

Atlantic Richfield Company

Shannon Couch
Operations Project Manager

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Alameda County
Environmental Health

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October 19, 2011

Re: Case Evaluation & Justification for No Further Action Report
Atlantic Richfield Company Station #374
6407 Telegraph Avenue, Oakland, California
ACEH Case #RO0000078

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by,



Shannon Couch
Operations Project Manager

Attachment

Atlantic Richfield Company

Shannon Couch

Remediation Management Project Manager

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July 27, 2011

Mr. Paresh Khatri
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

**Re: ARCO STATION NO. 0374
6407 Telegraph Avenue
Oakland, California
ACEH Case No. RO0000078 (the "Site")**

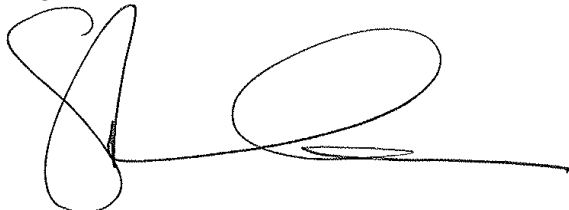
Dear Mr. Khatri,

Atlantic Richfield Company (ARC) is pleased to submit this Request for No Further Action Status for ARCO Station No. 0374, located at 6407 Telegraph Avenue, Oakland, California. ARC is interested in bringing forward those cases that appear to meet low-risk closure criteria, and presenting case precedents that have been established to facilitate a finding of No Further Action. We have retained Closure Solutions Incorporated (Closure Solutions) to facilitate this effort statewide, and to augment the existing project teams.

Based on our review, the environmental case at the aforementioned location does not appear to pose a significant threat to human health, environmental receptors, or reasonably anticipated beneficial uses of water. Furthermore, we believe that if this case were to be considered in relation to the decisional framework and criteria developed by the SWRCB and the SWRCB Task Forces, a finding of No Further Action would be appropriate. As such, we request that the environmental case at this facility be granted No Further Action status at this time.

If you have any questions or would like to discuss this matter in greater detail, please feel free to contact me via email or at the number listed above.

Regards,



Shannon Couch
Remediation Management Project Manager
Atlantic Richfield Company, a BP-affiliated company

Enclosure: Case Evaluation & Justification for No Further Action

cc: Mr. John Skance, ARC (electronic copy uploaded to ENFOS)
Mr. Thomas Sparrowe, Broadbent & Associates (electronic copy uploaded to ENFOS)

July 27, 2011

Ms. Shannon Couch
Atlantic Richfield Company
P.O. Box 1257
San Ramon, California 94583

**RE: CASE EVALUATION & JUSTIFICATION FOR NO FURTHER ACTION
ARCO Station No. 0347
6407 Telegraph Avenue
Oakland, California
ACEH Case No. RO0000078**

Dear Ms. Couch:

Closure Solutions, Incorporated (Closure Solutions) is submitting this *Case Evaluation & Justification for No Further Action* for ARCO Station No. 0347, located at 6407 Telegraph Avenue in Oakland, California (the Site, Figures 1 and 2 in Attachment A). A summary of existing Site conditions, the technical justification for a finding of No Further Action status, and a summary of similar cases that have been closed by the State Water Resources Control Board (SWRCB) are presented in this document.

The Site environmental case was opened in 1988 after an integrity test of an underground storage tank (UST) failed. During UST replacement activities and subsequent investigations petroleum hydrocarbons were reported beneath the former USTs, dispensers, and pump islands. To reduce residual impacts, heavily impacted soil was excavated and removed from the Site during the 1988 UST replacement activities and 2008 dispenser and piping upgrades. Despite the fact that a groundwater extraction system was operated from December 1993 through October 1995 and extracted approximately 93,989 gallons of water, the system reportedly only removed an estimated 2.61 pounds of total petroleum hydrocarbons as gasoline (TPHg) from groundwater.

The primary constituents of concern at the Site include gasoline range organics (GRO), benzene, ethylbenzene, and methyl tertiary butyl ether (MTBE). Although elevated GRO and benzene concentrations extend offsite, the down-gradient extent is defined and appears to extend less than 100 feet from the source area. MTBE concentrations are below the 'low threat' numeric values recommended by the SWRCB's Department of Water Quality Task Force.

Regardless of the remaining hydrocarbon and fuel additive mass, the closest identified wells are located approximately 1,590 feet cross-gradient from the Site based on the reported regional groundwater flow direction, and potential impacts to human or ecological receptors are considered unlikely. Additionally, the East Bay Plain Groundwater Basin Beneficial Use

Evaluation Report indicates groundwater in the vicinity of the Site is unlikely to be used as a drinking water resource primarily due to low recharge rates and “achievement of drinking water objectives within a reasonable time period is an appropriate long term goal.”

Extensive soil and groundwater investigations have adequately defined the residual and dissolved-phase contaminants, and further investigation and active remediation does not appear to be warranted or necessary to protect human health and ecological receptors. Site data demonstrate that source removal and natural attenuation processes continue to diminish the residual hydrocarbons and fuel additives, and Water Quality Objectives will likely be reached in a reasonable timeframe. These observations, plus several additional lines of evidence are the basis for this closure recommendation.

1.0 SITE SUMMARY

1.1 Location and Setting

The Site is located at the northwest corner of Telegraph and Alcatraz Avenues in an area of mixed residential and commercial use. The elevation of the Site is approximately 164 feet above mean sea level with local topography sloping gently to the southwest. Surrounding land use is primarily single- and multi-family residences with commercial buildings located east and southeast of the Site.

A former Mobile Oil Service Station located at 6398 Telegraph Avenue, across the intersection of Telegraph and Alcatraz Avenues (cross-gradient), was identified as a site with a listed leaking UST according to the Report on Releases of Hazardous Substances from Underground Storage Tanks (State Water Resources Control Board, January 1992). The leak was reported in March 1986 and was last reviewed, according to the Report, in June 1990. Based on research of the GeoTracker database and Alameda County Environmental Health Services (ACEH) website, no action has been taken by the responsible party since the initial report of the leak, although recommendations in the Report included removal of free product and excavation and treatment of contaminated soil. A July 15, 2011 directive to perform site assessment activities is listed on the GeoTracker website.

1.2 Current Use

The Site is currently an active ARCO station and AM/PM™ Mini-Mart. Site facilities include three 12,000-gallon USTs, two dispenser islands, and associated product lines. The majority of the subject property is covered with the station building, asphalt and concrete pavement and planter areas.

1.3 Regional Hydrogeology

According to the East Bay Plain Groundwater Basin Beneficial Use Evaluation Report (California Regional Water Quality Control Board – San Francisco Bay Region (SFRWQCB), June 1999), the Site is located within the Berkeley Sub-Area (Zone B) of the East Bay Plain of the San Francisco Basin. The Berkeley Sub-Area contains a series of alluvial fans deposited on a west sloping bedrock surface. The alluvial deposits range from 10 to 300 feet deep, averaging 100 to 200 feet deep. There is no historical evidence that groundwater supplies are sufficient for municipal use, primarily due to low recharge rates.

There are no reported clay units that function as major aquitards. However, in the Berkeley Sub-Area, the first encountered groundwater is frequently semi-confined, particularly in West Berkeley.

Throughout most of the Alameda County portion of the East Bay Plain, from Hayward north to Albany, water level contours show that the general direction of groundwater flow is from east to west or from the Hayward Fault to the San Francisco Bay. Groundwater flow direction generally correlates to topography. Flow direction and velocity are also influenced by buried stream channels that are typically oriented in an east-west direction.

1.4 Local Hydrogeology

Since groundwater monitoring began at the Site in 1989, depth-to-water (DTW) measurements have ranged from approximately 5 to 11 feet below ground surface (bgs). During the first quarter 2011 monitoring event, DTW beneath the Site ranged from approximately 7 to 7.5 feet bgs. Groundwater flow direction during the first quarter 2011 monitoring event was to the southwest at an average gradient of approximately 0.03 feet per foot, which is consistent with results collected over the last five years. Current and Historical Groundwater Data is presented in Attachment B.

1.5 Lithology

According to Broadbent & Associates, Inc. (BAI), the Site is generally underlain by silty and sandy clays with lenses consisting of sands and gravels to the total explored depth of approximately 28 feet bgs. Boring logs for MW-1 and MW-2 indicate intermittent layers of silty clay and sandy clay are present throughout the borings with gravel encountered at approximately 8 feet bgs, and sand encountered in MW-1 at approximately 18 feet bgs. Boring log MW-3 indicates that silty clay was present throughout the boring with minor gravel encountered at approximately 18.5 feet bgs and sand encountered at approximately 27 feet bgs. Boring log MW-4 indicates that silty clay was present from approximately ground surface to 13 feet bgs,

and sandy gravel with some silt was encountered at 13 feet bgs which transitioned into silty clay with some sand and gravel at approximately 22 feet bgs. Selected Soil Boring/Well Logs are presented in Attachment C.

1.6 Sensitive Receptors

Based on Closure Solutions' review of information provided by the Department of Water Resources, two wells were identified within a ½-mile radius of the Site. The two wells were reportedly installed in 1935 on the same property, did not have identified uses, and are located approximately 1,590 feet south (cross-gradient) of the Site.

The nearest surface body water appears to be an unnamed creek that terminates approximately 3,400 feet east (up-gradient) of the Site. According to BAI, the nearest down-gradient natural drainage is Claremont Creek, located approximately 1.2 miles west-northwest of the Site. Claremont Creek flows generally east to west near the Site vicinity. The San Francisco Bay is located approximately 2 miles west of the Site.

1.7 Summary of Previous Investigations

Based on various environmental documents prepared by Atlantic Richfield Company's (ARC's) current and former consultants, Closure Solutions has prepared the following summary of previous environmental corrective actions at the Site. While Closure Solutions does not have reason to believe that the information is incorrect, Closure Solutions has not independently verified this information for accuracy. It is our understanding that:

- In February 1988, a leak was detected in the vapor/vent line of the unleaded system during annual tank testing. In April 1988, a UST Unauthorized Release Report was filed with the Alameda County Public Health Service by Brown and Caldwell.
- In April 1988, Applied Geosystems (AGS) advanced soil borings B-1 through B-4 near the USTs. TPHg concentrations in soil samples ranged from 48 to 930 milligrams per kilogram (mg/kg). Groundwater was encountered at approximately 10 feet bgs. One inch of floating product was observed in a "grab" groundwater sample collected from boring B-1. Product sheen was also observed in "grab" groundwater samples from borings B-2 and B-4.
- In June 1988, four gasoline USTs were removed from the Site. No holes were observed in the removed tanks; however, some of the protective asphaltic coating had dissolved around the fill ports of the tanks. Laboratory analyses of the soil samples collected beneath former tank T4 indicated TPHg concentrations ranging from 3 mg/kg to 1,097

mg/kg. The excavation was extended north of tank T4; a soil sample (S-12-T4A2) collected after this excavation indicated a TPHg concentration of 795 mg/kg. A soil sample collected beneath the north end of tank T1 (S-11-T1A) indicated a TPHg concentration of 399 mg/kg. Groundwater was observed seeping into the northwestern portion of the UST pit as a depth of approximately 12 feet. Observation wells W-1 and W-2 were installed in the former UST pit and observation wells W-3 and W-4 were installed in the new UST pit. Subjective analyses of the water from these wells indicated the presence of sheen in wells W-1 and W-2 in the former UST pit.

- In December 1988, AGS collected a groundwater sample from well W-4 and analyzed for TPHg and the volatile gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX). No detectable concentrations of TPHg or BTEX were reported (AGS, January 5, 1989).
- In July 1989, AGS installed groundwater monitoring wells MW-1 through MW-4. Well MW-3 was installed offsite on the west side of Irwin Court. The maximum TPHg concentration in soil from the four borings was 60 mg/kg.
- In April 1991, RESNA performed step-drawdown and constant discharge tests using tank backfill well W-2. Using the test results, the hydraulic conductivity of the aquifer outside of the backfill material was calculated at approximately 0.37 feet per day.
- In April 1992, RESNA advanced offsite soil borings B-5 and B-6 and converted the borings into wells MW-5 and MW-6, southwest and west of the Site. No TPHg or BTEX were reported in the soil samples collected from the borings.
- Between October and December 1993, RESNA oversaw installation of a groundwater extraction (GWE) remediation system at the Site. System operation commenced on December 21, 1993. Water was extracted from well W-2 and treated using liquid-phase activated carbon before being discharged to the sanitary sewer. The system was shut down on October 13, 1995 following verbal approval from the ACEH. An estimated total of 93,989 gallons of water were extracted during system operation and an estimated 2.61 pounds of TPHg were removed from groundwater.
- In September 1995, dispensers and associated underground product lines were removed from the Site. Pacific Environmental Group, Inc. collected soil samples beneath both the dispenser islands and product lines. Total purgeable petroleum hydrocarbons as gasoline (TPPHg) were reported in soil from beneath the product lines at concentrations ranging between 1.9 mg/kg and 65 mg/kg; benzene was detected in soil Sample TR-A-13 at 0.30

mg/kg. Beneath the product dispensers, TPPHg was detected at concentrations ranging between 19 mg/kg and 140 mg/kg; benzene was detected in two soil samples at 2.1 mg/kg (TR-A-14) and 0.0089 mg/kg (TR-A-15).

- In November 1995, PEG installed oxygen releasing compound (ORC) socks in well MW-3 to enhance bioremediation. In September 1998, Pinnacle Environmental Solutions installed ORC socks in well MW-4. The bioremediation enhancement program was terminated during the Second Quarter of 2000.
- In November 2008, Stratus Environmental, Inc. (Stratus) conducted an onsite soil investigation, as requested by ACEH in their directive letter dated September 4, 2008, in order to characterize residual hydrocarbon contamination within soils at the former UST area. Soil borings B-11 and B-12 were advanced in the vicinity of historical soil samples S-12-T4A1 and S-12-T4A2, respectively. Soil samples collected during boring activities were analyzed for GRO, BTEX, MTBE, ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), di-isopropyl ether (DIPE), 1,2-dichloroethane (1,2-DCA), 1,2-dibromoethane (EDB), tertiary butyl alcohol (TBA), and ethanol. The analytes were not detected above their respective reporting limits in the two soil samples submitted for laboratory analysis with the exception of minor concentrations of MTBE (up to 0.014 mg/kg) at 15 feet bgs and TBA (0.011 mg/kg) at 15.5 feet bgs. The boring locations are depicted in Drawing 2 in Attachment D.
- In December 2008, Stratus collected compliance soil samples during dispenser and product piping upgrades. Soil samples were collected beneath the fuel dispensers and short pipeline stubs into the main product lines, which were not removed/replaced. Based on initial soil sample analytical results, limited excavation was attempted to remove soil from sampling locations D4-2.5' and PL3-3' due to their elevated hydrocarbon concentrations. Some additional soil was excavated, but the amount was limited due to constraints from the existing infrastructure. Additional soil samples (D-4 5' and PL-3 5') were collected on December 9, 2008 from approximately 5 feet bgs in an attempt to delineate the vertical extent of contamination at the two previous locations with elevated hydrocarbon concentrations. Additional soil sample PL-3 5' contained lower hydrocarbon concentrations than the original sample, while sample D-4 5' contained higher hydrocarbons concentrations than the original sample. Maximum GRO and benzene concentrations reported in the soil samples were 6,500 mg/kg and 19 mg/kg, respectively. A total of approximately 84 cubic yards of soil was transported by Belshire Environmental Services to the Forward Incorporated Allied Waste Services disposal facility in Manteca California.

- In September 2009, Stratus oversaw advancement of four onsite direct-push borings in the vicinity of the south end of the eastern pump island. The borings were advanced near the December 2008 pipeline and dispenser samples PL-3 and D-4, mentioned above. Four direct-push borings (B-13, B-14, B-14A, and B-15) were advanced to a maximum depth of 18 feet bgs and tight clayey and silty soils were observed within the borings. A groundwater sample was collected from boring B-15. Soil samples from B-13 and B-15 contained GRO up to 1,800 mg/kg, benzene up to 8.2 mg/kg, and MTBE up to 0.024 mg/kg. Soil samples from boring B-14 to the south of the pump island contained GRO up to 390 mg/kg, benzene up to 0.56 mg/kg, and MTBE up to 0.025 mg/kg. It was noted that the highest concentrations in soil from borings B-13 and B-14 were from the sample collected at 8.5 feet bgs (likely within the capillary fringe or smear zone), whereas the highest concentrations in soil from boring B-15 on the western side of this pump island were from the sample at 4.5 feet bgs. The groundwater sample collected from boring B-15 contained 19,000 micrograms per liter (ug/L) of GRO, 3,700 ug/L of benzene, and 250 ug/L of MTBE. BAI recommended that a new well be installed just south of B-15 to monitoring groundwater conditions and potentially use as a remediation well in the vicinity to the nearby former pipeline release location.
- In November 2010, BAI advanced four soil borings (B-16 through B-19) and converted three borings (B-16 through B-18) to groundwater monitoring wells (MW-7, MW-8, and MW-9) to assess impacts to soil and groundwater in the vicinity of the eastern pump islands. It was noted that the highest concentrations in soil from the borings were primarily from the sample collected at 8 feet bgs (likely within the capillary fringe or smear zone).

Groundwater monitoring has been conducted at the Site since July 1989. Current and historical groundwater monitoring results, including intrinsic bioremediation data, are presented in Attachment B. Selected soil boring/well logs are presented in Attachment C and historical soil sample results are presented in Attachment D. Geologic Cross-Sections are presented as Attachment E and GWE system performance data is presented as Attachment F.

1.8 Groundwater Constituents of Concern

Historically TPHg/GRO, BTEX constituents, MTBE, TBA, and TAME have been detected in groundwater at the Site. No other fuel oxygenates or additives have been detected above laboratory reporting limits in Site wells.

The following table presents the maximum concentrations for constituents of concern detected within the past year, as well as the Water Quality Objectives for each constituent. For the

purposes of this document, Closure Solutions considers the Water Quality Objective for each constituent to be the secondary maximum contaminant level (MCL), or primary MCL if the secondary MCL has not been established. If neither has been established, the San Francisco Bay Regional Water Quality Control Board's (SFRWQCB) Environmental Screening Level (ESL) has been used.

Contaminant	Recent Maximum Concentration	Sample Date	Water Quality Objective	Water Quality Objective Basis
GRO	15,000 ug/L (MW-4)	12/16/2010	100 ug/L	Environmental Screening Level (ESL)
Benzene	1,800 ug/L (MW-4)	12/16/2010	1 ug/L	Primary MCL
Ethylbenzene	400 ug/L (MW-4)	8/10/2010	300 ug/L	Primary MCL
MTBE	390 ug/L (MW-9)	12/16/2010	5 ug/L	Secondary MCL

Environmental Screening Level (ESL), from *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, California Regional Water Quality Control Board - San Francisco Bay Region, Interim Final - November 2007 (Revised May 2008). Table F-1a – Groundwater Screening Levels (groundwater is a current or potential drinking water resource).

GRO, benzene, ethylbenzene and MTBE are considered to be the only constituents of concern at the Site. Toluene, total xylenes, DIPE, TAME and ETBE are not considered constituents of concern because these constituents are typically either not detected, or detected at concentrations well below their respective Water Quality Objectives, where established.

The only detections of TBA were in well MW-1 at a concentration of 250 ug/L in August 2005 and well MW-9 at a concentration of 40 ug/L in December 2010. While the California Department of Public Health (CDPH) has established a Notification Level for TBA at 12 ug/L, it is Closure Solutions' understanding that the SWRCB does not consider CDPH Notification Levels to be actionable criteria that can be used to establish Water Quality Objectives in accordance with Resolution 68-16. A taste and odor threshold for TBA has been established at 290,000 ug/L. The concentrations reported at the Site are well below this level, therefore TBA is not considered to be a constituent of concern.

1.9 Current Regulatory Status

In correspondence dated June 2, 2011, the ACEH concurred with BAI's recommendation to prepare a Feasibility Study/Corrective Action Plan (FS/CAP) to evaluate remedial alternatives for the Site. In correspondence dated July 11, 2011, ARC respectfully requested

that the directive be suspended. ARC based their request on recently acquired knowledge that shallow groundwater in the immediate vicinity of the Site is unlikely to be used as a source of supply, and that according to the recent Area Well Survey, the nearest drinking water well is over 1,500 feet from the Site. ARC further stated that the groundwater contaminant plume does not seem to show any evidence of migration, appears to be limited in extent, and it is highly unlikely that this particular limited pocket of shallow groundwater will be used directly as a source of drinking water. As of the date of this report, ARC has not received a reply to the proposed suspension request.

2.0 ENVIRONMENTAL CONDITIONS

2.1 Extent of Groundwater Impact

As noted in Section 1.8, the constituents of concern are considered to be GRO, benzene, ethylbenzene, and MTBE. The dissolved GRO, benzene and ethylbenzene plumes are delineated down- and cross-gradient from the former USTs and existing pump islands and are primarily restricted to the portion of the Site between the source areas. Over the past year, the highest concentrations of GRO, benzene and ethylbenzene at the Site were from well MW-4 at concentrations of 15,000 ug/L (12/16/2010), 1,800 ug/L (12/16/2010), and 400 ug/L (8/10/2010), respectively.

The dissolved MTBE plume is adequately delineated in the down-gradient direction with the highest concentrations typically observed in well MW-1 in the northwest portion of the Site and in recently installed well MW-9 in the southeast portion of the Site. Over the past year, the highest MTBE concentration at the Site was 390 ug/L in well MW-9 (12/16/2010). MTBE is also typically detected in down-gradient wells MW-3 and MW-6 at very low concentrations and has not been detected in the furthest down-gradient well MW-5 since 2002.

Closure Solutions notes that a grab groundwater sample was collected from boring B-15 during a site assessment conducted in September 2009. Elevated constituents of concern (GRO at 19,000 ug/L, benzene at 3,700 ug/L, ethylbenzene at 840 ug/L, and MTBE at 250 ug/L) were reported in the sample. Because the grab groundwater sample was collected in a primarily clay soil column, and because the act of advancing the drive rod disturbs the pore water in the sampling zone, it is understood that grab-groundwater concentrations are not directly comparable to those collected from groundwater monitoring wells. Therefore, Closure Solutions does not consider the grab groundwater results to be representative of Site conditions. Current and historical groundwater monitoring results, including intrinsic bioremediation data, are presented in Attachment B.

2.2 Extent of Soil Impact

Elevated gasoline-related hydrocarbons have been encountered in soil samples beneath the former UST complex located in the southwestern portion of the Site and beneath the eastern dispenser islands and product piping. The UST pit was over-excavated to removed impacts noted near tank T4 following UST removal in 1988. The maximum residual TPHg and benzene soil impacts near former tank 4 were reported at 930 and 23.1 mg/kg, respectively. Given the typical depth to water at the Site, the above sample was collected at an elevation that is currently submerged. The maximum residual soil impacts in the vicinity of the eastern dispenser island were reported at 5,300 mg/kg of GRO, 19 mg/kg of benzene, 23 mg/kg of ethylbenzene, and 31 mg/kg of total xylenes. De minimis soil impacts were noted at the southern dispenser island. Analytical results from perimeter soil borings suggest that significant shallow soil impacts are not laterally extensive as evidenced by borings including MW-2, MW-4, B-13, and B-14, where the only significant impacts were noted within the capillary fringe or smear zone.

3.0 TECHNICAL JUSTIFICATION FOR NO FURTHER ACTION

Regardless of the remaining hydrocarbon and fuel additive mass, the closest identified wells are located approximately 1,590 feet cross-gradient from the Site based on the reported regional groundwater flow direction, and potential impacts to human or ecological receptors are considered unlikely. According to the East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, the Site is located within the Berkeley Sub-Area Zone B and “there is no historical evidence that groundwater supplies are sufficient for municipal use, primarily due to low recharge rates” and groundwater is unlikely to be used as a drinking water resource.

The Report indicates remedial strategies should be focused on protecting domestic irrigation, industrial uses and potential aquatic receptors rather than municipal drinking water supplies, and should reflect the low probability that groundwater in Zone B will be used as a source of drinking water in the foreseeable future. The report goes on to state “achievement of drinking water objectives within a reasonable time period is an appropriate long term goal” and “Zone B is an area where other, nondrinking water, exposure pathways are more likely to “drive” remediation.”

Groundwater has been monitored at the Site for over 23 years. Seasonal groundwater elevation and flow directions at the Site are well documented and additional monitoring is not needed to further define these parameters. Three wells installed in November 2010 only help to define onsite source area impacts, while wells installed in 1989 and 1992 adequately define impacts down-gradient and cross-gradient.

Although elevated GRO and benzene concentrations extend offsite, the down-gradient extent is defined and appears to extend less than 100 feet from the source area. MTBE concentrations are below the 'low threat' numeric values recommended by the SWRCB's Department of Water Quality Task Force.

Natural attenuation processes have prevented, and will continue to prevent, significant migration from the source areas. Since there has been no indication of a fuel release at the Site for over 23 years, contaminant concentrations are unlikely to increase substantially above current concentrations and additional monitoring is also not needed to further define the distribution and characteristics of constituents of concern in groundwater.

Contaminant concentrations in groundwater exhibit clear decreasing trends for all identified constituents of concern, with the exception of TPHg/GRO (described further in Section 4.4). Though the longer chain hydrocarbons comprising TPHg/GRO biodegrade more slowly than certain petroleum constituents, such as benzene, they are also more recalcitrant (i.e., less volatile, less soluble and highly absorbent) and much less mobile. As natural processes diminish the residual mass, TPHg/GRO concentrations will begin to decrease. Additionally, according to BAI, biodegradation indicator parameter results indicate that dissolved oxygen, temperature, and pH measured during first quarter 2011 monitoring were in the range conducive for biodegradation to take place. These data indicate that intrinsic bioremediation of petroleum hydrocarbon constituents in the groundwater is ongoing at the Site.

4.0 QUALIFICATION AS LOW RISK CASE

Closure Solutions recognizes that SWRCB Resolutions 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California), 88-63 (Sources of Drinking Water), and 92-49 (Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304) require the cleanup of unauthorized releases to background concentrations or the highest water quality protective of the designated beneficial uses. Nevertheless, Closure Solutions believes that the environmental case at the subject Site should be granted No Further Action status at this time for numerous regulatory and technical reasons. These reasons are outlined in the following sections.

4.1 Existing SWRCB Closure Policy

SWRCB Resolution 68-16 resolves that any activity that produces a waste discharge will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that the highest water quality consistent with the maximum benefit to the people of the State will be maintained. SWRCB Resolution 88-63

resolves that virtually all water in California is designated as a drinking water source. Water Code Section 13304 authorizes Regional Boards to require the complete cleanup of all waste discharged and the restoration of affected water to background conditions or the best water quality reasonable if background levels of water quality cannot be restored. SWRCB Resolution 92-49 sets forth the policies and procedures for the investigation and cleanup of discharges from leaking Underground Storage Tank cases.

Resolution 92-49 does not require, however, that the Water Quality Objectives be met at the time of site closure. Even if the requisite level of water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable time frame. SWRCB Water Quality Order 98-04 (Matthew Walker) explicitly interprets a “reasonable time frame” as “anywhere from a couple of decades to hundreds of years.” The Matthew Walker petition further states “...[I]f complete removal of detectable traces of petroleum hydrocarbon constituents becomes the standard for UST corrective actions, the statewide technical and economic implications will be enormous.”

SWRCB Resolution 2009-042 states that “[i]t is the responsibility of Regional Water Boards, LOP agencies, and other local agencies to close UST cases that are ready for closure.” This Resolution further states “[i]n previous decisions, the State Water Board, when determining a reasonable period, has considered all relevant factors including, but not limited to, existing and anticipated beneficial uses of water.” Resolution 2009-081 further clarifies this issue by stating that “[i]n the orders issued by the State Water Board regarding UST case closure, several factors relevant to the particular UST case were considered, such as: (1) whether remaining petroleum constituents would migrate beyond the limited spatial extent, (2) the presence and location of drinking water wells in the area, (3) the likelihood that the impacted groundwater will be used as a source of drinking water in the reasonably foreseeable future, and (4) the protective nature of standard well-construction practices.”

SWRCB Resolution 2009-042 makes it clear that the decisional framework used in previous UST closure orders interpreted a “reasonable time frame” to be the amount of time before the resource is actually used, based on *existing* or *anticipated* beneficial use. SWRCB Resolution 2009-081 clarifies that the decisional framework in UST closure orders contemplates whether the impacted groundwater will be used as a source of *drinking water* in the *foreseeable future*. These Resolutions indicate that closure policy based on “potential beneficial use” or “possible future beneficial use” is inappropriate. These Resolutions indicate that the decisional framework previously used by SWRCB when considering UST closures is based on “existing” beneficial use or “anticipated beneficial use within the foreseeable future.” SWRCB Resolution 2009-081

resolves that “[w]hen considering whether a UST cleanup case should be closed, Agencies shall apply the decisional framework established in previous State Water Board UST closure orders.”

4.2 Site Qualification as Low-Risk Based on 1996 Criteria

On December 8, 1995, Mr. Walter Pettit (Executive Director, SWRCB) issued an advisory to all Regional Water Quality Control Boards indicating that oversight agencies should proceed aggressively to close low risk cases. *Supplemental Instructions and Interim Guidance* was prepared by the SFRWQCB on January 5, 1996, which defined and explained low risk criteria for environmental UST cases. These low-risk criteria are presented below, with justification why each criteria element is satisfied.

1) **The leak has been stopped and ongoing sources, including free product, removed or remediated to the extent practicable.**

All known leaking facilities have been removed from the Site and there is no evidence of an ongoing release. To reduce residual impacts, heavily impacted soil was excavated and removed from the Site during the 1988 UST replacement activities and 2008 dispenser and piping upgrades. Although a GWE system operated onsite from late 1993 to 1995 and removed an estimated 93,989 gallons of impacted groundwater, only 2.61 pounds of hydrocarbon were estimated removed by the system, suggesting the original mass in groundwater was not extensive or groundwater extraction was not an effective remediation technique. Free product has not been observed at the Site since 1988. As such, this criterion is satisfied.

2) **The site has been adequately characterized.**

As stated by the SFRWQCB *Interim Guidance on Required Cleanup at Low Risk Fuel Sites* (January 5, 1996):

“The extent of the subsurface impact should be defined to the degree that is necessary to determine if the site poses a threat to human health, the environment, or other sensitive nearby receptors.... It is assumed that subsurface conditions are highly variable and that there is always some uncertainty with evaluating data at a site. However, the cost of obtaining additional data must be weighed against the benefit of obtaining that data and the effect the data may have on the certainty of decisions to be made at the site.”

Closure Solutions believes that soil sampling during excavation and multiple assessments performed at the Site have adequately defined the source areas in soil and no significant data gaps remain. The existing monitoring well network at the Site also provides adequate characterization of the hydrocarbon plume in groundwater, which is limited and delineated to discrete areas on and near the Site. Therefore, Closure Solutions believes that the Site has been adequately characterized for the purpose of Site closure.

3) The dissolved contaminant plume is not migrating.

Dissolved constituents of concern have been delineated to near or below laboratory detection limits. No fuel hydrocarbon concentrations are detected in monitoring wells that surround the source areas onsite. Although MTBE is typically reported in samples from most of the onsite wells, concentrations are relatively low and MTBE has only been detected once (March 2002 at 3.2 ug/L) in the furthest down-gradient well (MW-5). It is noted that the release occurred over 23 years ago, and if the plume has not migrated significantly beyond the extent of the property since that time, it is unlikely to do so in the future. These data indicate that natural attenuation processes are destroying dissolved hydrocarbons and fuel additives at a greater rate than residual mass of these compounds is loading to groundwater and the dissolved compounds are not migrating from the Site at significant concentrations.

4) No water wells, deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted.

A recent well survey identified two wells with unknown usage located approximately 1,590 feet cross-gradient of the Site. The nearest surface body water appears to be an unnamed creek that terminates approximately 3,400 feet east (up-gradient) of the Site. Given the relatively large distance from the Site to the closest surface water, the lack of known nearby drinking water wells, and the fact that dissolved compounds do not appear to be migrating from the Site at significant concentrations, no known wells or sensitive receptors are likely to be impacted by Site conditions. Additionally, based on the East Bay Plains Report, it is unlikely that water supply wells will be installed in the vicinity of the Site in the foreseeable future.

5) The site presents no significant risk to human health.

Given the lack of known nearby drinking water wells, there are no expected human health risks associated with the ingestion of groundwater impacted by Site conditions. Soil samples collected during confirmation soil sampling and site assessment activities indicate residual

hydrocarbons exist in some areas of the Site, although no elevated concentrations are located near the enclosed structure.

As described in the SFRWQCB *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater* (Interim Final, May 2008), the appropriate step-wise approach to evaluating vapor intrusion is to first compare groundwater data to the Environmental Screening Levels in Table E-1 (Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion Concerns), then determine whether vapor samples should be collected.

Benzene is the constituent most likely to cause potential health risks to onsite workers at the Site. According to Table E-1, the Environmental Screening Level (ESL for Vapor Concerns) for benzene in groundwater is 1,800 ug/L for commercial/industrial land use. The 1,800 ug/L value is derived using model inputs including high permeability soil: One meter dry sandy soil (92% sand, 5% silt, 3% clay) over one meter moist clayey loam (33% sand, 34% silt, 33% clay) and assumes a vadose-zone thickness/depth to groundwater of three meters (approximately 10 feet).

According to recent depth to groundwater measurements, the average depth to groundwater is approximately 7.5 feet; however, the lithology beneath the Site is reported to be much finer grained (primarily silts and clays with some sand and gravel) from the ground surface to groundwater than the model inputs.

The recent maximum benzene concentration in groundwater is 1,800 ug/L in well MW-4 (December 2010). Although this concentration equals the ESL, benzene concentrations in the well have only equaled the ESL twice since 2002 and concentrations exceeding the ESL at the Site have been rare since 2000. Since benzene concentrations do not currently exceed the ESL, existing contaminants do not appear to pose a vapor intrusion threat. Based on the distance of benzene impacts to soil and groundwater in relation to the structure and the observation that the structure is slab on grade, Closure Solutions does not believe further evaluation of vapor intrusion is warranted. This contention is further supported by the SWRCB draft Low-Threat UST Closure Policy, dated July 14, 2011, for petroleum vapor intrusion to indoor air which states “Exposures to petroleum vapors associated with historical fuel system releases are comparatively insignificant relative to exposures from small surface spills and fugitive vapor releases that typically occur at active fueling facilities. Therefore, satisfaction of the mediaspecific criteria for petroleum vapor intrusion to indoor air is not required at active commercial petroleum fueling facilities, except in cases where release characteristics can be reasonably believed to pose an unacceptable health risk.”

6) The site presents no significant risk to the environment.

Because the nearest surface body water is approximately 3,400 feet east (up-gradient) of the Site, no surface water is likely to be impacted by the Site constituents of concern and, therefore, the Site conditions are unlikely to pose a significant risk to any environmental receptors.

4.3 Site Qualification as Low-Risk Based on Groundwater Concentration

On May 19, 2009, the State Water Resources Control Board formed the UST Cleanup Program Task Force under Resolution 2009.042. The Task Force was directed to make recommendations to improve the Underground Storage Tank Cleanup regulatory program, including additional approaches to risk-based cleanup.

The Task Force final report (January 12, 2010) included a recommendation that cases be considered for low-risk closure if the concentration of petroleum hydrocarbons and fuel oxygenates are below the following levels:

- a. *10 parts per million (ppm) for total petroleum hydrocarbon gasoline range (TPHg) and for TPH diesel range (TPHd)*
- b. *1 ppm for each of the individual petroleum constituents*
- c. *0.5 ppm for each of the individual oxygenates*

It is understood that while these criteria cannot be uniformly applied to all sites, in “the vast majority of cases,” unless an existing water well or surface water body is located within 1,000 feet of the source area in the down-gradient direction, cases that exhibit concentrations similar to those established above should be considered strong candidates for low-risk closure. It is also noted that “[i]n cases where the TPH concentration is high, but MTBE and benzene concentrations are low or not present above laboratory detection limits, the case should be considered to be low-risk irrespective of the TPH concentration.”

Although GRO and benzene concentrations have recently exceeded the above criteria, MTBE concentrations have not been reported above the criteria since 2005. As discussed in Section 4.3, regression analysis of GRO and benzene concentrations in well MW-4 (highest recently reported GRO and benzene concentrations) indicates benzene concentrations in the well are decreasing and GRO concentrations are relatively stable. MW-4 is situated within the residual source area. As natural processes diminish the residual mass, GRO concentrations will begin to decrease. It is expected that concentrations of constituents of concern will reduce well below the Water

Quality Objectives before the plume can migrate sufficiently to impact any drinking water well or potential receptor. Therefore, the Site case is considered a candidate for low-risk closure.

4.4 Achievement of Water Quality Objectives Met Before Resource is Used

To evaluate whether Water Quality Objectives will be met within a reasonable timeframe, Closure Solutions performed a statistical analysis (Mann-Kendall trend test) to demonstrate whether contaminant concentrations are declining with respect to time. Closure Solutions used MTBE data from 2000 to the present in wells MW-1, MW-2 and MW-4 and TPHg/GRO and benzene data from the same time period in well MW-4. Recently installed wells MW-7 through MW-9 exhibit concentrations of the above constituents although not enough data is available from these wells to determine trends. Based on the analysis, long-term MTBE concentration trends in MW-1, MW-2 and MW-4 are decreasing, the benzene trend in MW-4 is decreasing and the TPHg/GRO trend in MW-4 appears to be increasing. Input data and results from the Mann-Kendall trend test are presented in Attachment G, and summarized on the following table.

Well ID	Constituent	Number of Samples	Confidence in Trend	Mann-Kendall Trend
MW-1	MTBE	30	100%	Decreasing
MW-2	MTBE	19	99.0%	Decreasing
MW-4	TPHg/GRO	23	75.2%	Increasing
MW-4	Benzene	23	76.1%	Decreasing
MW-4	MTBE	23	99.7%	Decreasing

The Mann-Kendall trend analysis does not account for temporal variation in the data and therefore cannot be used to estimate a time to reach Water Quality Objectives.

The next step is to estimate the amount of time necessary for existing Site contaminants to degrade to Water Quality Objectives. Closure Solutions performed a logarithmic regression analysis of the same datasets used for the Mann-Kendall analysis to estimate the amount of time necessary for the Site constituents of concern to reach Water Quality Objectives. The results of the regression analysis are presented in Attachment H and summarized in the following table.

Well ID	Constituent	Water Quality Objective (ug/L)	Projected Date to Achieve Water Quality Objectives
MW-1	MTBE	5	2020
MW-2	MTBE	5	2045
MW-4	TPHg/GRO	100	Not determined
MW-4	Benzene	1	2043
MW-4	MTBE	5	2016

Based on the regression analysis for MTBE in MW-1, MW-2, and MW-4 and for benzene in MW-4, these contaminant concentrations at the subject Site are calculated to reach Water Quality Objectives by time periods which are reasonably considered to be protective of the existing and anticipated beneficial uses of water at the subject Site. Although statistical analysis indicates an increasing TPHg/GRO trend in MW-4, regression analysis indicates the trend is relatively stable. MW-4 is situated within the residual source area. Though the longer chain hydrocarbons comprising TPHg/GRO biodegrade more slowly than certain petroleum constituents, such as benzene, they are also more recalcitrant (i.e., less volatile, less soluble and highly absorbent) and much less mobile. As natural processes diminish the residual mass, TPHg/GRO concentrations will begin to decrease. It is expected that the concentrations of constituents of concern will reduce well below the Water Quality Objectives before the plume can migrate sufficiently to impact any drinking water well or potential receptor. As such, it is believed that Water Quality Objectives will be reached within a ‘reasonable time frame’ without the need for active remediation, and the case should be considered a candidate for low-risk closure.

5.0 CASE CLOSURE PRECEDENT

Numerous environmental cases have been reviewed and closed by the State Water Resources Control Board under the petition process. These cases can be used as case precedent for management and closure of environmental UST cases. A brief summary of selected SWRCB closure orders that pertain to the subject environmental case are presented below, and are merely provided to demonstrate that significant concentrations of constituents of concern may be left in place to naturally attenuate without violating Resolutions 68-16, 88-63, and 92-49:

Water Quality Order 98-10 (Margo Hayes)

The Margo Hayes case is a case where contaminant concentrations had been shown to attenuate rapidly with respect to distance from the source. At the time of the petition, concentrations of dissolved hydrocarbons in the source area were found to be up to 64,000 ug/L of TPHg, 2,600 ug/L of ethylbenzene, and 86 ug/L of benzene.

The SWRCB reiterated that Resolution 92-49 does not require that Water Quality Objectives be met at the time of closure, and concluded that the level of site cleanup was consistent with the maximum benefit of the people of the state and will meet the Water Quality Objectives within a reasonable time frame. There was no evidence in the record to suggest that shallow groundwater in the vicinity of the site has been used in the past or is being used presently or that it will with any likelihood be used in the foreseeable future for domestic or municipal supply. The facts in this case indicated that with no further regulatory action, residual detectable concentrations of TPH-g, BTEX present in shallow groundwater and adsorbed to shallow soils are (and will remain) localized and will continue to attenuate naturally over time with no further corrective action.

Comparative Analysis: The environmental case at 6407 Telegraph Avenue is similar to the Margo Hayes case in that shallow groundwater in the vicinity of the Site is not expected to be used in the foreseeable future for domestic or municipal supply. Additionally, concentrations decrease to below detection limits within a short distance from the source area. In the Margo Hayes case, the SWRCB explicitly notes that it is highly unlikely that petroleum hydrocarbon constituents detected in localized areas will migrate substantially beyond the current limited spatial extent to impact drinking water supplies. The subject Site down-gradient and cross-gradient wells MW-1, MW-2 and MW-3 have been monitored for approximately 11 years providing evidence that substantial migration of the subject plume is also unlikely.

6.0 BENEFIT OF ADDITIONAL WORK

Hydrocarbons and MTBE in soil and groundwater have been adequately defined and no significant data gaps exist. Based on the available Site data, no wells or environmental receptors are threatened and contaminants in groundwater do not appear to represent a significant threat to existing or reasonably anticipated beneficial uses in the foreseeable future. As such the Site is adequately characterized and no further investigation appears to be warranted to evaluate potential impacts to human health or environmental receptors.

If ARC were to pursue active remediation of the contaminant plume at the Site, the most likely remedial approach would be limited excavation or implementation of an ozone sparge

system. Excavation would involve closing a portion of the station for several weeks to months, demolition of infrastructure over the target area, excavation and hauling impacted soil to a different location in the State and reconstruction of the station facilities. Excavation is typically very costly and, since the residual constituents in soil likely pose no significant threat to water quality or potential receptors, minimal benefit to human health and the environment would be gained. An ozone sparge system would require the installation of numerous ozone sparge wells, extensive remediation system infrastructure, equipment, and ongoing operations and maintenance for a limited period of time before water quality objectives could be met. While pursuing the installation and operation of a robust ozone sparge system would be extremely costly, it is not expected that installation and operation of such a system would confer appreciable benefit to human health or environmental receptors. As noted in Water Quality Order 98-04, “[i]f the complete removal of detectable traces of petroleum hydrocarbon constituents becomes the standard for UST corrective actions, the statewide technical and economic implications will be enormous”. As such, it appears that the Site specific benefit of additional work, if any, is far outweighed by the cost and statewide implications for corrective action.

7.0 CLOSURE RECOMMENDATION

This document presents a summary of the current environmental status of the Site, as well as rationale justifying case closure both from technical and regulatory perspectives. In addition to the technical and regulatory justification, there are strong economic reasons for closing the case. Maintaining a backlog of open low-risk environmental cases diverts available funding from cases with significantly greater threat to human health and the environment. By closing low-risk environmental cases, the available funding for the investigation and remediation of environmental cases with significantly greater threat to human health and the environment can be increased, which will, in turn accelerate the cleanup of UST cases statewide.

Closure Solutions believes that the environmental condition at the Site has been adequately characterized with respect to the evaluation of human health and ecological risk, and that no further investigation is necessary. Source removal activities and subsequent natural attenuation processes have remediated the Site to the extent feasible and further active remediation of the remaining contaminants cannot be justified from a technical or economic perspective since the constituents of concern at the Site will likely degrade naturally to Water Quality Objectives within a reasonable time frame. If further investigation and remediation are not warranted at the Site, then long term groundwater monitoring serves no useful purpose. Therefore, ***Closure Solutions recommends that ARC formally request that No Further Action status be granted for the environmental case at 6407 Telegraph Avenue.***

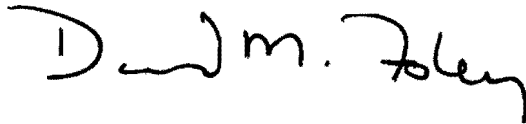
8.0 LIMITATIONS

This report is based on Site conditions, data, and other information available as of the date of the report, and the conclusions and recommendations herein are only applicable to the time frame in which the report was prepared. Background information used to prepare this report including, but not limited to, previous field measurements, analytical results, Site plans and other data have been furnished to Closure Solutions by ARC and their previous consultants. Closure Solutions has relied on this information as furnished, and is neither responsible for nor has confirmed the accuracy of this information.

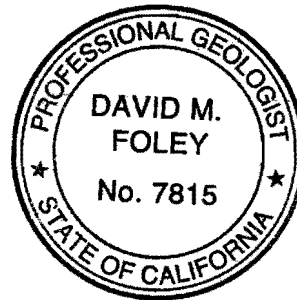
If you have any questions regarding this submission, please contact the undersigned at (916) 760-7236 (dfoley@closureolutions.com) or Ms. Kathleen Waldo of Closure Solutions at (916) 760-7025 (kwaldo@closureolutions.com).

Sincerely,

Closure Solutions, Inc.



David M. Foley, P.G.
Senior Geologist



Attachment A	Figures
Attachment B	Current and Historical Groundwater Data
Attachment C	Soil Boring/Well Logs
Attachment D	Historical Soil Assessment Data
Attachment E	Geologic Cross-Sections
Attachment F	Groundwater Extraction System Performance Data
Attachment G	Mann-Kendall Analysis
Attachment H	Regression Trend Analysis

ATTACHMENT A

Figures

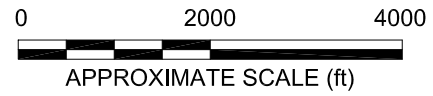
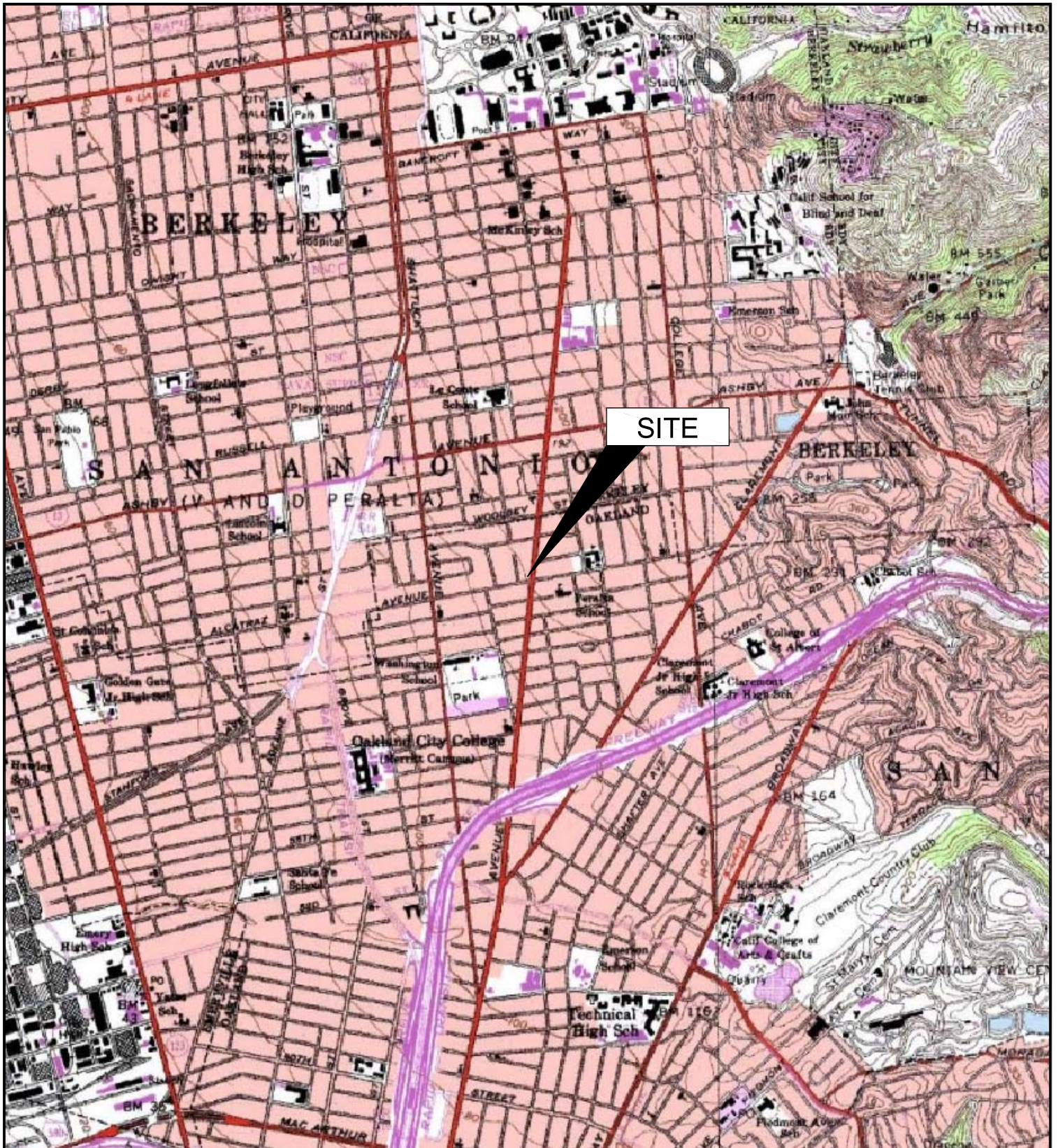
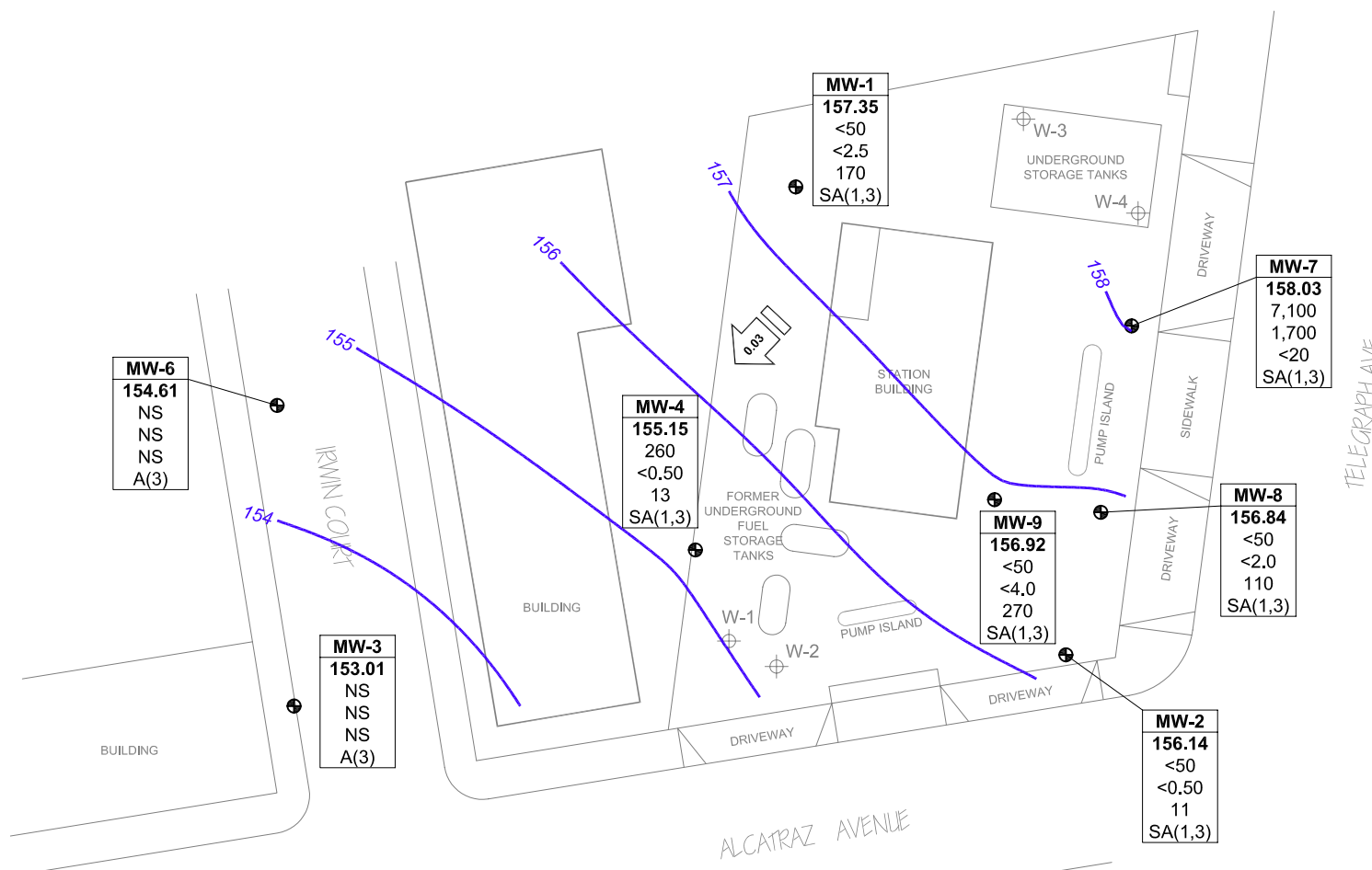


IMAGE SOURCE: USGS



MW-6
154.61
NS
NS
NS
A(3)

MW-3
153.01
NS
NS
NS
A(3)

MW-4
155.15
260
<0.50
13
SA(1,3)

MW-1
157.35
<50
<2.5
170
SA(1,3)

MW-9
156.92
<50
<4.0
270
SA(1,3)

MW-2
156.14
<50
<0.50
11
SA(1,3)

MW-8
156.84
<50
<2.0
110
SA(1,3)

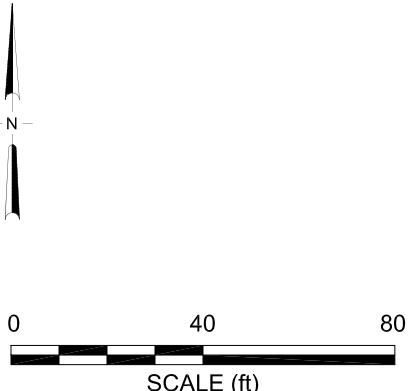
MW-7
158.03
7,100
1,700
<20
SA(1,3)

MW-5
NM
NS
NS
NS
A(3)

LEGEND

- ⊕ Monitor Well Location
 - ⊕ Tank Pit Monitor Well Location
 - Ground-Water Elevation Contour (Feet Above Site Datum)
 - 0.03 Groundwater Flow Direction and Gradient (ft/ft)
- | | |
|---------|---|
| A(3) | Sampled Annually - Third Quarter |
| SA(1,3) | Sampled Semi-Annually - First and Third Quarter |
| NM | Not Monitored |
| NS | Not Sampled |

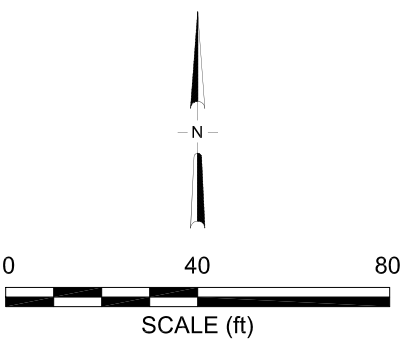
WELL	Well Designation
ELEV	Ground-Water Elevation (ft)
GRO	GRO, Benzene and MTBE
BZ	Concentrations (µg/L)
MTBE	
A/SA	Sampling Frequency



NOTE: SITE MAP ADAPTED FROM IT CORPORATION FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

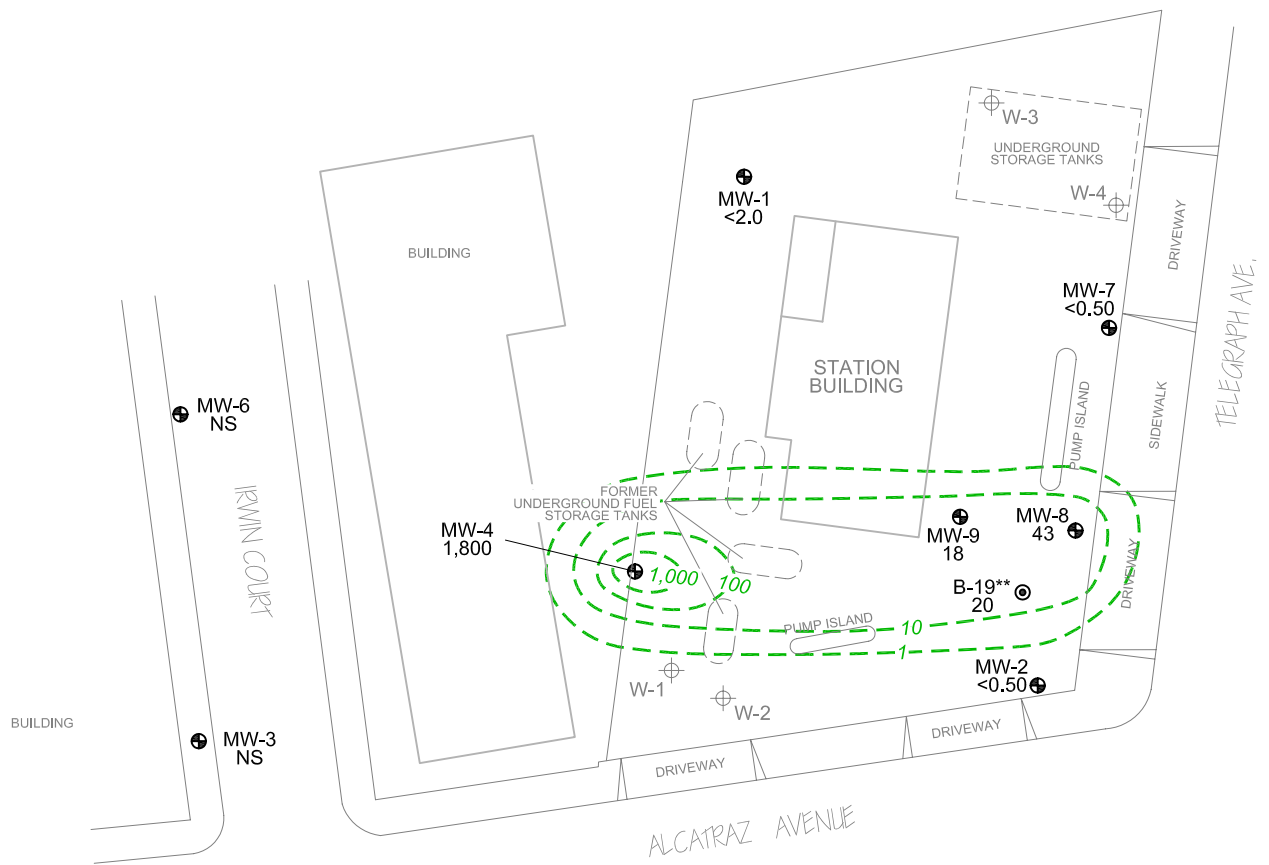


⊕
MW-5
NS

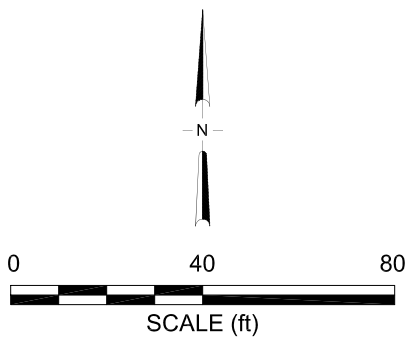


LEGEND	
⊕	Monitor Well Location
⊕	Tank Pit Monitor Well Location
⊙	Soil Boring Location
MW-9 330	Well ID with GRO Concentration (µg/L)
---	GRO Isoconcentration Contour (µg/L)
NS	Not Sampled
**	Grab Groundwater Sample

NOTE: SITE MAP ADAPTED FROM STANTEC FIGURES.
SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

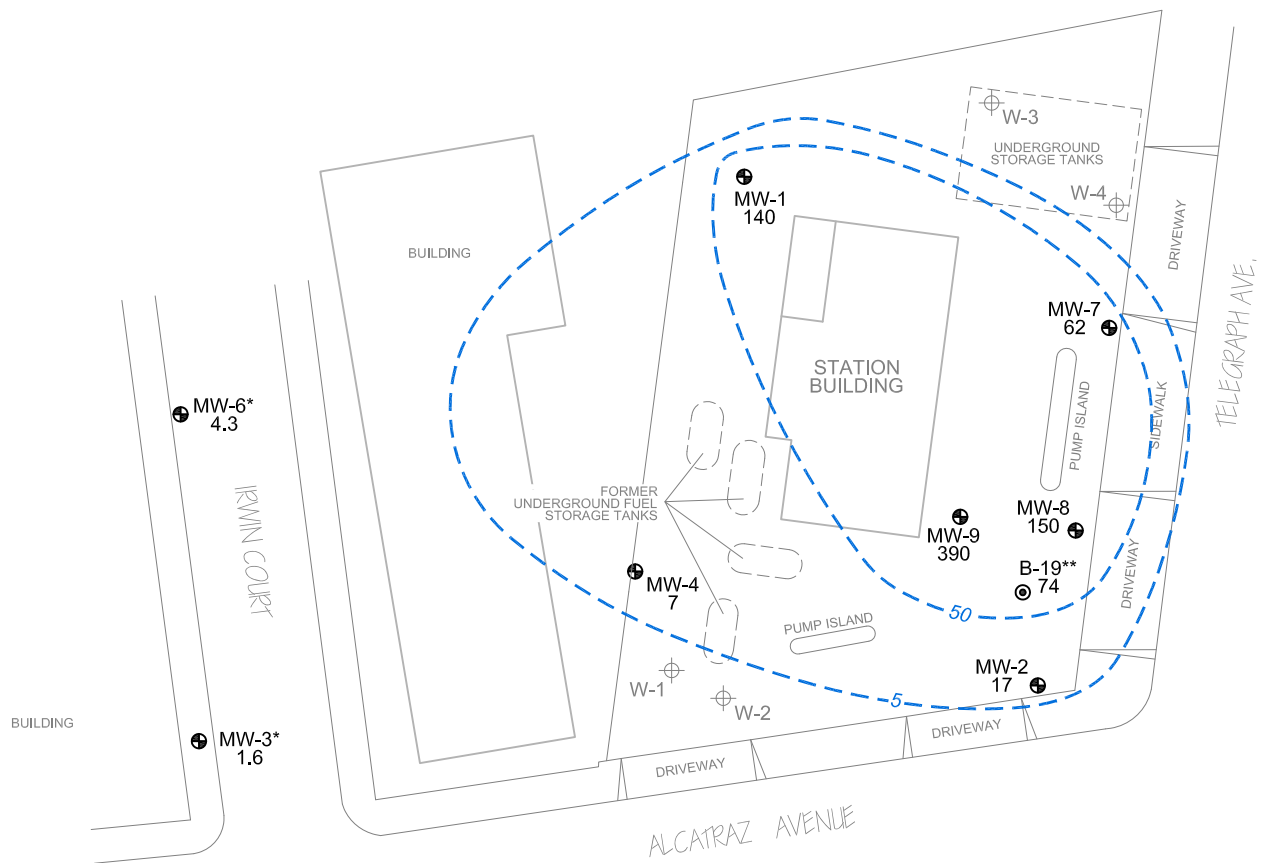


⊕
MW-5
NS

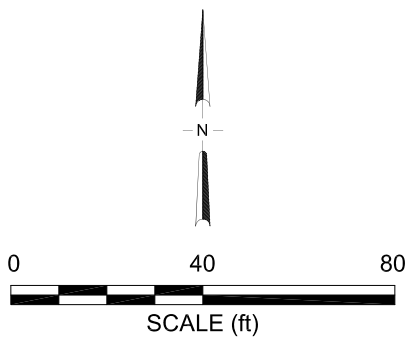






LEGEND	
⊕	Monitor Well Location
⊕	Tank Pit Monitor Well Location
⊙	Soil Boring Location
MW-9 18	Well ID with Benzene Concentration (µg/L)
---	Benzene Isoconcentration Contour (µg/L)
NS	Not Sampled
**	Grab Groundwater Sample

NOTE: SITE MAP ADAPTED FROM STANTEC FIGURES.
SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



 MW-5*
 <0.50



LEGEND	
	Monitor Well Location
	Tank Pit Monitor Well Location
	Soil Boring Location
MW-9 390	Well ID with MTBE Concentration (µg/L)
	MTBE Isoconcentration Contour (µg/L)
NS	Not Sampled
*	Well Sampled 8/10/2010
**	Grab Groundwater Sample

NOTE: SITE MAP ADAPTED FROM STANTEC FIGURES.
 SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

ATTACHMENT B

Current and Historical Groundwater Data

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-1															
6/20/2000	--	158.91	7.00	27.00	6.86	152.05	--	--	--	--	--	--	--	--	
9/28/2000	--		7.00	27.00	7.50	151.41	--	--	--	--	--	--	--	--	
12/17/2000	--		7.00	27.00	7.49	151.42	--	--	--	--	--	--	--	--	
3/23/2001	--		7.00	27.00	5.90	153.01	<50	<0.5	<0.5	<0.5	<0.5	2,710	--	--	
6/21/2001	--		7.00	27.00	7.45	151.46	--	--	--	--	--	--	--	--	
9/23/2001	--		7.00	27.00	8.46	150.45	--	--	--	--	--	--	--	--	
12/31/2001	--		7.00	27.00	5.50	153.41	--	--	--	--	--	--	--	--	
3/21/2002	--		7.00	27.00	4.71	154.20	<5,000	<50	<50	<50	<50	2,000	--	--	
4/17/2002	--		7.00	27.00	5.54	153.37	--	--	--	--	--	--	--	--	
8/12/2002	--		7.00	27.00	7.77	151.14	--	--	--	--	--	--	--	--	
12/6/2002	--		7.00	27.00	7.65	151.26	--	--	--	--	--	--	--	--	
1/29/2003	--		7.00	27.00	5.88	153.03	--	--	--	--	--	--	--	--	b
5/23/2003	--		7.00	27.00	5.62	153.29	<10,000	<100	<100	<100	<100	1,600	1.3	7.1	
9/4/2003	--		7.00	27.00	7.85	151.06	--	--	--	--	--	--	--	--	
11/20/2003	P		7.00	27.00	8.17	150.74	1,600	<10	<10	<10	<10	1,500	1.7	6.7	
02/02/2004	P	164.57	7.00	27.00	6.71	157.86	--	--	--	--	--	--	1.0	--	f
05/14/2004	P		7.00	27.00	7.08	157.49	<2,500	<25	<25	<25	<25	1,200	1.4	6.6	
09/02/2004	P		7.00	27.00	8.12	156.45	580	<5.0	<5.0	<5.0	<5.0	660	3.8	6.7	
11/04/2004	P		7.00	27.00	7.38	157.19	1,700	<10	<10	<10	<10	580	6.0	6.5	
02/08/2005	P		7.00	27.00	6.60	157.97	<1,000	<10	<10	<10	<10	610	0.71	6.5	
05/09/2005	P		7.00	27.00	6.84	157.73	540	<5.0	<5.0	<5.0	5.5	620	3.12	6.6	e
08/11/2005	P		7.00	27.00	7.36	157.21	540	<2.5	<2.5	<2.5	4.0	390	0.8	6.6	
11/18/2005	P		7.00	27.00	8.02	156.55	350	<2.5	<2.5	<2.5	<2.5	340	2.6	6.7	e
02/16/2006	P		7.00	27.00	6.44	158.13	350	<2.5	<2.5	<2.5	<2.5	340	1.6	6.7	e
5/30/2006	P		7.00	27.00	6.87	157.70	270	<2.5	<2.5	<2.5	<2.5	420	4.73	6.4	
8/24/2006	P		7.00	27.00	7.75	156.82	95	<5.0	<5.0	<5.0	<5.0	180	0.65	6.9	
11/1/2006	P		7.00	27.00	8.28	156.29	120	<5.0	<5.0	<5.0	<5.0	220	1.65	7.07	
2/7/2007	NP		7.00	27.00	7.40	157.17	120	<5.0	<5.0	<5.0	<5.0	190	1.88	7.45	e

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ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-1 Cont.															
5/8/2007	P	164.57	7.00	27.00	6.50	158.07	<500	<5.0	<5.0	<5.0	<5.0	420	1.21	6.94	
8/8/2007	NP		7.00	27.00	8.17	156.40	82	<0.50	<0.50	<0.50	<0.50	110	1.16	7.00	e
11/14/2007	NP		7.00	27.00	8.01	156.56	170	<2.5	<2.5	<2.5	<2.5	210	1.92	6.49	
2/22/2008	P		7.00	27.00	6.00	158.57	<50	<0.50	<0.50	<0.50	<0.50	250	2.57	6.65	
5/24/2008	NP		7.00	27.00	7.58	156.99	<50	<5.0	<5.0	<5.0	<5.0	380	2.28	6.81	
8/21/2008	NP		7.00	27.00	8.60	155.97	<50	<2.5	<2.5	<2.5	<2.5	170	2.16	6.98	
11/19/2008	NP		7.00	27.00	8.88	155.69	<50	<0.50	<0.50	<0.50	<0.50	30	2.12	7.27	
2/23/2009	P		7.00	27.00	6.40	158.17	78	<2.5	<2.5	<2.5	<2.5	240	2.19	6.03	
5/14/2009	P		7.00	27.00	6.67	157.90	53	<0.50	<0.50	<0.50	<0.50	200	1.75	6.69	
8/20/2009	NP		7.00	27.00	8.25	156.32	150	<2.0	<2.0	<2.0	<2.0	170	2.14	6.25	i (GRO)
2/19/2010	P		7.00	27.00	6.07	158.50	<50	<0.50	<0.50	<0.50	<0.50	170	0.92	6.66	
8/10/2010	NP		7.00	27.00	7.58	156.99	<50	<2.5	<2.5	<2.5	<2.5	230	3.86	7.1	
12/16/2010	P	164.45	7.00	27.00	6.64	157.81	<50	<2.0	<2.0	<2.0	<2.0	140	1.20	6.86	j
2/14/2011	NP		7.00	27.00	7.10	157.35	<50	<2.5	<2.5	<2.5	<2.5	170	1.18	6.7	
MW-2															
6/20/2000	--	157.92	7.00	27.00	7.67	150.25	--	--	--	--	--	--	--	--	
9/28/2000	--		7.00	27.00	8.51	149.41	--	--	--	--	--	--	--	--	
12/17/2000	--		7.00	27.00	8.14	149.78	--	--	--	--	--	--	--	--	
3/23/2001	--		7.00	27.00	7.21	150.71	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
6/21/2001	--		7.00	27.00	7.99	149.93	--	--	--	--	--	--	--	--	
9/23/2001	--		7.00	27.00	8.52	149.40	--	--	--	--	--	--	--	--	
12/31/2001	--		7.00	27.00	6.01	151.91	--	--	--	--	--	--	--	--	
3/21/2002	--		7.00	27.00	5.95	151.97	<50	<0.5	<0.5	<0.5	<0.5	45	--	--	
4/17/2002	--		7.00	27.00	6.45	151.47	--	--	--	--	--	--	--	--	
8/12/2002	--		7.00	27.00	8.08	149.84	--	--	--	--	--	--	--	--	
12/6/2002	--		7.00	27.00	8.29	149.63	--	--	--	--	--	--	--	--	
1/29/2003	--		7.00	27.00	7.22	150.70	--	--	--	--	--	--	--	--	b
5/23/2003	--		7.00	27.00	6.85	151.07	<50	<0.50	<0.50	<0.50	<0.50	55	1.4	7.2	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-2 Cont.															
9/4/2003	--	157.92	7.00	27.00	7.94	149.98	--	--	--	--	--	--	--	--	
11/20/2003	--		7.00	27.00	8.05	149.87	--	--	--	--	--	--	--	--	
02/02/2004	P	163.46	7.00	27.00	7.00	156.46	74	<0.50	<0.50	<0.50	<0.50	37	1.1	8.9	f
05/14/2004	--		7.00	27.00	7.97	155.49	--	--	--	--	--	--	--	--	
09/02/2004	P		7.00	27.00	8.19	155.27	<250	<2.5	<2.5	<2.5	<2.5	67	2.7	6.9	
11/04/2004	--		7.00	27.00	7.54	155.92	--	--	--	--	--	--	--	--	
02/08/2005	P		7.00	27.00	6.72	156.74	<50	<0.50	<0.50	<0.50	<0.50	30	0.86	6.7	
05/09/2005	--		7.00	27.00	7.16	156.30	--	--	--	--	--	--	--	--	
08/11/2005	P		7.00	27.00	7.85	155.61	<50	<0.50	<0.50	<0.50	<0.50	35	1.0	6.6	
11/18/2005	--		7.00	27.00	8.23	155.23	--	--	--	--	--	--	--	--	
02/16/2006	P		7.00	27.00	6.82	156.64	<50	<0.50	<0.50	<0.50	<0.50	39	1.3	7.0	
5/30/2006	--		7.00	27.00	7.23	156.23	--	--	--	--	--	--	--	--	
8/24/2006	P		7.00	27.00	8.00	155.46	60	<0.50	<0.50	<0.50	<0.50	25	0.90	6.8	
11/1/2006	--		7.00	27.00	8.38	155.08	--	--	--	--	--	--	--	--	
2/7/2007	NP		7.00	27.00	7.88	155.58	<50	0.50	<0.50	<0.50	<0.50	7.2	0.94	7.39	
5/8/2007	--		7.00	27.00	7.28	156.18	--	--	--	--	--	--	--	--	
8/8/2007	NP		7.00	27.00	8.38	155.08	88	3.2	<0.50	<0.50	<0.50	7.2	0.94	7.75	
11/14/2007	--		7.00	27.00	8.10	155.36	--	--	--	--	--	--	--	--	
2/22/2008	P		7.00	27.00	6.75	156.71	<50	<0.50	<0.50	<0.50	<0.50	24	2.18	7.02	
5/24/2008	--		7.00	27.00	7.98	155.48	--	--	--	--	--	--	--	--	
8/21/2008	NP		7.00	27.00	8.58	154.88	<50	2.6	<0.50	<0.50	<0.50	4.9	2.20	7.11	
11/19/2008	--		7.00	27.00	8.66	154.80	--	--	--	--	--	--	--	--	
2/23/2009	P		7.00	27.00	6.67	156.79	74	1.0	<0.50	<0.50	<0.50	24	2.25	6.16	
5/14/2009	--		7.00	27.00	7.02	156.44	--	--	--	--	--	--	--	--	
8/20/2009	NP		7.00	27.00	8.41	155.05	82	2.4	<0.50	<0.50	<0.50	8.4	2.19	6.37	
2/19/2010	NP		7.00	27.00	7.36	156.10	<50	<0.50	<0.50	<0.50	<0.50	22	0.81	6.90	
8/10/2010	NP		7.00	27.00	7.69	155.77	<50	<0.50	<0.50	<0.50	<0.50	23	2.40	7.67	
12/16/2010	P	163.49	7.00	27.00	7.12	156.37	<50	<0.50	<0.50	<0.50	<0.50	17	0.69	7.06	j

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-2 Cont.															
2/14/2011	NP	163.49	7.00	27.00	7.35	156.14	<50	<0.50	<0.50	<0.50	<0.50	11	0.87	7.0	
MW-3															
6/20/2000	--	153.64	7.00	27.00	6.42	147.22	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--	
9/28/2000	--		7.00	27.00	7.31	146.33	--	--	--	--	--	--	--	--	
12/17/2000	--		7.00	27.00	6.45	147.19	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/23/2001	--		7.00	27.00	6.01	147.63	--	--	--	--	--	--	--	--	
6/21/2001	--		7.00	27.00	6.80	146.84	110	5.5	<0.5	5.4	4.1	2.5	--	--	
9/23/2001	--		7.00	27.00	7.32	146.32	--	--	--	--	--	--	--	--	
12/31/2001	--		7.00	27.00	4.48	149.16	<50	<0.5	<0.5	<0.5	<0.5	4.9	--	--	
3/21/2002	--		7.00	27.00	4.36	149.28	--	--	--	--	--	--	--	--	
4/17/2002	--		7.00	27.00	5.31	148.33	<50	<0.5	<0.5	<0.5	<0.5	8.7	--	--	
8/12/2002	--		7.00	27.00	7.00	146.64	--	--	--	--	--	--	--	--	
12/6/2002	--		7.00	27.00	7.32	146.32	<50	<0.5	<0.5	<0.5	<0.5	6.2	1.4	6.7	
1/29/2003	--		7.00	27.00	6.07	147.57	--	--	--	--	--	--	--	--	b
5/23/2003	--		7.00	27.00	6.45	147.19	<50	<0.50	<0.50	<0.50	<0.50	1.6	0.9	7.7	
9/4/2003	--		7.00	27.00	6.93	146.71	--	--	--	--	--	--	--	--	c
11/20/2003	--		7.00	27.00	7.04	146.60	--	--	--	--	--	--	--	--	c
02/02/2004	--	159.21	7.00	27.00	5.92	153.29	--	--	--	--	--	--	--	--	f
05/14/2004	--		7.00	27.00	7.52	151.69	--	--	--	--	--	--	--	--	
09/02/2004	P		7.00	27.00	7.19	152.02	<50	<0.50	<0.50	<0.50	<0.50	6.5	9.3	8.9	
11/04/2004	--		7.00	27.00	6.40	152.81	--	--	--	--	--	--	--	--	
02/08/2005	--		7.00	27.00	6.01	153.20	--	--	--	--	--	--	--	--	
05/09/2005	--		7.00	27.00	6.74	152.47	--	--	--	--	--	--	--	--	
08/11/2005	P		7.00	27.00	6.77	152.44	<50	<0.50	<0.50	<0.50	<0.50	11	1.9	6.5	
11/18/2005	--		7.00	27.00	7.83	151.38	--	--	--	--	--	--	--	--	
02/16/2006	--		7.00	27.00	7.26	151.95	--	--	--	--	--	--	--	--	
5/30/2006	--		7.00	27.00	5.82	153.39	--	--	--	--	--	--	--	--	
8/24/2006	P		7.00	27.00	7.00	152.21	<50	<0.50	<0.50	<0.50	<0.50	7.6	1.15	6.4	

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							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-3 Cont.															
11/1/2006	--	159.21	7.00	27.00	7.50	151.71	--	--	--	--	--	--	--	--	
2/7/2007	--		7.00	27.00	6.90	152.31	--	--	--	--	--	--	--	--	
5/8/2007	--		7.00	27.00	5.95	153.26	--	--	--	--	--	--	--	--	
8/8/2007	NP		7.00	27.00	7.47	151.74	<50	<0.50	<0.50	<0.50	<0.50	1.2	1.21	6.93	
11/14/2007	--		7.00	27.00	7.05	152.16	--	--	--	--	--	--	--	--	
2/22/2008	--		7.00	27.00	5.50	153.71	--	--	--	--	--	--	--	--	
5/24/2008	--		7.00	27.00	7.03	152.18	--	--	--	--	--	--	--	--	
8/21/2008	NP		7.00	27.00	7.80	151.41	<50	<0.50	<0.50	<0.50	<0.50	3.1	2.11	6.84	
11/19/2008	--		7.00	27.00	7.69	151.52	--	--	--	--	--	--	--	--	
2/23/2009	--		7.00	27.00	7.28	151.93	--	--	--	--	--	--	--	--	
5/14/2009	--		7.00	27.00	6.17	153.04	--	--	--	--	--	--	--	--	
8/20/2009	NP		7.00	27.00	7.38	151.83	<50	<0.50	<0.50	<0.50	<0.50	2.2	2.05	7.01	
2/19/2010	--		7.00	27.00	5.31	153.90	--	--	--	--	--	--	--	--	
8/10/2010	NP		7.00	27.00	7.12	152.09	<50	<0.50	<0.50	<0.50	<0.50	1.6	1.27	7.33	
12/16/2010	--		7.00	27.00	5.65	153.56	--	--	--	--	--	--	--	--	j
2/14/2011	--		7.00	27.00	6.20	153.01	--	--	--	--	--	--	--	--	
MW-4															
6/20/2000	--	156.53	7.00	27.00	7.50	149.03	20,000	5,100	440	1,000	1,700	<250	--	--	c
9/28/2000	--		7.00	27.00	8.20	148.33	--	--	--	--	--	--	--	--	
12/17/2000	--		7.00	27.00	8.11	148.42	4,320	1,240	<20	27.2	249	<100	--	--	
3/23/2001	--		7.00	27.00	6.69	149.84	--	--	--	--	--	--	--	--	
6/21/2001	--		7.00	27.00	8.01	148.52	2,800	470	16	19	160	130	--	--	
9/23/2001	--		7.00	27.00	8.91	147.62	--	--	--	--	--	--	--	--	
12/31/2001	--		7.00	27.00	4.42	152.11	4,600	1,500	100	160	210	160	--	--	
3/21/2002	--		7.00	27.00	4.98	151.55	--	--	--	--	--	--	--	--	
4/17/2002	--		7.00	27.00	6.23	150.30	7,100	2,200	110	290	450	<250	--	--	
8/12/2002	--		7.00	27.00	8.24	148.29	--	--	--	--	--	--	--	--	
12/6/2002	--		7.00	27.00	8.42	148.11	1,500	410	6.8	20	29	43	1.1	6.7	a

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							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-4 Cont.															
1/29/2003	--	156.53	7.00	27.00	7.20	149.33	--	--	--	--	--	--	--	--	b
5/23/2003	--		7.00	27.00	7.18	149.35	<5,000	1,300	89	210	260	<50	1.4	6.9	
9/4/2003	--		7.00	27.00	8.15	148.38	--	--	--	--	--	--	--	--	c
11/20/2003	--		7.00	27.00	8.73	147.80	--	--	--	--	--	--	--	--	c
02/02/2004	P	163.25	7.00	27.00	6.25	157.00	980	280	21	29	38	29	1.4	10.6	c, f, g
05/14/2004	--		7.00	27.00	8.38	154.87	--	--	--	--	--	--	--	--	g
09/02/2004	P		7.00	27.00	8.36	154.89	260	11	<1.0	5.5	14	28	2.4	7.4	g
11/04/2004	--		7.00	27.00	7.71	155.54	--	--	--	--	--	--	--	--	c, g
02/08/2005	P		7.00	27.00	6.27	156.98	7,500	1,700	320	480	920	45	0.65	6.5	g
05/09/2005	--		7.00	27.00	5.90	157.35	--	--	--	--	--	--	--	--	g
08/11/2005	P		7.00	27.00	7.96	155.29	3,100	1,100	41	160	110	32	0.6	6.5	g
11/18/2005	--		7.00	27.00	8.57	154.68	--	--	--	--	--	--	--	--	g
02/16/2006	P		7.00	27.00	6.28	156.97	9,400	1,800	130	600	420	35	0.5	6.8	g
5/30/2006	--	162.47	7.00	27.00	7.02	155.45	--	--	--	--	--	--	--	--	g
8/24/2006	P		7.00	27.00	8.26	154.21	3,600	1,400	21	110	70	39	1.00	6.8	
11/1/2006	--		7.00	27.00	8.67	153.80	--	--	--	--	--	--	--	--	
2/7/2007	NP		7.00	27.00	8.02	154.45	3,100	570	17	170	110	67	0.95	7.07	
5/8/2007	--		7.00	27.00	7.03	155.44	--	--	--	--	--	--	--	--	
8/8/2007	NP		7.00	27.00	8.60	153.87	2,900	630	22	67	57	72	0.93	6.79	
11/14/2007	--		7.00	27.00	8.53	153.94	--	--	--	--	--	--	--	--	
2/22/2008	P		7.00	27.00	6.25	156.22	3,900	880	39	180	92	70	2.31	6.87	
5/24/2008	--		7.00	27.00	--	--	--	--	--	--	--	--	--	--	d
8/21/2008	NP		7.00	27.00	8.96	153.51	3,700	1,100	26	85	130	53	2.26	6.80	
11/19/2008	--		7.00	27.00	9.20	153.27	--	--	--	--	--	--	--	--	
2/23/2009	P		7.00	27.00	6.35	156.12	3,000	220	9.1	23	19	39	2.21	6.51	
5/14/2009	--		7.00	27.00	7.00	155.47	--	--	--	--	--	--	--	--	
8/20/2009	NP		7.00	27.00	8.05	154.42	5,700	1,100	35	110	100	23	2.17	6.81	
2/19/2010	P		7.00	27.00	5.71	156.76	12,000	1,200	120	230	390	<5.0	0.81	6.70	i

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ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-4 Cont.															
8/10/2010	NP	162.47	7.00	27.00	7.59	154.88	9,700	1,500	120	400	400	<20	3.81	6.8	
12/16/2010	P	162.48	7.00	27.00	6.83	155.65	15,000	1,800	82	270	210	<25	0.49	6.81	j
2/14/2011	NP		7.00	27.00	7.33	155.15	260	<0.50	<0.50	2.7	11	13	0.80	7.10	
MW-5															
6/20/2000	--	151.33	10.00	23.00	7.84	143.49	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--	
9/28/2000	--		10.00	23.00	8.37	142.96	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/17/2000	--		10.00	23.00	8.36	142.97	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/23/2001	--		10.00	23.00	7.55	143.78	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
6/21/2001	--		10.00	23.00	8.20	143.13	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
9/23/2001	--		10.00	23.00	8.68	142.65	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/31/2001	--		10.00	23.00	7.57	143.76	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/21/2002	--		10.00	23.00	6.12	145.21	<50	<0.5	<0.5	<0.5	<0.5	3.2	--	--	
4/17/2002	--		10.00	23.00	6.61	144.72	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
8/12/2002	--		10.00	23.00	8.14	143.19	<50	<0.5	<0.5	<0.5	<0.5	<2.5	4.1	7.6	
12/6/2002	--		10.00	23.00	8.65	142.68	<50	<0.5	<0.5	<0.5	<0.5	<2.5	1.1	6.8	
1/29/2003	--		10.00	23.00	7.22	144.11	<50	<0.5	<0.5	<0.5	<0.5	<0.50	1	6.6	b
5/23/2003	--		10.00	23.00	7.31	144.02	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	6.6	
9/4/2003	--		10.00	23.00	9.50	141.83	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.2	6.7	
11/20/2003	--		10.00	23.00	8.31	143.02	--	--	--	--	--	--	--	--	
02/02/2004	--		10.00	23.00	6.92	144.41	--	--	--	--	--	--	--	--	c, f, h
05/14/2004	--		10.00	23.00	8.56	142.77	--	--	--	--	--	--	--	--	h
09/02/2004	P		10.00	23.00	8.79	142.54	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.5	6.8	h
11/04/2004	--		10.00	23.00	8.33	143.00	--	--	--	--	--	--	--	--	c, h
02/08/2005	--		10.00	23.00	7.28	144.05	--	--	--	--	--	--	--	--	h
05/09/2005	--		10.00	23.00	8.19	143.14	--	--	--	--	--	--	--	--	h
08/11/2005	P		10.00	23.00	8.39	142.94	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	6.6	h
11/18/2005	--		10.00	23.00	11.25	140.08	--	--	--	--	--	--	--	--	h
02/16/2006	--		10.00	23.00	9.22	142.11	--	--	--	--	--	--	--	--	h

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-5 Cont.															
5/30/2006	--	151.33	10.00	23.00	7.52	143.81	--	--	--	--	--	--	--	--	h
8/24/2006	P		10.00	23.00	7.95	143.38	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.60	6.6	
11/1/2006	--		10.00	23.00	8.32	143.01	--	--	--	--	--	--	--	--	
2/7/2007	--		10.00	23.00	8.25	143.08	--	--	--	--	--	--	--	--	
5/8/2007	--		10.00	23.00	7.60	143.73	--	--	--	--	--	--	--	--	
8/8/2007	P		10.00	23.00	8.12	143.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.26	7.31	
11/14/2007	--		10.00	23.00	9.10	142.23	--	--	--	--	--	--	--	--	
2/22/2008	--		10.00	23.00	7.48	143.85	--	--	--	--	--	--	--	--	
5/24/2008	--		10.00	23.00	8.12	143.21	--	--	--	--	--	--	--	--	
8/21/2008	P		10.00	23.00	8.65	142.68	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.14	6.54	
11/19/2008	--		10.00	23.00	11.86	139.47	--	--	--	--	--	--	--	--	
2/23/2009	--		10.00	23.00	10.20	141.13	--	--	--	--	--	--	--	--	
5/14/2009	--		10.00	23.00	9.63	141.70	--	--	--	--	--	--	--	--	
8/20/2009	P		10.00	23.00	8.52	142.81	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.01	6.47	
2/19/2010	--		10.00	23.00	--	--	--	--	--	--	--	--	--	--	d
8/10/2010	P		10.00	23.00	8.05	143.28	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.15	7.1	
12/16/2010	--	156.90	10.00	23.00	8.10	148.80	--	--	--	--	--	--	--	--	j
2/14/2011	--		10.00	23.00	--	--	--	--	--	--	--	--	--	--	d
MW-6															
6/20/2000	--	153.84	5.00	15.00	4.79	149.05	--	--	--	--	--	--	--	--	
9/28/2000	--		5.00	15.00	5.39	148.45	--	--	--	--	--	--	--	--	
12/17/2000	--		5.00	15.00	4.71	149.13	--	--	--	--	--	--	--	--	
3/23/2001	--		5.00	15.00	4.69	149.15	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
6/21/2001	--		5.00	15.00	5.22	148.62	--	--	--	--	--	--	--	--	
9/23/2001	--		5.00	15.00	5.40	148.44	--	--	--	--	--	--	--	--	
12/31/2001	--		5.00	15.00	3.95	149.89	--	--	--	--	--	--	--	--	
3/21/2002	--		5.00	15.00	2.94	150.90	<50	<0.5	<0.5	<0.5	<0.5	5.2	--	--	
4/17/2002	--		5.00	15.00	5.11	148.73	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-6 Cont.															
8/12/2002	--	153.84	5.00	15.00	5.23	148.61	--	--	--	--	--	--	--	--	
12/6/2002	--		5.00	15.00	5.29	148.55	--	--	--	--	--	--	--	--	
1/29/2003	--		5.00	15.00	4.79	149.05	--	--	--	--	--	--	--	--	b
5/23/2003	--		5.00	15.00	4.31	149.53	<50	<0.50	<0.50	<0.50	<0.50	9.4	1	6.7	
09/04/03	--		5.00	15.00	--	--	--	--	--	--	--	--	--	--	d
11/20/2003	--		5.00	15.00	6.31	147.53	--	--	--	--	--	--	--	--	
02/02/2004	--	159.41	5.00	15.00	4.78	154.63	--	--	--	--	--	--	--	--	f
05/14/2004	--		5.00	15.00	6.29	153.12	--	--	--	--	--	--	--	--	
09/02/2004	--		5.00	15.00	5.79	153.62	--	--	--	--	--	--	--	--	d
11/04/2004	--		5.00	15.00	--	--	--	--	--	--	--	--	--	--	d
02/08/2005	--		5.00	15.00	5.13	154.28	--	--	--	--	--	--	--	--	
05/09/2005	--		5.00	15.00	4.52	154.89	--	--	--	--	--	--	--	--	
08/11/2005	P		5.00	15.00	5.02	154.39	<50	<0.50	<0.50	<0.50	<0.50	7.9	2.1	6.6	
11/18/2005	--		5.00	15.00	6.31	153.10	--	--	--	--	--	--	--	--	
02/16/2006	--		5.00	15.00	4.24	155.17	--	--	--	--	--	--	--	--	
5/30/2006	--		5.00	15.00	4.45	154.96	--	--	--	--	--	--	--	--	
8/24/2006	P		5.00	15.00	5.18	154.23	<50	<0.50	<0.50	<0.50	<0.50	12	3.4	6.8	
11/1/2006	--		5.00	15.00	6.05	153.36	--	--	--	--	--	--	--	--	
2/7/2007	--		5.00	15.00	5.00	154.41	--	--	--	--	--	--	--	--	
5/8/2007	--		5.00	15.00	4.30	155.11	--	--	--	--	--	--	--	--	
8/8/2007	NP		5.00	15.00	5.51	153.90	<50	<0.50	<0.50	<0.50	<0.50	0.57	2.94	6.87	
11/14/2007	--		5.00	15.00	5.38	154.03	--	--	--	--	--	--	--	--	
2/22/2008	--		5.00	15.00	4.70	154.71	--	--	--	--	--	--	--	--	
5/24/2008	--		5.00	15.00	5.25	154.16	--	--	--	--	--	--	--	--	
8/21/2008	NP		5.00	15.00	6.14	153.27	<50	<0.50	<0.50	<0.50	<0.50	1.9	1.99	7.13	
11/19/2008	--		5.00	15.00	5.94	153.47	--	--	--	--	--	--	--	--	
2/23/2009	--		5.00	15.00	5.00	154.41	--	--	--	--	--	--	--	--	
5/14/2009	--		5.00	15.00	4.60	154.81	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-6 Cont.															
8/20/2009	NP	159.41	5.00	15.00	5.65	153.76	<50	<0.50	<0.50	<0.50	<0.50	2.0	1.98	6.81	
2/19/2010	--		5.00	15.00	7.28	152.13	--	--	--	--	--	--	--	--	
8/10/2010	NP		5.00	15.00	5.02	154.39	<50	<0.50	<0.50	<0.50	<0.50	4.3	1.99	6.93	
12/16/2010	--		5.00	15.00	4.50	154.91	--	--	--	--	--	--	--	--	j
2/14/2011	--		5.00	15.00	4.80	154.61	--	--	--	--	--	--	--	--	
MW-7															
12/16/2010	P	164.80	--	--	6.52	158.28	700	<0.50	<0.50	15	32	62	--	7.08	j
2/14/2011	NP		--	--	6.77	158.03	7,100	1,700	98	260	210	<20	1.02	6.8	
MW-8															
12/16/2010	P	164.14	--	--	6.85	157.29	520	43	<0.50	4.1	21	150	0.46	7.12	j
2/14/2011	NP		--	--	7.30	156.84	<50	<2.0	<2.0	<2.0	<2.0	110	1.07	6.7	
MW-9															
12/16/2010	P	163.77	--	--	6.63	157.14	330	18	<0.50	11	38	390	0.57	6.97	j
2/14/2011	NP		--	--	6.85	156.92	<50	<4.0	<4.0	<4.0	<4.0	270	0.98	6.9	

Symbols & Abbreviations:

-- = Not analyzed/applicable/measured/available
< = Not detected at or above laboratory reporting limit
DO = Dissolved oxygen
DTW = Depth to water in ft below TOC
ft bgs = Feet below ground surface
GRO = Gasoline range organics
GWE = Groundwater elevation measured in ft
mg/L = Milligrams per liter
MTBE = Methyl tert-butyl ether
NP = Well was not purged prior to sampling
P = Well was purged prior to sampling
TOC = Top of casing measured in ft
TPH-g = Total petroleum hydrocarbons as gasoline
µg/L = Micrograms per liter
BTEX = Benzene, toluene, ethylbenzene and xylenes

ESL - DW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil & Groundwater, Interim Final-November 2007 (Revised May 2008).

ESL - NDW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is NOT a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil & Groundwater, Interim Final-November 2007 (Revised May 2008).

NE = ESL not established

Footnotes:

a = Chromatogram pattern: Gasoline C6-C10 for GRO/TPH-g
b = Beginning this quarter, groundwater samples were analyzed by EPA method 8260B for TPH-g, BTEX, and fuel oxygenates
c = Wells gauged with ORC sock in well
d = Well inaccessible
e = The hydrocarbon result for GRO was partly due to individual peaks in the quantitative range
f = Well resurveyed on 1/27/2004 to NAVD88
g = Upon review of survey data (1/27/2004), TOC elevation for MW-4 is actually 162.47 ft.
h = Upon review of survey data (1/27/2004), MW-5 was not surveyed from the TOC. MW-5 was surveyed from the pavement due to inaccessibility to the TOC. Therefore, survey data for MW-5 from the TOC is unavailable. Historic data prior to 5/30/2006 (change in consultant) not modified
i = Quantitation of unknown hydrocarbon(s) in sample based on gasoline
j = Surveyed 12/9/2010
k = Grab groundwater sample

Notes:

Beginning in the fourth quarter 2003, the laboratory modified the reported analyte list. TPH-g was changed to GRO. The resulting data may be impacted by the potential of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported

Beginning in the second quarter 2004, the carbon range for GRO was changed from C6-C10 to C4-C12

Values for DO and pH were obtained through field measurements

The DTW's and TOC's for wells MW-5 and MW-6 were taken from Delta Environmental sampling sheets because the well logs were not available

GRO analysis was completed by EPA method 8260B (C4-C12) for samples collected from the time period April 2006 through February 4, 2008. The analysis for GRO was changed to EPA method 8015B (C6-C12) for samples collected from the time period February 5, 2008 through the present

The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-1									
3/23/2001	--	--	2,710	--	--	--	--	--	
3/21/2002	--	--	2,000	--	--	--	--	--	
5/23/2003	<20,000	<4,000	1,600	<100	<100	<100	--	--	
11/20/2003	<2,000	<400	1,500	<10	<10	<10	--	--	a
05/14/2004	<5,000	<1,000	1,200	<25	<25	<25	<25	<25	
09/02/2004	<1,000	<200	660	<5.0	<5.0	<5.0	<5.0	<5.0	
11/04/2004	<2,000	<400	580	<10	<10	<10	<10	<10	
02/08/2005	<2,000	<400	610	<10	<10	<10	<10	<10	
05/09/2005	<1,000	<200	620	<5.0	<5.0	<5.0	<5.0	<5.0	a
08/11/2005	<500	250	390	<2.5	<2.5	2.6	<2.5	<2.5	a
11/18/2005	<500	<100	340	<2.5	<2.5	<2.5	<2.5	<2.5	a
02/16/2006	<1,500	<100	340	<2.5	<2.5	<2.5	<2.5	<2.5	
5/30/2006	<1,500	<100	420	<2.5	<2.5	<2.5	<2.5	<2.5	a
8/24/2006	<3,000	<200	180	<5.0	<5.0	<5.0	<5.0	<5.0	
11/1/2006	<3,000	<200	220	<5.0	<5.0	<5.0	<5.0	<5.0	a
2/7/2007	<3,000	<200	190	<5.0	<5.0	<5.0	<5.0	<5.0	
5/8/2007	<3,000	<200	420	<5.0	<5.0	<5.0	<5.0	<5.0	
8/8/2007	<300	<20	110	<0.50	<0.50	<0.50	<0.50	<0.50	
11/14/2007	<1,500	<100	210	<2.5	<2.5	<2.5	<2.5	<2.5	
2/22/2008	<300	<10	250	<0.50	<0.50	1.5	<0.50	<0.50	
5/24/2008	<3,000	<100	380	<5.0	<5.0	<5.0	<5.0	<5.0	
8/21/2008	<1,500	<50	170	<2.5	<2.5	<2.5	<2.5	<2.5	
11/19/2008	<300	<10	30	<0.50	<0.50	<0.50	<0.50	<0.50	
2/23/2009	<1,500	<50	240	<2.5	<2.5	<2.5	<2.5	<2.5	
5/14/2009	<300	<10	200	<0.50	<0.50	1.3	<0.50	<0.50	
8/20/2009	<1,200	<40	170	<2.0	<2.0	<2.0	<2.0	<2.0	
2/19/2010	<300	<10	170	<0.50	<0.50	1.2	<0.50	<0.50	
8/10/2010	<1,500	<50	230	<2.5	<2.5	<2.5	<2.5	<2.5	
12/16/2010	<1,200	<40	140	<2.0	<2.0	<2.0	<2.0	<2.0	

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-1 Cont.									
2/14/2011	<1,500	<50	170	<2.5	<2.5	<2.5	<2.5	<2.5	
MW-2									
3/23/2001	--	--	<2.5	--	--	--	--	--	
3/21/2002	--	--	45	--	--	--	--	--	
5/23/2003	<100	<20	55	<0.50	<0.50	0.53	--	--	
02/02/2004	<100	<20	37	<0.50	<0.50	<0.50	<0.50	<0.50	
09/02/2004	<500	<100	67	<2.5	<2.5	<2.5	<2.5	<2.5	
02/08/2005	<100	<20	30	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	35	<0.50	<0.50	<0.50	<0.50	<0.50	a
02/16/2006	<300	<20	39	<0.50	<0.50	<0.50	<0.50	<0.50	
8/24/2006	<300	<20	25	<0.50	<0.50	<0.50	<0.50	<0.50	
2/7/2007	<300	<20	7.2	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2007	<300	<20	7.2	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2008	<300	<10	24	<0.50	<0.50	<0.50	<0.50	<0.50	
8/21/2008	<300	<10	4.9	<0.50	<0.50	<0.50	<0.50	<0.50	
2/23/2009	<300	<10	24	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2009	<300	<10	8.4	<0.50	<0.50	<0.50	<0.50	<0.50	
2/19/2010	<300	<10	22	<0.50	<0.50	<0.50	<0.50	<0.50	
8/10/2010	<300	<10	23	<0.50	<0.50	<0.50	<0.50	<0.50	
12/16/2010	<300	<10	17	<0.50	<0.50	<0.50	<0.50	<0.50	
2/14/2011	<300	<10	11	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-3									
6/20/2000	--	--	<10	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
6/21/2001	--	--	2.5	--	--	--	--	--	
12/31/2001	--	--	4.9	--	--	--	--	--	
4/17/2002	--	--	8.7	--	--	--	--	--	
12/6/2002	--	--	6.2	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-3 Cont.									
5/23/2003	<100	<20	1.6	<0.50	<0.50	<0.50	--	--	
09/02/2004	<100	<20	6.5	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	11	<0.50	<0.50	<0.50	<0.50	<0.50	a
8/24/2006	<300	<20	7.6	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2007	<300	<20	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	
8/21/2008	<300	<10	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2009	<300	<10	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	
8/10/2010	<300	<10	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-4									
6/20/2000	--	--	<250	--	--	--	--	--	
12/17/2000	--	--	<100	--	--	--	--	--	
6/21/2001	--	--	130	--	--	--	--	--	
12/31/2001	--	--	160	--	--	--	--	--	
4/17/2002	--	--	<250	--	--	--	--	--	
12/6/2002	--	--	43	--	--	--	--	--	
5/23/2003	<10,000	<2,000	<50	<50	<50	<50	--	--	
02/02/2004	<500	<100	29	<2.5	<2.5	2.6	<2.5	<2.5	
09/02/2004	<200	<40	28	<1.0	<1.0	<1.0	<1.0	<1.0	
02/08/2005	<5,000	<1,000	45	<25	<25	<25	<25	<25	
08/11/2005	<2,000	<400	32	<10	<10	<10	<10	<10	
02/16/2006	<6,000	<400	35	<10	<10	<10	<10	<10	
8/24/2006	<1,500	<100	39	<2.5	<2.5	<2.5	<2.5	<2.5	
2/7/2007	<6,000	<400	67	<10	<10	<10	<10	<10	
8/8/2007	<6,000	<400	72	<10	<10	<10	<10	<10	
2/22/2008	<6,000	<200	70	<10	<10	<10	<10	<10	
8/21/2008	<12,000	<400	53	<20	<20	<20	<20	<20	
2/23/2009	<3,000	<100	39	<5.0	<5.0	<5.0	<5.0	<5.0	
8/20/2009	<12,000	<400	23	<20	<20	<20	<20	<20	
2/19/2010	<3,000	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-4 Cont.									
8/10/2010	<12,000	<400	<20	<20	<20	<20	<20	<20	
12/16/2010	<15,000	<500	<25	<25	<25	<25	<25	<25	
2/14/2011	<300	<10	13	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-5									
6/20/2000	--	--	<10	--	--	--	--	--	
9/28/2000	--	--	<2.5	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
3/23/2001	--	--	<2.5	--	--	--	--	--	
6/21/2001	--	--	<2.5	--	--	--	--	--	
9/23/2001	--	--	<2.5	--	--	--	--	--	
12/31/2001	--	--	<2.5	--	--	--	--	--	
3/21/2002	--	--	3.2	--	--	--	--	--	
4/17/2002	--	--	<2.5	--	--	--	--	--	
8/12/2002	--	--	<2.5	--	--	--	--	--	
12/6/2002	--	--	<2.5	--	--	--	--	--	
1/29/2003	<40	<20	<0.50	<0.50	<0.50	<0.50	--	--	
5/23/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	--	--	
9/4/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
09/02/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/24/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/21/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/10/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-6									
3/23/2001	--	--	<2.5	--	--	--	--	--	
3/21/2002	--	--	5.2	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-6 Cont.									
5/23/2003	<100	<20	9.4	<0.50	<0.50	<0.50	--	--	
08/11/2005	<100	<20	7.9	<0.50	<0.50	<0.50	<0.50	<0.50	a
8/24/2006	<300	<20	12	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2007	<300	<20	0.57	<0.50	<0.50	<0.50	<0.50	<0.50	
8/21/2008	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2009	<300	<10	2.0	<0.50	<0.50	<0.50	<0.50	<0.50	
8/10/2010	<300	<10	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-7									
12/16/2010	<300	<10	62	<0.50	<0.50	<0.50	<0.50	<0.50	
2/14/2011	<1,2000	<400	<20	<20	<20	<20	<20	<20	
MW-8									
12/16/2010	<300	<10	150	<0.50	<0.50	1.7	<0.50	<0.50	
2/14/2011	<1,200	<40	110	<2.0	<2.0	<2.0	<2.0	<2.0	
MW-9									
12/16/2010	<300	40	390	<0.50	<0.50	4.1	<0.50	<0.50	
2/14/2011	<2,400	<80	270	<4.0	<4.0	<4.0	<4.0	<4.0	

Symbols & Abbreviations:

-- = Not analyzed/applicable/measured/available

< = Not detected at or above the laboratory reporting limit

1,2-DCA = 1,2-Dichloroethane

DIPE = Di-isopropyl ether

EDB = 1,2-Dibromoethane

ETBE = Ethyl tert-butyl ether

MTBE = Methyl tert-butyl ether

TAME = tert-Amyl methyl ether

TBA = tert-Butyl alcohol

µg/L = Micrograms per Liter

ESL - DW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil & Groundwater, Interim Final-November 2007 (Revised May 2008).

ESL - NDW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is NOT a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil & Groundwater, Interim Final-November 2007 (Revised May 2008).

NE = ESL not established

Footnotes:

a = The continuing calibration verification for ethanol was outside of client contractual limits, however, it was within method acceptance limits. The data should still be useful for its intended purpose

Notes:

All volatile organic compounds analyzed using EPA Method 8260B

The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information

**Table 3. Historical Groundwater Flow Direction and Gradient
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA**

Date Measured	Approximate Groundwater Flow Direction	Approximate Hydraulic Gradient (ft/ft)
1/31/1996	Southwest	0.04
4/10/1996	Southwest	0.04
7/16/1996	Southwest	0.03
10/14/1996	Southwest	0.03
3/27/1997	Southwest	0.04
5/27/1997	Southwest	0.03
8/12/1997	Southwest	0.04
11/17/1997	Southwest	0.03
3/16/1998	Southwest	0.03
5/12/1998	Southwest	0.04
7/27/1998	Southwest	0.04
10/15/1998	Southwest	0.02
2/18/1999	Southwest	0.05
5/24/1999	Southwest	0.03
8/27/1999	Southwest	0.03
10/26/1999	Southwest	0.03
2/3/2000	Southwest	0.047
6/20/2000	Southwest	0.035
9/28/2000	Southwest	0.034
12/17/2000	Southwest	0.032
3/23/2001	Southwest	0.034
6/21/2001	Southwest	0.032
9/23/2001	Southwest	0.029
12/31/2001	Southwest	0.043
3/21/2002	Southwest	0.038
4/17/2002	Southwest	0.031
8/12/2002	Southwest	0.032
12/6/2002	Southwest	0.020
1/29/2003	Southwest	0.027
5/23/2003	Southwest	0.039
9/4/2003	Southwest	0.033
11/20/2003	Southwest	0.029
2/2/2004	Southwest	0.043 (a)
5/14/2004	Southwest	0.037 (a)
9/2/2004	Southwest	0.027 (a)
11/4/2004	Southwest	0.034 (a)
2/8/2005	Southwest	0.061 (a)
5/9/2005	Southwest	0.08 (a)
8/11/2005	Southwest	0.06 (a)
11/18/2005	Southwest	0.07 (a)
2/16/2006	Southwest	0.09 (a)
5/30/2006	Southwest	0.06 (a)

**Table 3. Historical Groundwater Flow Direction and Gradient
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA**

Date Measured	Approximate Groundwater Flow Direction	Approximate Hydraulic Gradient (ft/ft)
8/24/2006	Southwest	0.03
11/1/2006	Southwest	0.02
2/7/2007	Southwest	0.03
5/8/2007	Southwest	0.03
8/8/2007	Southwest	0.03
11/14/2007	Southwest	0.03
2/22/2008	Southwest	0.03
5/24/2008	Southwest	0.03
8/21/2008	Southwest	0.03
11/19/2008	Southwest	0.03
2/23/2009	Southwest	0.04
5/14/2009	Southwest	0.03
8/20/2009	Southwest	0.03
2/19/2010	West-Southwest	0.05
8/10/2010	Southwest	0.03
12/16/2010	Southwest	0.03
2/14/2011	Southwest	0.03

Footnotes:

a = Gradients potentially suspect due to error in MW-4 and MW-5 TOC measuring point elevations discovered third quarter 2006

Notes:

The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information

Table 3
Groundwater Analytical Data
 Total Purgeable Petroleum Hydrocarbons
 (TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

ARCO Service Station 0374
 6407 Telegraph Avenue at Alcatraz Avenue
 Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)
MW-1	07/21/89	33	0.77	1.6	15	5	NA	NA
	08/30/89	<20	<0.50	<0.50	<0.50	<0.50	NA	NA
	10/04/89	<20	<0.50	<0.50	<0.50	<0.50	NA	NA
	01/10/90	<20	<0.50	<0.50	<0.50	<0.50	NA	NA
	08/07/90	<20	<0.50	<0.50	<0.50	<0.50	NA	NA
	12/06/90	<50	3.6	2.7	0.60	5.8	NA	NA
	02/20/91	<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	07/08/91	<30	<0.30	<0.30	<0.30	<0.30	NA	NA
	09/25/91	<30	57	57	54	1.7	NA	NA
	11/20/91	57	9.2	3.7	0.63	25	NA	NA
	03/09/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	04/15/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	07/14/92	<50	<0.5	0.7	<0.5	1.3	NA	NA
	10/12/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	01/21/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	04/27/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	08/04/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	10/13/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/03/94	<50	1.4	2.1	<0.5	2	NA	NA
	04/29/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	08/02/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
11/12/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
02/23/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
05/09/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
08/07/95	a	<500	<5.0	<5.0	<5.0	<5.0	NA	NA
11/02/95		<50	3.6	<0.50	<0.50	<0.50	NA	NA
MW-2	07/21/89	4,200	280	210	38	24	NA	NA
	08/30/89	4,200	160	260	45	240	NA	NA
	10/04/89	4,300	860	300	29	330	NA	NA
	01/10/90	8,000	890	710	120	760	NA	NA
	08/07/90	6,000	880	76	25	80	NA	NA
	12/06/90	1,600	330	69	18	63	NA	NA
	02/20/91	1,300	160	46	13	48	NA	NA
	07/08/91	310	76	18	7.7	24	NA	NA
	09/25/91	83	17	0.69	2.2	4.1	NA	NA
	11/20/91	180	46	6.1	3	8.7	NA	NA
	03/09/92	690	170	25	21	58	NA	NA
	04/15/92	86	20	2.3	3.8	85	NA	NA
	07/14/92	160	46	1.4	1.2	35	NA	NA
	10/12/92	230	59	7	55	11	NA	NA
	01/21/93	450	70	6.6	22	54	NA	NA
	04/27/93	<50	6.6	<0.5	0.7	1.1	NA	NA
	08/04/93	<50	2.1	<0.5	<0.5	<0.5	NA	NA
	10/13/93	<50	14	<0.5	<0.5	<0.5	NA	NA
	02/03/94	<50	4.4	<0.5	<0.5	0.8	NA	NA
04/29/94	150	38	0.7	4.3	4.8	NA	NA	
08/02/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
11/12/94		95	28	0.7	2.5	7.5	NA	NA

Table 3 (continued)
Groundwater Analytical Data
 Total Purgeable Petroleum Hydrocarbons
 (TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

ARCO Service Station 0374
 6407 Telegraph Avenue at Alcatraz Avenue
 Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)	
MW-2 (cont.)	02/23/95	<50	1.8	<0.50	<0.50	<0.50	NA	NA	
	05/09/95	<50	1.9	<0.50	<0.50	<0.50	NA	NA	
	08/07/95	<50	0.66	<0.50	<0.50	<0.50	NA	NA	
	11/02/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
MW-3	07/21/89	430	9	4.8	<0.50	50	NA	NA	
	08/30/89	1,200	85	46	84	55	NA	NA	
	10/04/89	7,000	580	900	120	670	NA	NA	
	01/10/90	940	130	59	21	73	NA	NA	
	08/07/90	2,300	180	64	59	120	NA	NA	
	12/06/90	460	52	55	14	39	350	NA	
	02/20/91	470	36	30	9.3	31	<100	<5,000	
	07/08/91	2500	240	470	74	320	NA	NA	
	09/25/91	1,100	120	110	34	120	NA	NA	
	11/20/91	1,000	180	140	43	140	NA	NA	
	03/10/92	1,200	200	110	53	130	NA	NA	
	04/15/92	1,600	200	13	110	81	NA	NA	
	07/14/92	5,200	620	44	310	250	NA	NA	
	10/12/92	850	150	5.2	55	46	NA	NA	
	01/21/93	620	100	12	35	35	NA	NA	
	04/27/93	1,700	180	83	64	100	NA	NA	
	08/04/93	380	70	12	29	41	NA	NA	
	10/13/93	780	90	6	40	31	NA	NA	
	02/03/94	340	42	8.7	9.2	28	NA	NA	
	04/29/94	830	150	38	27	48	NA	NA	
08/02/94	220	25	1.7	7.6	8.3	NA	NA		
11/12/94	160	6.0	<0.5	3.2	4.1	NA	NA		
02/23/95	120	1.3	<0.50	1.1	1.6	NA	NA		
05/09/95	190	20	6.6	8.9	20	NA	NA		
08/07/95	<50	2.3	0.51	0.51	0.57	NA	NA		
11/02/95	<50	2.3	<0.50	<0.50	0.94	NA	NA		
MW-4	07/21/89	8,700	720	360	120	640	NA	NA	
	08/30/89	7,300	630	220	N/A	320	NA	NA	
	10/04/89	21,000	2,300	1,300	280	1,300	NA	NA	
	01/10/90	4,300	470	250	63	430	NA	NA	
	08/07/90	69,000	8,700	4,200	540	4,600	28,000	<5,000	
	12/06/90	----- Separate-Phase Hydrocarbon Sheen -----							
	02/20/91	5,200	690	200	95	580	<100	<5,000	
	07/08/91	1,700	280	68	37	170	NA	NA	
	09/25/91	6,300	2,100	290	210	590	NA	NA	
	11/20/91	2,700	1,200	200	110	320	NA	NA	
	03/10/92	690	180	80	18	43	NA	NA	
	04/15/92	8,500	2,100	750	280	1,000	NA	NA	
	07/14/92	10,000	2,900	530	290	930	NA	NA	
	10/12/92	19,000	5,200	1,600	490	1,800	690	NA	
	01/21/93	22,000	4,400	1,300	580	2,200	1,400	NA	
	04/27/93	21,000	4,800	1,200	630	2,400	1,100	NA	
08/04/93	23,000	6,600	1,700	770	2,600	1500	NA		

Table 3 (continued)
Groundwater Analytical Data
 Total Purgeable Petroleum Hydrocarbons
 (TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

ARCO Service Station 0374
 6407 Telegraph Avenue at Alcatraz Avenue
 Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)	
MW-4 (cont.)	10/13/93	16,000	3,500	800	470	1,800	670	NA	
	02/03/94	850	140	84	7.9	59	59	NA	
	04/29/94	68	1.1	<0.5	<0.5	1.7	<50	NA	
	08/02/94	52	5.7	<0.5	1.2	1.9	<50	NA	
	11/12/94	1,600	230	51	81	190	90	NA	
	02/23/95	1,700	340	81	52	130	NA	NA	
	05/09/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	08/07/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	11/02/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
MW-5	04/15/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	07/14/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	10/25/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	01/21/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	04/27/93	<50	0.5	1	<0.5	0.8	NA	NA	
	08/05/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/03/94	<50	0.8	1.7	<0.5	15	NA	NA	
	04/29/94	Well Inaccessible							
	08/02/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/12/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/23/95	<50	<0.50	0.56	<0.50	0.50	NA	NA	
	05/09/95	<50	<0.50	0.56	<0.50	0.50	NA	NA	
	08/07/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
11/02/95	<50	<0.50	1.8	<0.50	<0.50	NA	NA		
MW-6	04/15/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	07/15/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	10/25/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	01/21/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	04/27/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/05/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	10/13/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/03/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	04/29/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	08/02/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	11/12/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	
	02/23/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	05/09/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
	08/07/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA	
11/02/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA		
TEPH = Total extractable petroleum hydrocarbons ppb = Parts per billion NA = Not analyzed a. Detection limits were raised due to analysis for MTBE Prior to June 1995, TPPH as gasoline and TEPH as diesel were reported as TPH as gasoline and diesel, respectively.									

Table 4
Groundwater Analytical Data
Total Methyl t-Butyl Ether

ARCO Service Station 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

Well Number	Date Sampled	Methyl t-Butyl Ether (ppb)
MW-1	08/07/95	510
MW-2	08/07/95	37
MW-3	08/07/95	<2.5
MW-4	08/07/95	<2.5
MW-5	08/07/95	<2.5
MW-6	08/07/95	160

ppb = Parts per billion
See certified analytical report for detection limit.

Table 1
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MTBE)

ARCO Service Station 0374
6407 Telegraph Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-1	01/31/96	158.91	6.34	152.57	Not Sampled: Well Sampled Annually							
MW-1	04/10/96	158.91	5.82	153.09	Not Sampled: Well Sampled Annually							
MW-1	07/16/96	158.91	7.23	151.68	<50	<0.5	<0.5	<0.5	<0.5	340	NM	
MW-1	10/14/96	158.91	8.34	150.57	Not Sampled: Well Sampled Annually							
MW-1	03/27/97	158.91	6.37	152.54	Not Sampled: Well Sampled Annually							
MW-1	05/27/97	158.91	7.30	151.61	Not Sampled: Well Sampled Annually							
MW-1	08/12/97	158.91	8.22	150.69	<50	<0.5	<0.5	<0.5	<0.5	620	NM	
MW-1	11/17/97	158.91	7.98	150.93	Not Sampled: Well Sampled Annually							
MW-1	03/16/98	158.91	4.94	153.97	Not Sampled: Well Sampled Annually							
MW-1	05/12/98	158.91	5.28	153.63	Not Sampled: Well Sampled Annually							
MW-1	07/27/98	158.91	6.84	152.07	<500	<5	<5	<5	<5	580	0.6	P
MW-1	10/15/98	158.91	7.32	151.59	Not Sampled: Well Sampled Annually							
MW-1	02/18/99	158.91	6.28	152.63	Not Sampled: Well Sampled Annually							
MW-1	05/24/99	158.91	6.45	152.46	<50	<0.5	<0.5	<0.5	<0.5	1,300	2.0	NP
MW-1	08/27/99	158.91	7.86	151.05	<50	<0.5	<0.5	<0.5	<0.5	1,500	1.65	NP
MW-1	10/26/99	158.91	8.43	150.48	Not Sampled: Well Sampled Annually							
MW-1	02/03/00	158.91	7.28	151.63	<50	<0.5	<0.5	<0.5	<1	4,000	1.0	NP
MW-2	01/31/96	157.92	6.51	151.41	Not Sampled: Well Sampled Annually							
MW-2	04/10/96	157.92	6.94	150.98	Not Sampled: Well Sampled Annually							
MW-2	07/16/96	157.92	7.73	150.19	<50	1.2	<0.5	<0.5	<0.5	33	NM	
MW-2	10/14/96	157.92	8.35	149.57	Not Sampled: Well Sampled Annually							
MW-2	03/27/97	157.92	7.40	150.52	Not Sampled: Well Sampled Annually							
MW-2	05/27/97	157.92	7.82	150.10	Not Sampled: Well Sampled Annually							
MW-2	08/12/97	157.92	8.29	149.63	<50	<0.5	<0.5	<0.5	<0.5	23	NM	
MW-2	11/17/97	157.92	8.05	149.87	Not Sampled: Well Sampled Annually							
MW-2	03/16/98	157.92	6.45	151.47	Not Sampled: Well Sampled Annually							

Table 1
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MTBE)

ARCO Service Station 0374
6407 Telegraph Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-2	05/12/98	157.92	6.93	150.99	Not Sampled: Well Sampled Annually							
MW-2	07/27/98	157.92	7.39	150.53	<50	<0.5	<0.5	<0.5	<0.5	<3	0.85	NP
MW-2	10/15/98	157.92	7.67	150.25	Not Sampled: Well Sampled Annually							
MW-2	02/18/99	157.92	6.63	151.29	Not Sampled: Well Sampled Annually							
MW-2	05/24/99	157.92	7.43	150.49	<50	6.3	<0.5	0.7	<0.5	29	3.0	P
MW-2	08/27/99	157.92	8.22	149.70	<50	<0.5	<0.5	<0.5	<0.5	<3	0.95	NP
MW-2	10/26/99	157.92	8.46	149.46	Not Sampled: Well Sampled Annually							
MW-2	02/03/00	157.92	7.75	150.17	<50	<0.5	<0.5	<0.5	<1	<3	1.0	NP
MW-3 *	01/31/96	153.64	7.02	146.62	140	20	0.87	11	14	NA	NM	
MW-3 *	04/10/96	153.64	7.82	145.82	84	2.4	<0.5	1.9	1.1	NA	NM	
MW-3 *	07/16/96	153.64	6.80	146.84	<50	2.2	<0.5	<0.5	<0.5	<2.5	NM	
MW-3 *	10/14/96	153.64	7.67	145.97	<50	1.2	<0.5	<0.5	0.81	2.9	NM	
MW-3 *	03/27/97	153.64	7.62	146.02	<50	0.94	<0.5	0.9	0.63	<2.5	NM	
MW-3 *	05/27/97	153.64	6.72	146.92	Not Sampled: Well Sampled Semiannually							
MW-3 *	08/12/97	153.64	8.20	145.44	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NM	
MW-3 *	11/17/97	153.64	7.64	146.00	Not Sampled: Well Sampled Semiannually							
MW-3 *	03/18/98	153.64	5.14	148.50	<50	<0.5	<0.5	<0.5	<0.5	<3	4.0	P
MW-3 *	05/12/98	153.64	5.53	148.11	Not Sampled: Well Sampled Semiannually							
MW-3 *	07/27/98	153.64	7.63	146.01	74	<0.5	<0.5	<0.5	<0.5	<3	1.7	NP
MW-3 *	10/15/98	153.64	7.46	146.18	Not Sampled: Well Sampled Semiannually							
MW-3 *	02/18/99	153.64	5.85	147.79	Not Sampled							
MW-3 *	05/24/99	153.64	7.00	146.64	<50	<0.5	<0.5	<0.5	<0.5	4	6.0	NP
MW-3 *	08/27/99	153.64	7.16	146.48	<50	<0.5	<0.5	<0.5	<0.5	<3	16.57	NP
MW-3 *	10/26/99	153.64	7.79	145.85	<50	<0.5	<0.5	<0.5	<1	<3	14.86	NP
MW-3 *	02/03/00	153.64	7.11	146.53	<50	<0.5	<0.5	<0.5	<1	<3	1.0	NP

Table 1
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MTBE)

ARCO Service Station 0374
6407 Telegraph Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)		
MW-4	01/31/96	156.53	5.64	150.89	230	23	2.2	3.7	32	NA	NM			
MW-4	04/10/96	156.53	6.66	149.87	7,300	1,600	350	350	830	NA	NM			
MW-4	07/16/96	156.53	7.73	148.80	5,600	1,100	160	240	520	150	NM			
MW-4	10/14/96	156.53	8.55	147.98	4,500	860	72	160	340	<62	NM			
MW-4	03/27/97	156.53	7.15	149.38	25,000	5,200	760	850	2,600	<250	NM			
MW-4	05/27/97	156.53	7.75	148.78	Not Sampled: Well Sampled Semiannually									
MW-4	08/12/97	156.53	8.46	148.07	4,800	950	40	140	210	170	NM			
MW-4	11/17/97	156.53	8.24	148.29	Not Sampled: Well Sampled Semiannually									
MW-4	03/16/98	156.53	5.32	151.21	<50	<0.5	<0.5	<0.5	<0.5	<3	1.5	P		
MW-4	05/12/98	156.53	6.38	150.15	Not Sampled: Well Sampled Semiannually									
MW-4	07/27/98	156.53	7.36	149.17	21,000	6,100	390	810	1,600	<300	0.5	NP		
MW-4 *	10/15/98	156.53	8.30	148.23	Not Sampled: Well Sampled Semiannually									
MW-4 *	02/18/99	156.53	4.39	152.14	Not Sampled									
MW-4 *	05/24/99	156.53	7.45	149.08	18,000	5,600	350	410	1,300	<300	1.0	NP		
MW-4 *	08/27/99	156.53	8.07	148.46	12,000	3,200	170	490	810	65	1.32	NP		
MW-4 *	10/26/99	156.53	8.72	147.81	12,000	3,100	130	450	680	12	1.39	NP		
MW-4 *	02/03/00	156.53	7.41	149.12	9,300	2,800	96	330	400	73	1.0	NP		
MW-5	01/31/96	151.33	8.64	142.69	<50	<0.5	<0.5	<0.5	<0.5	NA	NM			
MW-5	04/10/96	151.33	N/A	--	<50	<0.5	<0.5	<0.5	<0.5	NA	NM			
MW-5	07/16/96	151.33	8.15	143.18	<50	0.79	1.3	<0.5	<0.5	<2.5	NM			
MW-5	10/14/96	151.33	7.92	143.41	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NM			
MW-5	03/27/97	151.33	7.75	143.58	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NM			
MW-5	05/27/97	151.33	8.16	143.17	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NM			
MW-5	08/12/97	151.33	----- Well Inaccessible -----											
MW-5	11/17/97	151.33	8.75	142.58	<50	<0.5	<0.5	<0.5	<0.5	<2.5	4.0	NP		
MW-5	03/16/98	151.33	6.90	144.43	<50	<0.5	<0.5	<0.5	<0.5	<3	1.5	P		

Table 1
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MTBE)

ARCO Service Station 0374
6407 Telegraph Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)	
MW-5	05/12/98	151.33	7.24	144.09	<50	<0.5	<0.5	<0.5	<0.5	<3	2.2	P	
MW-5	07/27/98	151.33	7.91	143.42	<50	<0.5	<0.5	<0.5	<0.5	<3	1.3	P	
MW-5	10/15/98	151.33	8.31	143.02	<50	<0.5	<0.5	<0.5	0.6	<3	3.0	P	
MW-5	02/18/99	151.33	7.25	144.08	<50	<0.5	<0.5	<0.5	<0.5	<3	2.0	P	
MW-5	05/24/99	151.33	7.52	143.81	<50	<0.5	<0.5	<0.5	<0.5	<3	2.0	NP	
MW-5	08/27/99	151.33	8.31	143.02	<50	<0.5	<0.5	<0.5	<0.5	<3	2.28	P	
MW-5	10/26/99	151.33	8.61	142.72	<50	<0.5	<0.5	<0.5	<1	<3	1.99	P	
MW-5	02/03/00	151.33	10.09	141.24	<50	<0.5	<0.5	<0.5	<1	<3	1.0	NP	
MW-6	01/31/96	153.84	5.15	148.69	Not Sampled: Well Sampled Annually								
MW-6	04/10/96	153.84	4.58	149.26	Not Sampled: Well Sampled Annually								
MW-6	07/16/96	153.84	4.96	148.88	<50	<0.5	<0.5	<0.5	<0.5	150	NM		
MW-6	10/14/96	153.84	6.15	147.69	Not Sampled: Well Sampled Annually								
MW-6	03/27/97	153.84	4.40	149.44	Not Sampled: Well Sampled Annually								
MW-6	05/27/97	153.84	4.90	148.94	Not Sampled: Well Sampled Annually								
MW-6	08/12/97	153.84	5.43	148.41	<50	<0.5	<0.5	<0.5	<0.5	39	NM		
MW-6	11/17/97	153.84	5.87	147.97	Not Sampled: Well Sampled Annually								
MW-6	03/16/98	153.84	4.52	149.32	Not Sampled: Well Sampled Annually								
MW-6	05/12/98	153.84	4.42	149.42	Not Sampled: Well Sampled Annually								
MW-6	07/27/98	153.84	4.75	149.09	<50	<0.5	<0.5	<0.5	<0.5	18	0.9	P	
MW-6	10/15/98	153.84	5.75	148.09	Not Sampled: Well Sampled Annually								
MW-6	02/18/99	153.84	3.93	149.91	Not Sampled: Well Sampled Annually								
MW-6	05/24/99	153.84	4.32	149.52	<50	<0.5	<0.5	<0.5	<0.5	6	2.0	NP	
MW-6	08/27/99	153.84	5.72	148.12	<50	<0.5	<0.5	<0.5	<0.5	8	1.02	NP	
MW-6	10/26/99	153.84	5.94	147.90	Not Sampled: Well Sampled Annually							2.51	
MW-6	02/03/00	153.84	5.44	148.40	<50	<0.5	<0.5	<0.5	<1	<3	1.0	NP	

Table 1
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MTBE)

ARCO Service Station 0374
6407 Telegraph Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)	MTBE (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MSL	= Mean sea level.											
TOC	= Top of casing.											
TPPH	= Total purgeable petroleum hydrocarbons by modified EPA method 8015.											
BTEX	= Benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 10/26/99).											
MTBE	= Methyl tert -Butyl Ether by EPA method 8021B (EPA method 8020 prior to 10/26/99).											
ppb	= Parts per billion.											
ppm	= Parts per million.											
<	= Less than laboratory detection limit stated to the right.											
NA	= Not analyzed.											
NM	= Not measured.											
N/A	= Not available.											
*	= ORCs installed in well MW-3 beginning 11/14/95 and in well MW-4 beginning 09/29/98. Please refer to Appendix D for details.											

Table D-1
Intrinsic Bioremediation Evaluation and Enhancement Data

ARCO Service Station 0374
6407 Telegraph Avenue, Oakland, California

Well	Date Sampled	Field Analyses					Laboratory Analyses										
		Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	D.O. (mg/L)	Ferrous Iron (mg/L)	Total Alkalinity (mg CaCO ₃ /L)	B.O.D. (mg/L)	Carbon Dioxide (mg/L)	C.O.D. (mg/L)	Methane (%)	Nitrate as Nitrate (mg/L)	Nitrite as Nitrite (mg/L)	Sulfate (mg/L)	TPH as Gasoline (µg/L)	Total BTEX (µg/L)	
MW-3	11/14/95	**	65.5*	6.76*	508*	7.17	N/A	NS	NS	NS	NS	NS	6.6	<1.0	NS	140	46
MW-3	06/06/96	**	66.2	7.38	700	12.28	N/A	NS	NS	NS	NS	NS	NS	NS	NS	84†	5.4†
MW-3	07/16/96		67.8	7.08	1,010	8.73	0.0	280	1.8	270	44	<0.020	<1.0	NS	78	<50	2.2
MW-3	01/21/97	**	59	N/A	N/A	11.15	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-3	08/12/97	**	74.4	6.65	600	6.7	1.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-3	11/17/97		N/A	N/A	N/A	12.0	0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-3	03/16/98		68.5	7.75	806	4.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-3	05/12/98		NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-3	07/27/98		68.1	6.81	904	1.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	74	ND
MW-3	09/29/98	**	ORC installed														
MW-3	10/15/98		NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-3	02/18/99		NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-3	05/24/99		66.2	7.24	799	6.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-3	07/26/99	**	ORC installed														
MW-3	08/27/99		69.0	7.97	782	16.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-3	10/26/99		66.5	5.93	794	14.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-3	02/03/00		62.0	7.42	7,877	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	
MW-4	07/16/96		69.5	6.72	1,370	3.20	4.20	420	NS	470	NS	0.11	<1.0	NS	18	5,600	2,020
MW-4	03/16/98		66.2	6.89	1,411	1.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-4	05/12/98		NM	NM	NM	NM	N/A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-4	07/27/98		70.5	6.34	1,434	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	21,000	8,900
MW-4	09/29/98	**	ORC installed														
MW-4	10/15/98		NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-4	02/18/99		NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-4	05/24/99		67.6	6.72	1,509	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18,000	7,660
MW-4	07/26/99	**	ORC installed														

Table D-1
Intrinsic Bioremediation Evaluation and Enhancement Data

ARCO Service Station 0374
6407 Telegraph Avenue, Oakland, California

Well	Date Sampled	Field Analyses					Laboratory Analyses									
		Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	D.O. (mg/L)	Ferrous Iron (mg/L)	Total Alkalinity (mg CaCO3/L)	B.O.D. (mg/L)	Carbon Dioxide (mg/L)	C.O.D. (mg/L)	Methane (%)	Nitrate as Nitrate (mg/L)	Nitrite as Nitrite (mg/L)	Sulfate (mg/L)	TPH as Gasoline (µg/L)	Total BTEX (µg/L)
MW-4	08/27/99	70.5	7.09	1,469	1.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12,000	4,670
MW-4	10/26/99	66.8	7.05	1,565	1.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12,000	4,360
MW-4	02/03/00	64.1	7.27	1,506	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9,300	3,626
MW-5	07/16/96	70.4	6.85	690	6.80	0.0	170	NS	180	NS	<0.020	<1.0	NS	35	<50	1.1
MW-5	03/16/98	69.5	7.19	584	1.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	05/12/98	65.9	7.04	619	2.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	07/27/98	73.6	7.39	569	1.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	10/15/98	65.8	6.88	626	3.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	0.6
MW-5	02/18/99	63.4	6.98	616	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	05/24/99	66.7	6.70	591	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	08/27/99	72.6	7.10	624	2.28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	10/26/99	70.4	5.95	601	1.99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-5	02/03/00	62.1	7.31	6,072	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-6	06/06/96	N/A	N/A	N/A	3.47	N/A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	03/16/98	N/A	N/A	N/A	N/A	N/A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	05/12/98	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	07/27/98	70.3	6.67	638	0.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-6	10/15/98	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	02/18/99	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	05/24/99	65.5	6.62	713	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-6	08/27/99	73.0	7.12	589	1.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND
MW-6	10/26/99	NM	NM	NM	2.51	NM	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	02/03/00	61.7	7.32	5,091	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND

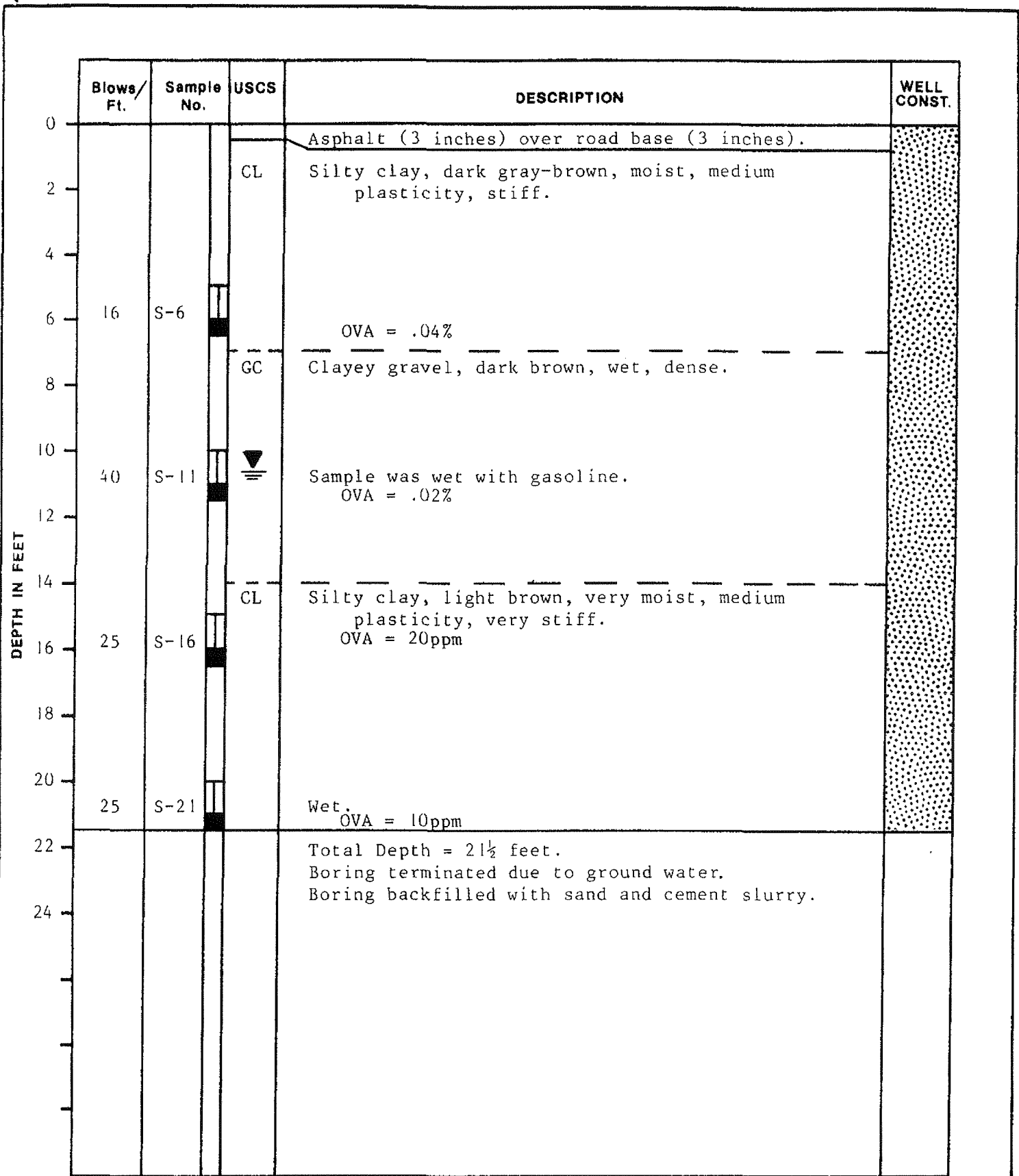
Table D-1
Intrinsic Bioremediation Evaluation and Enhancement Data

ARCO Service Station 0374
6407 Telegraph Avenue, Oakland, California

Well	Date Sampled	<u>Field Analyses</u>					<u>Laboratory Analyses</u>								
		Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	D.O. (mg/L)	Ferrous Iron (mg/L)	Total Alkalinity (mg CaCO ₃ /L)	B.O.D. (mg/L)	Carbon Dioxide (mg/L)	C.O.D. (mg/L)	Methane (%)	Nitrate as Nitrate (mg/L)	Nitrite as Nitrite (mg/L)	Sulfate (mg/L)	TPH as Gasoline (µg/L)
D.O. = Dissolved oxygen B.O.D = Biochemical oxygen demand C.O.D = Chemical oxygen demand TPPH = Total purgeable petroleum hydrocarbons BTEX = Benzene, toluene, ethylbenzene, and xylenes deg F = Degrees Fahrenheit µmhos = Micromhos mg/L = Milligrams per liter						µg/L	= Micrograms per liter								
						NM	= not measured								
						NS	= Not sampled								
						ND	= Not detected								
						N/A	= Not available								
						*	Field measurements collected on November 2, 1995.								
						**	ORC installed								
						†	From April 10, 1996 groundwater monitoring event.								

ATTACHMENT C

Soil Boring/Well Logs



Applied GeoSystems
41253 Mission Blvd. Suite B Fremont, CA 94539 415-651-1906

LOG OF BORING B - 1

ARCO Station No. 374

Telegraph and Alcatraz Avenues

Oakland, California

PLATE

P-4

PROJECT NO. 18039-1

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
	0				Asphalt (3 inches) over road base (3 inches).
2			CL	Silty clay, with trace sand, gray-brown, damp, medium plasticity, very stiff.	
6	29	S-6		OVA = .05%	
8			SC	Clayey sand, gray-brown, wet, medium dense.	
10	18	S-9.5		OVA = 100ppm	
14		S-14		No sample recovered.	
16				Total Depth = 14½ feet. Boring terminated due to ground water. Boring backfilled with sand and cement slurry.	



41255 Miramar Blvd. Suite B Fremont, CA 94539 (415) 851-1906

LOG OF BORING B - 2
ARCO Station No. 374
Telegraph and Alcatraz Avenues
Oakland, California

PLATE
P-5

PROJECT NO. **18039-1**

DEPTH IN FEET	Blows/ Ft.	Sample No.	USCS	DESCRIPTION	WELL CONST.
	0				Asphalt (3 inches) over road base (3 inches).
2			CL	Silty clay, with sand and gravel, gray-brown, damp, medium plasticity, stiff.	
6	13	S-6		OVA = 41ppm	
10	16	S-10		Silty clay, very moist. OVA = 82ppm	[Dotted pattern]
12				Total Depth = 11 feet. Boring backfilled with sand and cement slurry.	
14					
16					

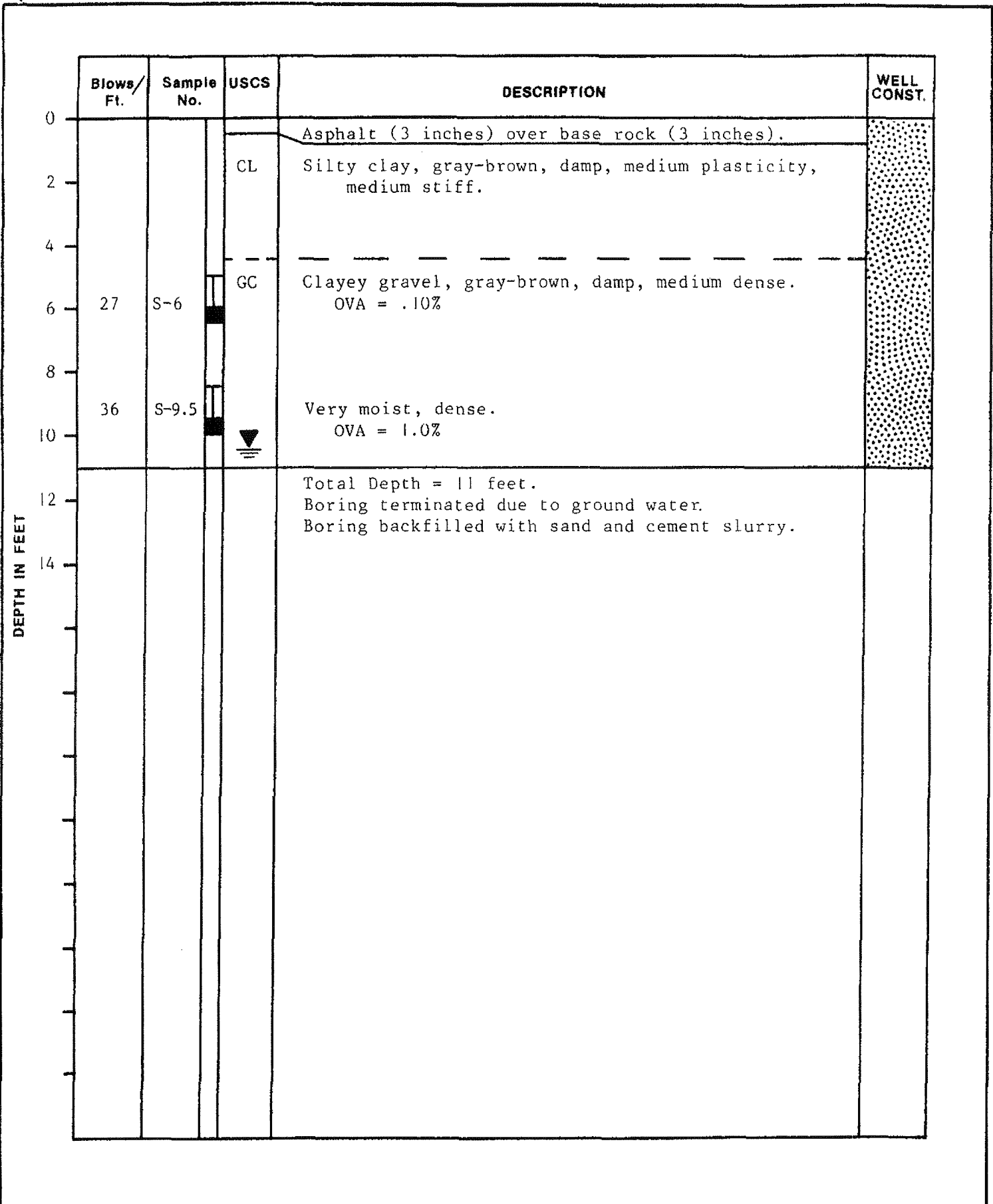


Applied GeoSystems
33255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

LOG OF BORING B - 3
ARCO Station No. 374
Telegraph and Alcatraz Avenues
Oakland, California

PLATE
P-6

PROJECT NO. **18039-1**



Applied GeoSystems
 41255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

LOG OF BORING B - 4
 ARCO Station No. 374
 Telegraph and Alcatraz Avenues
 Oakland, California

PLATE
P-7

PROJECT NO. **18039-1**

Total depth of boring: 28-1/2 feet **Diameter of boring:** 11 inches **Date drilled:** 7-6-89
Casing diameter: 4 inches **Length:** 27 feet **Slot size:** 0.020-inch
Screen diameter: 4 inches **Length:** 20 feet **Material type:** Sch 40 PVC
Drilling Company: Kviihaug Drilling Company, Inc. **Driller:** Rod and Leroy
Method Used: Hollow-Stem Auger **Field Geologist:** Becky and Keith

Signature of Registered Professional: _____

Registration No.: _____ **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt.	
2				CL	Silty clay, dark brown, slightly damp, medium plasticity, very stiff, rootlets, minor iron staining.	
4	S-3.5	4 12 18	0			
8	S-8.5	3 5 12	110	▽	Sandy clay, grading to clay with gravel, some mottling, slight plasticity, stiff, noticeable odor.	
12				▽		
14	S-13.5	15 18 20	81		Slightly green, hard.	
18	S-18.5	8 10 12	0		Silty clay, some sand and gravel, light brown, moist, medium plasticity, very stiff.	
20					(Section continues downward)	



PROJECT NO. 18039-3

LOG OF BORING B-1/MW-1
ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California

PLATE
4

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-22	S-23	.3	0	CL	Silty clay, some sand and gravel, light brown, moist, medium plasticity, stiff.	
-23		.4				
-24		.7				
-26						
-28	S-27	.3 .5 .7	0			
-30	Total Depth = 28-1/2 feet.					
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						



PROJECT NO. 18039-3

LOG OF BORING B-1/MW-1

ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California

PLATE

5

Total depth of boring: 28-1/2 feet **Diameter of boring:** 11 inches **Date drilled:** 7-6-89
Casing diameter: 4 inches **Length:** 27 feet **Slot size:** 0.020-inch
Screen diameter: 4 inches **Length:** 20 feet **Material type:** Sch 40 PVC
Drilling Company: Kvilhaug Drilling Company, Inc. **Driller:** Rod and Leroy
Method Used: Hollow-Stem Auger **Field Geologist:** Becky and Keith
Signature of Registered Professional: _____
Registration No.: _____ **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0				CL	Sandy clay, dark brown, damp, slight plasticity, very stiff.	
4	S-3.5	6 10 12	0			
8	S-8.5	7 20 25	0	▽	Silty clay, with some gravel, light brown, damp, hard.	
14	S-13.5	5 7 15	0		Very stiff.	
18	S-18.5	7 20 25	0	▽	Silty clay with gravel, brown, moist, hard.	
20						

(Section continues downward)



PROJECT NO. 18039-3

LOG OF BORING B-2/MW-2

ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California

PLATE

6

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-22		.3		CL	Silty clay with gravel, brown, moist, hard.	[Well Const. Diagram]
-24	S-23	5 12	0		Silty clay, some fine gravel, dark brown, stiff.	
-26		.10				
-28	S-27	.20 25	0		Silty clay with sand, medium brown, slightly damp, slight plasticity, hard.	
					Total Depth = 28-1/2 feet.	
-30						
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						



PROJECT NO. 18039-3

LOG OF BORING B-2/MW-2

ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California

PLATE

7

Total depth of boring: 28-1/2 feet Diameter of boring: 11 inches Date drilled: 7-7-89
 Casing diameter: 4 inches Length: 27 feet Slot size: 0.020-inch
 Screen diameter: 4 inches Length: 20 feet Material type: Sch 40 PVC
 Drilling Company: Kvilhaug Drilling Company, Inc. Driller: Rod and Leroy
 Method Used: Hollow-Stem Auger Field Geologist: Becky and Keith

Signature of Registered Professional: _____
 Registration No.: _____ State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Concrete (4 inches) over baserock (6 inches).	
2				CL	Silty clay, with sand and some gravel, medium brown, damp, slight plasticity, stiff, rootlets.	
4	S-3.5	3 10 10	0			
8	S-8.5	2 4 8	0		Damp.	
14	S-13.5	4 6 10	8.5		Some mottling, moist.	
18	S-18.5	.6 5 12	9.1		Silty clay, minor gravel, light to medium brown, damp, medium plasticity, stiff.	
20						

(Section continues downward)



PROJECT NO. 18039-3

LOG OF BORING B-3/MW-3

ARCO Station No. 374
 6407 Telegraph Avenue
 Oakland, California

PLATE

8

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-22		.6		CL	Silty clay, minor gravel, light to medium brown, damp, medium plasticity, stiff.	[Well Const. Diagram]
-24	S-23	8 12	0		Very stiff.	
-26		.5				
-28	S-27	10 12			Silty clay with sand, slight plasticity.	
-30					Total Depth = 28-1/2 feet.	
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						



Applied GeoSystems

PROJECT NO. 18039-3

LOG OF BORING B-3/MW-3

ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California

PLATE

9

Total depth of boring: 27-1/2 feet **Diameter of boring:** 11 inches **Date drilled:** 7-7-89
Casing diameter: 4 inches **Length:** 27 feet **Slot size:** 0.020-inch
Screen diameter: 4 inches **Length:** 20 feet **Material type:** Sch 40 PVC
Drilling Company: Kvilhaug Drilling Company, Inc. **Driller:** Rod and Leroy
Method Used: Hollow-Stem Auger **Field Geologist:** Becky and Keith
Signature of Registered Professional: _____
Registration No.: _____ **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0						
2		2			CL Silty clay, some sand and fine-grained gravel, very dark brown, slightly damp, slight plasticity, stiff.	
3		3				
4	3.5	8	0			
6						
8		3			GM Sandy gravel, some silt, medium brown, very moist, medium dense, obvious odor.	
8.5		4	0			
10		10				
12						
14	S-13.5	4			GM Sandy gravel, some silt, medium brown, very moist, medium dense, obvious odor.	
14		10	41.6			
14		25				
16						
18		15			Wet, dense.	
18	S-18.5	15	0			
20		20				

(Section continues downward)



Applied GeoSystems

PROJECT NO. 18039-3

LOG OF BORING B-4/MW-4
ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California

PLATE
10

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
				GM	Sandy gravel, some silt, medium brown, very moist, medium dense.	
-22		6				
-24	S-23.5	15	0	CL	Silty clay, some sand and gravel, very stiff.	
-26		7				
-27	S-27	20	0		Grades more gravelly.	
-28					Total Depth = 27-1/2 feet.	
-30						
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						



PROJECT NO. 18039-3

LOG OF BORING B-4/MW-4 PLATE

ARCO Station No. 374
 6407 Telegraph Avenue
 Oakland, California

11

Depth of boring: 25-1/2 feet Diameter of boring: 10 inches Date drilled: 4/1/92
 Well depth: 23 feet Material type: Sch 40 PVC Casing diameter: 4 inches
 Screen interval: 10 to 23 feet Slot size: 0.020-inch
 Drilling Company: Gregg Drilling Driller: Steve Stone
 Method Used: Hollow-Stem Auger Field Geologist: Rob Campbell

Signature of Registered Professional: *Jan F. Turner*
 Registration No.: RCE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Paved street: Alcatraz Avenue	
					Asphalt (6 inches).	
				SW	Gravelly sand, gray, damp, very dense: Fill (Baserock).	
2				CL	Silty clay with trace of coarse-grained sand, dark blue-gray, damp, medium plasticity, very stiff.	
4					Color change to light brown at 4 feet.	
6	S-5.5	7 18 22	0		Color change to light brown mottled with green, hard; caliche nodules present.	
8					Color change to green at 7-1/2 feet. (Water level - 4/9/92).	
10	S-10	5 10 20	0		Color change to dark green at 10 feet, moist.	
12						
14	S-14.5	6 14 29	0	CL	Color change to light brown at 13 feet. Sandy clay with silt, light brown, very moist, medium plasticity, hard.	
16				CL	Gravelly clay with sand, light brown, very moist, low plasticity, hard.	
18				CL	Silty clay with sand, light brown, very moist, low plasticity, very stiff.	
20	S-19	8 10 12	0	SC	Clayey sand, brown, wet, medium dense.	
				CH	Silty clay, light brown, very moist, high plasticity, hard.	

(Section continues downward)



LOG OF BORING B-5/MW-5
 ARCO Station 374
 6407 Telegraph Avenue
 Oakland, California

PLATE
 4

PROJECT: 60025.05

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-22				CH	Silty clay, light brown, very moist, high plasticity, hard.	
-24	S-24.5	10 22 35	0	ML	Sandy silt with clay, brown, moist, low plasticity, hard.	
-26					Total depth = 25-1/2 feet.	
-28						
-30						
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						

RESNA
Working to Restore Nature

PROJECT 60025.05

LOG OF BORING B-5/MW-5
ARCO Station 374
6407 Telegraph Avenue
Oakland, California

PLATE

5

Depth of boring: 17 feet Diameter of boring: 10 inches Date drilled: 4/1/92
 Well depth: 15 feet Material type: Sch 40 PVC Casing diameter: 4 inches
 Screen interval: 5 to 15 feet Slot size: 0.020-inch
 Drilling Company: Gregg Drilling Driller: Steve Stone
 Method Used: Hollow-Stem Auger Field Geologist: Rob Campbell

Signature of Registered Professional: *Steve Stone*
 Registration No.: RCE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Paved Street: Irwin Court. Asphalt (7 inches).	
				SW	Gravelly sand, gray, damp, very dense: Fill (baserock).	
2				CL	Silty clay, dark brown mottled with green, moist, medium plasticity, stiff.	
4		4		▽	Color change to light brown at 3-1/2 feet. (Water level - 4/9/92)	
6	S-5.5	6 9	0	CL	Sandy clay with silt, light brown, moist, low plasticity, stiff; some organic fragments and root holes.	
8				▽		
10	S-10	11 18 25 4	0	GP	Sandy gravel with some silt, light brown, wet, dense.	
12		8 16	0			
14		6 12 18				
16	S-15	11 25 32	0	CL	Silty clay with gravel, light brown, very moist, medium plasticity, hard.	
18					Total depth = 17 feet.	
20						



PROJECT: 60025.05

LOG OF BORING B-6/MW-6
 ARCO Station 374
 6407 Telegraph Avenue
 Oakland, California

PLATE

6

SOIL BORING LOG

Boring No. B-11

Sheet: 1 of 1

Client	ARCO 374	Date	November 13, 2008
Address	6407 Telegraph Avenue Oakland, CA	Drilling Co.	RSI rig type: Geoprobe GH-40
Project No.	E374	Driller	Juan Morales
Logged By:	Scott Bittinger	Method	Direct Push borehole diameter: 3"
Well Pack	grout: 16 ft. to 0 ft.	Sampler:	Acetate Liner

Sample Type	Sample		Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
	No.	Blow Count					
				1		Airknife to 5' bgs.	
				2		mixed fill material (fine grained soil, sand, and gravel mixtures) with plastic and other debris	
				3			
				4	CL		SILTY CLAY fill material, olive brown to greenish gray, dry to moist
				5			
				6			
				7			
				8			
				9	GP	GRAVEL (crushed rock fill material), fine gravel particle size, very wet	
				10			
				11			
				12			
				13			
				14			
S	B11-15		9:03	15	CL	SILTY CLAY, grayish brown (13.5' to 15'), light olive brown with orange iron oxide stains (15'-16'), wet (13.5'-15'), moist (15'-16'), stiff	4.2
				16			
				17			
				18			
				19			
				20			

Recovery _____

Sample _____

Comments: total depth = 16'

STRATUS
ENVIRONMENTAL, INC.



SOIL BORING LOG

Boring No. B-12

Sheet: 1 of 1

Client	ARCO 374	Date	November 13, 2008
Address	6407 Telegraph Avenue	Drilling Co.	RSI rig type: Geoprobe GH-40
	Oakland, CA	Driller	Juan Morales
Project No.	E374	Method	Direct Push borehole diameter: 3"
Logged By:	Scott Bittinger	Sampler:	Acetate Liner
Well Pack	grout: 16 ft. to 0 ft.		

Sample		Blow Count	Sample		Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
Type	No.		Time	Recov.					
						1		Airknife to 5' bgs.	
						2		mixed fill material (fine grained soil, sand, and gravel mixtures) with plastic and other debris	
						3			
						4	CL	SILTY CLAY fill material, olive brown to greenish gray, dry to moist	
						5			
						6			
						7			
						8			
						9			
						10	GP	GRAVEL (crushed rock fill material), fine gravel particle size, very wet	
						11			
						12			
						13			
						14			
S	B12-15.5		9:50			15	CL	SILTY CLAY, light olive brown, damp to moist, stiff	6.3
						16			
						17			
						18			
						19			
						20			

Recovery _____

Sample _____

Comments: total depth = 16'

STRATUS
ENVIRONMENTAL, INC.



SOIL BORING LOG

Boring No. B-13

Sheet: 1 of 1

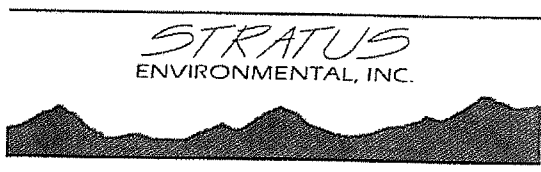
Client	ARCO 374	Date	September 21, 2009
Address	6407 Telegraph Avenue Oakland, CA	Drilling Co.	RSI Drilling rig type: Powerprobe 6600
Project No.	E374	Driller	Gilberto
Logged By:	Collin Fischer	Method	Geoprobe Hole Diameter: 2 inches
		Sampler:	Continuous Core

Type	Sample		Blow Count	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
	No.			Time	Recov.				
						1		Cleared to 6.5' bgs with air knife.	
						2			
						3	CL	Silty clay with sand, CL, (0'-5.5'), dark gray, moist, medium plasticity 60% clay, 30% silt, 10% medium grained sand	
						4			
S	B-13 4.5'		N/A	1120	100	5			18
						6			
S	B-13 6.5'		N/A	1130	100	7	SC	Clayey sand with silt and gravel, SC, (5.5'-7.5'), dark gray, moist, HC odor 50% medium grained sand, 25% clay, 15% silt, 10% medium gravel	48
						8			
S	B-13 8.5'		N/A	1515	100	9	ML	Clayey silt, ML, (7.5'-8.5'), dark gray, moist, medium plasticity, HC odor 60% silt, 40% clay	3800
						10			
						11	SC	Clayey sand with silt and gravel, SC, (8.5'-12.5'), dark gray, moist to wet 50% coarse grained sand, 25% clay, 15% silt, 10% coarse gravel	
						12			
						13			
						14			
						15	CL	Silty clay with gravel, CL, (12.5'-18'), dark yellowish brown, moist, medium plasticity 70% clay 30% silt	
						16			
						17			
						18			
						19			
						20			

Recovery

Sample

Comments: Failed water sample from temporary screen interval from 8'-18' bgs.



SOIL BORING LOG

Boring No. B-14

Sheet: 1 of 1

Client	ARCO 374	Date	September 21, 2009
Address	6407 Telegraph Avenue Oakland, CA	Drilling Co.	RSI Drilling rig type: Powerprobe 6600
Project No.	E374	Driller	Gilberto
Logged By:	Collin Fischer	Method	Geoprobe Hole Diameter: 2 inches
		Sampler:	Continuous Core

Type	Sample		Blow Count	Time	Recov.	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
	No.	Time							
						1		Cleared to 6.5' bgs with air knife.	
						2			
						3	CL	Silty clay with sand, CL, (0'-5.5'), dark gray, moist, medium plasticity 60% clay, 30% silt, 10% medium grained sand	
S	B-14 4.5'	N/A	0940	100		4			0
						5			
						6			
S	B-14 6.5'	N/A	0950	100		7	ML	Clayey silt, ML, (5.5'-7'), dark gray, moist, medium plasticity, HC odor 60% silt 40% clay	0
						8			
S	B-14 8.5'	N/A	1100	100		9		Clayey silt with sand and gravel, ML, (7'-11'), dark gray, moist, medium plasticity HC odor, 50% silt, 30% clay, 10% fine grained sand, 10% medium gravel	62
						10			
						11			
						12			
						13			
						14			
						15	SC	Clayey sand with silt and gravel, SC, dark yellowish brown, wet 50% coarse grained sand, 25% clay, 15% silt, 10% coarse gravel	
						16			
						17			
						18			
						19			
						20			

Recovery

Sample

Comments: Failed water sample from temporary screen intervals from 4.5'-14.5' and 8'-18' bgs.

STRATUS
ENVIRONMENTAL, INC.

SOIL BORING LOG

Boring No. B-15

Sheet: 1 of 1

Client	ARCO 374	Date	September 21, 2009
Address	6407 Telegraph Avenue Oakland, CA	Drilling Co.	RSI Drilling rig type: Powerprobe 6600
Project No.	E374	Driller	Gilberto
Logged By:	Collin Fischer	Method	Geoprobe Hole Diameter: 2 inches
		Sampler:	Continuous Core

Type	Sample		Blow Count	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
	No.			Time	Recov.				
						1		Cleared to 6.5' bgs with air knife.	
						2			
						3	CL	Silty clay with sand, CL, (0'-5.5'), dark gray, moist, medium plasticity 60% clay, 30% silt, 10% medium grained sand	
S	B-15 4.5'		N/A	1015	100	4			163
						5			
						6			
S	B-15 6.5'		N/A	1025	100	7			82
						8	ML	Clayey silt, ML, (5.5'-9.5'), dark gray, moist, medium plasticity, HC odor 60% silt, 40% clay	
S	B-15 8.5'		N/A	1210	100	9			146
						10			
						11			
						12	SC	Clayey sand with silt and gravel, SC, (9.5'-11.5'), dark gray, wet, HC odor 50% medium grained sand, 25% clay, 15% silt, 10% coarse gravel	
						13			
						14		Clayey sand with silt and gravel, SC, (11.5'-15'), dark yellowish brown, moist 50% medium to coarse grained sand, 25% clay, 15% silt, 10% coarse gravel	
						15			
						16			
						17	CL	Silty clay, CL, (15'-18'), dark yellowish brown, moist, medium plasticity 70% clay, 30% silt	
						18			
						19			
						20			

Recovery

Sample

Comments: Water sample taken from temporary screen interval (8'-18') bgs.

STRATUS
ENVIRONMENTAL, INC.

PROJECT NAME: BP/ARCO 374 SITE ADDRESS: 6407 Telegraph Ave., Oakland, CA

PROJECT NUMBER: 06-88-602 LEGAL DESC: _____ APN: _____

LOGGED BY: Aaron Sonerholm FACILITY ID OR WAIVER: _____ NOI NUMBER: _____

DATE: 11/24/2010 START: 0745 DRILLING COMPANY: Gregg DRILLER: Jason

WELL ID: B-16/MW-7 STOP: 1015 DRILLING METHOD: Hollow Stem Auger SAMPLE METHOD: Split Spoon

DEPTH (FEET)	MONITOR WELL CONSTRUCTION DIAMETER: 4"	SAMPLE ID	PID	MOISTURE			COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
1	GROUT										
2	BENTONITE										
3		MW-7-3	0.0 ppm	Moist		Gray to Dk. Gray		Silty clay - clayey silt with sand		CL	
4											
5		MW-7-5	0.0 ppm								
6		MW-7-6	8.7 ppm					Clayey silt with some sand and gravel		ML	
7											
8	#2/12 SAND	MW-7-8	385 ppm	Moist		Gray - Dk. gray	Stiff	Clayey silt with sand grading to silty sand and gravel			
9											
10		MW-7-9.5	0.0 ppm	Moist		Brown - Reddish brown	Med. Dense	Sand, fine grained poorly graded with trace silt		SP	
11		MW-7-11	9.4 ppm			Brown Dark brown		Silty sand with gravel		SM	
12											
13		MW-7-12.5	0.0 ppm	Very moist			Very stiff	Clayey silt and sand and gravel		CL	
14		MW-7-14	0.0 ppm								
15											
16		MW-7-15.5	0.0 ppm					Silty sands with gravels, fine to coarse grained		SM	
17		MW-7-17	0.0 ppm								
18	SCREEN INTERVAL 0.01"	MW-7-18.5	0.0 ppm	Very moist to wet			Stiff	Wet at 18 feet Silty clay with gravel		CL	
19											
20		MW-7-20	0.0 ppm								

TOTAL BORING DEPTH: 20.0' PAGE NO: 1 OF 1 ESTIMATED GROUNDWATER DEPTH: 7.44'

BROADBENT & ASSOCIATES, INC. LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

PROJECT NAME: BP/ARCO 374 SITE ADDRESS: 6407 Telegraph Ave., Oakland, CA

PROJECT NUMBER: 06-88-602 LEGAL DESC: _____ APN: _____

LOGGED BY: Aaron Sonerholm FACILITY ID OR WAIVER: _____ NOI NUMBER: _____

DATE: 11/23/2010 START: 1300 DRILLING COMPANY: Gregg DRILLER: Jason

WELL ID: B-17/MW-8 STOP: 1700 DRILLING METHOD: Hollow Stem Auger SAMPLE METHOD: Split Spoon

DEPTH (FEET)	MONITOR WELL CONSTRUCTION DIAMETER: 4"	SAMPLE ID	PID	MOISTURE			COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
1	GROUT										
2											
3	BENTONITE	MW-8-3	14.8 ppm					Silty clay with sand	CL		
4											
5	#2/12 SAND	MW-8-5	26.3 ppm								
6		MW-8-6	79.0 ppm					Clayey silt with fine to coarse sand and gravel	ML		
7											
8		MW-8-8	563 ppm	▼ Moist	Greenish gray to dk. gray	Stiff					
9											
10		MW-8-9.5	334 ppm		Brown - Reddish brown	Med. dense		Sand, poorly graded, fine grained with trace silt	SP		
11		MW-8-11	710 ppm					Silty sand with occasional gravel	SM		
12		MW-8-12.5	8.1 ppm	Moist	Brown with greenish gray	Very stiff		Clayey silt	ML		
13											
14		MW-8-14	0.0 ppm		Brown - reddish brown						
15	MW-8-15.5	0.0 ppm	Very moist to wet	Greenish gray	Med. dense		Silty sand with gravel	SM			
16			▽				Wet at 16.5 feet				
17	MW-8-17	0.0 ppm									
18	SCREEN INTERVAL 0.01"	MW-8-18.5	0.0 ppm	Moist		Stiff		Silty Clay with fine to coarse grained sand	CI		
19											
20		MW-8-20	0.0 ppm		Brown						

TOTAL BORING DEPTH: 20.0' PAGE NO: 1 OF 1 ESTIMATED GROUNDWATER DEPTH: 7.73'

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.



BROADBENT & ASSOCIATES, INC.

ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

PROJECT NAME: BP/ARCO 374

SITE ADDRESS: 6407 Telegraph Ave., Oakland, CA

PROJECT NUMBER: 06-88-602

LEGAL DESC: _____

APN: _____

LOGGED BY: Aaron Sonerholm

FACILITY ID OR WAIVER: _____

NOI NUMBER: _____

DATE: 11/23/2010

START: 0910

DRILLING COMPANY: Gregg

DRILLER: Jason

WELL ID: B-18/MW-9

STOP: 1200

DRILLING METHOD: Hollow Stem Auger

SAMPLE METHOD: Split Spoon

DEPTH (FEET)	MONITOR WELL CONSTRUCTION DIAMETER: 4"	SAMPLE ID	PID	MOISTURE			COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
1	GROUT										
2											
3	BENTONITE	MW-9-3	24.9 ppm								
4											
5	#2/12 SAND	MW-9-5	13.5 ppm								
6		MW-9-6	75.0 ppm								
7											
8		MW-9-8	1386 ppm	Moist							
9											
10											
11		MW-9-11	2475 ppm								
12		MW-9-12.5	3794 ppm								
13											
14		MW-9-14	14.5 ppm	Moist							
15	MW-9-15.5	1.6 ppm	Very moist								
16											
17	MW-9-17	0.0 ppm	Wet								
18											
19	MW-9-18.5	0.0 ppm									
20	MW-9-20	0.0 ppm									

TOTAL BORING DEPTH: 20.0'

PAGE NO: 1 OF 1



ESTIMATED GROUNDWATER DEPTH: 7.31'

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

BROADBENT & ASSOCIATES, INC. LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

PROJECT NAME: BP/ARCO 374 SITE ADDRESS: 6407 Telegraph Ave., Oakland, CA

PROJECT NUMBER: 06-88-602 LEGAL DESC: _____ APN: _____

LOGGED BY: Aaron Sonerholm FACILITY ID OR WAIVER: _____ NOI NUMBER: _____

DATE: 11/23/2010 START: 0745 DRILLING COMPANY: Gregg DRILLER: Jason

WELL ID: B-19 STOP: 0843 DRILLING METHOD: Hollow Stem Auger SAMPLE METHOD: Split Spoon

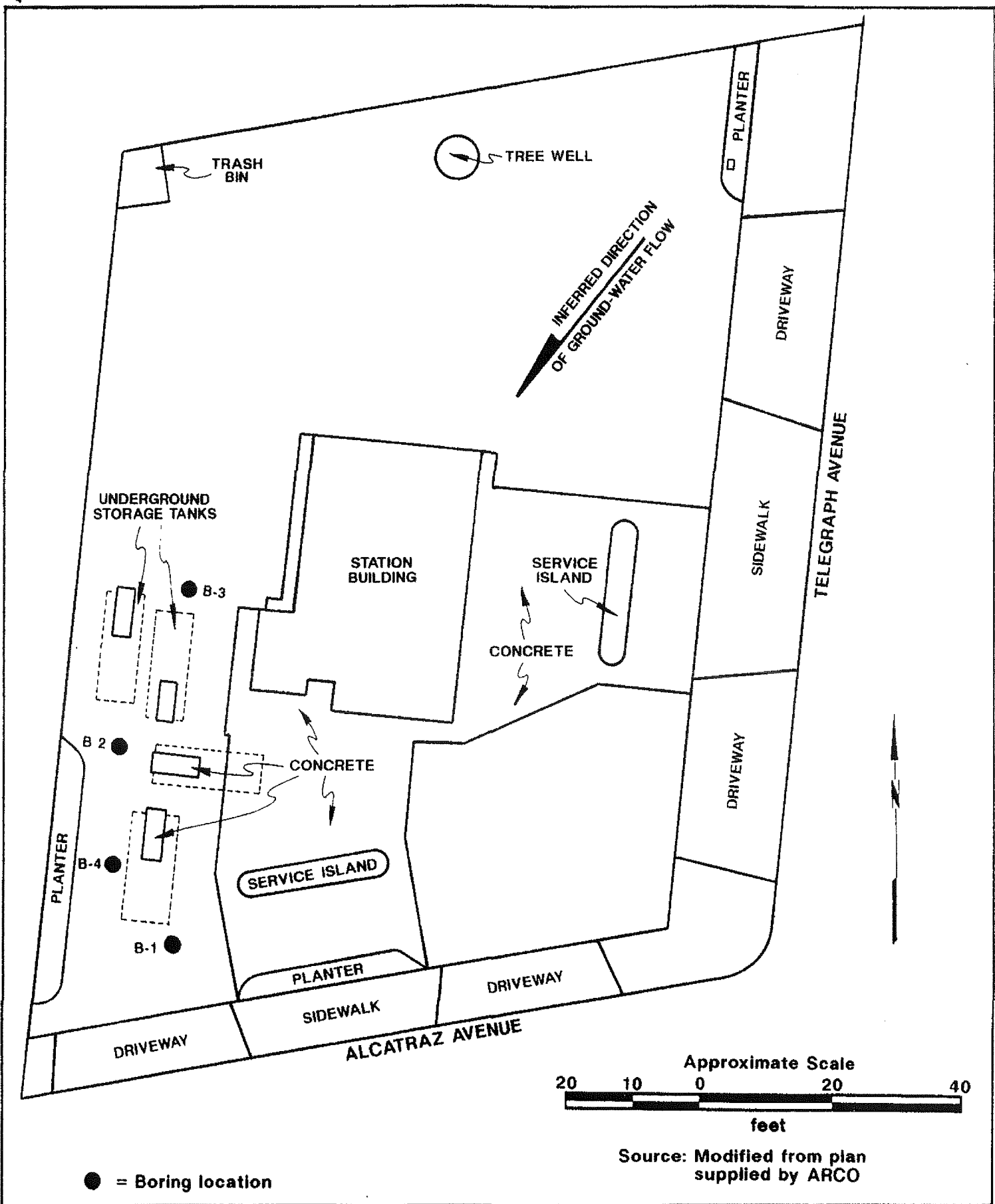
DEPTH (FEET)	SOIL BORING	SAMPLE ID	PID	MOISTURE			COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
1	GROUT										
2											
3		B-19-3	12.8 ppm		Moist	Gray to Dk. Gray	Stiff	Silty clay with sand		CL	
4											
5		B-19-5	7.0 ppm					Silty clay or clayey silt with some sand and gravel			
6		B-19-6	17.5 ppm				Stiff	Clayey silt with coarse sand			
7										ML	
8		B-19-8	4602 ppm			Gray to Dk. gray					
9											
10		B-19-9.5	5896 ppm			Brown - Reddish brown					
11		B-19-11	4558 ppm		Moist to very moist		Stiff	Silty clay - clayey silt with thin sand and fine gravel lenses		CL	
12		B-19-12.5	514 ppm								
13											
14		B-19-14	7.7 ppm			Brown - reddish brown		Silty clay - clayey silt with occasional coarse sand			
15		B-19-15.5	4.5 ppm				Very stiff	Silty sands, coarse sand and gravel		SM	
16											
17		B-19-17	0.0 ppm		Very moist to Wet	Lt. Brown		Wet at 17.5 feet			
18		B-19-18.5	0.0 ppm								
19							Stiff	Sandy silt to clayey silt		ML	
20		B-19-20	0.0 ppm					Silt - clayey silt			

TOTAL BORING DEPTH: 20.0' PAGE NO: 1 OF 1 ESTIMATED GROUNDWATER DEPTH: 8.50'

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

ATTACHMENT D

Historical Soil Assessment Data



● = Boring location

Source: Modified from plan supplied by ARCO

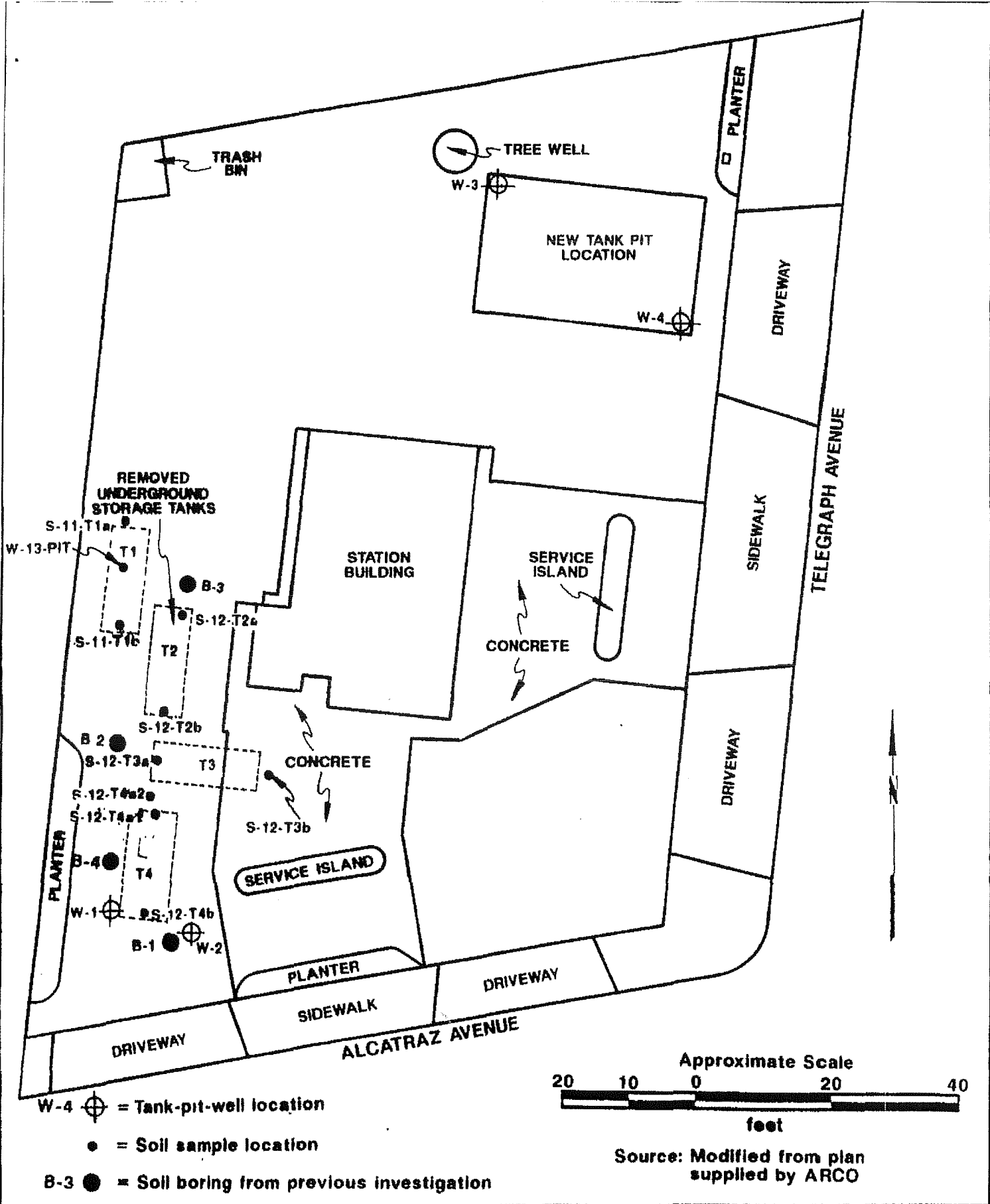


Applied GeoSystems
4125 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

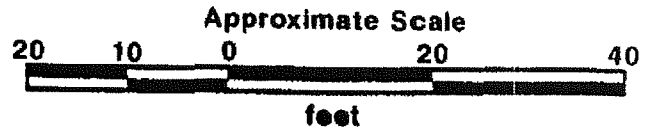
PROJECT NO. 18039-1

GENERALIZED SITE PLAN
ARCO Station No. 374
Telegraph and Alcatraz Avenues
Oakland, California

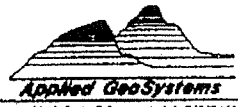
PLATE
P - 2



- W-4 ⊕ = Tank-pit-well location
- = Soil sample location
- B-3 ● = Soil boring from previous investigation



Source: Modified from plan supplied by ARCO

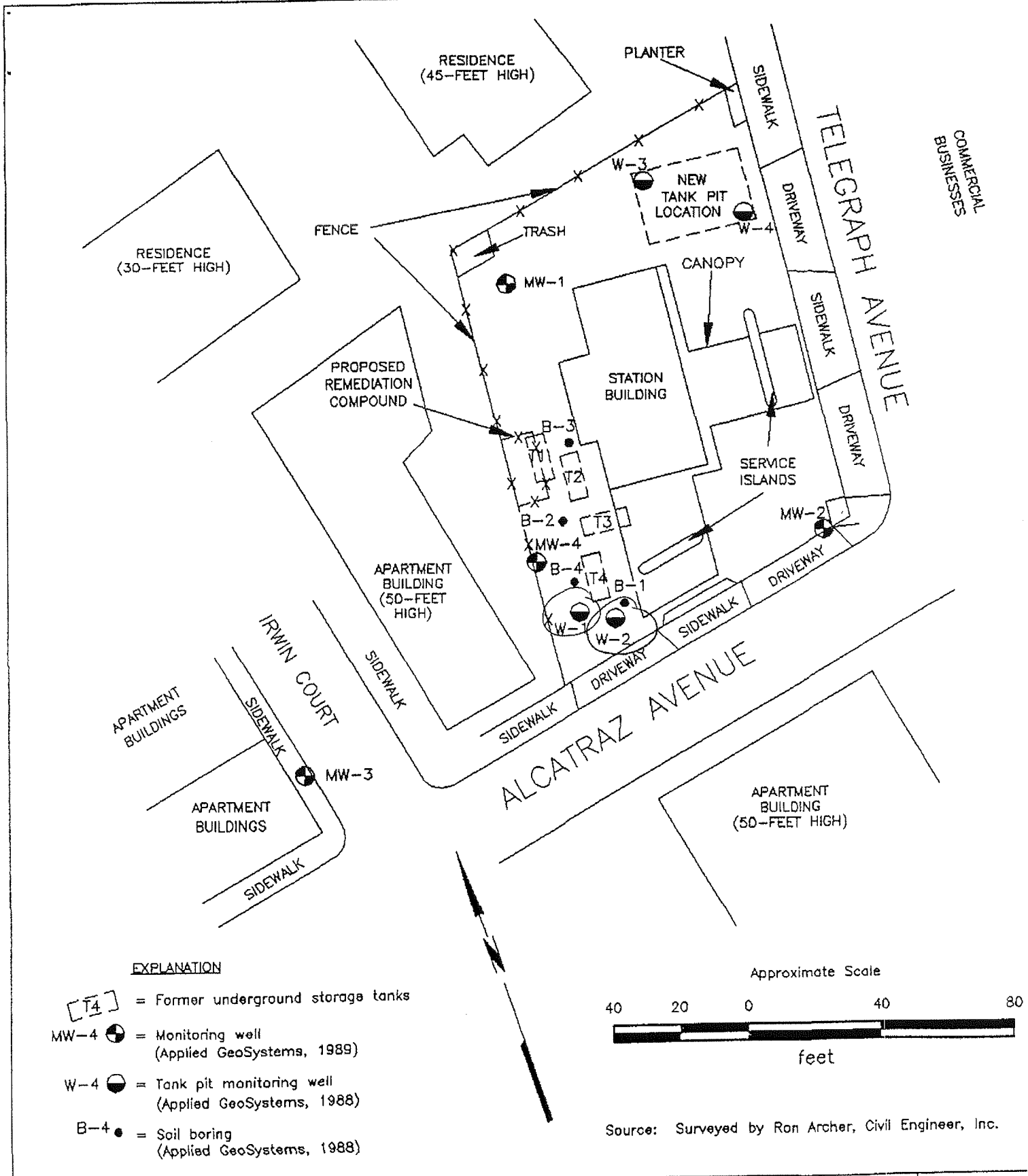


43755 Mission Blvd. Suite B Fremont, CA 94538 (415) 651-1906

GENERALIZED SITE PLAN
ARCO Station No. 374
Telegraph and Alcatraz Avenues
Oakland, California

PLATE
P - 2

PROJECT NO. 18039-2



<h1>RESNA</h1>	GENERALIZED SITE PLAN AND AREA MAP ARCO Station 374 6407 Telegraph Avenue Oakland, California	PLATE 2
	PROJECT 60025.08	

TABLE 1
 CUMULATIVE RESULTS OF LABORATORY ANALYSES
 OF SOIL SAMPLES
 ARCO Station 374
 6407 Telegraph Avenue
 Oakland, California
 (Page 1 of 2)

Sample Number	TPHg	Benzene	Toluene	Ethylbenzene	Total Xylenes
<u>April 1988 - Limited Environmental Site Assessment</u>					
S-05-B1	165	NA	NA	NA	NA
S-10-B1	48	NA	NA	NA	NA
S-05-B2	260	NA	NA	NA	NA
S-8.5-B2	60	NA	NA	NA	NA
S-05-B3	64	NA	NA	NA	NA
S-09-B3	62	NA	NA	NA	NA
S-05-B4	389	NA	NA	NA	NA
S-8.5-B4	930	NA	NA	NA	NA
<u>June 1988 - Excavation and Removal of USTs</u>					
S-11-T1A	399	14.7	20.0	20.5	91.9
S-11-T1B	8	2.57	0.74	0.39	2.75
S-12-T2A	4	0.35	0.10	0.38	0.70
S-12-T2B	75	0.91	1.77	3.61	11.92
S-12-T3A	4	2.54	0.13	<0.05	0.13
S-12-T3B	<2	<0.05	<0.05	<0.05	<0.05
S-12-T4A	1,097	16.3	34.5	81.6	188.2
S-12-T4A2**	795	23.1	24.9	67.1	130.9
S-12-T4B	3	0.76	<0.05	<0.05	<0.05
S-13-PIT	3.6	0.738	0.038	0.154	0.566
<u>July 1989 - Limited Subsurface Investigation</u>					
S-3.5-B1/MW-1	<2	<0.05	<0.05	<0.05	<0.05
S-8.5-B1/MW-1	60	0.66	2.9	0.99	5.2
S-3.5-B2/MW-2	<2	<0.05	<0.05	<0.05	<0.05
S-13.5-B2/MW-2	<2	<0.05	<0.05	<0.05	<0.05
S-18.5-B2/MW-2	<2	<0.05	<0.05	<0.05	<0.05
S-3.5-B3/MW-3	<2	<0.05	<0.05	<0.05	<0.05
S-3.5-B4/MW-4	<2	<0.05	<0.05	<0.05	<0.05
S-13.5-B4/MW-4	<2	<0.05	<0.05	<0.05	<0.05
S-18.5-B4/MW-4	<2	<0.05	<0.05	<0.05	<0.05
S-0731-B4 (1a,b,c,d)*	21	<0.05	<0.05	<0.05	0.37
<u>April 1, 1992 - Offsite Investigation</u>					
S-5.5-B5	<1.0	<0.005	<0.005	<0.005	<0.005
S-14.5-B5	<1.0	<0.005	<0.005	<0.005	<0.005
S-5.5-B6	<1.0	<0.005	<0.005	<0.005	<0.005

See notes on Page 2 of 2.

TABLE 1
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF SOIL SAMPLES
ARCO Station 374
6407 Telegraph Avenue
Oakland, California
(Page 2 of 2)

Results are in parts per million (ppm).

TPHg: Total petroleum hydrocarbons as gasoline.

<: Below the reporting limits of the analytical method.

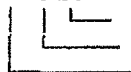
*: Signifies composite sample following aeration.

** : Resample area near sample T4A following additional excavation.

NA: Not analyzed.

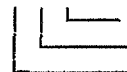
Sample designations:

S-5.5-B6

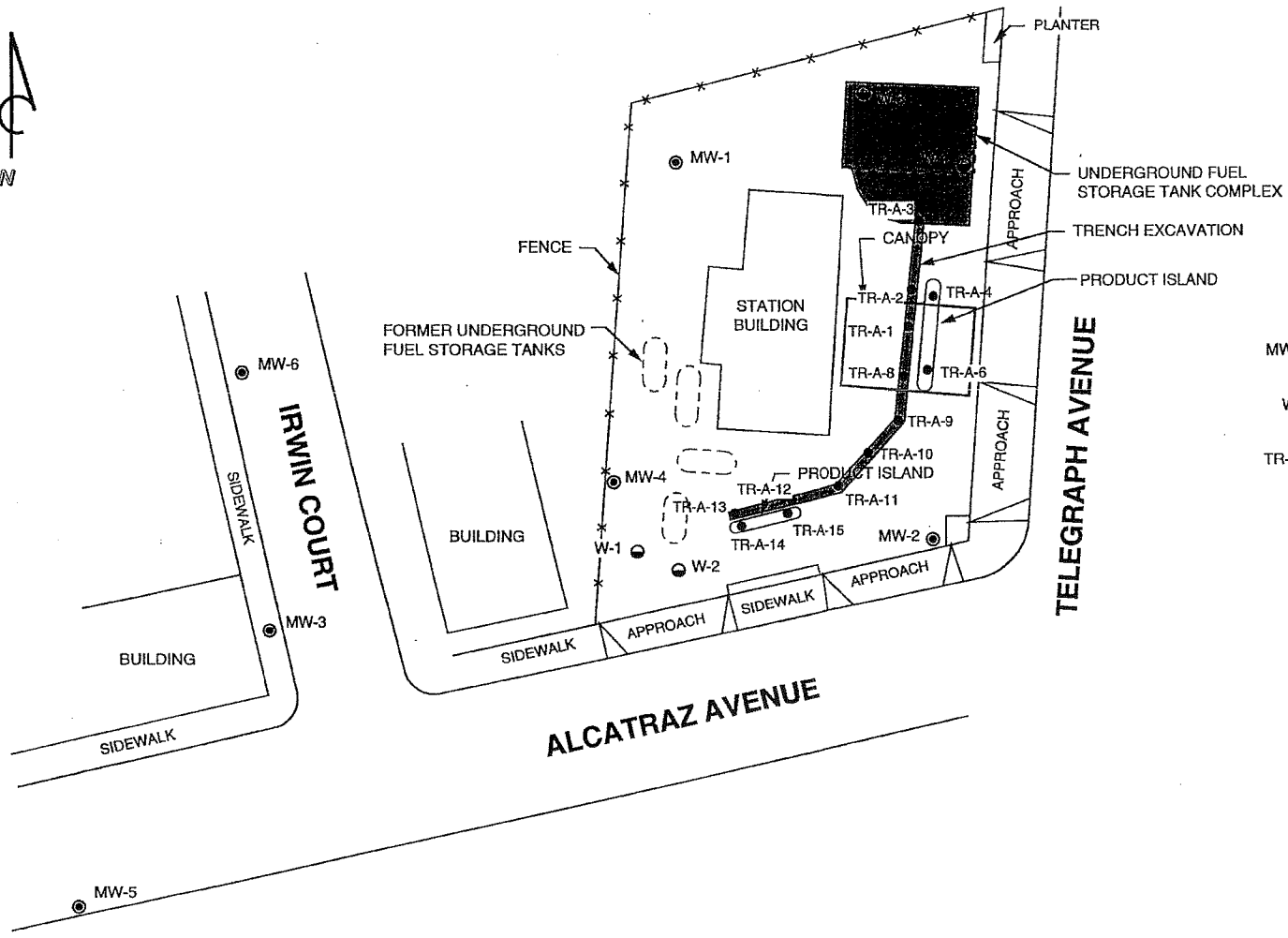


Boring number
Sample depth in feet
Soil sample

S-12-T4B



Tank number and location
Sample depth in feet
Soil sample

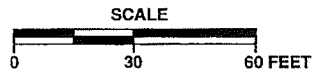


LEGEND

- MW-1 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- W-1 ● TANK PIT GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- TR-A-3 ● SOIL SAMPLE LOCATION AND DESIGNATION



PACIFIC ENVIRONMENTAL GROUP, INC.



ARCO SERVICE STATION 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

SITE MAP

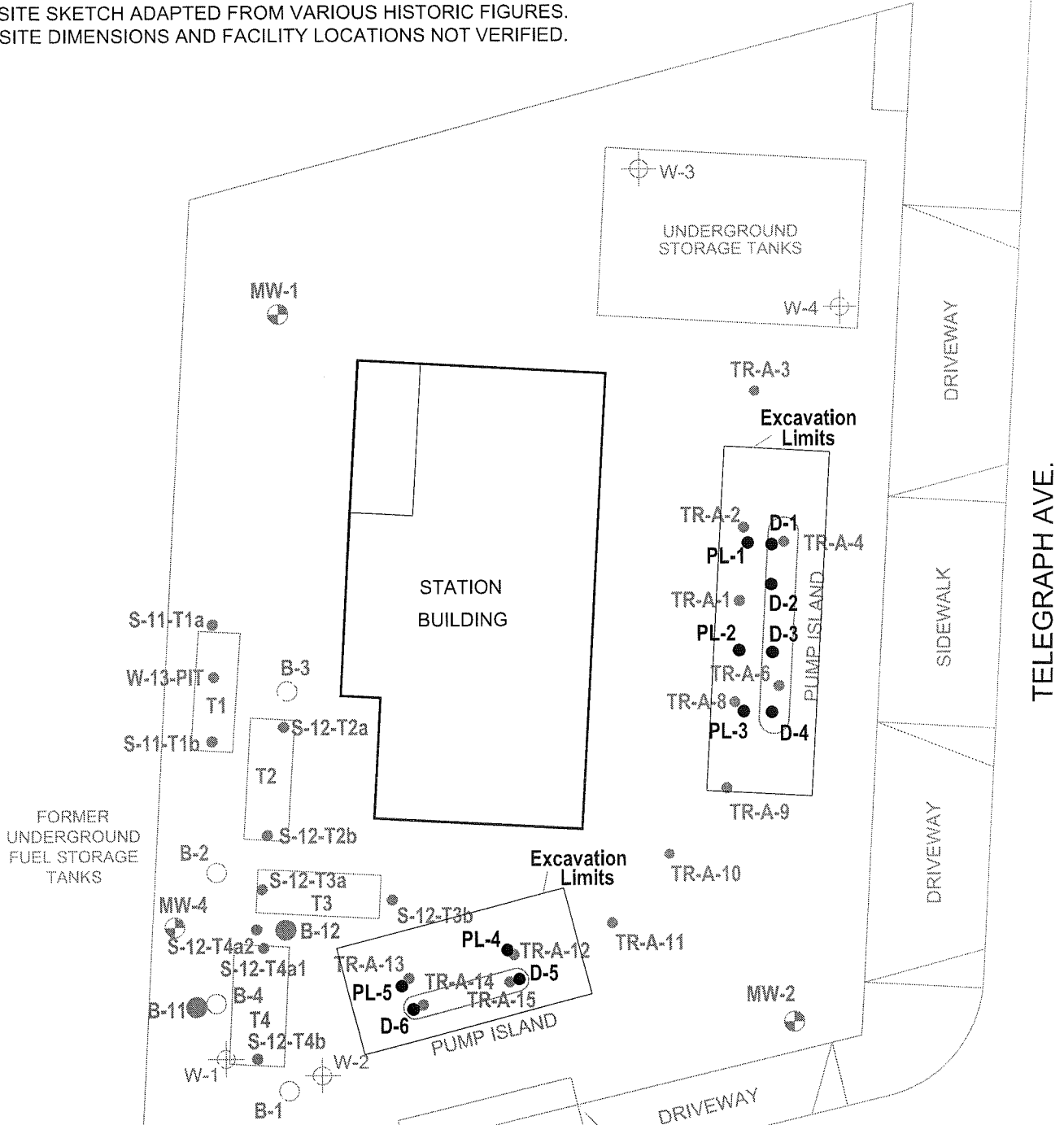
FIGURE:
2
PROJECT:
330-084.1B

Table 1
Soil Analytical Data
Product Line and Dispenser Excavation
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and Total Lead)

ARCO Service Station 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

Sample ID	Date Sampled	Sample Depth (feet)	TPPH as Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
Product Lines								
TR-A-1	9/21/95	3	NA	NA	NA	NA	NA	15
TR-A-2	9/21/95	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA
TR-A-3	9/21/95	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA
TR-A-8	9/21/95	3	65	<0.025	0.15	0.096	6.7	NA
TR-A-9	9/21/95	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA
TR-A-10	9/21/95	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA
TR-A-11	9/21/95	3	1.9	<0.0050	<0.0050	0.0050	<0.0050	NA
TR-A-12	9/21/95	3	6.2	<0.0050	<0.0050	0.0067	<0.0050	NA
TR-A-13	9/21/95	3	48	0.30	2.2	0.53	3.6	NA
Product Dispensers								
TR-A-4	9/21/95	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA
TR-A-6	9/21/95	3	140	<0.50	1.1	0.80	1.5	NA
TR-A-14	9/21/95	3	89	2.1	8.5	1.7	9.4	NA
TR-A-15	9/21/95	3	19	0.0089	0.37	0.045	1.9	NA
ppm = Parts per million NA = Not analyzed < = Indicates the concentration is below the detection limit.								

NOTE: SITE SKETCH ADAPTED FROM VARIOUS HISTORIC FIGURES.
 SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



LEGEND

- SOIL SAMPLE LOCATION
- SOIL BORING LOCATION
- ⊕ MONITORING WELL LOCATION
- ⊕ TANK-PIT WELL LOCATION
- HISTORIC BORING LOCATION
- HISTORIC SAMPLE LOCATION

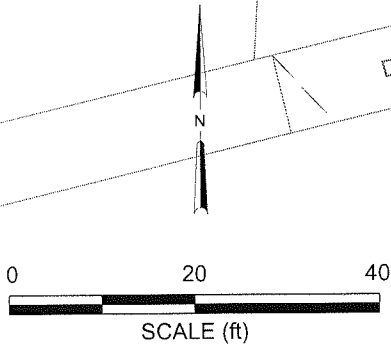


Table 1. Soil Sampling Analytical Data
Atlantic Richfield Company Station #374
6407 Telegraph Avenue, Oakland, California

Soil Sample ID	Sampling Depth (feet bgs)	Sampling Date	Laboratory Analytical Results (mg/kg)													
			GRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	TBA	DIPE	ETBE	TAME	Ethanol	1,2 DCA	EDB	Lead
D1-2.5'	2.5	12/4/2008	120	0.15	<0.10	1.8	9.7	<0.10	<1.0	<0.20	<0.20	<0.20	<10	<0.10	<0.10	4.76
D2-2.5'	2.5	12/4/2008	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0020	<0.0020	<0.0020	<0.10	<0.0010	<0.0010	5.50
D3-2.5'	2.5	12/4/2008	17	0.46	<0.10	0.91	1.8	<0.10	<1.0	<0.20	<0.20	<0.20	<10	<0.10	<0.10	11.70
D4-2.5'	2.5	12/4/2008	1,500	3.6	0.12	3.6	2.9	<0.10	<1.0	<0.20	<0.20	<0.20	<10	<0.10	<0.10	8.65
D-4 5'	5.0	12/9/2008	5,300	19	1.1	23	31	<0.50	<5.0	<1.0	<1.0	<1.0	<50	<0.50	<0.50	11.2
D5-2.5'	2.5	12/4/2008	2.9	<0.0010	0.0019	<0.0010	0.0021	0.0038	<0.010	<0.0020	<0.0020	<0.0020	<0.10	<0.0010	<0.0010	5.38
D6-2.5'	2.5	12/4/2008	1.7	0.0054	0.015	0.0037	0.021	0.0055	<0.010	<0.0020	<0.0020	<0.0020	0.19	<0.0010	<0.0010	5.81
PL1-3'	3.0	12/4/2008	8.0	<0.0010	<0.0010	<0.0010	<0.0010	0.046	0.019	<0.0020	<0.0020	0.0027	<0.10	<0.0010	<0.0010	5.49
PL2-3'	3.0	12/4/2008	<0.50	0.0059	<0.0010	<0.0010	<0.0010	<0.0010	<0.10	<0.0020	<0.0020	<0.0020	<0.10	<0.0010	<0.0010	6.03
PL3-3'	3.0	12/4/2008	6,500	18	0.74	25	12	<0.20	<2.0	<0.40	<0.40	<0.40	<20	<0.20	<0.20	12.20
PL-3 5'	5.0	12/9/2008	0.78	0.035	<0.0010	0.019	0.0021	0.012	<0.010	<0.0020	<0.0020	<0.0020	<0.10	<0.0010	<0.0010	5.43
PL4-3'	3.0	12/4/2008	26	<0.10	<0.10	0.35	<0.10	0.16	<1.0	<0.20	<0.20	<0.20	<10	<0.10	<0.10	5.16
PL5-3'	3.0	12/4/2008	15	<0.10	<0.10	0.36	0.10	<0.10	<1.0	<0.20	<0.20	<0.20	<10	<0.10	<0.10	4.89
Soil Waste Composite 1	NA	12/4/2008	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.010	<0.0020	<0.0020	<0.0020	<0.10	<0.0010	<0.0010	5.37
Soil Waste Composite 2	NA	12/4/2008	77	0.11	0.71	0.28	0.62	<0.10	<1.0	<0.20	<0.20	<0.20	<10	<0.10	<0.10	8.24

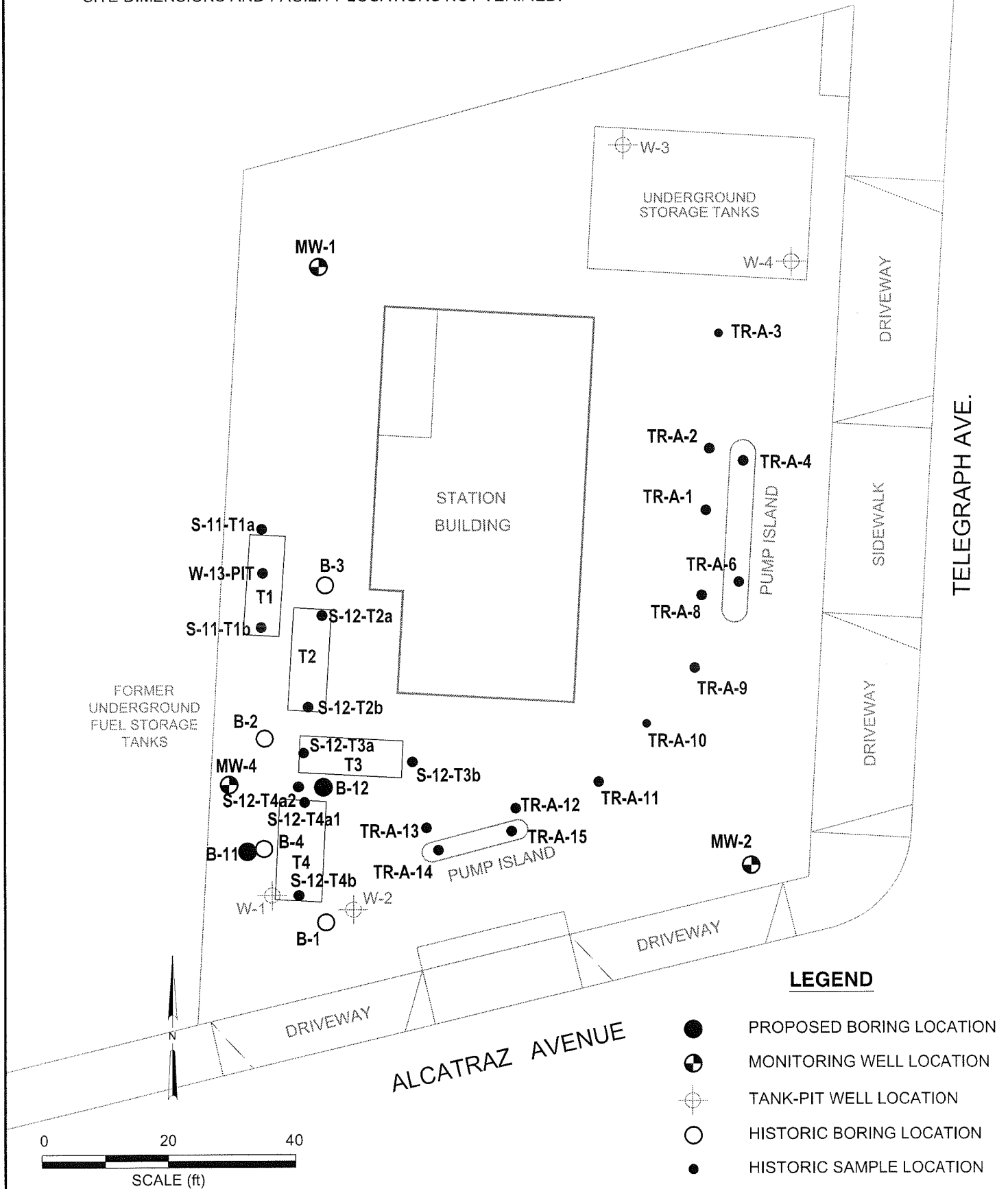
NOTES:

Concentrations detected above laboratory reporting limits are in bold

bgs = Below ground surface
mg/kg = Milligrams per kilogram
NA = Not applicable
GRO = Gasoline Range Organics
MTBE = Methyl Tert-Butyl Ether

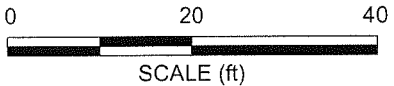
TBA = Tert-Butyl Alcohol
DIPE = Di-Isopropyl Ether
ETBE = Ethyl Tert-Butyl Ether
TAME = Tert-Amyl Methyl Ether
1,2-DCA = 1,2-Dichloroethane
EDB = 1,2-Dibromoethane

NOTE: SITE SKETCH ADAPTED FROM VARIOUS HISTORIC FIGURES.
 SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



LEGEND

- PROPOSED BORING LOCATION
- ⊕ MONITORING WELL LOCATION
- ⊕ TANK-PIT WELL LOCATION
- HISTORIC BORING LOCATION
- HISTORIC SAMPLE LOCATION



Laboratory Analytical Results from On-Site Soil Investigation, 13 November 2008
Atlantic Richfield Company Service Station #374, 6407 Telegraph Avenue, Oakland, California
ACEH Case #RO0000078

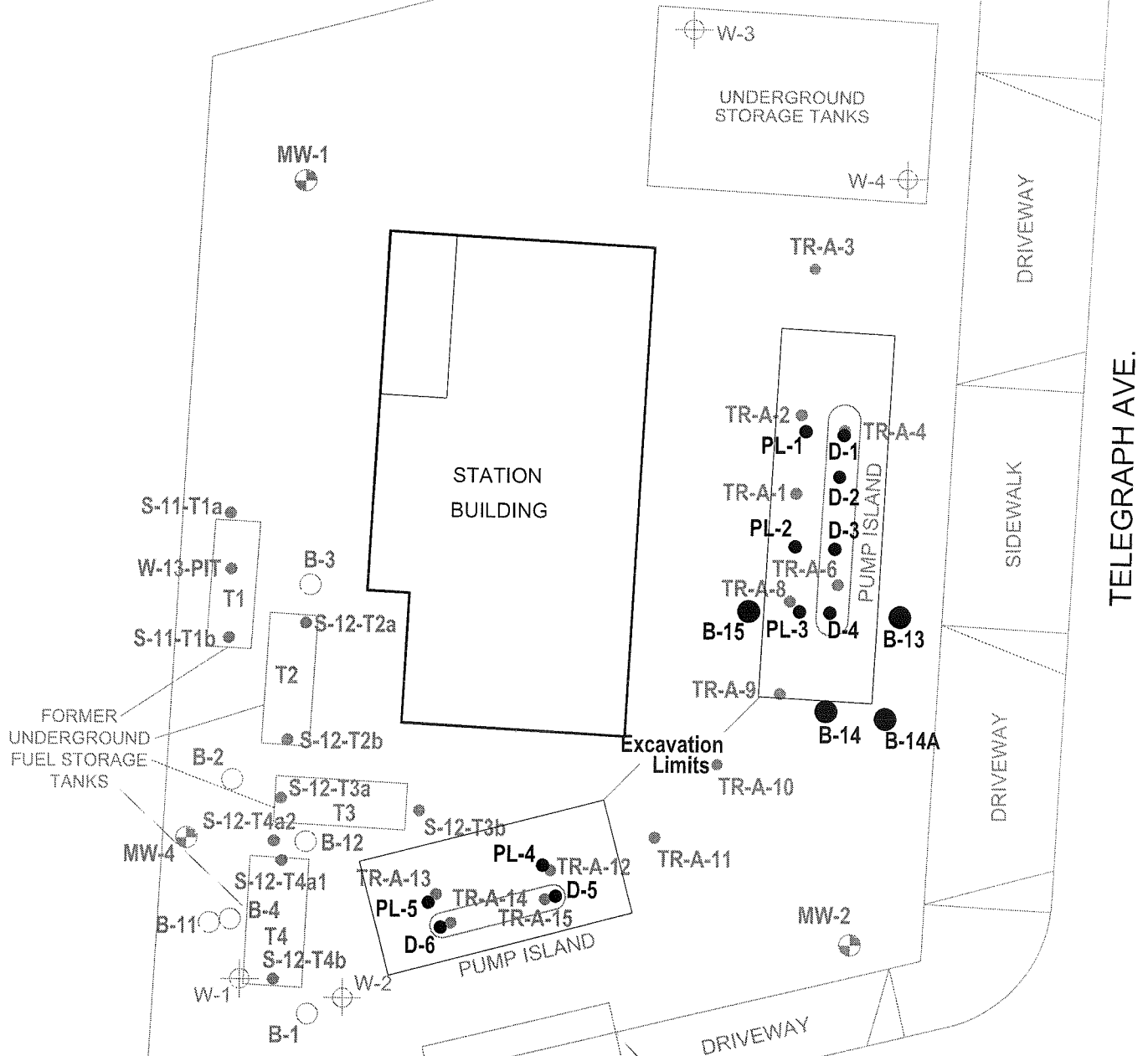
Soil Boring Samples
(Concentrations in milligrams per kilogram, mg/kg)

Sample ID	GRO	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	ETBE	TAME	DIPE	1,2-DCA	EDB	TBA	Ethanol
B-11-15	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.014	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10
B-12-15.5	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.0072	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.011	<0.10
Waste Comp.	NA	<0.0010	<0.0010	<0.0010	<0.0010	0.0084	<0.0020	<0.0020	<0.0020	NA	NA	<0.010	NA

Notes:

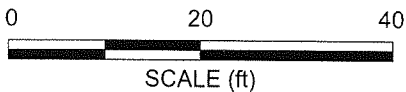
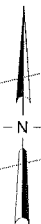
- GRO: Gasoline Range Organics, hydrocarbon chain lengths C6-C12
- MTBE: Methyl-tertiary Butyl Ether
- ETBE: Ethyl Tert-Butyl Ether
- TAME: Tert-Amyl Methyl Ether
- DIPE: Di-Isopropyl Ether
- 1,2-DCA: 1,2-Dichloroethane
- EDB: 1,2-Dibromomethane
- TBA: Tert-Butyl Alcohol
- <: Analyte not detected above the laboratory reporting limit given
- NA: Analysis not requested or performed

NOTE: SITE SKETCH ADAPTED FROM VARIOUS HISTORIC FIGURES.
 SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



LEGEND

- SOIL BORING LOCATION
- DEC. 2008 SOIL SAMPLE
- ⊗ MONITORING WELL
- ⊗ TANK-PIT WELL
- HISTORIC BORING
- HISTORIC SAMPLE



ALCATRAZ AVENUE

TELEGRAPH AVE.

Laboratory Analytical Results from On-Site Soil & Ground-Water Investigation, 21 September 2009
Atlantic Richfield Company Service Station #374, 6407 Telegraph Avenue, Oakland, California
ACEH Case #RO0000078

Soil Boring Samples
(Concentrations in milligrams per kilogram, mg/kg)

Sample ID	GRO	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	ETBE	TAME	DIPE	1,2-DCA	EDB	TBA	Ethanol
B-13 4.5'	1.7	0.048	0.0017	0.036	0.019	0.024	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.052	<0.10
B-13 6.5'	67	0.38	<0.10	0.82	1.8	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10
B-13 8.5'	1,800	8.2	71	32	190	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<10	<100
B-14 4.5'	<0.50	0.0018	<0.0010	<0.0010	<0.0010	0.012	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.014	<0.10
B-14 6.5'	0.73	0.011	<0.0010	0.0023	<0.0010	0.025	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.031	<0.10
B-14 8.5'	390	0.56	<0.10	6.3	0.70	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10
B-15 4.5'	1,400	0.87	<0.10	4.3	3.0	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10
B-15 6.5'	170	0.91	<0.10	2.8	7.5	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10
B-15 8.5'	940	2.2	<1.0	13	52	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<10	<100
ESL - DW	83	0.044	2.9	2.3	2.3	0.023	NE	NE	NE	0.0045	0.0033	0.075	NE
ESL - NDW	100	0.12	9.3	2.3	11	8.4	NE	NE	NE	0.22	0.019	100	NE

Ground-Water Grab Sample
(Concentrations in micrograms per Liter, µg/L)

Sample ID	GRO	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	ETBE	TAME	DIPE	1,2-DCA	EDB	TBA	Ethanol
B-15W	19,000	3,700	54	840	1,600	250	<20	<20	<20	<20	<20	<400	<12,000
ESL - DW	100	1.0	40	30	20	5.0	NE	NE	NE	0.5	0.05	12	NE
ESL - NDW	210	46	130	43	100	1,800	NE	NE	NE	200	150	18,000	NE

Notes for both tables:

GRO: Gasoline Range Organics, hydrocarbon chain lengths C6-C12

MTBE: Methyl-tertiary Butyl Ether

ETBE: Ethyl Tert-Butyl Ether

TAME: Tert-Amyl Methyl Ether

DIPE: Di-Isopropyl Ether

1,2-DCA: 1,2-Dichloroethane

EDB: 1,2-Dibromomethane

TBA: Tert-Butyl Alcohol

<: Analyte not detected above the laboratory reporting limit given

Conc: Concentration in *Italics* exceeds ESL-DW; Concentration in ***Bold Italics*** exceeds ESL-NDW

ESL - DW: Residential Environmental Screening Level (in soil or ground water, as approp.), for shallow soil, where ground water is potential drinking water resource

ESL - NDW: Residential Environmental Screening Level (in soil or ground water, as approp.), for shallow soil, where ground water is not potential drinking water resource

NE: ESL not established



	MW-7		
	G	B	M
3'	<0.50	<0.0010	<0.0010
5'	<0.50	<0.0010	0.0017
6'	<0.50	0.0053	0.0023
8'	650	0.0047	<0.0010
9.5'	<0.50	<0.0010	<0.0010
11'	<0.50	<0.0010	<0.0010
12.5'	<0.50	<0.0010	0.0017
14'	1.2	<0.0010	0.0080

	MW-9		
	G	B	M
3'	5.2	0.0069	0.046
5'	1.4	0.0024	0.031
6'	3.5	0.025	0.033
8'	710	1.2	<0.20
11'	54	<0.10	<0.10
12.5'	46	<0.0010	<0.0010
14'	9.3	0.0012	<0.0010
15.5'	<0.50	<0.0010	0.031

	MW-8		
	G	B	M
3'	2.6	0.0099	0.011
5'	1.7	0.057	0.0075
6'	3.2	0.23	<0.10
8'	510	2.7	0.13
9.5'	900	1.2	<0.10
11'	1,400	<0.10	<0.10
12.5'	0.93	0.0041	0.0014
14.5'	0.57	0.022	0.036

	B-19		
	G	B	M
3'	2.7	<0.0010	<0.0010
5'	2.6	<0.0010	<0.0010
6'	<0.50	0.0053	0.0032
8'	190	0.84	0.015
9.5'	250	0.19	0.011
11'	18	<0.10	<0.10
12.5'	47	0.018	0.0013
14'	<0.50	<0.0010	<0.0010
15.5'	<0.50	<0.0010	0.0034

FORMER UNDERGROUND FUEL STORAGE TANKS

PUMP ISLAND

STATION BUILDING

MW-2

MW-4

W-2

W-1

W-3

W-4

DRIVEWAY

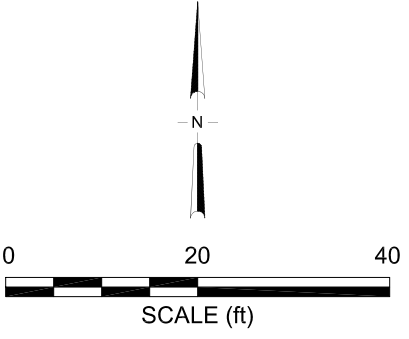
SIDEWALK

DRIVEWAY

DRIVEWAY

DRIVEWAY

ALCATRAZ AVENUE



LEGEND

- ⊕ Monitor Well Location
- ⊕ Tank Pit Monitor Well Location
- ⊙ Soil Boring Location

Depth (feet)

D'	WELL		
	G	B	M
	<0.50	<0.0010	<0.0010

Well Designation, GRO, Benzene and MTBE Concentrations (mg/Kg)

NOTE: SITE MAP ADAPTED FROM STANTEC FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

Table 1. Laboratory Soil Analytic Results from On-Site Investigation, November 22 to 24, 2010

ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Boring and Sample Date	Sample ID	Sample Depth (feet)	Concentrations in (mg/Kg)													Comments
			GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	Ethanol	TBA	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW			83	0.044	2.9	2.3	2.3	0.023	NE	0.075	NE	NE	NE	0.0045	0.0033	
ESL - NDW			100	0.12	9.3	2.3	11	8.4	NE	100	NE	NE	NE	0.22	0.019	
B-19																
11/23/2010	B-19-3	3	2.7	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	B-19-5	5	2.6	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	B-19-6	6	<0.50	0.0053	<0.0010	<0.0010	<0.0010	0.0032	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	B-19-8	8	190	0.84	0.0065	5.5	0.044	0.015	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	B-19-9.5	9.5	250	0.19	0.0016	1.4	0.0094	0.011	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	B-19-11	11	18	<0.10	<0.10	<0.10	<0.10	<0.10	<10	<1.0	<0.20	<0.20	<0.20	<0.10	<0.10	DF
11/23/2010	B-19-12.5	12.5	47	0.018	<0.0010	0.026	0.0025	0.0013	<0.10	0.013	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	B-19-14	14	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	B-19-15.5	15.5	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.0034	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
MW-7																
11/22/2010	MW-7-3	3	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/22/2010	MW-7-5	5	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.0017	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/22/2010	MW-7-6	6	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.0023	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/24/2010	MW-7-8	8	650	0.0047	<0.0010	9.2	9.3	<0.0010	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/24/2010	MW-7-9.5	9.5	<0.50	<0.0010	<0.0010	0.0014	0.0014	<0.0010	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/24/2010	MW-7-11	11	<0.50	<0.0010	<0.0010	0.0015	0.0017	<0.0010	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/24/2010	MW-7-12.5	12.5	<0.50	<0.0010	<0.0010	0.0018	0.0021	0.0017	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/24/2010	MW-7-14	14	1.2	<0.0010	<0.0010	0.0020	0.0024	0.0080	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
MW-8																
11/22/2010	MW-8-3	3	2.6	0.0099	<0.0010	<0.0010	0.0023	0.011	<0.10	0.013	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/22/2010	MW-8-5	5	1.7	0.057	<0.0010	0.028	0.0033	0.0075	<0.10	0.013	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/22/2010	MW-8-6	6	3.2	0.23	<0.10	0.75	<0.10	<0.10	<10	<1.0	<0.20	<0.20	<0.20	<0.10	<0.10	
11/23/2010	MW-8-8	8	510	2.7	<0.10	8.8	5.0	0.13	<10	<1.0	<0.20	<0.20	<0.20	<0.10	<0.10	
11/23/2010	MW-8-9.5	9.5	900	1.2	<0.10	12	6.7	<0.10	<10	<1.0	<0.20	<0.20	<0.20	<0.10	<0.10	
11/23/2010	MW-8-11	11	1,400	<0.10	<0.10	<0.10	0.11	<0.10	<10	<1.0	<0.20	<0.20	<0.20	<0.10	<0.10	
11/23/2010	MW-8-12.5	12.5	0.93	0.0041	<0.0010	0.0036	0.0018	0.0014	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	MW-8-14.5	14.5	0.57	0.022	<0.0010	0.011	0.0056	0.036	<0.10	0.011	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	

Table 1. Laboratory Soil Analytic Results from On-Site Investigation, November 22 to 24, 2010
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Boring and Sample Date	Sample ID	Sample Depth (feet)	Concentrations in (mg/Kg)													Comments
			GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	Ethanol	TBA	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW			83	0.044	2.9	2.3	2.3	0.023	NE	0.075	NE	NE	NE	0.0045	0.0033	
ESL - NDW			100	0.12	9.3	2.3	11	8.4	NE	100	NE	NE	NE	0.22	0.019	
MW-9																
11/22/2010	MW-9-3	3	5.2	0.0069	<0.0010	0.0012	0.0028	0.046	<0.10	0.026	<0.0020	<0.0020	0.0030	<0.0010	<0.0010	
11/22/2010	MW-9-5	5	1.4	0.0024	<0.0010	0.0052	<0.0010	0.031	<0.10	0.037	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/22/2010	MW-9-6	6	3.5	0.025	<0.0010	0.060	0.0036	0.033	<0.10	0.036	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	MW-9-8	8	710	1.2	<0.20	16	28	<0.20	<20	<2.0	<0.40	<0.40	<0.40	<0.20	<0.20	
11/23/2010	MW-9-11	11	54	<0.10	<0.10	<0.10	<0.10	<0.10	<10	<1.0	<0.20	<0.20	<0.20	<0.10	<0.10	DF
11/23/2010	MW-9-12.5	12.5	46	<0.0010	<0.0010	<0.0010	0.0014	<0.0010	0.12	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	MW-9-14	14	9.3	0.0012	<0.0010	0.0013	0.0017	<0.0010	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	
11/23/2010	MW-9-15.5	15.5	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.031	<0.10	<0.010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	

SYMBOLS AND ABBREVIATIONS:

< = Not detected at or above specified laboratory reporting limit

GRO = Gasoline range organics

MTBE = Methyl tert-butyl ether

TBA = tert-Butyl alcohol

MTBE = Methyl tert-butyl ether

DIPE = Di-isopropyl ether

ETBE = Ethyl tert-butyl ether

TAME = tert-Amyl methyl ether

1,2-DCA = 1,2-Dichloroethane

EDB = 1,2-Dibromoethane

mg/kg = Milligrams per Kilogram

DF = Reporting limits elevated due to matrix interference

ESL - DW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil Groundwater, Interim Final-November 2007 (Revised May 2008).

ESL - NDW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is NOT a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil Groundwater, Interim Final-November 2007 (Revised May 2008).

NE = ESL not established

NOTES:

GRO (C6-C12) analyzed using EPA method 8015B.

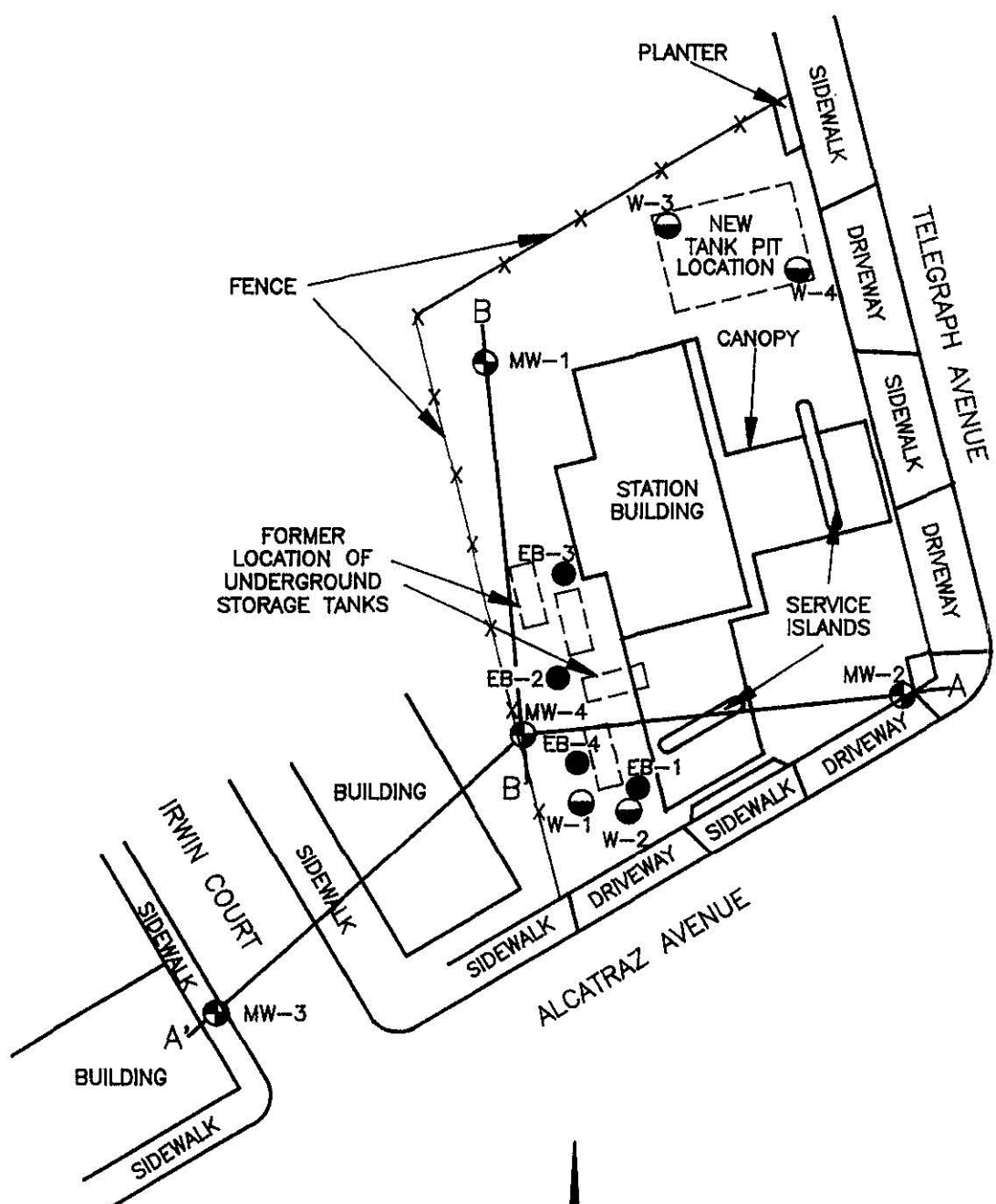
Concentrations in *Italics* exceeds ESL-DW

Concentrations in ***Bold Italics*** exceeds ESL-NDW

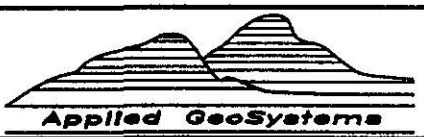
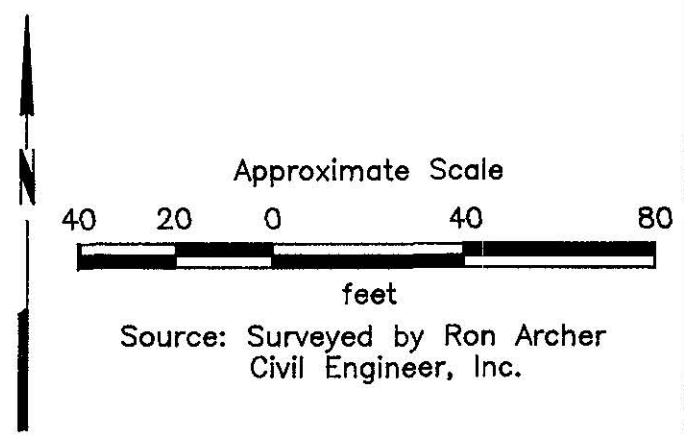
Benzene, toluene, ethylbenzene, total xylenes, MTBE, ethanol and TBA analyzed using EPA method 8260B.

ATTACHMENT E

Geologic Cross-Sections



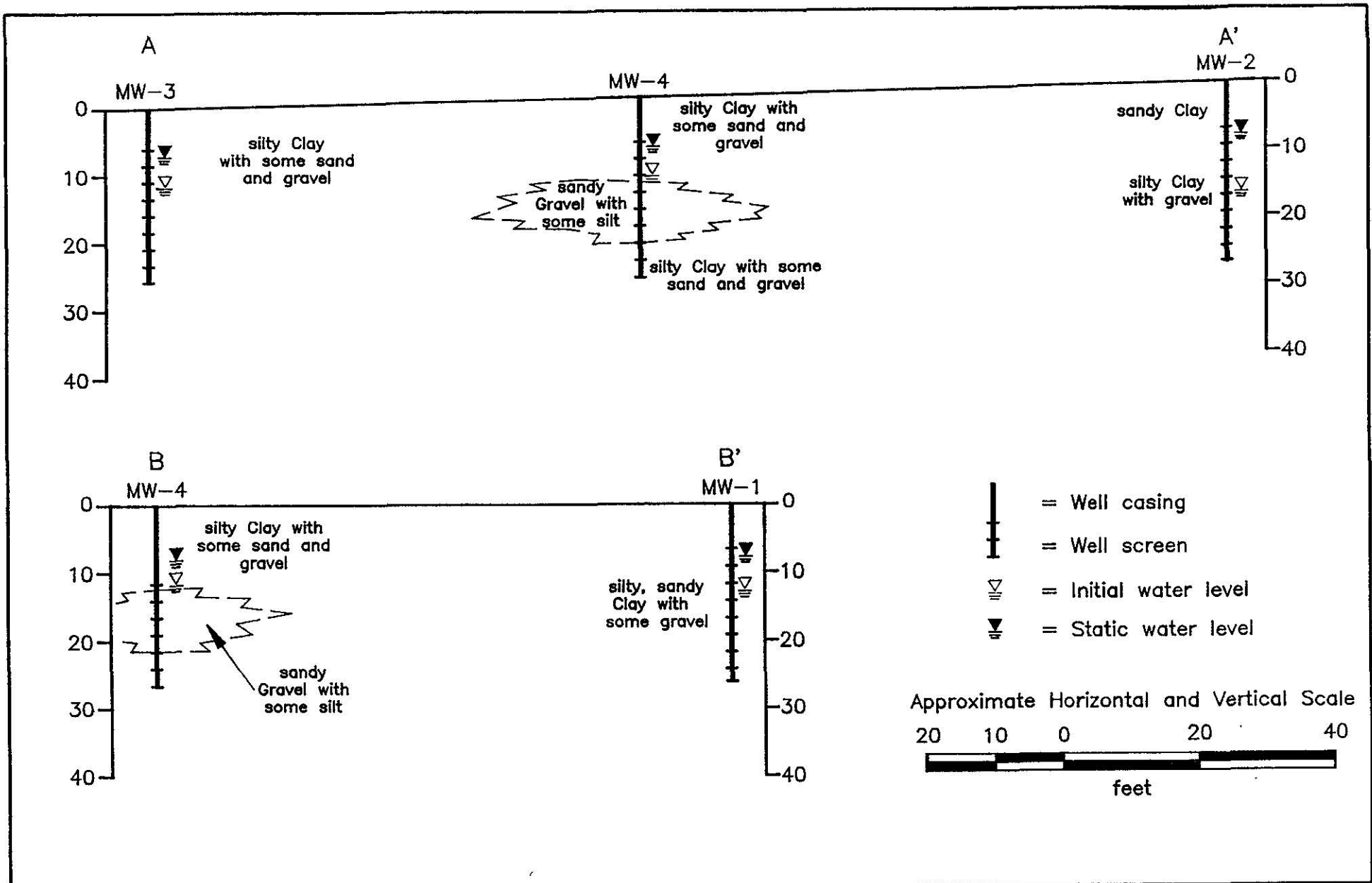
- B-B' = Cross section line
- MW-4 ⊕ = Ground-water monitoring well
- W-4 ⊙ = Tank pit monitoring well
- EB-4 ● = Exploratory soil boring



PROJECT NO. 18039-3

**GENERALIZED SITE PLAN
ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California**

**PLATE
2**



**PLATE
12**

**GEOLOGIC CROSS SECTIONS
ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California**



PROJECT NO. 18039-3

ATTACHMENT F

Groundwater Extraction System Performance Data

Table 5
Groundwater Extraction System Performance Data

ARCO Service Station 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

Sample I.D.	Date Sampled	Totalizer Reading (gallons)	Net Volume (gallons)	Average Flow Rate (gpm)	TPPH			Benzene			Primary Carbon Loading (percent)
					Influent Concentration (µg/L)	Net Removed (lbs)	Removed to Date (lbs)	Influent Concentration (µg/L)	Net Removed (lbs)	Removed to Date (lbs)	
INFL	12/21/93 a	22	22	0.21	NS	0.000	0.00	NS	0.000	0.00	0.0
INFL	12/23/93 a	4,855	4,833	1.6	9,300	0.380	0.38	1,200	0.024	0.02	0.5
INFL	12/27/93 a	6,871	2,016	0.36	5,700	0.130	0.51	820	0.017	0.04	0.6
INFL	12/29/93 a	7,192	321	0.13	5,800	0.018	0.53	950	0.002	0.04	0.7
INFL	01/03/94 a	7,925	733	0.10	6,500	0.010	0.54	860	0.006	0.05	0.7
INFL	01/05/94 a	8,162	237	0.08	5,200	0.010	0.55	970	0.002	0.05	0.7
INFL	01/11/94 a	8,907	745	0.08	6,300	0.030	0.58	900	0.006	0.06	0.7
INFL	01/13/94 a	9,175	288	0.09	8,600	0.019	0.60	950	0.002	0.06	0.7
INFL	01/24/94 a	9,306	131	0.08	NS	0.007	0.60	NS	0.001	0.06	0.8
INFL	02/24/94 a	14,555	5,249	0.21	4,200	0.280	0.88	520	0.011	0.07	1.1
INFL	03/24/94 a	23,723	9,168	0.24	6,200	0.400	1.40	1,100	0.062	0.13	1.8
INFL	04/26/94 b	29,543	5,820	0.12	6,400	0.150	1.55	1,400	0.061	0.19	1.9
INFL	05/24/94 c	35,082	5,539	0.14	NS	0.196	1.75	NS	0.043	0.24	2.2
INFL	11/17/94 d,e	35,507	425	N/A	2,100	0.004	1.75	460	0.001	0.24	2.2
INFL	01/10/95 f	36,493	986	0.01	1,100	0.013	1.76	180	0.003	0.24	2.2
INFL	02/07/95 g	41,399	4,906	0.12	3,500	0.094	1.86	370	0.011	0.25	2.3
INFL	03/03/95 h	53,290	11,891	0.34	NS	0.220	2.08	NS	0.035	0.29	2.6
INFL	04/03/95	62,582	9,292	0.21	5,000	0.194	2.27	1,000	0.039	0.32	2.8
INFL	05/01/95	69,809	7,227	0.18	580	0.168	2.44	40	0.031	0.36	3.0
INFL	06/09/95	75,254	5,445	0.10	1,400	0.045	2.48	420	0.010	0.37	3.1
INFL	07/05/95	81,540	6,286	0.17	750	0.056	2.54	41	0.012	0.38	3.2
INFL	08/10/95	86,868	5,328	0.10	610	0.030	2.57	29	0.002	0.38	3.2
INFL	09/18/95	91,532	4,664	0.08	600	0.024	2.59	10	0.001	0.38	3.2
INFL	10/02/95	92,918	1,386	0.07	790	0.008	2.60	52	0.000	0.38	3.3
INFL	10/13/95 i,h	93,989	1,071	0.07	NS	0.006	2.61	NS	0.000	0.38	3.3

REPORTING PERIOD: 08/18/85 - 12/31/95 (i)

TOTAL POUNDS REMOVED: 2.61 0.38

TOTAL GALLONS REMOVED: 0.43 0.05

PERIOD POUNDS REMOVED: 0.014 0.00

PERIOD GALLONS REMOVED: 0.002 0.00

TOTAL GALLONS EXTRACTED: 93,989

PERIOD GALLONS EXTRACTED: 2,467

PERIOD AVERAGE FLOW RATE (gpm): 0.07

PRIMARY BED CAPACITY REMAINING: 96.7%

TPPH = Total purgeable petroleum hydrocarbons

gpm = Gallons per minute

µg/L = Micrograms per liter

lbs = Pounds

NS = Not sampled (prior concentrations assumed)

N/A = Not available or not applicable

a. All data prior to 9/1/94 provided by prior consultant.

b. Samples taken 4/21/94; totalizer reading from 4/26/94.

c. Last site visit by RESNA on 5/24/94.

d. Pacific Environmental Group, Inc. became consultant for the site 9/1/94.

e. System operated for two days in 4th quarter 1994; system down due to extensive repairs required for system and compound.

f. System started on January 10, 1995.

g. System auto shutdown 2/14/95; shut down 3/3/95 for repairs.

h. TPPH/benzene pounds removed estimated from previous data.

i. GWE system temporarily shut down 10/13/95.

System operation began December 21, 1993, under RESNA Industries, Inc.; system shut down 4/27/94 - 11/17/94.

Pounds of hydrocarbons removed to date through March 24, 1994 provided by prior consultant.

Benzene mass removal from 12/21/93 through 4/27/94 estimated from data provided by prior consultant.

Prior to June 1995, TPPH was reported as "TPH calculated as Gasoline".

Mass removed is an approximation calculated using averaged concentrations.

Carbon loading assumes an 8 percent isotherm. See certified analytical reports for detection limits.

Table 6
Groundwater Extraction System Analytical Data
 Total Purgeable Petroleum Hydrocarbons
 (TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 0374
 6407 Telegraph Avenue at Alcatraz Avenue
 Oakland, California

Sample I.D.	Date Sampled	TPPH as			Ethyl-benzene (µg/L)	Xylenes (µg/L)
		Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)		
Influent Samples						
SP-105	01/10/94	1,100	180	2.7	26	51
SP-105	02/07/94	3,500	370	120	67	230
SP-105	04/03/95	5,000	1,000	41	88	300
INFL	05/01/95	580	40	ND	1.2	17
SP-105	06/09/95	1,400	420	7	10	20
SP-105	07/05/95	750	41	ND	2.8	17
SP-105	08/10/95	610	29	0.64	3.4	16
SP-105	09/18/95	600	10	ND	ND	20
105	10/02/95	790	52	ND	8.4	67
Midpoint-1 Samples						
SP-106	01/10/94	ND	ND	ND	ND	ND
SP-106	02/07/94	ND	ND	ND	ND	ND
SP-106	04/03/95	ND	ND	ND	ND	ND
MID-1	05/01/95	ND	ND	ND	ND	ND
SP-106	06/09/95	ND	ND	ND	ND	ND
SP-106	07/05/95	ND	ND	ND	ND	ND
SP-106	08/10/95	ND	ND	ND	ND	ND
SP-106	09/18/95	ND	ND	ND	ND	ND
106	10/02/95	ND	ND	ND	ND	ND
Midpoint-2 Samples						
MID-2	11/17/94	ND	ND	ND	ND	ND
SP-107	01/10/94	ND	ND	ND	ND	ND
SP-107	02/07/94	ND	ND	ND	ND	ND
SP-107	04/03/95	ND	ND	ND	ND	ND
SP-107	06/09/94	ND	ND	ND	ND	ND
SP-107	09/18/95	ND	ND	ND	ND	ND
Effluent Samples						
SP-108	01/10/94	ND	ND	ND	ND	ND
SP-108	02/07/94	ND	ND	ND	ND	ND
SP-108	04/03/95	ND	ND	ND	ND	ND
EFFL	05/01/95	ND	ND	ND	ND	ND
SP-108	06/09/95	79	ND	ND	ND	ND
SP-108	07/05/95	ND	ND	ND	ND	ND
SP-108	08/10/95	ND	ND	ND	ND	ND
SP-108	09/18/95	ND	ND	ND	ND	ND
108	10/02/95	ND	ND	ND	ND	ND
µg/L = Micrograms per liter ND = Not detected above detection limits System startup on 12/21/93 by RESNA Industries, Inc. Pacific Environmental Group, Inc. (PACIFIC) became consultant 9/01/94. PACIFIC restarted system on 11/17/94. See certified analytical reports for individual detection limits.						

Table 7
Groundwater Biodegradation Study Field and Laboratory Data

ARCO Service Station 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

Well	Date Sampled	<u>Field Analyses</u>				<u>Laboratory Analyses</u>	
		Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	DO (mg/L)	Nitrite as Nitrite (mg/L)	Nitrate as Nitrate (mg/L)
MW-3	11/14/95	65.5*	6.76*	508*	7.17†	<1.0	6.6
DO = Dissolved oxygen		* = Field measurements collected on November 2, 1995.					
deg F = Degrees Fahrenheit		† = DO measurement taken in office.					
µmhos = Micromhos							
mg/L = Milligrams per liter							

ATTACHMENT G

Mann-Kendall Analysis

Mann-Kendall Trend Analysis - MW-2

ARCO Station No. 0347
6407 Telegraph Avenue
Oakland, CA

Sample Date	MTBE Concentration (ug/L)																		
		CE1	CE2	CE3	CE5	CE6	CE7	CE8	CE9	CE10	CE11	CE12	CE13	CE14	CE15	CE16	CE17	CE18	CE19
3/23/2001	1.25																		
3/21/2002	45	+1																	
5/23/2003	55	+1	+1																
2/2/2004	37	+1	-1	-1															
9/2/2004	67	+1	+1	+1															
2/8/2005	30	+1	-1	-1	-1														
8/11/2005	35	+1	-1	-1	-1	+1													
2/16/2006	39	+1	-1	-1	-1	+1	+1												
8/24/2006	25	+1	-1	-1	-1	-1	-1	-1											
2/7/2007	7.2	+1	-1	-1	-1	-1	-1	-1	-1										
8/8/2007	7.2	+1	-1	-1	-1	-1	-1	-1	-1	0									
2/22/2008	24	+1	-1	-1	-1	-1	-1	-1	-1	+1	+1								
8/21/2008	4.9	+1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1							
2/23/2009	24	+1	-1	-1	-1	-1	-1	-1	-1	+1	+1	0	+1						
8/20/2009	8.4	+1	-1	-1	-1	-1	-1	-1	-1	+1	+1	-1	+1	-1					
2/19/2010	22	+1	-1	-1	-1	-1	-1	-1	-1	+1	+1	-1	+1	-1	+1				
8/10/2010	23	+1	-1	-1	-1	-1	-1	-1	-1	+1	+1	-1	+1	-1	+1	+1			
12/16/2010	17	+1	-1	-1	-1	-1	-1	-1	-1	+1	+1	-1	+1	-1	+1	-1	-1		
2/14/2011	11	+1	-1	-1	-1	-1	-1	-1	-1	+1	+1	-1	+1	-1	+1	-1	-1	-1	

S Value:	-67
n:	19

Count Pos: 51

Count Neg: 118

Count Zed: 2

99.00% (From Hollander and Wolfe, 1973, Appendix A, Table A21)

Notes:

ug/L = Micrograms per Liter

Negative Value = Declining Trend, Positive Value = Increasing Trend, Zero = Stable

Concentrations <x are entered as z/2 where z is the lowest reporting limit in the dataset.

Source: Hollander M. and D.A. Wolfe, 1973. Nonparametric Statistical Methods. Wiley, New York.

Mann-Kendall Trend Analysis - MW-4

ARCO Station No. 0347
6407 Telegraph Avenue
Oakland, CA

Sample Date	TPHg/GRO Concentration (ug/L)																							
		CE1	CE2	CE3	CE4	CE5	CE6	CE7	CE8	CE9	CE10	CE11	CE12	CE13	CE14	CE15	CE16	CE17	CE18	CE19	CE20	CE21	CE22	CE23
6/20/2000	20,000																							
12/17/2000	4,320	-1																						
6/21/2001	2,800	-1	-1																					
12/31/2001	4,600	-1	+1	+1																				
4/17/2002	7,100	-1	+1	+1	+1																			
12/6/2002	1,500	-1	-1	-1	-1	-1																		
5/23/2003	2,500	-1	-1	-1	-1	-1	+1																	
2/2/2004	980	-1	-1	-1	-1	-1	-1	-1																
9/2/2004	260	-1	-1	-1	-1	-1	-1	-1	-1															
2/8/2005	7,500	-1	+1	+1	+1	+1	+1	+1	+1	+1														
8/11/2005	3,100	-1	-1	+1	-1	-1	+1	+1	+1	+1	+1													
2/16/2006	9,400	-1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1												
8/24/2006	3,600	-1	-1	+1	-1	-1	+1	+1	+1	+1	-1	+1	-1											
2/7/2007	3,100	-1	-1	+1	-1	-1	+1	+1	+1	+1	-1	0	-1	-1										
8/8/2007	2,900	-1	-1	+1	-1	-1	+1	+1	+1	+1	-1	-1	-1	-1	-1									
2/22/2008	3,900	-1	-1	+1	-1	-1	+1	+1	+1	+1	-1	+1	-1	+1	+1	+1								
8/21/2008	3,700	-1	-1	+1	-1	-1	+1	+1	+1	+1	-1	+1	-1	+1	+1	+1	-1							
2/23/2009	3,000	-1	-1	+1	-1	-1	+1	+1	+1	+1	-1	-1	-1	-1	+1	-1	-1							
8/20/2009	5,700	-1	+1	+1	+1	-1	+1	+1	+1	+1	-1	+1	-1	+1	+1	+1	+1	+1						
2/19/2010	12,000	-1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1					
8/10/2010	9,700	-1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1				
12/16/2010	15,000	-1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1			
2/14/2011	260	-1	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1

S Value:	27
n:	23

Count Pos: 139 Count Neg: 112 Count Zed: 2
 Confidence Level of the Trend = 75.20% (From Hollander and Wolfe, 1973, Appendix A, Table A21)

Notes:

ug/L = Micrograms per Liter

Negative Value = Declining Trend, Positive Value = Increasing Trend, Zero = Stable

Concentrations <x are entered as z/2 where z is the lowest reporting limit in the dataset.

Source: Hollander M. and D.A. Wolfe, 1973. Nonparametric Statistical Methods. Wiley, New York.

Mann-Kendall Trend Analysis - MW-4

ARCO Station No. 0347
6407 Telegraph Avenue
Oakland, CA

Sample Date	Benzene Concentration (ug/L)																							
		CE1	CE2	CE3	CE4	CE5	CE6	CE7	CE8	CE9	CE10	CE11	CE12	CE13	CE14	CE15	CE16	CE17	CE18	CE19	CE20	CE21	CE22	CE23
6/20/2000	5,100																							
12/17/2000	1,240	-1																						
6/21/2001	470	-1	-1																					
12/31/2001	1,500	-1	+1	+1																				
4/17/2002	2,200	-1	+1	+1	+1																			
12/6/2002	410	-1	-1	-1	-1	-1																		
5/23/2003	1,300	-1	+1	+1	-1	-1	+1																	
2/2/2004	280	-1	-1	-1	-1	-1	-1	-1																
9/2/2004	11	-1	-1	-1	-1	-1	-1	-1	-1															
2/8/2005	1,700	-1	+1	+1	+1	-1	+1	+1	+1	+1														
8/11/2005	1,100	-1	-1	+1	-1	-1	+1	-1	+1	+1	-1													
2/16/2006	1,800	-1	+1	+1	+1	-1	+1	+1	+1	+1	+1	+1												
8/24/2006	1,400	-1	+1	+1	-1	-1	+1	+1	+1	+1	-1	+1	-1											
2/7/2007	570	-1	-1	+1	-1	-1	+1	-1	+1	+1	-1	-1	-1	-1										
8/8/2007	630	-1	-1	+1	-1	-1	+1	-1	+1	+1	-1	-1	-1	-1	+1									
2/22/2008	880	-1	-1	+1	-1	-1	+1	-1	+1	+1	-1	-1	-1	-1	+1	+1								
8/21/2008	1,100	-1	-1	+1	-1	-1	+1	-1	+1	+1	-1	0	-1	-1	+1	+1	+1							
2/23/2009	220	-1	-1	-1	-1	-1	-1	-1	-1	+1	-1	-1	-1	-1	-1	-1	-1	-1						
8/20/2009	1,100	-1	-1	+1	-1	-1	+1	-1	+1	+1	-1	0	-1	-1	+1	+1	+1	0	+1					
2/19/2010	1,200	-1	-1	+1	-1	-1	+1	-1	+1	+1	-1	+1	-1	-1	+1	+1	+1	+1	+1	+1				
8/10/2010	1,500	-1	+1	+1	0	-1	+1	+1	+1	+1	-1	+1	-1	+1	+1	+1	+1	+1	+1	+1	+1			
12/16/2010	1,800	-1	+1	+1	+1	-1	+1	+1	+1	+1	+1	+1	0	+1	+1	+1	+1	+1	+1	+1	+1	+1		
2/14/2011	0.25	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1

S Value:	-28
n:	23

Count Pos: 110 Count Neg: 138 Count Zed: 5
Confidence Level of the Trend = 76.10% (From Hollander and Wolfe, 1973, Appendix A, Table A21)

Notes:

ug/L = Micrograms per Liter

Negative Value = Declining Trend, Positive Value = Increasing Trend, Zero = Stable

Concentrations <x are entered as z/2 where z is the lowest reporting limit in the dataset.

Source: Hollander M. and D.A. Wolfe, 1973. Nonparametric Statistical Methods. Wiley, New York.

ATTACHMENT H

Regression Trend Analysis

Estimated Time to Reach Water Quality Objective

ARCO Station No. 0374, 6407 Telegraph Avenue, Oakland, CA

Well ID: MW-1
Constituent: MTBE

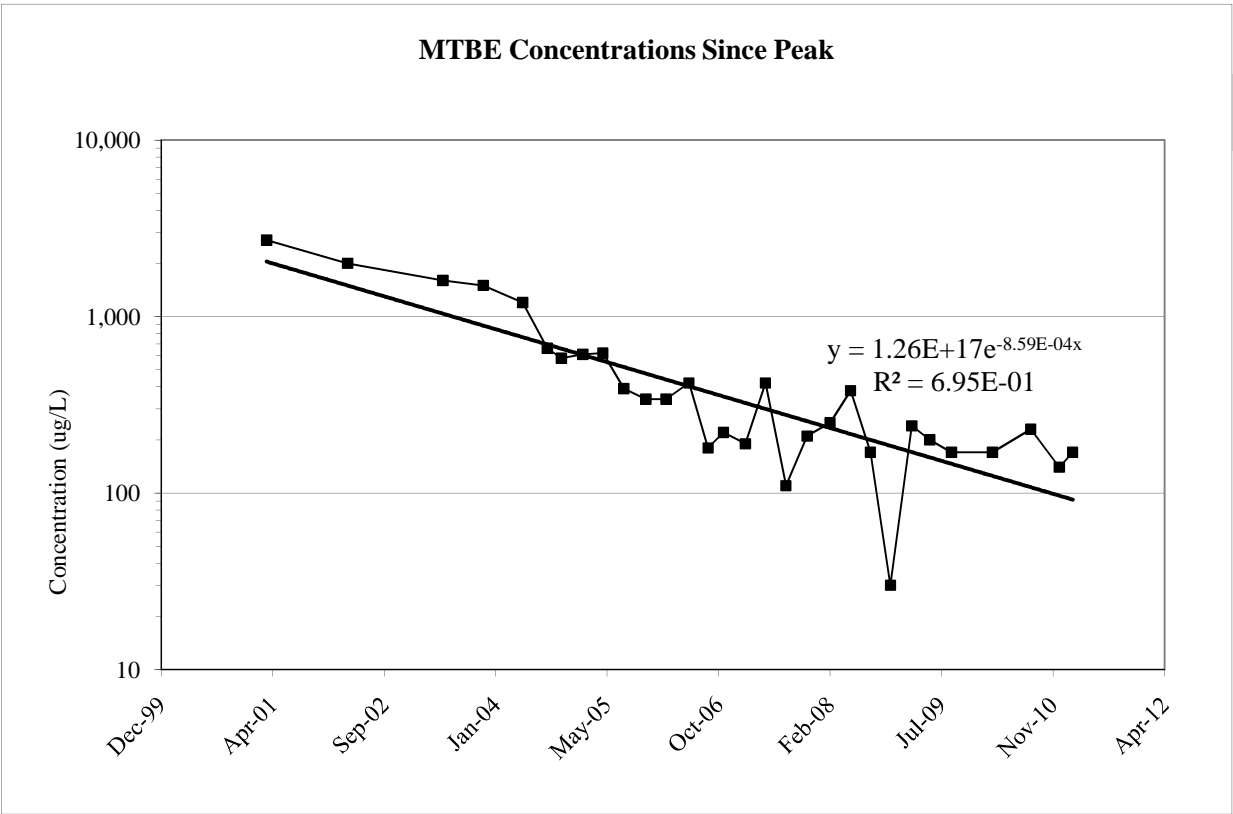
Calculation uses first-order decay equation:
 $y = b e^{ax}$ converts to: $x = \ln(y/b) / a$

Given

Water Quality Objective:	y	5 ug/L
Constant:	b	1.26E+17
Constant:	a	-8.59E-04
Date of Peak Concentration:		3/23/2001

Attenuation Half Life: $(-\ln(2)/a)$ 2.21 Years

Estimated Date to Reach WQO: $(x = \ln(y/b) / a)$ May 13, 2020



Estimated Time to Reach Water Quality Objective

ARCO Station No. 0374, 6407 Telegraph Avenue, Oakland, CA

Well ID: MW-2
Constituent: MTBE

Calculation uses first-order decay equation:

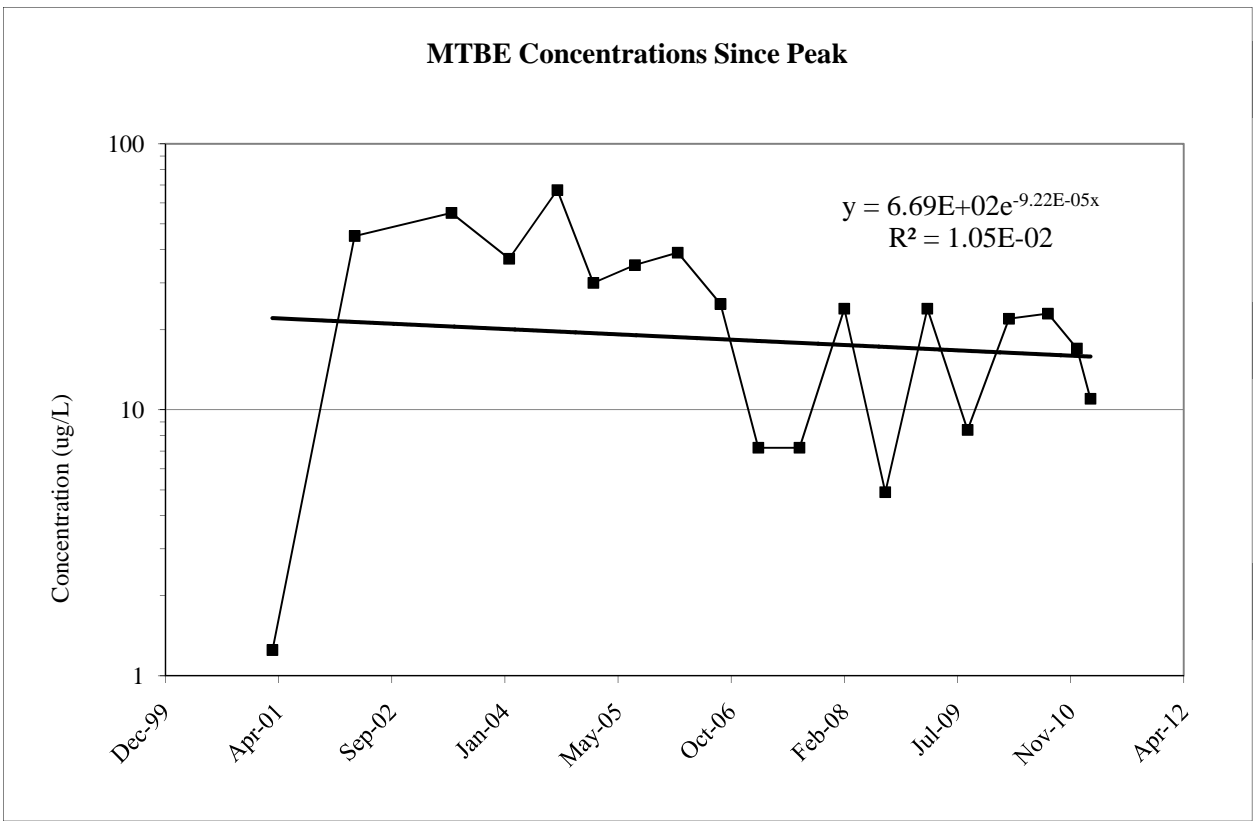
$$y = b e^{ax} \quad \text{converts to:} \quad x = \ln(y/b) / a$$

Given

Water Quality Objective:	y	5 ug/L
Constant:	b	6.69E+02
Constant:	a	-9.22E-05
Date of Peak Concentration:		9/2/2004

Attenuation Half Life: $(-\ln(2)/a)$ 20.58 Years

Estimated Date to Reach WQO: $(x = \ln(y/b) / a)$ May 23, 2045



Estimated Time to Reach Water Quality Objective

ARCO Station No. 0374, 6407 Telegraph Avenue, Oakland, CA

Well ID: MW-4
 Constituent: TPHg/GRO

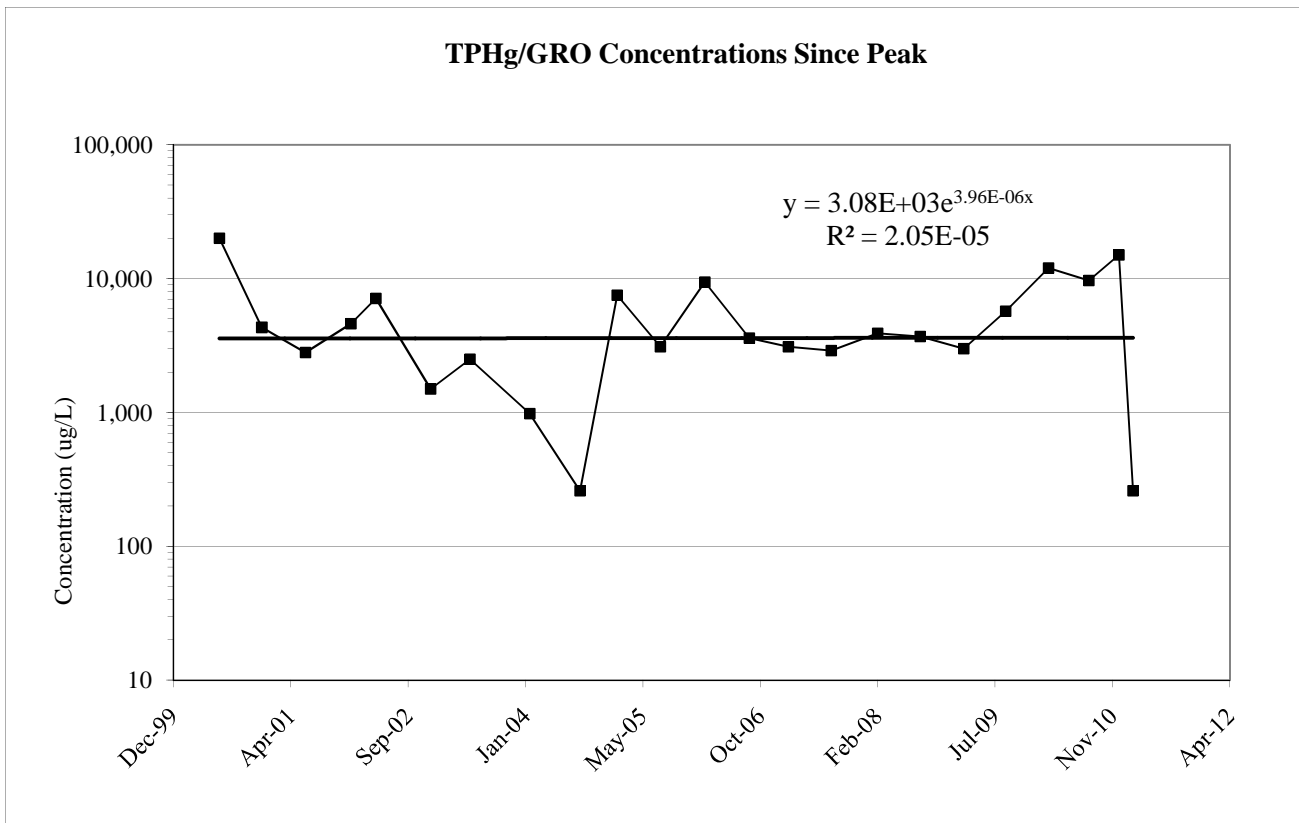
Calculation uses first-order decay equation:
 $y = b e^{ax}$ converts to: $x = \ln(y/b) / a$

Given

Water Quality Objective:	y	100	ug/L
Constant:	b	3.08E+03	
Constant:	a	3.96E-06	
Date of Peak Concentration:		6/20/2000	

Attenuation Half Life: $(-\ln(2)/a)$ -479.23 Years

Estimated Date to Reach WQO: $(x = \ln(y/b) / a)$ Not Determined



Estimated Time to Reach Water Quality Objective

ARCO Station No. 0374, 6407 Telegraph Avenue, Oakland, CA

Well ID: MW-4
Constituent: Benzene

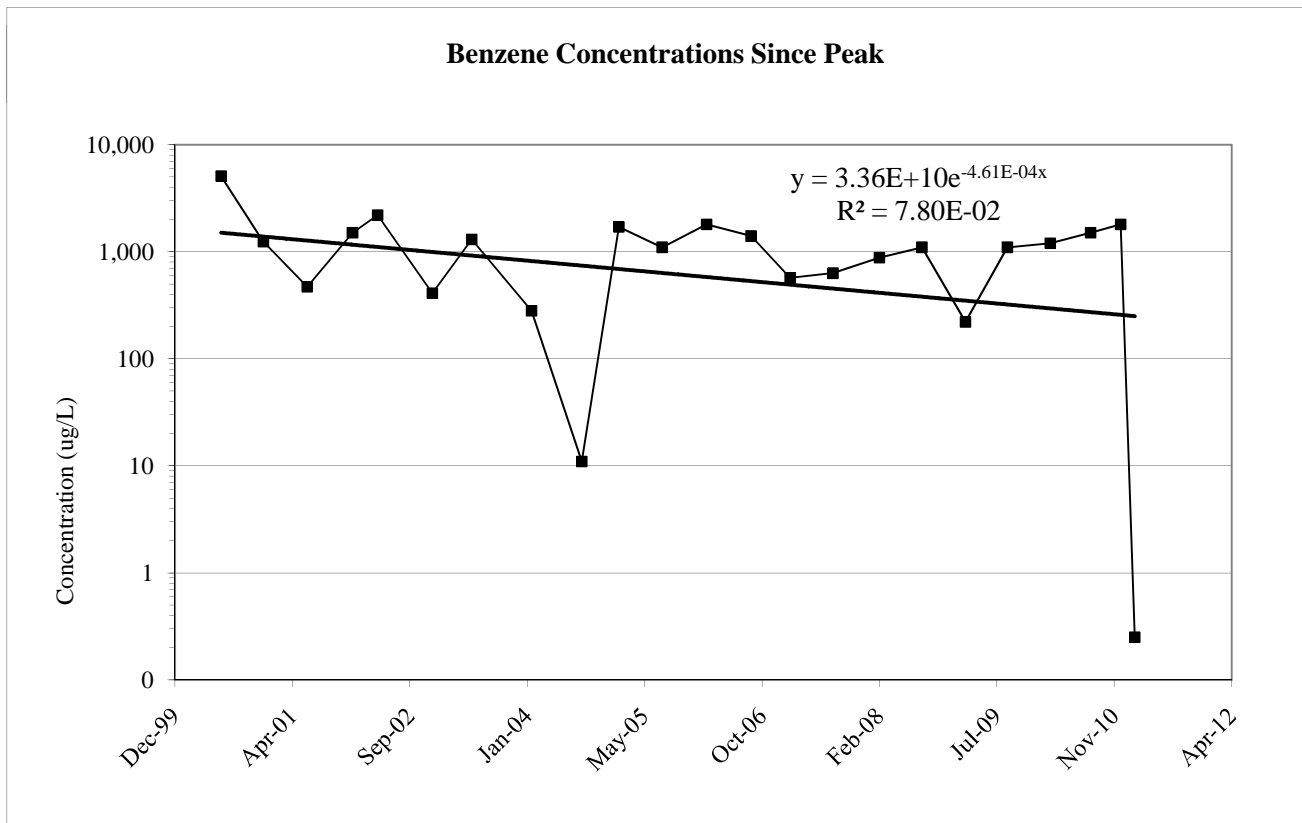
Calculation uses first-order decay equation:
 $y = b e^{ax}$ converts to: $x = \ln(y/b) / a$

Given

Water Quality Objective:	y	1	ug/L
Constant:	b	3.36E+10	
Constant:	a	-4.61E-04	
Date of Peak Concentration:		6/20/2000	

Attenuation Half Life: $(-\ln(2)/a)$ 4.12 Years

Estimated Date to Reach WQO: $(x = \ln(y/b) / a)$ December 11, 2043



Estimated Time to Reach Water Quality Objective

ARCO Station No. 0374, 6407 Telegraph Avenue, Oakland, CA

Well ID: MW-4
 Constituent: MTBE

Calculation uses first-order decay equation:
 $y = b e^{ax}$ converts to: $x = \ln(y/b) / a$

Given

Water Quality Objective:	y	5	ug/L
Constant:	b	1.84E+10	
Constant:	a	-5.17E-04	
Date of Peak Concentration:		12/31/2001	

Attenuation Half Life: $(-\ln(2)/a)$ 3.67 Years

Estimated Date to Reach WQO: $(x = \ln(y/b) / a)$ August 21, 2016

