parking  
**WorkOrder:** 1608144

### Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)



## Glossary of Terms & Qualifier Definitions

**Client:** Pangea Environmental Svcs., Inc.  
**Project:** Douglas Parking  
**WorkOrder:** 1608144

### Analytical Qualifiers

S Surrogate spike recovery outside accepted recovery limits  
c4 surrogate recovery outside of the control limits due to coelution with another peak(s) / cluttered chromatogram.  
d1 weakly modified or unmodified gasoline is significant  
d17 Reporting limit for MTBE raised due to co-elution with non-target peaks.





## Analytical Report

**Client:** Pangea Environmental Svcs., Inc.  
**Date Received:** 8/3/16 19:00  
**Date Prepared:** 8/4/16-8/6/16  
**Project:** Douglas Parking

**WorkOrder:** 1608144  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** µg/L

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

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-1	1608144-001A	Water	08/03/2016 11:55	GC3	124722

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	50	1	08/04/2016 05:34
MTBE	ND	5.0	1	08/04/2016 05:34
Benzene	ND	0.50	1	08/04/2016 05:34
Toluene	ND	0.50	1	08/04/2016 05:34
Ethylbenzene	ND	0.50	1	08/04/2016 05:34
Xylenes	ND	1.5	1	08/04/2016 05:34

Surrogates	REC (%)	Limits	Date Analyzed
aaa-TFT	104	70-130	08/04/2016 05:34

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2	1608144-002A	Water	08/03/2016 12:30	GC3	124722

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	980	50	1	08/04/2016 06:04
MTBE	ND	5.0	1	08/04/2016 06:04
Benzene	0.90	0.50	1	08/04/2016 06:04
Toluene	1.9	0.50	1	08/04/2016 06:04
Ethylbenzene	9.4	0.50	1	08/04/2016 06:04
Xylenes	9.9	1.5	1	08/04/2016 06:04

Surrogates	REC (%)	Qualifiers	Limits	Date Analyzed
aaa-TFT	183	S	70-130	08/04/2016 06:04

Analyst(s): IA

Analytical Comments: d1,c4



## Analytical Report

**Client:** Pangea Environmental Svcs., Inc.  
**Date Received:** 8/3/16 19:00  
**Date Prepared:** 8/4/16-8/6/16  
**Project:** Douglas Parking

**WorkOrder:** 1608144  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** µg/L

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

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-3	1608144-003A	Water	08/03/2016 13:10	GC3	124722

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	7400	250	5	08/04/2016 06:34
MTBE	27	25	5	08/04/2016 06:34
Benzene	3.0	2.5	5	08/04/2016 06:34
Toluene	3.5	2.5	5	08/04/2016 06:34
Ethylbenzene	ND	2.5	5	08/04/2016 06:34
Xylenes	ND	7.5	5	08/04/2016 06:34

Surrogates	REC (%)	Qualifiers	Limits	Date Analyzed
aaa-TFT	211	S	70-130	08/04/2016 06:34

Analyst(s): IA

Analytical Comments: d1,d17,c4

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-5	1608144-004A	Water	08/03/2016 13:35	GC3	124822

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	ND	50	1	08/04/2016 12:58
MTBE	ND	5.0	1	08/04/2016 12:58
Benzene	ND	0.50	1	08/04/2016 12:58
Toluene	ND	0.50	1	08/04/2016 12:58
Ethylbenzene	ND	0.50	1	08/04/2016 12:58
Xylenes	ND	1.5	1	08/04/2016 12:58

Surrogates	REC (%)	Limits	Date Analyzed
aaa-TFT	102	70-130	08/04/2016 12:58

Analyst(s): TD



## Analytical Report

**Client:** Pangea Environmental Svcs., Inc.  
**Date Received:** 8/3/16 19:00  
**Date Prepared:** 8/4/16-8/6/16  
**Project:** Douglas Parking

**WorkOrder:** 1608144  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** µg/L

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

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-6	1608144-005A	Water	08/03/2016 14:00	GC3	124822

Analytes	Result	RL	DF	Date Analyzed
TPH(g)	12,000	1000	20	08/06/2016 04:48
MTBE	450	100	20	08/06/2016 04:48
Benzene	710	10	20	08/06/2016 04:48
Toluene	67	10	20	08/06/2016 04:48
Ethylbenzene	3800	10	20	08/06/2016 04:48
Xylenes	3100	30	20	08/06/2016 04:48

Surrogates	REC (%)	Qualifiers	Limits	Date Analyzed
aaa-TFT	516	S	70-130	08/06/2016 04:48

**Analyst(s):** LT

**Analytical Comments:** d1,c4



## Quality Control Report

**Client:** Pangea Environmental Svcs., Inc.  
**Date Prepared:** 8/3/16  
**Date Analyzed:** 8/3/16  
**Instrument:** GC3  
**Matrix:** Water  
**Project:** Douglas Parking

**WorkOrder:** 1608144  
**BatchID:** 124722  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** µg/L  
**Sample ID:** MB/LCS-124722  
 1608097-002AMS/MSD

### QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	59.7	40	60	-	99	70-130
MTBE	ND	10.4	5.0	10	-	104	70-130
Benzene	ND	9.80	0.50	10	-	98	70-130
Toluene	ND	9.91	0.50	10	-	99	70-130
Ethylbenzene	ND	9.95	0.50	10	-	99	70-130
Xylenes	ND	29.4	1.5	30	-	98	70-130
<b>Surrogate Recovery</b>							
aaa-TFT	9.41	9.24		10	94	92	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	58.6	60.1	60	ND	98	100	70-130	2.59	20
MTBE	10.2	9.69	10	ND	102	97	70-130	4.73	20
Benzene	9.66	9.97	10	ND	97	100	70-130	3.15	20
Toluene	9.75	10.1	10	ND	98	101	70-130	3.41	20
Ethylbenzene	10.0	10.2	10	ND	100	102	70-130	2.35	20
Xylenes	30.0	30.5	30	ND	100	102	70-130	1.72	20
<b>Surrogate Recovery</b>									
aaa-TFT	9.28	9.70	10		93	97	70-130	4.52	20



## Quality Control Report

**Client:** Pangea Environmental Svcs., Inc.  
**Date Prepared:** 8/5/16  
**Date Analyzed:** 8/5/16  
**Instrument:** GC7  
**Matrix:** Water  
**Project:** Douglas Parking

**WorkOrder:** 1608144  
**BatchID:** 124822  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** µg/L  
**Sample ID:** MB/LCS-124822  
 1608144-005AMS/MSD

### QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH(btex)	ND	57.8	40	60	-	96	70-130
MTBE	ND	9.63	5.0	10	-	96	70-130
Benzene	ND	9.67	0.50	10	-	97	70-130
Toluene	ND	9.42	0.50	10	-	94	70-130
Ethylbenzene	ND	9.35	0.50	10	-	94	70-130
Xylenes	ND	28.0	1.5	30	-	93	70-130
<b>Surrogate Recovery</b>							
aaa-TFT	10.6	10.3		10	106	103	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	NR	NR		2600	NR	NR	-	NR	
MTBE	NR	NR		450	NR	NR	-	NR	
Benzene	NR	NR		710	NR	NR	-	NR	
Toluene	NR	NR		67	NR	NR	-	NR	
Ethylbenzene	NR	NR		3800	NR	NR	-	NR	
Xylenes	NR	NR		3100	NR	NR	-	NR	
<b>Surrogate Recovery</b>									
aaa-TFT	NR	NR			NR	NR	-	NR	



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

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 1608144

ClientCode: PEO

WaterTrax   
  WriteOn   
  EDF   
  Excel   
  EQUIS   
  Email   
  HardCopy   
  ThirdParty   
  J-flag

**Report to:**

Elizabeth Avery  
 Pangea Environmental Svcs., Inc.  
 1710 Franklin Street, Ste. 200  
 Oakland, CA 94612  
 (510) 836-3700    FAX: (510) 836-3709

Email: eavery@pangeaenv.com  
 cc/3rd Party:  
 PO:  
 ProjectNo: Douglas Parking

**Bill to:**

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

**Requested TAT: 5 days;**

**Date Received: 08/03/2016**

**Date Logged: 08/03/2016**

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	
1608144-001	MW-1	Water	8/3/2016 11:55	<input type="checkbox"/>	A	A											
1608144-002	MW-2	Water	8/3/2016 12:30	<input type="checkbox"/>	A												
1608144-003	MW-3	Water	8/3/2016 13:10	<input type="checkbox"/>	A												
1608144-004	MW-5	Water	8/3/2016 13:35	<input type="checkbox"/>	A												
1608144-005	MW-6	Water	8/3/2016 14:00	<input type="checkbox"/>	A												

**Test Legend:**

1	G-MBTX_W	2	PREFD REPORT	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Alexandra Iniguez

**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.



## WORK ORDER SUMMARY

**Client Name:** PANGEA ENVIRONMENTAL SVCS., INC.

**QC Level:** LEVEL 2

**Work Order:** 1608144

**Project:** Douglas Parking

**Client Contact:** Elizabeth Avery

**Date Logged:** 8/3/2016

**Comments:**

**Contact's Email:** eavery@pangeaenv.com

WaterTrax     WriteOn     EDF     Excel     Fax     Email     HardCopy     ThirdParty     J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1608144-001A	MW-1	Water	SW8021B/8015Bm (G/MBTEX)	3	VOA w/ HCl	<input type="checkbox"/>	8/3/2016 11:55	5 days	Present	<input type="checkbox"/>	
1608144-002A	MW-2	Water	SW8021B/8015Bm (G/MBTEX)	3	VOA w/ HCl	<input type="checkbox"/>	8/3/2016 12:30	5 days	Present	<input type="checkbox"/>	
1608144-003A	MW-3	Water	SW8021B/8015Bm (G/MBTEX)	3	VOA w/ HCl	<input type="checkbox"/>	8/3/2016 13:10	5 days	Present	<input type="checkbox"/>	
1608144-004A	MW-5	Water	SW8021B/8015Bm (G/MBTEX)	3	VOA w/ HCl	<input type="checkbox"/>	8/3/2016 13:35	5 days	Present	<input type="checkbox"/>	
1608144-005A	MW-6	Water	SW8021B/8015Bm (G/MBTEX)	3	VOA w/ HCl	<input type="checkbox"/>	8/3/2016 14:00	5 days	Present	<input type="checkbox"/>	

**NOTES:** - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).  
 - MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.









### Sample Receipt Checklist

Client Name: **Pangea Environmental Svcs., Inc.**  
 Project Name: **Douglas Parking**  
 WorkOrder No: **1608144** Matrix: Water  
 Carrier: Client Drop-In

Date and Time Received: **8/3/2016 19:00**  
 Date Logged: **8/3/2016**  
 Received by: **Alexandra Iniguez**  
 Logged by: **Alexandra Iniguez**

#### 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   
 Sample/Temp Blank temperature Temp: 5.6°C NA   
 Water - VOA vials have zero headspace / no bubbles? Yes  No  NA   
 Sample labels checked for correct preservation? Yes  No   
 pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)? Yes  No  NA   
 Samples Received on Ice? Yes  No

(Ice Type: WET ICE )

#### UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522? Yes  No  NA   
 Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539? Yes  No  NA

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 Comments: