Atlantic Richfield Company

Shannon Couch
Operations Project Manager

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November 20, 2012

RECEIVED

2:05 pm, Nov 21, 2012

Alameda County
Environmental Health

Re: Soil Investigation Work Plan
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

SOIL VAPOR INVESTIGATION WORK PLAN
Atlantic Richfield Company Station No.374
6407 Telegraph Avenue
Oakland, California

Prepared for

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

Prepared by

875 Cotting Lane, Suite G
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November 20, 2012

Project No. 06-88-602

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November 20, 2012

Project No. 06-88-602

Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583
Submitted via ENFOS

Attn.: Ms. Shannon Couch

Re: Soil Vapor Investigation Work Plan, Atlantic Richfield Company Station No.374, 6407 Telegraph Avenue, Oakland, California; ACEH Case No. RO0000078

Dear Ms. Couch:

Broadbent & Associates, Inc. (Broadbent) is pleased to submit this *Soil Vapor Investigation Work Plan* for Atlantic Richfield Company Station No.374 located at 6407 Telegraph Avenue, San Leandro, California (Site). This document was prepared in order to propose additional assessment that would potentially support case closure under the recently-approved Low Threat Policy (CRWQCB, 2012). Broadbent is proposing herein the installation and sampling of one soil vapor probe.

Should you have questions or require additional information, please do not hesitate to contact us at (707) 455-7290.

Sincerely,
BROADBENT & ASSOCIATES, INC.

Kristene Tidwell, P.G., C.HG.
Senior Geologist

Enclosures

cc: Ms. Dilan Roe, Alameda County Environmental Health (Submitted via ACEH ftp site)
Electronic copy uploaded to GeoTracker

SOIL VAPOR INVESTIGATION WORK PLAN
Atlantic Richfield Company Station No.374
6407 Telegraph Avenue, Oakland, California
Fuel Leak Case No. RO0000078

TABLE OF CONTENTS

SOIL VAPOR INVESTIGATION WORK PLAN
Atlantic Richfield Company Station No.374
6407 Telegraph Avenue, Oakland, California
Fuel Leak Case No. RO0000078

1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company– (ARC, a BP affiliated company) Broadbent & Associates, Inc. (Broadbent) has prepared this *Soil Vapor Investigation Work Plan* (Work Plan) for the Atlantic Richfield Company (ARCO) Station No.374 (herein referred to as Station No.374), located at 6407 Telegraph Avenue, Oakland, California (Site). This Work Plan was prepared in order to assess potenital soil vapor impacts at the Site resulting from moderate residual groundwater hydrocarbon concentrations in onsite monitoring well MW-4. Other wells at the Site contain comparatively low to non-detect hydrocarbon concentrations, and it appears that this Site may be eligible to be closed under the recently approved California State Water Resources Control Board's (CSWRCB) *Low Threat Underground Storage Tank Case Closure Policy* (Low Threat UST Closure Policy). This work plan includes discussions on the Site background and previous environmental activities, regional and Site geology and hydrogeology, proposed scope of work, and proposed schedule.

2.0 BACKGROUND INFORMATION

2.1 Site Location

Station No. 374 is located at the northwest corner of Telegraph and Alcatraz Avenues in an area of mixed residential and commercial land use. The elevation of the Site is approximately 164 feet above mean sea level with local topography sloping gently to the southwest (United States Geological Survey [USGS], Oakland West Quadrangle, California). Surrounding land use is primarily single- and multi-family residences with commercial buildings located east and southeast of the Site. The Assessor's Parcel Number is 16-1424.

2.2 Previous Environmental Activities at Site

The following section summarizes the previous hydrocrabon release, resulting investigations, and remedial activities completed at the Site. Appendix A includes tabulated soil and groundwater analytical data. Appendix B includes available soil boring and well contstruciton logs. Appendix C includes available Site geologic cross sections and historic figures.

In February 1988, a leak was detected in the vapor/vent line of the unleaded system during annual tank testing. In April 1988, an underground storgate tank (UST) Unauthorized Release Report was filed with the Alameda County Public Health Service.

In April 1988, Applied Geosystems (AGS) advanced soil borings B-1 through B-4 near then exisiting USTs. Gasoline range organics (GRO, hydrocarbon chain lengths C6-C12) concentrations in soil samples ranged from 48 to 930 milligrams per kilogram (mg/kg). Groundwater was encountered at approximately 10 feet below ground surface (bgs). One inch of floating product was observed in a grab-groundwater sample collected from boring B-1. Additionally, 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 one of the former USTs indicated GRO concentrations ranging from 3 mg/kg to 1,097 mg/kg. The excavation was extended north of this UST; a soil sample (S-12-T4A2) collected after this excavation indicated a GRO concentration of 795 mg/kg. A

soil sample collected beneath the north of the excavation (S-11-T1A) indicated a GRO concentration of 399 mg/kg. Groundwater was observed seeping into the northwestern portion of the UST pit at 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. Field observations 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 GRO and the volatile gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX). No detectable concentrations of GRO or BTEX were reported (AGS, January 5, 1989).

In July 1989, AGS installed groundwater monitor wells MW-1 through MW-4. Well MW-3 was installed offsite on the west side of Irwin Court. Eight of the nine soil samples collected during these activities did not contained detectable concentrations of gasoline constituents. A GRO concentration of 60 mg/kg was reported for the sample obtained from a depth of 8.5 feet in the boring advanced prior to the installation of well MW-1.

In April 1991, RESNA performed step-drawdown and constant discharge tests using tank backfill well W-2.

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 GRO or BTEX were reported in the soil samples collected during this investigation.

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. A total of 93,989 gallons of water were reportedly extracted during system operation and an estimated 2.61 pounds of GRO were removed from groundwater.

In September 1995, dispensers and associated underground product lines were removed from the Site. Pacific Environmental Group (PEG), Inc. collected soil samples beneath both the dispenser islands and product lines. Total purgeable petroleum hydrocarbons as gasoline (TPPHg) were reported for soil samples collected 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 naturally-occuring 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 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 from 15 feet (B-11) and 15.5 feet (B-12) were analyzed for GRO, BTEX, methyl tertiary butyl ether (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. All analytes were non-detect with the exception of trace concentrations of MTBE (0.0072 mg/kg and 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 Appendix C.

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. 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. Sample locations are depicted in Appendix C.

In September 2009, Stratus oversaw advancement of four direct-push borings (B-13, B-14, B-14A, and B-15) 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, to a maximum depth of 18 feet bgs; soil samples for laboratory analyses were obtained from 4.5 feet, 6.5 feet, and 8.5 feet bgs from each boring. 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. A "grab" 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[i]. Boring locations are depicted in Appendix C.

In November 2010, BAI advanced four soil borings (B-16 through B-19) and converted three borings (B-16 through B-18) to groundwater monitor wells (MW-7, MW-8, and MW-9). Boring and monitor well locations are provided in Appendix C.

Groundwater monitoring has been performed at the Site since wells were first installed in 1989. The highest concentrations of petroleum hydrocarbons have historically and are currently detected in well MW-4. Currently, the highest concentraitons of GRO and BTEX have been detected in MW-4, with non-detect concentrations in other wells. MTBE is currently present in wells MW-1, MW-2, MW-3, MW-6 MW-7, MW-8, and MW-9. Currently, the highest concentration of MTBE is present in well MW-1 at 66 ug/L.

2.3 Regional Geology and 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 San Leandro Sub-Area, near the northern boundary of the San Lorenzo Sub-Area, in the East Bay Plain of the San Francisco Basin. These Sub-Areas share the same hydrogeologic characteristics, yet are separated by the junction of the surface trace between the San Leandro and San Lorenzo alluvial fans. These Sub-Areas consist primarily of alluvial fan sediments with the distinction of the Yerba Buena Mud extending west into the San Leandro and San Lorenzo Sub-Areas, unlike the northern Sub-Areas. The Yerba Buena Mud forms a major aquitard between the shallow and deep aquifers throughout much of southwestern area of the East Bay Plain. The San Leandro and San Lorenzo Sub-Areas alluvial fans are finer grained and produce less groundwater than the Niles Cone basin to the south.

Geologic data derived from onsite borings indicate unconsolidated sediments consisting of silts and silty clay from two to 40 feet bgs. Sand, sandy clay and clayey sand zone underlies and overlies these silty clays and silts. Soil boring and well construction logs are provided in Appendix B. Copies of geologic cross-sections for the Site are provided in Appendix C.

2.4 Site Hydrogeology

The Site is underlain Holocene and Pleistocene alluvial fan and fluvial sediments (USGS, 1997) consisting of beds and lenses of medium dense to dense, sandy or silty clay, and clayey or silty sands and gravels to the total explored depth of 40 feet bgs.

Groundwater under confined conditions is typically encountered at depths greater than ten to twelve feet bgs. Since groundwater monitoring began at the Site in 1989, depth-to-water measurements have ranged from approximately 4.5 to 9.5 feet below ground surface (bgs). Groundwater flow direction has been consistently to the southwest at an average gradient of approximately 0.03 feet per foot. Current and Historical Groundwater Data are presented in Attachment A. Available Soil Boring/Well Logs are presented in Attachment B.

3.0 PROPOSED SCOPE OF WORK

Soil vapor sampling is proposed herein to evaluate potential petroleum compounds present in soil vapor at the Site near the former hydrocarbon releases described above. Current GRO and benzene concentrations in monitoring well MW-4 indicate residual impacts, however recent analytical data from other Site wells indicates that the hydrocarbon plume is small in size. However, due to current benzene concentrations in well MW-4 being approximately 1,000 ug/L, soil vapor in this area needs to be evaluated for the Site to be considered a candidate to be closed according to the Low Threat UST Closure Policy (CSWRCB, 2012). To that end, soil vapor sampling in the vicinity of well MW-4 is proposed herein. The details of the proposed scope of work are presented below.

This soil vapor sampling is being proposed to evaluate potential unacceptable human health risks that will be required to be address prior this Site being ready for case closure per the Low Threat UST Closure Policy. A preliminary Closure checklist based on this guidance is presented in Appendix D.

3.1 Pre-Mobilization Activities

Prior to initiating field activities, Broadbent will obtain the necessary permits from Alameda County, prepare a Site-Specific Health & Safety Plan (HASP) for the proposed work, clear the Site for subsurface utilities, and provide 72-hour advance written notification to ACEH prior to the start of field activities. The utility clearance will include notifying Underground Services Alert (USA-North) of the pending work a minimum of two full business days prior to initiating the subsurface field investigation. In addition, the services of a private underground utility locator will be utilized.

The Site-Specific HASP will be prepared for use by personnel implementing the work. The HASP will address the proposed soil vapor probe installation/sampling scope of work. A copy of the HASP will be available onsite during the work. Subcontractors performing field activities will be provided with a copy of the HASP prior to initiating work. A safety tailgate meeting will also be conducted daily to review the Site hazards and mitigations.

3.2 Proposed Soil Vapor Probe Installation Activities

A total of two soil vapor probes at two different sampling depths are proposed to be installed in the vicinity if well MW-4 (SG-1A/SG-1B; Drawing 3). The soil vapor probes will be installed using a hand auger at each location. Probe SG-1A will be constructed to a total depth of 3.0 feet bgs and SG-1B will be constructed to a total depth of 5.5 feet bgs. Soil vapor from both intervals will be sampled and the deeper sample will be initially analyzed, with the shallower depth being analyzed if the deeper sample exceeds screening levels as described below.

Soil vapor probes will be constructed using implants attaching a 6-inch long soil vapor probe tip to 0.125- inch diameter nylon (i.e. NylaFlow) or Teflon tubing extending two feet above the surface. The soil vapor probe tips will be constructed of double-woven stainless steel wire screen with a 0.057-inch pore diameter, equipped with stainless-steel end fittings. Each soil vapor implant will be embedded within the middle of a one-foot thick sand filter pack of #2/12 sorted sand, topped with one-half foot of dry granular Bentonite below a minimum of one-half foot of hydrated granular Bentonite, and completed with a flush, traffic-rated well vault at the surface set within neat cement concrete surface seal to match the existing grade. Care will be taken to prevent the tubing and Swagelok fitting at its end from being damaged or kinked when coiled back into the well vault.

3.3 Proposed Soil Vapor Probe Sampling

Sampling will occur at least two weeks after installation of the soil vapor monitoring implants to allow time for the concrete to cure and disturbed subsurface conditions to equilibrate. In addition, soil vapor sampling shall not be performed during or immediately after a rainfall event of 0.5 inches or more. If a rainfall event of this magnitude occurs within 24 hours of the scheduled soil vapor sampling activities, the field work shall be rescheduled.

After setting up a secure and barricaded work area, the sampling train will be assembled. The Swagelok fitting at the end of the implant's tubing will be connected to an inline vacuum gage with a tee then a 100-cubic centimeter (cc) calibrated syringe with three-way valve at the tip. Coming off the tee for the sample will be a one-liter Summa canister, supplied by the laboratory under high vacuum (-30 inches Mercury/in.Hg), leak checked, and batch certified to be free of contaminants. With the valve to the soil vapor monitoring implant closed and the valve to the Summa canister closed, the sampling train will be checked for leaks during a shut-in leak test by applying with the calibrated syringe a vacuum of -15 in.Hg for a period of five minutes (-15 in. Hg is fifty percent above the standard threshold of -10 in.Hg considered representative of "No Flow" conditions). When the applied vacuum does not drop during the shut-in test, the sampling train assembly will be considered leak-tested tight.

After the shut-in leak test, the closed valve of the soil vapor monitoring implant will be opened and the sampling train slowly purged of three calculated interior volumes using the calibrated syringe. Following completion of purging, a clear plastic shroud will be setup over the sampling train to contain the chemical tracer/leak-check compound (Helium gas) that will be released within. The shroud will be placed to completely cover the soil vapor sampling implant wellhead, its aboveground tubing, and the tubing, fittings, and sample Summa canister that will make up the sampling train. Once setup, Helium gas will be released via tubing under the shroud. A Radiodetection Model MGD-2002 Helium Detector (or similar) will be used to monitor the concentration within the shroud by placing its probe within.

Prior to and during sampling, a positive-pressure concentration of approximately 20 percent Helium will be maintained within the shroud using the compressed gas cylinder's flow regulator. Helium concentrations within the shroud will be recorded in the field notes at one-minute intervals.

Once a positive-pressure Helium atmosphere is created under the shroud, the valve to the Summa canister will be opened and the sample collected. The sampling rates into the Summa canisters will be fixed by laboratory-supplied critical orifice assemblies (flow regulators) with a 0.0060 inch orifice allowing approximately 200 standard cc per minute (cc/min). Samples will be collected into the Summa canisters until the vacuum has dropped from the initial laboratory-supplied vacuum of -30 in.Hg to -5 in.Hg. Sample start times, end times, starting vacuums, ending vacuums, and Helium concentrations during sampling will be recorded in the field notes.

Finally, for comparison purposes, one Summa canister will be used to collect an ambient air sample from the ground level just outside the door into the front side of the Station Building. No leak-check compound will be utilized during collection of the ambient air sample.

3.4 Laboratory Analysis of Soil Vapor Samples

Collected samples will be promptly submitted under chain-of-custody protocol to Calscience Environmental Laboratories, Inc. in Garden Grove, California (CA-ELAP #1230, NELAP #03220CA). At the laboratory, select soil gas samples will be analyzed for GRO by EPA Method TO-3, and for BTEX, MTBE, Ethanol, TBA, DIPE, ETBE, and TAME by EPA Method TO-15. Soil gas samples will also be analyzed for Oxygen (O_2) and Argon, Carbon Dioxide (CO_2), Methane (CH_4), and Helium (Tracer/leak-check compound) by Modified Method ASTM D-1946.

Direction on the chain-of-custody will be to analyze first the "B" samples from 5.5 feet bgs. Concentration results for the "B" deeper soil vapor samples will be compared against the Environmental Screening Levels (ESLs) for shallow soil gas (commercial/industrial land use) established by the California Regional Water Quality Control Board, San Francisco Bay Region. Concentrations will also be compared to acceptable concentrations presented in the Low Threat UST Closure Policy (SWRCB, 2012). If concentration results for any of the TO-3/TO-15 analytes from the deeper "B" soil vapor sample exceed established screening levels, then the corresponding shallow "A" soil vapor sample from 3.0 ft bgs will be analyzed also. Laboratory analyses for soil vapor samples will be performed in accordance with EPA standard holding times for Summa canisters.

3.5 Reporting

Upon completion of the work activities described above and after receipt of laboratory analytical data, Broadbent will prepare a Soil Vapor Sampling Report containing the following information at a minimum:

- Descriptions of the work performed;
- Copies of the required permits;
- Copies of the field notes;
- Tabulated results and measurements;
- Laboratory analytical reports with chain-of-custody records; and
- Site recommendations.

4.0 PROPOSED SCHEDULE

The schedule for the above-noted work shall proceed as follows:

- Implementation of Soil-Vapor Assessment Activities– Within 90 days of approval of this Work Plan;
- Soil-Vapor Assessment Report– Within 60 days of completing field work.

5.0 CLOSURE

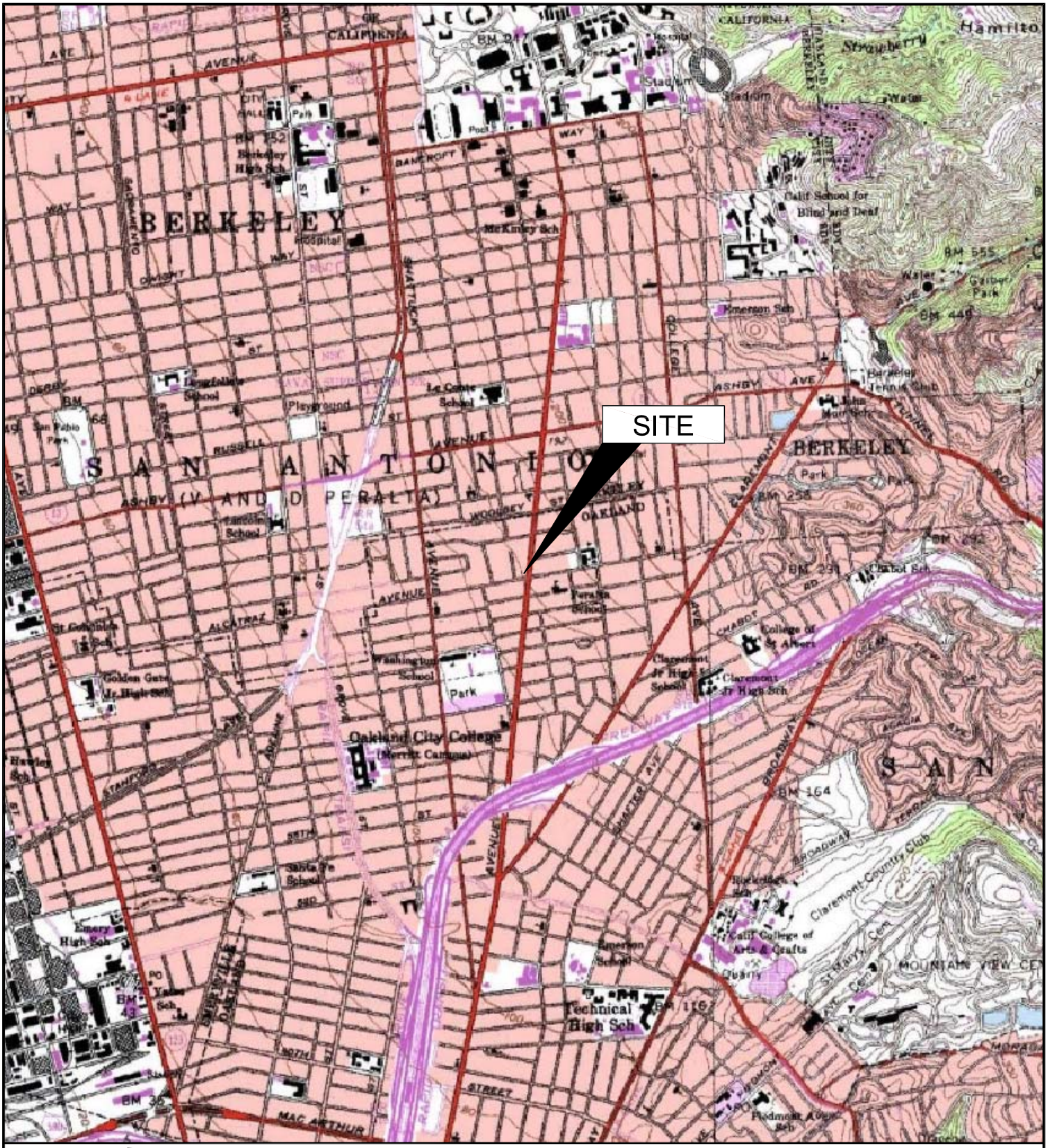
The findings presented in this document are based upon: observations of field personnel from previous consultants, the points investigated, and results of analytical tests performed by various laboratories. Our services were performed in accordance with the generally accepted standard of practice at the time this document was written. No other warranty, expressed or implied was made. This report has been prepared for the exclusive use of BP. It is possible that variations in soil or groundwater conditions could exist beyond points explored in this investigation. Also changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

6.0 REFERENCES

State Water Resources Control Board, 2012. Low-Threat Underground Storage Tank Case Closure Policy, April 17.

East Bay Plain Groundwater Basin Beneficial Use Evaluation Report. California Regional Water Quality Control Board – San Francisco Bay Region (SFRWQCB), June 1999.

USGS 1997. Quaternary Geology of Alameda County, and parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties, California: a digital database
By E.J. Helley and R.W. Graymer



N

0 2000 4000

APPROXIMATE SCALE (ft)

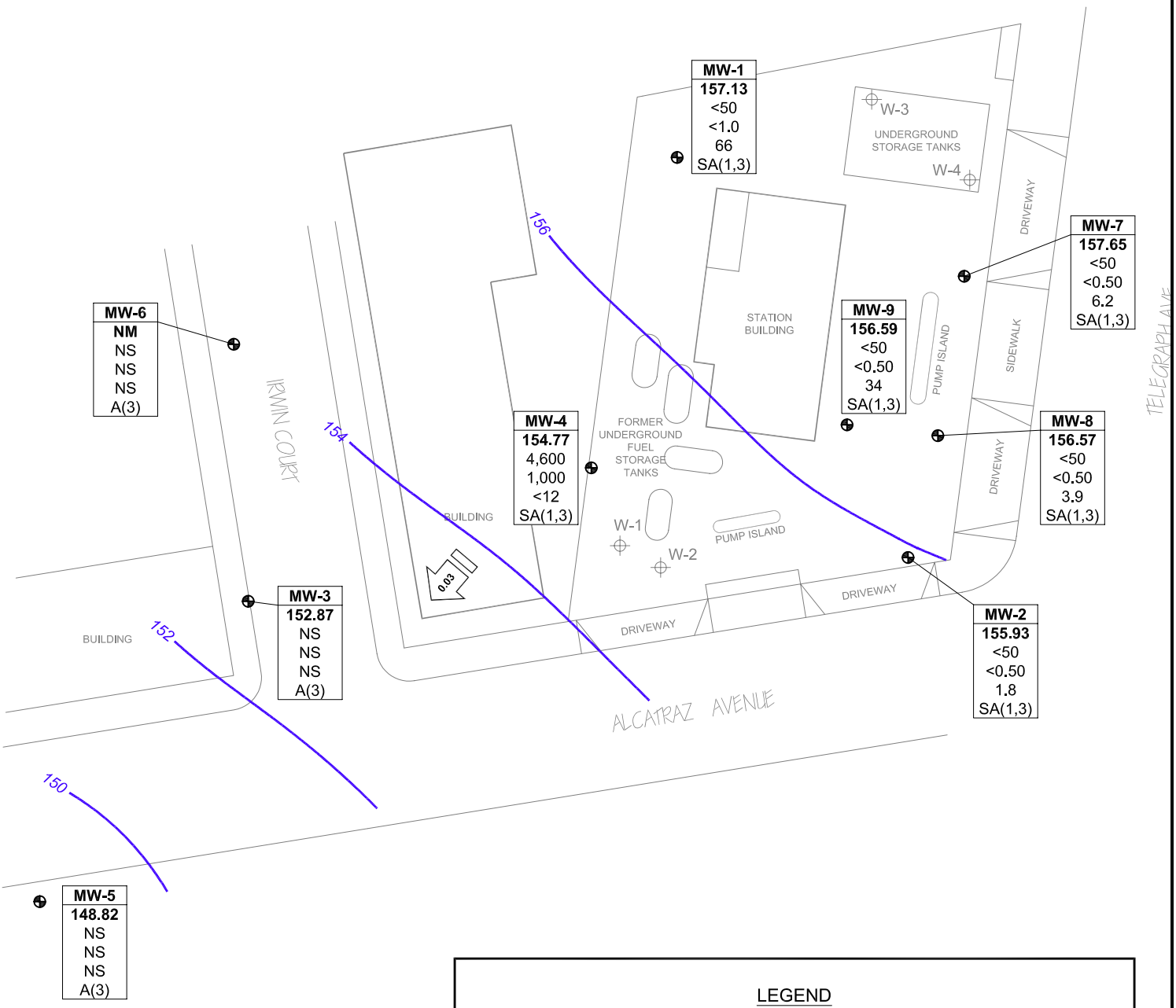
IMAGE SOURCE: USGS

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, CA 95926
Project No.: 06-88-602 Date: 10/30/09

Station #374
6407 Telegraph Ave.
Oakland, California

Site Location Map

Drawing
1



LEGEND

⊕	Monitor Well Location	A(3)	Sampled Annually - Third Quarter
⊕	Tank Pit Monitor Well Location	SA(1,3)	Sampled Semi-Annually - First and Third Quarter
—	Groundwater Elevation Contour (Feet Above Site Datum)	NM	Not Monitored
0.03	Groundwater Gradient (ft/ft)	NS	Not Sampled
		*	Not Used in Contouring

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

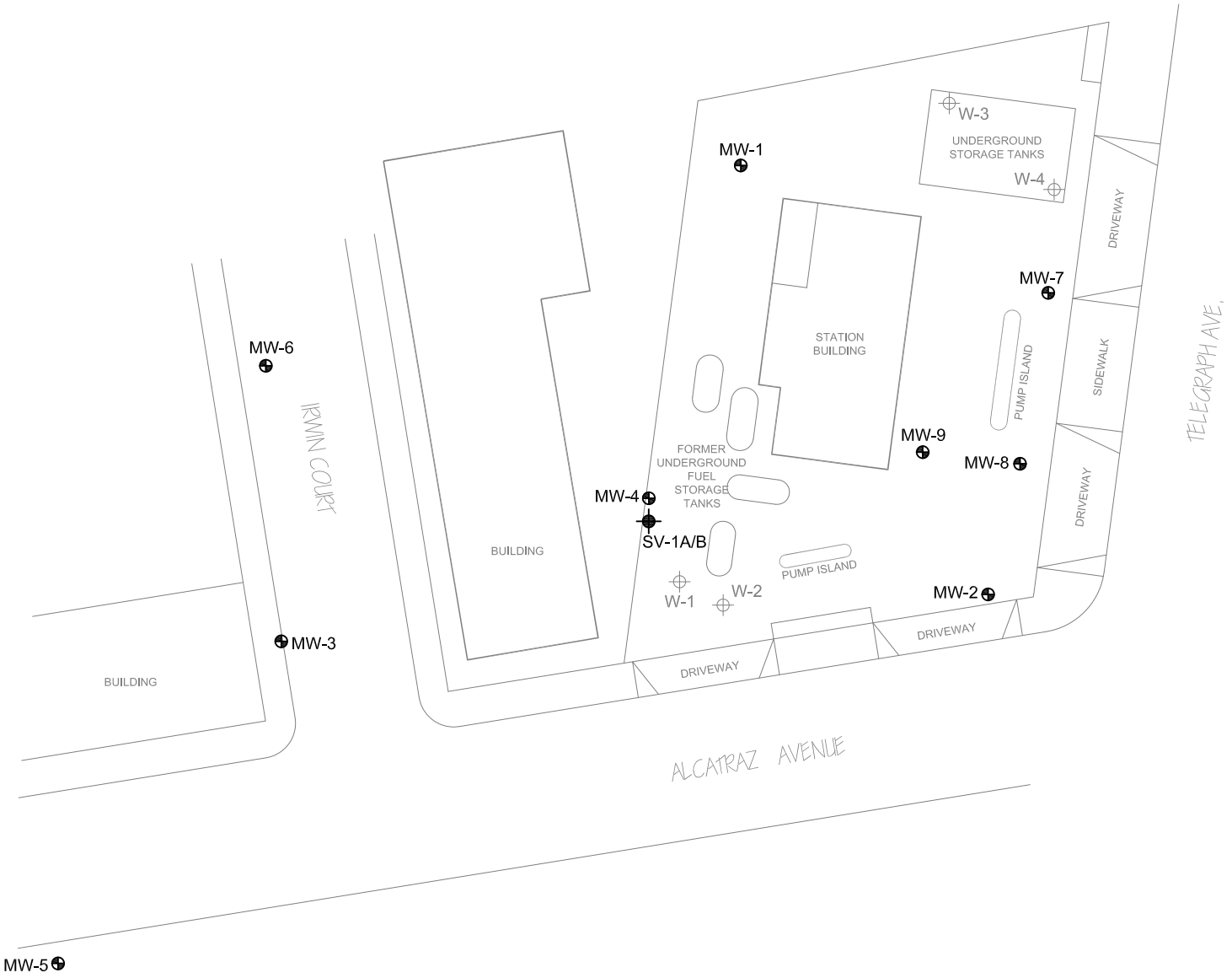
NOTE: SITE MAP ADAPTED FROM IT CORPORATION FIGURES.
SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
875 Cotting Lane Suite G, Vacaville, California
Project No.: 06-88-602 Date: 3/1/2012

Station #374
6407 Telegraph Ave.
Oakland, California

Groundwater Elevation Contours and Analytical Summary Map
February 2, 2012

Drawing
2



N

0 40 80

SCALE (ft)

LEGEND

- Monitor Well Location
- Tank Pit Monitor Well Location
- Proposed Soil Vapor Probe Location

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

BROADBENT
875 Cotting Lane, Suite G
Vacaville, California 95688
Project No.: 06-88-602 Date: 9/5/2012

Station #374
6407 Telegraph Ave.
Oakland, California

Proposed Soil Vapor Probe Location

Drawing
3

APPENDIX A

Historical Soil and 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 ID and Date Monitored	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

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	Ethyl-benzene	Total Xylenes
April 1988 - Limited Environmental Site Assessment					
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
June 1988 - Excavation and Removal of USTs					
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
July 1989 - Limited Subsurface Investigation					
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
April 1, 1992 - Offsite Investigation					
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

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.

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

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

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

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 Screning 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 Screning 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.

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

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

Well ID and Date Monitored	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 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	
5/20/2011	--		7.00	27.00	6.38	158.07	--	--	--	--	--	--	--	--	
8/15/2011	NP		7.00	27.00	7.24	157.21	<50	*<2.5*	<2.5	<2.5	<2.5	*130*	2.54	6.9	
2/2/2012	P		7.00	27.00	7.32	157.13	<50	<1.0	<1.0	<1.0	<1.0	*66*	1.01	7.1	
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	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

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

Well ID and Date Monitored	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.															
12/6/2002	--	157.92	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	
9/4/2003	--		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	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

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

Well ID and Date Monitored	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.															
2/19/2010	NP	163.46	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
2/14/2011	NP		7.00	27.00	7.35	156.14	<50	<0.50	<0.50	<0.50	<0.50	*11*	0.87	7.0	
5/20/2011	--		7.00	27.00	7.02	156.47	--	--	--	--	--	--	--	--	
8/15/2011	NP		7.00	27.00	7.62	155.87	<50	<0.50	<0.50	<0.50	<0.50	1.7	1.45	7.1	
2/2/2012	P		7.00	27.00	7.56	155.93	<50	<0.50	<0.50	<0.50	<0.50	1.8	0.85	7.3	
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	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

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

Well ID and Date Monitored	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-3 Cont.															
05/09/2005	--	159.21	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	
11/1/2006	--		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	--	--	--	--	--	--	--	--	
5/20/2011	--		7.00	27.00	5.77	153.44	--	--	--	--	--	--	--	--	
8/15/2011	P		7.00	27.00	6.41	152.80	<50	<0.50	<0.50	<0.50	<0.50	1.2	1.04	7.0	
2/2/2012	--		7.00	27.00	6.34	152.87	--	--	--	--	--	--	--	--	
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	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

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

Well ID and Date Monitored	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.															
12/17/2000	--	156.53	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
1/29/2003	--		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	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

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

Well ID and Date Monitored	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.															
11/14/2007	--	162.47	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
8/10/2010	NP		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	
5/20/2011	--		7.00	27.00	6.89	155.59	--	--	--	--	--	--	--	--	
8/15/2011	P		7.00	27.00	7.59	154.89	***8,600***	***2,100***	*86*	***250***	***210***	*<12*	1.02	7.0	l
2/2/2012	P		7.00	27.00	7.71	154.77	***4,600***	***1,000***	34	23	*33*	*<12*	0.60	7.2	
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

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

Well ID and Date Monitored	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.															
5/23/2003	--	151.33	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
5/30/2006	--		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	

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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-5 Cont.															
12/16/2010	--	156.90	10.00	23.00	8.10	148.80	--	--	--	--	--	--	--	--	j
2/14/2011	--		10.00	23.00	--	--	--	--	--	--	--	--	--	--	d
5/20/2011	--		10.00	23.00	--	--	--	--	--	--	--	--	--	--	d
8/15/2011	P		10.00	23.00	7.91	148.99	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.46	7.4	
2/2/2012	--		10.00	23.00	8.08	148.82	--	--	--	--	--	--	--	--	
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	--	--	--	--	--	--	--	--	
8/12/2002	--		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	

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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-6 Cont.															
11/18/2005	--	159.41	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	--	--	--	--	--	--	--	--	
8/20/2009	NP		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	--	--	--	--	--	--	--	--	
5/20/2011	--		5.00	15.00	4.29	155.12	--	--	--	--	--	--	--	--	
8/15/2011	P		5.00	15.00	4.52	154.89	<50	<0.50	<0.50	<0.50	<0.50	2.2	1.55	7.1	
2/2/2012	--		5.00	15.00	--	--	--	--	--	--	--	--	--	--	d
MW-7															
12/16/2010	P	164.80	5.00	20.00	6.52	158.28	***700***	<0.50	<0.50	15	*32*	*62*	--	7.08	j
2/14/2011	NP		5.00	20.00	6.77	158.03	***7,100***	***1,700***	*98*	***260***	***210***	*<20*	1.02	6.8	
5/20/2011	NP		5.00	20.00	5.84	158.96	***570***	<0.50	<0.50	*37*	*25*	4.6	1.66	6.7	l (GRO)
8/15/2011	P		5.00	20.00	6.96	157.84	***420***	<1.0	<1.0	***49***	6.7	*14*	0.58	6.9	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

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

Well ID and Date Monitored	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-7 Cont.															
2/2/2012	P	164.80	5.00	20.00	7.15	157.65	<50	<0.50	<0.50	<0.50	<0.50	*6.2*	0.45	7.5	
MW-8															
12/16/2010	P	164.14	5.00	20.00	6.85	157.29	***520***	*43*	<0.50	4.1	*21*	*150*	0.46	7.12	j
2/14/2011	NP		5.00	20.00	7.30	156.84	<50	*<2.0*	<2.0	<2.0	<2.0	*110*	1.07	6.7	
5/20/2011	NP		5.00	20.00	6.88	157.26	<50	*<2.0*	<2.0	<2.0	<2.0	*88*	1.35	6.5	
8/15/2011	P		5.00	20.00	6.00	158.14	<50	*5.2*	<1.0	9.7	<1.0	*57*	0.51	6.7	
2/2/2012	P		5.00	20.00	7.57	156.57	<50	<0.50	<0.50	<0.50	<0.50	3.9	0.68	7.1	
MW-9															
12/16/2010	P	163.77	5.00	20.00	6.63	157.14	***330***	*18*	<0.50	11	*38*	*390*	0.57	6.97	j
2/14/2011	NP		5.00	20.00	6.85	156.92	<50	*<4.0*	<4.0	<4.0	<4.0	*270*	0.98	6.9	
5/20/2011	NP		5.00	20.00	6.39	157.38	66	*<4.0*	<4.0	<4.0	<4.0	*280*	1.64	6.7	l (GRO)
8/15/2011	NP		5.00	20.00	7.09	156.68	<50	*<2.0*	<2.0	<2.0	<2.0	*120*	0.88	7.1	
2/2/2012	P		5.00	20.00	7.18	156.59	<50	<0.50	<0.50	<0.50	<0.50	*34*	0.65	7.2	

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 Screning 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 Screning 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
l = Quantitated against gasoline

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 ID and Date Monitored	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 ID and Date Monitored	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*	
8/15/2011	<1,500	*<50*	*130*	<2.5	<2.5	<2.5	*<2.5*	*<2.5*	
2/2/2012	<600	*<20*	*66*	<1.0	<1.0	<1.0	*<1.0*	*<1.0*	
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*	
8/15/2011	<300	<10	1.7	<0.50	<0.50	<0.50	<0.50	*<0.50*	
2/2/2012	<300	<10	1.8	<0.50	<0.50	<0.50	<0.50	*<0.50*	
MW-3									
6/20/2000	--	--	*<10*	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data

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

Well ID and Date Monitored	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.									
6/21/2001	--	--	2.5	--	--	--	--	--	
12/31/2001	--	--	4.9	--	--	--	--	--	
4/17/2002	--	--	*8.7*	--	--	--	--	--	
12/6/2002	--	--	*6.2*	--	--	--	--	--	
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*	
8/15/2011	<300	<10	1.2	<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*	

Table 2. Summary of Fuel Additives Analytical Data

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

Well ID and Date Monitored	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.									
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*	
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*	
8/15/2011	<7,500	*<250*	*<12*	<12	<12	<12	*<12*	*<12*	
2/2/2012	<7,500	*<250*	*<12*	<12	<12	<12	*<12*	*<12*	
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*	

Table 2. Summary of Fuel Additives Analytical Data

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

Well ID and Date Monitored	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-5 Cont.									
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*	
8/15/2011	<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*	--	--	--	--	--	
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*	
8/15/2011	<300	<10	2.2	<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*	
5/20/2011	<300	<10	4.6	<0.50	<0.50	<0.50	<0.50	*<0.50*	
8/15/2011	<600	*<20*	*14*	<1.0	<1.0	<1.0	*<1.0*	*<1.0*	
2/2/2012	<300	<10	*6.2*	<0.50	<0.50	<0.50	<0.50	*<0.50*	
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*	
5/20/2011	<1,200	*<40*	*88*	<2.0	<2.0	<2.0	*<2.0*	*<2.0*	
8/15/2011	<600	*<20*	*57*	<1.0	<1.0	<1.0	*<1.0*	*<1.0*	
2/2/2012	<300	<10	3.9	<0.50	<0.50	<0.50	<0.50	*<0.50*	

Table 2. Summary of Fuel Additives Analytical Data

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

Well ID and Date Monitored	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-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*	
5/20/2011	<2,400	*<80*	*280*	<4.0	<4.0	<4.0	*<4.0*	*<4.0*	
8/15/2011	<1,200	*<40*	*120*	<2.0	<2.0	<2.0	*<2.0*	*<2.0*	
2/2/2012	<300	<10	*34*	<0.50	<0.50	<0.50	<0.50	*<0.50*	

Symbols & Abbreviations:
-- = Not analyzed/applicable/measured/available
< = Not detected at or above the laboratory reporting limi
1,2-DCA = 1,2-Dichloroethane
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 Screning 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 Screning 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

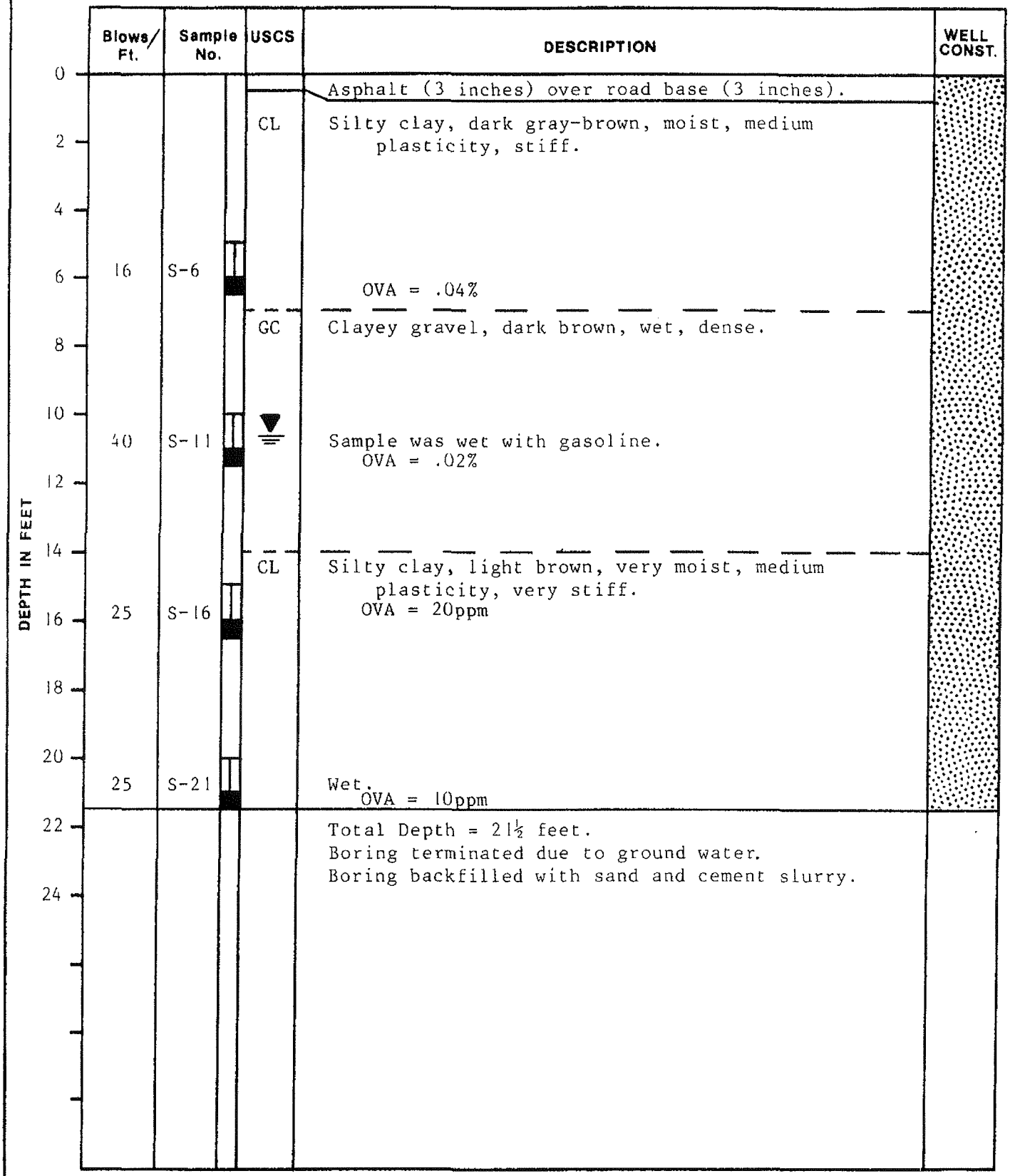
Footnotes:
a = The continuing calibration verification for ethanol was outside of client contractual limits, however, it was within method acceptance limits. The data should still be useful for its intended purpose

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

APPENDIX B

Soil Boring and Well Construction Logs



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PROJECT NO. 18039-1

LOG OF BORING B - 1

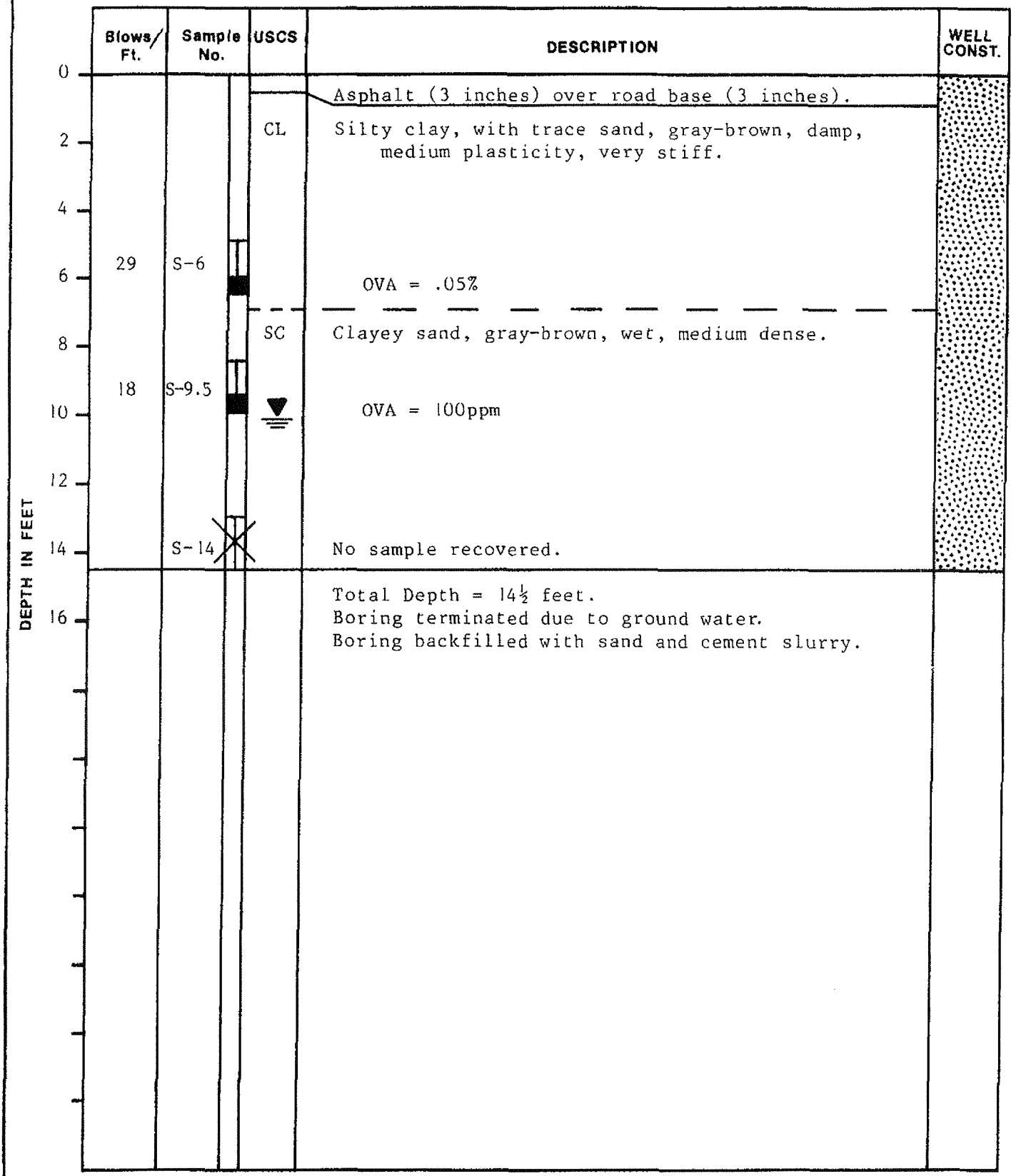
ARCO Station No. 374

Telegraph and Alcatraz Avenues

Oakland, California

PLATE

P-4



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PROJECT NO. 18039-1

LOG OF BORING B - 2

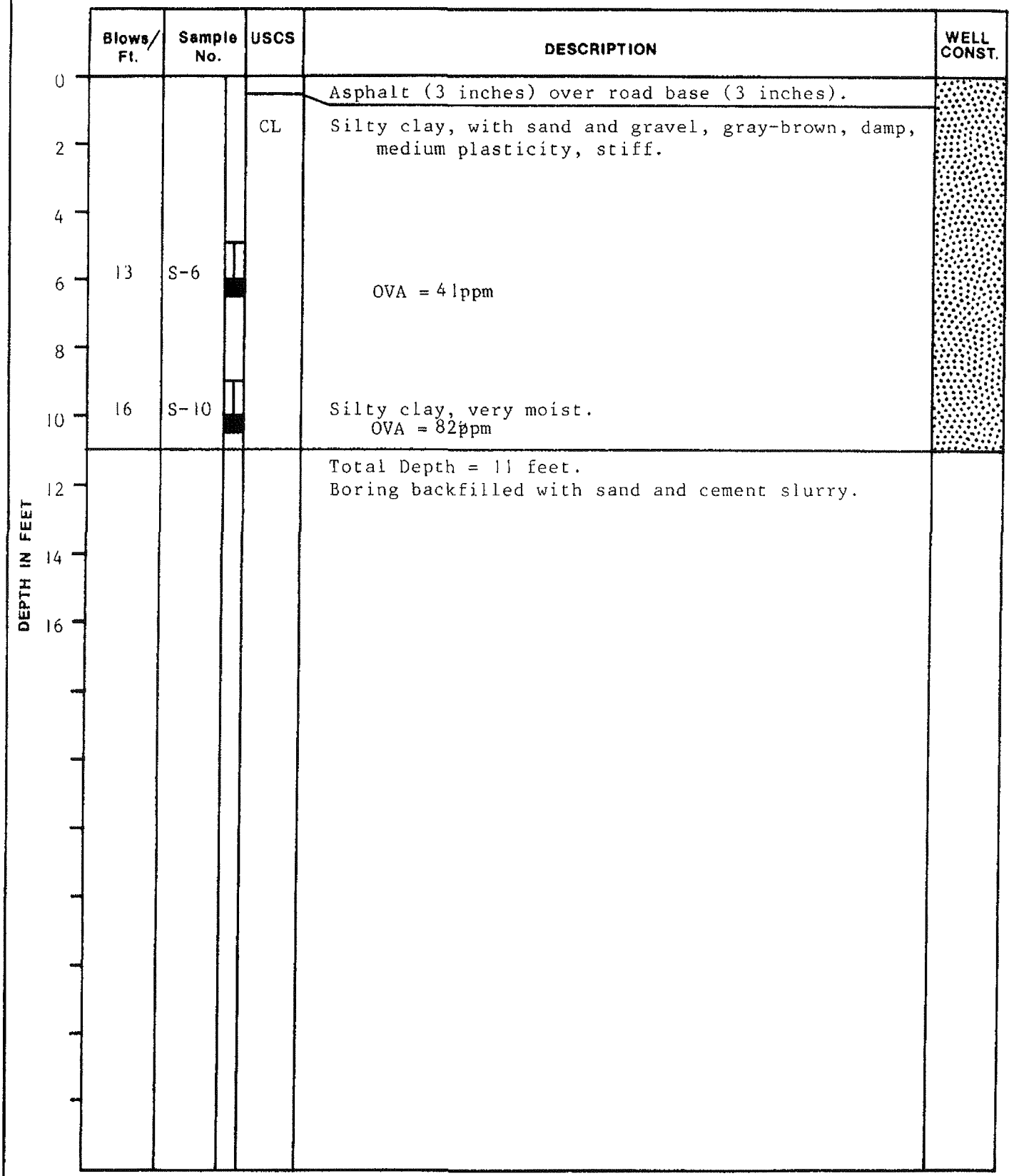
ARCO Station No. 374

Telegraph and Alcatraz Avenues

Oakland, California

PLATE

P-5



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PROJECT NO. 18039-1

LOG OF BORING B - 3

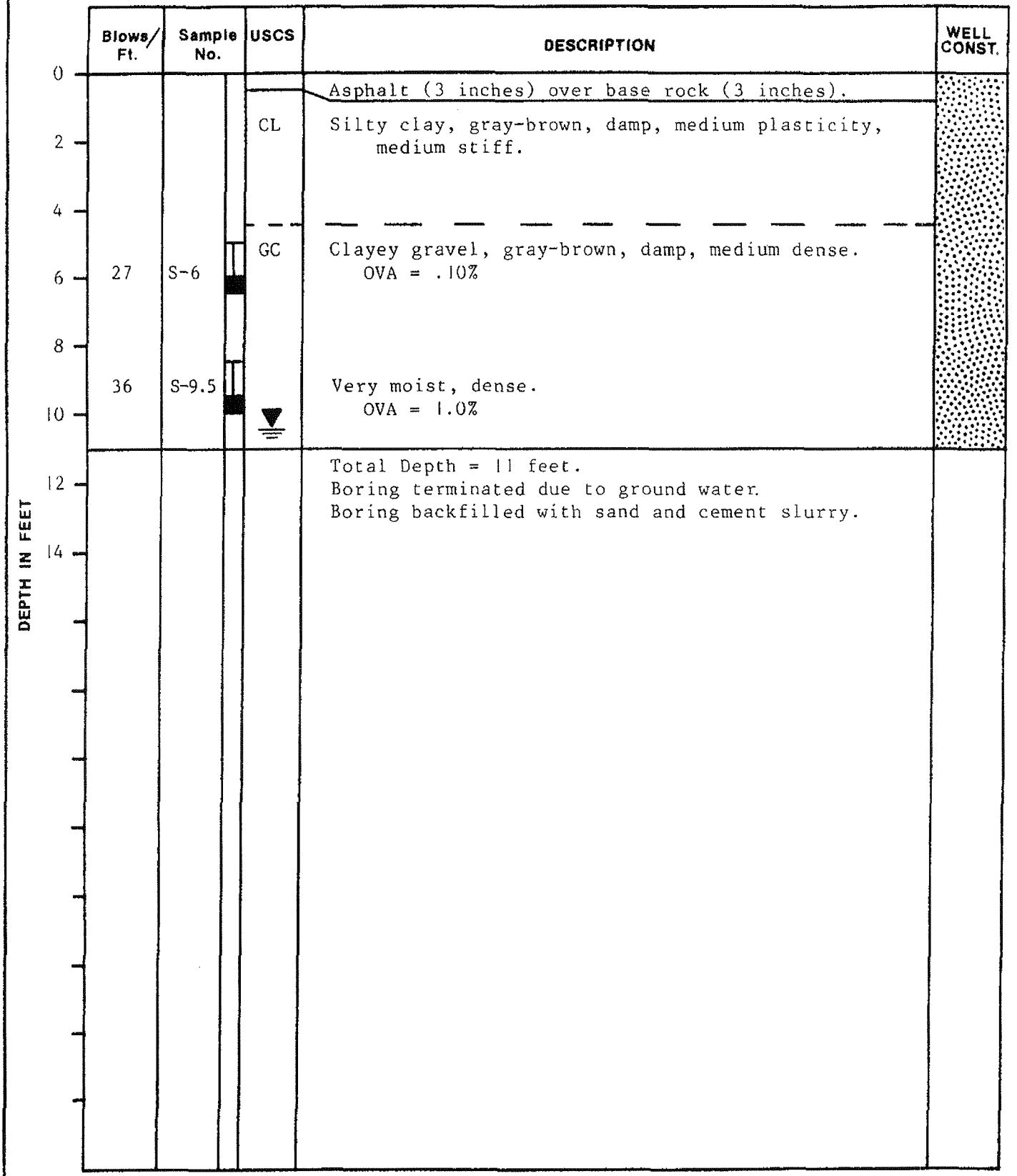
ARCO Station No. 374

Telegraph and Alcatraz Avenues

Oakland, California

PLATE

P-6



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PROJECT NO. 18039-1

LOG OF BORING B - 4

ARCO Station No. 374

Telegraph and Alcatraz Avenues

Oakland, California

PLATE

P-7

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					Asphalt.	
				CL	Silty clay, dark brown, slightly damp, medium plasticity, very stiff, rootlets, minor iron staining.	
2		4				
		12				
4	S-3.5	18	0			
6						
8		3		▼		
		5				
	S-8.5	12	110		Sandy clay, grading to clay with gravel, some mottling, slight plasticity, stiff, noticeable odor.	
10						
12				▽		
		15				
		18				
14	S-13.5	20	81		Slightly green, hard.	
16						
		8				
18		10				
	S-18.5	12	0		Silty clay, some sand and gravel, light brown, moist, medium plasticity, very stiff.	
20						

(Section continues downward)

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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.
				CL	Silty clay, some sand and gravel, light brown, moist, medium plasticity, stiff.	
22		3 4				
	S-23	7	0		Trace gravel.	
24						
26						
		3 5				
28	S-27	7	0			
					Total Depth = 28-1/2 feet.	
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						

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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						
2				CL	Sandy clay, dark brown, damp, slight plasticity, very stiff.	
4	S-3.5	6 10 12	0			
6						
8	S-8.5	7 20 25	0		Silty clay, with some gravel, light brown, damp, hard.	
10						
12						
14	S-13.5	5 7 15	0		Very stiff.	
16						
18	S-18.5	7 20 25	0		Silty clay with gravel, brown, moist, hard.	
20					(Section continues downward)	

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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.
				CL	Silty clay with gravel, brown, moist, hard.	
22		3				
		5				
	S-23	12	0		Silty clay, some fine gravel, dark brown, stiff.	
24						
26						
		10				
		20			Silty clay with sand, medium brown, slightly damp, slight plasticity, hard.	
28	S-27	25	0			
					Total Depth = 28-1/2 feet.	
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						

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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		3		CL	Silty clay, with sand and some gravel, medium brown, damp, slight plasticity, stiff, rootlets.	
		10				
4	S-3.5	10	0			
6						
8		2				
		4				
	S-8.5	8	0		Damp.	
10						
12		4				
		6				
14	S-13.5	10	8.5		Some mottling, moist.	
16						
18		6				
		5				
	S-18.5	12	9.1		Silty clay, minor gravel, light to medium brown, damp, medium plasticity, stiff.	
20					(Section continues downward)	

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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.
				CL	Silty clay, minor gravel, light to medium brown, damp, medium plasticity, stiff.	
22		6				
		8				
	S-23	12	0		Very stiff.	
24						
26						
		5				
		10				
28	S-27	12			Silty clay with sand, slight plasticity.	
					Total Depth = 28-1/2 feet.	
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						

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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 3		CL	Silty clay, some sand and fine-grained gravel, very dark brown, slightly damp, slight plasticity, stiff.	
4	3.5	8	0			
6						
8		3 4				
10	8.5	10	0			
12		4				
14	S-13.5	10 25	41.6	GM	Sandy gravel, some silt, medium brown, very moist, medium dense, obvious odor.	
16						
18	S-18.5	15 15 20	0		Wet, dense.	
20					(Section continues downward)	

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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		CL	Silty clay, some sand and gravel, very stiff.	
		12				
	S-23.5	15	0			
24						
26		7				
		20				
	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						

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PROJECT NO. 18039-3

LOG OF BORING B-4/MW-4

ARCO Station No. 374
6407 Telegraph Avenue
Oakland, California

PLATE 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:

Registration No.: RCE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Paved street: Alcatraz Avenue	
0					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						
					Color change to light brown at 13 feet.	
14	S-14.5	6 14 29	0	CL	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)

RESNA
Working to Restore Nature

PROJECT: 60025.05

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

PLATE 4

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:

Registration No.: RCE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Paved Street: Irwin Court.	
0					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)	
	S-5.5	6 9	0	CL	Sandy clay with silt, light brown, moist, low plasticity, stiff; some organic fragments and root holes.	
6						
8		11		GP	Sandy gravel with some silt, light brown, wet, dense.	
10	S-10	18 25	0			
		4 8				
12		16	0			
14		6 12				
	S-15	18	0			
16		11 25		CL	Silty clay with gravel, light brown, very moist, medium plasticity, hard.	
		32	0			
18					Total depth = 17 feet.	
20						

RESNA
Working to Restore Nature

PROJECT: 60025.05

LOG OF BORING B-6/MW-6

ARCO Station 374
6407 Telegrapf 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	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 Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
						1		Airknife to 5' bgs.	
						2		mixed fill material (fine grained soil, sand, and gravel mixtures) with plastic and other debris	
						3			
						4			
						5	CL	SILTY CLAY fill material, olive brown to greenish gray, dry to moist	
						6			
						7			
						8			
						9	GP	GRAVEL (crushed rock fill material), fine gravel particle size, very wet	
						10			
						11			
						12			
						13			
						14			
						15			
S	B11-15		9:03			16	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
						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 Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
						1		Airknife to 5' bgs.	
						2		mixed fill material (fine grained soil, sand, and gravel mixtures) with plastic and other debris	
						3			
						4			
						5	CL	SILTY CLAY fill material, olive brown to greenish gray, dry to moist	
						6			
						7			
						8			
						9			
						10	GP	GRAVEL (crushed rock fill material), fine gravel particle size, very wet	
						11			
						12			
						13			
						14			
						15			
S	B12-15.5		9:50			16	CL	SILTY CLAY, light olive brown, damp to moist, stiff	6.3
						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	Drilling Co.	RSI Drilling rig type: Powerprobe 6600
	Oakland, CA	Driller	Gilberto
Project No.	E374	Method	Geoprobe Hole Diameter: 2 inches
Logged By:	Collin Fischer	Sampler:	Continuous Core

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
					1	CL	Cleared to 6.5' bgs with air knife.	
					2			
					3		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	SC		
S	B-13 6.5'	N/A	1130	100	7		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	ML		
S	B-13 8.5'	N/A	1515	100	9		Clayey silt, ML, (7.5'-8.5'), dark gray, moist, medium plasticity, HC odor 60% silt, 40% clay	3800
					10	SC		
					11		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.

STRATUS ENVIRONMENTAL, INC.

SOIL BORING LOG — Boring No. B-14 — Sheet: 1 of 1

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

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
					1	CL	Cleared to 6.5' bgs with air knife.	
					2			
					3		Silty clay with sand, CL, (0'-5.5'), dark gray, moist, medium plasticity 60% clay, 30% silt, 10% medium grained sand	
					4			
S	B-14 4.5'	N/A	0940	100	5			0
					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	SC		
					13			
					14			
					15		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	Drilling Co.	RSI Drilling rig type: Powerprobe 6600
	Oakland, CA	Driller	Gilberto
Project No.	E374	Method	Geoprobe Hole Diameter: 2 inches
Logged By:	Collin Fischer	Sampler:	Continuous Core

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
					1	CL	Cleared to 6.5' bgs with air knife.	
					2			
					3		Silty clay with sand, CL, (0'-5.5'), dark gray, moist, medium plasticity 60% clay, 30% silt, 10% medium grained sand	
					4			
S	B-15 4.5'	N/A	1015	100	5			163
					6	ML		
S	B-15 6.5'	N/A	1025	100	7			82
					8		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	SC		
					11		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	
					12			
					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	CL		
					17		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.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

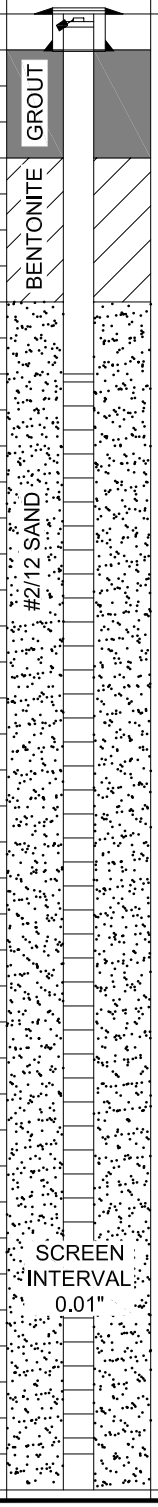
PROJECT NAME: BP/ARCO 374 | SITE ADDRESS: 6407 Telegraph Ave., Oakland, CA

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

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

DATE: 11/24/2010 | 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)	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
3	MW-7-3	0.0 ppm	Moist	Gray to Dk. Gray		Silty clay - clayey silt with sand	CL	
5	MW-7-5	0.0 ppm						
6	MW-7-6	8.7 ppm				Clayey silt with some sand and gravel	ML	
8	MW-7-8	385 ppm	Moist	Gray - Dk. gray	Stiff	Clayey silt with sand grading to silty sand and gravel		
9	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	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	MW-7-15.5	0.0 ppm				Silty sands with gravels, fine to coarse grained	SM	
17	MW-7-17	0.0 ppm						
18	MW-7-18.5	0.0 ppm	Very moist to wet		Stiff	Wet at 18 feet Silty clay with gravel	CL	
20	MW-7-20	0.0 ppm						

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

\\reno\public\CAD\templates\LITHLOG.DWG

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

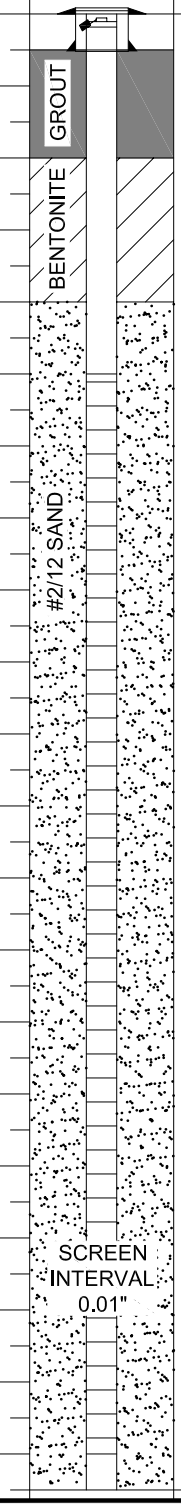
PROJECT NAME: BP/ARCO 374 | SITE ADDRESS: 6407 Telegraph Ave., Oakland, CA

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

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

DATE: 11/23/2010 | START: 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)	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
1–2				Gray to Dk. Gray				
3	MW-8-3	14.8 ppm				Silty clay with sand	CL	
4								
5	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								
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								
18–19	MW-8-18.5	0.0 ppm	Moist		Stiff	Silty Clay with fine to coarse grained sand	CL	
20	MW-8-20	0.0 ppm		Brown				

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

\\reno\public\CAD\templates\LITHLOG.DWG

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			Moist	Gray to Dk. Gray		Silty clay		
2									
3	BENTONITE	MW-9-3	24.9 ppm					CL	
4									
5		MW-9-5	13.5 ppm				Silty clay		
6		MW-9-6	75.0 ppm				Silty clay with sand and gravel		
7	#2/12 SAND			▼					
8		MW-9-8	1386 ppm	Moist	Gray to Brown	Stiff	Clayey silt with occasional sand and gravel		
9							No recovery at 9.5'	ML	
10									
11		MW-9-11	2475 ppm		Brown - Reddish brown	Firm			
12		MW-9-12.5	3794 ppm		Dk. gray to greenish gray				
13									
14		MW-9-14	14.5 ppm	Moist	Brown	Med. dense	Silty sand with coarse gravel	SM	
15		MW-9-15.5	1.6 ppm	Very moist	Brown to Reddish brown				
16									
17	SCREEN INTERVAL 0.01"	MW-9-17	0.0 ppm	▽ Wet			Wet at 17 feet Sandy gravel with trace silt	GP	
18		MW-9-18.5	0.0 ppm			Med. dense	Silty sand with gravel	SM	
19									
20		MW-9-20	0.0 ppm			Hard	Silty clay with gravel	CL	

TOTAL BORING DEPTH: 20.0' | PAGE NO: 1 OF 1 | ▼ ESTIMATED GROUNDWATER DEPTH: 7.31'

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: 0745 | DRILLING COMPANY: Gregg | DRILLER: Jason

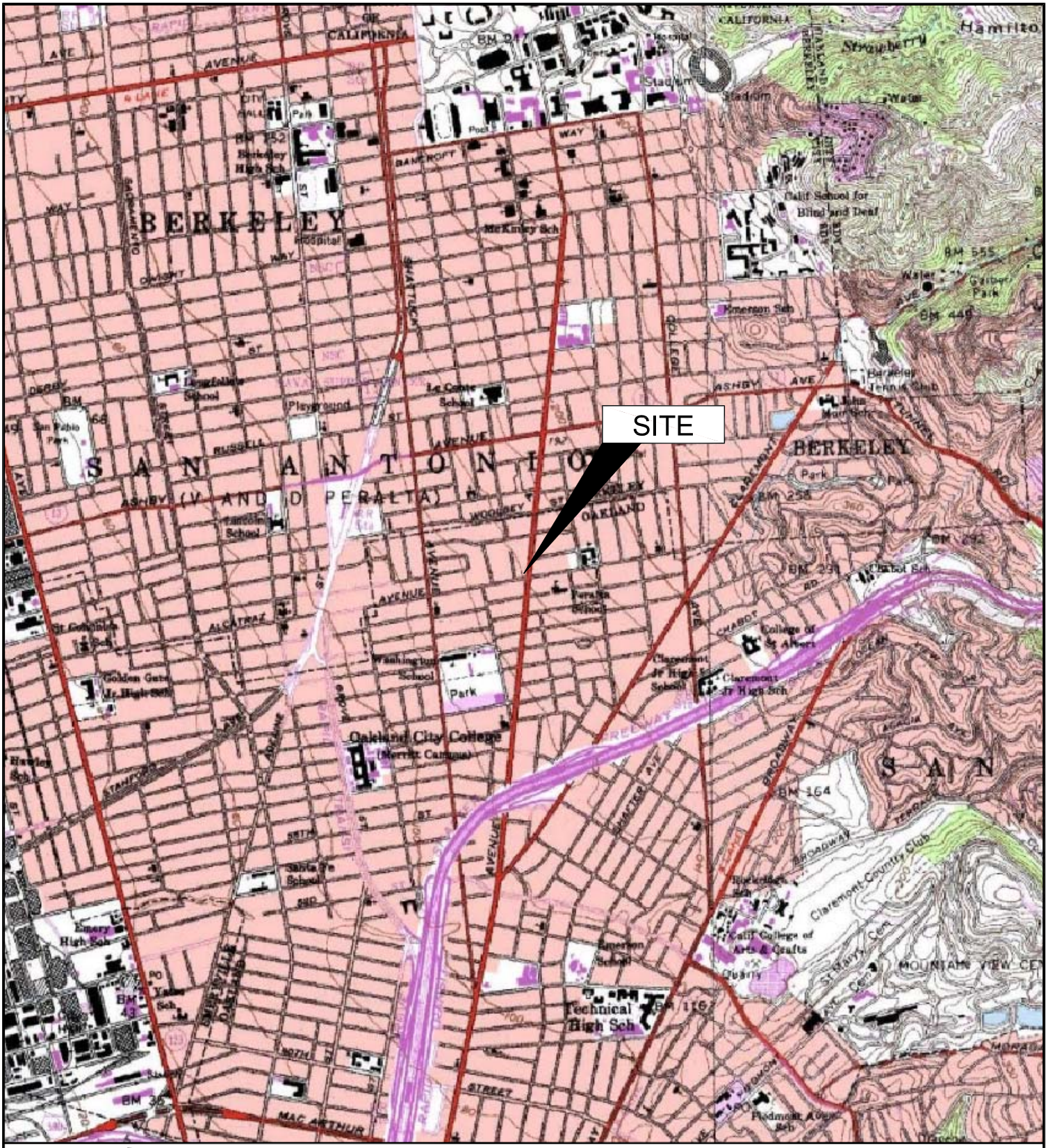
WELL ID: B-19 | STOP: 0843 | DRILLING METHOD: Hollow Stem Auger | SAMPLE METHOD: Split Spoon

DEPTH (FEET)	SOIL BORING	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
1	GROUT			Moist	Gray to Dk. Gray	Stiff	Silty clay with sand	CL	
2									
3		B-19-3	12.8 ppm						
4									
5		B-19-5	7.0 ppm				Silty clay or clayey silt with some 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		B-19-9.5	5896 ppm		Brown - Reddish brown				
10									
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			Stiff	Sandy silt to clayey silt		
19								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'

APPENDIX C

Geologic Cross-Sections and Historic Site Figures



N

0 2000 4000

APPROXIMATE SCALE (ft)

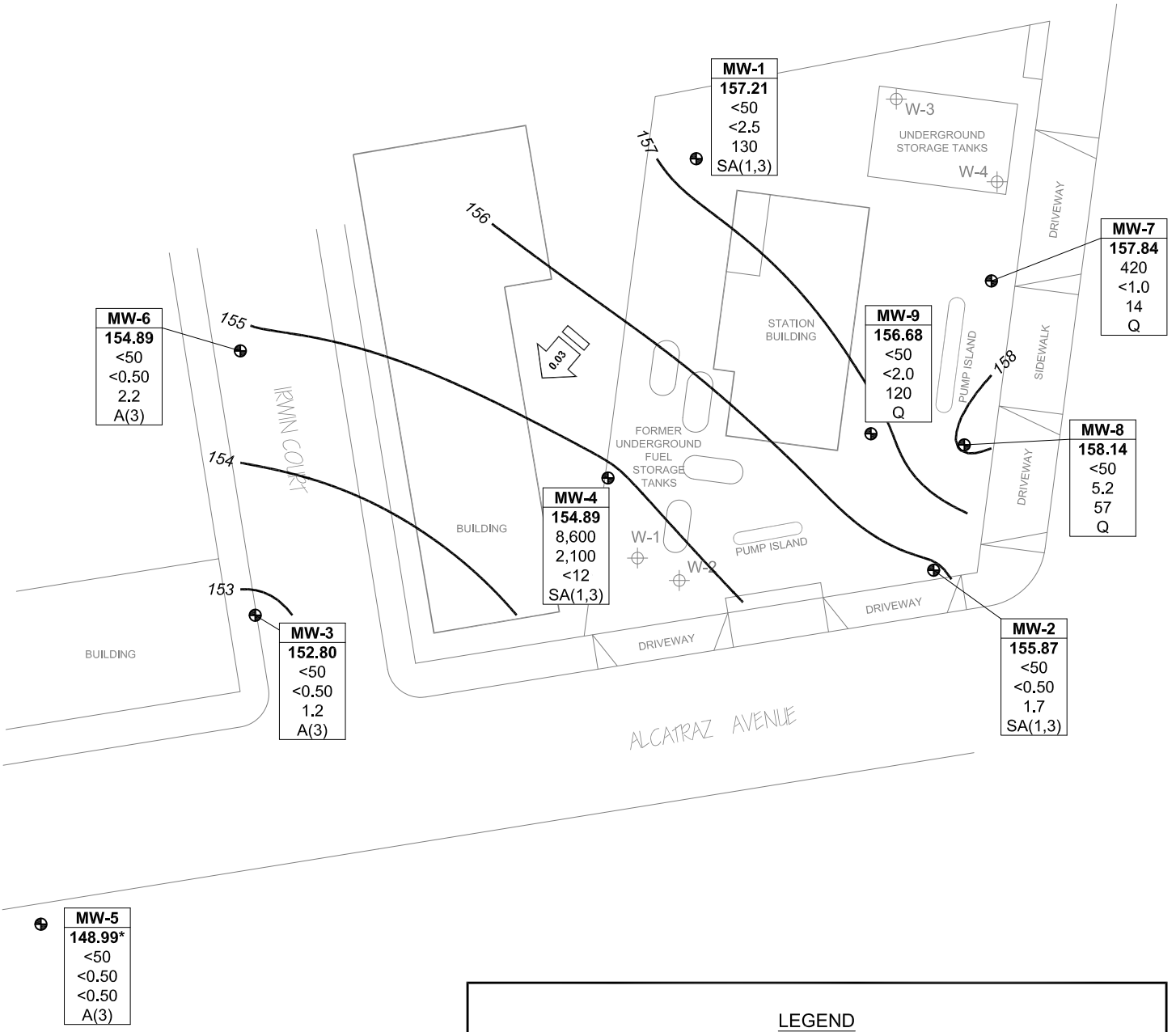
IMAGE SOURCE: USGS

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, CA 95926
Project No.: 06-88-602 Date: 10/30/09

Station #374
6407 Telegraph Ave.
Oakland, California

Site Location Map

Drawing
1



LEGEND

- Monitor Well Location
- Tank Pit Monitor Well Location
- Groundwater Elevation Contour (Feet Above Site Datum)
- 0.03 Groundwater Gradient (ft/ft)

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

A(3)	Sampled Annually - Third Quarter
SA(1,3)	Sampled Semi-Annually - First and Third Quarter
Q	Sampled Quarterly
NM	Not Monitored
NS	Not Sampled
*	Not used in contouring

N

0 40 80

SCALE (ft)

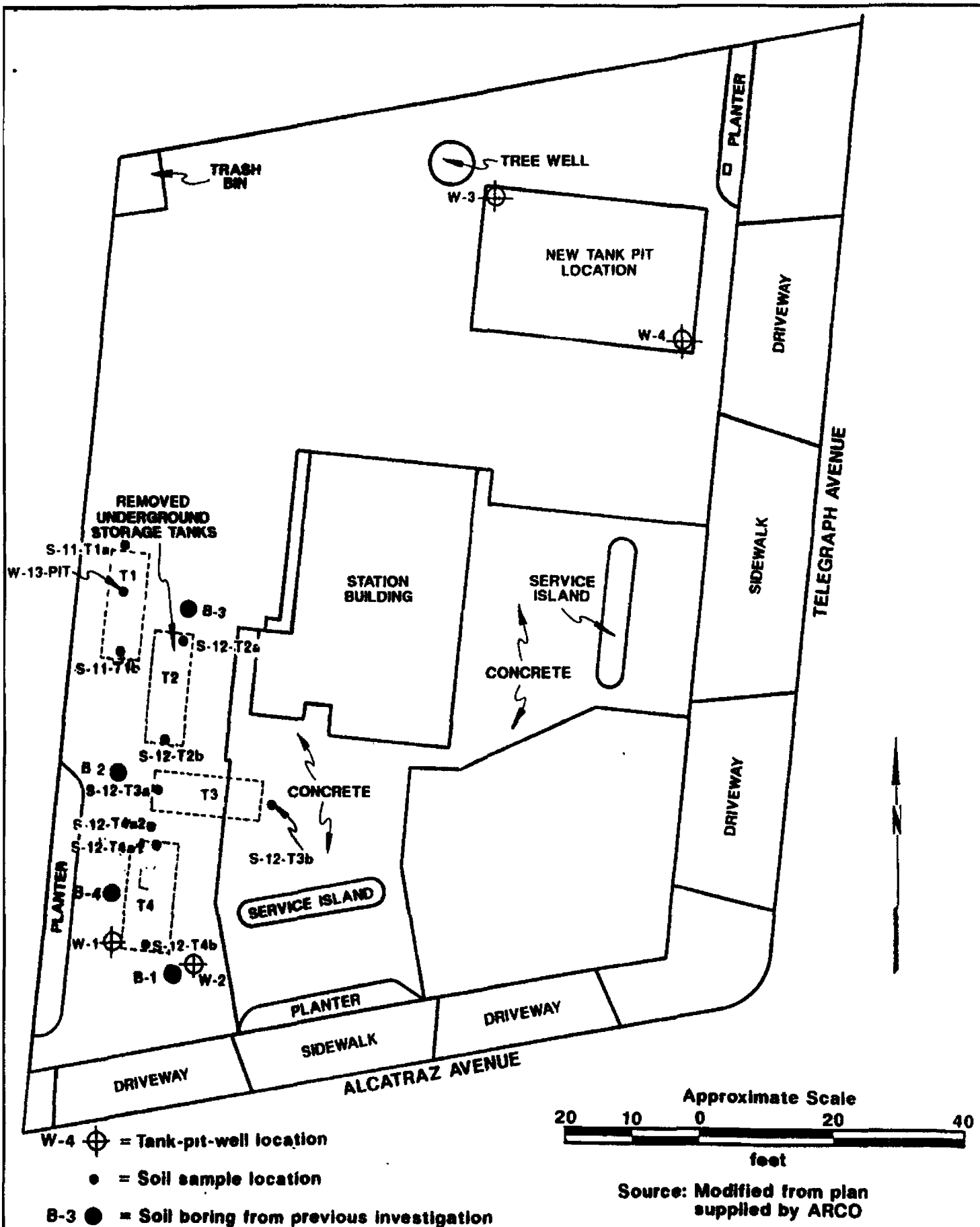
NOTE: SITE MAP ADAPTED FROM IT CORPORATION FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
875 Cotting Lane Suite G, Vacaville, California
Project No.: 06-88-602 Date: 8/31/2011

Station #374
6407 Telegraph Ave.
Oakland, California

Groundwater Elevation Contours and Analytical Summary Map
August 15, 2011

Drawing
2



Applied GeoSystems

PROJECT NO. 18039-2

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

PLATE
P - 2

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

N

0 40 80

SCALE (ft)

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

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California 95926

Project No.: 06-88-602 Date: 12/30/2010

Station #374
6407 Telegraph Ave.
Oakland, California

GRO Isoconcentration Contours
December 16, 2010

Drawing
4

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

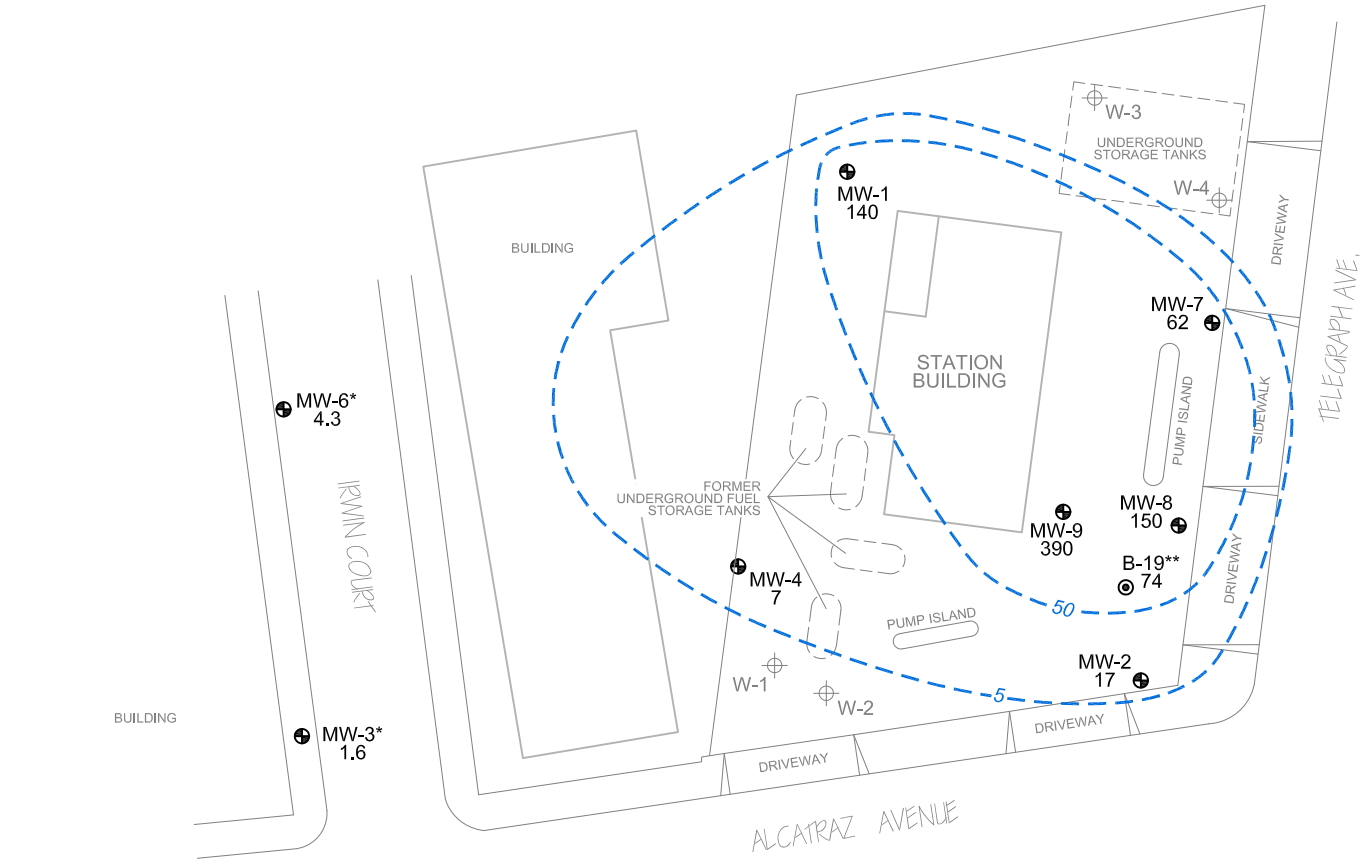
NOTE: SITE MAP ADAPTED FROM STANTEC FIGURES.
SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California 95926
Project No.: 06-88-602 Date: 12/30/2010

Station #374
6407 Telegraph Ave.
Oakland, California

Benzene Isoconcentration Contours
December 16, 2010

Drawing
5



N

0 40 80

SCALE (ft)

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 DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

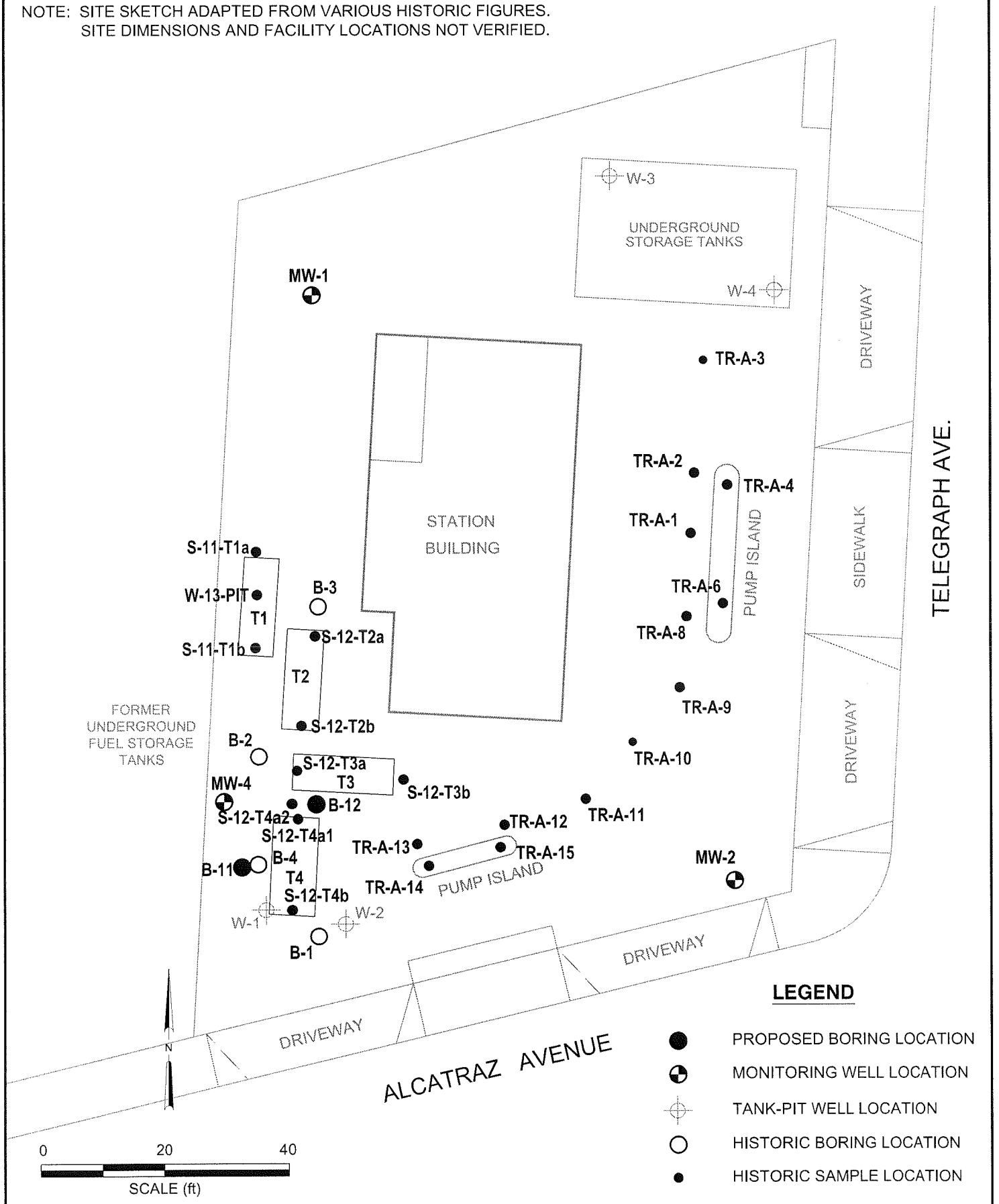
BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California 95926
Project No.: 06-88-602 Date: 12/31/2010

Station #374
6407 Telegraph Ave.
Oakland, California

MTBE Isoconcentration Contours
December 16, 2010

Drawing
6

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



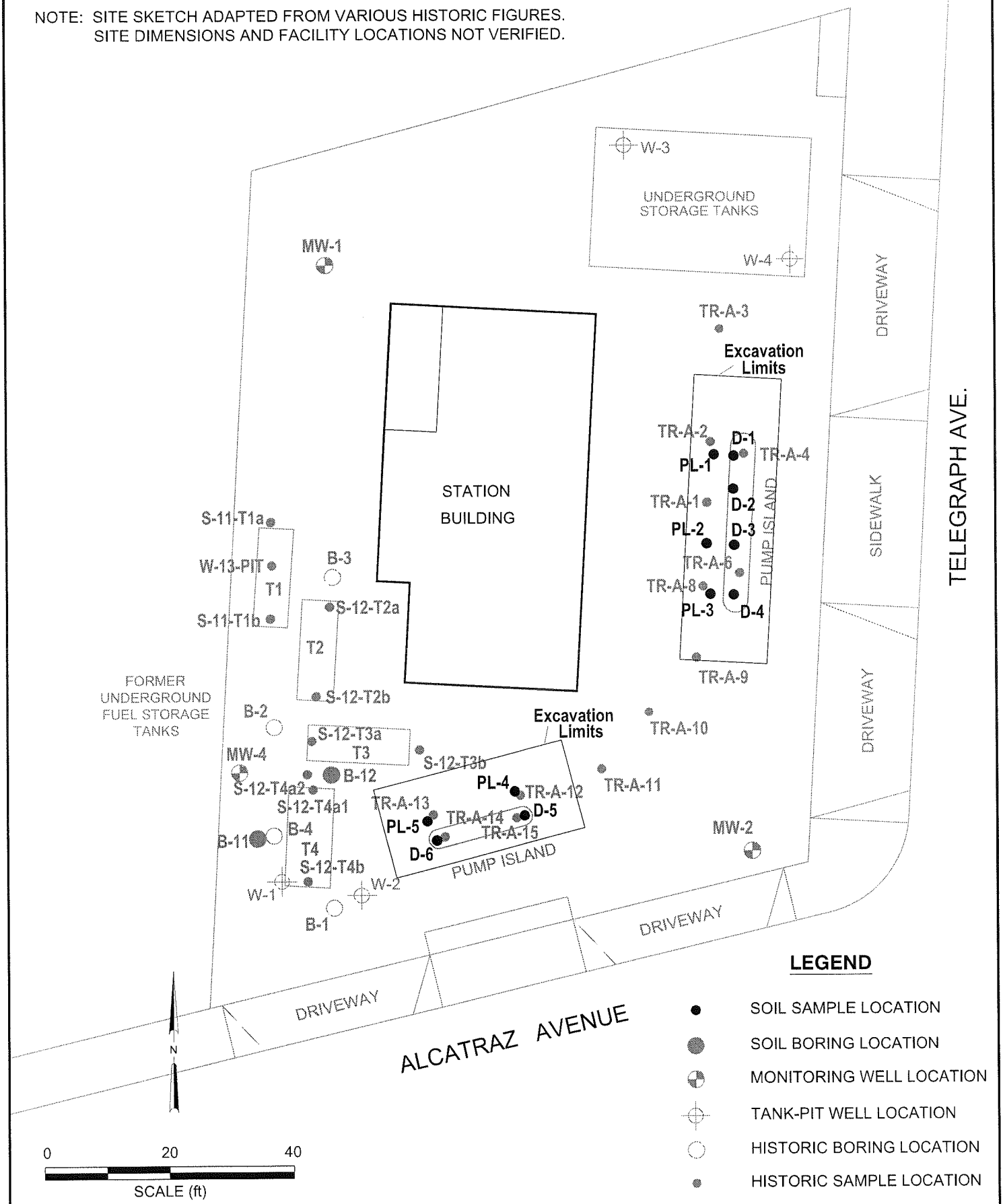
BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California
Project No.: 06-08-602 Date: 9/16/08

Station #374
6407 Telegraph Ave.
Oakland, California

Site Sketch With Historic and Proposed Sample Locations

Drawing
2

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

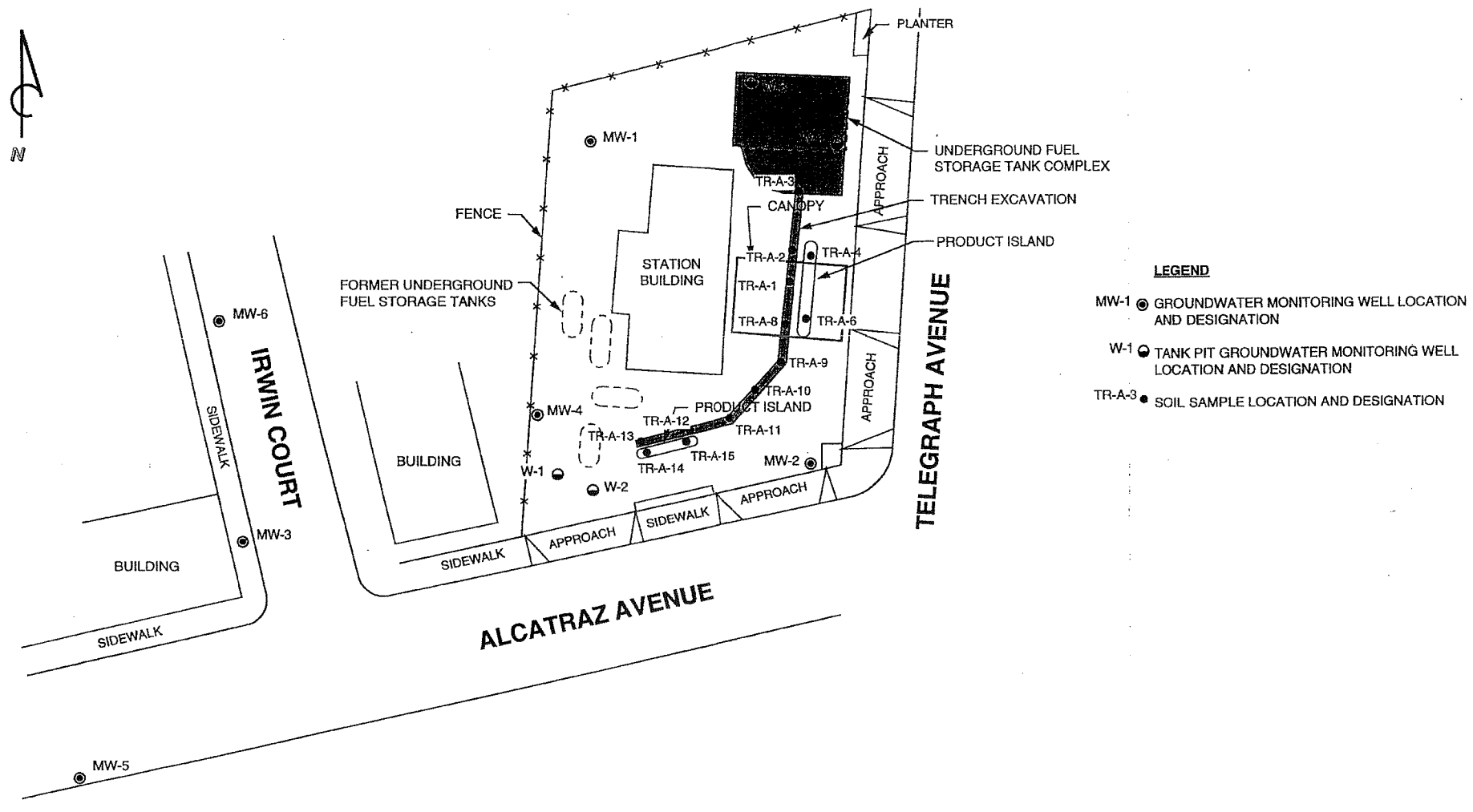


BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California
Project No.: 06-08-602 Date: 1/29/09

Station #374
6407 Telegraph Ave.
Oakland, California

Site Layout Plan with
Soil Sample Locations

Drawing
2



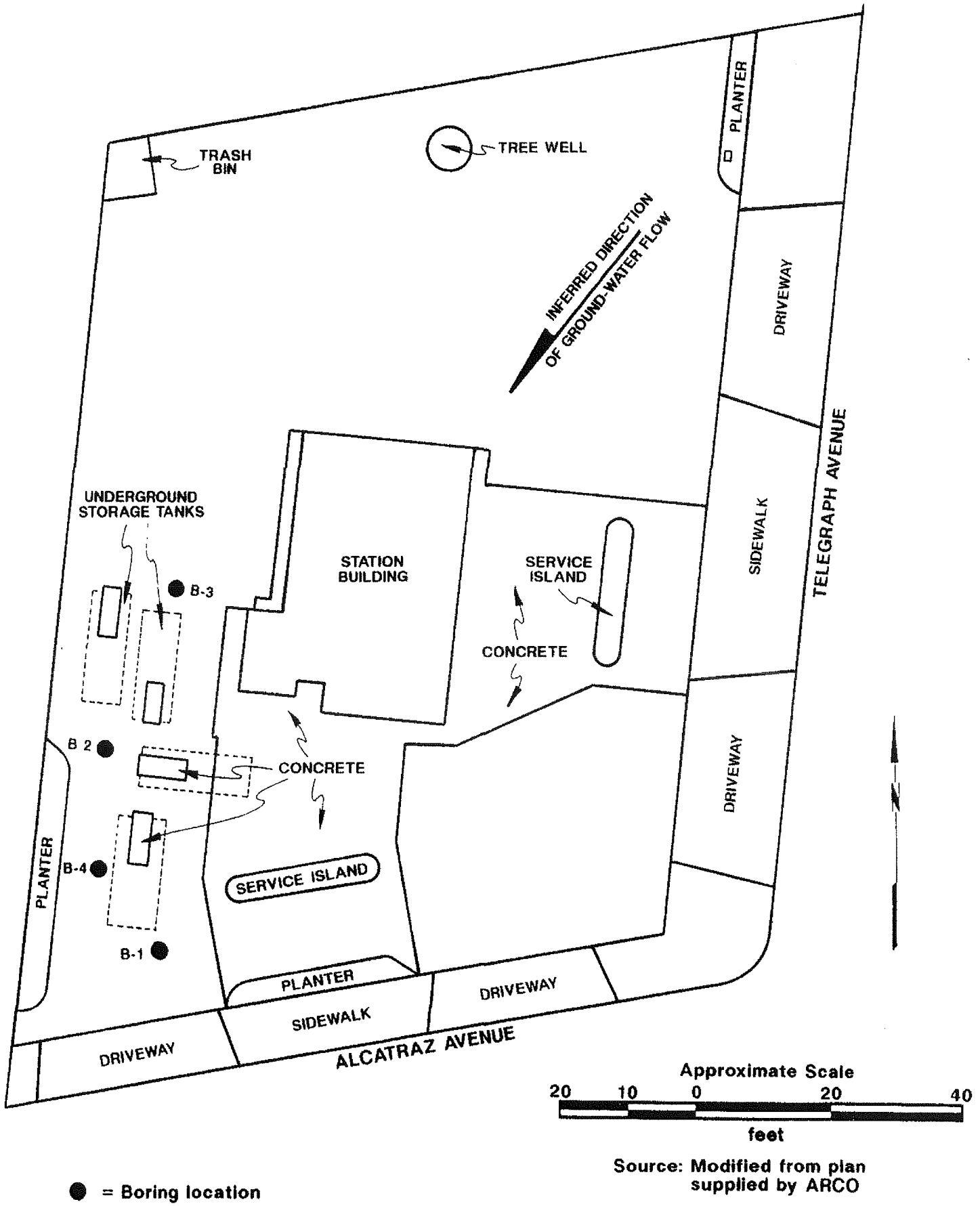
PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

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

SITE MAP

FIGURE:
2
PROJECT:
330-084.1B



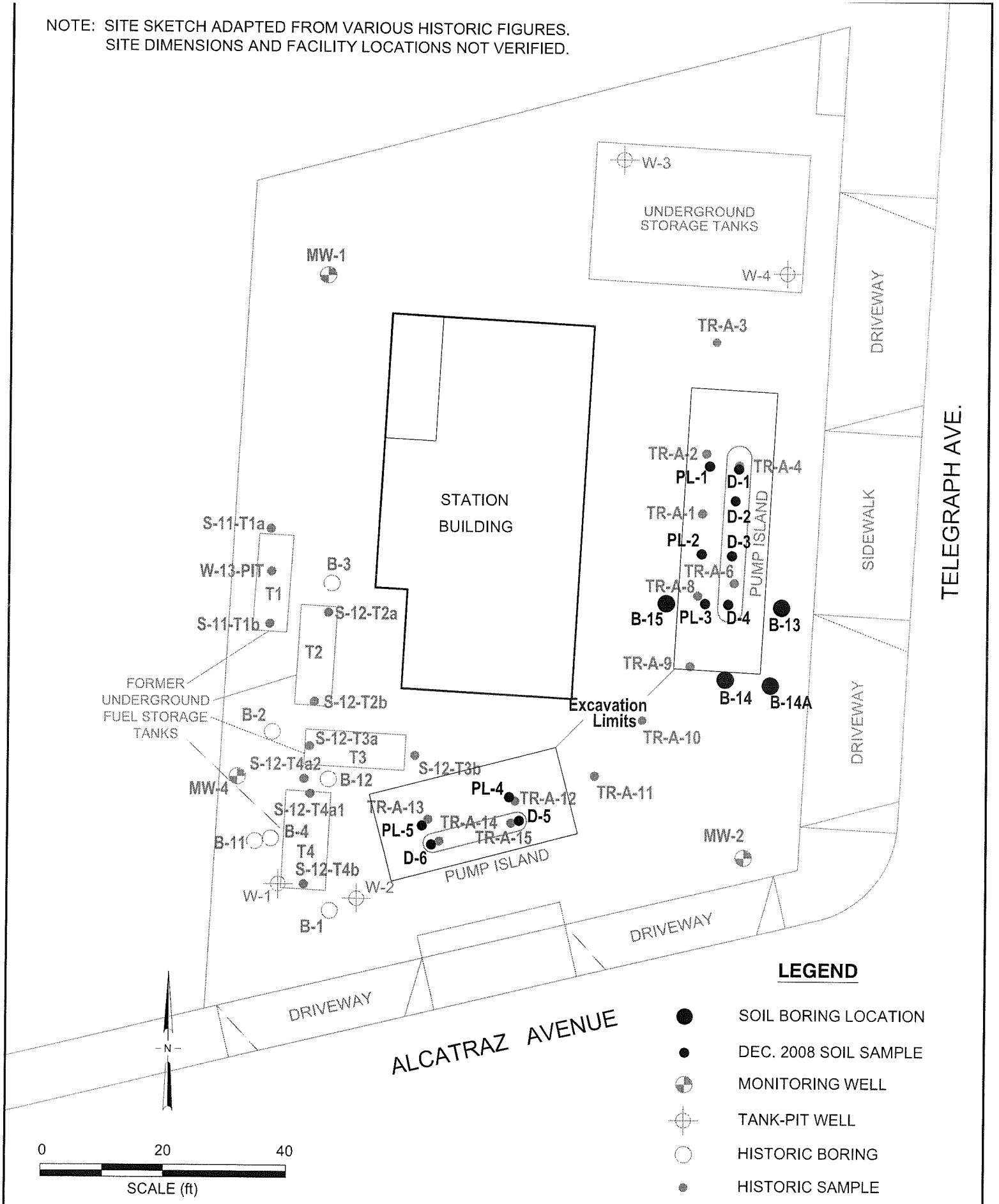
Applied GeoSystems
4125 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

PROJECT NO. 18039-1

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

PLATE
P - 2

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

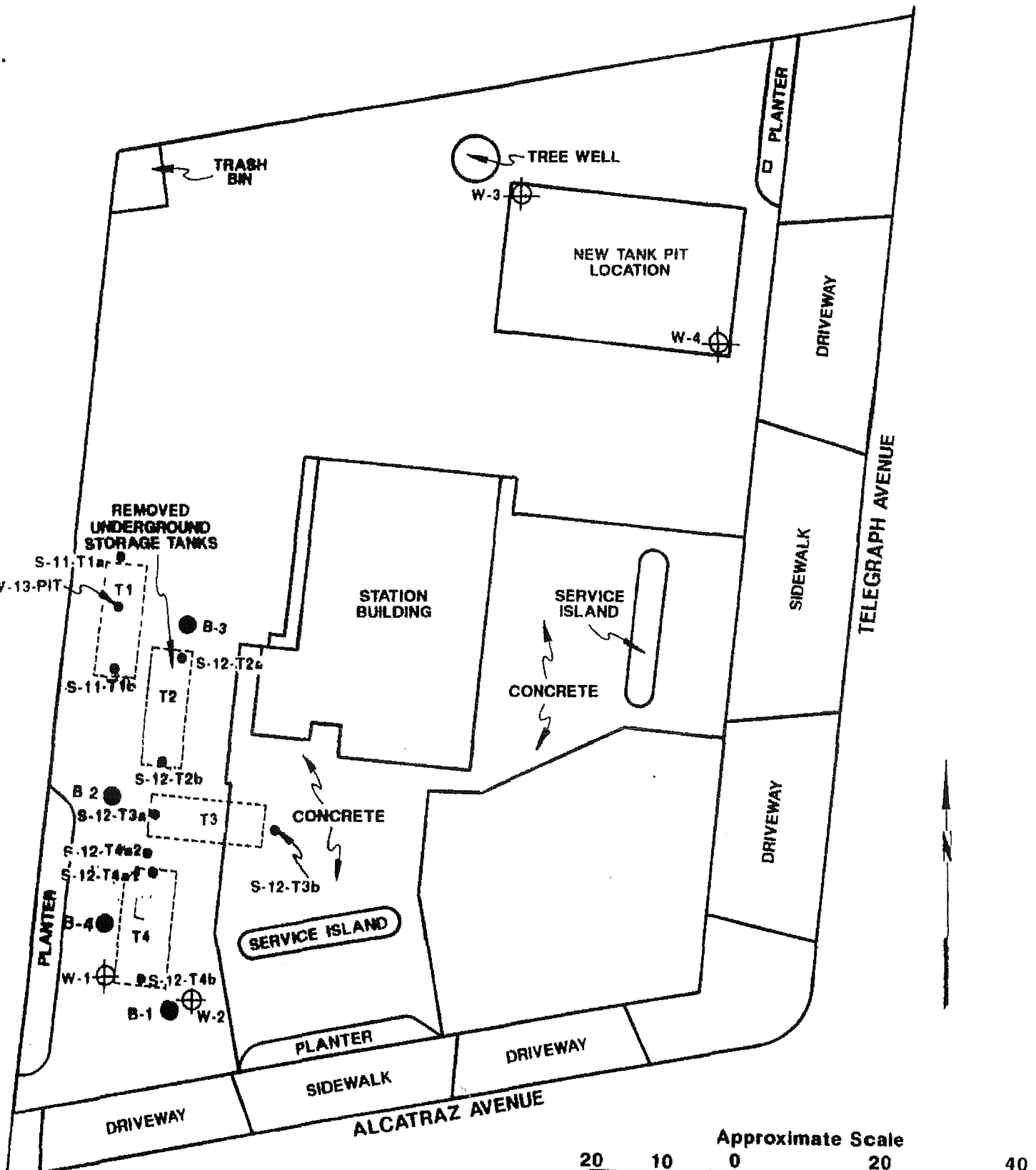


LEGEND

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

BROADBENT & ASSOCIATES, INC. ENGINEERING, WATER RESOURCES & ENVIRONMENTAL 1324 Mangrove Ave. Suite 212, Chico, California Project No.: 06-08-602 Date: 5/19/09	Station #374 6407 Telegraph Ave. Oakland, California	Site Layout Plan with Soil Boring Locations

Drawing 2

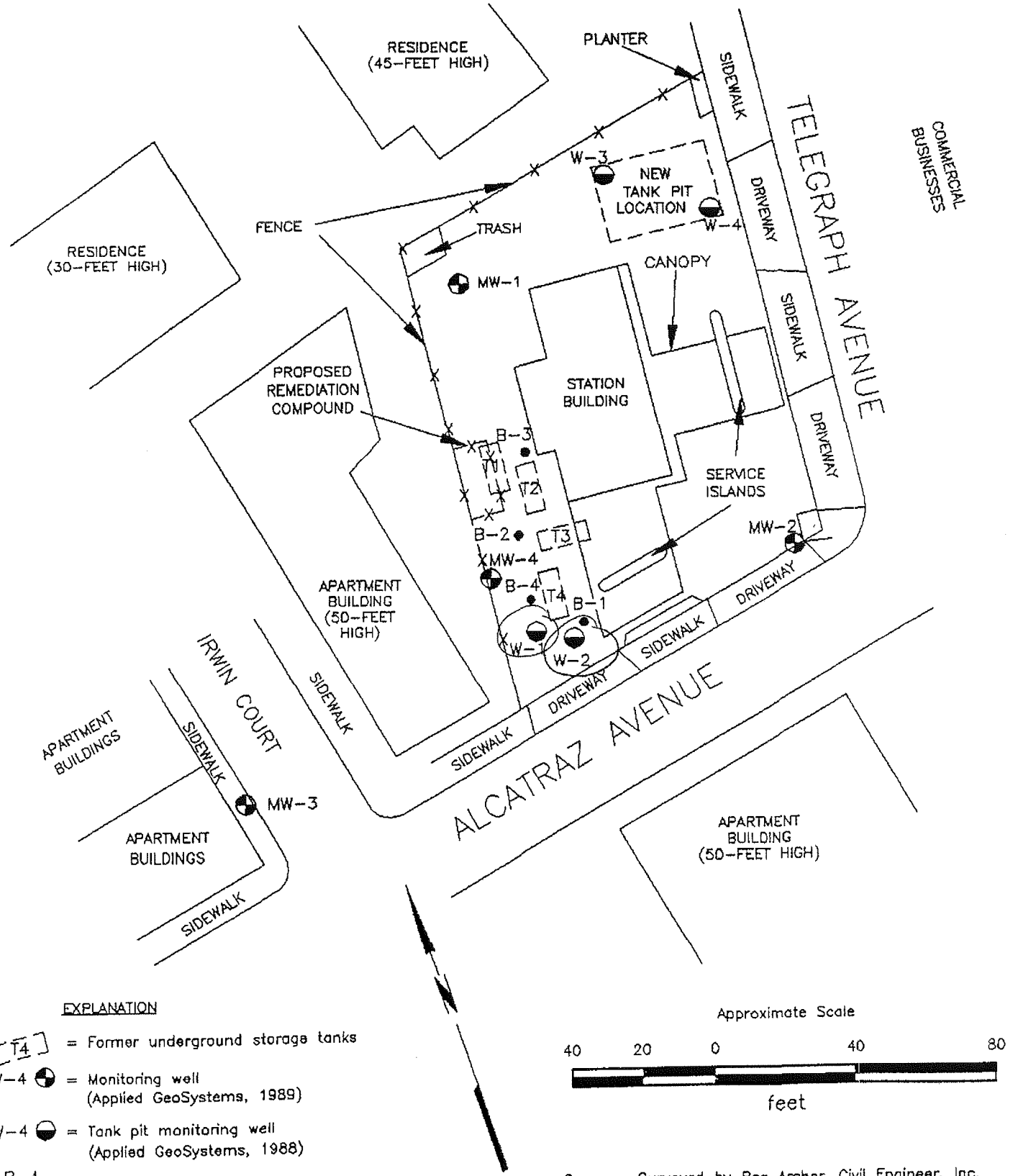


Applied GeoSystems

PROJECT NO. 18039-2

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

PLATE
P - 2



EXPLANATION

[T4] = Former underground storage tanks

MW-4 = Monitoring well (Applied GeoSystems, 1989)

W-4 = Tank pit monitoring well (Applied GeoSystems, 1988)

B-4 = Soil boring (Applied GeoSystems, 1988)

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by Ron Archer, Civil Engineer, Inc.

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

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

N

0 20 40

SCALE (ft)

LEGEND

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

Depth (feet)

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

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

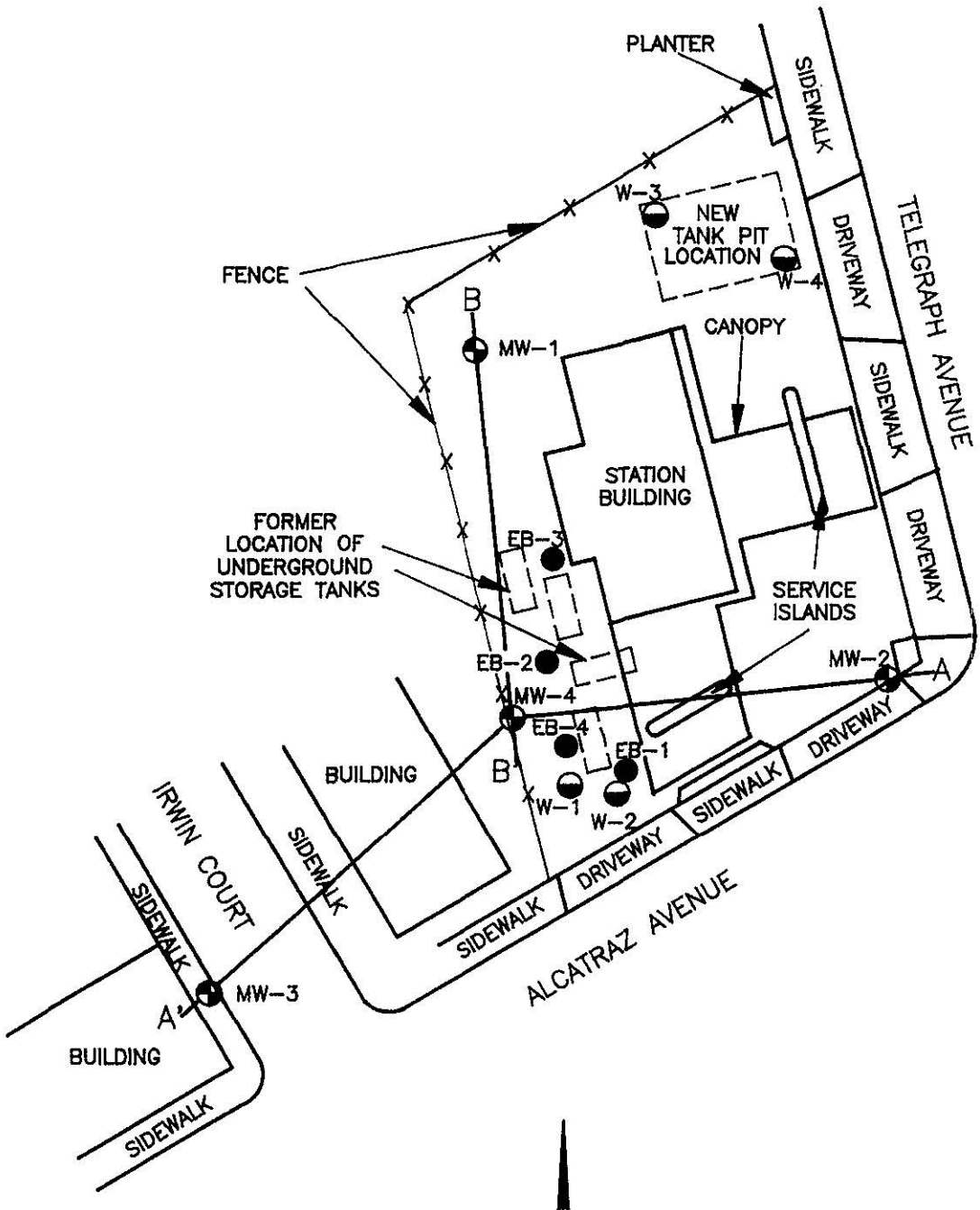
NOTE: SITE MAP ADAPTED FROM STANTEC FIGURES.
SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California 95926
Project No.: 06-88-602 Date: 12/30/2010

Station #374
6407 Telegraph Ave.
Oakland, California

Soil Analytical Results
November 22 to 24, 2010

Drawing
3



B — B' = Cross section line

MW-4 = Ground-water monitoring well

W-4 = Tank pit monitoring well

EB-4 = Exploratory soil boring

N

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by Ron Archer
Civil Engineer, Inc.

Applied GeoSystems

PROJECT NO. 18039-3

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

PLATE
2

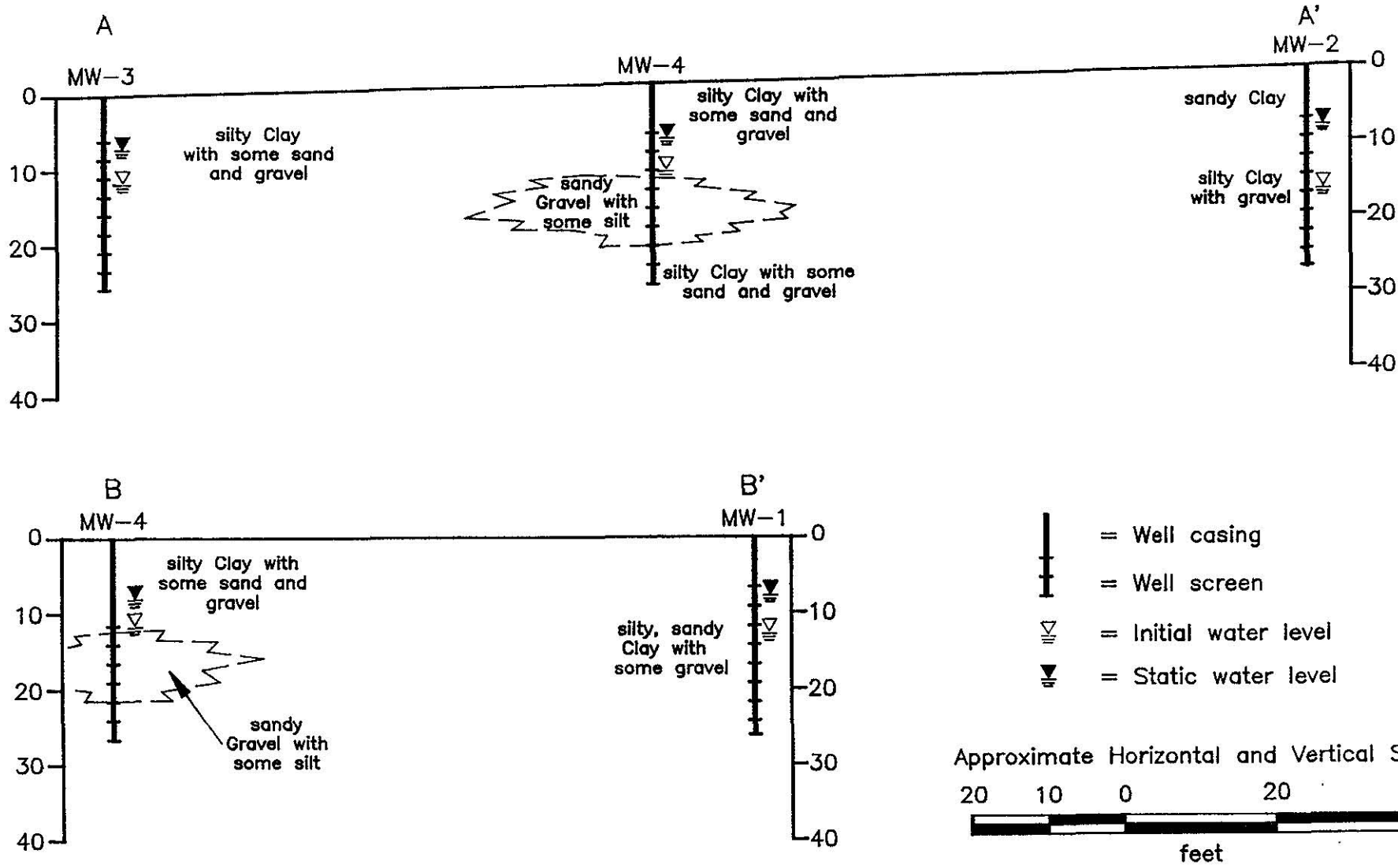


PLATE 12	GEOLOGIC CROSS SECTIONS ARCO Station No. 374 6407 Telegraph Avenue Oakland, California	Applied GeoSystems PROJECT NO. 18039-3

APPENDIX D

Draft Closure Checklist

Agency Name : Alameda County Environmental Health Local Oversight Program	Date: 10/25/12
Case Worker: Dilan Roe	Fuel Leak Case No: RO0000078
Site Name: Arco 374	GeoTracker Global ID: T0600100106
Site Address: 6407 Telegraph Avenue, Berkeley, CA	USTCF Claim No:

☐ PASS ☐ FAIL - DRAFT

The site does [does not comply] with the requirements of the Low-Threat Underground Storage Tank Case Closure Policy (LTCP) as described below.[1]

General Criteria (must be satisfied by all candidate sites)

a. Is the unauthorized release located within the service area of a public water system? ☒ Yes ☐ No

If Yes, then Provide Name of Water System:

Water system info will be presented upon completion of proposed field work and revision of this checklist.

If Yes, are there Site Specific Conditions that Need to be Considered in Evaluation?

Does the property owner use the water system? ☒ Yes ☐ No

Do property owners in the vicinity of the site use the water system? ☒ Yes ☐ No

Are there other sources of water for property owners in the vicinity of the site?

☐ Irrigation Wells ☐ Water Supply Wells

☐ Other Capture Systems:

Pertinent Information Provided:

DWR Well Search ☒ Yes ☐ No

Name/Date Of Document:

Reference Lists will be compiled upon completion of proposed field work and revision of this checklist.

General Criteria (continued)	

b. Does the unauthorized release consist only of petroleum? ☒ Yes ☐ No

If No, then List Other Contaminants:

☐ Chlorobenzene ☐ PCE ☐ TCE ☐ Chloroform ☐ Vinyl Chloride

☐ Bromoform ☐ Other

If Other, then:

☐ PCBs ☐ Phenol ☐ 1,4-dioxane ☐ Dibenzofurans ☐ Dioxins

☐ Metals:

☐ Other SVOCs:

☐ Other VOCs:

Pertinent Information Provided:

Description of Site History, Types of Products or Chemicals Used at the Site ☐ Yes ☐ No

History of Types of Releases other than Petroleum ☐ Yes ☐ No

Tabulation and Discussion of Sampling Results for All Chemicals other than Petroleum ☐ Yes ☐ No

Name/Date of Document:

General Criteria (continued)

c. Has the unauthorized ("primary") release from the UST system been stopped? ☒ Yes ☐ No

If No, then Explain:

Pertinent Information Provided:

Description of the history of release(s) and the actions that were taken to stop each release not provided or incomplete ☒ Yes ☐ No

Evaluation and accounting for changing contaminant concentrations over the full time period of site investigation ☒ Yes ☐ No

Name/Date of Document:
Reference Lists will be compiled upon completion of proposed field work and revision of this checklist.

General Criteria (continued)

d. Has free product been removed to the maximum extent practicable?

☒ FP Not Encountered

☐ Yes ☐ No

If No, then,

Removal Methods Tried: ☐ HVDPE ☐ Skimmer ☐ Bailing ☐ Absorbent Materials ☐ Did Not Try to Remove FP ☐ Other

If Other, then Explain:

Pertinent Information Provided:

Description of investigation and monitoring activities that have been undertaken to assess whether free product is present.	☐ Yes ☐ No
Data including tables and figures showing any observation and measurements of free product.	☐ Yes ☐ No
Description of corrective action(s) that were taken to remove free product, dates of removal actions, and volumes removed	☐ Yes ☐ No
An evaluation of whether free product removal is practicable, or if not practicable, a description of the conditions that prevent free product removal	☐ Yes ☐ No

Name(s)/Date(s) of Document(s):

General Criteria (continued)

e. Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed? ☐ Yes ☒ No

If No, Then:

- ☐ GW Not Evaluated
- ☐ Groundwater Assessment Incomplete – Areal Extent of Contamination Not Defined
- ☐ Hydrogeology Not Adequately Defined
- ☐ Potential Receptors Not Identified
- ☐ Soil Assessment Incomplete – Aerial Extent Not Defined
- ☐ Soil Assessment Incomplete – Depth Unknown
- ☒ Soil Vapor Not Evaluated
- ☐ Other

Pertinent Information Provided:

Sensitive Receptor Survey	☒ Yes ☐ No
Preferential Pathway Study	☐ Yes ☒ No
Cross Sections	☐ Yes ☒ No
Bore Logs	☒ Yes ☐ No
Rose Diagrams	☐ Yes ☒ No
Monitoring Well Construction Logs	☒ Yes ☐ No
Table Providing Details of Monitoring Well Network	☒ Yes ☐ No
Evaluation of Groundwater Flow Direction and Gradient	☒ Yes ☐ No
Description of Type and Effectiveness of Corrective Action	☒ Yes ☐ No

Name(s)/Date(s) of Documents:

Reference Lists will be compiled upon completion of proposed field work and revision of this checklist.

General Criteria (continued)

f. Has secondary source been removed to the extent practicable? ☒ Yes ☐ No

The secondary source is the petroleum-impacted soil, free product, or groundwater that acts as a long-term source releasing contamination to the surrounding area. Unless site conditions prevent secondary source removal petroleum-release sites are required to undergo secondary source removal to the maximum extent practicable.

If No, then identify Impediments to Removing Secondary Source:

☐ Remediation Has Not Been Attempted

☐ Remediation Was Designed Incorrectly

☐ Remediation Was Shut Off Prematurely

☐ Poor Remediation O&M

☐ Other

If Other, then:

Site Conditions Prevent Secondary Source Removal (e.g., physical or infrastructural constraints exist whose removal or relocation would be technically or economically infeasible) ☐ Yes ☐ No

Pertinent Information Provided:

History of corrective actions for the site including the types of cleanup actions taken, dates of the actions, and mass removed ☒ Yes ☐ No

Figures depicting the location of the removal action ☒ Yes ☐ No

Confirmation sampling results which demonstrate the effectiveness of secondary source removal ☒ Yes ☐ No

Narrative description of the actions and areas of success or infeasibility of actions ☒ Yes ☐ No

Long-term monitoring data for in-situ corrective actions that demonstrate the concentrations have not rebounded following the cessation of corrective actions ☐ Yes ☐ No

Name(s)/Date(s) of Document(s):

Reference Lists will be compiled upon completion of proposed field work and revision of this checklist.

General Criteria (continued)

g. Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?	☒ Yes ☐

Pertinent Information Required:

Sufficient data including tables and figures to assess whether MTBE is or was present in soil and groundwater at the site ☒ Yes ☐ No

Name(s)/Dates(s) of Document(s):

Reference Lists will be compiled upon completion of proposed field work and revision of this checklist.

General Criteria (continued)

h. **Does a nuisance as defined by Water Code section 13050 exist at the site?**	☐ Yes ☒ No

If Yes, then Describe Nuisance Condition:

Pertinent Information Required:

Sufficient data to evaluate whether site contamination is present in locations that currently exist or potentially could exist in the future to pose nuisance conditions during common or reasonably expected site activities.	☒ Yes ☐ No
Descriptions of the type and vertical and lateral extent of shallow soil	☒ Yes ☐ No
Data on the lateral extent of surface soil contamination	☐ Yes ☐ No
Discussion of odors or visual evidence of contamination	☐ Yes ☐ No
Preferential pathway and utility conduit surveys	☐ Yes ☒ No
Review of potential points for exposure (such as groundwater seeps into basements)	☒ Yes ☐ No
Current use of the site	☒ Yes ☐ No
Expected use of the site	☒ Yes ☐ No
Description of surface water runoff from the property to storm drains or other sites	☒ Yes ☐ No

Name(s)/Date(s) of Documents:

Reference Lists will be compiled upon completion of proposed field work and revision of this checklist.

1. Media Specific Criteria: Groundwater

Exemption – Soil Only Case (Release has not Affected Groundwater) Sites with soil that does not contain sufficient mobile constituents [leachate, vapors, or light non-aqueous-phase liquids (LNAPL)] to cause groundwater to exceed the groundwater criteria in this policy shall be considered low-threat sites for the groundwater medium. For older releases, the absence of current groundwater impact is often a good indication that residual concentrations present in the soil are not a source for groundwater pollution.	☐ Yes ☒ No
If Site Does Not Qualify for Soil Only Exemption, then, Is the contaminant plume stable or decreasing in areal extent (i.e. has the contaminant mass expanded to its maximum extent defined as the distance from the release where attenuation exceeds migration)? Has sufficient data been presented to demonstrate that site characterization activities have defined the horizontal and vertical extent of the plume? ☒ Yes ☐ No Has plume stability has been demonstrated using a valid technical analysis that considers: ☐ Yes ☐ No The accuracy of data from the wells ☒ Yes ☐ No Placement within the plume ☒ Yes ☐ No Changes in areal extent of the plume ☒ Yes ☐ No Valid concentration trends within the plume (Note:plotting of decreasing concentrations using data from a single well is not likely to be sufficient) ☒ Yes ☐ No Have the following factors been considered: Seasonal variability ☒ Yes ☐ No Water level changes ☒ Yes ☐ No Sampling methods ☒ Yes ☐ No Well construction ☒ Yes ☐ No Other factors that can affect data quality ☒ Yes ☐ No Has a recent well survey that uses all available wells from both the Department of Water Resources and local agencies (Zone 7 Water Agency or Alameda County Public Works as appropriate) been presented? ☒ Yes ☐ No Are supply wells located within 2,000 feet of the site presented on a site figure with a table identifying each well along with the well construction details been presented? ☐ Yes ☒ No	☒ Yes ☐ No
Media Specific Criteria: Groundwater (continued)	

If the Contaminant Plume is Stable or Decreasing, then

Does it meet all of the additional characteristics of one of the five (5) classes of sites listed below? ☒ Yes ☐ No

(1) a. Is < 100 feet in length ☐ Yes ☐ No

b. There is no free product ☐ Yes ☐ No

c. The nearest existing water supply well is > 250 feet from the defined plume boundary ☐ Yes ☐ No

d. The nearest existing surface water body is > 250 feet from the defined plume boundary ☐ Yes ☐ No

(2) a. Is < 250 feet in length ☐ Yes ☐ No

b. There is no free product ☐ Yes ☐ No

c. The nearest existing water supply well is > 1,000 feet from the defined plume boundary ☐ Yes ☐ No

d. The nearest existing surface water body is > 1,000 feet from the defined plume boundary ☐ Yes ☐ No

e. The dissolved concentration of benzene is <3,000 µg/L ☐ Yes ☐ No

f. The dissolved concentration of MTBE is is <1,000 µg/L ☐ Yes ☐ No

(3) a. Is < 250 feet in length ☐ Yes ☐ No

b. Free product has been removed to the maximum extent practicable, may still be present below the site where the release originated, but does not extend off-site ☐ Yes ☐ No

c. The plume has been stable or decreasing for a minimum of 5 years ☐ Yes ☐ No

d. The nearest existing water supply well is > 1,000 feet from the defined plume boundary ☐ Yes ☐ No

e. The nearest existing surface water body is > 1,000 feet from the defined plume boundary ☐ Yes ☐ No

f. The property owner is willing to accept a land use restriction if the regulatory agency requires a land use restriction as a condition for closure ☐ Yes ☐ No

(continued on next page)

Media Specific Criteria: Groundwater (continued):

(4) a. Is < 1,000 feet in length ☒ Yes ☐ No

b. There is no free product ☒ Yes ☐ No

c. The nearest existing water supply well or surface water body is > 1,000 feet from the defined plume boundary ☒ Yes ☐ No

d. The nearest existing surface water body is > 1,000 feet from the defined plume boundary ☒ Yes ☐ No

e. The dissolved concentration of benzene is <1,000 µg/L ☒ Yes ☐ No

f. The dissolved concentration of MTBE is <1,000 µg/L ☒ Yes ☐ No

(5) The regulatory agency determines, based on an analysis of site specific conditions, that the site under current and reasonable anticipated near-term future scenarios, the contaminant plume poses a low threat to human health and safety and to the environment and water quality objectives will be achieved within a reasonable time frame. ☐ Yes ☐ No

If the Site Does Not Meet any of the 5 Groundwater Specific Criteria Scenarios Listed Above, then Answer the Additional Questions Below

Plume Length (That Exceeds Water Quality Objectives):

☐ ≥ 100 Feet and < 250 Feet ☐ ≥ 100 Feet and < 250 Feet ☐ ≥ 100 Feet and < 250 Feet

☐ ≥ 1,000 Feet ☐ ≥ Unknown

Free Product in Groundwater: ☐ Yes ☐ No ☐ Unknown

Free Product Has Been Removed to the Maximum Extent Practicable: ☐ No ☐ Unknown

For Sites with Free Product, the Plume has Been Stable or Decreasing for 5-Years: ☐ No ☐ Unknown

For Sites with Free Product, owner Willing to Accept a Land Use Restriction (if Required):

☐ No ☐ Unknown

Free Product Extends Offsite: ☐ Yes ☐ Unknown

Benzene Concentration: ☐ ≥ 1,000 µg/L and < 3,000 µg/L ☐ ≥ 3,000 µg/L ☐ Unknown

MTBE Concentration: ☐ ≥ 1,000 µg/L ☐ Unknown

Nearest Supply Well (From Plume Boundary):

☐ ≤ 250 Feet ☐ > 250 Feet and ≤ 1,000 Feet ☐ Unknown

Nearest Surface Water Body (From Plume Boundary):

☐ ≤ 250 Feet ☐ > 250 Feet and ≤ 1,000 Feet ☐ Unknown

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air

The low-threat vapor-intrusion criteria described below apply to sites where the release originated and impacted or potentially impacted adjacent parcels when: (1) existing building are occupied or may be reasonably expected to be occupied in the future, or (2) buildings for human occupancy are reasonably expected to be constructed in the near future. Appendices 1 through 4 (attached) illustrate four potential exposure scenarios and describe characteristics and criteria associated with each scenario.

EXEMPTION – Active Commercial Petroleum Facility

☐ Yes ☐ No
UNKNOWN

According to the Policy, 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 media-specific 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.

Do release characteristics pose an unacceptable health risk to facility users or nearby facilities? ☐ Yes ☐ No

If Yes, Provide Explanation:
High residual concentrations in groundwater are present on the border of a property where a residential exposure pathway exists

Criteria below will be evaluated upon completion of proposed soil vapor sampling activities.

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air (continued)

If Site Does Not Qualify for Vapor Intrusion to Indoor Air Exemption, then,

Does the release site meet one of the three petroleum vapor intrusion to indoor air specific criteria listed below (a, b, or c)? ☐ Yes ☐ No

a. Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of **Scenarios 1 through 3 or** all of the applicable characteristics and criteria of **Scenario 4**?

If YES, check applicable scenarios: ☐ **1** ☐ **2** ☐ **3** ☐ **4**

Scenario 1: Unweathered LNAPL in Groundwater *(App. 1)* ☐ Yes ☐ No

1. The bioattenuation zone is a continuous zone provides a separation of at least 30 feet vertically between the LNAPL in groundwater and the foundation of existing or potential buildings; and
2. Total TPH (TPH-g and TPH-d combined) are less than 100 mg/kg throughout the entire depth of the bioattenuation zone

Scenario 2: Unweathered LNAPL in Soil *(App. 2)* ☐ Yes ☐ No

1. The boattenuation zone is a continuous zone that provides a separation of at least 30 feet vertically between the LNAPL in soil and the foundation of existing or potential buildings; and
2. Total TPH (TPH-g and TPH-d combined) are <100 mg/kg throughout the entire lateral and vertical extent of the bioattenuation zone

Scenario 3: Dissolved Phase Benzene Concentrations in Groundwater *(App. 3)* ☐ Yes ☐ No

Defining the Bioattenuation Zone For Sites without Oxygen Data or Where Oxygen is <4%

Figure A: For Benzene concentrations < 100 µg/l

- **a.** The bioattenuation zone is a continuous zone that provides a separation of at least 5 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings; and
- **b.** Contains total TPH (TPH-g and TPH-d combined) < 100 mg/kg throughout the entire depth of the bioattenuation zone

Figure B: For Benzene concentrations ≥ 100 µg/L but < 1,000 µg/L

- **a.** The bioattenuation zone is a continuous zone that provides a separation of at least 10 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings

Defining the Bioattenuation Zone For Sites with Oxygen ≥ 4%

Figure C: For Benzene concentrations < 1,000 µg/L

1. A continuous zone that provides a separation of at least 10 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings
2. Contains total TPH (TPH-g and TPH-d combined) < 100 mg/kg throughout the entire depth of the bioattenuation zone

Scenario 4: Direct Measurement of Soil Gas Concentrations (see Next Page)

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air (continued)

a. Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of **Scenarios 1 through 3 <u>or</u>** all of the applicable characteristics and criteria of **Scenario 4**?

Scenario 4: Direct Measurement of Soil Gas Concentrations *(App 4)*

Soil Gas Sampling Locations (According to the Policy, when applying the criteria listed below, the soil gas sample must be obtained from the following locations)

Was the soil gas sample obtained from the following locations:

a. **Beneath or adjacent to an existing building:** Soil gas sample collected at least 5 feet below the bottom of the building foundation ☐ Yes ☐ No

b. **Future construction:** Soil gas sample collected from at least five feet below ground surface ☐ Yes ☐ No

If no, then provide justification for the validity of the soil gas data:

Soil Gas Sampling Protocol

Were soil gas samples collected in accordance with DTSC Advisory – Active Soil Gas Investigations (April 2012) ☐ Yes ☐ No

Soil Gas Criteria – With Bioattenuation Zone

Are the following criteria for a bioattenuation zone satisfied?

1. There is a minimum of five vertical feet of soil between the soil vapor measurement and the foundation of an existing building or ground surface of future construction; <u>and</u> ☐ Yes ☐ No
2. TPH (TPHg + TPHd) is less than 100 mg/kg (measured in at least two depths within the five-foot zone; <u>and</u> ☐ Yes ☐ No
3. Oxygen is ≥ 4% measured at the bottom of the five-foot zone ☐ Yes ☐ No

If yes, then use Soil Gas Criteria listed below:

	Residential	Commercial
Constituent	**Soil Gas Concentration (µg/m^3)**	
Benzene	**<85,000**	**<280,000**
Ethylbenzene	**<1,100,000**	**<3,600,000**
Napthalene	**<93,000**	**<310,000**

If no, then use No Bioattenuation Zone Criteria listed in the section below

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air (continued)

Soil Gas Criteria – No Bioattenuation Zone

	Residential	Commercial
Constituent	**Soil Gas Concentration ($\mu g/m^3$)**	
Benzene	**<85**	**<280**
Ethylbenzene	**<1,100**	**<3,600**
Napthalene	**<93**	**<310**

Pertinent Information Provided:

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air (continued)

b. Has a site-specific risk assessment for the vapor intrusion pathway been conducted and demonstrates that human health is protected to the satisfaction of the regulatory agency? ☐ Yes ☒ No

Was the risk assessment conducted in accordance with the DTSC Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (October 2011)?	☐ Yes ☐ No
Were the following DTSC Guidance recommendations followed:	
Use of multiple lines of evidence (i.e., soil gas, soil matrix, and groundwater data) to reasonably estimate the level of risk posed by vapor intrusion	☐ Yes ☐ No
Use of maximum contaminant concentrations (i.e., data collected above the source)	☐ Yes ☐ No
Use of reasonable site-specific input parameters in the California version of the USEPA's Vapor Intrusion Model by Johnson and Ettinger, created by the DTSC to include California-specific chemical toxicity factors	☐ Yes ☐ No
Calculation of cumulative health effects conducted	☐ Yes ☐ No
Use of data representing seasonable variability before making a final risk determination as short term measurements rarely represent long-term conditions	☐ Yes ☐ No
No preferential pathways exist at the site	☐ Yes ☐ No
Knowledge of adjacent building construction (e.g., slab-on-grade, crawl spaces, etc.)	☐ Yes ☐ No

Pertinent Information Provided:

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air (continued)

c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health?

☐ Yes ☐ No

Mitigation Measures:

Institutional Controls:

Deed Restrictions ☐ Yes ☐ No

Engineering Controls:

Pertinent Information Provided

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air (continued)

Additional Questions – Please indicate only those conditions that do not meet the policy criteria

Soil Gas Samples:

☐ No soil gas samples ☐ Taken incorrectly ☐ Not taken at two depths within 5 foot zone

Exposure Type:

☐ Residential ☐ Commercial

Free Product:

☐ In Groundwater ☐ In Soil ☐ Unknown

TPH in the Bioattenuation Zone:

☐ ≥ 100 mg/kg ☐ Unknown

Bioattenuation Zone Thickness:

☐ < 5 feet (No Biozone**)** ☐ ≥5 Feet and < 10 Feet ☐ ≥10 Feet and < 30 Feet ☐ ≥30 Feet

☐ 30 Feet BioZone Compromised ☐ Unknown

Oxygen Data in Bioattenuation Zone:

☐ No Oxygen Data ☐ Oxygen < 4% ☐ Oxygen ≥ 4%

Benzene in Groundwater:

☐ ≥ 100 µg/L and < 1,000 µg/L ☐ ≥ 1,000 µg/L ☐ Unknown

Soil Gas Benzene:

☐ ≥ 85 µg/m^3 and < 280 µg/m^3 ☐ ≥ 280 µg/m^3 and < 85,000 µg/m^3 ☐ ≥ 85,000 µg/m^3 and < 280,000 µg/m^3

☐ ≥ 280,000 µg/m^3 ☐ Unknown

Soil Gas Ethylbenzene:

☐ ≥ 1,100 µg/m^3 and < 3,600 µg/m^3 ☐ ≥ 3,600 µg/m^3 and < 1,100,000 µg/m^3

☐ ≥ 1,100,000 µg/m^3 and < 3,600,000 ☐ ≥ 3,600,000 µg/m^3 ☐ Unknown

Soil Gas Napthalene:

☐ ≥ 93 µg/m^3 and < 310 µg/m^3 ☐ ≥ 310 µg/m^3 and < 93,000 µg/m^3 ☐ ≥ 93,000 µg/m^3 and < 310,000 µg/m^3

☐ ≥ 310,000 µg/m^3 ☐ Unknown

Media-Specific Criteria: Direct Contact and Outdoor Air Exposure	
3. Direct Contact and Outdoor Air Exposure: The site is considered low-threat for direct contact and outdoor air exposure if site-specific conditions satisfy one of the three classes of sites (a through c).	
a. Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs)?	☒ Yes ☐ No ☐ NA ☐ UND
b. Are maximum concentrations of petroleum constituents in soil less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health?	☒ Yes ☐ No ☐ NA ☐ UND
c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?	☒ Yes ☐ No ☐ NA ☐ UND
Media-Specific Criteria: Direct Contact and Outdoor Air Exposure	

Additional Questions – Indicate only those conditions that do not meet the policy

Exposure Type:

☐ Residential ☒ Commercial ☐ Utility Worker

Petroleum Constituents in Soil:

☐ ≤ 5 Feet bgs ☒ > 5 Feet bgs and ≤ 10 Feet bgs ☐ Unknown

Soil Concentrations of Benzene:

☐ > 1.9 mg/kg and ≤ 2.8 mg/kg ☐ > 2.8 mg/kg and ≤ 8.2 mg/kg ☐ > 12 mg/kg and ≤ 14 mg/kg

☐ > 14 mg/kg

Soil Concentrations of EthylBenzene:

☐ > 21 mg/kg and ≤ 32 mg/kg ☐ > 32 mg/kg and ≤ 89 mg/kg ☐ > 89 mg/kg and ≤ 134 mg/kg

☐ > 134 mg/kg and ≤ 314 mg/kg ☐ > 314 mg/kg ☐ Unknown

Soil Concentrations of Naphthalene:

☐ > 9.7 mg/kg and ≤ 45 mg/kg ☐ > 45 mg/kg and ≤ 219 mg/kg ☐ > 219 mg/kg ☐ Unknown

Soil Concentrations of PAH:

☐ > 0.063 mg/kg and ≤ 0,68 mg/kg ☐ > 0.68 mg/kg and ≤ 4.5 mg/kg ☐ > 4.5 mg/kg

☒ Unknown

Area of Impacted Soil :

☒ Area of Impacted Soil > 82 by 82 Feet ☐ Unknown

Notes:

[1]This site [complies/does not comply] with the State Water Resources Control Board (SWRCB) policies and state law. Section 25296.10 of the Health and Safety Code requires that sites be cleaned up to protect human health, safety, and the environment. The current site conceptual model based on information contained in the case file databases (Alameda County Environmental Health ftp site and SWRCB GeoTracker website), is not adequate to determine that residual petroleum constituents at the site do not pose a significant risk to human health, safety, or the environment. See Attachment 2 for details.