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April 23, 2013

Ms. Keith Nowell
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: **Remedial Action Plan**

Site: **76 Station No. 5191/5043**
449 Hegenberger Road
Oakland, California
Fuel Leak Case No. RO0000219

Dear Mr. Nowell;

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

If you have any questions or need additional information, please call:

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Sincerely,

PACIFIC CONVENIENCE & FUEL

WALTER SPRAGUE
Director of Retail Services

Attachment

Remedial Action Plan

76 Service Station No. 5191/5043
449 Hegenberger Road
Oakland, California

Alameda County Health Care Services Agency Fuel Leak Case No. RO0000219

San Francisco Bay, Regional Water Quality Control Board Case No. 01-1601

GeoTracker Global ID No.T0600101476

Antea Group Project No. I42705191

Prepared for:
Mr. Keith Nowell
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Remedial Action Plan

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Remedial Action Plan

1.0 INTRODUCTION

Antea™Group is pleased to submit this *Remedial Action Plan* (RAP) to the Alameda County Health Care Services Agency (ACHCSA) for the referenced site in Oakland, California (**Figure 1**).

This RAP details Antea Group's proposed shallow soil excavation in the southwest and eastern portions of the site. The goal of this proposed remedial action is to excavate the majority of the residual petroleum hydrocarbons in soil contributing to dissolved groundwater concentrations of total petroleum hydrocarbons - gasoline range organics (GRO), benzene, ethylbenzene, naphthalene, and methyl tertiary-butyl ether (MTBE).

2.0 SITE DESCRIPTION

The subject site is an operating 76 station located on the southwestern corner of Hegenberger Road and Edgewater Drive in Oakland, California **(Figure 1).** . This site contains six fuel dispensers on two islands under a single canopy, three fuel underground storage tanks (USTs) on the north side of the site, a carwash facility on the west side of the site, and a station building in the central portion of the site. The current site features are shown on **Figure 2**. A summary of previous site assessment, environmental investigations, remedial activities, and sensitive receptors are presented in **Appendix A.**

3.0 GEOLOGY AND HYDROGEOLOGY

The following sections provide a summary of the regional and site-specific geologic and hydrogeologic setting.

3.1 Regional Geologic Setting

The site is located on the western portion of the East Bay Plain Subbasin near the Oakland Airport. This area is primarily underlain by bay mud and artificial fill.

3.2 Regional Hydrogeologic Setting

According to the California Department of Water Resources' (DWR) *California's Groundwater, Bulletin 118 – Update 2004,* the site is located in the Santa Clara Valley Groundwater Basin – East Bay Plain Subbasin. Groundwater bearing formations in the subbasin include the Early Pleistocene Santa Clara Formation, Late Pleistocene Alameda Formation, Early Holocene Temescal Formation, and artificial fill. East Bay Plain Subbasin has existing beneficial uses as irrigation, municipal, and domestic water supplies (DWR, 2004).

3.3 Site Geologic and Hydrogeologic Conditions

The site is underlain by Holocene-age bay mud. The bay mud typically consists of unconsolidated, saturated clay and sandy clay that is rich in organic material. The bay mud locally contains lenses and stringers of silt, well-sorted sand and gravel, and beds of peat. The most recent monitoring and sampling event was conducted at the site on December 13, 2012. The measured depth to groundwater ranged from 1.56 feet to 4.20 feet below top of casing (TOC). The groundwater flow direction was southeast with a hydraulic gradient of 0.02 foot per foot. **Figure 3** depicts the groundwater elevation contours on December 13, 2013.

3.4 Sensitive Receptors

On April 24, 2006 TRC completed a sensitive receptor survey for the site. According to the Department of Water Resources (DWR) records, there are two irrigation wells and one industrial well located within one-half mile of the site. The nearest well, is an irrigation well located approximately 1,080 feet southeast of the site. The other irrigation well is located approximately 2,623 feet southeast of the site and the industrial well is located approximately 2,570 feet northeast of the site.

In addition, two surface water bodies were observed within a one-half mile radius of the site. San Leandro Creek is located approximately 1,400 feet southwest of the site and flows into the San Leandro Bay. Elmhurst Creek is located approximately 2,220 feet north of the site and also flows into the San Leandro Bay.

4.0 EXTENT OF CONTAMINANTS OF CONCERN (COCS)

The following sections provide a summary of the extent of the site's primary COCs (benzene, ethylbenzene, and methyl tertiary-butyl ether (MTBE)) in soil and groundwater. Refer to Delta and Antea Group's site assessment reports dated February 15, 2010, July 26, 2010, and August 26, 2011 for more details regarding recent soil data. Refer to Antea Group's *Quarterly Monitoring Report – Fourth Quarter 2012* for additional details regarding current groundwater conditions.

4.1 Former USTs

In October 1991, the product lines were excavated during dispenser island modifications. During the excavation four (4) soil samples were collected at 3 feet below ground surface (bgs). Maximum concentrations of petroleum hydrocarbons reported in the soil samples were 9,000 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPHg), 8,400 mg/kg TPH as diesel (TPHd), 48 mg/kg benzene, and 330 mg/kg ethylbenzene. The excavation was completed to 4.5 feet bgs.

In September 1994, a 280-gallon waste oil tank was removed from the site. The tank was reported to be in good condition upon removal with no visible holes or cracks. Soil around the tank was excavated to a depth of nine (9) feet bgs. A confirmation soil sample was collected from beneath the tank at nine (9) feet bgs. Concentrations of

TPHg, TPHd, benzene, and ethylbenzene were reported below the laboratory's indicated reporting limits for each constituent.

In September 1994, one (1) oil-water separator and three (3) hydraulic hoists were removed from the site. Maximum concentrations of petroleum hydrocarbons reported in the soil samples were 1.6 mg/kg TPHg, <1.0 mg/kg TPHd, 0.014 mg/kg benzene, and 0.15 mg/kg ethylbenzene.

In March and April 1995, two 10,000-gallon gasoline USTs and one 10,000-gallon diesel UST were removed during a site rebuild. The product lines, dispenser islands, and the station building were also removed and excavation in those areas took place. Approximately 2,729 cubic yards of soil were removed from the site during the excavations. Maximum concentrations of petroleum hydrocarbons reported in the soil samples were 3,300 mg/kg TPHg, 330 mg/kg TPHd, 18 mg/kg benzene, and 110 mg/kg ethylbenzene.

4.2 Distribution of Contaminants in Groundwater

The most recent grab groundwater samples were collected at the site during a 2009 investigation. The highest concentrations of petroleum hydrocarbons in groundwater during the 2009 investigation were reported in grab groundwater samples collected from boring B-5 at a depth of 20 feet bgs, located east of the dispenser islands. TPHg was reported in the at a concentration of 23,500,000 micrograms per liter (µg/L), TPHd was reported at a concentrations of 20,400,000 µg/L, benzene was reported at a concentration of 324,000 µg/L, and MTBE was reported at <50 µg/L. MTBE was reported at a maximum concentration of 632 µg/L in a grab groundwater sample collected from boring B-5, at a depth of 32 feet bgs.

Based on the recent fourth quarter 2012 groundwater sampling data, the dissolved-phase plume extends off-site in the east direction from MW-17 and to the west from MW-14. The greatest concentrations of COCs are reported in the vicinity of the southeast dispenser island and planter and just southwest of the station building. **Figures 4 through 7** depict iso-concentration maps for TPHg, TPHd, benzene, and MTBE as reported in groundwater samples collected during the fourth quarter 2012. **Table 1** summaries well construction details. **Table 2 and 2A** summarize current and historical groundwater monitoring well analytical data.

4.3 Distribution of Contaminants in Soil

Lateral and vertical extents of the COCs in soil are depicted in **Figure 8** which includes historical concentrations measured in soil samples collected at the site and in the site vicinity. The following table contains maximum concentrations of COCs in soil before the excavations that took place in 1995.

Constituent	Maximum Concentration (mg/kg)	Sample Location
Benzene	160	MW-1 at 2.5 feet bgs
Ethylbenzene	470	MW-1 at 2.5 feet bgs

In 1995, the area around monitoring well MW-1 was over excavated to a depth of 16 feet bgs and the area around soil sample location P2 was over excavated to a depth of 6 feet bgs, effectively removing the contamination associated with the above samples. Maximum concentrations of COCs in soil since the 1995 excavation are detailed in the table below.

Constituent	Maximum Concentration (mg/kg)	Sample Location	Maximum Concentration in Shallow Soil (<10 ft bgs) (mg/kg)	Sample Location
Benzene	80.9	MW-12A at 26 ft bgs	26.4	B-6 at 9 ft bgs
Ethylbenzene	178	MW-12A at 26 ft bgs	58.1	B-6 at 9 ft bgs

4.4 Total Oxygen Demand (TOD) Bench Scale Test

Antea Group and PTS performed a TOD bench scale test on soil samples from hand auger boring HA 1 and a groundwater sample collected from monitoring well MW-14. The test evaluated TOD and the oxidant persistence during chemical oxidation treatment using stabilized hydrogen peroxide activated sodium persulfate. A copy of PTS's lab report is included as **Appendix B**.

The TOD bench scale test applied Oxygen BioChem (OBC) to soil and groundwater samples collected from the site. OBC was applied in two concentrations to the same soil and ground water sample volume in a reactor vessel for a period of twenty eight (28) days, a low concentration dose (8 [grams per liter] g/L) and a high concentration dose (15 g/L). Aliquots of the sample were removed from the vessel and analyzed for pH each day during the test. At the culmination of the 28 day test each sample TOD analysis was completed on both the high and low concentration dose vessels.

The initial pH readings were 9.04 and 9.98 for the low and high concentration doses, respectively. After four (4) hours the pH levels rose to 9.60 and 10.03, but dropped done to 8.34 and 8.46 after 24 hours. After the initial decrease, pH levels stayed relatively stable over the course of the test, staying slightly basic at the end of the 28 days. The final TOD analysis results for the low and high concentration dose vessels were12.1 g/Kg and 18.3 g/kg, respectively.

The typical TOD range for cost effective use of persulfate is 5-10 g/kg (grams persulfate to kilograms soil mass). In addition, the stabilized pH range of the sample vessels was lower than typically required (pH 10-10.5 SU) for effective use of persulfate. Based on results of the test, Antea Group does not recommend the use of stabilized hydrogen peroxide activated sodium persulfate for site remediation.

5.0 REGULATORY CLEANUP GOALS

The tables below compare maximum historical soil concentration and current groundwater concentrations for the primary COCs (Naphthalene, Benzene, Ethylbenzene and MTBE) at this site with general soil and groundwater cleanup objectives from the respective oversight agencies. Attached **Tables 2 and 2A** summarizes current and historical groundwater analytical data and **Table 3** summaries historical soil analytical data. The proposed excavation will consist of two areas on the site designated as A1 and A2.

5.1 Cleanup Goals for Groundwater (SWRCB Low –Threat Closure Goals)

The ACHCSA is the oversight agency for groundwater cleanup at this site under the direction of the Regional Water Quality Control Board, San Francisco Bay Region. Below are the State Water Resources Control Board (SWRCB) Low-Threat Closure cleanup goals for the primary COCs compared with the current maximum dissolved groundwater concentrations:

	Benzene (µg/L)	MTBE (µg/L)
MW-6 (A2)	**2,130 (6/30/2010)** **2,300 (9/20/2010)** **1,300 (12/8/2010)** **1,020 (3/6/2012)**	**19 (9/20/2010)** **16 (3/14/2011)** **15 (12/5/2011)** **11 (6/12/2012)**
MW-12 (A1)	**1,030 (7/6/2010)** **6,020 (9/20/2010)**	**1650 (7/6/2010)** **1470 (12/8/2010)**

	Benzene (µg/L)	MTBE (µg/L)
	688 (6/02/2011) **920 (9/7/2011)**	**1020 (3/14/2011)** **1040 (12/5/2011)**
SWRCB Low- Threat 100' plume	'No Free Product Present'	
SWRCB Low- Threat 250' plume	3000	1000

5.2 Cleanup Goals for Soil (SWRCB Low –Threat Closure Goals)

The following table compares the greatest soil concentration of each of the primary COCs reported at the site to date with the general Low-Threat Closure Goals established by the SWRCB for soil:

	Naphthalene (mg/kg)	Benzene (mg/kg)	Ethylbenzene (mg/kg)
Maximum Concentration Reported in Soil Samples (A1)	**Note 1**	**26.4** **(B-6 @ 9' 5/18/11)**	**58.1** **(B-6 @ 9' 5/18/11)**
Maximum Concentration Reported in Soil Samples (A2)	**Note 1**	**0.9** **(MW-6 @ 5' 8/21/1992)**	**1.0** **(MW-6 @ 5' 8/21/1992)**
SWRCB Low- Threat No Significant Threat Soil Concentrations (0-5 bgs)	45	8.2	89
SWRCB Low- Threat No Significant Threat Soil Concentrations (0-10 bgs)	219	14	314

Note 1: No historical data.

The area and depth of the proposed excavation are discussed in the following section. Impacts in soil above the Low Threat Closure goal levels may remain outside the proposed excavation areas (A1 and A2). However, it is anticipated the excavation will remove the majority of the secondary source material. Groundwater concentrations are expected to decrease following the excavation due to the removal of the residual soil impacts.

6.0 PROPOSED ACTIVITIES

6.1 Permitting, Utility Notification, and Borehole Clearance

Before commencing field activities Antea Group will prepare a Health and Safety Plan in accordance with state and federal requirements for use during investigation activities. Drilling permits will be obtained for the three (3) monitoring well destructions and the seven (7) soil borings from the Alameda County Public Works Agency. Prior to drilling, Underground Service Alert (USA) will be notified as required by law and a private utility locator will be employed to clear each boring location for underground utilities. In addition, an air- knife will be used to clear each boring location to a depth of 5 feet bgs prior borehole advancement.

6.2 Monitoring Well Destruction

Antea Group will supervise the destruction of three (3) monitoring wells (MW-6, MW-12, and MW-12a) in preparation for the excavation. A licensed drilling company under the supervision of an Antea Group geologist will pressure grout the wells by pumping neat cement into the monitoring well casing at a pressure of approximately 25 pounds per square inch. The well boxes will be removed during the excavation. Boring logs are presented in **Appendix C**.

6.3 Soil Boring

Antea Group will supervise the advancement of seven (7) soil borings in the vicinity of monitoring well MW-6 to refine the boundaries of the proposed excavation (**Figure 9**). A licensed driller, under the supervision of an Antea Group geologist, will advance the borings using a limited access drill rig with direct push technology. The total depth of the borings will be determined in the field but is anticipated to be approximately 11 feet bgs. Soil samples will be collected continuously beginning at a depth of approximately 5 feet bgs and logged using the USCS for lithologic interpretation and field screened for the presence of volatile organic compounds by headspace analysis using a pre-calibrated PID. Soil samples from the boring will be retained for laboratory analysis. The samples will be chosen based on PID readings, changes in lithology, groundwater elevation, and the total depth of the boring.

6.4 Soil Sampling

Soil samples retained for analysis will be analyzed for TPHg, benzene, toluene, ethylbenzene, and total xylenes (BTEX), and MTBE, and naphthalene by Environmental Protection Agency (EPA) Method 8260B and TPHd with silica gel treatment by EPA Method 8015M. The samples will be submitted with chain-of-custody documentation to Kiff Analytical LLC (Kiff), a state of California Environmental Laboratory Accreditation Program (ELAP) certified laboratory (Certification No. 08263CA).

6.5 Reporting

A summary of the well destruction and soil boring advancement activities will be submitted in a RAP addendum report. The addendum report will include a discussion of the extent of the proposed excavation. Required electronic submittals will be uploaded to the State Geotracker database.

7.0 PROPOSED SOIL REMEDIATION ACTION

Based on a review of the results of the hydraulic profile tool, TOD Bench Scale Test discussed above, current site conditions, and the distribution of petroleum impacts in soil and groundwater, Antea Group proposes the following shallow excavation to remove remaining secondary soil impacts at the site. **Figure 9** depicts the proposed extent of excavation.

7.1 Permitting, Notifications, and Utility Clearance

7.1.1 City and County Notifications

The following agencies will be notified at least 10 days prior to the start of excavation activities: Alameda County Public Works Agency, City of Oakland Building and Planning Department, City of Oakland Fire Department, and the ACHCSA. Local utility companies will, also, be contacted to mark, physically expose, and provide clearance of underground utilities within 10 feet of the proposed excavation area.

7.1.2 Excavation and Grading Permits

A soil excavation permit will be obtained through the appropriate city and county public agencies. No soil excavation permits are required by the ACHCSA.

Post-excavation backfill, compaction and restoration activities within the service station property boundaries will be completed to existing grade.

7.1.3 Well Destruction Permits

A well abandonment permit application will be submitted to the Alameda County Public Works Agency for the destruction of monitoring wells MW-6, MW-12, and MW-12A, which are located within the excavation limits.

7.1.4 Water Discharge Permit

Antea Group is considering three options for disposal of water generated during dewatering of the excavation areas. These options include pumping the water into a holding tank and disposing of it off-site, discharging the water to the sewer system under permit with East Bay Municipal Utilities District, or discharging the waters to the storm drain under permit with Alameda County Flood Control and Water Conservation District. Water quality requirements, permit requirements, and the anticipated amount of generated water will be used as factors in determining which option works best for the site.

7.2 Site Preparation

As indicated above, prior to initiation of field activities, Antea Group will produce a Health and Safety Plan (HASP) in accordance with Title 8, Section 5192 of the California Code of Regulations. Field personnel will perform a daily review of the HASP containing a list of emergency contacts as well as a hospital route map to the nearest emergency facility.

Pacific Convenience & Fuels (PC&F) plans to raze and rebuild the site during the second quarter of 2013. As of March 2013 these plans have not been finalized, including the final foot print of the site. Antea Group will coordinate excavation activities included in this RAP in conjunction with PC&F's proposed raze and rebuild. The excavation is contingent upon PC&F moving forward with the planned raze and rebuild. In the event, PC&F does not proceed, as planned; feasibility of implementing the excavation described herein will be re-evaluated.

7.2.1 Well Destruction Activities

There are three monitoring wells MW-6, MW-12, and MW-12A located within the planned excavation limits. Since the total depths of the wells extend below the excavation depth, Antea Group will pressure grout and over excavate the wells in accordance with the requirements of the Alameda Public Works Agency. Subsequent to the proposed excavation activities only monitoring well MW-6 will be replaced.

7.2.2 Utility Locate and Clearance Activities

Antea Group will contact Underground Service Alert (USA) and employ a private utility locator at least 72 hours prior to the initiation of field activities in order to clear the proposed excavation area of underground utilities. Antea Group will additionally request that utilities identified within 10 feet of the excavation limits be physically exposed by the utility owner. Figure 10 depicts known utilities at the station.

7.2.3 Site Set-up

Prior to the start of excavation activities, the following set-up will be implemented at the site:

- Set-up traffic and pedestrian controls per appropriate city and/ or county public agencies approved traffic control plans;
- Set-up temporary fencing or barricades around excavation and work areas;
- Post placards and notifications at site entrance and exits identifying work, physical/chemical/environmental hazards (including Proposition 65 warnings and personal protective equipment required) and emergency contact information;
- Establish and set-up exclusion, contamination reduction, and support zones;
- Establish staging area and truck/equipment entrance and exits;

- Set-up real-time air monitoring stations and storm water control measures.

7.3 Excavation Extent and Methods

7.3.1 Excavation Volume and Limits

Based on historical concentrations of COCs in soil reported at the site, the anticipated extent of excavation areas are depicted on Figure 9. The excavation will consist of two excavation areas, A1 and A2.

Excavation area A1 is bordered by a planter area to the east and a dispensing island to the west. The excavation area A1 extends south to the envelope of the dispenser island and canopy area and extends north of the location of previous monitoring well MW-2. The approximate dimensions of the excavation area A1 are 40-feet along on the north-south axis and 15-feet long along the east-west axis. The average depth of excavation anticipated to remove residual soil impacts contained in the upper clay unit of the site is approximately 11-feet bgs.

Excavation area A2 is located in the southwest corner of the site. The northwest corner of the excavation is just slightly south and west of the sump located next to the **c**ar **w**ash. The northeast corner of the excavation is located at the edge of the canopy station building**,** mid-way along the south facing wall of the building. The southeast corner of the excavation is located at the border between the paved area of the site and the vegetation border to the south of the station building. The southwest corner of the excavation extends into the vegetation area along a line parallel to the canopy of the car wash. The approximate dimensions of the excavation area A2 are 50 feet along the north-south axis and 60 feet along the east-west axis. The average depth of excavation anticipated to remove residual soil impacts contained in the upper clay unit of the site is approximately 11 feet bgs.

Approximately 244 cubic yards of impacted soil will be removed from excavation area A1, and approximately 1221 cubic yards of impacted soil will be removed from excavation area A2. A total of approximately 1465 cubic yards (approximately 2124 tons using a conversion factor of 1.45 tons/ cubic yard) of impacted soil will be excavated for off-site disposal. However, the limits of excavation A2 will likely be modified and the final extent will be based on the analytical results of the soil samples collected from the seven direct push borings proposed in section 6.3, above.

7.3.2 Methods of Excavation

The specific equipment and means utilized to execute the scope of work proposed herein will be at the discretion of the selected State of California Class A licensed General Engineering Contractor. It is anticipated that this soil remediation can be accomplished using standard equipment including but not limited to an excavator, front-end loader, backhoe, end-dump trucks, and a roller wheeled compactor.

7.3.3 Shoring

A temporary shoring system will be utilized to complete excavation activities. To protect the existing USTs and on-site buildings, the western, eastern, southern, and northern sidewalls of both excavation areas will be shored. Temporary shoring support will consist of traditional sheet pile shoring with lateral supports. The shoring system will be designed and stamped by a civil professional engineer.

7.3.4 Dewatering

Based on the depth of the excavation and historic ground water elevations indicated in the *Quarterly Summary Report, Fourth Quarter 2012*, the excavation**s** will require dewatering. The average depth to water during the previous three years in excavation area A1 (MW-6) has been 3.7 f**ee**t with a range of 2.9-8.4 f**ee**t; and, the average depth to water during the previous two years in excavation area A1 (MW-12) has been 4.0 f**ee**t with a range of 3.35-4.4 f**ee**t. Based on a soil porosity of 30%, the approximated volumes to be de-watered from each excavation area are: 15,000 gallons from A1, and 74,000 gallons from A2. Based on lithology of the site being homogeneous across the site and the re-charge rate of MW-6 a constant pump rate of at least 0.5 gallons/minute will be maintained during excavation and backfilling activities after initial de-watering is complete. Based on this data, Antea Group anticipates that the excavations can be dewatered to twelve (12) feet effectively using a submersible or centrifugal pump. Water generated during the dewatering will be discharged as described in Section 7.1.4.

7.3.5 Environmental Control Measures

A basic and site-specific storm water pollution prevention plan (SWPPP) will be prepared using best management practices (BMPs) such as those described in the *Construction Best Management Practice Handbook* prepared by the California Stormwater Quality Association (CASQA) in 2009. Antea Group will coordinate with PC&F in determining the potential need to obtain a *Construction General Permit* for discharge..

Types of minimum techniques and practices defined in the SWPPP and implemented by the General Engineering Contractor may include the following:

- Berming down-sloping portions of the site with booms/sand/gravel bags;
- Installing stormwater control devices around the site perimeter;
- Protecting existing catch basins with booms/sand/gravel bags.

Dust control techniques will be implemented by the General Engineering Contractor at all times during the excavation, loading, and backfilling activities to prevent the formation and migration of visible dust. These techniques may include the following:

- Misting or spraying water at least twice daily to prevent formation of dust while excavating, loading, or backfilling;
- Controlling and monitoring excavation activities to minimize the generation of dust;

- Minimizing drop heights while loading transportation vehicles;
- Covering all trucks hauling soils or backfill materials, and requiring all trucks to maintain at least 2-feet of freeboard.
- Covering any stockpiles of clean fill material or top soils with weighted plastic;
- Sweep site daily if visible soil is on paved areas and being carried on public right-of-way.

Air monitoring will be performed to establish background air quality using a photoionization detector (PID) to measure ambient volatile organic compound (VOCs) concentrations, and a multi-gas lower explosive limit (LEL) detector to measure. Antea Group will prepare an Air Monitoring Plan for use during excavation activities.

7.3.6 Soil Transportation and Disposal Plan & Waste Characterization

Waste hauling will be performed by a hauling contractor arranged by the General Engineering Contractor that is licensed and permitted as required by the United Stated Environmental Protection Agency (EPA), Department of Transportation, and the State of California. Trucks will use only pre-planned and authorized routes established in a site-specific Traffic Control and Waste Transportation Plan. Trucks used for the off-site transportation of contaminated soil and debris will remain in clean, regularly swept areas, to the extent possible, to minimize the need to decontaminate the truck tires. Each loaded truck will be equipped to fully cover all soil and debris during transportation and leave the site with a completed manifest or bill of lading for transport of the soil to the assigned disposal facility.

Soil samples from borings discussed in section 6.3 will be used to initially characterize the soil for waste disposal and select an appropriate class, State of California-permitted disposal facility. Antea Group may collect and submit additional waste samples for waste characterization analyses as requested by the selected disposal facility.

Following the approval of this RAP, Antea Group will prepare a site-specific Traffic Control and Waste Transportation Plan for implementation during soil removal activities. The Traffic Control and Waste Transportation Plan will be prepared in accordance with the Department of Toxic Substances Control (DTSC) *Transportation Plan, Preparation Guidance for Site Remediation* dated December 2001.

7.3.7 Confirmation Sampling Plan

Confirmation soil samples will be collected at the final depth of the soil excavation and at accessible sidewalls. Confirmation samples will be collected at discrete locations using an approximate 20-foot by 20-foot grid for the bottom of each excavation area and approximately every 20 linear feet along the length of accessible excavation sidewalls. Since the total depth of the excavation areas is greater than 4-feet deep, confirmation samples will be collected from the excavator bucket. Antea Group personnel will screen soil samples using a PID prior to submitting the samples for laboratory analyses.

Confirmation soil samples collected for laboratory analyses will be submitted to a California Environmental Laboratory Accreditation Program (ELAP) certified laboratory for the following analyses:

- TPHg, BTEX, MTBE, tertiary-butyl alcohol (TBA), ethyl-tertiary-butyl ether (ETBE), tertiary-amyl methyl ether (TAME), di-isopropyl ether (DIPE), ethylene dibromide (EDB), ethanol, 1,2-dichloroethane (1,2-DCA), and naphthalene by EPA Method 8260B.

7.3.8 Backfill Materials and Methods

Certified clean backfill materials will be mobilized to the site as arranged by the General Engineering Contractor. Following the completion of the soil excavation and confirmation sampling, the excavation area will be backfilled and compacted.

Fill material will be placed in maximum 12-inch lifts and compacted to not less than 95 percent relative compaction per standard proctor method (American Society of Testing and Materials D698). As backfill operations progress, shoring will be removed to ensure that compaction testing meets the required specifications. Compaction results will be certified by a civil or geotechnical professional engineer.

7.3.9 In-Situ Chemical Oxidation

To accelerate biodegradation of the dissolved hydrocarbon plume, Regenesis brand Oxygen Release Compound® (ORC®) will be added to the excavation backfill. ORC is a proprietary formulation of phosphate-intercalated magnesium peroxide that, when hydrated, produces controlled-release oxygen. Based on calculations using Regenesis' Remediation Design Software, a minimum of approximately 100 pounds of ORC-A® for excavation area A1, and a minimum of approximately 1,100 pounds of ORC-A® for excavation area A2 will be distributed with the backfill material below the water table. This is the minimum amount needed to remediate the remaining COCs estimated in groundwater based on stoichiometric calculations. Additional ORC may be added to the excavation area to increase the migration potential of dissolved oxygen laterally across the site and to offsite areas. The groundwater infiltration into the backfilled excavation will assist in the releasing of oxygen to the shallow aquifer. The amount of ORC-A used will be based upon the limits of the final excavations. The Material Safety Data Sheet for ORC-A® is attached as **Appendix D**.

7.3.10 Record Keeping

At minimum, Antea Group will measure and record the limits of excavation, daily air monitoring data, daily dewatering and discharge volumes, confirmation sampling locations and PID results and import fill material types

and quantities. Antea Group will also maintain a daily log of site personnel arriving and leaving, complete a daily checklist for site set-up and control measures and retain copies of bills of lading and manifests.

A detailed log of the soil hauled off-site will be maintained. The log will include, at minimum, the date and time trucks are loaded, the destination, size (estimated volume and weight) of the load, description of contents, name and signature of the hauler, truck license plate number, name and signature of Antea Group personnel or the General Engineering Contractor personnel.

7.4 Post-Excavation Monitoring Plan

Antea Group proposes to replace only monitoring well MW-6 subsequent to the remediation excavation and ORC-A® application. Antea Group has already submitted a work plan proposing the removal of monitoring well MW-12A, so this monitoring well will not be replaced. In addition, there are currently two monitoring wells in the vicinity and down-gradient of monitoring well MW-12, so Antea Group does not propose that this monitoring well be replaced. Antea Group further recommends that the site monitoring wells in the vicinity of the two excavations and monitoring well MW-6R be monitoring and sampled on a quarterly basis, subsequent to the remediation excavation and ORC-A® application to evaluate the on-site effect of removing the residual impacted soil material.

8.0 IMPLEMENTION SCHEDULE

Antea Group is prepared to implement this remedial action plan in conjunction with the raise and rebuild activities being conducted by PC&F, which are anticipated to take place during the second quarter of 2013. Accordingly, Antea Group requests a timely review, within 60 days, of this remedial action plan.

9.0 REMARKS

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. For any reports cited that were not generated by Delta or Antea Group, the data from those reports is used "as is" and is assumed to be accurate. Antea Group does not guarantee the accuracy of this data for the referenced work performed nor the inferences or conclusions stated in these reports. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

for:

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for:

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Antea Group

PROFESSIONAL GEOLOGIST
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No. 7480
STATE OF CALIFORNIA

Reviewed by:

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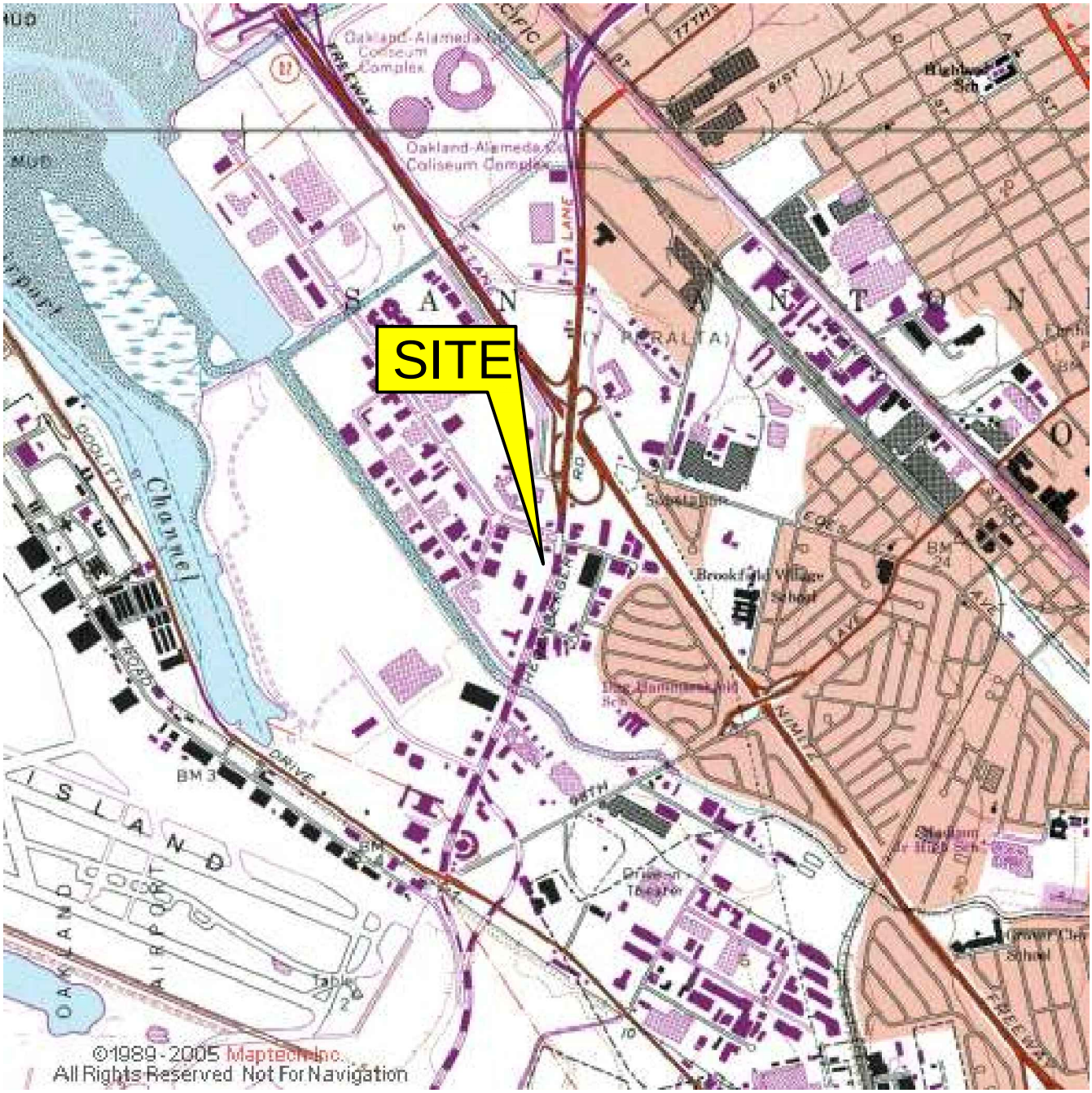
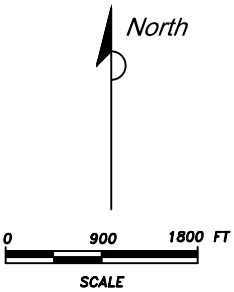
California Registered Professional Geologist No. 7480
Antea Group

cc: GeoTracker (upload)

Figures





SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, OAKLAND EAST QUADRANGLE (1973)

FIGURE 1
SITE LOCATION

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	EW	DR/JH
DATE	REVIEWED BY	FILE NAME
4/11/13	DD	5043-SiteLocator

antea group

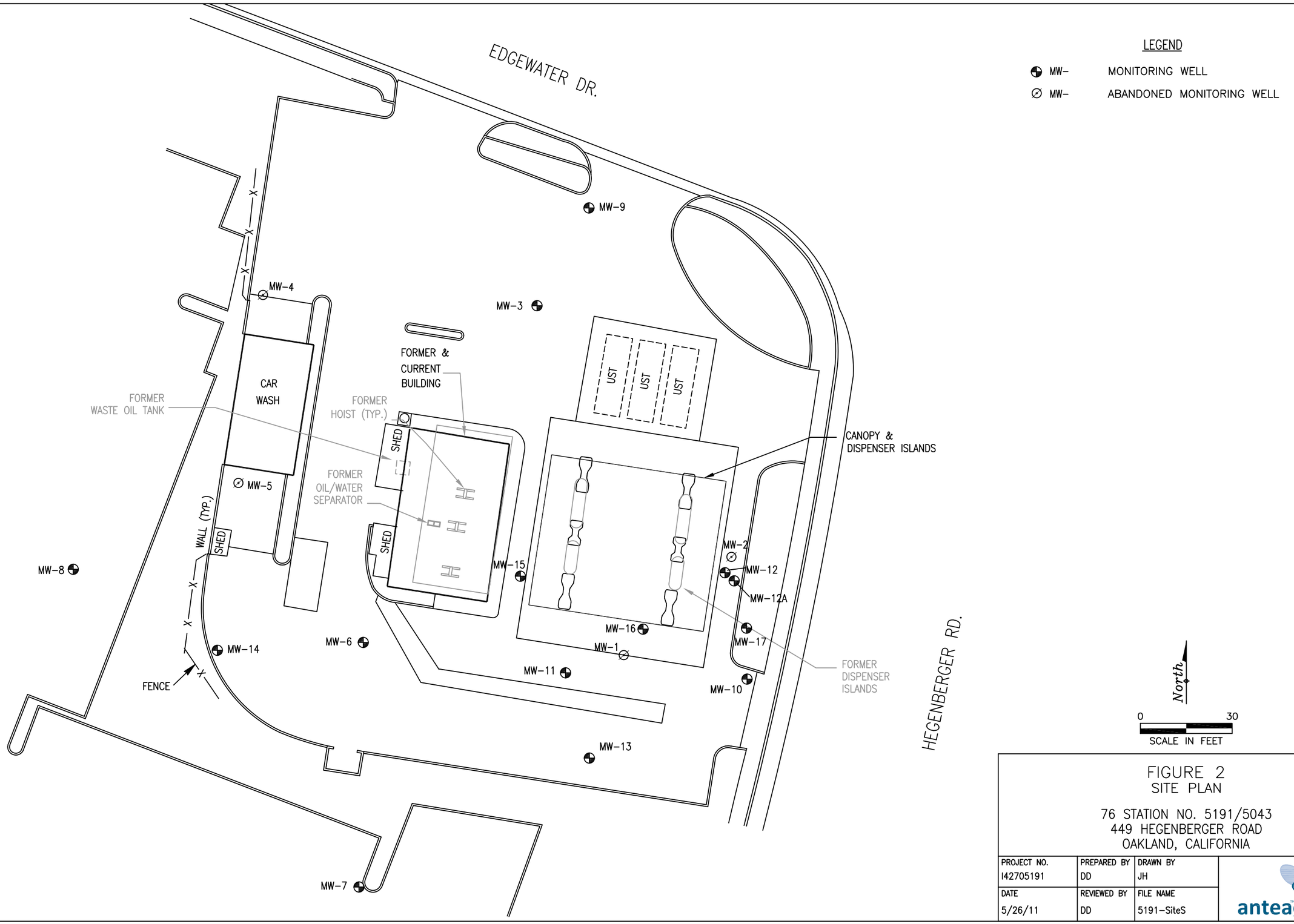


FIGURE 2
SITE PLAN

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	DD	JH
DATE	REVIEWED BY	FILE NAME
5/26/11	DD	5191-SiteS

antea group

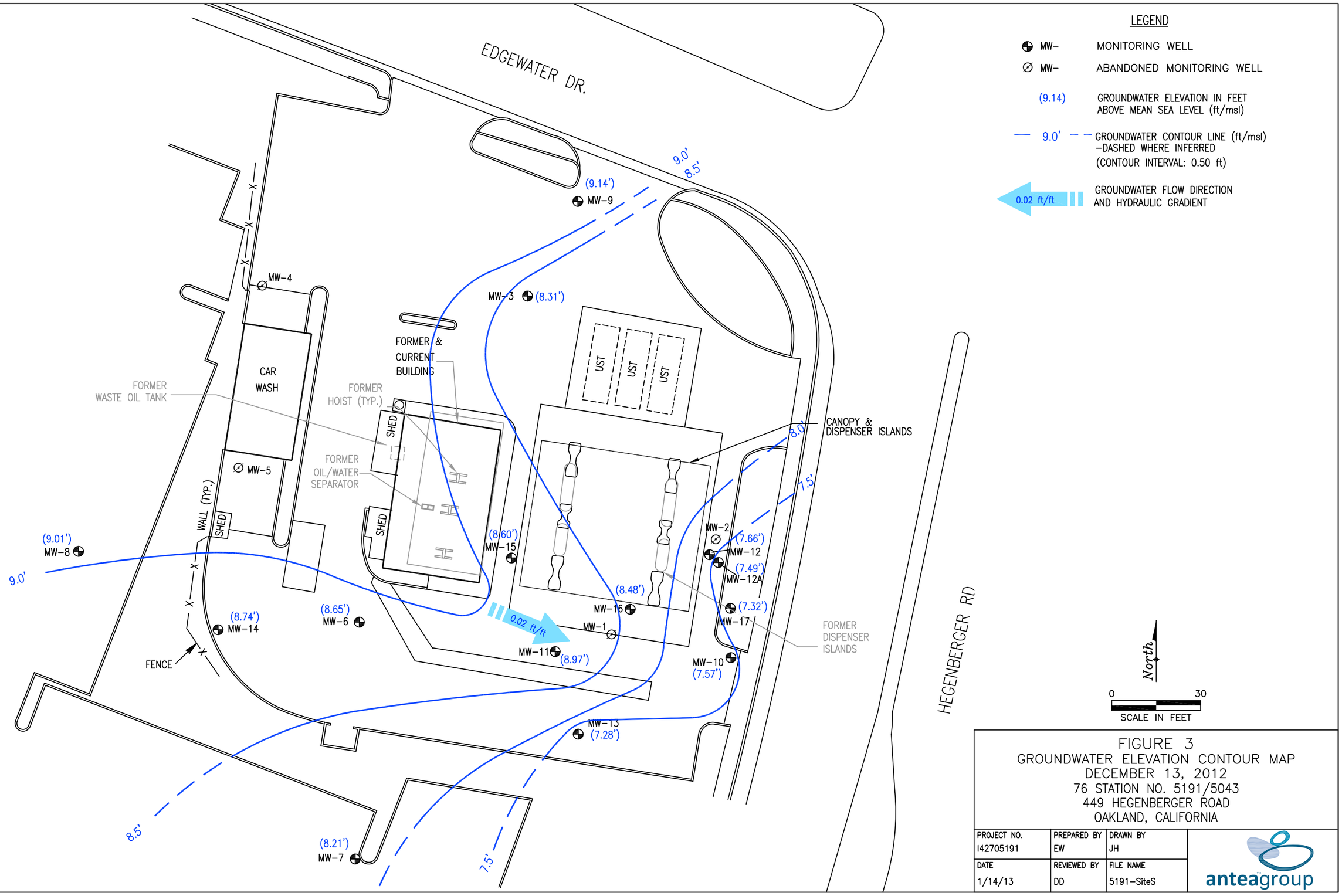


FIGURE 3
GROUNDWATER ELEVATION CONTOUR MAP
DECEMBER 13, 2012
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
I42705191	EW	JH
DATE	REVIEWED BY	FILE NAME
1/14/13	DD	5191–SiteS

antea group

EDGEWATER DR.

MW-9
(<50.0)

50
MW-3
(130)

MW-4

FORMER &
CURRENT
BUILDING

FORMER
WASTE OIL TANK

CAR
WASH

FORMER
HOIST (TYP.)

SHED

FORMER
OIL/WATER
SEPARATOR

UST
UST
UST

CANOPY &
DISPENSER ISLANDS

MW-5

WALL (TYP.)

SHED

SHED

(<50.0)
MW-15

MW-8
(<50.0)

50
500
5,000
(10,000)
MW-14
(20,000)
MW-6

FENCE

MW-2
(480)
MW-12
(<50.0)*

50
500
5,000
MW-12A

(<150)
MW-16

50,000
(55,000)
MW-17

FORMER
DISPENSER
ISLANDS

MW-1

MW-11 (<50.0)

MW-10
(120)

HEGENBERGER RD

MW-13
(<50.0)

MW-7
(<50.0)

LEGEND

- MW- MONITORING WELL
- MW- ABANDONED MONITORING WELL
- (55,000) DISSOLVED PHASE TPHg ISOOCONCENTRATION (µg/L)
- 5,000 DISSOLVED PHASE TPHg ISOCONTOUR (µg/L) –DASHED WHERE INFERRED

NOTES:

TPHg = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
µg/L = MICROGRAMS PER LITER
<50 = LESS THAN LABORATORY INDICATED REPORTING LIMIT
* = NOT USED IN CONTOURING

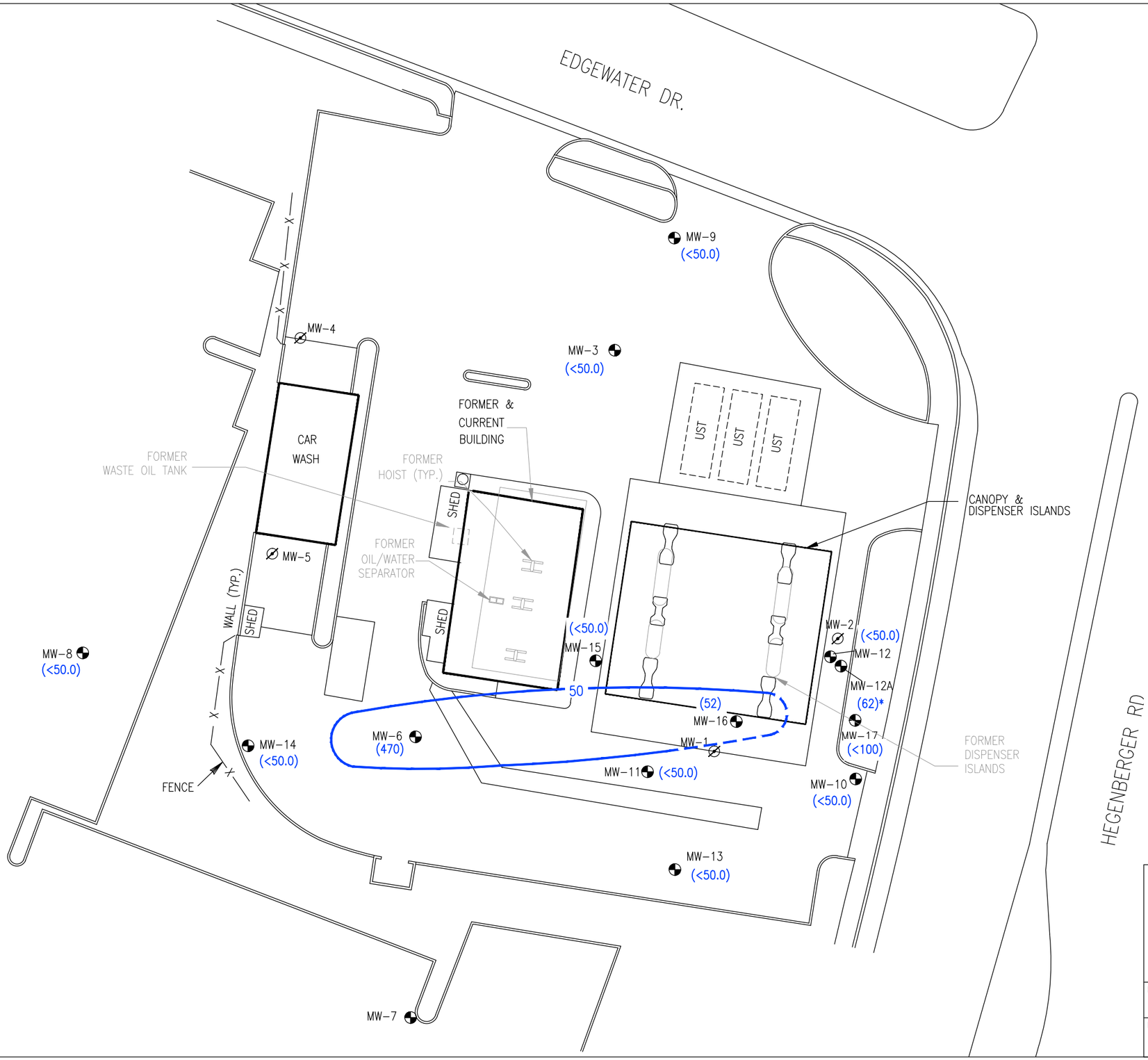
North

0 30
SCALE IN FEET

FIGURE 4
DISSOLVED PHASE TPHg ISOCONCENTRATION MAP
DECEMBER 13, 2012
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	EW	JH
DATE	REVIEWED BY	FILE NAME
1/14/13	DD	5191-SiteS

antea group



LEGEND

- MW- MONITORING WELL
- MW- ABANDONED MONITORING WELL
- (420) DISSOLVED PHASE TPHd ISOOCONCENTRATION (µg/L)
- 50 DISSOLVED PHASE TPHd ISOCONTOUR (µg/L) –DASHED WHERE INFERRED

NOTES:

TPHd = TOTAL PETROLEUM HYDROCARBONS AS DIESEL
µg/L = MICROGRAMS PER LITER
<50.0 = LESS THAN LABORATORY INDICATED REPORTING LIMIT
* = NOT USED IN CONTOURING

North

0 30

SCALE IN FEET

FIGURE 5
DISSOLVED PHASE TPHd ISOCONCENTRATION MAP
DECEMBER 13, 2012
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	EW	JH
DATE	REVIEWED BY	FILE NAME
1/14/13	DD	5191-SiteS

antea group

EDGEWATER DR.

MW-9 (<0.50)

MW-4

MW-5 (28)

0.50

5.0

FORMER & CURRENT BUILDING

CAR WASH

FORMER WASTE OIL TANK

FORMER HOIST (TYP.)

SHED

FORMER OIL/WATER SEPARATOR

UST

UST

UST

CANOPY & DISPENSER ISLANDS

MW-5

WALL (TYP.)

SHED

SHED

MW-8 (<0.50)

(33) MW-15

50

500

MW-2

(820) MW-12

(<0.50)*

MW-12A

(980) MW-16

(<10) MW-17

MW-14 (<1.5)

MW-6 (<4.0)

MW-1

(27) MW-11

FORMER DISPENSER ISLANDS

MW-10 (<0.50)

FENCE

(130) MW-13

MW-7 (<0.50)

HEGENBERGER RD

North

0 30

SCALE IN FEET

LEGEND

- MW- MONITORING WELL
- MW- ABANDONED MONITORING WELL
- (980) DISSOLVED PHASE MTBE ISOOCONCENTRATION (µg/L)
- 500 DISSOLVED PHASE MTBE ISOCONTOUR (µg/L) –DASHED WHERE INFERRED

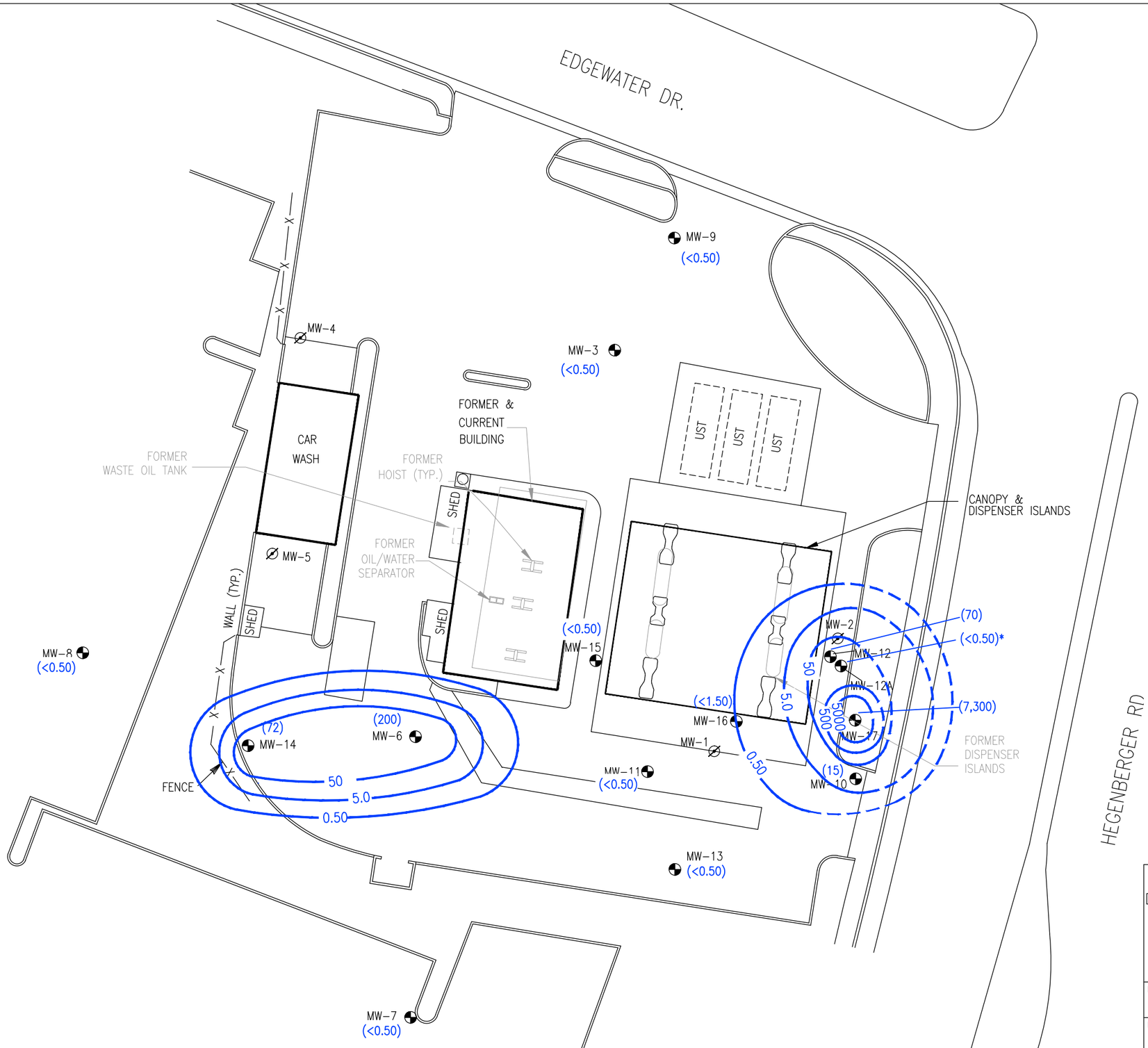
NOTES:

MTBE = METHYL TERTIARY BUTYL ETHER
µg/L = MICROGRAMS PER LITER
<0.50= LESS THAN LABORATORY INDICATED REPORTING LIMIT
* = NOT USED IN CONTOURING

FIGURE 6
DISSOLVED PHASE MTBE ISOCONCENTRATION MAP
DECEMBER 13, 2012
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	EW	JH
DATE	REVIEWED BY	FILE NAME
1/14/13	DD	5191-SiteS

antea group



LEGEND

- MW- MONITORING WELL
- MW- ABANDONED MONITORING WELL
- (1,200) DISSOLVED PHASE BENZENE ISOOCONCENTRATION (µg/L)
- 500 DISSOLVED PHASE BENZENE ISOCONTOUR (µg/L) –DASHED WHERE INFERRED

NOTES:

µg/L = MICROGRAMS PER LITER
<0.50 = LESS THAN LABORATORY INDICATED REPORTING LIMIT
* = NOT USED IN CONTOURING

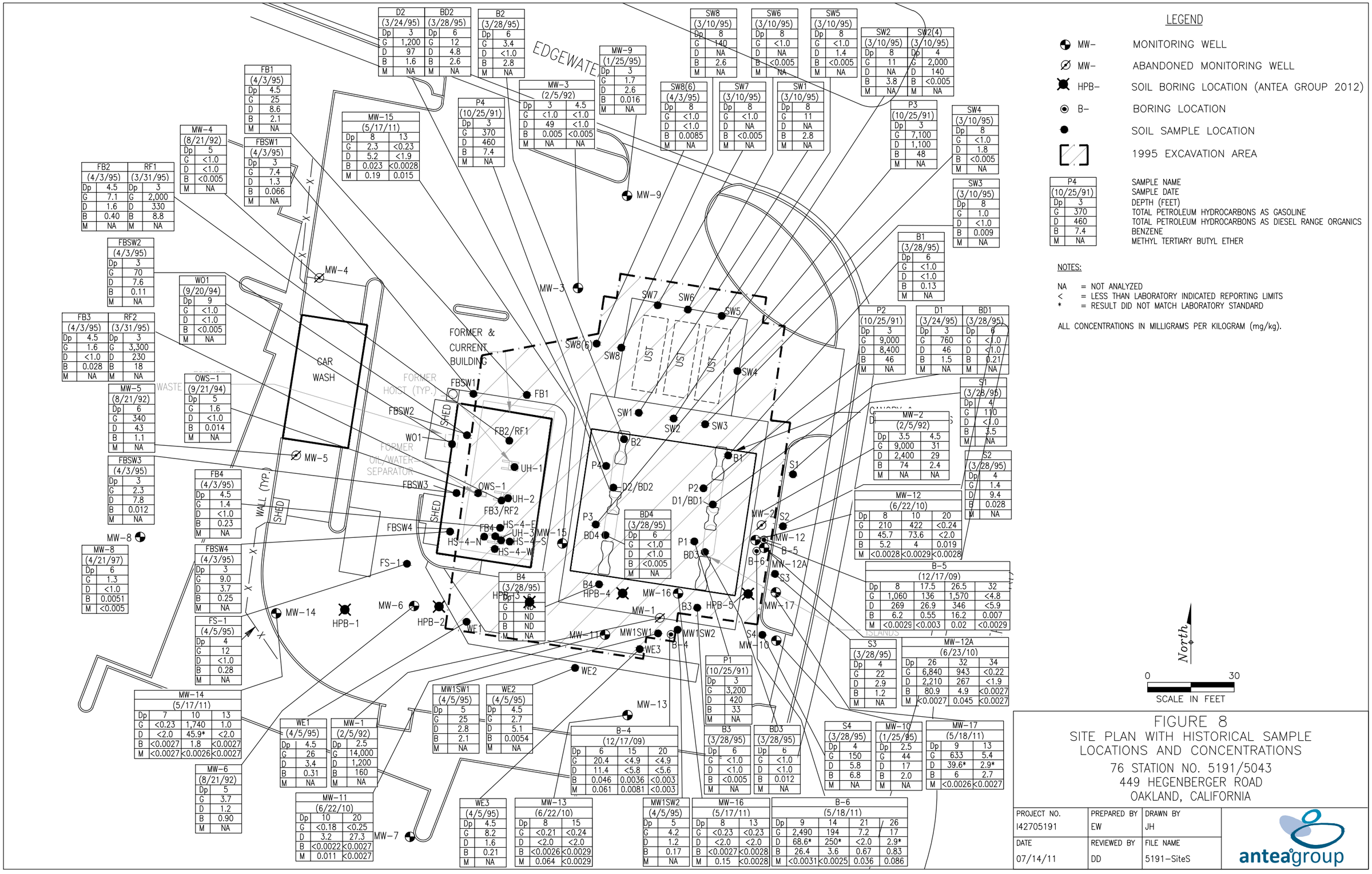
North

0 30
SCALE IN FEET

FIGURE 7
DISSOLVED PHASE BENZENE ISOCONCENTRATION MAP
DECEMBER 13, 2012
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	EW	JH
DATE	REVIEWED BY	FILE NAME
1/14/13	DD	5191-SiteS

antea group



LEGEND

- MW– MONITORING WELL
- MW– ABANDONED MONITORING WELL
- HPB– SOIL BORING LOCATION (ANTEA GROUP 2012)
- B– BORING LOCATION
- SOIL SAMPLE LOCATION
- 1995 EXCAVATION AREA

P4	
(10/25/91)	
Dp	3
G	370
D	460
B	7.4
M	NA

SAMPLE NAME
SAMPLE DATE
DEPTH (FEET)
TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
TOTAL PETROLEUM HYDROCARBONS AS DIESEL RANGE ORGANICS
BENZENE
METHYL TERTIARY BUTYL ETHER

NOTES:

NA = NOT ANALYZED
< = LESS THAN LABORATORY INDICATED REPORTING LIMITS
* = RESULT DID NOT MATCH LABORATORY STANDARD

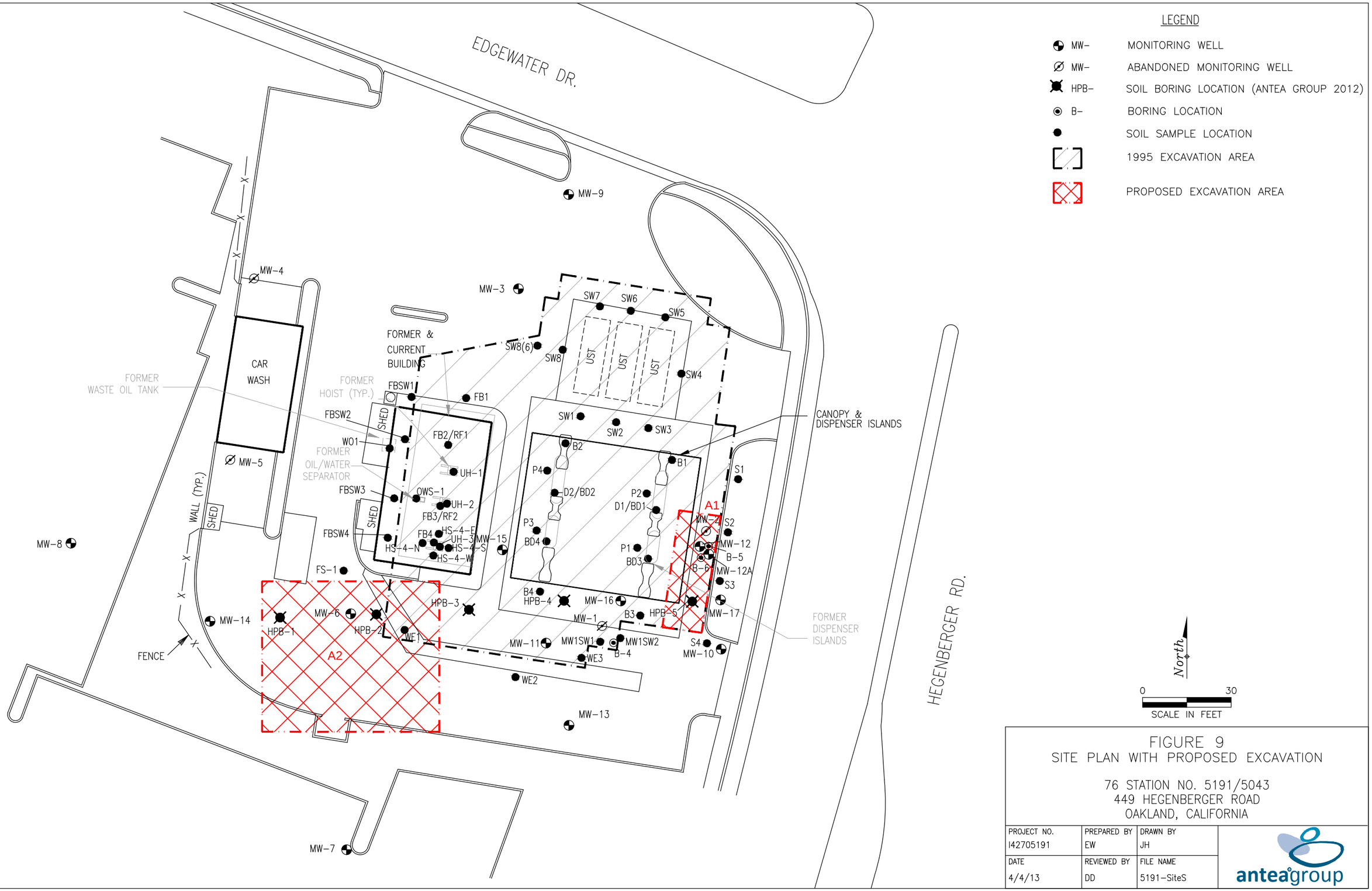
ALL CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg).

FIGURE 8
SITE PLAN WITH HISTORICAL SAMPLE LOCATIONS AND CONCENTRATIONS

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	EW	JH
DATE	REVIEWED BY	FILE NAME
07/14/11	DD	5191-SiteS

antea group



LEGEND

- MW- MONITORING WELL
- MW- ABANDONED MONITORING WELL
- HPB- SOIL BORING LOCATION (ANTEA GROUP 2012)
- B- BORING LOCATION
- SOIL SAMPLE LOCATION
- 1995 EXCAVATION AREA
- PROPOSED EXCAVATION AREA

FIGURE 9
SITE PLAN WITH PROPOSED EXCAVATION

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	EW	JH
DATE	REVIEWED BY	FILE NAME
4/4/13	DD	5191-SiteS

antea group

EDGEWATER DR.

HEGENBERGER RD.

COMPRESSOR

MW-9

MW-4

MW-3

MW-5

MW-8

MW-14

MW-6

MW-15

MW-2

MW-12

MW-12A

MW-17

MW-1

MW-16

MW-11

MW-10

MW-13

MW-7

HPB-1

HPB-2

HPB-3

HPB-4

HPB-5

B-4

B-5

B-6

CAR WASH

FORMER & CURRENT BUILDING

FORMER WASTE OIL TANK

FORMER HOIST (TYP.)

FORMER OIL/WATER SEPARATOR

SHED

UST

CANOPY & DISPENSER ISLANDS

FORMER DISPENSER ISLANDS

WALL (TYP.)

FENCE

METAL UTILITY

METAL READING

ELECTRICAL TRANSFORMER

LEGEND

- MW- MONITORING WELL
- MW- ABANDONED MONITORING WELL
- HPB- SOIL BORING LOCATION (ANTEA GROUP 2012)
- B- BORING LOCATION
- T TELEPHONE
- SS SEWER
- W WATER
- ST STORM DRAIN
- E ELECTRIC
- G GAS
- SL STREET LIGHT
- SOIL BUFFERING TEST LOCATION
- PILOT TEST INJECTION AREA

North

0 30

SCALE IN FEET

FIGURE 10
SITE PLAN WITH UTILITIES

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
142705191	EW	JH
DATE	REVIEWED BY	FILE NAME
4/4/13	DD	5191-SiteS

antea group

Tables

TABLE 1
WELL CONSTRUCTION DETAILS
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

		Well		Screen		Screen	
Well	**Drill**	**Depth**	**Diameter**	**Top**	**Bottom**	**Length**	**Comments**
I.D.	**Date**	(feet bgs)	(inches)	(feet bgs)	(feet bgs)	(feet)	
Monitoring Wells							
MW-1	02/05/91	13.5	2	2.0	13.0	11.0	Abandoned
MW-2	02/05/91	15.0	2	3.0	15.0	12.0	Abandoned
MW-3	02/05/91	14.0	2	2.0	14.0	12.0	
MW-4	08/21/92	13.5	2	2.5	13.5	11.0	Abandoned
MW-5	08/21/92	13.5	2	2.5	13.5	11.0	Abandoned
MW-6	08/21/92	13.5	2	2.5	13.5	11.0	
MW-7	04/21/97	13.0	2	3.0	13.0	10.0	
MW-8	04/21/97	15.0	2	3.0	15.0	12.0	
MW-9	01/25/95	13.0	2	3.0	13.0	10.0	
MW-10	01/25/95	13.0	2	3.0	13.0	10.0	
MW-11	06/22/10	20.0	4	5.0	20.0	15.0	
MW-12	06/22/10	20.0	4	5.0	20.0	15.0	
MW-12A	06/23/10	34.0	2	30.0	34.0	4.0	
MW-13	06/22/10	15.0	2	5.0	15.0	10.0	
MW-14	05/17/11	13.0	2	3.0	13.0	10.0	
MW-15	05/17/11	13.0	2	3.0	13.0	10.0	
MW-16	05/17/11	13.0	2	3.0	13.0	10.0	
MW-17	05/18/11	13.0	2	3.0	13.0	10.0	

Explanation

Wells are of poly-vinyl-chloride (PVC) construction

bgs = Below ground surface

TABLE 2
CURRENT GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA								
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (ug/L)	TBA (ug/L)	Ethanol (ug/L)
MW-3	12/13/2012	10.81	2.50	NP	8.31	<50	**130**	<0.50	<0.50	<0.50	<0.50	**28**	**77**	<5.0
MW-6	12/13/2012	11.55	2.90	NP	8.65	**470**	**20,000**	**200**	**16**	**350**	**1,100**	<4.0	**22**	<40
MW-7	12/13/2012	11.64	3.43	NP	8.21	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0
MW-8	12/13/2012	11.32	2.31	NP	9.01	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0
MW-9	12/13/2012	10.94	1.80	NP	9.14	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0
MW-10	12/13/2012	10.97	3.40	NP	7.57	<50	**120**	**15**	**1.1**	**1.7**	**5.2**	<0.50	<5.0	<5.0
MW-11	12/13/2012	10.53	1.56	NP	8.97	<50	<50	<0.50	<0.50	<0.50	<0.50	**27**	<5.0	<5.0
MW-12	12/13/2012	11.01	3.35	NP	7.66	<50	**480**	**70**	**4.6**	**7.2**	**19**	**820**	**19**	<15
MW-12A	12/13/2012	11.29	3.80	NP	7.49	**62**	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0
MW-13	12/13/2012	11.08	3.80	NP	7.28	<50	<50	<0.50	<0.50	<0.50	<0.50	**130**	**14**	<5.0
MW-14	12/13/2012	12.00	3.26	NP	8.74	<50	**10,000**	**72**	**5.8**	**610**	**780**	<1.5	<7.0	<15
MW-15	12/13/2012	11.11	2.51	NP	8.60	<50	<50	<0.50	<0.50	<0.50	<0.50	**33**	**7.4**	<5.0
MW-16	12/13/2012	10.98	2.50	NP	8.48	**52**	<150	<1.5	<1.5	<1.5	<1.5	**980**	**55**	<20
MW-17	12/13/2012	11.52	4.20	NP	7.32	<100	**55,000**	**7,300**	**2,700**	**1,700**	**4,600**	<10	**300**	<100

Gauging Notes:
TOS - Top of Screen
ft - Feet
NP - LNAPL not present
LNAPL - Light non-aqueous phase liquid
* - Corrected for LNAPL if present (assumes LNAPL specific gravity = 0.75)
-- - No information available

Analytical Notes:
< - Below laboratory's indicated reporting limit
ug/L - micrograms/liter
TPHd- Total petroleum hydrocarbons as diesel
TPHg- Total petroleum hydrocarbons as gasoline
MTBE- Methyl tertiary-butyl ether
TBA- Tertiary-butyl alcohol
Bold - Above the laboratory's indicated reporting limit

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-1	2/18/1992	NSVD	NG	NG	NG	**13,000**	**150,000**	**17,000**	**26,000**	**5,200**	**26,000**	--	--	--	--	--	--	--	--	--
	5/20/1992	NSVD	NG	NG	NG	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/31/1992	NSVD	NG	NG	NG	**8,900**	**64,000**	**13,000**	**12,000**	**2,500**	**22,000**	--	--	--	--	--	--	--	--	--
	11/30/1992	NSVD	NG	NG	NG	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/4/1993	NSVD	NG	NG	NG	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/4/1993	8.96	2.13	0.10	6.91	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	8/4/1993	8.96	2.92	0.03	6.06	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	11/3/1993	7.38	3.04	NP	4.34	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	2/7/1994	7.38	2.55	0.03	4.85	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	5/19/1994	7.38	2.23	0.01	5.16	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	6/25/1994	7.38	2.49	0.01	4.90	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	7/27/1994	7.38	3.10	NP	4.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/15/1994	7.38	2.85	0.11	4.61	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	11/14/1994	7.38	2.97	0.12	4.50	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	2/21/1995	7.38	1.53	0.02	5.87	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	5/18/1995	NSVD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD
MW-2	2/18/1992	NSVD	NG	NG	NG	**4,300**	**29,000**	**1,000**	**5,300**	**260**	**7,900**	--	--	--	--	--	--	--	--	--
	5/20/1992	NSVD	NG	NG	NG	**4,300**	**24,000**	**2,200**	**7,600**	**630**	**11,000**	--	--	--	--	--	--	--	--	--
	8/31/1992	NSVD	NG	NG	NG	**1,600**	**9,000**	**1,800**	**640**	**140**	**2,000**	--	--	--	--	--	--	--	--	--
	11/30/1992	NSVD	NG	NG	NG	**5,700**	**29,000**	**2,000**	**3,400**	**1,200**	**6,900**	--	--	--	--	--	--	--	--	--
	2/4/1993	NSVD	NG	NG	NG	**6,100**	**18,000**	**1,600**	**3,000**	ND	**6,900**	--	--	--	--	--	--	--	--	--
	5/4/1993	8.96	2.48	NP	6.48	**7,100**	**63,000**	**3,200**	**17,000**	**470**	**17,000**	--	--	--	--	--	--	--	--	--
	8/4/1993	8.96	3.20	NP	5.76	**1,800**	**45,000**	**2,100**	**6,600**	**1,400**	**12,000**	--	--	--	--	--	--	--	--	--
	11/3/1993	8.58	3.37	NP	5.21	**2,600**	**72,000**	**3,700**	**16,000**	**3,700**	**20,000**	--	--	--	--	--	--	--	--	--
	2/7/1994	8.58	2.40	NP	6.18	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	5/19/1994	8.58	2.13	NP	6.45	**3,000**	**42,000**	**2,500**	**1,300**	**2,300**	**13,000**	--	--	--	--	--	--	--	--	--
	6/25/1994	8.58	2.65	NP	5.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/27/1994	8.58	3.44	NP	5.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/15/1994	8.58	3.25	NP	5.33	**2,800**	**35,000**	**2,400**	**850**	**1,700**	**15,000**	--	--	--	--	--	--	--	--	--
	11/14/1994	8.58	2.13	NP	6.45	**10,000**	**43,000**	**2,200**	**6,500**	**1,800**	**14,000**	--	--	--	--	--	--	--	--	--
	2/21/1995	8.58	1.65	NP	6.93	**2,000**	**44,000**	**2,200**	**3,200**	**1,300**	**1,500**	--	--	--	--	--	--	--	--	--
	5/18/1995	NSVD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD
MW-3	2/18/1992	NSVD	NG	NG	NG	ND	**230**	**5**	**22**	**2**	**33**	--	--	--	--	--	--	--	--	--
	5/20/1992	NSVD	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI
	8/31/1992	NSVD	NG	NG	NG	**92**	**210**	**1**	ND	ND	ND	--	--	--	--	--	--	--	--	--
	11/30/1992	NSVD	NG	NG	NG	**94**	**790**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	2/4/1993	NSVD	NG	NG	NG	**550**	**3,300**	**320**	ND	**96**	**6**	--	--	--	--	--	--	--	--	--
	5/4/1993	7.84	4.32	NP	3.52	**250**	**1,800**	**95**	ND	ND	ND	--	--	--	--	--	--	--	--	--
	8/4/1993	7.84	4.94	NP	2.90	**100**	**210**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	11/3/1993	7.42	4.53	NP	2.89	**160**	**640**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	2/7/1994	7.42	2.40	NP	5.02	**620**	**2,700**	**110**	ND	**17**	ND	--	--	--	--	--	--	--	--	--
	5/19/1994	7.42	3.60	NP	3.82	**480**	**1,800**	**83**	ND	**6**	**9**	--	--	--	--	--	--	--	--	--
	6/25/1994	7.42	4.58	NP	2.84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/27/1994	7.42	4.58	NP	2.84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/15/1994	7.42	4.65	NP	2.77	**110**	**130**	**1**	**1**	ND	**1**	--	--	--	--	--	--	--	--	--
	11/14/1994	7.42	3.18	NP	4.24	**150**	**1,600**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	2/21/1995	7.42	1.81	NP	5.61	**850**	**3,800**	**350**	ND	130	**22**	--	--	--	--	--	--	--	--	--
	5/18/1995	7.42	4.56	NP	2.86	**150**	**1,300**	**42**	ND	**ND**	ND	--	--	--	--	--	--	--	--	--
	8/17/1995	7.42	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI
	7/26/1996	7.42	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-3	10/28/1996	7.42	WO	WO	WO	WO	WO	WO	WO	WO	WO	WO	WO	WO	WO	WO	WO	WO	WO	WO
	1/29/1997	7.42	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI
	4/15/1997	7.42	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI
	5/27/1997	7.42	3.45	NP	3.97	--	**670**	**7**	ND	ND	ND	**250**	--	--	--	--	--	--	--	--
	6/1/1997	7.42	3.50	NP	3.92	**610**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/15/1997	8.04	3.71	NP	4.33	**240**	**240**	ND	ND	ND	ND	**490**	--	--	--	--	--	--	--	--
	10/9/1997	8.04	3.70	NP	4.34	**500**	**270**	**1**	ND	**2**	**1**	**910**	--	--	--	--	--	--	--	--
	1/14/1998	8.04	2.16	NP	5.88	**340**	**310**	ND	ND	**1**	**1**	**140**	--	--	--	--	--	--	--	--
	4/1/1998	8.04	2.20	NP	5.84	**320**	**370**	**6**	ND	ND	ND	**93**	--	--	--	--	--	--	--	--
	7/15/1998	8.04	3.38	NP	4.66	**510**	**460**	**ND**	ND	ND	ND	**230**	--	--	--	--	--	--	--	--
	10/16/1998	8.04	2.30	NP	5.74	**67**	**330**	**5**	ND	ND	ND	**60**	--	--	--	--	--	--	--	--
	1/25/1999	8.04	2.42	NP	5.62	**120**	**420**	**2**	ND	ND	ND	**180**	--	--	--	--	--	--	--	--
	4/15/1999	8.04	2.16	NP	5.88	**170**	**290**	**1**	ND	ND	ND	**160**	--	--	--	--	--	--	--	--
	7/14/1999	8.04	2.35	NP	5.69	**420**	**290**	**3**	ND	ND	ND	**160**	--	--	--	--	--	--	--	--
	10/21/1999	8.04	2.49	NP	5.55	**350**	**360**	**1**	ND	ND	ND	**82**	--	--	--	--	--	--	--	--
	1/20/2000	8.04	2.38	NP	5.66	**2,060**	ND	**1**	ND	ND	ND	**54**	--	--	--	--	--	--	--	--
	4/13/2000	8.04	2.76	NP	5.28	**200**	**250**	**1**	ND	ND	ND	**91**	**150**	ND	ND	ND	ND	ND	ND	ND
	7/14/2000	8.04	3.26	NP	4.78	**423**	**345**	ND	ND	ND	ND	**95**	--	--	--	--	--	--	--	--
	10/26/2000	8.04	3.12	NP	4.92	**330**	**480**	**6.0**	ND	ND	ND	**120**	--	--	--	--	--	--	--	--
	1/3/2001	8.04	3.65	NP	4.39	**287**	**364**	**2**	ND	ND	ND	**118**	--	--	--	--	--	--	--	--
	4/4/2001	8.04	3.98	NP	4.06	**360**	**417**	**1**	ND	ND	**1**	**237**	--	--	--	--	--	--	--	--
	7/17/2001	8.04	3.12	NP	4.92	**270**	**480**	ND	ND	ND	ND	**150**	--	--	--	--	--	--	--	--
	10/1/2001	8.04	3.25	NP	4.79	**270**	**310**	**1.0**	<0.50	<0.50	<0.50	**53**	--	--	--	--	--	--	--	--
	1/31/2002	8.04	2.27	NP	5.77	**250**	**250**	**4**	<1.0	<1.0	<1.0	**110**	--	--	--	--	--	--	--	--
	4/18/2002	8.04	3.55	NP	4.49	**320**	**300**	<2.0	<2.0	<2.0	<2.0	--	**59**	--	--	--	--	--	--	--
	7/28/2002	8.04	2.55	NP	5.49	**310**	**500**	<0.50	<0.50	<0.50	<1.0	--	**130**	--	--	--	--	--	--	--
	10/9/2002	8.04	2.47	NP	5.57	**700**	**690**	**<5**	<5	<5	<10	--	**120**	--	--	--	--	--	--	--
	1/2/2003	8.04	1.70	NP	6.34	**210**	**310**	<0.50	<0.50	<0.50	<1.0	--	**110**	<2.0	<2.0	<2.0	<100	<500	<2.0	<2.0
	4/1/2003	8.04	3.48	NP	4.56	**200**	**250**	<1.0	<1.0	<1.0	<2.0	--	**210**	--	--	--	--	--	--	--
	7/1/2003	8.04	2.65	NP	5.39	**380**	**450**	<2.5	<2.5	<2.5	<5.0	--	**70**	--	--	--	--	<2500	--	--
	10/2/2003	8.04	3.12	NP	4.92	**300**	<250	<2.5	<2.5	<2.5	<5.0	--	**210**	--	--	--	--	<2500	--	--
	1/9/2004	8.04	2.39	NP	5.65	**200**	**300**	<0.50	**1**	**1**	**2**	--	**66**	--	--	--	--	<500	--	--
	4/26/2004	8.04	3.11	NP	4.93	**160**	**440**	**3**	**6**	**3**	**9**	--	**81**	--	--	--	--	<50	--	--
	7/22/2004	8.04	2.51	NP	5.53	**330**	**420**	<0.5	<0.5	<0.5	<1	--	**72**	--	--	--	--	<1000	--	--
	10/29/2004	8.04	2.00	NP	6.04	**200**	**460**	**6**	**15**	**10**	**46**	--	**48**	--	--	--	--	<50	--	--
	1/10/2005	8.04	1.52	NP	6.52	**250**	**280**	<0.50	**1**	<0.50	**2**	--	**64**	--	--	--	--	<50	--	--
	6/15/2005	8.04	2.00	NP	6.04	**360**	**460**	<0.50	**0.70**	0.56	**2**	--	**110**	--	--	--	--	<50	--	--
	9/27/2005	8.04	1.90	NP	6.14	<200	**210**	<0.50	**0.60**	<0.50	<1.0	--	**100**	<0.50	<0.50	<0.50	**79**	<250	--	--
	12/13/2005	8.04	2.35	NP	5.69	**230**	**230**	<0.50	<0.50	<0.50	<1.0	--	**92**	--	--	--	--	<250	--	--
	3/23/2006	8.04	1.84	NP	6.20	**260**	**290**	<0.50	<0.50	<0.50	<1.0	--	**88**	--	--	--	--	<250	--	--
	6/23/2006	8.04	2.26	NP	5.78	**330**	**500**	<0.50	<0.50	<0.50	<1.0	--	**75**	--	--	--	--	<250	--	--
	9/26/2006	8.04	2.08	NP	5.96	**260**	**270**	<0.50	<0.50	<0.50	<0.50	--	**73**	--	--	--	--	<250	--	--
	12/22/2006	8.04	1.88	NP	6.16	**250**	**260**	<0.50	<0.50	<0.50	**1**	--	**71**	--	--	--	--	<250	--	--
	3/30/2007	8.04	2.47	NP	5.57	**210**	**390**	<0.50	<0.50	<0.50	<0.50	--	**120**	--	--	--	--	<250	--	--
	6/28/2007	8.04	2.54	NP	5.50	**290**	**370**	<0.50	<0.50	<0.50	<0.50	--	**55**	--	--	--	--	<250	--	--
	9/25/2007	8.04	2.56	NP	5.48	**210**	**350**	<0.50	<0.50	<0.50	<0.50	--	**61**	--	--	--	--	<250	--	--
	12/28/2007	8.04	2.29	NP	5.75	**150**	**260**	<0.50	<0.50	<0.50	<1.0	--	**66**	--	--	--	--	<250	--	--
	3/22/2008	8.04	3.26	NP	4.78	**230**	**390**	<0.50	<0.50	<0.50	<1.0	--	**39**	--	--	--	--	<250	--	--
	6/23/2008	8.04	2.60	NP	5.44	**130**	**200**	<0.50	<0.50	<0.50	<1.0	--	**46**	--	--	--	--	<250	--	--
	9/19/2008	8.04	3.45	NP	4.59	**93**	**180**	<0.50	<0.50	<0.50	<1.0	--	**120**	--	--	--	--	<250	--	--

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-3	12/31/2008	8.04	2.55	NP	5.49	**110**	**190**	<0.50	<0.50	<0.50	<1.0	--	**38**	--	--	--	--	<250	--	--
	3/27/2009	8.04	2.37	NP	5.67	**130**	**150**	<0.50	<0.50	<0.50	<1.0	--	**50**	--	--	--	--	<250	--	--
	5/28/2009	8.04	3.32	NP	4.72	**120**	**190**	<0.50	<0.50	<0.50	<1.0	--	**60**	--	--	--	--	<250	--	--
	9/17/2009	8.04	2.63	NP	5.41	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/2009	8.04	2.13	NP	5.91	**338**	**300**	<0.50	<0.50	**1**	<1.5	--	**43**	--	--	--	--	<250	--	--
	3/29/2010	8.04	2.22	NP	5.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/30/2010	10.81	2.91	NP	7.90	**90**	**261**	<0.50	<0.50	<0.50	<1.5	--	**89.0**	--	--	--	--	<250	--	--
	7/6/2010	10.81	2.66	NP	8.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/20/2010	10.81	3.12	NP	7.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/8/2010	10.81	2.37	NP	8.44	**137**	**306**	<0.50	<0.50	<0.50	<1.5	--	**58.8**	--	--	--	--	<250	--	--
	3/14/2011	10.81	2.26	NP	8.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/2/2011	10.81	2.43	NP	8.38	**155**	**283**	**0.58**	**1.3**	<0.50	**2.2**	--	**42.1**	--	--	--	**55.7**	<250	--	--
	9/7/2011	10.81	2.36	NP	8.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/5/2011	10.81	2.55	NP	8.26	**81.7**	**381**	<0.50	<0.50	<0.50	<1.5	--	**41.8**	--	--	--	--	<250	--	--
	3/6/2012	10.81	2.63	NP	8.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/11/2012	10.81	2.99	NP	7.82	**87.9**	**371**	<0.50	<0.50	<0.50	<1.5	--	**55.7**	--	--	--	**77.2**	<250	--	--
	9/6/2012	10.81	2.50	NP	8.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2012	10.81	2.50	NP	8.31	<50	**130**	<0.50	<0.50	<0.50	<0.50	--	**28**	--	--	--	**77**	<5.0	--	--
MW-4	8/31/1992	NSVD	NG	NG	NG	**90**	**240**	ND	ND	ND	**0.54**	--	--	--	--	--	--	--	--	--
	11/30/1992	NSVD	NG	NG	NG	**61**	**420**	ND	**ND**	ND	**ND**	--	--	--	--	--	--	--	--	--
	2/4/1993	NSVD	NG	NG	NG	**ND**	**ND**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	5/4/1993	9.00	4.09	NP	4.91	ND	**110**	**0.95**	ND	ND	ND	--	--	--	--	--	--	--	--	--
	8/4/1993	9.00	5.01	NP	3.99	**81**	**250**	ND	**3.5**	ND	**4.1**	--	--	--	--	--	--	--	--	--
	11/3/1993	8.41	4.23	NP	4.18	**68**	**130**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	2/7/1994	8.41	3.35	NP	5.06	ND	**56**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	5/19/1994	8.41	3.92	NP	4.49	**90**	**140**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	6/25/1994	8.41	4.35	NP	4.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/27/1994	8.41	4.28	NP	4.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/15/1994	8.41	4.27	NP	4.14	**72**	**59**	ND	**0.6**	ND	ND	--	--	--	--	--	--	--	--	--
	11/14/1994	8.41	4.05	NP	4.36	ND	**130**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	2/21/1995	NSVD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD
MW-5	8/31/1992	NSVD	NG	NG	NG	**690**	**78**	**1**	ND	ND	**13**	--	--	--	--	--	--	--	--	--
	11/30/1992	NSVD	NG	NG	NG	**470**	**930**	**70**	**290**	**1**	**14**	--	--	--	--	--	--	--	--	--
	2/4/1993	NSVD	NG	NG	NG	**5,500**	**5,700**	**38**	ND	**620**	**170**	--	--	--	--	--	--	--	--	--
	5/4/1993	8.95	4.37	NP	4.58	**4,600**	**7,400**	**41**	ND	**1,000**	**35**	--	--	--	--	--	--	--	--	--
	8/4/1993	8.95	5.81	NP	3.14	**970**	**1,500**	**130**	**1**	**460**	**11**	--	--	--	--	--	--	--	--	--
	11/3/1993	8.95	5.68	NP	3.27	**2,100**	**13,000**	**350**	ND	**3,500**	**530**	--	--	--	--	--	--	--	--	--
	2/7/1994	8.95	5.11	NP	3.84	**830**	**2,000**	**87**	ND	**370**	**110**	--	--	--	--	--	--	--	--	--
	5/19/1994	8.95	5.09	NP	3.86	**600**	**260**	**44**	ND	**32**	**4**	--	--	--	--	--	--	--	--	--
	6/25/1994	8.95	4.55	NP	4.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/27/1994	8.95	5.72	NP	3.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/15/1994	8.95	5.68	NP	3.27	**860**	**1,600**	**110**	ND	**340**	**72**	--	--	--	--	--	--	--	--	--
	11/14/1994	8.95	5.63	NP	3.32	**290**	**250**	**40**	ND	ND	**5**	--	--	--	--	--	--	--	--	--
	2/21/1995	NSVD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD	WD

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-6	8/31/1992	NSVD	NG	NG	NG	**750**	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	11/30/1992	NSVD	NG	NG	NG	**1,400**	**9,200**	**550**	ND	**740**	**1,600**	--	--	--	--	--	--	--	--	--
	2/4/1993	NSVD	NG	NG	NG	**890**	**3,600**	**340**	ND	**290**	**550**	--	--	--	--	--	--	--	--	--
	5/4/1993	9.12	3.72	NP	5.40	**1,800**	**4,900**	**360**	**18**	**450**	**430**	--	--	--	--	--	--	--	--	--
	8/4/1993	9.12	5.15	NP	3.97	**1,100**	**3,400**	**390**	ND	**440**	**190**	--	--	--	--	--	--	--	--	--
	11/3/1993	8.87	5.25	NP	3.62	**390**	**1,400**	**320**	ND	**200**	**8**	--	--	--	--	--	--	--	--	--
	2/7/1994	8.87	4.55	NP	4.32	**970**	**4,900**	**650**	ND	**250**	**35**	--	--	--	--	--	--	--	--	--
	5/19/1994	8.87	4.62	NP	4.25	**1,400**	**3,600**	**300**	**2**	**210**	**41**	--	--	--	--	--	--	--	--	--
	8/15/1994	8.87	5.08	NP	3.79	**790**	**1,300**	**130**	**7**	**54**	**57**	--	--	--	--	--	--	--	--	--
	11/14/1994	8.87	5.30	NP	3.57	**800**	**730**	**50**	ND	ND	**39**	--	--	--	--	--	--	--	--	--
	2/21/1995	8.87	5.37	NP	3.50	**730**	**2,000**	**250**	**5**	**25**	**30**	--	--	--	--	--	--	--	--	--
	5/18/1995	8.87	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI
	8/17/1995	8.87	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI	WI
	7/26/1996	8.87	6.40	3.33	4.97	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	10/28/1996	8.87	4.10	0.21	4.93	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	11/13/1996	8.87	4.02	0.25	5.04	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	11/25/1996	8.87	4.01	0.75	5.42	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	12/4/1996	8.87	3.65	0.50	5.60	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	12/19/1996	8.87	4.80	2.20	5.72	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	1/8/1997	8.87	4.84	1.75	5.34	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	1/14/1997	8.87	4.51	1.15	5.22	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	1/27/1997	8.87	4.00	1.75	6.18	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	1/29/1997	8.87	3.24	0.31	5.86	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	2/11/1997	8.87	4.65	1.20	5.12	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	2/24/1997	8.87	4.81	1.10	4.89	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	3/10/1997	8.87	4.60	0.95	4.98	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	3/17/1997	8.87	4.50	0.89	5.04	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	3/31/1997	8.87	4.65	1.00	4.97	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	4/15/1997	8.87	4.90	1.03	4.74	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	4/28/1997	8.87	4.78	0.03	4.11	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	5/15/1997	8.87	4.60	0.25	4.46	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	5/27/1997	8.87	4.50	0.25	4.56	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	6/9/1997	8.87	4.60	0.20	4.42	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	6/24/1997	8.87	4.50	0.25	4.56	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	7/9/1997	8.87	4.80	0.60	4.52	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	7/15/1997	8.87	4.63	0.42	4.56	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	7/21/1997	8.87	4.75	0.25	4.31	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	8/6/1997	8.87	4.50	0.10	4.45	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	8/20/1997	8.87	4.55	0.10	4.40	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	9/2/1997	8.87	4.75	0.05	4.16	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	10/9/1997	8.87	4.84	0.04	4.06	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	1/14/1998	8.87	3.90	0.94	5.68	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	2/12/1998	8.87	3.35	0.64	6.00	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	3/3/1998	8.87	4.51	0.02	4.38	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	4/1/1998	8.87	3.67	1.60	6.40	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	5/26/1998	8.87	4.11	0.50	5.14	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	6/15/1998	8.87	5.03	0.30	4.07	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	7/15/1998	8.87	4.56	0.05	4.35	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	8/21/1998	8.87	4.77	0.02	4.12	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	9/30/1998	8.87	5.08	0.03	3.81	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	10/16/1998	8.87	4.31	2.40	6.36	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	11/6/1998	8.87	3.98	0.17	5.02	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-6	11/25/1998	8.87	3.92	0.10	5.03	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	12/28/1998	8.87	3.90	0.20	5.12	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	1/25/1999	8.87	4.18	0.60	5.14	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	2/22/1999	8.87	4.07	0.22	4.97	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	3/22/1999	8.87	4.32	0.15	4.66	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	4/15/1999	8.87	4.23	0.95	5.35	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	5/28/1999	8.87	4.38	0.39	4.78	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	6/29/1999	8.87	4.12	0.02	4.77	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	7/14/1999	8.87	4.20	0.03	4.69	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	8/23/1999	8.87	4.51	0.24	4.54	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	9/30/1999	8.87	4.17	0.17	4.83	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	10/21/1999	8.87	4.27	0.12	4.69	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	11/29/1999	8.87	4.18	NP	4.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/20/1999	8.87	4.26	0.01	4.62	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH	LPH
	1/20/2000	8.87	4.31	NP	4.56	**67,600**	**130,000**	**2,900**	**8,600**	**2,000**	**16,000**	ND	--	--	--	--	--	--	--	--
	2/26/2000	8.87	3.98	NP	4.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/31/2000	8.87	4.14	NP	4.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/13/2000	8.87	4.04	NP	4.83	**8,700**	**140,000**	**5,000**	**14,000**	**3,600**	**27,000**	**7,700**	--	--	--	--	--	--	--	--
	5/26/2000	8.87	4.41	NP	4.46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/17/2000	8.87	4.35	NP	4.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/14/2000	8.87	4.47	NP	4.40	**133,000**	**259,000**	**7,670**	**13,700**	**6,860**	**40,700**	ND	ND	--	--	--	--	--	--	--
	8/24/2000	8.87	3.71	NP	5.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/27/2000	8.87	4.33	NP	4.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/26/2000	8.87	4.32	NP	4.55	**61,000**	**110,000**	**7,000**	**6,200**	**3,700**	**12,000**	**670**	**43**	--	--	--	--	--	--	--
	1/3/2001	8.87	4.52	NP	4.35	**929**	**84,700**	**3,950**	**4,130**	**3,650**	**11,800**	ND	ND	--	--	--	--	--	--	--
	4/4/2001	8.87	4.29	NP	4.58	**18,000**	**69,800**	**2,060**	**2,840**	**3,650**	**10,900**	ND	**48**	ND	ND	ND	ND	ND	ND	ND
	7/17/2001	8.87	4.37	NP	4.50	**20,000**	**100,000**	**3,200**	**3,300**	**3,400**	**12,000**	ND	--	--	--	--	--	--	--	--
	10/1/2001	8.87	4.45	NP	4.42	**24,000**	**110,000**	**3,200**	**2,400**	**4,500**	**13,000**	<1000	--	--	--	--	--	--	--	--
	1/31/2002	8.87	4.03	NP	4.84	**11,000**	**230,000**	**2,400**	**1,800**	**5,400**	**16,000**	<2500	--	--	--	--	--	--	--	--
	4/18/2002	8.87	3.45	NP	5.42	**3,500**	**94,000**	**6,800**	**13,000**	**3,000**	**19,000**	<500	--	--	--	--	--	--	--	--
	7/28/2002	8.87	2.24	NP	6.63	**27,000**	**110,000**	**530**	**170**	**3,200**	**7,300**	--	<100	--	--	--	--	--	--	--
	10/9/2002	8.87	3.53	NP	5.34	**170,000**	**970,000**	**10,000**	**39,000**	**13,000**	**94,000**	--	<2000	--	--	--	--	--	--	--
	1/2/2003	8.87	2.34	NP	6.53	**66,000**	**270,000**	**6,100**	**15,000**	**5,400**	**37,000**	--	<200	--	--	--	--	--	--	--
	4/1/2003	8.87	3.17	NP	5.70	**35,000**	**3,000,000**	**8,000**	**39,000**	**37,000**	**260,000**	--	<2000	--	--	--	--	--	--	--
	7/1/2003	8.87	3.55	NP	5.32	**11,000**	**38,000**	**2,100**	**990**	**2,700**	**6,500**	--	<100	--	--	--	--	<25000	--	--
	10/2/2003	8.87	3.82	NP	5.05	<50	**100,000**	**5,600**	**6,900**	**4,700**	**18,000**	--	<800	--	--	--	--	<200000	--	--
	1/9/2004	8.87	2.80	NP	6.07	**20,000**	**170,000**	**2,800**	**3,300**	**4,700**	**16,000**	--	<200	--	--	--	--	<50000	--	--
	4/26/2004	8.87	3.40	NP	5.47	**13,000**	**97,000**	**5,900**	**9,000**	**5,100**	**23,000**	--	<50	--	--	--	--	<5000	--	--
	7/22/2004	8.87	3.54	NP	5.33	**33,000**	**110,000**	**4,100**	**5,100**	**4,000**	**16,000**	--	<200	--	--	--	--	<300000	--	--
	10/29/2004	8.87	3.03	NP	5.84	**78,000**	**100,000**	**5,200**	**6,100**	**4,200**	**15,000**	--	<50	--	--	--	--	<5000	--	--
	1/10/2005	8.87	2.35	NP	6.52	**12,000**	**71,000**	**1,600**	**3,700**	**2,100**	**9,900**	--	<50	--	--	--	--	<5000	--	--
	6/15/2005	8.87	2.47	NP	6.40	**16,000**	**130,000**	**800**	**1,800**	**2,200**	**9,300**	--	<50	--	--	--	--	<5000	--	--
	9/27/2005	8.87	2.55	NP	6.32	**2,500**	**13,000**	**82**	**120**	**430**	**990**	--	**1**	**2**	<0.50	<0.50	<10	<250	--	--
	12/13/2005	8.87	3.28	NP	5.59	**18,000**	**68,000**	**1,500**	**1,100**	**2,200**	**7,700**	--	<50	--	--	--	--	<25000	--	--

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-6	3/23/2006	8.87	2.87	NP	6.00	**73,000**	**41,000**	**290**	**140**	**1,500**	**2,700**	--	<50	--	--	--	--	<25000	--	--
	6/23/2006	8.87	3.15	NP	5.72	**35,000**	**50,000**	**2,200**	**1,400**	**1,900**	**5,700**	--	<12	--	--	--	--	<6200	--	--
	9/26/2006	8.87	3.08	NP	5.79	**22,000**	**130,000**	**2,200**	**1,000**	**2,900**	**8,800**	--	<50	--	--	--	--	<25000	--	--
	12/22/2006	8.87	2.90	NP	5.97	**62,000**	**90,000**	**940**	**610**	**1,900**	**4,700**	--	<50	--	--	--	--	<25000	--	--
	3/30/2007	8.87	3.26	NP	5.61	**62,000**	**210,000**	**1,100**	**560**	**3,400**	**12,000**	--	<10	--	--	--	--	<5000	--	--
	6/28/2007	8.87	3.46	NP	5.41	**71,000**	**67,000**	**2,200**	**1,300**	**2,700**	**10,000**	--	<25	--	--	--	--	<12000	--	--
	9/25/2007	8.87	3.52	NP	5.35	**58,000**	**56,000**	**2,900**	**720**	**2,400**	**9,000**	--	<25	--	--	--	--	<12000	--	--
	12/28/2007	8.87	3.27	NP	5.60	**18,000**	**78,000**	**28,000**	**2,700**	**4,000**	**8,100**	--	**16,000**	--	--	--	--	<12000	--	--
	3/22/2008	8.87	2.48	NP	6.39	**68,000**	**66,000**	**380**	**150**	**1,500**	**2,400**	--	<25	--	--	--	--	<12000	--	--
	6/23/2008	8.87	3.54	NP	5.33	**68,000**	**59,000**	**1,600**	**130**	**1,800**	**4,100**	--	**25**	--	--	--	--	<12000	--	--
	9/19/2008	8.87	4.06	NP	4.81	**180,000**	**65,000**	**2,000**	**230**	**2,000**	**4,500**	--	<12	--	--	--	--	<6200	--	--
	12/31/2008	8.87	3.45	NP	5.42	**68,000**	**91,000**	**2,000**	**320**	**5,300**	**13,000**	--	<50	--	--	--	--	<25000	--	--
	3/27/2009	8.87	3.09	NP	5.78	**170,000**	**150,000**	**1,300**	**240**	**2,800**	**7,200**	--	<50	--	--	--	--	<25000	--	--
	5/28/2009	8.87	3.49	NP	5.38	**78,000**	**53,000**	**1,700**	**200**	**2,300**	**5,400**	--	<50	--	--	--	--	<25000	--	--
	9/17/2009	8.87	3.64	NP	5.23	**250,000 T4**	**77,000**	**2,100**	**1,400**	**2,600**	**8,500**	--	<12	--	--	--	--	<6200	--	--
	12/17/2009	8.87	3.14	NP	5.73	**30,300**	**59,100**	**1,730**	**199**	**2,260**	**5,460**	--	**20**	--	--	--	--	<250	--	--
	3/29/2010	8.87	3.16	NP	5.71	**106,000**	**48,400**	**1,980**	**208**	**3,070**	**8,070**	--	**12**	--	--	--	--	<250	--	--
	6/30/2010	11.55	3.50	NP	8.05	**170,000**	**78,700**	**2,130**	**281**	**2,860**	**8,400**	--	**6**	--	--	--	--	<250	--	--
	7/6/2010	11.55	3.49	NP	8.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/20/2010	11.55	3.75	NP	7.80	**18,800**	**64,500**	**2,300**	**170**	**2,770**	**6,260**	--	**19**	--	--	--	--	<250	--	--
	12/8/2010	11.55	8.42	NP	3.13	**28,700**	**78,400**	**1,300**	**1,680**	**3,490**	**20,600**	--	**11**	--	--	--	--	<250	--	--
	3/14/2011	11.55	3.40	NP	8.15	**93,000**	**44,600**	**912**	**338**	**728**	**3,670**	--	**16**	--	--	--	**134**	<250	--	--
	6/2/2011	11.55	2.76	NP	8.79	**33,700 T4**	**56,200**	**780**	**262**	**651**	**3,890**	--	**7**	--	--	--	**81.0**	<250	--	--
	9/7/2011	11.55	2.83	NP	8.72	**6,780 T4**	**16,600**	**16**	**11**	**90**	**339**	--	**<0.50**	--	--	--	--	<250	--	--
	12/5/2011	11.55	3.56	NP	7.99	**20,200 T4**	**64,600**	**646**	**95**	**924**	**4,050**	--	**15**	--	--	--	--	<250	--	--
	3/6/2012	11.55	3.43	NP	8.12	**14,800 T4**	**55,000**	**1,020**	**131**	**1,320**	**4,730**	--	**19**	--	--	--	**316**	<1250	--	--
	6/11/2012	11.55	3.33	NP	8.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/12/2012	--	--	--	--	**47,100 T4**	**33,400**	**773**	**61**	**840**	**3,110**	--	**11**	--	--	--	**123**	<250	--	--
	9/6/2012	11.55	2.85	NP	8.70	<1000	**24,000**	**450**	**51**	**610**	**1,800**	--	**6**	<4.0	<4.0	<4.0	**82**	<40	<4.0	<4.0
	9/11/2012	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2012	11.55	2.90	NP	8.65	**470**	**20,000**	**200**	**16**	**350**	**1,100**	--	<4.0	--	--	--	**22**	<40	--	--
MW-7	5/27/1997	8.83	4.50	NP	4.33	--	**68**	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	6/1/1997	8.83	4.54	NP	4.29	**69**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/15/1997	8.83	4.70	NP	4.13	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/9/1997	8.83	4.30	NP	4.53	**190**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	1/14/1998	8.83	2.88	NP	5.95	**65**	ND	ND	ND	ND	ND	**36**	--	--	--	--	--	--	--	--
	4/1/1998	8.83	3.13	NP	5.70	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	7/15/1998	8.83	4.45	NP	4.38	**74**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/16/1998	8.83	3.45	NP	5.38	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	1/25/1999	8.83	3.22	NP	5.61	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	4/15/1999	8.83	3.11	NP	5.72	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	7/14/1999	8.83	3.34	NP	5.49	**69**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/21/1999	8.83	3.43	NP	5.40	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	1/20/2000	8.83	3.29	NP	5.54	ND	ND	ND	ND	ND	ND	**4.2**	--	--	--	--	--	--	--	--
	4/13/2000	8.83	3.39	NP	5.44	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	7/14/2000	8.83	4.42	NP	4.41	**68.0**	ND	ND	ND	ND	ND	**7.83**	--	--	--	--	--	--	--	--
	7/17/2001	8.83	5.06	NP	3.77	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/1/2001	8.83	4.98	NP	3.85	<51	<50	<0.50	<0.50	<0.50	<0.50	<5.0	--	--	--	--	--	--	--	--
	1/31/2002	8.83	3.88	NP	4.95	**90**	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--	--	--	--	--	--	--
	4/18/2002	8.83	4.03	NP	4.80	**78**	<50	<0.50	<0.50	<0.50	<0.50	**5.7**	--	--	--	--	--	--	--	--
	7/28/2002	8.83	3.59	NP	5.24	<50	<50	<0.50	<0.50	<0.50	<1.0	--	**3.9**	--	--	--	--	--	--	--
	10/9/2002	8.83	4.53	NP	4.30	<96	<50	<0.50	<0.50	<0.50	<1.0	--	**3.9**	--	--	--	--	--	--	--
	1/3/2003	8.83	3.36	NP	5.47	**78**	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	--	--	--
	4/1/2003	8.83	3.94	NP	4.89	**67**	**71**	<0.50	<0.50	**0.71**	<1.0	--	**3.4**	--	--	--	--	--	--	--
	7/1/2003	8.83	4.60	NP	4.23	**68**	**64**	<0.50	<0.50	**0.77**	**2.0**	--	**35**	--	--	--	--	<500	--	--
	10/2/2003	8.83	5.46	NP	3.37	**82**	<50	<0.50	<0.50	<0.50	<1.0	--	**4.9**	--	--	--	--	<500	--	--
	1/9/2004	8.83	3.55	NP	5.28	**75**	**54**	<0.50	<0.50	<0.50	<1.0	--	**2.4**	--	--	--	--	<500	--	--
	4/26/2004	8.83	4.49	NP	4.34	<50	<50	<0.50	<0.50	<0.50	**1.5**	--	**2.3**	--	--	--	--	<50	--	--
	7/22/2004	8.83	4.93	NP	3.90	<200	**82**	**0.90**	**2.0**	**3.5**	**9.9**	--	**1.4**	--	--	--	--	<1000	--	--
	10/29/2004	8.83	3.71	NP	5.12	**54**	**210**	**0.67**	**1.6**	**1.7**	**5.8**	--	<0.50	--	--	--	--	<50	--	--

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-7	1/10/2005	8.83	2.77	NP	6.06	<50	**74**	**0.51**	**2.2**	**1.7**	**7.0**	--	<0.50	--	--	--	--	<50	--	--
	6/15/2005	8.83	3.40	NP	5.43	<50	<50	<0.50	<0.50	<0.50	<1.0	--	**0.88**	--	--	--	--	<50	--	--
	9/27/2005	8.83	3.44	NP	5.39	<200	<50	**0.59**	**1.2**	<0.50	<1.0	--	**0.96**	<0.50	<0.50	<0.50	<10	<250	--	--
	12/13/2005	8.83	3.98	NP	4.85	<200	<50	<0.50	<0.50	<0.50	<1.0	--	**0.65**	--	--	--	--	<250	--	--
	3/23/2006	8.83	3.37	NP	5.46	<200	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	6/23/2006	8.83	5.25	NP	3.58	<200	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/26/2006	8.83	4.13	NP	4.70	<50	<50	<0.50	<0.50	<0.50	<0.50	--	0.77	--	--	--	--	<250	--	--
	12/22/2006	8.83	3.63	NP	5.20	**630**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	3/30/2007	8.83	4.31	NP	4.52	**94**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	6/28/2007	8.83	4.62	NP	4.21	<50	<50	<0.50	<0.50	<0.50	<0.50	--	0.54	--	--	--	--	<250	--	--
	9/25/2007	8.83	4.65	NP	4.18	<50	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	12/28/2007	8.83	3.99	NP	4.84	**75**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	3/22/2008	8.83	4.08	NP	4.75	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	6/23/2008	8.83	4.10	NP	4.73	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/19/2008	8.83	4.86	NP	3.97	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	12/31/2008	8.83	4.17	NP	4.66	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	3/27/2009	8.83	4.00	NP	4.83	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	5/28/2009	8.83	4.71	NP	4.12	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/17/2009	8.83	4.87	NP	3.96	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/29/2010	8.83	WI	WI	WI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/30/2010	11.64	4.45	NP	7.19	**66.0**	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	7/6/2010	11.64	4.63	NP	7.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/20/2010	11.64	4.85	NP	6.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/8/2010	11.64	3.99	NP	7.65	**57.7**	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/14/2011	11.64	3.81	NP	7.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/2/2011	11.64	3.90	NP	7.74	**63.0 T4**	--	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	9/7/2011	11.64	3.72	NP	7.92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/5/2011	11.64	4.60	NP	7.04	<50.0	--	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/6/2012	11.64	4.54	NP	7.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/11/2012	11.64	4.93	NP	6.71	<37.9	--	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	9/6/2012	11.64	4.03	NP	7.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2012	11.64	3.43	NP	8.21	<50	--	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	<5.0	<5.0	--	--
MW-8	5/27/1997	8.52	3.42	NP	5.10	--	**310**	**0.88**	**0.67**	**15**	**70**	ND	--	--	--	--	--	--	--	--
	6/1/1997	8.52	3.46	NP	5.06	**320**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/15/1997	8.52	3.49	NP	5.03	ND	ND	ND	ND	**2.7**	**3.8**	ND	--	--	--	--	--	--	--	--
	10/9/1997	8.52	3.73	NP	4.79	**390**	**590**	**1.4**	ND	**32**	**4.1**	ND	--	--	--	--	--	--	--	--
	1/14/1998	8.52	1.92	NP	6.60	**230**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	4/1/1998	8.52	2.38	NP	6.14	**510**	ND	ND	ND	ND	ND	**4.7**	--	--	--	--	--	--	--	--
	7/15/1998	8.52	3.53	NP	4.99	**140**	ND	ND	ND	**0.56**	**1.1**	ND	--	--	--	--	--	--	--	--
	10/16/1998	8.52	3.04	NP	5.48	**170**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	1/25/1999	8.52	2.92	NP	5.60	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	4/15/1999	8.52	2.40	NP	6.12	**91**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	7/14/1999	8.52	3.03	NP	5.49	**120**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/21/1999	8.52	3.11	NP	5.41	**110**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	1/20/2000	8.52	3.06	NP	5.46	**583**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	4/13/2000	8.52	2.84	NP	5.68	**80**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	7/14/2000	8.52	3.39	NP	5.13	**113**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	7/17/2001	8.52	3.46	NP	5.06	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/1/2001	8.52	3.51	NP	5.01	<50	<50	<0.50	<0.50	<0.50	<0.50	<5.0	--	--	--	--	--	--	--	--
	1/31/2002	8.52	2.75	NP	5.77	**260**	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--	--	--	--	--	--	--
	4/18/2002	8.52	2.98	NP	5.54	**160**	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--	--	--	--	--	--	--
	7/28/2002	8.52	2.41	NP	6.11	**140**	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	--	--	--
	10/9/2002	8.52	2.09	NP	6.43	**120**	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	--	--	--
	1/2/2003	8.52	1.98	NP	6.54	**210**	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	--	--	--
	4/1/2003	8.52	2.66	NP	5.86	**220**	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	--	--	--
	7/1/2003	8.52	3.08	NP	5.44	**170**	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	<500	--	--
	10/2/2003	8.52	3.89	NP	4.63	**350**	**540**	**3.9**	**15**	**29**	**80**	--	<2.0	--	--	--	--	<500	--	--
	1/9/2004	8.52	2.38	NP	6.14	**180**	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	<500	--	--
	4/26/2004	8.52	2.89	NP	5.63	**100**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<50	--	--
	7/22/2004	8.52	3.25	NP	5.27	**250**	<50	<0.5	<0.5	<0.5	<1	--	<0.5	--	--	--	--	<1000	--	--

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-8	10/29/2004	8.52	3.06	NP	5.46	**120**	<50	<0.50	<0.50	**0.82**	**2.5**	--	<0.50	--	--	--	--	<50	--	--
	1/10/2005	8.52	1.92	NP	6.60	**140**	**58**	<0.50	**0.61**	**1.2**	**4.0**	--	<0.50	--	--	--	--	<50	--	--
	6/15/2005	8.52	2.22	NP	6.30	**140**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<50	--	--
	9/27/2005	8.52	2.43	NP	6.09	<200	<50	<0.50	<0.50	**1.2**	<1.0	--	<0.50	<0.50	<0.50	<0.50	<10	<250	--	--
	12/13/2005	8.52	2.89	NP	5.63	<200	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	3/23/2006	8.52	2.12	NP	6.40	<200	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	6/23/2006	8.52	2.65	NP	5.87	<230	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/26/2006	8.52	2.75	NP	5.77	**110**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	12/22/2006	8.52	2.58	NP	5.94	**100**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	3/30/2007	8.52	2.74	NP	5.78	**120**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	6/28/2007	8.52	2.90	NP	5.62	**140**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	9/25/2007	8.52	3.26	NP	5.26	**110**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	12/28/2007	8.52	2.64	NP	5.88	**110**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	3/22/2008	8.52	2.31	NP	6.21	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	6/23/2008	8.52	3.13	NP	5.39	<58	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/19/2008	8.52	3.72	NP	4.80	**79**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	12/31/2008	8.52	2.98	NP	5.54	**110**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	3/27/2009	8.52	2.49	NP	6.03	**89**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	5/28/2009	8.52	3.12	NP	5.40	**91**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/17/2009	8.52	3.63	NP	4.89	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/29/2010	8.52	WI	WI	WI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/30/2010	11.32	2.60	NP	8.72	**182**	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	7/6/2010	11.32	3.03	NP	8.29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/20/2010	11.32	3.33	NP	7.99	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/8/2010	11.32	2.82	NP	8.50	**116**	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/14/2011	11.32	3.84	NP	7.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/2/2011	11.32	2.77	NP	8.55	--	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	9/7/2011	11.32	2.84	NP	8.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/5/2011	11.32	2.68	NP	8.64	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/6/2012	11.32	3.07	NP	8.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/11/2012	11.32	3.08	NP	8.24	<37.9	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	**8.3**	<250	--	--
	9/6/2012	11.32	2.91	NP	8.41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2012	11.32	2.31	NP	9.01	<50	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	<5.0	<5.0	--	--
MW-9	2/21/1995	8.29	1.98	NP	6.31	**71**	**70**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	5/18/1995	8.29	3.47	NP	4.82	ND	**52**	ND	**1.1**	ND	**1.9**	--	--	--	--	--	--	--	--	--
	8/17/1995	8.29	1.49	NP	6.80	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
	7/26/1996	8.29	0.28	NP	8.01	**98**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/28/1996	8.29	1.15	NP	7.14	**99**	ND	ND	ND	ND	ND	**7.6**	--	--	--	--	--	--	--	--
	1/29/1997	8.29	1.05	NP	7.24	**54**	ND	ND	ND	ND	ND	**5.4**	--	--	--	--	--	--	--	--
	4/15/1997	8.29	1.88	NP	6.41	**94**	ND	ND	ND	ND	ND	**5.4**	--	--	--	--	--	--	--	--
	5/27/1997	8.29	1.05	NP	7.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/15/1997	8.29	1.90	NP	6.39	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/9/1997	8.29	1.76	NP	6.53	**160**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	1/14/1998	8.29	1.26	NP	7.03	**110**	ND	ND	ND	ND	ND	**3.0**	--	--	--	--	--	--	--	--
	4/1/1998	8.29	0.85	NP	7.44	**110**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	7/15/1998	8.29	1.52	NP	6.77	**200**	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/16/1998	8.29	0.81	NP	7.48	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	1/25/1999	8.29	0.92	NP	7.37	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	4/15/1999	8.29	0.90	NP	7.39	ND	**75**	**21**	ND	ND	**1.1**	**680**	--	--	--	--	--	--	--	--
	7/14/1999	8.29	1.04	NP	7.25	**140**	ND	**1.9**	ND	ND	ND	**260**	--	--	--	--	--	--	--	--
	10/21/1999	8.29	1.23	NP	7.06	**210**	ND	ND	ND	ND	ND	**170**	--	--	--	--	--	--	--	--
	1/20/2000	8.29	1.18	NP	7.11	**519**	ND	**1.1**	ND	ND	ND	**35**	--	--	--	--	--	--	--	--
	4/13/2000	8.29	1.08	NP	7.21	**81**	**160**	**0.64**	ND	ND	ND	**53**	--	--	--	--	--	--	--	--
	7/14/2000	8.29	1.43	NP	6.86	**107**	ND	ND	ND	ND	ND	**20.2**	--	--	--	--	--	--	--	--
	10/26/2000	8.29	1.38	NP	6.91	**240**	240	**2.9**	ND	ND	ND	**56**	--	--	--	--	--	--	--	--
	1/3/2001	8.29	1.66	NP	6.63	**164**	**166**	**0.763**	**0.776**	ND	**1.28**	**50.2**	--	--	--	--	--	--	--	--
	4/4/2001	8.29	1.27	NP	7.02	**240**	**296**	**0.738**	ND	ND	0.907	**135**	--	--	--	--	--	--	--	--
	7/17/2001	8.29	1.38	NP	6.91	ND	ND	ND	ND	ND	ND	**13**	--	--	--	--	--	--	--	--
	10/1/2001	8.29	1.93	NP	6.36	<52	**51**	<0.50	<0.50	<0.50	<0.50	**5.0**	--	--	--	--	--	--	--	--
	1/31/2002	8.29	2.08	NP	6.21	200	<50	<0.50	<0.50	<0.50	<0.50	**5.8**	--	--	--	--	--	--	--	--

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-9	4/18/2002	8.29	1.76	NP	6.53	<50	<50	<0.50	<0.50	<0.50	<0.50	**5.1**	--	--	--	--	--	--	--	--
	7/28/2002	8.29	1.57	NP	6.72	<50	<50	<0.50	<0.50	<0.50	<1.0	--	**3.5**	--	--	--	--	--	--	--
	10/9/2002	8.29	1.45	NP	6.84	**100**	<50	<0.50	<0.50	<0.50	<1.0	--	**17**	--	--	--	--	--	--	--
	1/2/2003	8.29	1.18	NP	7.11	<50	<50	<0.50	<0.50	<0.50	<1.0	--	**8.6**	--	--	--	--	--	--	--
	4/1/2003	8.29	2.04	NP	6.25	56	<50	<0.50	<0.50	<0.50	<1.0	--	**9.4**	--	--	--	--	--	--	--
	7/1/2003	8.29	2.80	NP	5.49	<50	<50	<0.50	<0.50	<0.50	<1.0	--	**3.2**	--	--	--	--	<500	--	--
	10/2/2003	8.29	2.70	NP	5.59	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	<500	--	--
	1/9/2004	8.29	1.90	NP	6.39	**91**	**74**	<0.50	**0.98**	**2.3**	**6.2**	--	<2.0	--	--	--	--	<500	--	--
	4/26/2004	8.29	1.62	NP	6.67	<50	**51**	<0.50	<0.50	<0.50	<1.0	--	**0.51**	--	--	--	--	<50	--	--
	7/22/2004	8.29	1.88	NP	6.41	<200	<50	<0.5	<0.5	<0.5	<1	--	**0.78**	--	--	--	--	<1000	--	--
	10/29/2004	8.29	1.28	NP	7.01	**76**	<50	<0.50	<0.50	<0.50	**1.0**	--	<0.50	--	--	--	--	<50	--	--
	1/10/2005	8.29	0.07	NP	8.22	**77**	**93**	**0.60**	**2.3**	**2.4**	**9.0**	--	<0.50	--	--	--	--	<50	--	--
	6/15/2005	8.29	1.70	NP	6.59	**67**	<50	<0.50	<0.50	<0.50	<1.0	--	**6.6**	--	--	--	--	<50	--	--
	9/27/2005	8.29	1.98	NP	6.31	<200	<50	<0.50	**0.73**	<0.50	<1.0	--	**2.3**	<0.50	<0.50	<0.50	<10	<250	--	--
	12/13/2005	8.29	2.26	NP	6.03	<200	<50	<0.50	<0.50	<0.50	<1.0	--	**2.9**	--	--	--	--	<250	--	--
	3/23/2006	8.29	1.32	NP	6.97	<200	<50	<0.50	<0.50	<0.50	<1.0	--	**2.7**	--	--	--	--	<250	--	--
	6/23/2006	8.29	1.98	NP	6.31	<200	<50	<0.50	<0.50	<0.50	<1.0	--	**1.9**	--	--	--	--	<250	--	--
	9/26/2006	8.29	2.52	NP	5.77	<50	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	12/22/2006	8.29	1.98	NP	6.31	**150**	<50	<0.50	**0.57**	**1.8**	**4.6**	--	**1.6**	--	--	--	--	<250	--	--
	3/30/2007	8.29	2.01	NP	6.28	**72**	<50	<0.50	<0.50	<0.50	<0.50	--	**3.4**	--	--	--	--	<250	--	--
	6/28/2007	8.29	1.90	NP	6.39	**1000**	<50	<0.50	<0.50	<0.50	<0.50	--	**4.9**	--	--	--	--	<250	--	--
	9/25/2007	8.29	1.57	NP	6.72	**100**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	12/28/2007	8.29	1.98	NP	6.31	**56**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	3/22/2008	8.29	0.80	NP	7.49	<50	<50	<0.50	<0.50	<0.50	<1.0	--	**0.61**	--	--	--	--	<250	--	--
	6/23/2008	8.29	1.80	NP	6.49	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/19/2008	8.29	2.43	NP	5.86	56	<50	<0.50	<0.50	<0.50	<1.0	--	**3.9**	--	--	--	--	<250	--	--
	12/31/2008	8.29	2.66	NP	5.63	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	3/27/2009	8.29	2.01	NP	6.28	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	5/28/2009	8.29	2.20	NP	6.09	<50	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/17/2009	8.29	1.83	NP	6.46	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/17/2009	8.29	1.52	NP	6.77	**105**	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/29/2010	8.29	2.21	NP	6.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/30/2010	10.94	2.32	NP	8.62	**95.0**	<50.0	<0.50	<0.50	<0.50	<1.5	--	**0.85**	--	--	--	--	<250	--	--
	7/6/2010	10.94	2.02	NP	8.92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/20/2010	10.94	2.03	NP	8.91	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/8/2010	10.94	1.77	NP	9.17	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/14/2011	10.94	2.24	NP	8.70	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	6/2/2011	10.94	2.24	NP	8.70	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	9/7/2011	10.94	2.46	NP	8.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/5/2011	10.94	2.43	NP	8.51	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	**4.0**	--	--	--	--	<250	--	--
	3/6/2012	10.94	3.03	NP	7.91	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/11/2012	10.94	1.75	NP	9.19	<37.9	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	9/6/2012	10.94	1.24	NP	9.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2012	10.94	1.80	NP	9.14	<50	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	<5.0	<5.0	--	--
MW-10	2/21/1995	8.62	4.69	NP	3.93	**270**	**1500**	**250**	**26**	**9.1**	**160**	--	--	--	--	--	--	--	--	--
	5/18/1995	8.62	4.92	NP	3.70	**75**	**810**	**520**	ND	**18**	**23**	--	--	--	--	--	--	--	--	--
	8/17/1995	8.62	4.05	NP	4.57	ND	**67**	**25**	ND	**2.4**	ND	--	--	--	--	--	--	--	--	--
	7/26/1996	8.62	4.08	NP	4.54	ND	ND	**3.7**	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/28/1996	8.62	4.09	NP	4.53	ND	ND	**1.1**	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	1/29/1997	8.62	2.94	NP	5.68	ND	**210**	**41**	0.67	**7.2**	**4.8**	**11**	--	--	--	--	--	--	--	--
	4/15/1997	8.62	4.07	NP	4.55	ND	**110**	**12**	ND	**0.77**	ND	**9.7**	--	--	--	--	--	--	--	--
	5/27/1997	8.62	4.40	NP	4.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/15/1997	8.62	4.19	NP	4.43	ND	ND	**2.1**	ND	**0.67**	**0.73**	ND	--	--	--	--	--	--	--	--
	10/9/1997	8.62	4.75	NP	3.87	ND	**190**	**38**	**0.92**	**6.6**	**7.6**	ND	--	--	--	--	--	--	--	--
	1/14/1998	8.62	2.66	NP	5.96	--	**59**	**9.5**	**0.85**	**1.2**	**1.7**	**4.5**	--	--	--	--	--	--	--	--
	4/1/1998	8.62	3.45	NP	5.17	**62**	**230**	**66**	**1.7**	**12**	**17**	**6.4**	--	--	--	--	--	--	--	--
	7/15/1998	8.62	4.21	NP	4.41	**78**	**290**	**98**	**45**	**21**	**38**	**21**	--	--	--	--	--	--	--	--
	10/16/1998	8.62	4.11	NP	4.51	ND	**160**	**44**	**0.96**	**2.5**	**10**	**17**	--	--	--	--	--	--	--	--
	1/25/1999	8.62	3.26	NP	5.36	ND	**140**	**27**	ND	**2.8**	**6.8**	**23**	--	--	--	--	--	--	--	--
	4/15/1999	8.62	3.63	NP	4.99	ND	**120**	**18**	ND	**1.8**	**5.1**	**14**	--	--	--	--	--	--	--	--

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-10	7/14/1999	8.62	3.89	NP	4.73	**180**	**280**	**55**	**3.2**	**11**	**31**	**6.1**	--	--	--	--	--	--	--	--
	10/21/1999	8.62	4.09	NP	4.53	**96**	**140**	**22**	**0.59**	**1.7**	**7.7**	**5.3**	--	--	--	--	--	--	--	--
	1/20/2000	8.62	3.92	NP	4.70	**252**	ND	**0.73**	**0.86**	ND	ND	**5.2**	--	--	--	--	--	--	--	--
	4/13/2000	8.62	3.85	NP	4.77	**69**	**67**	**54**	ND	**2.6**	ND	**3.8**	--	--	--	--	--	--	--	--
	7/14/2000	8.62	4.18	NP	4.44	**149**	ND	**0.547**	ND	ND	ND	ND	--	--	--	--	--	--	--	--
	10/26/2000	8.62	3.96	NP	4.66	**83**	ND	**3.3**	ND	**0.83**	**1.5**	ND	--	--	--	--	--	--	--	--
	1/3/2001	8.62	4.14	NP	4.48	**126**	**52.7**	**5.15**	ND	**0.823**	**1.57**	ND	--	--	--	--	--	--	--	--
	4/4/2001	8.62	3.88	NP	4.74	**75**	**129**	**28.1**	**1.67**	**4.97**	**10.1**	ND	--	--	--	--	--	--	--	--
	7/17/2001	8.62	4.08	NP	4.54	ND	ND	**4.1**	ND	**1.0**	**1.8**	ND	--	--	--	--	--	--	--	--
	10/1/2001	8.62	4.22	NP	4.40	**100**	**140**	**30**	**0.51**	**4.0**	**12**	<5.0	--	--	--	--	--	--	--	--
	1/31/2002	8.62	3.68	NP	4.94	**170**	**110**	**16**	<0.50	**2.3**	**5.6**	<2.5	--	--	--	--	--	--	--	--
	4/18/2002	8.62	4.01	NP	4.61	**130**	<50	**11**	<0.50	**1.4**	**4.5**	<2.5	--	--	--	--	--	--	--	--
	7/28/2002	8.62	4.11	NP	4.51	**58**	**67**	**15**	<0.50	**0.94**	**7.3**	--	<2.0	--	--	--	--	--	--	--
	10/9/2002	8.62	3.97	NP	4.65	<94	<50	**0.67**	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	--	--	--
	1/2/2003	8.62	3.03	NP	5.59	**64**	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	--	--	--
	4/1/2003	8.62	3.83	NP	4.79	**76**	<50	**11**	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	--	--	--
	7/1/2003	8.62	4.13	NP	4.49	**87**	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0	--	--	--	--	<500	--	--
	10/2/2003	8.62	4.05	NP	4.57	**160**	**77**	9.9	**0.78**	**2.3**	**4.9**	--	<2.0	--	--	--	--	<500	--	--
	1/9/2004	8.62	3.40	NP	5.22	**74**	**53**	**1.2**	<0.50	**0.70**	**1.6**	--	<2.0	--	--	--	--	<500	--	--
	4/26/2004	8.62	3.89	NP	4.73	<50	**<50**	**2.8**	**1.3**	**1.0**	**2.9**	--	<0.50	--	--	--	--	<50	--	--
	7/22/2004	8.62	3.73	NP	4.89	<200	<50	<0.5	<0.5	<0.5	<1	--	<0.5	--	--	--	--	<1000	--	--
	10/29/2004	8.62	3.41	NP	5.21	<50	**100**	**2.0**	**1.2**	**1.1**	**3.6**	--	<0.50	--	--	--	--	<50	--	--
	1/10/2005	8.62	2.68	NP	5.94	**94**	**84**	**7.8**	**2.7**	**2.2**	**8.9**	--	<0.50	--	--	--	--	<50	--	--
	6/15/2005	8.62	4.63	NP	3.99	**62**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<50	--	--
	9/27/2005	8.62	3.96	NP	4.66	<200	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	<0.50	<0.50	<0.50	<10	<250	--	--
	12/13/2005	8.62	3.75	NP	4.87	<200	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	3/23/2006	8.62	3.13	NP	5.49	<200	50	**13**	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	6/23/2006	8.62	3.90	NP	4.72	<200	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/26/2006	8.62	3.66	NP	4.96	<50	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	12/22/2006	8.62	3.56	NP	5.06	**81**	<50	<0.50	<0.50	<0.50	**1.8**	--	<0.50	--	--	--	--	<250	--	--
	3/30/2007	8.62	3.93	NP	4.69	**82**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	6/28/2007	8.62	4.03	NP	4.59	**57**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	9/25/2007	8.62	3.91	NP	4.71	**82**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	--	<250	--	--
	12/28/2007	8.62	3.64	NP	4.98	**62**	<50	**2.1**	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	3/22/2008	8.62	4.00	NP	4.62	<50	**64**	**13**	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	6/23/2008	8.62	3.90	NP	4.72	<50	**94**	**30**	**0.53**	**3.4**	**3.5**	--	<0.50	--	--	--	--	<250	--	--
	9/19/2008	8.62	3.85	NP	4.77	<50	**130**	**15**	**1.7**	**5.7**	**11**	--	<0.50	--	--	--	--	<250	--	--
	12/31/2008	8.62	3.69	NP	4.93	<50	**82**	**11**	<0.50	**0.81**	**1.7**	--	<0.50	--	--	--	--	<250	--	--
	3/27/2009	8.62	3.75	NP	4.87	**730**	**210**	**28**	**1.4**	**1.2**	**3.9**	--	<0.50	--	--	--	--	<250	--	--
	5/28/2009	8.62	3.66	NP	4.96	<50	<50	**0.91**	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	9/17/2009	8.62	3.85	NP	4.77	**65**	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50	--	--	--	--	<250	--	--
	12/17/2009	8.62	3.00	NP	5.62	**57.7**	<50.0	**1.2**	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/29/2010	8.62	3.81	NP	4.81	**82.2**	<50.0	**0.77**	<0.50	<0.50	**3.4**	--	<0.50	--	--	--	--	<250	--	--
	6/30/2010	10.97	3.90	NP	7.07	**53.4**	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	7/6/2010	10.97	3.73	NP	7.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/20/2010	10.97	3.85	NP	7.12	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	12/8/2010	10.97	3.63	NP	7.34	<50.0	<50.0	**1.8**	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/14/2011	10.97	3.46	NP	7.51	**63.3**	<50.0	**1.1**	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	6/2/2011	10.97	3.92	NP	7.05	<50.0	**58.7**	**4.8**	**4.2**	**0.96**	**5.1**	--	<0.50	--	--	--	<5.0	<250	--	--
	9/7/2011	10.97	4.06	NP	6.91	<50.0	<50.0	**4.1**	<0.50	**0.66**	**2.4**	--	<0.50	--	--	--	--	<250	--	--
	12/5/2011	10.97	3.82	NP	7.15	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/6/2012	10.97	3.74	NP	7.23	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	**58.7**	<250	--	--
	6/11/2012	10.97	3.99	NP	6.98	<37.9	<50.0	**0.79**	<0.50	<0.50	<1.5	--	**0.72**	--	--	--	**17.2**	<250	--	--
	9/6/2012	10.97	4.00	NP	6.97	**110**	**64**	**6.9**	**0.89**	**1.8**	**3.9**	--	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<0.50	<0.50
	9/11/2012	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2012	10.97	3.40	NP	7.57	<50	**120**	**15**	**1.1**	**1.7**	**5.2**	--	<0.50	--	--	--	<5.0	<5.0	--	--

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-11	7/6/2010	10.53	2.44	NP	8.09	**226**	**99.2**	<0.50	<0.50	<0.50	<1.5	--	**165**	<0.50	<0.50	<0.50	**174**	<250	<1.0	<1.0
	9/20/2010	10.53	2.80	NP	7.73	<50.0	**76.4 1n**	<0.50	<0.50	<0.50	<1.5	--	**82.7**	--	--	--	--	<250	--	--
	12/8/2010	10.53	1.90	NP	8.63	**52.7**	<50.0	<0.50	<0.50	<0.50	<1.5	--	**59.1**	--	--	--	--	<250	--	--
	3/14/2011	10.53	1.89	NP	8.64	67.8	<50.0	<0.50	<0.50	<0.50	<1.5	--	**44.0**	--	--	--	<5.0	<250	--	--
	6/2/2011	10.53	1.75	NP	8.78	69.0 T4	<50.0	<0.50	0.61	<0.50	<1.5	--	**24.9**	--	--	--	7.1	<250	--	--
	9/7/2011	10.53	1.56	NP	8.97	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	**3.8**	--	--	--	--	<250	--	--
	12/5/2011	10.53	2.05	NP	8.48	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	**26.4**	--	--	--	--	<250	--	--
	3/6/2012	10.53	2.31	NP	8.22	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	**35.3**	--	--	--	**5.7**	<250	--	--
	6/11/2012	10.53	2.24	NP	8.29	<37.9	<50.0	<0.50	<0.50	<0.50	<1.5	--	**20.9**	--	--	--	**10.4**	<250	--	--
	9/6/2012	10.53	1.70	NP	8.83	**64**	<50	<0.50	<0.50	<0.50	<0.50	--	**7.7**	<0.50	<0.50	<0.50	<5.0	<5.0	<0.50	<0.50
	12/13/2012	10.53	1.56	NP	8.97	<50	<50	<0.50	<0.50	<0.50	<0.50	--	**27**	--	--	--	<5.0	<5.0	--	--
MW-12	7/6/2010	11.01	4.00	NP	7.01	**990**	**20,300**	**1,030**	**955**	**311**	**2,450**	--	**1,650**	<0.50	<0.50	**1.0**	**1,430**	<250	<1.0	<1.0
	9/20/2010	11.01	4.18	NP	6.83	**5,220**	**73,700**	**6,020**	**6,390**	**2,970**	**18,300**	--	**894**	--	--	--	--	<250	--	--
	12/8/2010	11.01	3.92	NP	7.09	**428**	**3,350**	**249**	**117**	**90**	**558**	--	**1,470**	--	--	--	--	<2500	--	--
	3/14/2011	11.01	3.70	NP	7.31	**283**	**2,420**	**287**	**81**	**49**	**243**	--	**1,020**	--	--	--	**70**	<250	--	--
	6/2/2011	11.01	4.40	NP	6.61	**1,330 T4**	**12,200**	**688**	**71**	**225**	**619**	--	**824**	--	--	--	**110**	<250	--	--
	9/7/2011	11.01	4.37	NP	6.64	**1,270 T4**	**7,900**	**920**	**25**	**187**	**267**	--	**896**	--	--	--	--	<2500	--	--
	12/5/2011	11.01	4.32	NP	6.69	**286 T4**	**2,240**	**296**	**38**	**38.0**	**122**	--	**1,040**	--	--	--	--	<250	--	--
	3/6/2012	11.01	4.01	NP	7.00	**272 T4**	**1,260**	**193**	**23**	**29**	**81**	--	**835**	--	--	--	**78**	<250	--	--
	6/11/2012	11.01	4.20	NP	6.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/12/2012	--	--	--	--	**957 T4**	**1,030**	**178**	**17.0**	**24**	**69**	--	**993**	--	--	--	**448**	<250	--	--
	9/6/2012	11.01	4.15	NP	6.86	<200	**580**	**120**	**10**	**15**	**37**	--	**840**	<1.5	<1.5	<1.5	**15**	<15	<1.5	**14**
	12/13/2012	11.01	3.35	NP	7.66	<50	**480**	**70**	**5**	**7**	**19**	--	**820**	--	--	--	**19**	<15	--	--
MW-12A	7/6/2010	11.29	4.22	NP	7.07	**89**	**664**	**18**	**1**	**2**	**50**	--	**14**	<0.50	<0.50	<0.50	**12**	<250	<1.0	<1.0
	9/20/2010	11.29	4.39	NP	6.90	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	**9**	--	--	--	--	<250	--	--
	12/8/2010	11.29	4.00	NP	7.29	**76**	<50.0	<0.50	<0.50	<0.50	<1.5	--	**9**	--	--	--	--	<250	--	--
	3/14/2011	11.29	3.81	NP	7.48	**62**	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	6/2/2011	11.29	4.20	NP	7.09	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	9/7/2011	11.29	4.42	NP	6.87	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	**1**	--	--	--	--	<250	--	--
	12/5/2011	11.29	4.30	NP	6.99	<50.0	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	--	<250	--	--
	3/6/2012	11.29	4.32	NP	6.97	**52.0 T4**	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	6/11/2012	11.29	4.36	NP	6.93	<37.9	<50.0	<0.50	<0.50	<0.50	<1.5	--	<0.50	--	--	--	<5.0	<250	--	--
	9/6/2012	11.29	4.45	NP	6.84	**300**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<0.50	<0.50
	12/13/2012	11.29	3.80	NP	7.49	**62**	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50	--	--	--	<5.0	<5.0	--	--
MW-13	7/6/2010	11.08	4.26	NP	7	**469**	**122**	<0.50	<0.50	<0.50	<1.5	--	**217**	<0.50	<0.50	<0.50	**199**	<250	<1.0	<1.0
	9/20/2010	11.08	4.81	NP	6	<50.0	**250 1n**	<0.50	<0.50	<0.50	<1.5	--	**272**	--	--	--	--	<250	--	--
	12/8/2010	11.08	5.02	NP	6	**97.0**	**177 1n**	<0.50	<0.50	<0.50	<1.5	--	**390**	--	--	--	--	<250	--	--
	3/14/2011	11.08	4.32	NP	7	**162**	**127**	<0.50	<0.50	<0.50	<1.5	--	**241**	--	--	--	**125**	<250	--	--
	6/2/2011	11.08	3.98	NP	7.10	**89.9 T4**	**260 1n**	<0.50	<0.50	<0.50	<1.5	--	**228**	--	--	--	**45**	<250	--	--
	9/7/2011	11.08	5.74	NP	5	<50.0	**167**	<0.50	<0.50	<0.50	<1.5	--	**207**	--	--	--	--	<250	--	--
	12/5/2011	11.08	5.00	NP	6	<50.0	**166 1n**	<0.50	<0.50	<0.50	<1.5	--	**215**	--	--	--	--	<250	--	--
	3/6/2012	11.08	5.37	NP	6	<50.0	**63.9 1n**	<0.50	<0.50	<0.50	<1.5	--	**110**	--	--	--	**39**	<250	--	--
	6/11/2012	11.08	5.73	NP	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/12/2012	--	--	--	--	<37.9	**118 1n**	<0.50	<0.50	<0.50	<1.5	--	**220**	--	--	--	**82**	<250	--	--
	9/6/2012	11.08	4.14	NP	7	**87**	<50	<0.50	<0.50	<0.50	<0.50	--	**140**	<0.50	<0.50	<0.50	**10**	<5.0	<0.50	<0.50
	12/13/2012	11.08	3.80	NP	7	<50	<50	<0.50	<0.50	<0.50	<0.50	--	**130**	--	--	--	**14**	<5.0	--	--
MW-14	6/2/2011	12.00	3.58	NP	8.42	**4,180 T4**	**51,600**	**2,750**	**67.9**	**1,790**	**13,400**	--	**1.9**	--	--	--	**27.2**	<250	--	--
	9/7/2011	12.00	3.02	NP	8.98	**2,970 T4**	**42,600**	**1,050**	**28.1**	**2,990**	**7,300**	--	<25.0	--	--	--	--	<12500	--	--
	12/5/2011	12.00	4.05	NP	7.95	**3,980 T4**	**14,000**	**709**	**9.1**	**1,420**	**2,530**	--	**0.97**	--	--	--	--	<250	--	--
	3/6/2012	12.00	3.94	NP	8.06	**3,640 T4**	**16,600**	**959**	**15.0**	**2,330**	**3,830**	--	<2.5	--	--	--	**28.1**	<1250	--	--
	6/11/2012	12.00	3.91	NP	8.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/12/2012	--	--	--	--	**4,580**	**15,700**	**1,200**	**14.0**	**1,580**	**3,010**	--	**1.4**	--	--	--	**23.3**	<250	--	--
	9/6/2012	12.00	3.35	NP	8.65	<2000	**12,000**	**210**	**9.1**	**1,100**	**1,800**	--	<4.0	<4.0	<4.0	<4.0	<20	<40	<4.0	<4.0
	9/11/2012	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2012	12.00	3.26	NP	8.74	<50	**10,000**	**72**	**5.8**	**610**	**780**	--	<1.5	--	--	--	<7.0	<15	--	--

TABLE 2a
HISTORICAL GROUNDWATER GAUGING AND ANALYTICAL DATA
76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

Well I.D.	Date	GROUNDWATER GAUGING DATA				GROUNDWATER ANALYTICAL DATA														
		TOC Elevation (ft)	Depth to Water (ft)	LNAPL Thickness (ft)	Water Elevation* (ft)	TPHd (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	MTBE (SW8021B) (ug/L)	MTBE (SW8260B) (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	Ethanol (ug/L)	1,2-Dibromoethane (EDB) (ug/L)	1,2-Dichloroethane (ug/L)
MW-15	6/2/2011	11.11	2.50	NP	8.61	**124 T4**	**357**	<0.50	<0.50	<0.50	<1.5	--	**15**	--	--	--	**6**	<250	--	--
	9/7/2011	11.11	2.54	NP	8.57	<50.0	**412**	**6**	<0.50	**43**	<1.5	--	**128**	--	--	--	--	<250	--	--
	12/5/2011	11.11	2.70	NP	8.41	**50.5 T4**	**201**	**7**	<0.50	**1**	<1.5	--	**142**	--	--	--	--	<250	--	--
	3/6/2012	11.11	2.69	NP	8.42	**56.2 T4**	<50.0	<0.50	<0.50	<0.50	<1.5	--	**106**	--	--	--	**101**	<250	--	--
	6/11/2012	11.11	2.84	NP	8.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/12/2012	--	--	--	--	<37.9	**74.3 1n**	<0.50	<0.50	<0.50	<1.5	--	**114**	--	--	--	**91**	<250	--	--
	9/6/2012	11.11	2.24	NP	8.87	**64**	59	<0.50	<0.50	<0.50	<0.50	--	**76**	<0.50	<0.50	<0.50	**45**	<5.0	<0.50	<0.50
	12/13/2012	11.11	2.51	NP	8.60	<50	<50	<0.50	<0.50	<0.50	<0.50	--	**33**	--	--	--	**7**	<5.0	--	--
MW-16	6/2/2011	10.98	3.00	NP	7.98	**509 T4**	**1,420 1n**	**79**	<0.50	**4**	<1.5	--	**1,200**	--	--	--	**257**	<250	--	--
	9/7/2011	10.98	2.65	NP	8.33	**90.0 T4**	**934**	<0.50	<0.50	<0.50	<1.5	--	**1,240**	--	--	--	--	<250	--	--
	12/5/2011	10.98	3.18	NP	7.80	**196 T4**	**948 1n**	<0.50	<0.50	<0.50	<1.5	--	**1,320**	--	--	--	--	<250	--	--
	3/6/2012	10.98	2.91	NP	8.07	**204 T4**	**392 1n**	<0.50	<0.50	<0.50	<1.5	--	**1,090**	--	--	--	**134**	<250	--	--
	6/11/2012	10.98	3.04	NP	7.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/12/2012	--	--	--	--	**48.1 T4**	**430 1n**	<0.50	<0.50	<0.50	<1.5	--	**1,100**	--	--	--	**374**	<250	--	--
	9/6/2012	10.98	2.61	NP	8.37	**390**	<150	<1.5	<1.5	<1.5	<1.5	--	**960**	<1.5	<1.5	<1.5	**70**	<15	<1.5	<1.5
	12/13/2012	10.98	2.50	NP	8.48	**52**	<150	<1.5	<1.5	<1.5	<1.5	--	**980**	--	--	--	**55**	<20	--	--
MW-17	6/2/2011	11.52	5.78	NP	5.74	**687 T4**	**9,130**	**2,530**	**960**	**35**	**907**	--	**1**	--	--	--	**366**	<250	--	--
	9/7/2011	11.52	4.56	NP	6.96	**1,900 T4**	**47,200**	**9,620**	**5,510**	**1,210**	**4,510**	--	<25.0	--	--	--	--	<12500	--	--
	12/5/2011	11.52	4.70	NP	6.82	**1,790 T4**	**17,300**	**4,720**	**511**	**238**	**747**	--	<2.5	--	--	--	--	<1250	--	--
	3/6/2012	11.52	4.64	NP	6.88	**1,530 T4**	**1,580**	**2,090**	**24**	**39**	**166**	--	**1**	--	--	--	**481**	<250	--	--
	6/11/2012	11.52	4.67	NP	6.85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/12/2012	--	--	--	--	**1,090 T4**	**4,950**	**2,340**	**123**	**153**	**610**	--	<2.5	--	--	--	**411**	<1250	--	--
	9/6/2012	11.52	4.39	NP	7.13	<1000	**18,000**	**4,300**	**170**	**370**	**1,100**	--	<10	<10	<10	<10	**300**	<100	<10	110
	9/11/2012	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2012	11.52	4.20	NP	7.32	<100	**55,000**	**7,300**	**2,700**	**1,700**	**4,600**	--	<10	--	--	--	**300**	<100	--	--

Gauging Notes:
TOS - Top of Screen
ft - Feet
NP - LNAPL not present
LNAPL - Light non-aqueous phase liquid
* - Corrected for LNAPL if present (assumes LNAPL specific gravity = 0.75)
-- - No information available

Analytical Notes:
< - Below laboratory's indicated reporting limit
ug/L - micrograms/liter
DRO- diesel range organics
TPHd- Total petroleum hydrocarbons as diesel
TPHg- Total petroleum hydrocarbons as gasoline
MTBE- Methyl tertiary-butyl ether
TBA- Tertiary-butyl alcohol

Bold - Above the laboratory's indicated reporting limit
1n - The TPHg result for this sample did not match the laboratory standard for gasoline. This is likely due to the presence of MTBE in the sample.
T4- Result reported for the hydrocarbons within the method-specific range that do not match pattern of laboratory standard.

TABLE 3
HISTORICAL SOIL ANALYTICAL RESULTS
76 Station No. 5191/5043
449 HEGENBERGER RD
OAKLAND, CALIFORNIA

Sample ID	Date	Sample Depth (feet)	TPHg (mg/kg)	TPHg* (mg/kg)	DRO (mg/kg)	DRO* (mg/Kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	TAME (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	Ethanol (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
P1	10/25/1991	3	**3,200**	NA	**420**	NA	**33**	**120**	**110**	**540**	NA	NA	NA	NA	NA	NA	NA	NA	NA
P2	10/25/1991	3	**9,000**	NA	**8,400**	NA	**46**	**120**	**330**	**1,500**	NA	NA	NA	NA	NA	NA	NA	NA	NA
P3	10/25/1991	3	**7,100**	NA	**1,100**	NA	**48**	**410**	**220**	**1,200**	NA	NA	NA	NA	NA	NA	NA	NA	NA
P4	10/25/1991	3	**370**	NA	**460**	NA	**7.4**	**39**	**12**	**77**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW1(2.5)	2/5/1992	2.5	**14,000**	NA	**1,200**	NA	**160**	**680**	**470**	**2,400**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW2(3.5)	2/5/1992	3.5	**9,000**	NA	**2,400**	NA	**74**	**440**	**280**	**1,400**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW2(4.5)	2/5/1992	4.5	**31**	NA	**29**	NA	**2.4**	**0.14**	**3**	**9**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW3(3)	2/5/1992	3	<1.0	NA	**49**	NA	<0.005	<0.005	<0.005	**0.011**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW3(4.5)	2/5/1992	4.5	<1.0	NA	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW4(5)	8/21/1992	5	<1.0	NA	<1.0	NA	<0.005	<0.005	<0.005	**0.0066**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW5(6)	8/21/1992	6	**340**	NA	**43**	NA	**1.1**	**1.2**	**7.8**	**13**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW6(5)	8/21/1992	5	**3.7**	NA	**1.2**	NA	**0.9**	<0.005	**1**	**0.05**	NA	NA	NA	NA	NA	NA	NA	NA	NA
WO1	9/20/1994	9	<1.0	NA	NA	NA	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	5.0
MW9(3)	1/25/1995	3	**1.7**	NA	**2.6**	NA	**0.016**	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW10(2.5)	1/25/1995	2.5	**44**	NA	**17**	NA	**2**	**1.5**	**2.3**	**5.4**	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW1	3/10/1995	8	**11**	NA	NA	NA	**2.8**	<0.005	**1.6**	**0.067**	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW2	3/10/1995	8	**11**	NA	NA	NA	**3.8**	<0.005	**0.79**	**0.034**	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW2(4)	3/10/1995	4	**2,000**	NA	**140**	NA	<0.005	**53**	**42**	**240**	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW3	3/10/1995	8	**1**	NA	<1.0	NA	**0.009**	**0.006**	**0.007**	**0.014**	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW4	3/10/1995	8	<1.0	NA	**1.8**	NA	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW5	3/10/1995	8	<1.0	NA	**1.4**	NA	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW6	3/10/1995	8	<1.0	NA	NA	NA	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW7	3/10/1995	8	<1.0	NA	NA	NA	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW8	3/10/1995	8	**140**	NA	NA	NA	**2.6**	**5.3**	**2.7**	**12**	NA	NA	NA	NA	NA	NA	NA	NA	NA
D1	3/24/1995	3	**760**	NA	**46**	NA	**1.5**	**19**	**15**	**73**	NA	NA	NA	NA	NA	NA	NA	NA	NA
D2	3/24/1995	3	**1,200**	NA	**97**	NA	**1.6**	**16**	**22**	**110**	NA	NA	NA	NA	NA	NA	NA	NA	NA
B1	3/28/1995	6	<1.0	NA	<1.0	NA	**0.13**	**0.026**	**0.0088**	**0.059**	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2	3/28/1995	6	**3.4**	NA	<1.0	NA	**2.8**	**0.041**	**0.19**	**0.28**	NA	NA	NA	NA	NA	NA	NA	NA	NA
B3	3/28/1995	6	<1.0	NA	<1.0	NA	<0.005	**0.01**	<0.005	**0.017**	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4	3/28/1995	6	<1.0	NA	<1.0	NA	<0.005	**0.017**	<0.005	**0.032**	NA	NA	NA	NA	NA	NA	NA	NA	NA
BD1	3/28/1995	6	<1.0	NA	<1.0	NA	**0.21**	**0.011**	**0.018**	**0.038**	NA	NA	NA	NA	NA	NA	NA	NA	NA
BD2	3/28/1995	6	**12**	NA	**4.8**	NA	**2.6**	**0.68**	**0.56**	**1.7**	NA	NA	NA	NA	NA	NA	NA	NA	NA
BD3	3/28/1995	6	<1.0	NA	<1.0	NA	**0.012**	**0.014**	**0.012**	**0.043**	NA	NA	NA	NA	NA	NA	NA	NA	NA
BD4	3/28/1995	6	<1.0	NA	<1.0	NA	<0.005	**0.011**	**0.0072**	**0.037**	NA	NA	NA	NA	NA	NA	NA	NA	NA
S1	3/28/1995	4	**110**	NA	<1.0	NA	**3.5**	**0.61**	**7**	**13**	NA	NA	NA	NA	NA	NA	NA	NA	NA
S2	3/28/1995	4	**1.4**	NA	**9.4**	NA	**0.028**	**0.012**	**0.015**	**0.019**	NA	NA	NA	NA	NA	NA	NA	NA	NA
S3	3/28/1995	4	**22**	NA	**2.9**	NA	**1.2**	**1.2**	**0.65**	**1.9**	NA	NA	NA	NA	NA	NA	NA	NA	NA
S4	3/28/1995	4	**150**	NA	**5.8**	NA	**6.8**	**5.6**	**5.3**	**27**	NA	NA	NA	NA	NA	NA	NA	NA	NA
RF1	3/31/1995	3	**2,000**	NA	**330**	NA	**8.8**	**68**	**55**	**280**	NA	NA	NA	NA	NA	NA	NA	NA	NA
RF2	3/31/1995	3	**3,300**	NA	**230**	NA	**18**	**160**	**110**	**550**	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW8(6)	4/3/1995	8	<1.0	NA	<1.0	NA	**0.0085**	<0.005	**0.0084**	**0.011**	NA	NA	NA	NA	NA	NA	NA	NA	NA
FB1	4/3/1995	4.5	**25**	NA	**8.6**	NA	**2.1**	**0.058**	**2.2**	**1.3**	NA	NA	NA	NA	NA	NA	NA	NA	NA
FB2	4/3/1995	4.5	**7.1**	NA	**1.6**	NA	**0.4**	**0.018**	**0.81**	**1.7**	NA	NA	NA	NA	NA	NA	NA	NA	NA
FB3	4/3/1995	4.5	**1.6**	NA	<1.0	NA	**0.028**	<0.005	**0.13**	**0.26**	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3
HISTORICAL SOIL ANALYTICAL RESULTS
76 Station No. 5191/5043
449 HEGENBERGER RD
OAKLAND, CALIFORNIA

Sample ID	Date	Sample Depth (feet)	TPHg (mg/kg)	TPHg* (mg/kg)	DRO (mg/kg)	DRO* (mg/Kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	TAME (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	Ethanol (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
FB4	4/3/1995	4.5	**1.4**	NA	<1.0	NA	**0.23**	**0.022**	**0.05**	**0.15**	NA	NA	NA	NA	NA	NA	NA	NA	NA
FBSW1	4/3/1995	3	**7.4**	NA	**1.3**	NA	**0.066**	**0.021**	**1**	**<0.005**	NA	NA	NA	NA	NA	NA	NA	NA	NA
FBSW2	4/3/1995	3	**70**	NA	**7.6**	NA	**0.11**	**0.096**	**2.1**	**6.7**	NA	NA	NA	NA	NA	NA	NA	NA	NA
FBSW3	4/3/1995	3	**2.3**	NA	**7.8**	NA	**0.012**	**0.01**	**0.018**	**0.012**	NA	NA	NA	NA	NA	NA	NA	NA	NA
FBSW4	4/3/1995	3	**9**	NA	**3.7**	NA	**0.25**	**0.036**	**0.93**	**0.062**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW1SW1	4/5/1995	5	**25**	NA	**2.8**	NA	**2.1**	**0.025**	**2.4**	**0.19**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW1SW2	4/5/1995	5	**4.2**	NA	**1.2**	NA	**0.17**	**0.01**	**0.68**	**0.048**	NA	NA	NA	NA	NA	NA	NA	NA	NA
WE1	4/5/1995	4.5	**26**	NA	**3.4**	NA	**0.31**	**0.3**	**0.59**	**2.6**	NA	NA	NA	NA	NA	NA	NA	NA	NA
WE2	4/5/1995	4.5	**2.7**	NA	**5.1**	NA	**0.0054**	**0.0065**	**0.038**	**0.17**	NA	NA	NA	NA	NA	NA	NA	NA	NA
WE3	4/5/1995	4.5	**8.2**	NA	**1.6**	NA	**0.21**	**0.074**	**1.6**	**0.0076**	NA	NA	NA	NA	NA	NA	NA	NA	NA
FS-1	4/5/1995	4	**12**	NA	<1.0	NA	**0.28**	<0.005	**1.5**	**0.016**	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW8(6)	4/21/1997	6	**1.3**	NA	<1.0	NA	**0.0051**	<0.005	**0.015**	**0.041**	<0.005	NA	NA	NA	NA	NA	NA	NA	NA
Delta 2009																			
B-4@6	12/17/2009	6	**20.4**	NA	**11.4**	**10.1**	**0.046**	**0.18**	**1**	**4.2**	**0.061**	**0.091**	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	NA
B-4@15	12/17/2009	15	<4.9	NA	<5.8	<5.8	**0.0036**	**0.0069**	**0.011**	**0.049**	**0.0081**	**0.036**	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	NA
B-4@20	12/17/2009	20	<4.9	NA	<5.6	<5.6	<0.003	<0.003	<0.003	<0.006	<0.003	<0.015	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	NA
B-5@8	12/17/2009	8	**1,060**	NA	**285**	**269**	**6.2**	**21.6**	**30.9**	**143**	<0.0029	**0.079**	**0.068**	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	NA
B-5@17.5	12/17/2009	17.5	**136**	NA	**27.8**	**26.9**	**0.55**	**1.4**	**2.7**	**15.8**	<0.003	**0.035**	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	NA
B-5@26.5	12/17/2009	26.5	**1,570**	NA	**338**	**346**	**16.2**	**73.5**	**52.8**	**255**	**0.02**	**0.11**	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028	NA
B-5@32	12/17/2009	32	<4.8	NA	<5.9	<5.9	**0.007**	**0.0087**	**0.0057**	**0.031**	<0.0029	<0.015	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	NA
Delta 2010																			
MW-11@10	6/22/2010	10	NA	<0.18	NA	**3.2**	<0.0022	<0.0022	<0.0022	<0.0066	**0.011**	<0.011	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	**6.1**
MW-11@20	6/22/2010	20	NA	<0.25	NA	**27.3**	<0.0027	<0.0027	<0.0027	<0.0081	<0.0027	<0.013	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	**3.4**
MW-12@8	6/22/2010	8	NA	**210**	NA	**45.7**	**5.2**	**9.1**	**6.7**	**33.3**	<0.0028	**0.021**	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028	**8.6**
MW-12@10	6/22/2010	10	NA	**422**	NA	**73.6**	**4**	**3.5**	**11.0**	**31.4**	<0.0029	<0.015	**0.023**	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	**9.5**
MW-12@20	6/22/2010	20	NA	<0.24	NA	<2.0	**0.019**	<0.0028	<0.0028	<0.0085	<0.0028	<0.014	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028	**6.6**
MW-12A@26	6/23/2010	26	NA	**6,840**	NA	**2,210**	**80.9**	**232**	**178**	**607**	<0.0027	<0.014	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	**13.1**
MW-12A@32	6/23/2010	32	NA	**943**	NA	**267**	**4.9**	**15.5**	**12.0**	**42.6**	**0.045**	**0.044**	**0.048**	<0.0028	<0.0028	<0.0028	<0.0028	<0.0028	**6.6**
MW-12A@34	6/23/2010	34	NA	<0.22	NA	<1.9	<0.0027	**0.0097**	**0.0074**	**0.033**	<0.0027	<0.013	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	<0.0027	**4.9**
MW-13@8	6/22/2010	8	NA	<0.21	NA	<2.0	<0.0026	<0.0026	<0.0026	<0.0077	**0.064**	<0.013	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	<0.0026	**3.6**
MW-13@15	6/22/2010	15	NA	<0.24	NA	<2.0	<0.0029	<0.0029	<0.0029	<0.0087	<0.0029	<0.014	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	<0.0029	**5.9**
Antea Group 2011																			
MW-14d7	5/17/2011	7	NA	<0.23	<2.0	<2.0	<0.0027	<0.0027	<0.0027	<0.0081	<0.0027	<0.014	<0.0027	<0.0027	<0.0027	<0.36	<0.0027	<0.0027	**6.6**
MW-14d10	5/17/2011	10	NA	**1,740**	**45.5 1n**	**45.9 1n**	**1.8**	**0.2**	**44**	**140**	<0.0026	<0.013	<0.0026	<0.0026	<0.0026	<0.34	<0.0026	<0.0026	**7**
MW-14d13	5/17/2011	13	NA	**1**	<2.0	<2.0	<0.0027	<0.0027	**0.037**	**0.066**	<0.0027	<0.014	<0.0027	<0.0027	<0.0027	<0.36	<0.0027	<0.0027	**6.6**
MW-15d8	5/17/2011	8	NA	**2.3**	**6.2**	**5.2**	**0.023**	<0.0038	**1.9**	**0.25**	**0.19**	**0.16**	<0.0038	<0.0038	<0.0038	<0.51	<0.0038	<0.0038	**7**
MW-15d13	5/17/2011	13	NA	<0.23	<1.9	<1.9	<0.0028	<0.0028	<0.0028	<0.0083	**0.015**	**0.022**	<0.0028	<0.0028	<0.0028	<0.37	<0.0028	<0.0028	**7**
MW-16d8	5/17/2011	8	NA	<0.23	<2.0	<2.0	<0.0027	<0.0027	<0.0027	<0.0081	**0.15**	**0.014**	<0.0027	<0.0027	<0.0027	<0.36	<0.0027	<0.0027	**5.7**
MW-16d13	5/17/2011	13	NA	<0.23	<2.0	<2.0	<0.0028	<0.0028	<0.0028	<0.0084	<0.0028	<0.014	<0.0028	<0.0028	<0.0028	<0.37	<0.0028	<0.0028	**5.5**
MW-17d9	5/18/2011	9	NA	**633**	**39.6 1n**	**36.7 1n**	**6**	**14.1**	**17.9**	**58**	<0.0026	**0.03**	<0.0026	<0.0026	<0.0026	<0.35	<0.0026	<0.0026	**16.3**
MW-17d13	5/18/2011	13	NA	**5.4**	**2.9 1n**	**2.5 1n**	**2.7**	**0.46**	**1.4**	**2.8**	<0.0027	**0.029**	<0.0027	<0.0027	<0.0027	<0.36	<0.0027	<0.0027	**6.4**
B-6d9	5/18/2011	9	NA	**2,490**	**72.0 1n**	**68.6 1n**	**26.4**	**73.9**	**58.1**	**230**	<0.0031	<0.015	<0.0031	<0.0031	<0.0031	<0.41	<0.0031	<0.0031	**10.1**
B-6d14	5/18/2011	14	NA	**194**	**258 1n**	**250 1n**	**3.6**	**5.1**	**5.1**	**22**	<0.0025	<0.013	<0.0025	<0.0025	<0.0025	<0.33	<0.0025	<0.0025	**9.2**
B-6d21	5/18/2011	21	NA	**7.2**	<2.0	<2.0	**0.67**	**0.86**	**0.25**	**0.94**	**0.036**	**0.014**	<0.0027	<0.0027	<0.0027	<0.37	<0.0027	<0.0027	**6.8**
B-6d26	5/18/2011	26	NA	**17**	**3.4 1n**	**2.9 1n**	**0.83**	**1.2**	**0.46**	**1.7**	**0.086**	**0.021**	<0.0026	<0.0026	<0.0026	<0.34	<0.0026	<0.0026	**6.6**

Notes:

TABLE 3
HISTORICAL SOIL ANALYTICAL RESULTS
76 Station No. 5191/5043
449 HEGENBERGER RD
OAKLAND, CALIFORNIA

Sample ID	Date	Sample Depth (feet)	TPHg (mg/kg)	TPHg* (mg/kg)	DRO (mg/kg)	DRO* (mg/Kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	TAME (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	Ethanol (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)

TPHg = total petroleum hydrocarbons as gasoline by EPA Method 8015
TPHg* = total petroleum hydrocarbons as gasoline by CA LUFT
DRO = Diesel Range Organics by EPA Method 8015B
DRO* = Diesel Range Organics by EPA Method 8015 Silica Gel Treated
BTEX = benzene, toluene, ethylbenzene, total xylenes by EPA Method 8260B
MTBE = methyl tertiary-butyl ether by EPA Method 8260
TBA = tertiary-butyl alcohol by EPA Method 8260
TAME = tert-amyl methyl ether by EPA Method 8260
DIPE = Diisopropyl ether by EPA Method 8260
ETBE = Ethyl-tert-butyl-ether by EPA Method 8260
EDB = 1,2-Dibromoethane by EPA Method 8260
1,2-DCA = 1,2-Dichloroethane by EPA Method 8260
mg/kg = milligrams per kilogram
NA = not applicable

Appendix A

Site Details and Previous Environmental Investigations

PREVIOUS INVESTIGATION AND SITE HISTORY SUMMARY

October 1991 - Four soil samples were collected from the product pipe trenches at depths of approximately 3 feet below ground surface (bgs) during a dispenser island modification. The product pipe trenches were subsequently excavated to the groundwater depth at 4 to 4.5 feet bgs.

February 1992 - Three monitoring wells, MW-1 through MW-3, were installed at the site to depths ranging from 13.5 to 15 feet bgs.

August 1992 - Three additional monitoring wells, MW-4 through MW-6, were installed at the site to a depth of 13.5 feet bgs.

September 1994 - One 280-gallon waste-oil UST was removed from the site. The UST was made of steel, and no apparent holes or cracks were observed in the UST. One soil sample was collected from beneath the former UST at a depth of approximately 9 feet bgs. No petroleum hydrocarbons were reported.

January 1995 - Two additional monitoring wells, MW-9 and MW-10, were installed to depths of 13 and 15 feet bgs. In addition, monitoring wells MW-4 and MW-5 were destroyed by over-drilling the wells and backfilling with neat cement.

March 1995 - Two 10,000-gallon gasoline USTs and one 10,000-gallon diesel UST were removed from the site. Groundwater was encountered in the tank cavity at a depth of approximately 8.5 feet bgs. Soil samples contained total petroleum hydrocarbons as diesel (TPHd) and benzene, and TPH as gasoline (TPHg). Approximately 125,000 gallons of groundwater were pumped from the site for remediation and properly disposed off-site. Four fuel dispenser islands and associated product piping were also removed. Based on the results of the confirmation samples, the product dispenser islands were over excavated to approximately 6 feet bgs.

March-April 1995 - During demolition activities of the former station building, soil samples were collected from two excavations, which were subsequently over excavated. Confirmation samples contained petroleum hydrocarbons. An additional area on the south side of the former station building was excavated based on photo-ionization detector (PID) readings. Two monitoring wells, MW-1 and MW-2, were destroyed in order to allow for over excavation activities to extend to an area adjacent to the dispenser islands in the southeastern quadrant of the site. The excavated areas were subsequently backfilled with clean-engineered fill.

April 1997 - Two additional monitoring wells, MW-7 and MW-8, were installed off-site to the south and east on the neighboring property to a depth of 13 feet bgs. In addition, monitoring well MW-3, which was damaged during site renovation activities, was fully drilled out and reconstructed in the same borehole.

October 2003 - Site environmental consulting responsibilities were transferred to TRC.

April 8-9, 2005 - TRC conducted a 24-hour dual phase extraction (DPE) test at the site using monitoring well MW-6. The 24-hour DPE test was only moderately successful at removing vapor-phase petroleum hydrocarbons from the subsurface; therefore, TRC recommended DPE no longer be considered a viable remedial alternative for the site.

October 2007 - Site environmental consulting responsibilities were transferred to Delta Consultants.

December 2009 - Delta advanced two borings, B-4 and B-5, to depths of 20 feet bgs and 32 feet bgs, respectively. Analytical results from the soil and groundwater samples collected from these two borings indicated that the soil and the groundwater were impacted by petroleum hydrocarbons at these locations.

June 2010 – Delta installed two 4-inch diameter monitoring/extraction wells, MW-11 and MW-12, and two 2-inch diameter monitoring wells, MW-12A and MW-13, at the site. Analytical results from the soil and groundwater samples collected from the MW-12 and MW-12A boring locations indicated that the soil and the groundwater were impacted by petroleum hydrocarbons at these locations.

May 2011 – Antea Group (formally Delta Consultants) installed four 2-inch diameter monitoring wells, MW-14 through MW-17, and advanced one soil boring, B-6, at the site. All four monitoring wells were installed with ten feet of screen from 3 feet bgs to 13 feet bgs. Analytical results of soil samples collected during the monitoring well installation reported TPHg concentrations ranging from 1.0 milligrams per kilogram (mg/kg) (MW-14d13) to 2,490 mg/kg (B-6d9), benzene concentrations ranging from 0.67 mg/kg (B-6d21) to 26.4 mg/kg (B-6d9), toluene concentrations ranging from 0.2 mg/kg (MW-14d10) to 73.9 mg/kg (B-6d9), ethylbenzene concentrations ranging from 0.037 mg/kg (MW-14d13) to 58.1 mg/kg (B-6d9), total xylenes concentrations ranging from 0.066 mg/kg (MW-14d13) to 230 mg/kg (B-6d9), methyl tertiary-butyl ether (MTBE) concentrations ranging from 0.015 mg/kg (MW-15d13) to 0.19 mg/kg (MW-15d8), tertiary-butyl alcohol (TBA) concentrations ranging from 0.014 mg/kg (MW-16d8 and B-6d21) to 0.16 mg/kg (MW-15d8), and lead concentrations ranging from 5.5 mg/kg (MW-16d13) to 16.3 mg/kg (MW-17d9). Diesel range organics (DRO) and DRO with silica gel concentrations were reported; however, all of the results did not match the laboratory standard for diesel. Concentrations of DRO ranged from 2.9 mg/kg (MW-17d13) to 258 mg/kg (B-6d14) and DRO with silica gel concentrations ranged from 2.5 mg/kg (MW-17d13) to 250 mg/kg (B-6d14).

March 2012 – Antea Group advanced five soil borings (HPB-1 through HPB-5) at the site. The borings were advanced using direct push technology. The borings were used to obtain a hydraulic profile of the substrate beneath the site. The data obtained during the investigation will be used to determine the best path forward in terms of remediation.

SENSITIVE RECEPTORS

April 24, 2006, TRC completed a sensitive receptor survey for the site. According to the Department of Water Resources (DWR) records, three water supply wells are located within one-half mile of the site. The closest well is an irrigation well, reported to be, approximately 1,080 feet southeast of the site. In addition, two surface water bodies were observed within a one-half mile radius of the site. San Leandro Creek is located approximately 1,400 feet southwest of the site and flows into the San Leandro Bay. Elmhurst Creek is located approximately 2,220 feet north of the site and also flows into the San Leandro Bay.

Current Consultant: **Antea Group**

Appendix B

PTS Persulfate Bench Scale Laboratory Report

PTS Laboratories, Inc.

8100 Secura Way • Santa Fe Springs, CA 90670
Telephone (562) 347-2500 • Fax (562) 907-3610

January 9, 2013

Dennis Dettloff
Antea Group
11050 White Rock Road, Suite 110
Rancho Cordova, CA 95670

Re: PTS File No: 42834
Physical Properties Data
Site 2705191, Oakland; I42705191

Dear Mr. Dettloff:

Please find enclosed report for pH Monitoring & Residual Persulfate Bench Scale analyses conducted upon soil and water samples received from your Site 2705191, Oakland; I42705191 project. All analyses were performed by applicable ASTM, EPA, or API methodologies in conjunction with Residual Persulfate procedures. An electronic version of the report has previously been sent to your attention via the internet. Any remnant sample material is in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please give me a call at (562) 347-2502.

Sincerely,
PTS Laboratories

Michael Mark Brady, P.G.
District Manager

Encl.

PTS Laboratories

Project Name: Site 2705191, Oakland
Project Number: I42705191

PTS File No: 42834
Client: Antea Group

TEST PROGRAM - 20130108

CORE ID	Depth ft.	Core Recovery ft.	ISCO Reactor Vessel Setup	pH Monitoring	Residual Persulfate Test 28 days			Notes
		Plugs:						
Date Received: 20121116								
HA-1d5	N/A	2.50	2	20	2			
MW-14	N/A	N/A						
TOTALS:	10 cores 4 bottles	2.50	2	20	2			14

Laboratory Test Program Notes

Contaminant identification: _____

Standard TAT for basic analysis is 10 business days.

Reagent is OBC (Oxygen BioChem) to be provided by Redox Tech. OBC Reagent doses: 8 g/L and 15 g/L.

pH monitoring at 0hr for baseline, 4 hr, 1 day, 2 days, 4 days, 7 days, 10 days, 14 days, 21 days, and 28 days.

If the pH in either test drops to 9, Client (Antea Group) requests laboratory provide notification in order to discuss how to proceed with running the rest of the test(s).

Additional work to be billed at laboratory standard rate of $85/hour or our standard test fee rates.

Residual persulfate TOD measurement at 28 days.

Based on specifications provided in email transmittal from N. Persaud/Antea Group 20121101

Run large ISCO reactor(250 g : 500 mL); Use 1-L reactors to accommodate additional volume required for pH monitoring.

Residual persulfate measured by using standard back titration, FMC method or similar.

pH monitoring events may be moved to accommodate PTS Laboratories schedule D.Dettloff/Antea Group 20121129.

Composition of OBC is 80% Sodium Persulfate 20% Calcium Peroxide per D.Dettloff/Antea Group 20121130.

Client: Antea Group
Project Name: Site 2705191, Oakland; I42705191

PTS File No: 42834
December 3, 2012

TOD REACTORS SETUP LABORATORY PROCEDURE

(ISCO – TOD Reactor Setup based on FMC Adventus procedure)

Purpose

The purpose of this test is to setup reactors for conducting residual persulfate tests using OBC (Oxygen BioChem). Residual persulfate is then used to calculate Total Oxidant Demand (TOD).

Method Summary

For the physical portion of the tests soil is added to glass reactor vessels. Groundwater with individual reagents (OBC) at designated ratios are added volumetrically to each reactor. The soil and reagent groundwater are manually stirred to make a slurry. Lids are placed upon the reactor vessels to minimize VOC loss. The reactors are placed on an oscillatory table and rotated at low speed (60-100 rpm) for the duration of testing. 10-20 ml aliquots of groundwater are periodically removed for measurement of pH, residual persulfate and calculation of TOD.

Deviations from Method

Deviations, if any, are to be communicated to client and prior approval should be obtained before proceeding with tests.

Safety

- All personnel working in the laboratory are required to follow the PTS - SFS Facility *Health, Safety, and Environment Manual* plan.
- The laboratory routinely analyzes contaminated materials (chemical and biological) where health and safety hazards can exist. Therefore this procedure should not be used unless adequate health and safety precautions are taken.
- A reference file of Material Safety Data Sheets (MSDS) is posted in the laboratory and is available to all personnel involved in these analyses.

Equipment and Supplies

1000mL Reactor Vessels
Balance – A balance sensitive to 0.01 g
Analytical Balance sensitive to 0.1 mg
Weighing canoes
Graduated cylinders (250, 500 or 1000 ml)
Stainless steel homogenizing bowl
Magnetic stirrer and stir bars
Stainless steel stirrer or large spoon
Oscillatory shaker table
10 or 20 ml pipette
pH meter

Reagents and Standards

See the Laboratory Procedure section for preparation and use of reagents.

Sample Collection, Preservation, and Storage

- Sample collection is performed by the client with samples delivered to the laboratory for analyses.

- Samples are stored in Sample Refrigerator at 4±2°C prior to the treatability tests.
- Water and soil samples are typically homogenized before use (homogenization may be dependant upon number of tests and sample volumes required, verify with client).
- The maximum holding time for bench scale testing is project-specific and determined by client.
- Refer to the PTS-SFS Quality Manual Section 22 Sample Management and PTS Laboratories Cooler Sample Receiving and Sample Storage SOP for additional information.

Quality Control

- Due to the nature of the samples received from client and the TOD Reactors test, standards are not available. Therefore the best way to assure the equipment is operating within control is to check the calibration of equipment before use.
- Duplicate reactors may be analyzed.

Calibration and Standardization

- The balances used in this analysis must have calibration checked on the day of use in the range of use.
- No other calibration or standardization is applicable to this analysis.

Laboratory Procedure

Be sure to read and be familiar with all client procedure and project requirements before beginning bench test.

Reactor Vessel Preparation

Contaminant free 1000 ml reactor vessels will be used for the tests.

Prepare Reagents

Measure all granular reagents into labeled disposable weighing canoes. Groundwater will be measured in specified increments as each groundwater/reagent solution is mixed. Remove groundwater from refrigerator and allow to equilibrate to room temperature several hours before beginning tests.

Prepare groundwater OBC solution in designated concentrations as provided by client.

Sample Preparation

Remove samples (soil and groundwater) from the refrigerator and allow to equilibrate to room temperature. Keep containers sealed to prevent the loss of VOCs. As written above, if required, the soil and groundwater are to be homogenized first. If rocks or other solid materials (gravel, lumps, and particles greater than 4 mesh) are present in soil remove them. The compositing will be conducted on the bench top as quickly as possible to minimize volatilization of COCs; however no effort will be made to exclude oxygen. The remainder of soil will be returned to refrigerator after sampling. Do not allow soil to dry. Homogenize containers of sample water to be used, using as little amount as required. The compositing will be conducted on the bench top as quickly as possible to minimize volatilization of COCs; however no effort will be made to purge oxygen. Keep remainder of sample water chilled to minimize VOC losses.

Reactor Vessel Preparation

1. Refer to the Test Program for setting up the TOD Reactors and sampling requirements/schedule.
2. Place the appropriate amount of homogenized soil listed in the TOD Setup Matrix, into each labeled reactor vessel (See TOD Setup matrix for labeling scheme).
    a. Soil and groundwater are combined in the reactors in a 1:2 soil to liquid ratio.
    b. For a 1000 ml reactor this will be 250 grams of soil to 500 ml of groundwater.
3. Measure reagent ground water using a graduated cylinder into the reactor vessel.

4. Mix slowly by hand for ~10 seconds using a stainless steel stirrer to minimize potential VOC volatilization/loss. A slurry should be created.
5. Measure the initial pH of the groundwater in the reactor vessel.
6. Repeat step 5. at client-specified specified time intervals; 4 hrs. 1, 2, 4, 7, 10, 14, 21 and 28 days.
7. Place the cap on each reactor vessel. Monitor reactors for gas production. If gas is produced, the lids will need to be loosened to prevent reactors from breaking.
8. Place reactors on an oscillatory table and rotate at low speed (60-100 rpm) for duration of testing.
9. Repeat steps 2 through 8 for each additional reactor to be setup, starting with the lowest concentration and finishing with the highest concentration of reagents.

TOD Sampling

1. After the designated time interval, remove reactor from oscillatory table and take a 10-20 ml aliquot using a pipette. The aliquot will be used for residual persulfate measurement (see Residual Persulfate by Titration Procedure).
2. If the tests have not reached the final test interval, return the reactors to the oscillatory shaker and continue rotating at low speed (60-100 rpm).
3. Repeats steps 1-2 as needed until all required time intervals have been sampled.

Pollution Prevention and Waste Management

- Although test samples are submitted by the laboratory's clients, it is the laboratory's responsibility to comply with all federal, state, and local regulations governing waste management, particularly the hazardous waste identification rules and land disposal restrictions, and to protect the air, water, and land by minimizing and controlling all releases from fume hoods and bench operations. Compliance with all sewage discharge permits and regulations is also required.
- Because many of the samples PTS Laboratories analyzes may be contaminated with crude oil, refined hydrocarbons or other contaminants, it is important that all samples are safely disposed and do not violate federal, state, or local laws. It is the policy of PTS Laboratories not to violate hazardous waste or clean water discharge regulations – contact your supervisor if you have any concern regarding sample disposal.
- Refer to the PTS-SFS Quality Manual Section 22 Sample Management and PTS Laboratories Sample Disposal SOP for additional information.

Eff. 01/02/2013

RESIDUAL PERSULFATE BY TITRATION PROCEDURE

(Based on FMC Adventus Klozur™ procedure)

Purpose

The purpose of this test is to determine the residual persulfate in groundwater.

Method Summary

Groundwater containing persulfate is mixed with 1 N H_2SO_4 and 0.5 N ferrous ammonium sulfate in an Erlenmeyer flask and back titrated with 0.5 N $KMnO_4$. The method is suitable for high pH and iron sulfate persulfate activation methods. For hydrogen peroxide and calcium peroxide activation of persulfate, 0.5 N $Ce(SO_4)_2$ and a ferroin indicator must be used. Residual persulfate may then be used to calculate Total Oxidant Demand (TOD).

Equipment needed

20 mL plastic syringe
Nylon 0.45µm syringe filter
10-20 mL pipette
250 mL Erlenmeyer flask
Stir bar / magnetic plate
Burette
100 mL flask

Chemicals needed

1 N H_2SO_4
0.5 N ferrous ammonium sulfate
0.5 N $KMnO_4$ or 0.5 N $Ce(SO_4)_2$
Ferroin indicator if using $Ce(SO_4)_2$

Procedure

1. Remove a small aliquot of ground water with 20 mL plastic syringe, filter through 0.45µm syringe filter.
2. Pipette 10 mL of the filtered ground water solution containing persulfate into a 250 mL Erlenmeyer flask. (Note: ground water volume used may range from 2 – 20 mL depending upon concentration).
3. Add 50 mL of a 1 N H_2SO_4 solution
4. Add exactly 40 mL of 0.5 N ferrous ammonium sulfate solution. Swirl constantly while adding.
5. Let stand for one minute
6. Titrate with 0.5 N $KMnO_4$ to a permanent pink endpoint or with 0.5 N $Ce(SO_4)_2$ to a Ferroin indicator endpoint.
7. Run a blank titration on exactly 40 mL of ferrous ammonium sulfate solution, as used above, in 50 mL of 1 N H_2SO_4.

Calculation

g/L Klozur™ persulfate = (A-B)*C*119 / D

where:

A = mL $KmnO_4$ or $Ce(SO_4)_2$ solution for titrating the blank
B = mL $KmnO_4$ or $Ce(SO_4)_2$ solution for titrating the sample
C = normality of the $KmnO_4$ or $Ce(SO_4)_2$ solution used
D = volume of sample in mL

8100 Secura Way – Santa Fe Springs, CA 90670
Phone 562.347.2500 Fax 562.907.3610
www.ptslabs.com

PTS Laboratories

Project Name: Site 2705191, Oakland
Project Number: I42705191

PTS File No: 42834
Client: Antea Group

TEST PROGRAM - MONITORING MATRIX 20130108

REACTOR VESSEL No.	REACTOR VESSEL NAME	REACTOR TREATMENT TYPE	Monitoring Event #1 T = 0 hour	Monitoring Event #2 T =4 hrs	Monitoring Event #3 T = 1 day	Monitoring Event #4 T = 2 days	Monitoring Event #5 T = 4 days	Monitoring Event #6 T = 7 days	Monitoring Event #7 T = 10 days	Monitoring Event #8 T = 16 days	Monitoring Event #9 T = 21 days	Monitoring Event #10 T = 28 days	Notes
1	Low OBC	28-days OBC at 8.0 g/L MW-14 Water, HA-1d5 soil	Initial pH measurement	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring, TOD test	28-days OBC© treatment
2	High OBC	28-days OBC at 15.0 g/L MW-14 Water, HA-1d5 soil	Initial pH measurement	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring	pH monitoring, TOD test	28-days OBC© treatment

Laboratory Test Program Notes

Reagent is OBC (Oxygen BioChem) to be provided by Redox Tech. OBC Reagent doses: 8 g/L and 15 g/L.
pH monitoring at 0hr for baseline, 4 hr, 1 day, 2 days, 4 days, 7 days, 10 days, 14 days, 21 days, and 28 days.
If the pH in either test drops to 9, Client (Antea Group) requests laboratory provide notification in order to discuss how to proceed with running the rest of the test(s).
Residual persulfate TOD measurement at 28 days.
Based on specifications provided in email transmittal from N. Persaud/Antea Group 20121101
Run large ISCO reactor(250 g : 500 mL); Use 1-L reactors to accommodate additional volume required for pH monitoring.
Residual persulfate measured by using standard back titration, FMC method or similar.
pH monitoring events may be moved to accommodate PTS Laboratories schedule D.Dettloff/Antea Group 20121129.
Composition of OBC is 80% Sodium Persulfate 20% Calcium Peroxide per D.Dettloff/Antea Group 20121130.

PTS Laboratories

Project Name: Site 2705191, Oakland
Project Number: I42705191

PTS File No: 42834
Client: Antea Group

TEST PROGRAM - Reagent Dosages Based on 500 ml of Groundwater 20130108

REACTOR VESSEL		REACTOR TREATMENT TYPE	SOIL, grams	GROUNDWATER ml	TIME = 0
No.	NAME				
1	Low OBC	28-days OBC at 8.0 g/L MW-14 Water, HA-1d5 soil	250	500	OBC = 8 g/L = 4.0g/500mL
2	High OBC	28-days OBC at 15.0 g/L MW-14 Water, HA-1d5 soil	250	500	OBC = 15 g/L = 7.5g/500mL

Laboratory Test Program Notes

Reactor Vessels should have a small amount of headspace when filled to accommodate to oxygen gas production; lids should not be tight.
Reagent is OBC (Oxygen BioChem) to be provided by Redox Tech. OBC Reagent doses: 8 g/L and 15 g/L.
Residual persulfate TOD measurement at 28 days.
Based on specifications provided in email transmittal from N. Persaud/Antea Group 20121101
Run large ISCO reactor(250 g : 500 mL); Use 1-L reactors to accommodate additional volume required for pH monitoring.
Residual persulfate measured by using standard back titration, FMC method or similar.
Composition of OBC is 80% Sodium Persulfate 20% Calcium Peroxide per D.Dettloff/Antea Group 20121130.

PTS File No: 42834
Client: Antea Group

PTS Laboratories

TOD BENCH SCALE ANALYSIS SETUP

(METHOD: ISCO - PTS Laboratories, Inc.)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	VOLUME GROUNDWATER, mL	REQUIRED MASS OF OBC©, g	ACTUAL MASS OF OBC©, g	REQUIRED SOIL MASS, g	ACTUAL SOIL MASS, g
1. Low OBC	500	4.0	4.0013	250	250.15
2. High OBC	500	7.5	7.5041	250	250.03

Use 250 g soil, 500 mL H_2O

Technician: JS

Date/Time: 20121210/1058

Low OBC (8g/L)

$$\left(\frac{8\,g\ OBC}{1L\ H_2O}\right) \times 0.5L\ H_2O = 4.0\,g\ OBC$$

High OBC (15g/L)

$$\left(\frac{15\,g\ OBC}{1L\ H_2O}\right) \times 0.5L\ H_2O = 7.5\,g\ OBC$$

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 0 hr

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20121210	1114	73	Water	9.04
2. High OBC	N/A	20121210	1123	73	Water	9.98

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20121210/1003
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 4 hr

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20121210	1515	75	Water	9.60
2. High OBC	N/A	20121210	1523	75	Water	10.03

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20121210/1003
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 1 day

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20121211	1116	74	Water	8.34
2. High OBC	N/A	20121211	1116	74	Water	8.46

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20121211/1017
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 2 days

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20121212	1113	75	Water	8.16
2. High OBC	N/A	20121212	1115	75	Water	8.08

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20121212/1038
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 4 days

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20121214	1115	73	Water	8.25
2. High OBC	N/A	20121214	1118	73	Water	8.15

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20121214/1050
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 7 days

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20121217	1115	74	Water	8.38
2. High OBC	N/A	20121217	1116	74	Water	8.00

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20121217/1049
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 10 days

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20121220	1114	71	Water	8.25
2. High OBC	N/A	20121220	1116	71	Water	7.96

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20121220/1015
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 16 days

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20121226	1031	71	Water	8.38
2. High OBC	N/A	20121226	1033	71	Water	7.67

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20121226/0929
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 21 days

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20121231	0823	70	Water	8.33
2. High OBC	N/A	20121231	0825	70	Water	7.58

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20121231/0815
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

Reactor Groundwater + Reagent pH T = 28 days

(METHODOLOGY: pH Meter)

PROJECT NAME: Site 2705191, Oakland
PROJECT NO: I42705191

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	ROOM TEMP. °F	SAMPLE MATRIX	pH READING
1. Low OBC	N/A	20130107	0755	71	Water	8.25
2. High OBC	N/A	20130107	0800	71	Water	7.51

QC DATA

Meter Model/Type: Corning pH Meter 240

METER CALIBRATION	Date/Time: 20130107/0749
pH Buffer Standard 4.00	4.00
pH Buffer Standard 7.00	7.00
pH Buffer Standard 10.00	10.01

PTS File No: 42834
Client: Antea Group

PTS Laboratories
Project Name: Site 2705191, Oakland
Project No. I42705191

RESIDUAL PERSULFATE BY TITRATION T = 28 days

(Based on FMC Adventus Klozur™ procedure)

LABORATORY PROCEDURE

About 50 mL 1.0N H_2SO_4 was reacted with 40 mL 0.5N Ferrous Ammonium Sulfate and 10 mL groundwater.
Solution mixture is let stand for 1 minute.
Solution titrated with a 0.5N $Ce(SO_4)_2$ solution to a ferroin indicator endpoint.
Final persulfate concentration determined using equation: (A-B)*C*119/D
TOD determined using equation: TOD(g/kg)= (Co - Cf) * V / M

Sample ID	TECH. INITIALS	DATE/ TIME	VOLUME OF $Ce(SO_4)_2$ FOR TITRATING BLANK mL [A]	VOLUME OF $Ce(SO_4)_2$ FOR TITRATING SAMPLE mL [B]	NORMALITY OF $Ce(SO_4)_2$ USED, N [C]	VOLUME OF SAMPLE mL [D]	INITIAL OBC® g/L	INITIAL PERSULFATE g/L	FINAL PERSULFATE g/L	VOLUME OF GROUNDWATER, L	MASS OF SOIL, g	TOD, g/Kg
1. Low OBC	JS	20130107/ 1126	43.85	43.79	0.5	10	8.0	6.4	0.4	0.5	250.15	12.1
2. High OBC	JS	20130107/ 1126	43.85	43.37	0.5	10	15.0	12.0	2.9	0.5	250.03	18.3

Initial Persulfate concentration calculated as 80% of Initial OBC® concentration based on client specified composition of OBC®

Observations or deviations from method: _____

Lab Supervisor/PM: MMB/20130107
Initial/Date

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

42834

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Antea Group	Report To:	Dennis Dettloff	Attention:	Dennis Dettloff
Address:	11050 White Rock Road	Copy To:	Ed Weyrens	Company Name:	Antea Group
	Suite 110, Rancho Cordova, CA 95670		ed.weyrens@anteagroup.com	Address:	11050 White Rock Road Suite 110
Email To:	dennis.dettloff@anteagroup.com	Purchase Order No.			Rancho Cordova, CA 95670
Phone:	916-503-1261 Fax	Client Project ID:	42705191		
Requested Due Date/TAT:	10 Day (Default)	Container Order Number:			

Regulatory Agency
Alameda County
State / Location
CA/Oakland

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	FIELD POINT NAME	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Requested Analysis Filtered (Y/N): TOD residual persulfate test	Residual Chlorine (Y/N)	
	SAMPLE ID																					
1	HA-1d		SL	G	11/15/2012	11:45				10	X									X		HOLD
2	MW-14		WT	G	11/15/2012	12:30				4	X									X		HOLD
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
MW-14 to be used with HA-1d	Antea Grp	11/15/12	15:00	PTS LABS	11/16/12	1340	49.9	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ed Weyrens

SIGNATURE of SAMPLER:

DATE Signed: 11-15-12

Appendix C

Soil Boring Logs

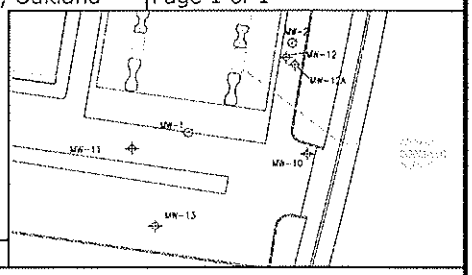
BORING LOG

Project No. KEI-P91-1004	**Boring Diameter** 9" **Casing Diameter** 2"	**Logged By** JGG D.L. CFG 1653
Project Name Unocal S/S #5043 449 Hegenberger Rd., Oakland	**Well Cover Elevation**	**Date Drilled** 8/21/92
Boring No. MW6	**Drilling Method** Hollow-stem Auger	**Drilling Company** West Hazmat

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		Asphalt pavement over sand and gravel base.
				Gravelly clay with sand, stiff, moist, black and olive gray, disturbed (fill).
3/4/4			CH	Clay with silt, stiff, moist, black (5Y 2.5/1) lensed with poorly graded and well graded sand.
4/5/7	▼	5	ML	Silt with very fine-grained sand, stiff, moist to wet, dark greenish gray (5GY 4/1), lensed with clayey silt between 4.5 and 5.5 feet.
3/3/4			OL	Clayey silt, stiff, moist, black (5Y 2.5/1) and very dark gray (5Y 3/1) mottled, with abundant organic matter (bay mud).
5/7/8		10	OH	Silty clay, stiff, moist, black (2.5YR 2.5/0), with abundant organic matter.
5/7/9			CH	Silty clay, stiff, moist, very dark gray (5Y 3/1), with organic matter.
				Silty clay, trace fine-grained sand, stiff, moist, dark greenish gray (5GY 4/1).
		15		TOTAL DEPTH 13.5'
		20		

Delta
Consultants

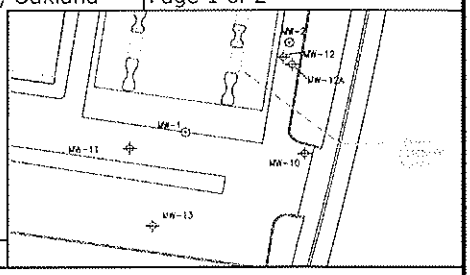
Project No:	I42705191	Client:	Delta/ELT	**Well No: MW-12**	
Logged By:	Jonathan Fillingame	Location:	449 Hegenberger Road, Oakland	Page 1 of 1	
Driller:	Gregg	Date Drilled:	6/22/2010		
Drilling Method:	Hollow Stem Auger	Hole Diameter:	11"		
Sampling Method:	Direct Push	Hole Depth:	20'		
Casing Type:	Sch 40 PVC	Well Diameter:	4"		
Slot Size:	0.020	Well Depth:	20'		
Gravel Pack:	#3 Monterey Sand	First Water Depth:	5.5'		
		Static Water Depth:	4.5'		
Elevation:		Northing:		Easting:	



Well Completion (Backfill / Casing)	Water Level	Blow Counts	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement	▼			Air-Knife	1				4" Asphalt
									Fill (Silty SAND with Gravel); brown, 60% fine to coarse sand, 20% silt, 20% fine to coarse gravel, chuncks of asphalt, damp.
					2				**Lean CLAY (CL)**; dark greenish grey, 95% clay, medium stiff, medium plasticity, 5% fine sand, moist.
					3				
					4				**Lean CLAY (CL)**; dark brownish grey and black, 90% clay, stiff, medium plasticity, 5% fine sand, 5% organics/roots, moist, hydrocarbon odor.
	▽		32.9		5				
					6				**Lean CLAY with Gravel (CL)**; dark brownish grey, 80% clay, stiff, low plasticity, 20% fine gravel,
					7				**Clayey GRAVEL (GC)**; dark brown, 50% fine gravel, loose, 40% clay, low plasticity, 10% fine to coarse sand, moist.
			2365	MW-12 @8	8				
					9				
				MW-12 @10	10				**Lean CLAY (CL)**; dark grey to black, soft, medium plasticity, wet, hydrocarbon odor.
					11				
			203		12				
					13				
					14				**Lean CLAY with Sand (CL)**; green grey, 85% clay, stiff, medium plasticity, 15% fine to medium sand, moist.
					15				Color Change to Brown.
			160		16				**Fat CLAY (CH)**; black, very soft, high plasticity, wet.
					17				**Fat CLAY (CH)**; greenish grey, 90% clay, soft, high plasticity, 10% fine sand, moist.
					18				
					19				**Lean CLAY (CL)**; brown with black spots, very stiff, medium plasticity, damp.
			335	MW-12 @20	20				
					21				
					22				

Delta
Consultants

Project No:	I42705191	Client:	Delta/ELT	**Well No: MW-12A**	
Logged By:	Jonathan Fillingame	Location:	449 Hegenberger Road, Oakland	Page 1 of 2	
Driller:	Gregg	Date Drilled:	6/23/2010		
Drilling Method:	Hollow Stem Auger	Hole Diameter:	8"		
Sampling Method:	Direct Push	Hole Depth:	44'		
Casing Type:	Sch 40 PVC	Well Diameter:	2"		
Slot Size:	0.020	Well Depth:	34'		
Gravel Pack:	#3 Monterey Sand	First Water Depth:	5.5'		
		Static Water Depth:	6'		
Elevation:		Northing:		Easting:	

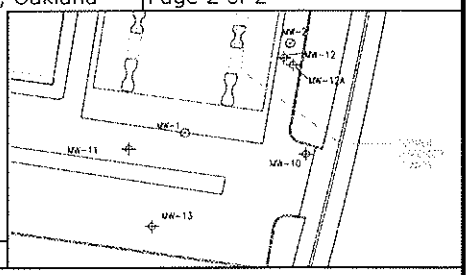


Well Completion (Backfill / Casing)	Water Level	Blow Counts	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Air-Knife	1				4" Asphalt **Fill (Silty SAND with Gravel)**; brown, 60% fine to coarse sand, 20% silt, 20% fine to coarse gravel, chuncks of asphalt, damp.
					2				
					3				**Lean CLAY (CL)**; dark greenish grey, 95% clay, medium stiff, medium plasticity, 5% fine sand, moist.
					4				**Lean CLAY (CL)**; dark brownish grey and black, 90% clay, stiff, medium plasticity, 5% fine sand, 5% organics/roots, moist, hydrocarbon odor.
			32.9		5				
	▽				6				**Lean CLAY with Gravel (CL)**; dark brownish grey, 80% clay, stiff, low plasticity, 20% fine gravel,
	▼				7				**Clayey GRAVEL (GC)**; dark brown, 50% fine gravel, loose, 40% clay, low plasticity, 10% fine to coarse sand, moist.
			2365		8				
					9				
					10				**Lean CLAY (CL)**; dark grey to black, soft, medium plasticity, wet, hydrocabon odor.
					11				
			203		12				
					13				
					14				**Lean CLAY with Sand (CL)**; green grey, 85% clay, stiff, medium plasticity, 15% fine to medium sand, moist.
					15				Color Change to Brown.
			160		16				**Fat CLAY (CH)**; black, very soft, high plasticity, wet.
					17				**Fat CLAY (CH)**; greenish grey, 90% clay, soft, high plasticity, 10% fine sand, moist.
					18				
					19				**Lean CLAY (CL)**; brown with black spots, very stiff, medium plasticity, damp.
			335		20				No Recovery
					21				
					22				

Delta
Consultants

Project No:	I42705191	Client:	Delta/ELT
Logged By:	Jonathan Fillingame	Location:	449 Hegenberger Road, Oakland
Driller:	Gregg	Date Drilled:	6/23/2010
Drilling Method:	Hollow Stem Auger	Hole Diameter:	8"
Sampling Method:	Direct Push	Hole Depth:	44'
Casing Type:	Sch 40 PVC	Well Diameter:	2"
Slot Size:	0.020	Well Depth:	34'
Gravel Pack:	#3 Monterey Sand	First Water Depth:	5.5'
		Static Water Depth:	6'
Elevation:		Northing:	Easting:

Well No: MW-12A
Page 2 of 2



Well Completion: Backfill	Well Completion: Casing	Water Level	Blow Counts	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement						23				No recovery
						24				
						25				
				1277	MW-12A @26	26				**Fat CLAY (CH)**; black, soft, high plasticity, wet, hydrocarbon odor.
						27				**Lean CLAY (CL)**; brown, greenish grey, 90% clay, stiff, medium plasticity, 10% fine to coarse sand, moist.
						28				
						29				
						30				
				3400	MW-12A @32	31				**Sandy Lean CLAY (CL)**; brown, 70% clay, stiff, medium plasticity, 30% fine to coarse sand, moist.
						32				
						33				**Clayey SAND (SC)**; brown, 60% fine to medium sand, loose, 40% clay, stiff, medium plasticity, wet.
				47.9	MW-12A @34	34				**Well Graded SAND with Clay (SW-SC)**; brown, 90% fine to coarse sand, dense, 10% clay, wet.
						35				
						36				**Clayey SAND (SC)**; brown, 60% fine to medium sand, 40% clay, wet.
						37				**Well Graded SAND (SW)**; brown, fine to coarse, wet.
						38				
						39				**Well Graded SAND (SW)**; brown, 90% medium to coarse sand, loose, 10% fine gravel, wet.
Sand Caved in while Augers were removed (slough)						40				**Well Graded SAND (SW)**; brown, 95% fine to coarse sand, loose, 5% clay, wet.
						41				**Well Graded SAND (SW)**; brown, 95% fine to coarse sand, loose, 5% fine gravel, wet.
						42				
						43				**Clayey SAND (SC)**; brown, 60% fine to medium sand, loose, 40% clay, wet.
						44				

Appendix D

Regenesis ORC Advanced® Material Safety and Data Sheet

Oxygen Release Compound – Advanced (ORC *Advanced*™)
MATERIAL SAFETY DATA SHEET (MSDS)

Last Revised: June 24, 2010

Section 1 - Material Identification

Supplier:

REGENESIS

1011 Calle Sombra
San Clemente, CA 92673

Phone:	**949.366.8000**
Fax:	**949.366.8090**
E-mail:	**info@regenesis.com**

Chemical Description:	A mixture of Calcium OxyHydroxide [$CaO(OH)_2$] and Calcium Hydroxide [$Ca(OH)_2$].
Chemical Family:	Inorganic Chemical
Trade Name:	Advanced Formula Oxygen Release Compound (ORC *Advanced*™)
Chemical Synonyms	Calcium Hydroxide Oxide; Calcium Oxide Peroxide
Product Use:	Used to remediate contaminated soil and groundwater (environmental applications)

Section 2 – Composition

CAS No.	Chemical
682334-66-3	**Calcium Hydroxide Oxide [$CaO(OH)_2$]**
1305-62-0	**Calcium Hydroxide [$Ca(OH)_2$]**
7758-11-4	**Dipotassium Phosphate (HK_2O_4P)**
7778-77-0	**Monopotassium Phosphate (H_2KO_4P)**

Section 3 – Physical Data	
Form:	Powder
Color:	White to Pale Yellow
Odor:	Odorless
Melting Point:	527 °F (275 °C) – Decomposes
Boiling Point:	Not Applicable (NA)
Flammability/Flash Point:	NA
Auto- Flammability:	NA
Vapor Pressure:	NA
Self-Ignition Temperature:	NA
Thermal Decomposition:	527 °F (275 °C) – Decomposes
Bulk Density:	0.5 – 0.65 g/ml (Loose Method)
Solubility:	1.65 g/L @ 68° F (20° C) for calcium hydroxide.
Viscosity:	NA
pH:	11-13 (saturated solution)
Explosion Limits % by Volume:	Non-explosive
Hazardous Decomposition Products:	Oxygen, Hydrogen Peroxide, Steam, and Heat
Hazardous Reactions:	None

Section 4 – Reactivity Data

Stability:	Stable under certain conditions (see below).
Conditions to Avoid:	Heat and moisture.
Incompatibility:	Acids, bases, salts of heavy metals, reducing agents, and flammable substances.
Hazardous Polymerization:	Does not occur.

Section 5 – Regulations

TSCA Inventory List:	Listed

CERCLA Hazardous Substance (40 CFR Part 302)

Listed Substance:	No
Unlisted Substance:	Yes
Reportable Quantity (RQ):	100 pounds
Characteristic(s):	Ignitibility
RCRA Waste Number:	D001

SARA, Title III, Sections 302/303 (40 CFR Part 355 – Emergency Planning and Notification)

Extremely Hazardous Substance:	No

SARA, Title III, Sections 311/312 (40 CFR Part 370 – Hazardous Chemical Reporting: Community Right-To-Know

Hazard Category:	Immediate Health Hazard Fire Hazard
Threshold Planning Quantity:	10,000 pounds

Section 5 – Regulations (cont)

SARA, Title III, Section 313 (40 CFR Part 372 – Toxic Chemical Release Reporting: Community Right-To-Know

Extremely Hazardous Substance:	No	
WHMIS Classification:	C	Oxidizing Material Poisonous and Infectious Material
	D	Material Causing Other Toxic Effects – Eye and Skin Irritant
Canadian Domestic Substance List:	Not Listed	

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:	Keep in tightly closed container. Store in dry area, protected from heat sources and direct sunlight.
Handling:	Clean and dry processing pipes and equipment before operation. Never return unused product to the storage container. Keep away from incompatible products. Containers and equipment used to handle this product should be used exclusively for this material. Avoid contact with water or humidity.

Section 6 – Protective Measures, Storage and Handling (cont)

Personal Protective Equipment (PPE)

Engineering Controls:	Calcium Hydroxide ACGIH® TLV® (2000) 5 mg/m^3 TWA OSHA PEL Total dust–15 mg/m^3 TWA Respirable fraction– 5 mg/m^3 TWA NIOSH REL (1994) 5 mg/m^3
Respiratory Protection:	For many conditions, no respiratory protection may be needed; however, in dusty or unknown atmospheres use a NIOSH approved dust respirator.
Hand Protection:	Impervious protective gloves made of nitrile, natural rubbber or neoprene.
Eye Protection:	Use chemical safety goggles (dust proof).
Skin Protection:	For brief contact, few precautions other than clean clothing are needed. Full body clothing impervious to this material should be used during prolonged exposure.
Other:	Safety shower and eyewash stations should be present. Consultation with an industrial hygienist or safety manager for the selection of PPE suitable for working conditions is suggested.
Industrial Hygiene:	Avoid contact with skin and eyes.
Protection Against Fire & Explosion:	NA

Section 7 – Hazards Identification

Emergency Overview:	Oxidizer – Contact with combustibles may cause a fire. This material decomposes and releases oxygen in a fire. The additional oxygen may intensify the fire.
Potential Health Effects:	Irritating to the mucous membrane and eyes. If the product splashes in ones face and eyes, treat the eyes first. Do not dry soiled clothing close to an open flame or heat source. Any

	clothing that has been contaminated with this product should be submerged in water prior to drying.
Inhalation:	High concentrations may cause slight nose and throat irritation with a cough. There is risk of sore throat and nose bleeds if one is exposed to this material for an extended period of time.
Eye Contact:	Severe eye irritation with watering and redness. There is also the risk of serious and/or permanent eye lesions.
Skin Contact:	Irritation may occur if one is exposed to this material for extended periods.
Ingestion:	Irritation of the mouth and throat with nausea and vomiting.

Section 8 – Measures in Case of Accidents and Fire

After Spillage/Leakage/Gas Leakage:	Collect in suitable containers. Wash remainder with copious quantities of water.
Extinguishing Media:	See next.
Suitable:	Large quantities of water or water spray. In case of fire in close proximity, all means of extinguishing are acceptable.
Further Information:	Self contained breathing apparatus or approved gas mask should be worn due to small particle size. Use extinguishing media appropriate for surrounding fire. Apply cooling water to sides of transport or storage vessels that are exposed to flames until the fire is extinguished. Do not approach hot vessels that contain this product.
First Aid:	After contact with skin, wash immediately with plenty of water and soap. In case of contact with eyes, rinse immediately with plenty of water and seek medical attention. Consult an opthalmologist in all cases.

Section 8 – Measures in Case of Accidents and Fire

Eye Contact:	Flush eyes with running water for 15 minutes, while keeping the eyelids wide open. Consult with an ophthalmologist in all cases.
Inhalation:	Remove subject from dusty environment. Consult with a physician in case of respiratory symptoms.

Ingestion:	If the victim is conscious, rinse mouth and admnister fresh water. DO NOT induce vomiting. Consult a physician in all cases.
Skin Contact:	Wash affected skin with running water. Remove and clean clothing. Consult with a physician in case of persistent pain or redness.
Special Precautions:	Evacuate all non-essential personnel. Intervention should only be done by capable personnel that are trained and aware of the hazards associated with this product. When it is safe, unaffected product should be moved to safe area.
Specific Hazards:	Oxidizing substance. Oxygen released on exothermic decomposition may support combustion. Confined spaces and/or containers may be subject to increased pressure. If product comes into contact with flammables, fire or explosion may occur.

Section 9 – Accidental Release Measures

Precautions:	Observe the protection methods cited in Section 3. Avoid materials and products that are incompatible with product. Immediately notify the appropriate authorities in case of reportable discharge (> 100 lbs).
Cleanup Methods:	Collect the product with a suitable means of avoiding dust formation. All receiving equipment should be clean, vented, dry, labeled and made of material that this product is compatible with. Because of the contamination risk, the collected material should be kept in a safe isolated place. Use large quantities of water to clean the impacted area. See Section 12 for disposal methods.

Section 10 – Information on Toxicology

Toxicity Data

Acute Toxicity:	Oral Route, LD_{50}, rat, > 2,000 mg/kg (powder 50%) Dermal Route, LD_{50}, rat, > 2,000 mg/kg (powder 50%) Inhalation, LD_{50}, rat, > 5,000 mg/m^3 (powder 35%)
Irritation:	Rabbit (eyes), severe irritant

Sensitization:	No data
Chronic Toxicity:	In vitro, no mutagenic effect (Powder 50%)
Target Organ Effects:	Eyes and respiratory passages.

Section 11 – Information on Ecology

Ecology Data	
	10 mg $Ca(OH)_2$/L: pH = 9.0
	100 mg $Ca(OH)_2$/L: pH = 10.6
Acute Exotoxicity:	Fishes, Cyprinus carpio, LC_{50}, 48 hrs, 160 mg/L
	Crustaceans, Daphnia sp., EC_{50}, 24 hours, 25.6 mg/L
	(Powder 16%)
Mobility:	Low Solubility and Mobility
	Water – Slow Hydrolysis.
	Degradation Products: Calcium Hydroxide
Abiotic Degradation:	Water/soil – complexation/precipitation. Carbonates/sulfates present at environmental concentrations.
	Degradation products: carbonates/sulfates sparingly soluble
Biotic Degradation:	NA (inorganic compound)
Potential for Bioaccumulation:	NA (ionizable inorganic compound)

Section 11 – Information on Ecology (cont)

Comments:

Observed effects are related to alkaline properties of the product. Hazard for the environment is limited due to the product properties of:

- No bioaccumulation
- Weak solubility and precipitation as carbonate or sulfate in an aquatic environment.

Diluted product is rapidly neutralized at environmental pH.

Further Information: NA

Section 12 – Disposal Considerations

Waste Disposal Method:	Consult current federal, state and local regulations regarding the proper disposal of this material and its emptied containers.

Section 13 – Shipping/Transport Information

D.O.T Shipping Name:	Oxidizing Solid, N.O.S [A mixture of Calcium OxyHydroxide [$CaO(OH)_2$] and Calcium Hydroxide [$Ca(OH)_2$].
UN Number:	1479
Hazard Class:	5.1
Label(s):	5.1 (Oxidizer)
Packaging Group:	II
STCC Number:	4918717

Section 14 – Other Information

HMIS® Rating	Health – 2 Flammability – 0	Reactivity – 1 PPE - Required

HMIS® is a registered trademark of the National Painting and Coating Association.

NFPA® Rating	Health – 2 Flammability – 0	Reactivity – 1 OX

NFPA® is a registered trademark of the National Fire Protection Association.

Reason for Issue: Update toxicological and ecological data

Section 15 – Further Information

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available.