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Work Plan for Onsite Soil and Ground-Water Investigation
Former BP Service Station No. 11117
7210 Bancroft Avenue, Oakland, California
ACEHS Case No. RO0000356

Prepared for

Mr. Paul Supple
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Prepared by

BROADBENT & ASSOCIATES, INC.
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16 October 2006

Project No. 06-08-649

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ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

16 October 2006 Job No. 06-08-649

Mr. Paul Supple
Environmental Business Manager
Atlantic Richfield Company (a BP affiliated company)
PO Box 1257
San Ramon, California 94583
Submitted via ENFOS

RE: WORK PLAN FOR ONSITE SOIL AND GROUND-WATER INVESTIGATION
FORMER BP SERVICE STATION No. 11117
7210 BANCROFT AVENUE, OAKLAND, CALIFORNIA
ACEHS CASE No. RO0000356

Dear Mr. Supple,

Broadbent & Associates, Inc. is pleased to present the enclosed *Work Plan for Onsite Soil and Ground-Water Investigation* for additional soil and ground-water characterization at the above-referenced facility. This work plan was prepared in response to a letter request from the Alameda County Environmental Health Services (ACEHS) dated 2 June 2006. In accordance with that request, this work plan includes discussion of the site background, previous investigations, site geology and hydrogeology, the proposed scope of work, and schedule.

Should you have any questions concerning this work plan, please do not hesitate to contact us at (530) 566-1400.

Sincerely,
BROADBENT & ASSOCIATES, INC.

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Enclosure

cc: Mr. Steven Plunkett, ACEHS (Submitted via ACEHS ftp site)
Ms. Liz Sewell, ConocoPhillips (Submitted via COC ftp site)
Mr. Jim Givens, One Eastmont Town Center, Oakland, California 94605-1907
Ms. Diane Clark, Eastmont Town Center CX LLC, 7200 Bancroft Avenue, Oakland, California 94605-2403

1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company, RM – a BP affiliated company, Broadbent & Associates, Inc. (BAI) has prepared this Work Plan for Onsite Soil and Ground-Water Investigation for additional soil and ground-water characterization at the Former BP Service Station No.11117, located at 7210 Bancroft Avenue, Oakland, California (Site). This work plan was prepared in response to a letter request from the Alameda County Environmental Health Services (ACEHS) dated 2 June 2006. Specifically, ACEHS technical comments within the 2 June 2006 letter requested a proposal to further define the vertical extent of hydrocarbon contamination in the southern portion of the Site, as recommended by URS Corporation in their *Soil and Water Investigation Report* for the Site, dated 30 November 2005. In accordance with the request of 2 June 2006, this work plan includes discussions on the site background and previous investigations, regional and Site geology and hydrogeology, the proposed scope of work to delineate the vertical extent of contamination, and completion schedule.

2.0 SITE BACKGROUND

The Site is an active 76-brand gasoline retail outlet located on the northern corner of Bancroft Avenue and 73rd Avenue in Oakland, California (Figure 1). The land use in the immediate vicinity of the Site is mixed commercial and residential. BP acquired the facility from Mobil Oil Corporation in 1989. In January 1994, BP transferred the property to TOSCO Marketing Company (TOSCO) and has not operated the facility since that time.

The Site consists of a service station building and three 12,000-gallon gasoline underground storage tanks (USTs) and one 10,000-gallon diesel UST with associated piping and dispensers. The Site is covered with asphalt or concrete surfacing except for planters along the southeastern and southwestern property boundaries and at the north corner of the property.

1984 UST Replacement: In 1984, the pre-existing USTs at the Site were removed and three gasoline USTs (6,000-gallon, 10,000-gallon, and 12,000-gallon) and one 6,000-gallon diesel UST were installed immediately to the east. The newly installed USTs were single-walled fiberglass USTs. An associated UST removal report is not on file and may not have been prepared. No documentation was reportedly found referencing the conditions of the removed USTs or reporting evidence of hydrocarbon impacts in the soil and ground water, if any, at the time of the UST removal.

1989 Phase II Environmental Audit: In December 1989, a Phase II environmental audit was conducted on the adjacent Eastmont Town Center site located to the north and northwest of the former BP Site. Part of the respective Phase II study relevant to the former BP Site included the installation of monitoring well MW-3 near the western boundary of the former BP Site. The analytical results of soil samples collected from 10 and 20 feet below ground surface (bgs) from MW-3 reported total petroleum hydrocarbons (TPH), benzene, toluene, ethyl benzene, and xylenes (BTEX), and oil and grease concentrations below their respective laboratory reporting limits. The analytical results of ground-water samples from MW-3 reported TPH and benzene concentrations of 2,700 micrograms per liter (µg/L) and 530 µg/L, respectively.

1991 Phase I Subsurface Investigation: In December 1991, two soil borings (MW-1 and MW-2) were drilled on-site to total depths of 40 feet bgs, soil samples were collected at 10 foot intervals between 5 and 25 feet bgs and the respective borings were subsequently converted into

monitoring wells MW-1 and MW-2. First ground water was encountered at approximately 30 feet bgs. The analytical results of the soil samples from MW-1 and MW-2 reported total petroleum hydrocarbons as gasoline (TPH-g) and BTEX at concentrations below their respective laboratory reporting limits.

Borings MW-4 and MW-6 were advanced to total depths of 40 feet bgs, and boring B-5 was advanced to 50 feet bgs. First ground water was encountered at approximately 30 feet bgs in borings MW-4 and MW-6, and no free water was encountered in boring B-5. The analytical results of soil samples collected at 30 feet bgs from B-5 and MW-6 reported TPH-g and BTEX at concentrations below their respective laboratory reporting limits. The maximum TPH-g and BTEX concentrations in soil reported in MW-4 were 6,000 milligrams per kilograms (mg/kg) and 34 mg/kg, respectively, from 20 feet bgs. Borings MW-4 and MW-6 were subsequently converted into monitoring wells.

1994 Baseline Assessment Report: In September 1994, a supplemental Site assessment was conducted at the Site. Four exploratory soil borings (THP-1, TB-2, TB-3, TB-4) were advanced to a maximum depth of 45 feet bgs, north of the former and existing UST complexes (THP-1), at the former service bays (TB-2), north of the northern pump island (TB-3), and at a former pump island (TB-4). Additionally, one soil sample was collected from beneath each of the five dispensers (TD-1 through TD-5). Ground water was encountered in TB-2 and TB-3 at approximately 33 to 36 feet bgs and ground-water samples were collected from TB-2 and TB-3 via temporary well points. Maximum concentrations of 16 mg/kg TPH-g (TD-3), TPH as diesel (TPH-d) at concentrations ranging from 110 mg/kg to 5,800 mg/kg (TD-1 through TD-5), and benzene at concentrations below laboratory reporting limits were reported in soil samples. No TPH-g was detected at concentrations above the laboratory reporting limits and a maximum concentration of 0.7 µg/L benzene (TB-3) was reported in ground-water samples. Boring MW-7 was advanced to a total depth of 45 feet bgs, and borings MW-8 and MW-9 were advanced to total depths of 40 feet bgs. First encountered ground water was at approximately 27 feet bgs to 32 feet bgs. No TPH-g or BTEX were detected above their respective laboratory reporting limits in soil samples collected from 25 feet bgs in each boring. The three borings were subsequently converted into monitoring wells MW-7 through MW-9.

1997 Offsite Well Installation: In July 1997, one boring (MW-10) was drilled off-site to a depth of approximately 37.5 feet bgs. Soil samples were collected and the boring was subsequently converted into a monitoring well. First ground water was encountered at approximately 26 feet bgs. No TPH-g, BTEX or methyl tertiary butyl ether (MTBE) was detected in soil samples at concentrations above their respective laboratory reporting limits in MW-10. No TPH-g or BTEX was detected in the ground-water sample from MW-10 at concentrations above their respective laboratory reporting limits. However, MTBE was detected at a concentration of 13 µg/L using EPA Method 8020.

1998 UST and Associated Piping and Dispenser Removal: In August 1998, the three gasoline USTs (6,000-gallon, 10,000-gallon, and 12,000-gallon) and one 6,000-gallon diesel UST, and associated dispensers and piping were removed from the Site. There was no visible evidence of leakage from the USTs removed. A total of eight native soil samples were collected from beneath each end of the removed USTs at depths of 14 to 16 feet bgs, and a total of 18 soil samples were collected from the former dispenser locations and from beneath the associated

product lines at three feet bgs. TPH-g was detected in five of the eight UST excavation samples at concentrations ranging from 3.7 mg/kg (S-15-T2S) to 5,300 mg/kg (S-15-T1S). TPH-d was detected at 630 mg/kg (S-15-T1N) and 800 mg/kg (S-15-T1S) in two samples, benzene concentrations ranged between 0.40 mg/kg (S-15-T1N) to 0.95 mg/kg (S-16-T3N) in three samples, MTBE concentrations ranged between 0.028 mg/kg (S-14-T4S) to 5.3 mg/kg (S-16-T3N) in seven samples, and lead was not detected in the sample analyzed for lead. TPH-g was detected in nine of the eighteen dispenser and product line samples with concentrations ranging between 1.4 mg/kg (S-3-PL12) to 7,200 mg/kg (S-3-D4). TPH-d was detected between 4.8 mg/kg (S-3-PL3) to 190 mg/kg (S-3-PL11) in five samples, benzene was detected between 0.0089 mg/kg (S-3-PL-12) to 22 mg/kg (S-3-D4) in three samples, and MTBE was detected between 0.048 mg/kg (S-3-PL12) to 15 mg/kg (S-3-PL1) in ten samples. During the 1998 UST replacement activities, approximately 389 tons of soil and backfill were transported off-site for disposal. The existing 10,000-gallon diesel and three 12,000-gallon gasoline USTs were installed as replacements.

1999 Ground-Water Recovery Test: In April 1999, a ground-water recovery test was performed on wells MW-1 through MW-4, MW-6, MW-7 and MW-10 to assess the spatial variation in hydraulic conductivity in the shallow water-bearing zone across the Site. The hydraulic conductivity values estimated from the recovery testing are presented in Alisto Engineering Group's *Results of Recovery Testing* dated June 4, 1999. The geometric mean of the hydraulic conductivity values and the flow velocity were calculated to be 1.37×10^{-5} feet per second and 73.85 feet per year, respectively.

1999 Extraction Well Installation: In November 1999, two 4-inch diameter wells (EX-1 and EX-2) were installed on-site to facilitate potential remedial activities at the Site. Well EX-1 was drilled to 39.5 feet bgs and EX-2 was drilled to 36.5 feet bgs. Ground water was first encountered at 26 feet bgs. Relatively low to no TPH-g, BTEX and MTBE concentrations were reported in soil samples collected from EX-1 and EX-2.

2000 Interim Remedial Action and Recovery Testing: Between March 16 and April 30, 2000, interim remedial activities were conducted at the Site to evaluate the effectiveness of hydrocarbon and MTBE reduction using short-term ground-water extraction. During eight extraction events, approximately 10,900 gallons of ground water was extracted from wells EX-1, EX-2 and MW-2. During the extraction events, stable to slightly decreasing hydrocarbon and MTBE concentration trends were exhibited in samples collected from wells MW-2 and EX-1, located immediately southwest of the existing USTs. Samples from well EX-2, which is located north of the existing USTs, exhibited lower hydrocarbon and MTBE concentrations than MW-2 and EX-1.

In April 2000, during the batch extraction events, recovery tests were conducted on wells EX-1, EX-2 and MW-2. Based on the recovery test measurements, the geometric mean of the hydraulic conductivity values and flow velocities for wells EX-1, EX-2 and MW-2 was calculated as 3.0×10^{-4} feet per minute and 26 feet per year, respectively.

2000 Potential Receptor Survey, Expanded Site Plan and Well Search: In October 2000, Alisto Engineering Group completed a potential receptor survey, prepared an expanded site plan with neighboring property parcel information and underground utilities mapped, and identified

wells in the vicinity of the Site. A review of the files of the California Department of Water Resources (DWR) was performed to identify all known wells within a one-half mile radius of the Site. The results of the well search revealed that there were 17 wells other than the onsite monitoring wells. Of these, 11 were offsite monitoring wells, four were cathodic protection wells, one an industrial well, and one an irrigation well for a nearby cemetery. No domestic/municipal water supply wells were identified from review of the DWR files. Copies of the completion logs from the DWR files for these wells are contained within the 19 October 2000 Alisto report.

2001 DPE Pilot Test: During October 29, through November 2, 2001, a dual-phase soil vapor and ground-water extraction (DPE) pilot test was performed on the monitoring wells with the highest historical hydrocarbon concentrations (i.e., MW-2 and MW-4) and the extraction wells (EX-1 and EX-2) at the Site. The DPE test results indicated that the vacuum influence was limited to within 18 to 28 feet of the extraction well. Water levels typically decreased several feet in the extraction wells and had a varied response in the observation wells. Estimated vapor-phase removal rates were approximately 200-pounds of hydrocarbon per day in wells MW-4 and EX-1, and less than 5-pounds of hydrocarbon per day in wells MW-2 and EX-2. Soil vapor concentrations showed a decreasing trend in wells MW-4 and EX-1 during the short-term pilot tests. Grab water samples collected before and after the pilot tests remained the same order of magnitude. A total of 6,500 gallons of water was extracted during the DPE pilot test and appropriately disposed off-Site. Overall, the test results indicated that DPE is a feasible remedial alternative for the Site and ACEHS approved Cambria's August 8, 2002, *Dual Phase Extraction Pilot Test Report* as a Corrective Action Plan (CAP).

2005 Soil and Water Investigation: In Fall 2005, URS completed nine Geoprobe soil borings with co-located Hydropunch borings. The first phase of the work was onsite source area characterization: five boring locations (A-1 through A-5) were advanced in the vicinity of the possible hydrocarbon source areas such as locations of the former and current USTs, product dispensers, and in the vicinity of MW-4 to adequately characterize the lateral and vertical extent of petroleum hydrocarbons in soils in the identified source areas. An offsite assessment was completed during the second phase of work (borings A-7 through A-10) to further define the downgradient, cross-gradient, and upgradient extent of the groundwater plume. (Soil boring A-6 was unable to be advanced due to close proximity to electric lines and product piping. Maximum concentrations of gasoline range organics (GRO), benzene, and methyl tert-butyl ether (MTBE) were detected in soil at concentrations of 490 mg/kg [A-4 (23.5-24')], 28 mg/kg [A-5 (35-35.5')], and 0.84 mg/kg [A-1 (46-46.5')], respectively. Maximum concentrations of GRO, benzene, and MTBE were detected in ground water at concentrations of 510,000 µg/L [A-2 (21.3')], 11,000 µg/L [A-4 (34-36')], and 39,000 µg/L [A-4 (34-36')], respectively.

The cross-gradient and downgradient lateral extents of the dissolved hydrocarbon plume were characterized during this last investigation. However, the vertical extent of dissolved phase hydrocarbons on the southern portion of the Site was not defined. Specifically, significantly elevated concentrations were detected in ground-water Hydropunch samples collected from the bottom depths of soil borings A-2, A-3, and A-4. The bottom Hydropunch sample from boring A-2 (40-42 ft bgs) contained concentrations of GRO, benzene, and MTBE at 36,000 µg/L, 1,800 µg/L, and 110 µg/L, respectively. The bottom Hydropunch sample from boring A-3 (34-36 ft bgs) contained concentrations of GRO, benzene, and MTBE at 12,000 µg/L, 21 µg/L, and 8.3

µg/L, respectively. The bottom Hydropunch sample from boring A-4 contained GRO, benzene, and MTBE concentrations of 120,000 µg/L, 11,000µg/L, and 39,000 µg/L, respectively. Therefore, the vertical extent of dissolved phase petroleum hydrocarbon contamination remains unknown in this area of the Site.

To date, a total of eleven wells have been installed at the Site: wells MW-1 through MW-4, MW-6 through MW-10, EX-1 and EX-2. Monitoring well locations are shown on Figure 2. Wells MW-1 and MW-2 are screened from approximately 20 feet bgs to 40 feet bgs; well MW-3 is screened from 30 to 45 feet bgs; wells MW-4 and MW-6 are screened from approximately 20 to 40 feet bgs; and wells MW-7 is screened from approximately 25 to 45 feet bgs; MW-8 and MW-9 are screened from approximately 25 to 40 feet bgs; and MW-10 is screened from approximately 15 to 35 feet bgs. Wells EX-1 and EX-2 are screened from approximately 18 feet bgs to 38 feet bgs and 15 feet bgs to 35 feet bgs, respectively. Existing soil boring and well construction logs are provided in Appendix A.

A quarterly ground-water monitoring program was initiated at the Site in January 1992 and is ongoing. Currently this schedule stipulates quarterly monitoring of all wells and quarterly collection of samples from wells MW-2, MW-4, MW-7, MW-10, EX-1, and EX-2; semi-annual collection of samples from MW-9 (first and third quarters); and annual collection of samples from MW-1, MW-3, MW-6, and MW-8 (first quarter). The laboratory analytical data of the ground-water monitoring program are included as Table 1 and Table 2. Historical ground-water flow directions at the Site are presented in Table 3. Historic soil and water concentrations and sampling locations are shown in Appendix B.

3.0 SITE 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 Oakland Sub-Area of the East Bay Plain of the San Francisco Basin. The Oakland Sub-Area contains a sequence of alluvial fans. The alluvial fill thickness ranges from 300 to 700 feet deep. There are no well-defined aquitards such as estuarine muds. The largest and deepest wells in this sub-area historically pumped one to two million gallons per day at depths greater than 200 feet. Overall, sustainable yields are low due in part to low recharge potential. The Merrit sand in West Oakland was an important part of the early water supply for the City of Oakland. It is shallow (up to 60 feet), and before the turn of the century, septic systems contaminated the water supply wells.

Throughout most of the Alameda County portion of the East Bay Plain, from Hayward north to Albany, water level contours show that the general direction of ground water flow is from east to west or from the Hayward Fault to the San Francisco Bay. Ground-water flow direction generally correlates to topography. Flow direction and velocity are also influenced by buried stream channels that typically are oriented in an east-west direction. In the southern end of the study area however, near the San Lorenzo Sub-Area, the direction of flow may not be this simple. According to information presented in *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report,* the small set of water level measurements available seemed to show that the ground water in the upper aquifers may be flowing south, with the deeper aquifers, the Alameda Formation, moving north. The nearest natural drainage is Arroyo Viejo, located approximately 1,300 feet south-southeast of the Site. The Arroyo Viejo channel flows generally

east to west, but flows north-northwestward before turning southwest again in the vicinity of the Site.

The Site elevation is approximately 50 feet above mean sea level. The water table fluctuates seasonally and has risen about 10 feet since 1992. The static depth to water in monitoring wells at the Site has ranged between an historic minimum of 9.49 ft bgs (MW-3 on 5/22/2000) and maximum of 34.07 feet bgs (MW-2 on 12/27/1993). However, it is possible that the minimum measurement was an anomaly, as the next minimum depth to water measurement was 12.04 ft bgs (MW-8 on 1/18/2005). Historically, depth-to-water measurements have more typically ranged around 15 to 20 feet bgs (Table 1). Ground-water flow direction during the third quarter monitoring event on 29 August 2006 was to the northeast at a gradient of 0.006 ft/ft (Figure 2). Based on historical quarterly ground-water monitoring data, potentiometric contours would indicate that local ground-water generally flows towards the north-northeast. Although this flow direction seems contrary to the surface topography and assumed flow direction towards the west-southwest, they are similar to the recent ground-water flow directions reported at the nearby Chevron Station across the street at 7225 Bancroft Avenue. Historic ground-water flow directions and gradients for the Site are summarized in Table 3, along with a rose diagram graphically illustrating this trend in flow directions.

According to the *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report*, the City of Oakland does not have "any plans to develop local ground-water resources for drinking water purposes, because of existing or potential saltwater intrusion, contamination, or poor or limited quantity." However, the SFRWQCB's basin plan denotes existing beneficial uses of municipal and domestic supply (MUN), industrial process supply (PROC), industrial service supply (IND), and agricultural supply (AGR) for the East Bay Plain ground-water basin.

The Site is typically underlain by clays with 1 to 4 foot thick intervals of sands and gravels to a total explored depth of approximately 45 feet bgs. Boring logs for wells MW-1, MW-2, MW-6 and MW-7 indicate less than 5 feet of sand and/or gravel encountered, while those for wells MW-3, MW-4, MW-8, MW-9, MW-10, EX-1 and EX-2 indicate more than 10 feet of sand and/or gravel encountered. The lithology observed in the most recent soil borings A-1 through A-5 and A-7 through A-10 was predominately a clay gravel layer in the first foot. Silty clays and clayey silts were then encountered to a depth of approximately 14 to 20 ft bgs. Clayey sands and sandy and clayey gravels were then encountered to a depth of approximately 25 to 30 ft bgs. Gravels and sands were then encountered to a depth of approximately 45 ft bgs. Silty clay was encountered below 45 ft bgs, specifically in boring A-1, where the total depth explored was 46 ft bgs. Off-site borings to the east were similar with the exception that clayey silt was encountered at a depth of approximately 35 ft bgs. Off-site boring A-10 varied greatly from all other borings. An angular gravel fill was encountered beneath a mulch layer to three feet bgs. Predominately silt or silty sand underlies the fill to approximately 35 feet bgs. Silty gravel was encountered from 35 to the total depth sampled of 39 feet bgs. Ground water was first encountered during drilling at depths ranging from 19 feet to 25 feet bgs. Soil boring logs are included within Appendix A. Geologic cross-sections of the Site are provided in Appendix C.

4.0 PREFERENTIAL PATHWAY SURVEY

An underground utility site survey was conducted in October 2000 by Alisto Engineering Group to identify potential man-made migration pathways and conduits, and to assess whether

preferential pathways and conduits may promote the migration of petroleum hydrocarbons. An additional underground utility survey was recently conducted by URS Corporation to augment the previous survey and verify the depths of the underground utilities in the area of the Site. A map showing the locations of the underground utilities in the area of the Site is presented in Appendix D. As mentioned previously, geologic cross-sections showing the locations and depths of the underground utilities in the Site vicinity are presented in Appendix C. Based on the locations and relatively shallow depths of the underground utilities (maximum depth of approximately 10 feet), the lithology and the typical depth to water at the Site (dependably between approximately 12 and 34 feet bgs, but typically between 15 to 20 feet bgs), man-made preferential dissolved petroleum hydrocarbon migration pathways and conduits are unlikely to exist at the Site.

5.0 PROPOSED SCOPE OF WORK

5.1 Onsite Source Area Characterization

The purpose of this contaminant source area characterization is to assess the vertical extent of petroleum hydrocarbons in ground water in the southern portion of the Site. Specifically, the historical analytical data indicates that elevated concentrations of petroleum hydrocarbons were encountered in soil and ground-water samples collected from the southern portion of the Site in the vicinity of soil borings A-2, A-3 and A-4 (URS, November 2005). Proposed boring locations are shown in Figure 6.

Therefore, two deeper borings are proposed to delineate the vertical extent of contamination. One deeper boring is proposed to be advanced in the space between previous borings A-2 and A-3, while another deeper boring is proposed to be advanced in the space between previous borings A-3 and A-4. The total depth will depend upon the conditions encountered. The proposed boring locations are preliminary, and may be subject to change in order to obtain the necessary clearance from underground and above-ground utilities per BP drilling and utility clearance policy.

The borings are proposed to be advanced using environmental cone penetration testing (CPT). CPT is a process whereby soil characteristics are determined when a cone penetrometer is driven into the subsurface. The CPT provides a rapid, reliable and economical means of determining soil stratigraphy, relative density, strength, and hydrogeologic information (e.g., static and dynamic pore pressure, hydraulic conductivity). CPT is a technology endorsed by the US EPA in its *Expedited Site Assessment Tools for Underground Storage Tank Sites* (EPA 510-B-97-001). Specialty samplers will be used to collect subsurface hydrogeologic information and high-quality ground-water samples at depths below first encountered ground water.

For this investigation, physical soil samples are not proposed to be extracted for classification at the surface by a field geologist. Using CPT, *in situ* geophysical, geochemical, and geotechnical measurements of subsurface conditions will be made using specialty sensors in the tip or "cone" of the direct-push rods. The ratio of sleeve resistance to tip resistance, which is referred to as the friction ratio, is used to interpret the soil types encountered. In general, sandy soils have high tip resistance and low friction ratios, whereas clayey soils have low tip resistance and higher friction ratios. CPT records soil behavior rather than actual soil type because in addition to grain size, the soil's degree of sorting, roundness, and mineralogy can also influence tip resistance. In

general, soil behavior type correlates well with soil type. Soil boring logs available for the nearby borings A-2, A-3, and A-4 will be used to interpret the CPT data for site-specific conditions.

A fuel fluorescence detector (FFD) is proposed for in situ measurement of TPH as part of the CPT. The FFD system uses a 254-nm ultraviolet light source that is focused on soil or ground water through a sapphire window. If aromatic hydrocarbons are present, the resulting fluorescence will return through fiber-optic cable for analysis at the ground surface. The borings are proposed to be advanced to a depth of 60 feet, or until screening with the FFD indicates that the CPT sampler tip is beyond the deepest level of detectable TPH contamination. Upon reaching that depth, a depth-discrete ground-water sampling probe with sealed retractable screen interval will be advanced and ground-water samples collected. Following completion of the CPT boring activities, borings will be sealed to the surface with a neat Portland cement grout slurry. A summary of CPT technology from the EPA's *Expedited Site Assessment Tools for Underground Storage Tank Sites* guidance document is provided within Appendix E.

A laboratory certified by the State of California Department of Health Services will analyze the selected ground-water samples for GRO; BTEX; MTBE; Ethyl tert-butyl ether (ETBE); tert-Amyl methyl ether (TAME); Di-isopropyl ether (DIPE); 1,2-Dichloroethane (1,2-DCA); 1,2-Dibromoethane (EDB); tert-Butyl alcohol (TBA); and ethanol using EPA Method 8260B.

5.2 Quarterly Ground-Water Monitoring and Sampling

Ground-water monitoring at wells MW-1 through MW-4, MW-6 through MW-10, and EX-1 and EX-2 will continue on the current schedule to assess the nature and extent of the dissolved petroleum hydrocarbons in ground water both onsite and offsite, over time. This schedule stipulates quarterly monitoring of all wells and quarterly collection of samples from wells MW-2, MW-4, MW-7, MW-10, EX-1, and EX-2; semi-annual collection of sample from MW-9 (first and third quarters); and annual collection of samples from MW-1, MW-3, MW-6, and MW-8 (first quarter). In accordance with the request from ACEHS, well MW-10 was recently surveyed with the other wells mentioned above simultaneously resurveyed. The new survey data will be posted to GeoTracker as required for compliance. Future quarterly reports will now be able to contain potentiometric water surface elevation contour maps incorporating depth-to-water monitoring data from MW-10.

5.3 Corrective Action Plan

The data obtained from the proposed site assessment activities will be evaluated in conjunction with Cambria's 8 August 2002 *Dual Phase Extraction Pilot Test Report* proposing the use of DPE at the Site. Based on the evaluation, a Corrective Action Plan (CAP) or a Remedial Action Plan will be submitted proposing a cost-effective cleanup solution for the petroleum hydrocarbons in soil and ground water that will adequately address human health and safety, the environment, eliminate nuisance conditions, and protect water resources. The CAP will evaluate at least three technically and economically feasible methods to restore and protect the beneficial uses of the water and to meet the cleanup objectives for each contaminant established in the CAP. The CAP will also propose verification monitoring to confirm completion of the corrective actions and evaluate the CAP implementation effectiveness.

6.0 PROPOSED SCHEDULE

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

- Onsite Soil and Water Investigation – Upon approval of this work plan and obtaining the necessary permits;
- Onsite Soil and Water Investigation Report – Within 60 days after completion of fieldwork;
- Corrective Action Plan – By 1 January 2007, per 2 June 2006 ACEHS letter.

In addition, quarterly ground-water monitoring reports will continue to be completed within 30 days following the end of the quarter from which the samples were collected, in accordance with the existing monitoring and sampling program.

7.0 CLOSURE

The findings presented in this document are based upon: observation of field personnel from previous consultants, the points investigated, and results of laboratory 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 on implied was made. This report has been prepared for the exclusive use of Atlantic Richfield Company. It is possible that variations in soil or ground-water 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.

8.0 REFERENCES

Hunter Environmental Services, Inc., 20 December 1989. *Phase II Environmental Audit, Eastmont Mall Property, Oakland, Alameda County, California.*

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Pacific Environmental Group, Inc., 20 October 1997. *Off Site Well Installation Report, BP Oil Facility #11117, 7210 Bancroft Avenue, Oakland, California.*

Environmental Resolutions, Inc., 20 November 1998. *Underground Storage Tank and Associated Piping and Dispenser Removal, Tosco 76 Service Station 11117, 7210 Bancroft Avenue, Oakland, California.*

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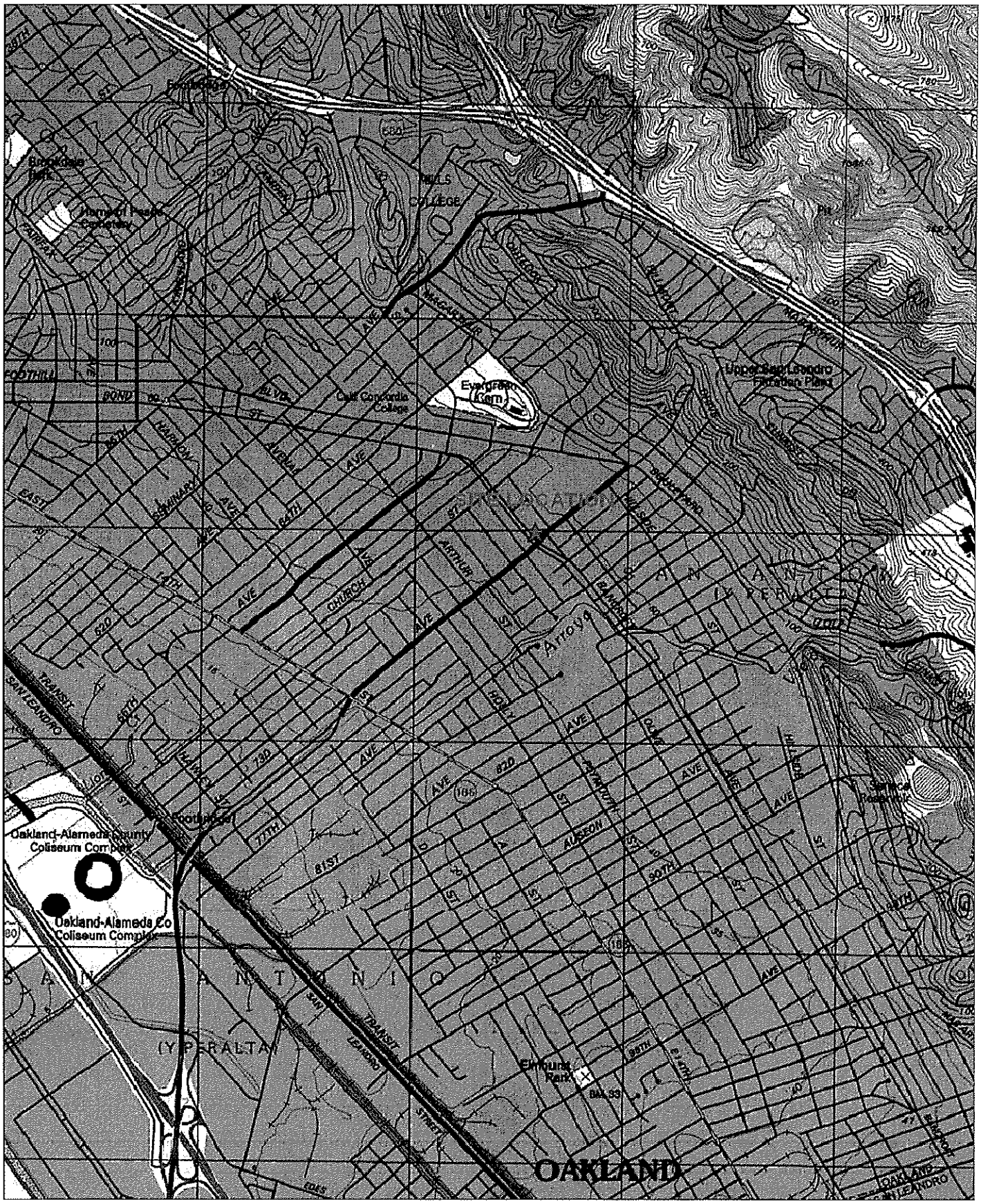
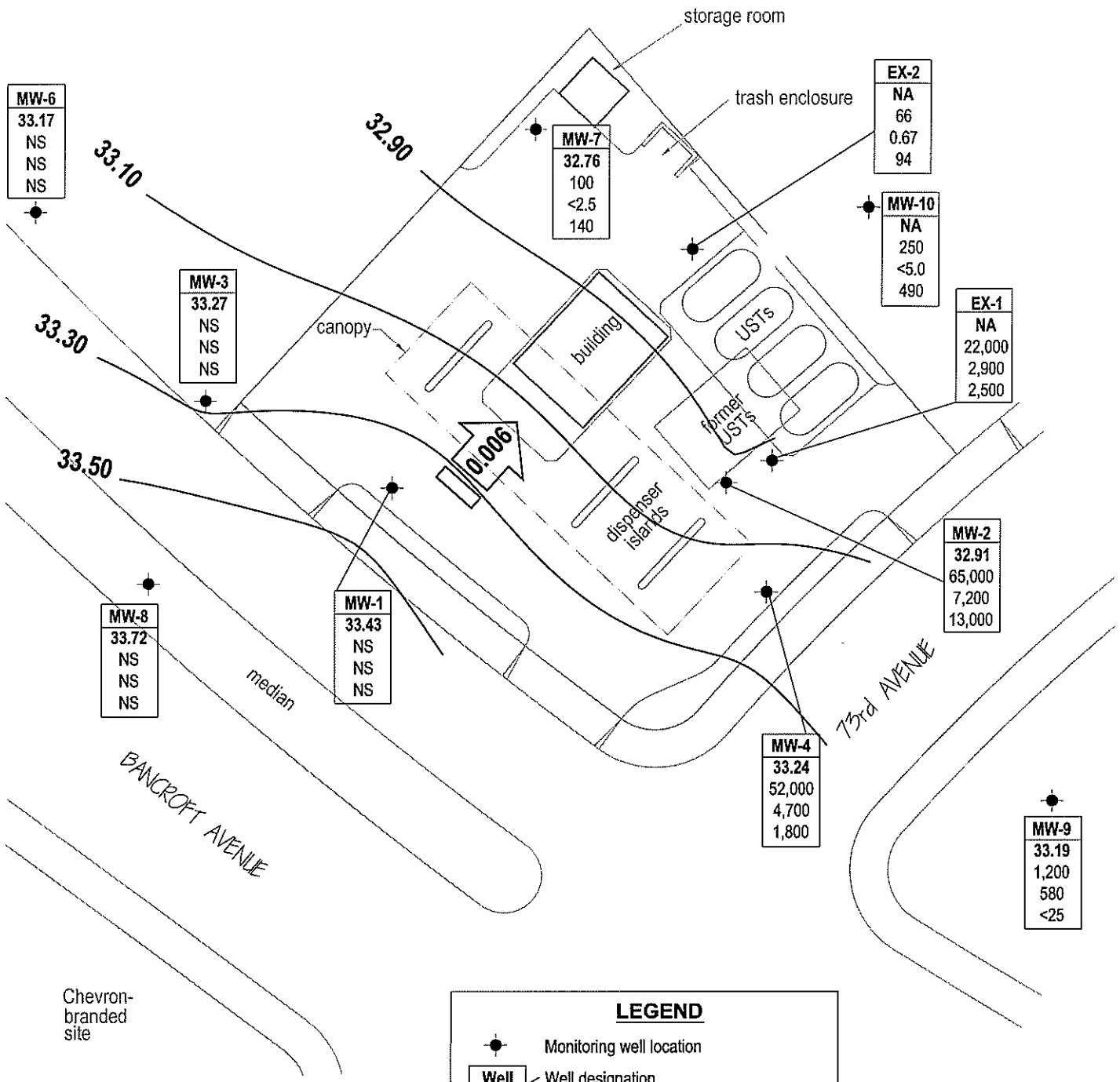
LIST OF FIGURES



BROADBENT & ASSOCIATES, INC. ENGINEERING, WATER RESOURCES & ENVIRONMENTAL 1324 Mangrove Ave. Suite 212, Chico, California 95926 Project No.: 06-08-649 Date: 10/11/06	Station #11117 7210 Bancroft Avenue Oakland, California	Site Location Map	Figure 1



LEGEND

	Monitoring well location
Well	Well designation
ELEV	Ground-water elevation (ft/MSL)
GRO Benzene MTBE	GRO, Benzene and MTBE concentrations in micrograms per liter (µg/L)
0.006	Ground-water flow gradient and direction (ft/ft)
33.50	Ground-water elevation contour (ft/MSL)
<	Not detected at or above laboratory reporting limit
NM	Not measured
NS	Not sampled
NA	Not available, well elevation not surveyed

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

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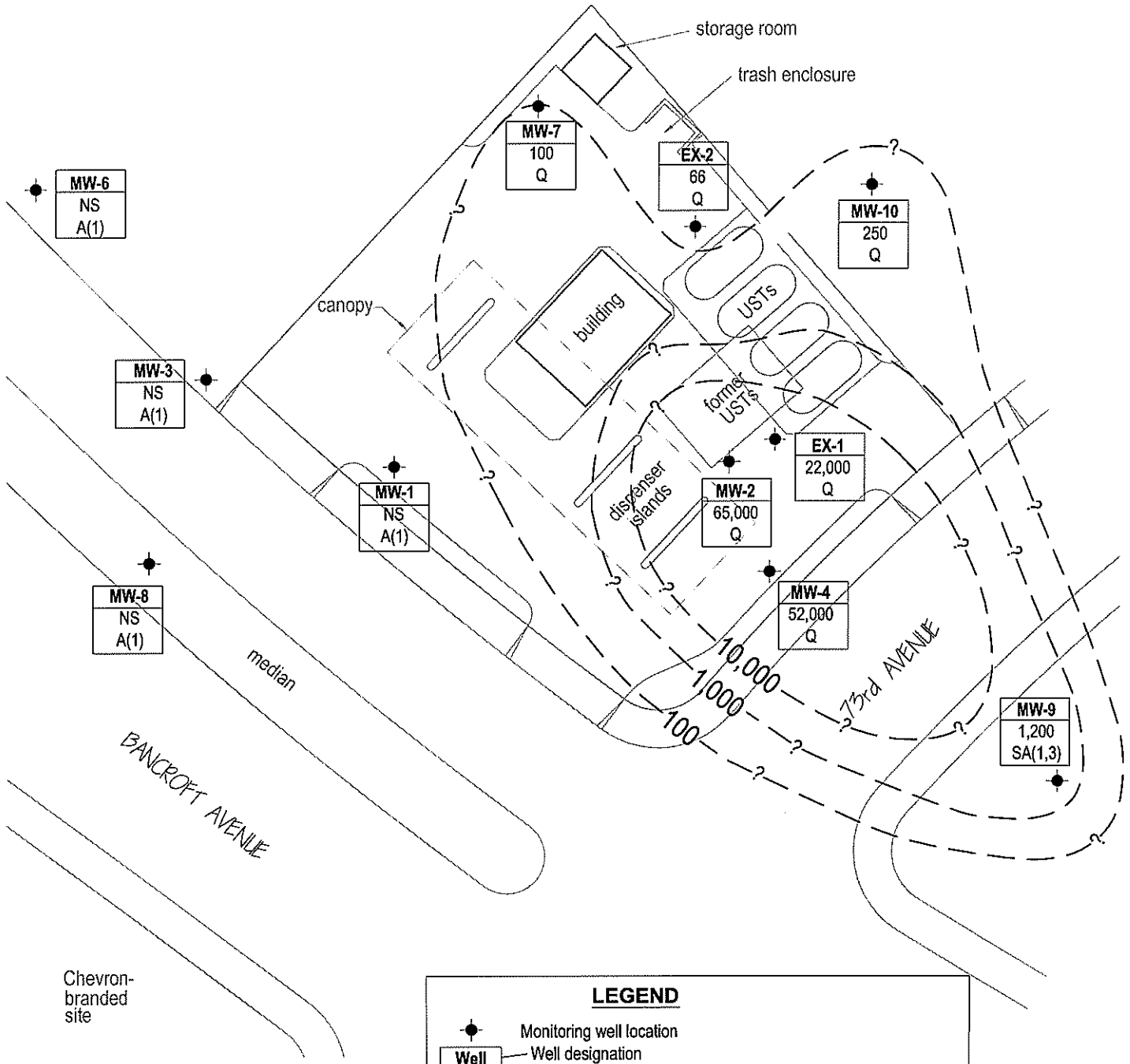
Station #11117
7210 Bancroft Avenue
Oakland, California

Ground-Water Elevation Contour and Analytical Summary Map
26 August 2006

Figure
2



LEGEND

- Monitoring well location
- Well / GRO / A/Q/SA — Well designation; GRO concentrations in micrograms per liter (µg/L); Sampling frequency
- 100 — Approximate GRO iso-concentration contour in micrograms per liter (µg/L). Contour interval = logarithmic.
- Q — Sampled quarterly
- SA(1,3) — Sampled semi-annually, 1st and 3rd quarter
- A(1) — Sampled annually, 1st quarter
- < — Not detected at or above laboratory reporting limit
- NS — Not sampled
- ? — Contours within regions not bounded by monitoring points. All contours depicted are approximate.

N

0 40 80

SCALE (ft)

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

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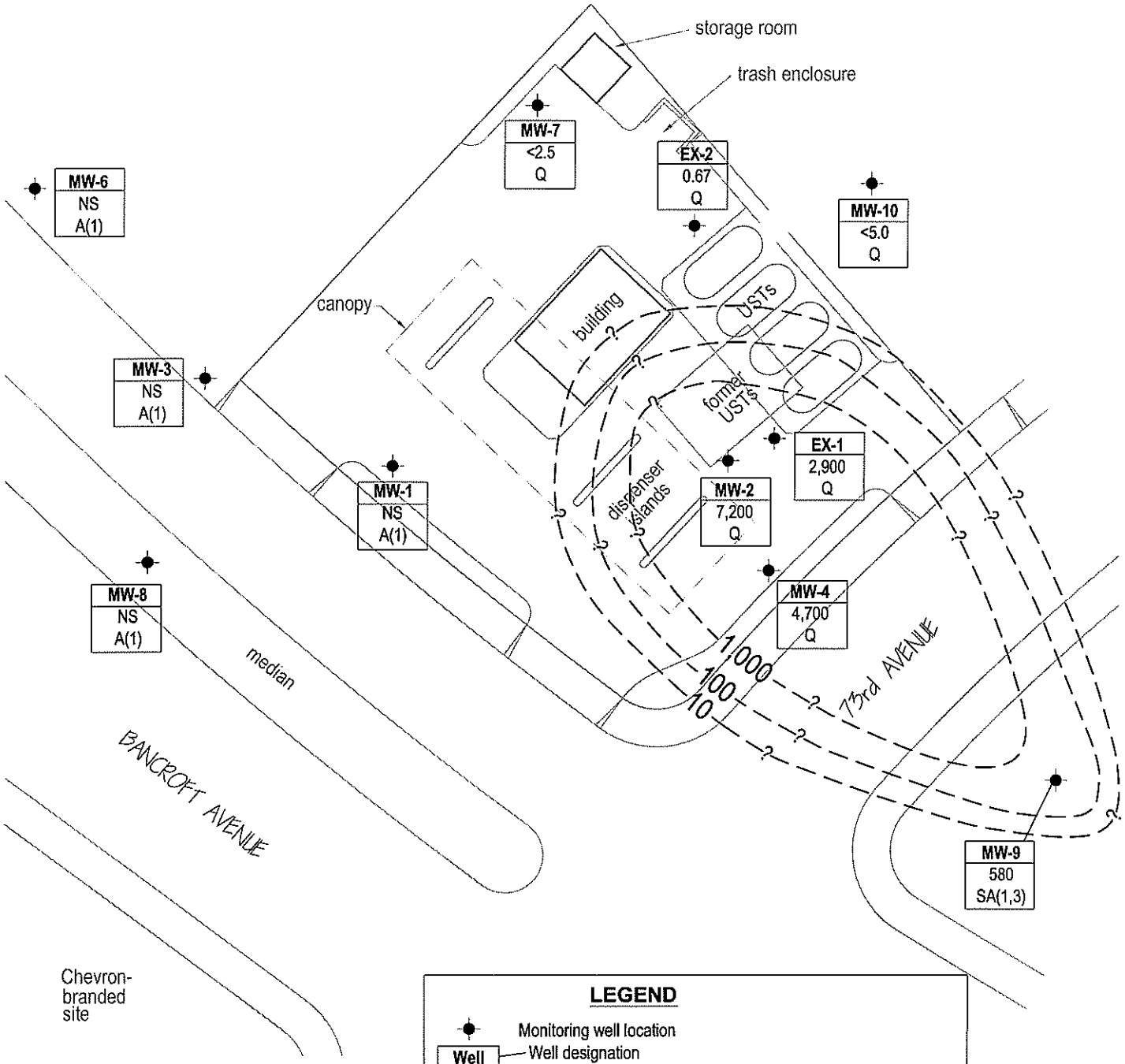
Station #11117
7210 Bancroft Avenue
Oakland, California

Gasoline Range Organics
Iso-Concentration Contours Map
26 August 2006

Figure 3



LEGEND

●	Monitoring well location
Well / Benzene / A/Q/SA	Well designation; Benzene concentrations in micrograms per liter (µg/L); Sampling frequency
100	Approximate Benzene iso-concentration contour in micrograms per liter (µg/L). Contour interval = logarithmic.
Q	Sampled quarterly
SA(1,3)	Sampled semi-annually, 1st and 3rd quarter
A(1)	Sampled annually, 1st quarter
<	Not detected at or above laboratory reporting limit
NS	Not sampled
?	Contours within regions not bounded by monitoring points. All contours depicted are approximate.

N

0 40 80

SCALE (ft)

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

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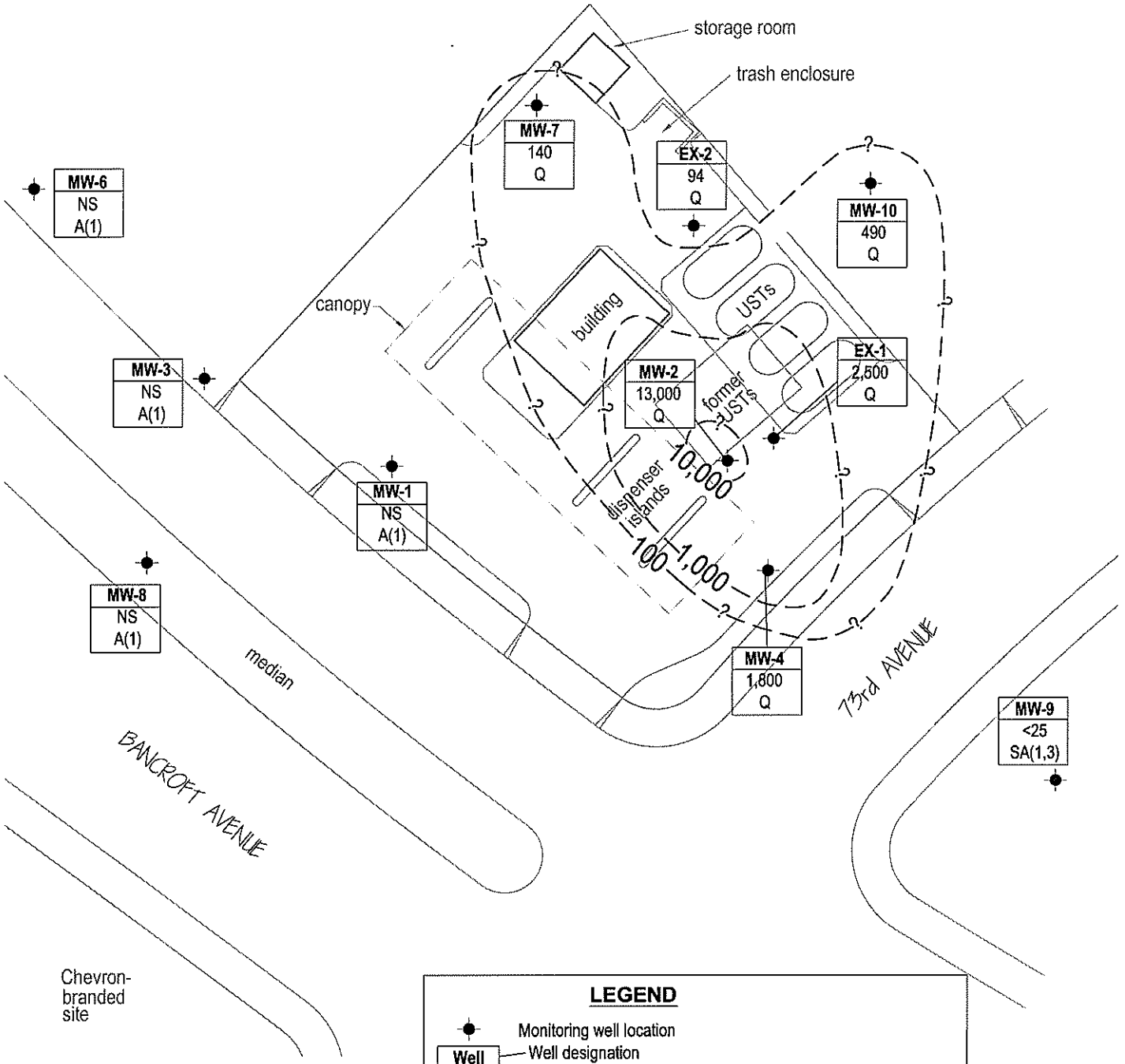
Station #11117
7210 Bancroft Avenue
Oakland, California

Benzene Iso-Concentration Contours Map
26 August 2006

Figure
4



LEGEND

●	Monitoring well location
Well / MTBE / A/Q/SA	Well designation; MTBE concentrations in micrograms per liter (µg/L); Sampling frequency
100	Approximate MTBE iso-concentration contour in micrograms per liter (µg/L). Contour interval = logarithmic.
Q	Sampled quarterly
SA(1,3)	Sampled semi-annually, 1st and 3rd quarter
A(1)	Sampled annually, 1st quarter
<	Not detected at or above laboratory reporting limit
NS	Not sampled
?	Contours within regions not bounded by monitoring points. All contours depicted are approximate.

N

0 40 80

SCALE (ft)

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

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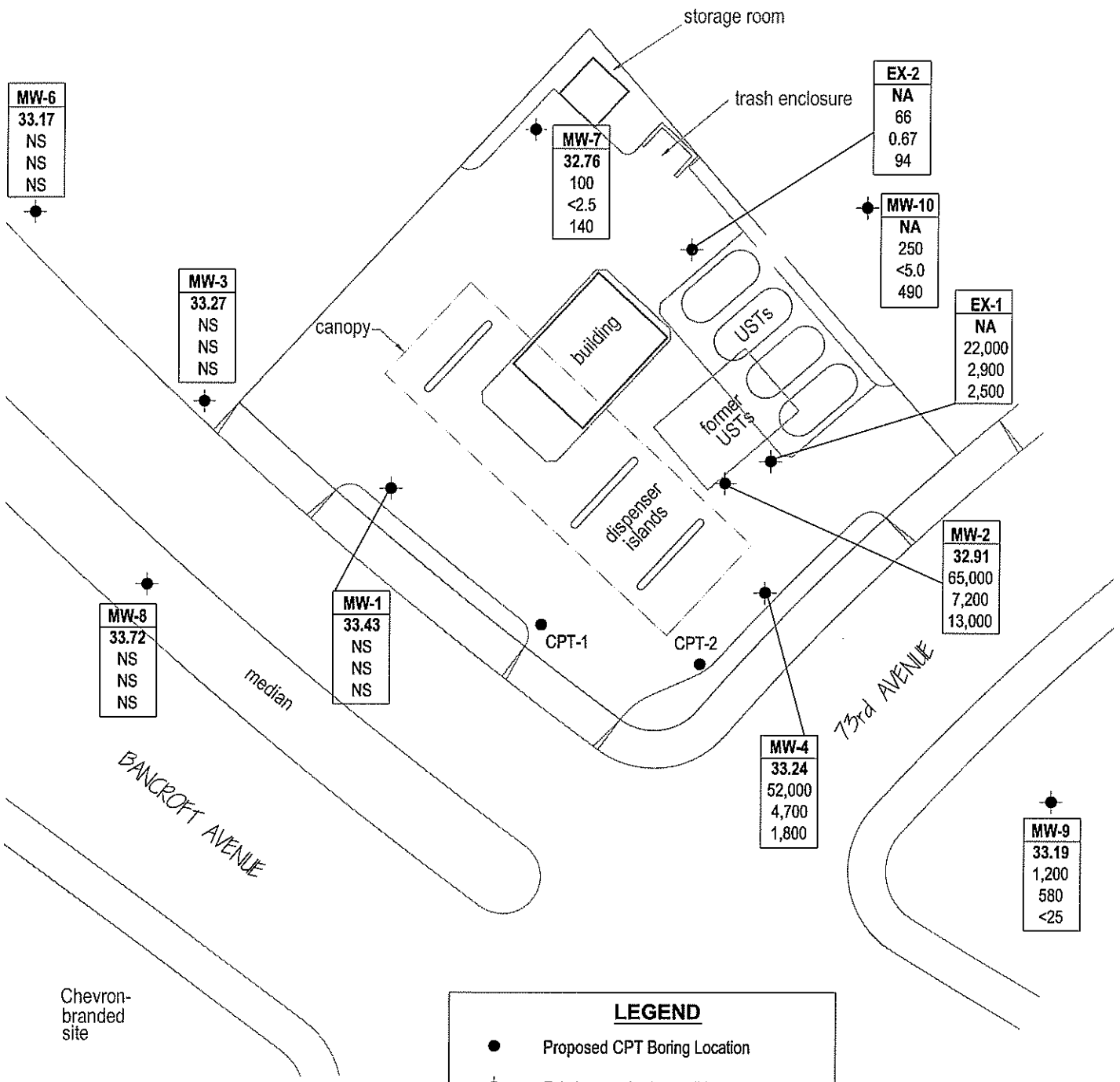
Station #11117
7210 Bancroft Avenue
Oakland, California

MTBE Iso-Concentration Contours Map
26 August 2006

Figure
5



LEGEND

- ● Proposed CPT Boring Location
- ⊕ Existing monitoring well location
- Well — Well designation
- ELEV — Ground-water elevation (ft/MSL)
- GRO / Benzene / MTBE — GRO, Benzene and MTBE concentrations in micrograms per liter (µg/L)
- < Not detected at or above laboratory reporting limit
- NM Not measured
- NS Not sampled
- NA Not available, well elevation not surveyed

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

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Project No.: 06-08-649 Date: 10/10/06

Station #11117
7210 Bancroft Avenue
Oakland, California

Proposed Boring Locations

Figure 6

LIST OF TABLES

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L) GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	(mg/L) DO	Lab	pH	Comments
EX-1															
05/04/2004	P	--	16.29	--	--	12,000	2,300	430	740	1,100	2,500	--	SEQM	6.8	h
08/31/2004	P	--	19.39	--	--	13,000	2,500	95	650	1,500	2,100	--	SEQM	6.7	h
11/23/2004	P	--	17.90	--	--	13,000	2,700	94	460	1,700	3,000	--	SEQM	6.9	
01/18/2005	P	--	14.20	--	--	16,000	2,100	390	570	2,500	2,200	--	SEQM	6.6	
06/29/2005	P	--	14.22	--	--	6,400	1,100	52	280	790	1,400	--	SEQM	7.2	
09/01/2005	P	--	17.22	--	--	7,900	2,000	94	400	870	2,000	--	SEQM	6.7	
11/03/2005	P	--	19.92	--	--	22,000	3,200	640	550	3,300	3,000	0.88	SEQM	6.8	
02/14/2006	P	--	15.40	--	--	3,500	<25	<25	<25	74	1,100	--	SEQM	6.8	
5/30/2006	P	--	13.43	--	--	8,600	1,400	120	490	1,300	1,400	--	SEQM	6.8	
8/29/2006	**--**	**--**	**17.74**	**--**	**--**	**22,000**	**2,900**	**210**	**1,400**	**3,600**	**2,500**	**--**	**TAMC**	**6.9**	
EX-2															
05/04/2004	P	--	16.65	--	--	<50	0.63	<0.50	<0.50	0.66	46	--	SEQM	6.7	h
08/31/2004	P	--	19.90	--	--	<250	<2.5	<2.5	<2.5	<2.5	130	--	SEQM	6.9	h
11/23/2004	P	--	18.36	--	--	<50	0.74	<0.50	0.83	3.0	5.8	--	SEQM	6.6	
01/18/2005	P	--	14.67	--	--	<50	<0.50	<0.50	<0.50	0.69	6.5	--	SEQM	6.5	
06/29/2005	P	--	14.60	--	--	<50	<0.50	<0.50	<0.50	0.50	24	--	SEQM	6.8	s
09/01/2005	P	--	17.28	--	--	<50	<0.50	1.4	<0.50	1.4	55	--	SEQM	7.0	
11/03/2005	P	--	20.42	--	--	<50	0.50	<0.50	<0.50	1.4	39	0.77	SEQM	6.9	
02/14/2006	P	--	14.54	--	--	220	<0.50	3.2	7.5	33	0.72	--	SEQM	7.0	
5/30/2006	P	--	13.35	--	--	<50	<0.50	<0.50	<0.50	0.70	7.8	--	SEQM	6.9	
8/29/2006	**--**	**--**	**17.92**	**--**	**--**	**66**	**0.67**	**<0.50**	**0.79**	**1.9**	**94**	**--**	**TAMC**	**6.9**	
MW-1															
1/5/1992	--	49.8	33.16	--	16.64	57,000	2,400	1,000	1,100	3,100	--	--	--	--	
1/10/1992	--	49.8	33.16	--	16.64	--	--	--	--	--	--	--	--	--	
6/5/1992	--	49.8	29.01	--	20.79	31,000	2,800	2,100	800	2,300	--	--	--	--	
7/24/1992	--	49.8	29.45	--	20.35	--	--	--	--	--	--	--	--	--	
7/27/1992	--	49.8	29.45	--	20.35	--	--	--	--	--	--	--	--	--	
9/15/1992	--	49.8	30.53	--	19.27	40,000	3,400	3,000	1,300	3,400	--	--	ANA	--	c
9/15/1992	--	--	--	--	--	36,000	3,800	3,400	1,400	3,800	--	--	ANA	--	d

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						(mg/L)			
						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	DO	Lab	pH	Comments
MW-1 Cont.															
12/15/1992	--	49.8	31.26	--	18.54	27,000	1,700	580	700	1,900	--	--	ANA	--	c
12/15/1992	--	--	--	--	--	22,000	1,500	440	510	1,300	--	--	ANA	--	d
3/15/1993	--	--	--	--	--	15,000	1,100	860	440	1,400	--	--	PACE	--	d, l
3/15/1993	--	49.8	24.8	--	25	17,000	1,700	1,200	590	1,800	--	--	PACE	--	l
6/7/1993	--	49.8	25.01	--	24.79	750	0.8	0.8	<0.5	<0.5	--	--	PACE	--	l
6/7/1993	--	--	--	--	--	720	0.7	0.7	<0.5	<0.5	--	--	PACE	--	d, l
9/23/1993	--	49.8	28.7	--	21.1	40,000	4,000	500	920	3,000	6,619	--	PACE	--	e, l
12/27/1993	--	--	--	--	--	21,000	1,700	380	830	2,400	9,219	--	PACE	--	e,l, d
12/27/1993	--	49.8	28.66	--	21.14	27,000	2,000	400	940	2,600	13,558	--	PACE	--	e, l
4/5/1994	--	--	--	--	--	29,000	3,700	1,000	1,000	3,100	9,672	1.3	PACE	--	e,l, d
4/5/1994	--	49.8	26.37	--	23.43	27,000	3,400	930	950	2,900	8,595	--	PACE	--	e,l,
7/22/1994	--	49.8	26.54	--	23.26	1,700	220	2.3	2	3.4	262	2.0	PACE	--	e,l
10/13/1994	--	49.8	27.46	--	22.34	1,200	250	21	<0.5	3.2	321	2.6	PACE	--	e,l
1/25/1995	--	49.8	20.96	--	28.84	1,000	420	8	13	4	--	--	ATI	--	
4/19/1995	--	49.8	19.59	--	30.21	5,200	420	51	230	340	--	6.0	ATI	--	
7/5/1995	--	49.8	19.61	--	30.19	320	4.2	<0.50	<0.50	<1.0	--	4.6	ATI	--	
10/5/1995	--	49.8	24.4	--	25.4	5,800	1,000	40	31	180	7,800	2.3	ATI	--	
1/12/1996	--	49.8	25.44	--	24.36	370	<0.50	<0.50	<0.50	<1.0	<5.0	3.7	ATI	--	
4/22/1996	--	49.8	18.02	--	31.78	<50	<0.5	<1	<1	<1	<10	3.9	SPL	--	
7/2/1996	--	49.8	19.72	--	30.08	--	--	--	--	--	--	--	--	--	
7/3/1996	--	49.8	--	--	--	<250	<2.5	<5	<5	<5	<50	3.6	SPL	--	
11/8/1996	--	49.8	19.98	--	29.82	<50	<0.5	<1.0	<1.0	<1.0	<10	4.3	SPL	--	
1/3/1997	--	49.8	19.49	--	30.31	<50	<0.5	14	<1.0	<1.0	<10	4.6	SPL	--	
4/28/1997	--	49.8	20.2	--	29.6	<50	<0.5	<1.0	<1.0	<1.0	<10	3.9	SPL	--	
7/1/1997	--	49.8	22.53	--	27.27	<50	<0.5	<1.0	<1.0	<1.0	<10	3.9	SPL	--	
10/2/1997	--	49.8	24.27	--	25.53	<50	<0.5	<1.0	<1.0	<1.0	<10	4.6	SPL	--	
1/9/1998	--	49.8	21.07	--	28.73	<50	<0.5	<1.0	<1.0	<1.0	<10	4.2	SPL	--	
5/6/1998	--	49.8	14.94	--	34.86	60	<0.5	<1.0	<1.0	<1.0	<10	3.8	SPL	--	
7/21/1998	--	49.8	15.11	--	34.69	70	<0.5	<1.0	<1.0	<1.0	<10	3.8	SPL	--	
12/30/1998	--	49.8	19.95	--	29.85	--	--	--	--	--	--	--	--	--	
2/2/1999	--	49.8	19.12	--	30.68	420	<1.0	<1.0	<1.0	<1.0	390	--	SPL	--	

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						(mg/L) DO	Lab	pH	Comments
						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE				
MW-1 Cont.															
5/10/1999	--	49.8	15.51	--	34.29	--	--	--	--	--	--	--	--	--	
9/23/1999	--	49.8	21.65	--	28.15	440	49	<1.0	<1.0	<1.0	910	--	SPL	--	
12/23/1999	--	49.8	22.32	--	27.48	--	--	--	--	--	--	--	--	--	
3/27/2000	--	49.8	15.72	--	34.08	2,500	230	3	83	36	4,400	--	PACE	--	
5/22/2000	--	49.8	16.92	--	32.88	--	--	--	--	--	--	--	--	--	
8/31/2000	--	49.8	20.12	--	29.68	1,700	18	5.5	7.9	5	510	--	PACE	--	
12/11/2000	--	49.8	20.72	--	29.08	--	--	--	--	--	--	--	--	--	
3/20/2001	--	49.8	15.91	--	33.89	880	38.2	<0.5	24.1	<1.5	391	--	PACE	--	
6/19/2001	--	49.8	18.38	--	31.42	--	--	--	--	--	--	--	--	--	
9/20/2001	--	49.8	21.23	--	28.57	3,200	400	19.8	42	32.5	2,510	--	PACE	--	
12/27/2001	--	49.8	16.72	--	33.08	750	70.1	0.536	4.74	3.76	649	--	PACE	--	
2/28/2002	--	49.8	15.25	--	34.55	<50	<0.5	<0.5	<0.5	<1.0	8.7	--	PACE	--	
6/28/2002	--	49.8	16.57	--	33.23	110	0.977	<0.5	0.818	<1.0	8.35	--	PACE	--	
9/12/2002	--	49.8	18.41	--	31.39	98	2.7	1.5	1.5	5.4	48	--	SEQ	6.9	
12/12/2002	--	49.8	20.26	--	29.54	210	1.9	<0.50	<0.50	<0.50	32	--	SEQ	6.8	
3/10/2003	--	49.8	16.22	--	33.58	<50	<0.50	<0.50	<0.50	<0.50	3.2	--	SEQ	6.9	
5/12/2003	--	49.8	14.3	--	35.5	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	SEQ	7.1	
8/27/2003	--	49.8	18.15	--	31.65	<50	<0.50	<0.50	<0.50	<0.50	4.2	--	SEQ	7.1	n
11/10/2003	P	49.80	19.24	--	30.56	<50	<0.50	<0.50	<0.50	<0.50	0.51	--	SEQM	6.8	
02/03/2004	P	49.80	14.84	--	34.96	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	7.0	
05/04/2004	P	49.80	14.67	--	35.13	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	7.1	
08/31/2004	P	49.80	17.75	--	32.05	<50	<0.50	<0.50	<0.50	<0.50	0.50	--	SEQM	7.1	
11/23/2004	--	49.80	16.03	--	33.77	--	--	--	--	--	--	--	--	--	
01/18/2005	P	49.80	12.47	--	37.33	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	6.9	
06/29/2005	--	49.80	12.65	--	37.15	--	--	--	--	--	--	--	--	--	
09/01/2005	--	49.80	15.79	--	34.01	--	--	--	--	--	--	--	--	--	
11/03/2005	--	49.80	18.55	--	31.25	--	--	--	--	--	--	--	--	--	
02/14/2006	P	49.80	12.29	--	37.51	51	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	7.0	w
5/30/2006	--	49.80	12.15	--	37.65	--	--	--	--	--	--	--	--	--	
8/29/2006	**--**	**49.80**	**16.37**	**--**	**33.43**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						(mg/L)			
						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	DO	Lab	pH	Comments
MW-2															
1/5/1992	--	51.07	--	--	--	--	--	--	--	--	--	--	--	--	r
1/10/1992	--	51.07	--	--	--	--	--	--	--	--	--	--	--	--	r
6/5/1992	--	51.07	30.05	--	21.02	11,000	2,000	180	490	1,900	--	--	--	--	
7/24/1992	--	51.07	30.72	--	20.35	--	--	--	--	--	--	--	--	--	
7/27/1992	--	51.07	30.52	--	20.55	--	--	--	--	--	--	--	--	--	
9/15/1992	--	51.07	31.56	--	19.51	75,000	2,000	6,500	2,300	13,000	--	--	ANA	--	c
12/15/1992	--	51.07	32.4	--	18.67	34,000	6,200	8,900	2,000	7,900	--	--	ANA	--	c
3/15/1993	--	51.07	26.14	--	24.93	150,000	12,000	18,000	3,200	22,000	82,000	--	PACE	--	e
6/7/1993	--	51.07	26.38	--	24.69	--	--	--	--	--	--	--	--	--	f
9/23/1993	--	51.07	31.43	--	17.72	--	--	--	--	--	--	--	--	--	f
12/27/1993	--	51.07	34.07	--	15.93	--	--	--	--	--	--	--	--	--	f
4/5/1994	--	51.07	30.44	--	17.33	--	--	--	--	--	--	--	--	--	f
7/22/1994	--	51.07	28.51	--	21.76	--	--	--	--	--	--	--	--	--	f
10/13/1994	--	51.07	29.33	--	21.04	--	--	--	--	--	--	--	--	--	f
1/25/1995	--	51.07	25.55	--	21.27	--	--	--	--	--	--	--	--	--	f
4/19/1995	--	51.07	19.78	--	31.17	--	--	--	--	--	--	--	--	--	f
7/5/1995	--	51.07	20.88	--	30.1	140,000	14,000	30,000	3,500	26,000	--	--	ATI	--	
10/5/1995	--	51.07	24.68	--	26.29	--	--	--	--	--	--	--	--	--	f
1/12/1996	--	51.07	25.72	--	25.29	--	--	--	--	--	--	--	--	--	f
4/22/1996	--	51.07	19.33	--	31.66	--	--	--	--	--	--	--	--	--	f
7/2/1996	--	51.07	20.01	--	31.02	--	--	--	--	--	--	--	--	--	f
11/8/1996	--	51.07	20.28	--	30.78	--	--	--	--	--	--	--	--	--	f
1/3/1997	--	51.07	19.87	--	31.18	--	--	--	--	--	--	--	--	--	f
4/28/1997	--	51.07	20.59	--	30.47	560,000	1,200	1,300	290	2,310	6,100	3.9	SPL	--	
7/1/1997	--	--	--	--	--	150,000	14,000	13,000	1,800	14,200	57,000	--	SPL	--	d
7/1/1997	--	51.07	22.9	--	28.16	24,000	15,000	16,000	4,900	24,400	63,000	3.7	SPL	--	
10/2/1997	--	51.07	24.65	--	26.4	--	--	--	--	--	--	--	--	--	
10/3/1997	--	51.07	--	--	--	250,000	32,000	39,000	6,000	42,000	160,000	4.5	SPL	--	
1/9/1998	--	--	--	--	--	300,000	20,000	25,000	5,200	37,000	84,000	--	SPL	--	d
1/9/1998	--	51.07	21.22	--	29.84	420,000	23,000	29,000	5,800	43,000	75,000	4.0	SPL	--	
2/2/1998	--	51.07	20.11	--	30.96	410,000	27,000	43,000	6,700	50,000	20,000	--	SPL	--	

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L) GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	(mg/L) DO	Lab	pH	Comments
MW-2 Cont.															
5/6/1998	--	51.07	15.1	--	35.96	180,000	25,000	26,000	3,400	22,900	35,000	3.7	SPL	--	
7/21/1998	--	51.07	15.31	--	35.75	270,000	21,000	20,000	2,700	18,800	34,000	3.8	SPL	--	
12/30/1998	--	51.07	21.1	--	29.87	300,000	22,000	24,000	4,200	26,000	89000/95000	--	SPL	--	j
5/10/1999	--	51.07	16.68	--	34.39	220,000	20,000	20,000	2,800	20,000	100,000	--	SPL	--	
9/23/1999	--	51.07	22.5	--	28.57	160,000	21,000	24,000	2,900	20,000	44,000	--	SPL	--	
12/23/1999	--	51.07	22.64	--	28.43	170,000	25,000	41,000	3,100	24,000	40,000	--	PACE	--	k
3/27/2000	--	51.07	16.88	--	34.19	140,000	15,000	25,000	3,400	21,000	19,000	--	PACE	--	
5/22/2000	--	51.07	17.75	--	33.32	150,000	18,000	31,000	3,500	22,000	26,000	--	PACE	--	
8/31/2000	--	51.07	21.97	--	29.1	200,000	16,000	26,000	2,500	16,000	38,000	--	PACE	--	
12/11/2000	--	51.07	22.05	--	29.02	130,000	18,600	30,000	3,250	20,600	21,700	--	PACE	--	
3/20/2001	--	51.07	17.75	--	33.32	140,000	15,900	24,800	3,700	22,100	12,900	--	PACE	--	
6/19/2001	--	51.07	20.15	--	30.92	130,000	15,100	19,500	3,300	21,400	20,300	--	PACE	--	
9/20/2001	--	51.07	22.14	--	28.93	110,000	12,400	12,600	2,230	13,000	39,500	--	PACE	--	
12/27/2001	--	51.07	18.17	--	32.9	150,000	17,500	26,000	3,050	19,500	27,500	--	PACE	--	
2/28/2002	--	51.07	17.42	--	33.65	120,000	13,900	18,800	3,030	19,600	17,300	--	PACE	--	
6/28/2002	--	51.07	17.04	--	34.03	3,700	190	23.3	139	287	826	--	PACE	--	u
9/12/2002	--	51.07	19.52	--	31.55	100,000	13,000	22,000	3,600	20,000	18,000	--	SEQ	6.6	
12/12/2002	--	51.07	21.08	--	29.99	120,000	13,000	21,000	4,400	25,000	16,000	--	SEQ	6.6	
3/10/2003	--	51.07	17.84	--	33.23	100,000	17,000	21,000	3,400	20,000	4,400	--	SEQ	6.8	
5/12/2003	--	51.07	16.66	--	34.41	150,000	16,000	24,000	3,500	22,000	3,600	--	SEQ	7.1	
8/27/2003	--	51.07	19.65	--	31.42	120,000	14,000	12,000	3,900	20,000	5,100	--	SEQ	6.9	n
11/10/2003	P	51.07	20.80	--	30.27	97,000	12,000	9,500	3,600	15,000	4,200	--	SEQM	6.7	
02/03/2004	P	51.07	16.82	--	34.25	130,000	14,000	19,000	3,400	20,000	1,900	--	SEQM	6.8	
05/04/2004	P	51.07	16.19	--	34.88	120,000	12,000	16,000	3,700	22,000	2,500	--	SEQM	6.7	
08/31/2004	P	51.07	19.50	--	31.57	99,000	10,000	13,000	3,700	18,000	3,400	--	SEQM	6.8	
11/23/2004	P	51.07	18.20	--	32.87	110,000	8,200	17,000	4,000	23,000	2,400	--	SEQM	6.7	s
01/18/2005	P	51.07	14.91	--	36.16	96,000	6,500	14,000	3,500	21,000	3,700	--	SEQM	6.6	
06/29/2005	P	51.07	13.98	--	37.09	54,000	6,200	4,900	3,300	12,000	3,600	--	SEQM	7.3	
09/01/2005	P	51.07	17.00	--	34.07	58,000	6,300	6,000	3,300	15,000	5,100	--	SEQM	7.0	
11/03/2005	P	51.07	20.25	--	30.82	63,000	7,400	3,700	3,300	10,000	3,700	0.66	SEQM	6.7	
02/14/2006	P	51.07	13.72	--	37.35	97,000	7,500	11,000	4,300	16,000	3,400	--	SEQM	6.9	

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Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L) GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	(mg/L) DO	Lab	pH	Comments
MW-2 Cont.															
5/30/2006	P	51.07	13.50	--	37.57	28,000	5,200	2,500	1,500	3,300	2,300	--	SEQM	6.7	
8/29/2006	**--**	**51.07**	**18.16**	**--**	**32.91**	**65,000**	**7,200**	**4,500**	**3,200**	**11,000**	**13,000**	**--**	**TAMC**	**6.7**	
MW-3															
1/5/1992	--	49.95	33.69	--	16.26	7,400	790	23	210	40	--	--	--	--	
1/10/1992	--	49.95	33.74	--	16.21	--	--	--	--	--	--	--	--	--	
6/5/1992	--	49.95	29.65	--	20.3	2,000	130	5.3	93	20	--	--	--	--	
7/24/1992	--	49.95	30.14	--	19.81	--	--	--	--	--	--	--	--	--	
7/27/1992	--	49.95	30.14	--	19.81	--	--	--	--	--	--	--	--	--	
9/15/1992	--	49.95	31.07	--	18.88	450	55	3.1	34	7.1	--	--	ANA	--	
12/15/1992	--	49.95	31.93	--	18.02	12,000	940	<50	310	120	--	--	ANA	--	c
3/15/1993	--	49.95	25.71	--	24.24	<50	<0.5	<0.5	<0.5	<0.5	--	--	PACE	--	l
6/7/1993	--	49.95	25.8	--	24.15	150	3.6	<0.5	0.9	1.3	--	--	PACE	--	l
9/23/1993	--	49.95	29.18	--	20.77	--	--	--	--	--	--	--	--	--	
9/24/1993	--	49.95	--	--	--	160	8.4	<0.5	3.7	1.3	15.3	--	PACE	--	l
12/27/1993	--	49.95	29.25	--	20.7	9,400	1,100	48	530	120	2,871	--	PACE	--	e,l
4/5/1994	--	49.95	26.84	--	23.11	7,000	860	19	330	52	10,414	2.0	PACE	--	l
7/22/1994	--	49.95	26.9	--	23.11	<50	<0.5	<0.5	<0.5	<0.5	<5.0	2.1	PACE	--	l
10/13/1994	--	49.95	27.83	--	22.12	<50	<0.5	<0.5	<0.5	<0.5	<5.0	2.6	PACE	--	l
1/25/1995	--	49.95	21.65	--	28.3	<50	<0.5	<0.5	<0.5	<1	--	--	ATI	--	
4/19/1995	--	49.95	19.33	--	30.62	2,400	170	8	130	27	--	5.0	ATI	--	
7/5/1995	--	49.95	20.27	--	29.68	<50	<0.50	<0.50	<0.50	<1.0	--	4.4	ATI	--	
10/5/1995	--	49.95	23.73	--	26.22	2,300	210	3.1	10	5.1	2,400	4.2	ATI	--	
1/12/1996	--	49.95	24.84	--	25.11	<50	<0.50	<0.50	<0.50	<1.0	<5.0	4.1	ATI	--	
4/22/1996	--	49.95	18.6	--	31.35	<50	<0.5	<1	<1	<1	<10	4.4	SPL	--	
7/2/1996	--	49.95	18.88	--	31.07	<50	<0.5	<1	<1	<1	<10	4.2	SPL	--	
11/8/1996	--	49.95	19.14	--	30.81	<50	<0.5	<1.0	<1.0	<1.0	<10	4.4	SPL	--	
1/3/1997	--	49.95	18.72	--	31.23	<50	<0.5	<1.0	<1.0	<1.0	<10	4.6	SPL	--	
4/28/1997	--	49.95	19.38	--	30.57	<50	<0.5	<1.0	<1.0	<1.0	<10	4.2	SPL	--	
7/1/1997	--	49.95	21.65	--	28.3	<50	<0.5	<1.0	<1.0	<1.0	<10	3.8	SPL	--	
10/2/1997	--	49.95	23.45	--	26.5	<50	<0.5	<1.0	<1.0	<1.0	<10	4.5	SPL	--	

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Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						(mg/L)			
						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	DO	Lab	pH	Comments
MW-3 Cont.															
1/9/1998	--	49.95	20.1	--	29.85	<50	<0.5	<1.0	<1.0	<1.0	<10	4.1	SPL	--	
5/6/1998	--	49.95	15.57	--	34.38	<50	<0.5	<1.0	<1.0	<1.0	<10	3.8	SPL	--	
7/21/1998	--	49.95	15.88	--	34.07	51	<0.5	<1.0	<1.0	<1.0	<10	3.8	SPL	--	
7/21/1998	--	--	--	--	--	60	<0.5	<1.0	<1.0	<1.0	<10	--	SPL	--	d
12/30/1998	--	49.95	20.3	--	29.65	--	--	--	--	--	--	--	SPL	--	
2/2/1999	--	49.95	19.75	--	30.2	<50	<1.0	<1.0	<1.0	<1.0	<10	--	SPL	--	
5/10/1999	--	49.95	16.17	--	33.78	--	--	--	--	--	--	--	--	--	
9/23/1999	--	49.95	22.05	--	27.9	--	--	--	--	--	--	--	--	--	
12/23/1999	--	49.95	22.55	--	27.4	--	--	--	--	--	--	--	--	--	
3/27/2000	--	49.95	16.4	--	33.55	350	22	<0.5	<0.5	<0.5	580	--	PACE	--	
5/22/2000	--	49.95	9.49	--	40.46	--	--	--	--	--	--	--	--	--	t
8/31/2000	--	49.95	13.02	--	36.93	--	--	--	--	--	--	--	--	--	t
12/11/2000	--	49.95	13.30	--	36.65	--	--	--	--	--	--	--	--	--	t
3/20/2001	--	49.95	16.49	--	33.46	1,000	66.4	0.597	6.96	<1.5	398	--	PACE	--	
6/19/2001	--	49.95	18.82	--	31.13	--	--	--	--	--	--	--	--	--	
9/20/2001	--	49.95	21.59	--	28.36	230	<0.5	0.593	<0.5	<1.5	289	--	PACE	--	
12/27/2001	--	49.95	17.37	--	32.58	--	--	--	--	--	--	--	--	--	
2/28/2002	--	49.95	15.81	--	34.14	<50	<0.5	<0.5	<0.5	<1.0	0.58	--	PACE	--	
6/28/2002	--	49.95	17.09	--	32.86	--	--	--	--	--	--	--	--	--	
9/12/2002	--	49.95	18.8	--	31.15	52	3.3	8.6	1.7	12	11	--	SEQ	7.0	
12/12/2002	--	49.95	20.57	--	29.38	--	--	--	--	--	--	--	--	--	
3/10/2003	--	49.95	16.68	--	33.27	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	SEQ	7.0	
5/12/2003	--	49.95	14.72	--	35.23	--	--	--	--	--	--	--	--	--	
8/27/2003	--	49.95	18.5	--	31.45	<50	<0.50	<0.50	<0.50	0.5	<0.50	--	--	7.1	n
11/10/2003	--	49.95	19.66	--	30.29	--	--	--	--	--	--	--	--	--	
02/03/2004	P	49.95	15.33	--	34.62	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	7.0	
08/31/2004	P	49.95	18.13	--	31.82	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	7.1	
11/23/2004	--	49.95	16.48	--	33.47	--	--	--	--	--	--	--	--	--	
01/18/2005	P	49.95	13.06	--	36.89	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	6.9	
06/29/2005	--	49.95	13.00	--	36.95	--	--	--	--	--	--	--	--	--	
09/01/2005	--	49.95	16.00	--	33.95	--	--	--	--	--	--	--	--	--	

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Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L) GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	(mg/L) DO	Lab	pH	Comments
MW-3 Cont.															
11/03/2005	--	49.95	18.91	--	31.04	--	--	--	--	--	--	--	--	--	
02/14/2006	P	49.95	12.90	--	37.05	86	<0.50	<0.50	<0.50	0.55	<0.50	--	SEQM	7.3	
5/30/2006	--	49.95	12.55	--	37.40	--	--	--	--	--	--	--	--	--	
8/29/2006	--	**49.95**	**16.68**	--	**33.27**	--	--	--	--	--	--	--	--	--	
MW-4															
7/24/1992	--	50.76	30.02	--	20.74	42,000	3,200	3,600	1,400	4,100	--	--	--	--	
7/27/1992	--	50.76	30.02	--	20.74	--	--	--	--	--	--	--	--	--	
9/15/1992	--	50.76	31.14	--	19.62	55,000	7,600	13,000	2,800	9,500	--	--	ANA	--	c
12/15/1992	--	50.76	31.98	--	18.78	36,000	3,700	4,700	1,200	4,000	--	--	ANA	--	c
3/15/1993	--	50.76	25.34	--	25.42	69,000	7,600	15,000	2,500	11,000	--	--	PACE	--	l
6/7/1993	--	50.76	25.67	--	25.09	73,000	10,000	19,000	3,400	14,000	--	--	PACE	--	l
9/23/1993	--	50.76	29.37	--	21.39	--	--	--	--	--	--	--	--	--	
9/24/1993	--	--	--	--	--	59,000	5,300	10,000	2,200	8,400	309	--	PACE	--	d
9/24/1993	--	50.76	--	--	--	68,000	11,000	2,100	8,600	990	390	--	PACE	--	l
12/27/1993	--	50.76	29.4	--	21.36	32,000	2,500	4,400	1,300	4,400	387	--	PACE	--	l
4/5/1994	--	50.76	27.09	--	23.67	64,000	6,500	14,000	1,900	9,600	413	1.4	PACE	--	l
7/22/1994	--	--	--	--	--	85,000	11,000	21,000	3,300	14,000	435	--	PACE	--	d, l
7/22/1994	--	50.76	27.33	--	23.43	85,000	10,000	20,000	3,200	13,000	796	0.8	PACE	--	l
10/13/1994	--	--	--	--	--	51,000	7,400	13,000	2,100	9,100	773	--	PACE	--	d, l
10/13/1994	--	50.76	28.25	--	22.51	51,000	7,100	13,000	2,100	8,900	506	2.9	PACE	--	e,l
1/25/1995	--	50.76	21.85	--	28.91	26,000	3,600	9,600	1,200	6,400	--	--	ATI	--	
1/25/1995	--	--	--	--	--	28,000	4,200	12,000	1,500	7,800	--	--	ATI	--	d, l
4/19/1995	--	50.76	19.44	--	31.32	89,000	12,000	24,000	3,500	18,000	--	5.1	ATI	--	
4/19/1995	--	--	--	--	--	100,000	12,000	26,000	3,800	21,000	--	--	ATI	--	d
7/5/1995	--	50.76	20.52	--	30.24	130,000	13,000	29,000	3,300	25,000	--	4.3	ATI	--	
10/5/1995	--	50.76	24.23	--	26.53	110,000	10,000	23,000	3,600	17,000	34,000	2.1	ATI	--	
1/12/1996	--	50.76	25.34	--	25.42	46,000	3,500	8,300	1,100	8,000	3,000	3.3	ATI	--	
1/12/1996	--	--	--	--	--	40,000	3,500	9,000	1,200	8,700	4,300	--	ATI	--	d
4/22/1996	--	50.76	19.13	--	31.63	40,000	5,100	9,600	980	11,800	29,000	3.2	SPL	--	
4/22/1996	--	--	--	--	--	61,000	8,300	16,000	1,600	15,200	36,000	--	SPL	--	d

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L) GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	(mg/L) DO	Lab	pH	Comments
MW-4 Cont.															
7/2/1996	--	--	--	--	--	78,000	9,800	21,000	1,900	15,300	42,000	--	SPL	--	d
7/2/1996	--	50.76	20.67	--	30.09	74,000	9,800	21,000	2,100	16,600	41,000	3.4	SPL	--	
11/8/1996	--	50.76	20.95	--	29.81	100,000	7,900	16,000	2,500	13,700	37,000	3.7	SPL	--	
11/8/1996	--	--	--	--	--	110,000	9,100	20,000	3,000	15,400	39,000	--	SPL	--	d
1/3/1997	--	50.76	20.54	--	30.22	99,000	17,000	30,000	4,300	22,700	79,000	4.2	SPL	--	
1/3/1997	--	--	--	--	--	66,000	12,000	19,000	2,900	15,000	69,000	--	SPL	--	d
4/28/1997	--	50.76	21.28	--	29.48	130,000	12,000	28,000	3,800	21,000	37,000	3.9	SPL	--	
4/28/1997	--	--	--	--	--	110,000	11,000	26,000	3,200	18,200	34,000	--	SPL	--	d
7/1/1997	--	50.76	23.61	--	27.15	110,000	16,000	25,000	4,900	24,400	37,000	3.6	SPL	--	
10/2/1997	--	50.76	25.39	--	25.37	--	--	--	--	--	--	--	--	--	
10/3/1997	--	--	--	--	--	71,000	8,600	8,700	2,900	13,500	84,000	--	SPL	--	d
10/3/1997	--	50.76	--	--	--	66,000	8,200	8,600	2,700	13,400	80,000	4.4	SPL	--	
1/9/1998	--	50.76	21.25	--	29.51	100,000	9,700	3,200	1,500	4,700	92,000	3.8	SPL	--	
5/6/1998	--	--	--	--	--	440,000	8,000	39,000	14,000	70,000	<5000	--	SPL	--	d
5/6/1998	--	50.76	15.96	--	34.8	430,000	6,900	31,000	11,000	56,000	<5000	3.9	SPL	--	
7/21/1998	--	--	--	--	--	210,000	11,000	27,000	5,600	26,800	29,000	--	SPL	--	d
7/21/1998	--	50.76	16.1	--	34.66	250,000	11,000	26,000	5,500	26,900	29,000	3.7	SPL	--	
12/30/1998	--	50.76	20.91	--	29.85	370,000	11,000	22,000	8,500	40,000	90000/92000	--	SPL	--	j
2/2/1999	--	50.76	20.13	--	30.63	190,000	4,100	19,000	4,800	32,000	28,000	--	SPL	--	
5/10/1999	--	50.76	16.63	--	34.13	2,700	23	7.1	8.1	25	120	--	SPL	--	
9/23/1999	--	50.76	22.48	--	28.28	180,000	11,000	29,000	7,000	38,000	12,000	--	SPL	--	
12/23/1999	--	50.76	22.94	--	27.82	66,000	6,300	5,200	2,200	7,800	35,000	--	PACE	--	k
3/27/2000	--	50.76	16.84	--	33.92	120,000	8,700	12,000	3,800	16,000	27,000	--	PACE	--	
5/22/2000	--	50.76	17.85	--	32.91	110,000	7,600	16,000	4,400	20,000	25,000	--	PACE	--	
8/31/2000	--	50.76	21.71	--	29.05	110,000	8,800	7,600	3,400	14,000	18,000	--	PACE	--	
12/11/2000	--	50.76	22.05	--	28.71	70,000	4,580	3,480	2,550	9,220	24,400	--	PACE	--	
3/20/2001	--	50.76	17.68	--	33.08	100,000	7,100	4,530	2,540	9,370	63,100	--	PACE	--	
6/19/2001	--	50.76	19.4	--	31.36	180,000	7,430	14,600	5,400	25,300	36,100	--	PACE	--	
9/20/2001	--	50.76	22.01	--	28.75	--	--	--	--	--	--	--	--	--	f, m
12/27/2001	--	50.76	17.96	--	32.8	120,000	6,880	9,030	2,840	14,600	32,300	--	PACE	--	
2/28/2002	--	50.76	17.06	--	33.7	80,000	4,920	5,450	2,220	12,300	35,900	--	PACE	--	

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						(mg/L)	Lab	pH	Comments
						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	DO			
MW-4 Cont.															
6/28/2002	--	50.76	17.76	--	33	48,000	2,780	2,770	1,530	6,790	25,100	--	PACE	--	
9/12/2002	--	50.76	19.45	--	31.31	46,000	4,500	6,800	2,600	10,000	9,100	--	SEQ	6.8	
12/12/2002	--	50.76	21.29	--	29.47	36,000	5,200	3,400	2,000	6,500	12,000	--	SEQ	6.7	
3/10/2003	--	50.76	17.16	--	33.6	70,000	7,000	4,800	3,300	13,000	29,000	--	SEQ	6.7	
5/12/2003	--	50.76	14.51	--	36.25	75,000	7,600	3,700	3,400	13,000	26,000	--	SEQ	6.8	
8/27/2003	--	50.76	19.32	--	31.44	77,000	7,500	1,300	2,100	4,000	32,000	--	SEQ	6.8	n, s
11/10/2003	P	50.76	20.36	--	30.40	110,000	7,100	3,100	2,100	5,800	25,000	--	SEQM	6.6	
02/03/2004	P	50.76	16.51	--	34.25	160,000	8,400	9,700	5,000	23,000	26,000	--	SEQM	6.7	
05/04/2004	P	50.76	16.47	--	34.29	110,000	8,100	7,500	4,300	17,000	<250	--	SEQM	6.7	
08/31/2004	P	50.76	19.16	--	31.60	91,000	6,600	8,400	3,700	14,000	14,000	--	SEQM	6.7	
11/23/2004	P	50.76	18.02	--	32.74	7,400,000	20,000	150,000	320,000	1,400,000	23,000	--	SEQM	6.6	s
01/18/2005	P	50.76	14.21	--	36.55	170,000	5,400	14,000	6,900	33,000	8,800	--	SEQM	6.5	s
06/29/2005	P	50.76	13.86	--	36.90	640,000	3,500	25,000	24,000	110,000	1,700	--	SEQM	7.2	
09/01/2005	P	50.76	16.89	--	33.87	100,000	3,800	11,000	4,900	33,000	1,100	--	SEQM	6.7	
11/03/2005	P	50.76	19.33	--	31.43	490,000	4,700	11,000	10,000	49,000	1,500	0.5	SEQM	6.6	
02/14/2006	P	50.76	13.55	--	37.21	970,000	60,000	7,000	36,000	140,000	38,000	--	SEQM	6.8	s
5/30/2006	P	50.76	13.52	--	37.24	140,000	3,000	6,600	6,200	29,000	560	--	SEQM	6.6	
8/29/2006	**--**	**50.76**	**17.52**	**--**	**33.24**	**52,000**	**4,700**	**2,500**	**3,500**	**12,000**	**1,800**	**--**	**TAMC**	**6.7**	
MW-6															
7/24/1992	--	50.32	30.63	--	19.69	ND	1.6	ND	ND	ND	--	--	--	--	
7/27/1992	--	50.32	30.63	--	19.69	--	--	--	--	--	--	--	--	--	
9/15/1992	--	50.32	31.52	--	18.8	<50	<0.5	<0.5	<0.5	<0.5	--	--	ANA	--	
12/15/1992	--	50.32	32.42	--	17.9	58	1.3	<0.5	<0.5	<0.5	--	--	ANA	--	
3/15/1993	--	50.32	26.29	--	24.03	<50	<0.5	0.6	<0.5	0.7	--	--	PACE	--	l
6/7/1993	--	50.32	26.33	--	23.99	<50	<0.5	<0.5	<0.5	1.5	--	--	PACE	--	l
9/23/1993	--	50.32	29.64	--	20.68	--	--	--	--	--	--	--	--	--	
9/24/1993	--	50.32	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	28.5	--	PACE	--	l
12/27/1993	--	50.32	29.75	--	20.57	<50	<0.5	<0.5	<0.5	<0.5	55.4	--	PACE	--	e,l
4/5/1994	--	50.32	27.26	--	23.06	<50	<0.5	<0.5	<0.5	<0.5	295	1.7	PACE	--	e,l
7/22/1994	--	50.32	27.34	--	22.98	350	<0.5	<0.5	<0.5	<0.5	419	4.5	PACE	--	e,l

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Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L) GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	(mg/L) DO	Lab	pH	Comments
MW-6 Cont.															
10/13/1994	--	50.32	--	--	--	--	--	--	--	--	--	--	--	--	g
1/25/1995	--	50.32	22.16	--	28.16	240	6	<0.5	<0.5	<1	--	--	ATI	--	
4/19/1995	--	50.32	--	--	--	--	--	--	--	--	--	--	--	--	g
7/5/1995	--	50.32	20.8	--	29.52	180	<0.50	<0.50	<0.50	<1.0	--	4.9	ATI	--	
10/5/1995	--	50.32	24.2	--	26.12	860	<5.0	<5.0	<5.0	<10	3,600	2.8	ATI	--	
1/12/1996	--	50.32	25.3	--	25.02	860	<5.0	<5.0	<5.0	<10	2,800	4.2	ATI	--	
4/22/1996	--	50.32	19.13	--	31.19	<50	<0.5	<1	<1	<1	470	4.3	SPL	--	
7/2/1996	--	50.32	20.66	--	29.66	100	<0.5	<1	<1	<1	1,100	4.2	SPL	--	
11/8/1996	--	50.32	20.98	--	29.34	1,100	<5	<10	<10	<10	1,500	4.3	SPL	--	
1/3/1997	--	50.32	20.53	--	29.79	<50	<0.5	<1.0	<1.0	<1.0	450	4.5	SPL	--	
4/28/1997	--	50.32	21.25	--	29.07	1,400	<0.5	<1.0	<1.0	<1.0	3,500	4.4	SPL	--	
7/1/1997	--	50.32	23.4	--	26.92	6,100	<0.5	<1.0	<1.0	<1.0	9,100	3.9	SPL	--	
10/2/1997	--	50.32	25.16	--	25.16	--	--	--	--	--	--	--	--	--	
10/3/1997	--	50.32	--	--	--	330	<0.5	<1.0	<1.0	<1.0	2,600	4.4	SPL	--	
1/9/1998	--	50.32	21.13	--	29.19	<50	<0.5	<1.0	<1.0	<1.0	<10	4.3	SPL	--	
5/6/1998	--	50.32	16.11	--	34.21	410	<0.5	<1.0	<1.0	<1.0	500	3.6	SPL	--	
7/21/1998	--	50.32	16.33	--	33.99	4,300	<5	<10	<10	<10	3,800	4.0	SPL	--	
12/30/1998	--	50.32	20.89	--	29.43	--	--	--	--	--	--	--	--	--	
2/2/1999	--	50.32	20.2	--	30.12	--	--	--	--	--	--	--	--	--	
5/10/1999	--	50.32	16.75	--	33.57	--	--	--	--	--	--	--	--	--	
9/23/1999	--	50.32	22.55	--	27.77	<50	<1.0	<1.0	<1.0	<1.0	1,600	--	SPL	--	
12/23/1999	--	50.32	23	--	27.32	--	--	--	--	--	--	--	--	--	
3/27/2000	--	50.32	16.89	--	33.43	1,700	4.4	0.54	<0.5	1	14,000	--	PACE	--	
5/22/2000	--	50.32	18.02	--	32.3	--	--	--	--	--	--	--	--	--	
8/31/2000	--	50.32	21.62	--	28.7	1,200	<0.5	<0.5	<0.5	<0.5	3,900	--	PACE	--	
12/11/2000	--	50.32	21.81	--	28.51	--	--	--	--	--	--	--	--	--	
3/20/2001	--	50.32	16.97	--	33.35	3,300	<0.5	<0.5	<0.5	<1.5	3,760	--	PACE	--	
6/19/2001	--	50.32	19.3	--	31.02	--	--	--	--	--	--	--	--	--	
9/20/2001	--	50.32	22	--	28.32	2,200	2.04	8.1	3.62	13.7	2,460	--	PACE	--	
12/27/2001	--	50.32	17.85	--	32.47	830	0.59	<0.5	<0.5	<1.0	1,040	--	PACE	--	
2/28/2002	--	50.32	16.31	--	34.01	1,100	<0.5	<0.5	<0.5	<1.0	1,450	--	PACE	--	

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Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						(mg/L)			
						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	DO	Lab	pH	Comments
MW-6 Cont.															
6/28/2002	--	50.32	17.57	--	32.75	<50	<0.5	<0.5	<0.5	<1.0	1,020	--	PACE	--	
9/12/2002	--	50.32	19.27	--	31.05	190	1.9	4.6	1	7.3	480	--	SEQ	7.1	
12/12/2002	--	50.32	20.94	--	29.38	270	<2.5	<2.5	<2.5	<2.5	500	--	SEQ	6.9	
3/10/2003	--	50.32	17.11	--	33.21	110	<0.50	<0.50	<0.50	<0.50	190	--	SEQ	7.0	
5/12/2003	--	50.32	15.18	--	35.14	<50	<0.50	<0.50	<0.50	<0.50	36	--	SEQ	7.0	
8/27/2003	--	50.32	18.9	--	31.42	<50	<0.50	<0.50	<0.50	<0.50	8.9	--	SEQ	7.0	n
11/10/2003	P	50.32	20.13	--	30.19	<50	<0.50	<0.50	<0.50	<0.50	4.5	--	SEQM	6.8	
02/03/2004	NP	50.32	15.83	--	34.49	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	6.9	
05/04/2004	P	50.32	15.62	--	34.70	<50	<0.50	<0.50	<0.50	<0.50	24	--	SEQM	6.9	
08/31/2004	P	50.32	18.56	--	31.76	<50	<0.50	<0.50	<0.50	<0.50	27	--	SEQM	7.0	
11/23/2004	--	50.32	16.95	--	33.37	--	--	--	--	--	--	--	--	--	
01/18/2005	P	50.32	13.61	--	36.71	<50	<0.50	<0.50	<0.50	<0.50	1.3	--	SEQM	6.8	
06/29/2005	--	50.32	13.55	--	36.77	--	--	--	--	--	--	--	--	--	
09/01/2005	--	50.32	16.52	--	33.80	--	--	--	--	--	--	--	--	--	
11/03/2005	--	50.32	19.28	--	31.04	--	--	--	--	--	--	--	--	--	
02/14/2006	--	50.32	--	--	--	--	--	--	--	--	--	--	--	--	g
5/30/2006	--	50.32	--	--	--	--	--	--	--	--	--	--	--	--	g
8/29/2006	**--**	**50.32**	**17.15**	**--**	**33.17**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-7															
1/25/1995	--	51.4	21.67	--	29.73	<50	<0.5	<0.5	<0.5	<1	--	7.0	ATI	--	
4/19/1995	--	51.4	25.27	--	26.13	<50	<0.5	<0.5	<0.5	<1	--	5.0	ATI	--	
7/5/1995	--	51.4	24.63	--	26.77	<50	<0.50	<0.50	<0.50	<1.0	--	4.2	ATI	--	
10/5/1995	--	51.4	28.21	--	23.19	83	<0.50	<0.50	<0.50	<1.0	77	4.5	ATI	--	
1/12/1996	--	51.4	29.29	--	22.11	63	<0.50	<0.50	<0.50	<1.0	120	4.8	ATI	--	
4/22/1996	--	51.4	23.11	--	28.29	<50	<0.5	<1	<1	<1	13	4.8	SPL	--	
7/2/1996	--	51.4	23.56	--	27.84	<50	<0.5	<1	<1	<1	<10	4.8	SPL	--	
11/8/1996	--	51.4	20.06	--	31.34	<50	<0.5	<1.0	<1.0	<1.0	<10	5.1	SPL	--	
1/3/1997	--	51.4	23.42	--	27.98	<50	<0.5	<1.0	<1.0	<1.0	<10	4.7	SPL	--	
4/28/1997	--	51.4	24.12	--	27.28	<50	<0.5	<1.0	<1.0	<1.0	<10	3.9	SPL	--	
7/1/1997	--	51.4	26.4	--	25	<50	<0.5	<1.0	<1.0	<1.0	<10	4.2	SPL	--	

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Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						(mg/L)			
						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	DO	Lab	pH	Comments
MW-7 Cont.															
10/2/1997	--	51.4	28.14	--	23.26	<50	<0.5	<1.0	<1.0	<1.0	<10	4.7	SPL	--	
1/9/1998	--	51.4	24.02	--	27.38	<50	<0.5	<1.0	<1.0	<1.0	<10	4.1	SPL	--	
5/6/1998	--	51.4	21	--	30.4	1,900	<0.5	<1.0	<1.0	<1.0	1,800	3.5	SPL	--	
7/21/1998	--	51.4	21.17	--	30.23	50	<0.5	<1.0	<1.0	<1.0	<10	3.7	SPL	--	
12/30/1998	--	51.4	22.13	--	29.27	--	--	--	--	--	--	--	--	--	
2/2/1999	--	51.4	22.08	--	29.32	--	--	--	--	--	--	--	--	--	
5/10/1999	--	51.4	18.58	--	32.82	--	--	--	--	--	--	--	--	--	
9/23/1999	--	51.4	24.29	--	27.11	70	<1.0	<1.0	<1.0	<1.0	4,700	--	SPL	--	
12/23/1999	--	51.4	24.53	--	26.87	--	--	--	--	--	--	--	--	--	
3/27/2000	--	51.4	18.58	--	32.82	910	<0.5	<0.5	<0.5	<0.5	2,600	--	PACE	--	
5/22/2000	--	51.4	19.49	--	31.91	--	--	--	--	--	--	--	--	--	
8/31/2000	--	51.4	22.53	--	28.87	440	<0.5	<0.5	<0.5	<0.5	900	--	PACE	--	
12/11/2000	--	51.4	22.75	--	28.65	--	--	--	--	--	--	--	--	--	
3/20/2001	--	51.4	18.79	--	32.61	1,100	<0.5	<0.5	<0.5	<1.5	1,210	--	PACE	--	
6/19/2001	--	51.4	19.82	--	31.58	--	--	--	--	--	--	--	--	--	
9/20/2001	--	51.4	21.35	--	30.05	1,300	1.21	<0.5	<0.5	<1.5	1,550	--	PACE	--	
12/27/2001	--	51.4	20.36	--	31.04	510	<0.5	<0.5	<0.5	<1.0	643	--	PACE	--	
2/28/2002	--	51.4	21.86	--	29.54	250	<0.5	<0.5	<0.5	<1.0	317	--	PACE	--	
6/28/2002	--	51.4	22.64	--	28.76	<50	<0.5	<0.5	<0.5	<1.0	102	--	PACE	--	
9/12/2002	--	51.4	23.51	--	27.89	<50	<0.5	<0.5	<0.5	1	14	--	SEQ	7.5	
12/12/2002	--	51.4	23.75	--	27.65	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	SEQ	7.5	
3/10/2003	--	51.4	21.25	--	30.15	61	<0.50	<0.50	<0.50	<0.50	99	--	SEQ	7.6	
5/12/2003	--	51.4	21.44	--	29.96	<100	<1.0	<1.0	<1.0	<1.0	120	--	SEQ	7.6	
8/27/2003	--	51.4	23.3	--	28.1	120	<0.50	<0.50	<0.50	<0.50	84	--	SEQ	7.6	n
11/10/2003	P	51.40	20.24	--	31.16	230	<1.0	<1.0	<1.0	<1.0	92	--	SEQM	6.7	o
02/03/2004	P	51.40	20.63	--	30.77	<250	<2.5	<2.5	<2.5	<2.5	91	--	SEQM	7.5	
05/04/2004	P	51.40	21.89	--	29.51	<250	<2.5	<2.5	<2.5	<2.5	190	--	SEQM	7.6	k
08/31/2004	P	51.40	23.16	--	28.24	<500	<5.0	<5.0	<5.0	<5.0	220	--	SEQM	7.3	
11/23/2004	P	51.40	21.65	--	29.75	590	<2.5	5.0	11	51	290	--	SEQM	7.1	
01/18/2005	P	51.40	16.28	--	35.12	<250	<2.5	<2.5	<2.5	2.5	92	--	SEQM	7.3	
06/29/2005	P	51.40	14.50	--	36.90	2,200	43	97	92	390	250	--	SEQM	8.0	

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						(mg/L)			
						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	DO	Lab	pH	Comments
MW-7 Cont.															
09/01/2005	P	51.40	20.41	--	30.99	<500	<5.0	<5.0	<5.0	<5.0	60	--	SEQM	7.5	
11/03/2005	P	51.40	21.00	--	30.40	130	<1.0	<1.0	<1.0	1.0	130	0.63	SEQM	7.2	w
02/14/2006	P	51.40	16.31	--	35.09	100	<0.50	<0.50	<0.50	0.87	62	--	SEQM	7.4	
5/30/2006	P	51.40	17.58	--	33.82	<50	<0.50	<0.50	<0.50	<0.50	9.1	--	SEQM	7.2	
8/29/2006	**--**	**51.40**	**18.64**	**--**	**32.76**	**100**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**140**	**--**	**TAMC**	**7.0**	
MW-8															
1/25/1995	--	50.88	31.59	--	19.29	54	<0.5	<0.5	<0.5	<1	--	7.1	ATI	--	
4/19/1995	--	50.88	19.18	--	31.7	<50	<0.5	<0.5	<0.5	<1	--	5.1	ATI	--	
7/5/1995	--	50.88	19.03	--	31.85	<50	<0.50	<0.50	<0.50	<1.0	--	4.5	ATI	--	
10/5/1995	--	50.88	24.4	--	26.48	<50	<0.50	<0.50	<0.50	<1.0	<5.0	4.1	ATI	--	
1/12/1996	--	50.88	25.51	--	25.37	<50	<0.50	<0.50	<0.50	<1.0	<5.0	4.6	ATI	--	
4/22/1996	--	50.88	18	--	32.88	<50	<0.5	<1	<1	<1	<10	4.8	SPL	--	
7/2/1996	--	50.88	19.83	--	31.05	<50	<0.5	<1	<1	<1	<10	4.5	SPL	--	
11/8/1996	--	50.88	20.09	--	30.79	<50	<0.5	<1.0	<1.0	<1.0	<10	4.7	SPL	--	
1/3/1997	--	50.88	19.72	--	31.16	<50	<0.5	<1.0	<1.0	<1.0	<10	4.4	SPL	--	
4/28/1997	--	50.88	20.44	--	30.44	<50	<0.5	<1.0	<1.0	<1.0	<10	4.1	SPL	--	
7/1/1997	--	50.88	22.72	--	28.16	<50	<0.5	<1.0	<1.0	<1.0	<10	3.8	SPL	--	
10/2/1997	--	50.88	24.51	--	26.37	<50	<0.5	<1.0	<1.0	<1.0	<10	4.2	SPL	--	
1/9/1998	--	50.88	21.17	--	29.71	<50	<0.5	<1.0	<1.0	<1.0	<10	3.5	SPL	--	
5/6/1998	--	50.88	18.34	--	32.54	<50	<0.5	<1.0	<1.0	<1.0	<10	3.6	SPL	--	
7/21/1998	--	50.88	18.55	--	32.33	90	<0.5	<1.0	<1.0	<1.0	<10	3.3	SPL	--	
12/30/1998	--	50.88	20.4	--	30.48	--	--	--	--	--	--	--	--	--	
2/2/1999	--	50.88	19.28	--	31.6	--	--	--	--	--	--	--	--	--	
5/10/1999	--	50.88	15.62	--	35.26	--	--	--	--	--	--	--	--	--	
9/23/1999	--	50.88	21.74	--	29.14	--	--	--	--	--	--	--	--	--	
12/23/1999	--	50.88	22.83	--	28.05	--	--	--	--	--	--	--	--	--	
3/27/2000	--	50.88	16.25	--	34.63	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	PACE	--	
5/22/2000	--	50.88	17.06	--	33.82	--	--	--	--	--	--	--	--	--	
8/31/2000	--	50.88	21.72	--	29.16	--	--	--	--	--	--	--	--	--	
12/11/2000	--	50.88	22.03	--	28.85	--	--	--	--	--	--	--	--	--	

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L) GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	(mg/L) DO	Lab	pH	Comments
MW-8 Cont.															
3/20/2001	--	50.88	16.23	--	34.65	<50	<0.5	<0.5	<0.5	<1.5	0.991	--	PACE	--	
6/19/2001	--	50.88	19.35	--	31.53	--	--	--	--	--	--	--	--	--	
9/20/2001	--	50.88	21.95	--	28.93	--	--	--	--	--	--	--	--	--	
12/27/2001	--	50.88	16.98	--	33.9	--	--	--	--	--	--	--	--	--	
2/28/2002	--	50.88	15.38	--	35.5	<50	<0.5	<0.5	<0.5	<1.0	<0.5	--	PACE	--	
6/28/2002	--	50.88	16.97	--	33.91	--	--	--	--	--	--	--	--	--	
9/12/2002	--	50.88	19.47	--	31.41	--	--	--	--	--	--	--	--	--	
12/12/2002	--	50.88	20.84	--	30.04	--	--	--	--	--	--	--	--	--	
3/10/2003	--	50.88	16.56	--	34.32	<50	<0.50	<0.50	<0.50	<0.50	3	--	SEQ	7.1	
5/12/2003	--	50.88	13.63	--	37.25	--	--	--	--	--	--	--	--	--	
8/27/2003	--	50.88	18.9	--	31.98	--	--	--	--	--	--	--	--	--	n
11/10/2003	--	50.88	19.68	--	31.20	--	--	--	--	--	--	--	--	--	
02/03/2004	P	50.88	14.76	--	36.12	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	7.5	
05/04/2004	--	50.88	14.69	--	36.19	--	--	--	--	--	--	--	--	--	
08/31/2004	--	50.88	18.08	--	32.80	--	--	--	--	--	--	--	--	--	
11/23/2004	NP	50.88	15.77	--	35.11	--	--	--	--	--	--	--	--	--	
01/18/2005	P	50.88	12.04	--	38.84	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	7.0	
06/29/2005	--	50.88	--	--	--	--	--	--	--	--	--	--	--	--	v
09/01/2005	--	50.88	16.12	--	34.76	--	--	--	--	--	--	--	--	--	
11/03/2005	--	50.88	19.42	--	31.46	--	--	--	--	--	--	--	--	--	
02/14/2006	P	50.88	12.43	--	38.45	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	7.0	
5/30/2006	--	50.88	12.40	--	38.48	--	--	--	--	--	--	--	--	--	
8/29/2006	**--**	**50.88**	**17.16**	**--**	**33.72**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-9															
1/25/1995	--	51.05	22.32	--	28.73	<50	<0.5	<0.5	<0.5	<1	--	7.4	ATI	--	
4/19/1995	--	51.05	19.86	--	31.19	<50	<0.5	<0.5	<0.5	<1	--	5.2	ATI	--	
7/5/1995	--	51.05	20.78	--	30.27	<50	<0.50	<0.50	<0.50	<1.0	--	4.4	ATI	--	
10/5/1995	--	--	--	--	--	52	<0.50	<0.50	<0.50	<1.0	160	--	ATI	--	d
10/5/1995	--	51.05	24.33	--	26.72	<50	<0.50	<0.50	<0.50	<1.0	--	2.3	ATI	--	
1/12/1996	--	51.05	25.44	--	25.61	<50	<0.50	<0.50	<0.50	<1.0	<5.0	3.2	ATI	--	

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Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						(mg/L)	Lab	pH	Comments
						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	DO			
MW-9 Cont.															
4/22/1996	--	51.05	18.01	--	33.04	<50	<0.5	<1	<1	<1	11	3.5	SPL	--	
7/2/1996	--	51.05	19.7	--	31.35	<50	<0.5	<1	<1	<1	<10	3.3	SPL	--	
11/8/1996	--	51.05	19.96	--	31.09	<50	<0.5	<1.0	<1.0	<1.0	<10	3.7	SPL	--	
1/3/1997	--	51.05	19.52	--	31.53	<250	<2.5	<5.0	<5.0	<5.0	<50	4.4	SPL	--	
4/28/1997	--	51.05	20.22	--	30.83	<50	<0.5	<1.0	<1.0	<1.0	<10	4.0	SPL	--	
7/1/1997	--	51.05	22.59	--	28.46	<50	<0.5	<1.0	<1.0	<1.0	<10	3.9	SPL	--	
10/2/1997	--	51.05	24.33	--	26.72	--	--	--	--	--	--	--	--	--	
10/3/1997	--	51.05	--	--	--	<50	<0.5	<1.0	<1.0	<1.0	<10	4.4	SPL	--	
1/9/1998	--	51.05	21.11	--	29.94	<50	<0.5	<1.0	<1.0	<1.0	<10	3.9	SPL	--	
5/6/1998	--	51.05	18.26	--	32.79	<50	<0.5	<1.0	<1.0	<1.0	<10	4.0	SPL	--	
7/21/1998	--	51.05	18.46	--	32.59	70	<0.5	<1.0	<1.0	<1.0	<10	3.7	SPL	--	
12/30/1998	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
2/2/1999	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
5/10/1999	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
9/23/1999	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
12/23/1999	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
3/27/2000	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
5/22/2000	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
8/31/2000	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
12/11/2000	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
3/20/2001	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
6/19/2001	--	51.05	--	--	--	--	--	--	--	--	--	--	--	--	g
9/20/2001	--	51.05	22.2	--	28.85	6,300	2.87	<0.5	<0.5	<1.5	8,640	--	PACE	--	
12/27/2001	--	51.05	18.92	--	32.13	--	--	--	--	--	--	--	--	--	
2/28/2002	--	51.05	17.22	--	33.83	19,000	1,560	61.3	84	111	20,200	--	PACE	--	
6/28/2002	--	51.05	18.2	--	32.85	--	--	--	--	--	--	--	--	--	
9/12/2002	--	51.05	19.92	--	31.13	5,100	570	180	<25	220	6,400	--	SEQ	6.8	
12/12/2002	--	51.05	21.78	--	29.27	--	--	--	--	--	--	--	--	--	
3/10/2003	--	51.05	18.25	--	32.8	26,000	2,500	<100	<100	<100	33,000	--	SEQ	6.9	
5/12/2003	--	51.05	16.29	--	34.76	--	--	--	--	--	--	--	SEQ	--	
8/27/2003	--	51.05	19.69	--	31.36	11,000	830	<50	<50	<50	6,300	--	SEQ	7.1	n

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						GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	DO			
MW-9 Cont.															
11/10/2003	--	51.05	19.97	--	31.08	--	--	--	--	--	--	--	--	--	
02/03/2004	P	51.05	17.23	--	33.82	6,200	180	<50	<50	<50	2,100	--	SEQM	7.2	
05/04/2004	--	51.05	17.17	--	33.88	--	--	--	--	--	--	--	--	--	
08/31/2004	P	51.05	19.71	--	31.34	<2,500	210	<25	<25	<25	1,500	--	SEQM	7.0	
11/23/2004	--	51.05	18.58	--	32.47	--	--	--	--	--	--	--	--	--	
01/18/2005	P	51.05	14.98	--	36.07	490	32	<2.5	<2.5	8.9	130	--	SEQM	6.9	
06/29/2005	--	51.05	14.74	--	36.31	--	--	--	--	--	--	--	--	--	
09/01/2005	P	51.05	17.42	--	33.63	3,500	1,300	<25	<25	28	240	--	SEQM	6.9	
11/03/2005	--	51.05	19.90	--	31.15	--	--	--	--	--	--	--	--	--	
02/14/2006	P	51.05	12.95	--	38.10	2,700	<25	<25	<25	<25	2,200	--	SEQM	7.0	w
5/30/2006	--	51.05	13.76	--	37.29	--	--	--	--	--	--	--	--	--	
8/29/2006	**--**	**51.05**	**17.86**	**--**	**33.19**	**1,200**	**580**	**<25**	**<25**	**<25**	**<25**	**--**	**TAMC**	**6.9**	
MW-10															
1/9/1998	--	--	20.97	--	--	<50	<0.5	<1.0	<1.0	<1.0	<10	4.3	SPL	--	h
5/6/1998	--	--	18.07	--	--	800	<0.5	<1.0	<1.0	<1.0	980	3.9	SPL	--	h
7/21/1998	--	--	18.28	--	--	80	<0.5	<1.0	<1.0	<1.0	<10	4.0	SPL	--	h
12/30/1998	--	--	22.22	--	--	--	--	--	--	--	--	--	--	--	h
2/2/1999	--	--	21.83	--	--	940	<10	<10	<10	<10	690	--	SPL	--	h
5/10/1999	--	--	17.99	--	--	--	--	--	--	--	--	--	--	--	h
9/23/1999	--	--	22.61	--	--	<50	<1.0	<1.0	<1.0	1.4	1,000	--	SPL	--	h
12/23/1999	--	--	23.75	--	--	--	--	--	--	--	--	--	--	--	h
3/27/2000	--	--	18.83	--	--	1,900	<0.5	<0.5	<0.5	<0.5	28,000	--	PACE	--	h
5/22/2000	--	--	19.47	--	--	--	--	--	--	--	--	--	--	--	h
8/31/2000	--	--	22.64	--	--	1,700	<0.5	<0.5	<0.5	<0.5	13,000	--	PACE	--	h
12/11/2000	--	--	22.84	--	--	--	--	--	--	--	--	--	--	--	h
3/20/2001	--	--	19.57	--	--	16,000	<0.5	<0.5	<0.5	<1.5	11,900	--	PACE	--	h
6/19/2001	--	--	20.63	--	--	--	--	--	--	--	--	--	--	--	h
9/20/2001	--	--	23.07	--	--	5,800	<0.5	<0.5	<0.5	<1.5	8,160	--	PACE	--	h
12/27/2001	--	--	20.92	--	--	6,600	17.3	14.5	<12.5	<25	7,750	--	PACE	--	h
2/28/2002	--	--	18.52	--	--	3,600	10.8	<0.5	<0.5	<1.0	5,380	--	PACE	--	h

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MW-10 Cont.															
6/28/2002	--	--	18.41	--	--	<50	<0.5	<0.5	<0.5	<1.0	2,570	--	PACE	--	h
9/12/2002	--	--	20.57	--	--	660	<5.0	<5.0	<5.0	<5.0	3,300	--	SEQ	7.2	h
12/12/2002	--	--	22.8	--	--	1,400	<5.0	<5.0	<5.0	<5.0	3,300	--	SEQ	6.9	h
3/10/2003	--	--	19.26	--	--	1,700	<5.0	<5.0	5.3	15	2,800	--	SEQ	6.9	h
5/12/2003	--	--	17.9	--	--	1,500	<12	<12	<12	<12	2,200	--	SEQ	6.9	h
8/27/2003	--	--	20.82	--	--	4,100	<25	<25	<25	<25	2,800	--	SEQ	7.0	n, h
11/10/2003	P	--	21.92	--	--	<5,000	<50	<50	<50	<50	3,300	--	SEQM	6.8	
02/03/2004	P	--	18.52	--	--	5,100	<50	<50	<50	<50	2,300	--	SEQM	7.0	q
05/04/2004	P	--	17.63	--	--	<2,500	<25	<25	<25	<25	1,600	--	SEQM	6.8	
08/31/2004	P	--	20.67	--	--	<5,000	<50	<50	<50	<50	1,900	--	SEQM	7.0	
11/23/2004	P	--	19.79	--	--	2,600	<25	<25	<25	<25	2,300	--	SEQM	6.8	
01/18/2005	P	--	16.13	--	--	560	<5.0	<5.0	<5.0	<5.0	530	--	SEQM	6.9	
06/29/2005	P	--	15.56	--	--	110	1.9	4.6	4.2	17	71	--	SEQM	6.8	
09/01/2005	P	--	18.10	--	--	<250	<2.5	<2.5	<2.5	<2.5	280	--	SEQM	6.9	
11/03/2005	P	--	20.90	--	--	800	<5.0	<5.0	<5.0	7.0	770	0.71	SEQM	6.8	w
02/14/2006	P	--	15.58	--	--	600	<0.50	<0.50	<0.50	<0.50	400	--	SEQM	7.1	x
5/30/2006	P	--	14.70	--	--	95	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	6.7	
8/29/2006	**--**	**--**	**18.69**	**--**	**--**	**250**	**<5.0**	**<5.0**	**<5.0**	**<5.0**	**490**	**--**	**TAMC**	**6.8**	
QC-2															
9/15/1992	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	ANA	--	i
12/15/1992	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	ANA	--	i
3/15/1993	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	PACE	--	i, l
6/7/1993	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	PACE	--	i, l
9/24/1993	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	PACE	--	i, l
12/27/1993	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	PACE	--	i, l
4/5/1994	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	PACE	--	i, l
7/22/1994	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	PACE	--	i, l
10/13/1994	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	PACE	--	i, l
1/25/1995	--	--	--	--	--	<50	<0.5	2	0.6	1	--	--	ATI	--	i
4/19/1995	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	ATI	--	i

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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet msl)	Depth to Water (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L) GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE	(mg/L) DO	Lab	pH	Comments
QC-2 Cont.															
7/5/1995	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	--	--	ATI	--	i
10/5/1995	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	ATI	--	i
1/12/1996	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	ATI	--	i
4/22/1996	--	--	--	--	--	<50	<0.5	<1	<1	<1	<10	--	SPL	--	i
7/2/1996	--	--	--	--	--	<50	<0.5	<1	<1	<1	<10	--	SPL	--	i

ABBREVIATIONS AND SYMBOLS:
< = Not detected at or laboratory reporting limit
--- = Not analyzed/applicable/measurable
µg/L = Micrograms per liter
ANA = Anamatrix, Inc.
ATI = Analytical Technologies, Inc.
DO = Dissolved oxygen
DTW = Depth to water in ft bgs
ft bgs = Feet below ground surface
ft MSL = Feet above mean sea level
GRO = Gasoline range organics
GWE = Groundwater elevation in ft MSL
mg/L = Milligrams per liter
MTBE = Methyl tert butyl ether
NP = Well not purged prior to sampling
P = Well purged prior to sampling
PACE = Pace, Inc.
SEQ/SEQM = Sequoia/Sequoia Morgan Hill Analytical
SPL = Southern Petroleum Laboratories
TOC = Top of casing in ft MSL
TPH-g = Total petroleum hydrocarbons as gasoline

FOOTNOTES:
c = Concentrations reported as diesel from MW-1, MW-2 and MW-4 are primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene.
d = Blind duplicate.
e = A copy of the documentation for this data is included in Appendix C of Alisto report 10-018-05-004.
f = Well not sampled due to presence of free product (FP).
g = Well inaccessible.
h = TOC not surveyed.
i = Travel blank.
j = EPA method by 8020\8260.
k = Samples ran outside of EPA recommended hold time.
l = A copy of the documentation for this data can be found in Blaine Tech Services report 010619-C-2. The MTBE data for the March 15, 1993 and June 7, 1993 events have been destroyed.
m = Thickness of SPH is only an estimate. The resulting GWE will not be used in contouring.
n = Samples analyzed by EPA Method 8260B for TPH-g, benzene, toluene, ethylbenzene, total xylenes, and fuel oxygenates.
o = Discrete peak @ C6-C7.
q = Discrete peak @ C5-C6.
r = Well was dry.
s = Sheen in well.
t = DTW and resulting GWE were anomalous and not used in groundwater contouring.
u = Anomalously low concentrations reported from Cambria. Do not appear to support historic trends.
v = Unable to locate well.
w = The hydrocarbon result for GRO was partly due to individual peaks in the quantitation range.
x = Initial analysis for MTBE within holding time but required dilution.

NOTES:
Casing elevations surveyed to the nearest 0.01 ft MSL.

GWE adjusted assuming a specific gravity of 0.75 for FP.

During the third quarter of 2002, URS Corporation assumed groundwater monitoring activities for BP.

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

Values for pH and DO are field measurements.

Note: 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

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
EX-1									
05/04/2004	<5,000	<1,000	2,500	<25	<25	38	<25	<25	
08/31/2004	<10,000	<2,000	2,100	<50	<50	<50	<50	<50	
11/23/2004	<5,000	<1,000	3,000	<25	<25	74	<25	<25	
01/18/2005	<5,000	<1,000	2,200	<25	<25	54	<25	<25	a
06/29/2005	<5,000	<1,000	1,400	<25	<25	30	<25	<25	
09/01/2005	<5,000	<1,000	2,000	<25	<25	46	<25	<25	
11/03/2005	<5,000	<1,000	3,000	<25	<25	87	<25	<25	
02/14/2006	<15,000	<1,000	1,100	<25	<25	<25	<25	<25	a
5/30/2006	<15,000	<1,000	1,400	<25	<25	37	<25	<25	a
8/29/2006	**<15,000**	**<1,000**	**2,500**	**<25**	**<25**	**56**	**<25**	**<25**	
EX-2									
05/04/2004	<100	<20	46	<0.50	<0.50	<0.50	<0.50	<0.50	
08/31/2004	<500	<100	130	<2.5	<2.5	3.4	<2.5	<2.5	
11/23/2004	<100	<20	5.8	<0.50	<0.50	<0.50	<0.50	<0.50	
01/18/2005	<100	<20	6.5	<0.50	<0.50	<0.50	<0.50	<0.50	a
06/29/2005	<100	<20	24	<0.50	<0.50	<0.50	<0.50	<0.50	
09/01/2005	<100	<20	55	<0.50	<0.50	0.56	<0.50	<0.50	
11/03/2005	<100	<20	39	<0.50	<0.50	0.80	<0.50	<0.50	
02/14/2006	<300	<20	0.72	<0.50	<0.50	<0.50	<0.50	<0.50	a
5/30/2006	<300	<20	7.8	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	**<300**	**<20**	**94**	**<0.50**	**<0.50**	**0.98**	**<0.50**	**<0.50**	
MW-1									
8/27/2003	<100	<20	4.2	<0.50	<0.50	<0.50	--	--	
11/10/2003	<100	<20	0.51	<0.50	<0.50	<0.50	--	--	
02/03/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
05/04/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/31/2004	<100	<20	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/18/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
02/14/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
MW-2									

Table 2. Summary of Fuel Additives Analytical Data

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-2 Cont.									
8/27/2003	<25,000	<5,000	5,100	<120	<120	140	--	--	
11/10/2003	<50,000	<10,000	4,200	<250	<250	<250	--	--	
02/03/2004	<100,000	<20,000	1,900	<500	<500	<500	<500	<500	
05/04/2004	<50,000	<10,000	2,500	<250	<250	<250	<250	<250	
08/31/2004	<50,000	<10,000	3,400	<250	<250	<250	<250	<250	
11/23/2004	<50,000	<10,000	2,400	<250	<250	<250	<250	<250	
01/18/2005	<20,000	<4,000	3,700	<100	<100	<100	<100	<100	a
06/29/2005	<10,000	<2,000	3,600	<50	<50	72	<50	<50	
09/01/2005	<20,000	<4,000	5,100	<100	<100	100	<100	<100	
11/03/2005	<20,000	<4,000	3,700	<100	<100	100	<100	<100	
02/14/2006	<60,000	<4,000	3,400	<100	<100	<100	<100	<100	a
5/30/2006	<60,000	<4,000	2,300	<100	<100	<100	<100	<100	
8/29/2006	**<60,000**	**<4,000**	**13,000**	**<100**	**<100**	**100**	**<100**	**<100**	
MW-3									
8/27/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	--	--	
02/03/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/31/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/18/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
02/14/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
MW-4									
8/27/2003	<50,000	<10,000	32,000	<250	<250	250	--	--	
11/10/2003	<100,000	<20,000	25,000	<500	<500	<500	--	--	
02/03/2004	<100,000	<20,000	26,000	<500	<500	<500	<500	<500	
05/04/2004	<50,000	<10,000	<250	<250	<250	<250	<250	<250	
08/31/2004	<50,000	<10,000	14,000	<250	<250	<250	<250	<250	
11/23/2004	<500,000	<100,000	23,000	<2,500	<2,500	<2,500	<2,500	<2,500	
01/18/2005	<50,000	<10,000	8,800	<250	<250	<250	<250	<250	a
06/29/2005	<50,000	<10,000	1,700	<250	<250	<250	<250	<250	
09/01/2005	<100,000	<20,000	1,100	<500	<500	<500	<500	<500	
11/03/2005	<100,000	<20,000	1,500	<500	<500	<500	<500	<500	

Table 2. Summary of Fuel Additives Analytical Data

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-4 Cont.									
02/14/2006	<300,000	<20,000	38,000	<500	<500	1,000	<500	<500	a
5/30/2006	<300,000	<20,000	560	<500	<500	<500	<500	<500	
8/29/2006	**<300,000**	**<20,000**	**1,800**	**<500**	**<500**	**<500**	**<500**	**<500**	
MW-6									
8/27/2003	<100	<20	8.9	<0.50	<0.50	<0.50	--	--	
11/10/2003	<100	<20	4.5	<0.50	<0.50	<0.50	--	--	
02/03/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
05/04/2004	<100	<20	24	<0.50	<0.50	<0.50	<0.50	<0.50	
08/31/2004	<100	<20	27	<0.50	<0.50	<0.50	<0.50	<0.50	
01/18/2005	<100	<20	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	a
MW-7									
8/27/2003	<100	<20	84	<0.50	<0.50	<0.50	--	--	
11/10/2003	<200	<40	92	<1.0	<1.0	<1.0	--	--	
02/03/2004	<500	<100	91	<2.5	<2.5	<2.5	<2.5	<2.5	
05/04/2004	<500	<100	190	<2.5	<2.5	<2.5	<2.5	<2.5	
08/31/2004	<1,000	<200	220	<5.0	<5.0	<5.0	<5.0	<5.0	
11/23/2004	<500	<100	290	<2.5	<2.5	<2.5	<2.5	<2.5	
01/18/2005	<500	<100	92	<2.5	<2.5	<2.5	<2.5	<2.5	a
06/29/2005	<500	<100	250	<2.5	<2.5	<2.5	<2.5	<2.5	
09/01/2005	<1,000	<200	60	<5.0	<5.0	<5.0	<5.0	<5.0	
11/03/2005	<200	<40	130	<1.0	<1.0	<1.0	<1.0	<1.0	
02/14/2006	<300	<20	62	<0.50	<0.50	<0.50	<0.50	<0.50	a
5/30/2006	<300	<20	9.1	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	**<1,500**	**<100**	**140**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	
MW-8									
02/03/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/18/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
02/14/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
MW-9									

Table 2. Summary of Fuel Additives Analytical Data

Station #11117, 7210 Bancroft Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-9 Cont.									
8/27/2003	<10,000	<2,000	6,300	<50	<50	<50	--	--	
02/03/2004	<10,000	<2,000	2,100	<50	<50	<50	<50	<50	a
08/31/2004	<5,000	<1,000	1,500	<25	<25	<25	<25	<25	
01/18/2005	<500	150	130	<2.5	<2.5	<2.5	<2.5	<2.5	a
09/01/2005	<5,000	2,700	240	<25	<25	<25	<25	<25	
02/14/2006	<15,000	<1,000	2,200	<25	<25	<25	<25	<25	a
8/29/2006	**<15,000**	**2,100**	**<25**	**<25**	**<25**	**<25**	**<25**	**<25**	
MW-10									
8/27/2003	<5,000	<1,000	2,800	<25	<25	<25	--	--	
11/10/2003	<10,000	<2,000	3,300	<50	<50	<50	--	--	
02/03/2004	<10,000	<2,000	2,300	<50	<50	<50	<50	<50	a
05/04/2004	<5,000	<1,000	1,600	<25	<25	<25	<25	<25	
08/31/2004	<10,000	<2,000	1,900	<50	<50	<50	<50	<50	
11/23/2004	<5,000	<1,000	2,300	<25	<25	<25	<25	<25	
01/18/2005	<1,000	<200	530	<5.0	<5.0	<5.0	<5.0	<5.0	a
06/29/2005	<100	<20	71	<0.50	<0.50	<0.50	<0.50	<0.50	
09/01/2005	<500	<100	280	<2.5	<2.5	<2.5	<2.5	<2.5	
11/03/2005	<1,000	<200	770	<5.0	<5.0	<5.0	<5.0	<5.0	
02/14/2006	<300	34	400	<0.50	<0.50	1.2	<0.50	<0.50	a, b
5/30/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	**<3,000**	**<200**	**490**	**<5.0**	**<5.0**	**<5.0**	**<5.0**	**<5.0**	

ABBREVIATIONS AND SYMBOLS:
-- = Not analyzed/applicable/measurable
< = Not detected above reported detection limit
1,2-DCA = 1,2-Dichloroethane
µg/L = Micrograms per Liter
DIPE = Di-isopropyl ether
EDB = 1, 2-Dibromoethane
ETBE = Ethyl tert-butyl ether
MTBE = Methyl tert-butyl ether
TAME = tert-Amyl methyl ether
TBA = tert-Butyl alcohol

FOOTNOTES:
a = The continuing calibration verficiation for ethanol was outside of client contractual acceptance limits. However, it was within method acceptance limits. The data should still be useful for its intended purpose.
b = Initial analysis for MTBE within holding time but required dilution.

NOTES:
All volatile organic compounds analyzed using EPA Method 8260B.

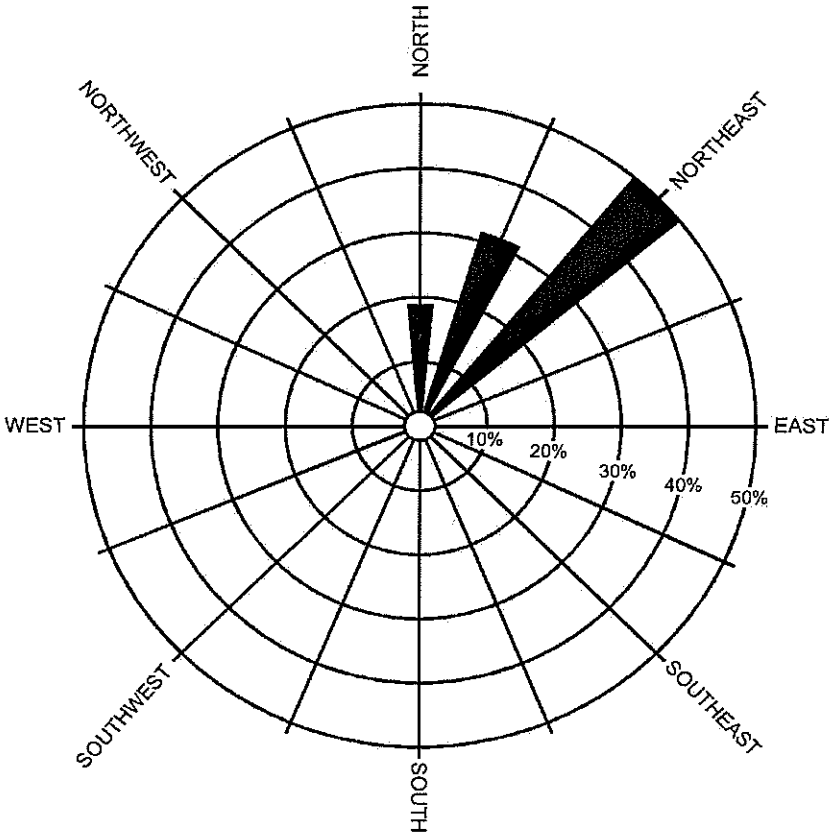
Note: The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information.

Table 3. Historical Ground-Water Flow Direction and Gradient

Station #11117, 7210 Bancroft Ave., Oakland, CA

Date Sampled	Approximate Flow Direction	Approximate Hydraulic Gradient
9/12/2002	Northeast	0.03
12/12/2002	Northeast	0.02
3/10/2003	Northeast	0.03
5/12/2003	North-Northeast	0.055
8/27/2003	North-Northeast	0.036
11/10/2003	North-Northeast	0.012
2/3/2004	Northeast	0.013
5/4/2004	Northeast	0.015
8/31/2004	Northeast	0.010
11/23/2004	North-Northeast	0.04
1/18/2005	Northeast	0.02
6/29/2005	Variable	0.003, 0.006
9/1/2005	North	0.03
11/3/2005	North	0.008
2/14/2006	North-Northeast	0.02
5/30/2006	North	0.03
8/29/2006	**Northeast**	**0.006**

Note: 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 A.

SOIL BORING/MONITORING WELL CONSTRUCTION LOGS

SITE/LOCATION 7210 Bancroft Avenue, Oakland, CA	BEGUN 12/27/91	BORING DIAMETER 8 Inches	ANGLE/BEARING 90 Degrees	BORING NO MW-1
DRILLING CONTRACTOR Bayland Drilling	COMPLETED 12/27/91	FIRST ENCOUNTERED WATER DEPTH 28 Feet		
OPERATOR Tom Schmidt	LOGGED BY T. Lane	STATIC WATER DEPTH/DATE 29 Feet		
DRILL MAKE & MODEL CME 75	SAMPLING METHOD California modified split spoon			BOTTOM OF BORING 40 Feet
WELL MATERIAL 2" SCH 40 PVC	SLOT SIZE 0.020"	FILTER PACK #2/16	WELL SEAL Neat cement over bentonite	WELL NO. MW-1

FIELD HEADSPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
	1–4					ASPHALT
						BASEROCK
						Silty CLAY (CL) dark brown, low plasticity, 20-25% silt, trace fine to coarse sand, trace pebble gravel, dry.
0.0	5–6					Sandy CLAY (CL) yellow-brown, low plasticity, 30-35% fine sand, trace pebble gravel, trace rootlets, moist.
	7–8					Gravelly SAND (SW) med. brown, well graded, medium to coarse grained, 15% sub-rounded pebble gravel, moist.
0.0	9–13					Silty CLAY (CL) medium brown, low plasticity, 15-20% silt, trace medium sand, damp.
0.0	14–15					Sandy CLAY (CL) medium brown, low plasticity, 35-40% fine sand, trace rounded pebble gravel, wet.
0.0	16–24					Silty CLAY (CL) medium yellow-brown, low plasticity, 15-20% silt, trace angular pebble gravel, trace charcoal fragments, wet.
0.0	25–30					Gravelly CLAY (CL) medium brown, low plasticity, 10-15% pebble gravel, damp.

*PID (ppm)

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE:

APPROVED BY: Frederick G. Moss, PE No. 35162

SOIL BORING LOG MW-1
AND
WELL CONSTRUCTION MW-1

BP Oil Station No. 11117
7210 Bancroft Avenue
Oakland, CA

PLATE
A-2

JOB NO.
9-029

SITE/LOCATION 7210 Bancroft Avenue, Oakland, CA	BEGUN 12/27/91	BORING DIAMETER 8 Inches	ANGLE/BEARING 90 Degrees	BORING NO MW-1
DRILLING CONTRACTOR Bayland Drilling	COMPLETED 12/27/91	FIRST ENCOUNTERED WATER DEPTH 28 Feet		
OPERATOR Tom Schmidt	LOGGED BY T. Lane	STATIC WATER DEPTH/DATE 29 Feet		
DRILL MAKE & MODEL CME 75	SAMPLING METHOD California modified split spoon			BOTTOM OF BORING 40 Feet
WELL MATERIAL 2" SCH 40 PVC	SLOT SIZE 0.020"	FILTER PACK #2/16	WELL SEAL Neat cement over bentonite	WELL NO. MW-1

FIELD HEADSPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
	31					Gravelly CLAY (CL) medium brown, low plasticity, 20-30% sub-rounded coarse gravel, wet.
	32					
	33					
	34					
	35					
	36					
	37					
	38					
	39					
	40					
	41					
	42					
	43					
	44					
	45					
	46					
	47					
	48					
	49					
	50					
	51					
	52					
	53					
	54					
	55					
	56					
	57					
	58					
*PID (ppm)	59					
	60					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE:

APPROVED BY: Frederick G. Moss, PE No. 35162

SOIL BORING LOG MW-1
AND
WELL CONSTRUCTION MW-1

BP Oil Station No. 11117
7210 Bancroft Avenue
Oakland, CA

PLATE
A-3

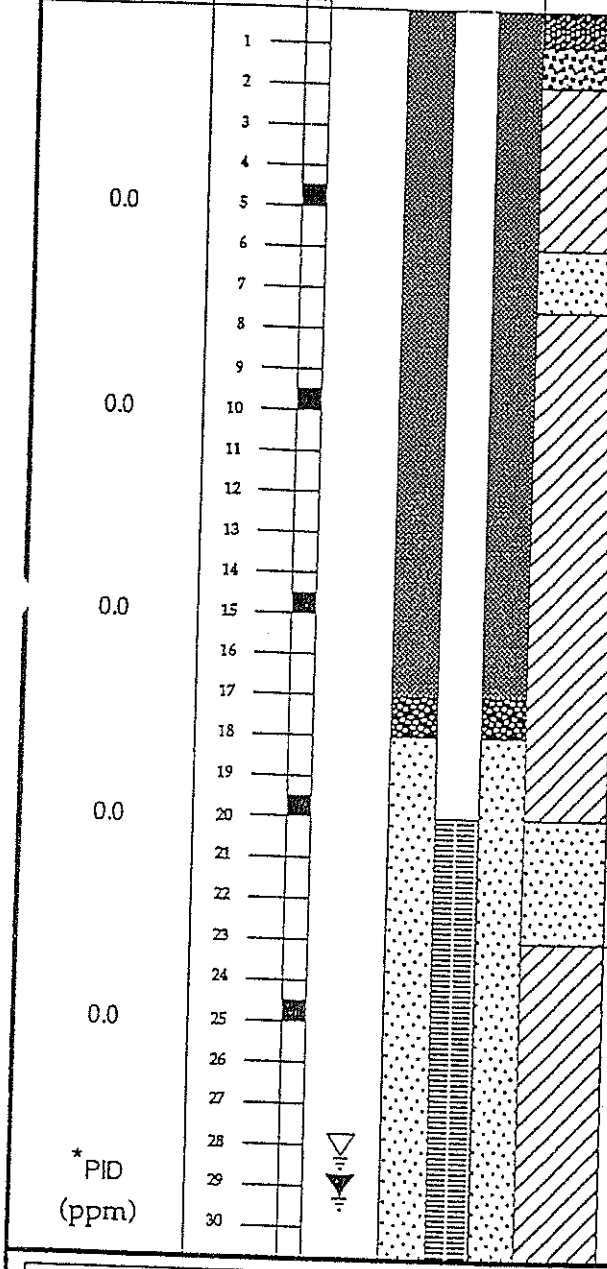
JOB NO. -
9-029

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

SITE/LOCATION 7210 Bancroft Avenue, Oakland, CA	BEGUN 12/27/91	BORING DIAMETER 8 Inches	GLE/BEARING 90 Degrees	BORING NO MW-2
DRILLING CONTRACTOR Bayland Drilling	COMPLETED 12/27/91	FIRST ENCOUNTERED WATER DEPTH 30 Feet		
OPERATOR Tom Schmidt	LOGGED BY T. Lane	STATIC WATER DEPTH/DATE 30 Feet		
DRILL MAKE & MODEL CME 75	SAMPLING METHOD California modified split spoon			BOTTOM OF BORING 40 Feet
WELL MATERIAL 2" SCH 40 PVC	SLOT SIZE 0.020"	FILTER PACK #2/16	WELL SEAL Neat cement over bentonite	WELL NO. MW-2



MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION

ASPHALT

BASEROCK

Silty CLAY (CL) dark brown, low plasticity, 20-25% silt, trace fine to coarse sand, trace pebble gravel, dry.

Sandy CLAY (CL) yellow-brown, low plasticity, 30-35% fine sand, trace pebble gravel, trace rootlets, moist.

Gravelly SAND (SW) med. brown, well graded, medium to coarse grained, 15% sub-rounded pebble gravel, moist.

Silty CLAY (CL) medium brown, low plasticity, 15-20% silt, trace medium sand, damp.

Sandy CLAY (CL) medium brown, low plasticity, 35-40% fine sand, trace rounded pebble gravel, wet.

Silty CLAY (CL) medium yellow-brown, low plasticity, 15-20% silt, trace angular pebble gravel, trace charcoal fragments, wet.

Gravelly SAND (SW) medium brown, well graded coarse sand, 10-15% well rounded pebble gravel, wet.

Gravelly CLAY (CL) medium brown, low plasticity, 10-15% pebble gravel, damp.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE:

APPROVED BY: Frederick G. Moss, PE No. 35162

SOIL BORING LOG MW-2
AND
WELL CONSTRUCTION MW-2

BP Oil Station No. 11117
7210 Bancroft Avenue
Oakland, CA

PLATE
A-4

JOB NO.
9-029

SITE/LOCATION 7210 Bancroft Avenue, Oakland, CA	BEGUN 12/27/91	BORING DIAMETER 8 Inches	ANGLE/BEARING 90 Degrees	BORING NO MW-2
DRILLING CONTRACTOR Bayland Drilling	COMPLETED 12/27/91	FIRST ENCOUNTERED WATER DEPTH 30 Feet		
OPERATOR Tom Schmidt	LOGGED BY T. Lane	STATIC WATER DEPTH/DATE 30 Feet		
DRILL MAKE & MODEL CME 75	SAMPLING METHOD California modified split spoon			BOTTOM OF BORING 40 Feet
WELL MATERIAL 2" SCH 40 PVC	SLOT SIZE 0.020"	FILTER PACK #2/16	WELL SEAL Neat cement over bentonite	WELL NO. MW-2

FIELD HEADSPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
	31					Gravelly CLAY (CL) medium brown, low plasticity, 20-30% sub-rounded coarse gravel, wet.
	32					
	33					
	34					
	35					
	36					
	37					
	38					
	39					
	40					
	41					
	42					
	43					
	44					
	45					
	46					
	47					
	48					
	49					
	50					
	51					
	52					
	53					
	54					
	55					
	56					
	57					
	58					
*PID (ppm)	59					
	60					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE:

APPROVED BY: Frederick G. Moss, PE No. 35162

SOIL BORING LOG MW-2
AND
WELL CONSTRUCTION MW-2

BP Oil Station No. 11117
7210 Bancroft Avenue
Oakland, CA

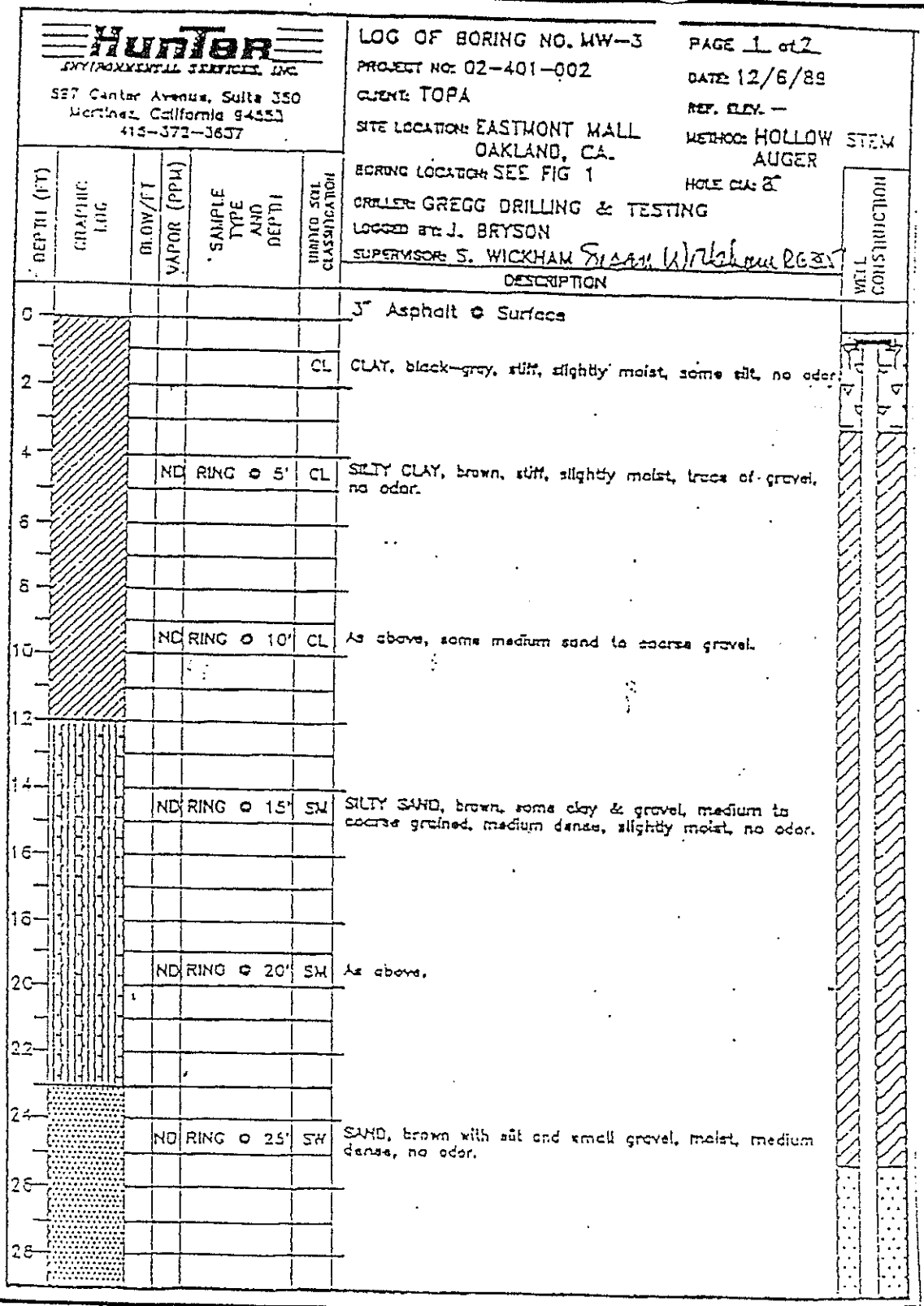
PLATE
A-5

JOB NO.
9-029

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED



Completed By: HUNTER ENVIRONMENTAL SERVICES, INC. December 6, 1989	SOIL BORING LOG MW-3 AND WELL CONSTRUCTION MW-3 BP Oil Station No. 11117 7210 Bancroft Avenue Oakland, CA	PLATE A-6 JOB NO. 9-029

HUNTER
ENVIRONMENTAL SERVICES, INC.

597 Center Avenue, Suite 350
Martinez, California 94553
415-372-3637

LOG OF BORING NO. MW-3

PAGE 2 of 2

PROJECT NO: 02-401-002

DATE: 12/5/89

CLIENT: TOPA

REF. ELEV. —

SITE LOCATION: EASTMONT MALL
OAKLAND, CA.

METHOD: HOLLOW STEM AUGER

BORING LOCATION: SEE FIG 1

HOLE DIA: 8"

DRILLER: GREGG DRILLING & TESTING

LOGGED BY: J. BRYSON

SUPERVISOR: S. WICKHAM Stuart Wickham RG 3951

DEPTH (FT)	GRAPHIC LOG	BLOW/FT	VAPOR (PPM)	SAMPLE TYPE AND DEPTH	UNIFIED SOIL CLASSIFICATION	DESCRIPTION	WELL CONSTRUCTION
29			ND	RING @ 30'	SW	As above.	
31							
33							
35			ND	RING @ 35'	SW	As above, moist.	
37						▽	
39						As above, saturated.	
41							
43						CLAY, silty, light brown, firm, slightly moist, no odor.	
45						TOTAL DEPTH — 45'	
47						Well Construction: 2" (0.02") slotted PVC 45'—30'; blank 2" PVC 30'—0'; #3 lonestar sand 45'—25'; bentonite 25'—3'; cement 3'—0.	
49							
51							
53							
55							
57							

Completed By:

HUNTER
ENVIRONMENTAL SERVICES, INC.

December 6, 1989

SOIL BORING LOG MW-3
AND
WELL CONSTRUCTION MW-3

BP Oil Station No. 11117
7210 Bancroft Avenue
Oakland, CA

PLATE
A-7

JOB NO.
9-029

SITE/LOCATION: 7210 Bancroft Avenue, Oakland, CA	BEGUN: 7/22/92	BORING DIAMETER: 8 Inches	ANGLE/BEARING: 90 Degrees	BORING NO: MW-4
DRILLING CONTRACTOR: Bayland Drilling	COMPLETED: 7/22/92	FIRST ENCOUNTERED WATER DEPTH: 31 Feet		
OPERATOR: Frank Bartolovich	LOGGED BY: T. Ramirez	STATIC WATER DEPTH/DATE: 32.5 Feet		
DRILL MAKE & MODEL: CME 55	SAMPLING METHOD: California modified split spoon			BOTTOM OF BORING: 40 Feet
WELL MATERIAL: 2" SCH 40 PVC	SLOT SIZE: 0.020"	FILTER PACK: #2/12	WELL SEAL: Neat cement with 5% bentonite over hydrated pellets	WELL NO.: MW-4

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1					ASPHALT
		2					BASEROCK
		3					CLAY (CL) medium brown, moderate plasticity, 5-10% medium to coarse sand, dry.
7		4					
24	462	5					Sandy CLAY (CL) light brown, low plasticity, 40% fine to medium angular sand, dry.
24		6					
		7					
		8					Sandy CLAY (CL) greenish-brown, moderate plasticity, 30% fine sub-angular to sub-rounded sand, 5-10% silt content, dry.
4		9					
12	106	10					
23		11					
		12					Sandy CLAY (CL) medium brown, low plasticity, 25-30% fine to coarse angular to sub-rounded sand, occasional gravel clast up to 5cm, dry.
		13					
13		14					
14	464	15					
22		16					
		17					
		18					
		19					Sandy CLAY (CL) interbedded light brown and dark brown layers. Dark brown sandy clay is 30% fine to medium sand, with moderate plasticity. Light brown sandy clay is 20% fine sand, 10% silt content, with low plasticity. Both are damp, with increasing moisture, clay content and plasticity with depth.
6		20					
10	442	21					
13		22					
		23					
		24					
3		25					
13	673	26					Clayey SAND (SC) medium brown, fine to medium sub-rounded to rounded sand, 5% gravel with clasts up to 3cm, 15% clay content, moist.
21		27					
		28					
		29					
	*PID (ppm)	30					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE:

APPROVED BY: Frederick G. Moss, PE No. 35162

SOIL BORING LOG MW-4
AND
WELL CONSTRUCTION MW-4

BP Oil Station No. 11117
7210 Bancroft Avenue
Oakland, CA

PLATE
A-8

JOB NO.
9-029

SITE/LOCATION 7210 Bancroft Avenue, Oakland, CA	BEGUN 7/22/92	BORING DIAMETER 8 Inches	ANGLE/BEARING 90 Degrees	BORING NO MW-4
DRILLING CONTRACTOR Bayland Drilling	COMPLETED 7/22/92	FIRST ENCOUNTERED WATER DEPTH 31 Feet		
OPERATOR Frank Bartolovich	LOGGED BY T. Ramirez	STATIC WATER DEPTH/DATE 32.5 Feet		
DRILL MAKE & MODEL CME 55	SAMPLING METHOD California modified split spoon			BOTTOM OF BORING 40 Feet
WELL MATERIAL 2" SCH 40 PVC	SLOT SIZE 0.020"	FILTER PACK #2/12	WELL SEAL Neat cement with 5% bentonite over hydrated pellets	WELL NO. MW-4

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
13 50/6	691	31 32 33	■	▽ ▼			Sandy CLAY (CL) medium brown, low plasticity, 30% fine to coarse, sub-angular to rounded sand, occasional gravel clast up to 2cm, moist to wet.
6 8 9		34 35 36 37 38					CLAY (CL) dark brown, high plasticity, wet.
							Silty SAND (SM) grey to light brown, fine to medium sand, 10% gravel up to 5cm, sub-rounded to rounded clasts, 20% silt content, saturated.
3 6 8		39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58					CLAY (CL) med. brown, moderate plasticity, approx. 5% rounded medium sand, wet.
	*PID (ppm)	59 60					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE:

APPROVED BY: Frederick G. Moss, PE No. 35162

SOIL BORING LOG MW-4
AND
WELL CONSTRUCTION MW-4

BP Oil Station No. 11117
7210 Bancroft Avenue
Oakland, CA

PLATE
A-9

JOB NO.
9-029

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

SITE/LOCATION 7210 Bancroft Avenue, Oakland, CA	BEGUN 7/23/92	BORING DIAMETER 8 Inches	ANGLE/BEARING 90 Degrees	BORING NO MW-6
DRILLING CONTRACTOR Bayland Drilling	COMPLETED 7/23/92	FIRST ENCOUNTERED WATER DEPTH 31.5 Feet		
OPERATOR Kurt Voss	LOGGED BY T. Ramirez	STATIC WATER DEPTH/DATE 31.5 Feet		
DRILL MAKE & MODEL CME 75	SAMPLING METHOD California modified split spoon			BOTTOM OF BORING 40 Feet
WELL MATERIAL 2" SCH 40 PVC	SLOT SIZE 0.020"	FILTER PACK #2/12	WELL SEAL Neat cement with 5% bentonite over hydrated pellets	WELL NO. MW-6

BLOWS/FOOT	FIELD HEADSPACE * PID (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1					ASPHALT
		2					CLAY (CL) dark brown, high plasticity, 10% sub-angular to sub-rounded fine to medium sand, moist.
4		3					
6		4					Sandy CLAY (CL) dark brown, high plasticity, 25% fine to coarse sand with occasional gravel clasts up to 3cm, dry.
9	0.0	5					
		6					CLAY (CL) light brown, moderate plasticity, 5-10% fine sand, dry. .
		7					
		8					
6		9					
9							
15	0.0	10					Sandy CLAY (SC) dark brown, high plasticity, 20% fine to coarse angular to sub-rounded sand, occasional gravel clasts up to 4cm, dry.
		11					
		12					
		13					
5		14					
12							
16	0.0	15					Sandy CLAY (CL) yellow brown, moderate plasticity, 20% fine to medium sand, 10% silt content, occasional gravel clasts up to 8cm, dry.
		16					
		17					
		18					
8		19					
12							
15	0.0	20					Sandy CLAY (CL) light brown, moderate plasticity, 40% fine to coarse sand, occasional angular to sub-rounded gravel clasts up to 10 cm, moist.
		21					
		22					
		23					
10		24					
13							
16	0.0	25					Sandy CLAY (CL) same as above except only 25% sand content.
		26					
		27					
		28					
9		29					
16							
20	0.0	30					Gravelly CLAY (CL) medium brown, 25% angular to sub-rounded gravel clasts up to 5cm, 20% fine to coarse sand, decrease gravel and sand content with depth, moist.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE:

APPROVED BY: Frederick G. Moss, PE No. 35162

SOIL BORING LOG MW-6
AND
WELL CONSTRUCTION MW-6

BP Oil Station No. 11117
7210 Bancroft Avenue
Oakland, CA

PLATE
A-12

JOB NO.
9-029

SITE/LOCATION	BEGUN	BORING DIAMETER	ANGLE/BEARING	BORING NO
7210 Bancroft Avenue, Oakland, CA	7/23/92	8 Inches	90 Degrees	MW-6
DRILLING CONTRACTOR: Bayland Drilling	COMPLETED: 7/23/92	FIRST ENCOUNTERED WATER DEPTH: 31.5 Feet		
OPERATOR: Kurt Voss	LOGGED BY: T. Ramirez	STATIC WATER DEPTH/DATE: 31.5 Feet		
DRILL MAKE & MODEL: CME 75	SAMPLING METHOD: California modified split spoon			BOTTOM OF BORING: 40 Feet
WELL MATERIAL: 2" SCH 40 PVC	SLOT SIZE: 0.020"	FILTER PACK: #2/12	WELL SEAL: Neat cement with 5% bentonite over hydrated pellets	WELL NO.: MW-6

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		31		▼			
		32					Silty CLAY (CL) yellow-brown, 30% silt content, 10% sub-angular to sub-rounded gravel clasts up to 10cm, approx. 5% medium to coarse sand, increase sand content with depth, wet.
4		33					
12		34					
20		35					
		36					
		37					Sandy GRAVEL (GP) light brown, gravel clasts up to 7cm, 30% fine to coarse sand, 10% silt content, saturated.
5		38					
9		39					Silty SAND (SM) light grey, fine to medium sand with <5% coarse sand, 35% silt content, saturated.
15		40					
		41					
		42					
		43					
		44					
		45					
		46					
		47					
		48					
		49					
		50					
		51					
		52					
		53					
		54					
		55					
		56					
		57					
		58					
	*PID (ppm)	59					
		60					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE:

APPROVED BY: Frederick G. Moss, PE No. 35162

SOIL BORING LOG MW-6
AND
WELL CONSTRUCTION MW-6

BP Oil Station No. 11117
7210 Bancroft Avenue
Oakland, CA

PLATE
A-13

JOB NO.
9-029

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

SITE/LOCATION: BP/7210 Bancroft Ave, Oakland		GUN: 10/6/94	BORING DIAMETER: 8"	ANGLE: 90	BORING NO: MW-7
DRILLING CONTRACTOR: West Hazmat Drilling Corp.		COMPLETED: 10/6/94	FIRST ENCOUNTERED WATER DEPTH: 31.0' damp		BOTTOM OF BORING: 45.0'
MAKE & MODEL: Mobile B-57	OPERATOR: Eugene Nunes	LOGGED BY: F. Maroni	STATIC WATER DEPTH/DATE: 43.67' 10/10/94		WELL NO.: MW-7
WELL MATERIAL: PVC Sch 40	SLOT SIZE: 0.020"	SAMPLING METHOD: CA Modified Split Spoon			BOTTOM OF WELL: 45.0'
FILTER PACK: #3 Monterey Sand	WELL SEAL: Bentonite				PLANNED USE: Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1					3" Asphalt over baserock; Gravel (GP) with some reddish brown clay.
		2					
		3					Silty CLAY (CL); very dark brown, stiff, dry.
		4					
88	0.0	5					Sandy CLAY (CL); yellow brown, very stiff; trace very fine grained sand, dry.
		6					
		7					
		8					
		9					
65	0.0	10					Sandy CLAY (CL); reddish brown, iron oxide deposits, black streaks like coal, well graded coarse grained, subangular to angular sand; few gravel, dry.
		11					
		12					
		13					Clayey SAND (SC); brown, well graded coarse sand, some subangular to angular gravel, some fine-grained sand, moist.
		14					
90	0.0	15					Gravelly CLAY (CL); brown, iron oxide deposits, some coarse gravel, few coarse sand.
		16					
		17					
		18					
		19					
57	0.0	20					Sandy CLAY (CL); brown, medium stiff, well graded coarse sand, some angular to subangular gravel, dry.
		21					
		22					
		23					
		24					
50 w/ 5" rec.	0.0	25					Encountered rock/gravel (GP) at 25.5 feet. Drilled out to 26.5 ft.
		26					
		MW-7-25'					
		27					Sandy CLAY (CL); brown, stiff, well graded, subangular to angular, coarse grained sand; some fine grained angular gravel; few fine grained sand.
50 w/ 10" rec.		28					
		29					
		30					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: 11/2/94

APPROVED BY: SP

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

MW-7

PLATE C-1

SHEET 1 OF 2

JOB NO. 9-029

SITE/LOCATION: BP/7210 Bancroft Ave, Oakland	RUN: 10/6/94	BORING DIAMETER: 8"	ANGLE/BEARING: 90°	BORING NO: MW-7
DRILLING CONTRACTOR: Hazmat Drilling Corp.	COMPLETED: 10/6/94	FIRST ENCOUNTERED WATER DEPTH: 31.0' damp		BOTTOM OF BORING: 45.0'
RIG MAKE & MODEL: Mobile B-57	OPERATOR: Eugene Nunes	LOGGED BY: F. Maroni	STATIC WATER DEPTH/DATE: 43.67' 10/10/94	WELL NO.: MW-7
WELL MATERIAL: PVC Sch 40	SLOT SIZE: 0.020"	SAMPLING METHOD: CA Modified Split Spoon		BOTTOM OF WELL: 45.0'
FILTER PACK: #3 Monterey Sand	WELL SEAL: Bentonite			PLANNED USE: Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		31					Sandy CLAY (CL); brown, stiff, medium to coarse grained, subangular to subrounded sand; some fine grained to coarse grained, angular to subangular gravel, damp.
50 w/ 6" rec.	0.0	35					CLAY (CL); yellowish brown, very stiff, damp.
85 w/ 8" rec.	0.0	40		▼			Silty CLAY (CL); yellowish orange, very stiff, moist.
		41					Gravelly CLAY (CL); yellowish brown, fine to coarse grained angular gravel; some medium to coarse grained sand, moist.
82		45					CLAY (CL); yellowish brown, trace fine grained sand.
							T.D. = 45.0"

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: 11/3/94

APPROVED BY: GP

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

MW-7

PLATE C-1

SHEET 2 OF 2

JOB NO. 9-029

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

SITE/LOCATION: BP/7210 Bancroft Ave, Oakland	BEGUN: 10/6/94	BORING DIAMETER: 8"	ANGLE BORING: 90°		BORING NO: MW-8
DRILLING CONTRACTOR: West Hazmat Drilling Corp.	COMPLETED: 10/6/94	FIRST ENCOUNTERED WATER DEPTH: 32.0'			BOTTOM OF BORING: 40.0'
RIG MAKE & MODEL: Mobile B-57	OPERATOR: Eugene Nunes	LOGGED BY: F. Maroni	STATIC WATER DEPTH/DATE: 28.51' 10/10/94		WELL NO.: MW-8
WELL MATERIAL: PVC Sch 40	SLOT SIZE: 0.020"	SAMPLING METHOD: CA Modified Split Spoon			BOTTOM OF WELL: 40.0'
FILTER PACK: #3 Monterey Sand	WELL SEAL: Bentonite				PLANNED USE: Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1					Sandy topsoil (OL/OH); brown.
		2					Silty CLAY (CL); dark gray, very stiff, dry.
		3					
		4					
		5					
		6					Silty CLAY (CL); light brown, stiff; trace fine grained sand, dry.
		7					
		8					
		9					
90	0.0	10					Sandy CLAY (CL); light brown; some fine to coarse grained sand, some fine-grained, angular to subangular gravel, trace coarse grained gravel; trace silt, dry.
		11					
		12					
		13					
		14					
50 w/ 6" rec.	0.0	15					Gravely CLAY (CL); light brown; some fine to coarse grained, well graded, subangular to subrounded gravel, some well graded, medium grained sand, moist.
		16					
		17					
		18					
		19					
80	0.0	20					
		21					Sandy CLAY (CL); light brown, some fine-grained sand, moist.
		22					
		23					
		24					
		MW-8-25'					
50 w/ 6" rec.	0.0	25					Sandy GRAVEL (GW); fine to coarse grained, well graded gravel; some fine to coarse grained, well-graded sand; trace clay, moist to wet.
		26					
		27					
		28		▼			
		29					
		30					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: 11/2/94

APPROVED BY: GP

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

MW-8

PLATE C-1

SHEET 1 OF 2

JOB NO. 9-029

SITE/LOCATION: BP/7210 Bancroft Ave		BEGUN: 10/6/94	BORING DIAMETER: 8"	ANG[illegible]EARING: 90°	BORING NO: MW-8
DRILLING CONTRACTOR: West Hazmat Drilling Corp.		COMPLETED: 10/6/94	FIRST ENCOUNTERED WATER DEPTH: 32.0'		BOTTOM OF BORING: 40.0'
RILL MAKE & MODEL: Mobile B-57	OPERATOR: Eugene Nunes	LOGGED BY: F. Maroni	STATIC WATER DEPTH/DATE: 28.51' 10/10/94		WELL NO.: MW-8
WELL MATERIAL: PVC Sch 40	SLOT SIZE: 0.020"	SAMPLING METHOD: CA Modified Split Spoon			BOTTOM OF WELL: 40.0'
FILTER PACK: #3 Monterey Sand	WELL SEAL: Bentonite				PLANNED USE: Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		31		▽			As above.
		32					
		33					
35 w/ 6" rec.		34					Clayey SAND (SC); brown, medium grained, well-graded sand; some clay; few fine grained, subrounded gravel, wet.
		35					
		36					
		37					
		38					
40 w/ 6" rec.		39					As above.
		40					

T.D. = 40.0'

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: 11/3/94

APPROVED BY: CP

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

MW-8

PLATE C-1

SHEET 2 OF 2

JOB NO. 9-029

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

SITE/LOCATION: BP/7210 Bancroft Ave, Oakland	RUN: 10/6/94	BORING DIAMETER: 8"	ANGLE/BEARING: 90°	BORING NO: MW-9
DRILLING CONTRACTOR: Hazmat Drilling Corp.	COMPLETED: 10/6/94	FIRST ENCOUNTERED WATER DEPTH: 27.5'		BOTTOM OF BORING: 40.0'
DRILLING MAKE & MODEL: Mobile B-57	OPERATOR: Eugene Nunes	LOGGED BY: F. Maroni	STATIC WATER DEPTH/DATE: 28.45' 10/10/94	WELL NO.: MW-9
WELL MATERIAL: PVC Sch 40	SLOT SIZE: 0.020"	SAMPLING METHOD: CA Modified Split Spoon		BOTTOM OF WELL: 40.0'
FILTER PACK: #3 Monterey Sand	WELL SEAL: Bentonite			PLANNED USE: Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		1–3					Backfill; GRAVEL (GP); cobble-sized.
		4–9					CLAY (CL); reddish brown, stiff, dry.
80	0.0	10–14					CLAY (CL); light brown, hard, trace fine grained sand, dry.
90	0.0	15–19					Silty CLAY (CL); light brown, hard, dry.
80	0.0	20–24					As above, moist.
70	0.0	MW-9-25' 25–30		▽			Clayey SAND (SC); brown; fine to medium grained, well graded, rounded to subrounded, moist.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: 11/2/94

APPROVED BY: CP

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

MW-9

PLATE C-1

SHEET 1 OF 2

JOB NO. 9-029

SITE/LOCATION: BP/7210 Bancroft Ave, Oakland		EGUN: 10/6/94	BORING DIAMETER: 8"	ANGL' ARING: 90	BORING NO: MW-9
DRILLING CONTRACTOR: West Hazmat Drilling Corp.		COMPLETED: 10/6/94	FIRST ENCOUNTERED WATER DEPTH: 27.5'		BOTTOM OF BORING: 40.0'
L-MAKE & MODEL: Mobile B-57	OPERATOR: Eugene Nunes	LOGGED BY: F. Maroni	STATIC WATER DEPTH/DATE: 28.45' 10/10/94		WELL NO.: MW-9
WELL MATERIAL: PVC Sch 40	SLOT SIZE: 0.020"	SAMPLING METHOD: CA Modified Split Spoon			BOTTOM OF WELL: 40.0'
FILTER PACK: #3 Monterey Sand	WELL SEAL: Bentonite				PLANNED USE: Monitoring

BLOWS/FOOT	PID FIELD HEADSPACE (ppm)	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
		31					Clayey SAND (SC); brown, fine-grained, well-graded, subrounded to rounded sand; few fine to coarse grained, angular to subrounded gravel, wet.
		32					
		33					
		34					Gravelly CLAY (CL); brown, fine grained, well graded, subangular to subrounded gravel; some fine grained sand, wet.
70		35					
		36					
		37					
		38					
		39					As above.
		40					T.D. = 40.0'

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: 11/2/94

APPROVED BY: CP

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

MW-9

PLATE C-1

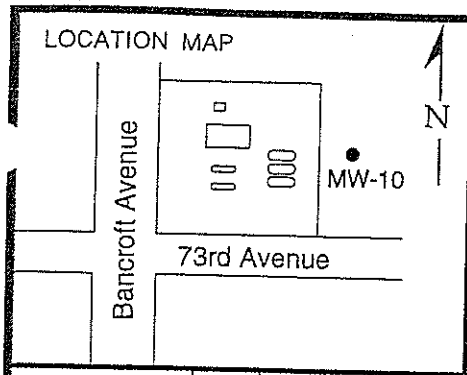
SHEET 2 OF 2

JOB NO. 9-029

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

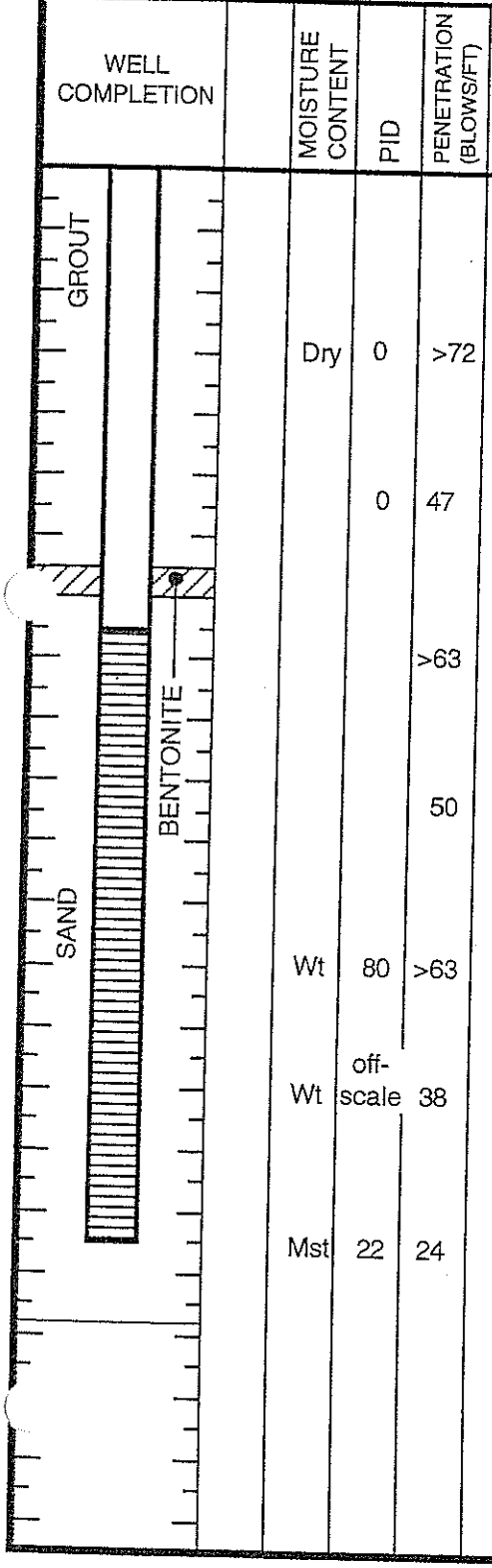


PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. MW-10
PAGE 1 OF 1

PROJECT NO. 360-016.1A
LOGGED BY: T.B.
DRILLER: MITCHELL
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: SCH 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: #8 SAND

CLIENT: BP OIL COMPANY
DATE DRILLED: 7-7-97
LOCATION: 7210 Bancroft Ave., Oakland
HOLE DIAMETER: 8"
HOLE DEPTH: 37.5'
WELL DIAMETER: 2"
WELL DEPTH: 35'
CASING STICKUP: NA



MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
			0			GP	ASPHALT SANDY GRAVEL
			2				
			4			CL	SANDY CLAY: dark brown; medium plasticity; 75% fines; 25% fine to medium sand; no product odor.
Dry	0	>72	6				
			8			ML	SANDY SILT: strong brown; 75% fines; 24% fine sand; 1% gravel; no product odor.
	0	47	10				
			12			GP	SANDY GRAVEL: no recovery except 2 coarse gravel - r x fragments.
		>63	14				
			16				
			18				
		50	20				@20': no recovery.
			22				
			24				
Wt	80	>63	26				@25': brown; 15% fines; 20% fine sand; 65% gravel; no product odor.
			28				
Wt	off-scale	38	30				@30': gray; 10% fines; 30% sand; 60% gravel.
			32			ML	SANDY SILT: brown; no product odor.
			34				
Mst	22	24	36				@35': brown; 75% fines; 20% fine sand; 5% gravel; no product odor.
			38				
			40				BOTTOM OF BORING 37.5'
			42				
			44				

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	BP Oil Company	BORING/WELL NAME	EX-1
JOB/SITE NAME	BP-11117	DRILLING STARTED	30-Nov-99
LOCATION	7210 Bancroft Avenue, Oakland, California	DRILLING COMPLETED	30-Nov-99
PROJECT NUMBER	852-1546	WELL DEVELOPMENT DATE (YIELD)	30-Nov-99
DRILLER	V&W Drilling	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	NA
BORING DIAMETER	10"	SCREENED INTERVAL	18 to 38 ft bgs
LOGGED BY	J. Jones	DEPTH TO WATER (First Encountered)	26.0 ft (30-Nov-99)
REVIEWED BY	K. Rahman, RG	DEPTH TO WATER (Static)	20.55 ft (30-Nov-99)
REMARKS	Hand augered to 5' bgs; located 5' from well MW-2.		

TPHg (mg/kg)	BLOW COUNTS	SAMPLE ID	DEPTH (ft bgs)	U.S.C.S.	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)
			0		ASPHALT.	1.0
					Silty GRAVEL; (FILL); light brown; dry; 5% clay, 35% silt, 20% sand, 40% gravel; low plasticity; moderate to high estimated permeability.	
	4, 7, 7	EX-1@6'	5		@ 5' - medium dense.	
					SAND; (SW); tan; loose; moist; 10% silt, 85% medium grained sand, 5% gravel; high estimated permeability.	
	4, 4, 5	EX-1@11'	10			
					Sandy Silty GRAVEL; (GM); brown; dense; moist; 5% clay, 35% silt, 15% medium grained sand, 45% angular gravel up to 2"; high estimated permeability.	13.0
<1.0	20, 50	EX-1@15.5'	15	GM		
	14, 17, 20	EX-1@21'	20		@ 20' - olive brown; damp; 10% medium grained sand, 50% angular gravel up to 0.5".	
<1.0					Gravelly Silty SAND; (SM); brown; dense; wet; 5% clay, 35% sill, 40% coarse grained sand, 20% gravel; high estimated permeability.	23.0
	20, 50	EX-1@25.5'	25	SM		
					Sandy Silty GRAVEL; (GM); olive; dense; wet; 20% silt, 35% sand, 45% gravel; high estimated permeability.	28.0
	20, 50	EX-1@30.5'	30	GM		
					Sandy Silty CLAY; (CL); see next page.	33.0
			35			

WELL DIAGRAM

- Portland Type I/II
- 4" diam., Schedule 40 PVC
- Bentonite Seal
- Lonestar Sand #2/12
- 4"-diam., 0.010" Slotted Schedule 40 PVC

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BORING/WELL LOG

CLIENT NAME	BP Oil Company	**BORING/WELL NAME**	EX-1
JOB/SITE NAME	BP-11117	**DRILLING STARTED**	30-Nov-99
LOCATION	7210 Bancroft Avenue, Oakland, California	**DRILLING COMPLETED**	30-Nov-99

Continued from Previous Page

TPHg (mg/kg)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
	17 23 33	EX-1@36'			CL		Sandy Silty CLAY; (CL); brown mottled with black; hard; damp; 45% clay, 35% silt, 20% very fine grained sand; low plasticity; low estimated permeability.		
	12 60/6	EX-1@39'						39.5	Bottom of Boring @ 39.5 ft

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BORING/WELL LOG

CLIENT NAME	BP Oil Company	BORING/WELL NAME	EX-2
JOB/SITE NAME	BP-11117	DRILLING STARTED	30-Nov-99
LOCATION	7210 Bancroft Avenue, Oakland, California	DRILLING COMPLETED	30-Nov-99
PROJECT NUMBER	852-1546	WELL DEVELOPMENT DATE (YIELD)	30-Nov-99
DRILLER	V&W Drilling	GROUND SURFACE ELEVATION	Not Surveyed
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	NA
BORING DIAMETER	10"	SCREENED INTERVAL	15 to 35 ft bgs
LOGGED BY	J. Jones	DEPTH TO WATER (First Encountered)	26.0 ft (30-Nov-99)
REVIEWED BY	K. Rahman, RG	DEPTH TO WATER (Static)	22.64 ft (30-Nov-99)
REMARKS	Hand augered to 5' bgs; located between trash enclosure and UST slab.		

TPHg (mg/kg)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)
							ASPHALT.	1.0
							Silty Sandy GRAVEL; (FILL); brown; dry; 5% clay, 15% silt, 20% sand, 50% gravel; high estimated permeability.	4.0
	10 12 14	EX-2@6'		5	ML		Sandy SILT; (ML); orange brown; very stiff; dry; 5% clay, 55% silt, 30% sand, 10% gravel; low plasticity; moderate estimated permeability.	8.0
<1.0	13 15 19	EX-2@11'		10	GM		Sandy Silty GRAVEL; (GM); brown; dense; dry; 5% clay, 20% silt, 25% sand, 50% gravel; high estimated permeability.	18.0
<1.0	20 50	EX-2@15.5'		15				
	26 55	EX-2@20.5'		20	SM		Silty SAND; (SM); brown; dense; damp; 25% silt, 70% medium grained sand, 5% gravel; high estimated permeability.	23.0
	18 26 30	EX-2@26'		25	GP		Silty Sandy GRAVEL; (GP); brown; dense; wet; 15% silt, 20% medium to coarse grained sand, 65% gravel; high estimated permeability.	30.5
	10 13 26	EX-2@31'		30	CL		Sandy Silty CLAY; (CL); light brown; hard; damp; 45% clay, 35% silt, 20% very fine grained sand; low plasticity; low estimated permeability.	
				35				

WELL DIAGRAM

- Portland Type I/II
- 4" diam., Schedule 40 PVC
- Bentonite Seal
- Lonestar Sand #2/12
- 4"-diam., 0.010" Slotted Schedule 40 PVC

11117--1\GINT\BP-11117.GPJ DEFAULT.GDT 4/24/00

WELL LOG (TPH-G) H:\BR

Cambria Environmental Technology, Inc.
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Oakland, CA 94608
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BORING/WELL LOG

CLIENT NAME	BP Oil Company	**BORING/WELL NAME**	EX-2
JOB/SITE NAME	BP-11117	**DRILLING STARTED**	30-Nov-99
LOCATION	7210 Bancroft Avenue, Oakland, California	**DRILLING COMPLETED**	30-Nov-99

Continued from Previous Page

TPHg (mg/kg)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
	10 13 32	EX-2@36'						36.5	Bottom of Boring @ 36.5 ft

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING

Borehole ID: A-1

Total Depth: 46.5 feet bgs.

PROJECT INFORMATION	DRILLING INFORMATION
Project: Former BP Site# 11117 Soil and Water Investigation	**Drilling Company:** Gregg Drilling and Testing, Inc.
Site Location: 7210 Bancroft Ave, Oakland, CA	**Driller:** Paul Rogers
Project Manager: Lynelle Onishi	**Type of Drilling Rig:** Geoprobe
PG: Barbara Jakub	**Drilling Method:** 4.25" Simco Augers
Geologist: Andrew Fowler	**Sampling Method:** Split spoon, every 5'
Job Number: 38487353.0A034	**Date(s) Drilled:** 9/27/05

BORING INFORMATION

Groundwater Depth: 22.6 feet bgs.	**Boring Location:** Adjacent to north west enrtance on Bancroft Ave.
Air Knife or Hand Auger Depth: 5.0 feet	**Boring Diameter:** 4.25"
Coordinates: X Y	**Boring Type:** Exploratory

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample ID	Recovery	Comments
0		ASPHALT	GP				
2		CLAYEY SANDY GRAVEL: Very dark grayish brown (10YR 3/2), dense, dry, 40% angular gravel, 30% fine - coarse angular sand, 20% clay, 10% silt.	CL				Boring grouted with neat Portland Cement. Top 3" finished to grade with cement.
		SILTY CLAY: Very dark grayish brown (10YR 3/2), stiff, dry, 80% clay, 15% silt, 5% fine med sand, minor gravel, medium plasticity, no odor.					
4		SILTY SANDY CLAY: Dark yellowish brown (10YR 4/4), stiff, dry, 50% clay, 30% fine - medium angular sand, 20% silt, minor angular gravel up to 1 cm diameter, no odor.					
				0	07:45 A-1 @ 6 - 6.5		Top 5' logged from hand auger / airknife cuttings.
6							
8							
10		SILTY CLAY: Dark yellowish brown (10YR 4/4), stiff, dry, 70% clay, 25%silt, 5% medium sand, no odor.		1	07:50 A-1 @ 11 - 11.5		
12							
14		CLAYEY SAND: Grayish brown (10YR 5/2), medium dense, dry, 70% fine sand, 30% clay, no odor.	SM				
		@15.5' silt content increases 65% fine - medium sand, 25% clay, 10% silt		0	07:52 A-1 @ 16 - 16.5		
16							
18							
20				0	07:58 A-1 @ 21 - 21.5		
22		CLAYEY GRAVEL: Yellowish brown(10YR 5/4), dense, moist, 65% angular medium gravel up to 1 cm diameter, 20% clay, 15% angular medium sand, no odor.	GM		08:00 A-1 @ 22.6'		▼

URS

LOG OF BORING

Borehole ID: A-1

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample I.D.	Recovery	Comments
24							
26		@25' becomes wet.		1	grab water sample 08:05 A-1 @ 25.5 - 26		
28							
30		GRAVELLY SAND: Gray (5Y 5/1), loose, wet, 70% fine -coarse rounded sand, 30% subrounded gravel up to 1.5cm diameter, no odor.	SM	2	08:15 A-1 @ 30.5 - 31		
32							
34							
36				2	08:205 A-1 @ 35.5 - 36		
38							
40		SANDY GRAVEL: Dark gray (5Y 4/1), loose, wet, 65% fine angular gravel up to 30 mm diameter, 20% fine - coarse sand, 15% silt, no odor.	GM	116	08:25 A-1 @ 39 - 39.5		Hydropunch driven from 32' to 34 in separate hole, 3 feet from A-1. After 1 hour, no water was availible for sampling.
42							
44					08:43 A-1 @ 46 - 46.5		
46		CLAYEY SILT: Light olive brown (2.5Y 5/4), soft, wet, 60% silt, 40% clay, medium plasticity, no odor.	ML	22			

URS 1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING

Borehole ID: A-2
Total Depth: 42 feet bgs.

PROJECT INFORMATION	DRILLING INFORMATION
Project: Former BP Site # 11117 Soil and Water Investigation	**Drilling Company:** Gregg Drilling and Testing, Inc.
Site Location: 7210 Bancroft Ave, Oakland, CA	**Driller:** Paul Rogers
Project Manager: Lynelle Onishi	**Type of Drilling Rig:** Geoprobe
PG: Barbara Jakub	**Drilling Method:** 2" Direct Push
Geologist: Andrew Fowler	**Sampling Method:** Continuous Core
Job Number: 38487353.0A034	**Date(s) Drilled:** 9/27/05
BORING INFORMATION	
Groundwater Depth: 21.3 feet bgs.	**Boring Location:** Adjacent to south west enrtance on Bancroft Ave.
Air Knife or Hand Auger Depth: 5.0 feet	**Boring Diameter:** 2"
Coordinates: X Y	**Boring Type:** Exploratory

Depth (ft bgs)	Symbol	Lithologic Description	USCs	PID (ppm)	Sample ID	Recovery	Comments
0		ASPHALT					
2		CLAYEY SANDY GRAVEL: Very dark gray (10YR 3/1), dense, dry, 40% angular gravel, 30% fine - coarse angular sand, 20% clay, 10% silt. Hydrocarbon staining @1.5' @2 -2.5' Angular cobbles up to 10cm.	GP				Boring grouted with neat Portland Cement. Top 3" finished to grade with cement.
4		SILTY CLAY: Very dark gray (10YR 3/1), stiff, dry, 80% clay, 15% silt, 5% fine med sand, minor gravel, medium plasticity, slight hydrocarbon odor.	CL				
6		SILTY SANDY CLAY: Dark yellowish brown (10YR 4/4), stiff, dry, 50% clay, 30% fine - medium angular sand, 20% silt, minor angular gravel up to 1cm diameter, no odor.		1.5	10:35 A-2 @ 5 - 5.5		Top 5' logged from hand auger / airknife cuttings.
8							
10		CLAYEY SILT: Brown (10YR 4/3), very stiff, dry, 70% silt, 30% clay, no odor.	ML	2	10:40 A-2 @10 - 10.5		
12		NO RECOVERY					
14		CLAYEY GRAVEL: Olive brown (10YR 4/3), medium dense, dry, 60% subrounded gravel up to 30 mm diameter, 20% coarse angular sand, 20% clay, slight hydrocarbon odor.	GM	2.5	10:45 A-2 @ 15 - 15.5		
16		CLAYEY SILT: Dark greenish gray (Gley1 4/10Y), soft, dry, 65% silt, 30% clay, 5% fine sand, medium plasticity, slight hydrocarbon odor.	ML				
18					10:46 A-2 @ 19.5 - 20		
20		CLAYEY GRAVEL: Very dark greenish gray (Gley2 3/10G), dense, dry, 70% rounded gravel, 30% clay, minor fine sand, strong hydrocarbon odor.	GM	9	11:22 A-2 @ 21.3' grab water sample		▼
22							

URS

LOG OF BORING

Borehole ID: A-2

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample I.D.	Recovery	Comments
24							
26		@27' 1" layer of red, well indurated sandstone		209	11:00 A-2 @ 25 - 25.5		
28							
30		@30' gravel clasts become angular		40	11:15 A-2 @ 30 - 30.5		
32		SAND: Dark greenish gray (Gley 1 3/10Y), loose, wet, 100% medium - coarse well rounded sand, minor clay, strong hydrocarbon odor.	SP				▽
34				259	11:20 A-2 @33.5 - 34		Hydropunch driven from 40' to 42' in separate hole, 3 feet from A-2. Sample collected (A-2 @40-42'). Strong resistance encountered from 32' to 42'
36		NO RECOVERY: Refusal @ 38.5'					
38							
40					12:35 A-2 @ 40 - 42 grab water sample		▼
42							

URS 1333 Broadway, Suite 800 Oakland, California 94612

LOG OF BORING

Borehole ID: A-3

Total Depth: 36 feet bgs.

PROJECT INFORMATION	DRILLING INFORMATION
Project: Former BP Site # 11117 Soil and Water Investigation	**Drilling Company:** Gregg Drilling and Testing, Inc.
Site Location: 7210 Bancroft Ave, Oakland, CA	**Driller:** Paul Rogers
Project Manager: Lynelle Onishi	**Type of Drilling Rig:** Geoprobe
PG: Barbara Jakub	**Drilling Method:** 2" Direct Push
Geologist: Andrew Fowler	**Sampling Method:** Continuous Core
Job Number: 38487353.0A034	**Date(s) Drilled:** 9/27/05
BORING INFORMATION	
Groundwater Depth: 19.24 feet bgs.	**Boring Location:** South corner of property
Air Knife or Hand Auger Depth: 5.0 feet	**Boring Diameter:** 2"
Coordinates: X Y	**Boring Type:** Exploratory

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample ID	Recovery	Comments
0		ASPHALT					
2		CLAYEY SANDY GRAVEL: Very dark gray (10YR 3/1), dense, dry, 40% angular gravel, 30% fine - coarse angular sand, 20% clay, 10% silt, no odor.	GP				Boring grouted with neat Portland Cement. Top 3" finished to grade with cement.
		SILTY CLAY: Very dark gray (10YR 3/1), stiff, dry, 80% clay, 15% silt, 5% fine med sand, minor gravel, medium plasticity, slight hydrocarbon odor.	CL				
4		SILTY SANDY CLAY: Dark yellowish brown (10YR 4/4), stiff, dry, 50% clay, 30% fine - medium angular sand, 20% silt, minor angular gravel up to 10 mm diameter, no odor.		2	13:05 A-3 @ 5 - 5.5		Top 5' logged from hand auger / airknife cuttings.
6							
8		NO RECOVERY					
10							
12		CLAYEY SILT: Olive gray (5Y 4/2)stiff, dry, 60% silt, 35% clay, no odor.	ML				
14							
16		CLAYEY GRAVEL: Dark greenish gray (Gley1 4/10GY), medium dense, dry, 60% angular medium gravel, 25% fine sand, 15% clay, slight hydrocarbon odor.	GM	3	13:15 A-3 @ 14.5 - 15		
18		@17' color change (Gley1 3/10G) green staining. Strong hydrocarbon odor.			13:35 A-3 @ 19.24 grab water sample		▼
		CLAYEY SILT: Dark greenish gray (Gley1 4/10GY), soft, moist, 60% silt, 30% clay, 10% fine sand, minor gravel, medium plasticity, strong hydrocarbon odor.	ML				
20		CLAYEY GRAVEL: Dark greenish gray (Gley1 4/10GY), medium dense, moist, 60% angular medium gravel, 30% clay, 10% fine sand, strong hydrocarbon odor.	GM	3	13:20 A-3 @ 19.5 - 20		
22							

URS

LOG OF BORING

Borehole ID: A-3

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample I.D.	Recovery	Comments
24				8	13:25 A-3 @ 23.5 - 24		⊻
26		SAND: Olive brown (2.5Y 4/3), very loose, wet, 100% fine - medium sand, minor clay, strong hydrocarbon odor.	SP	649	13:50 A-3 @ 26 - 26.5		
28		CLAYEY GRAVEL: Dark greenish gray (Gley1 4/10GY), medium dense, dry, 60% angular medium gravel, 30% clay, 10% fine sand, strong hydrocarbon odor.	GM				
30		NO RECOVERY: Sluffing. @27' 1" layer of red (5YR 5/6), well indurated sandstone.					
32					14:15 A-3 @ 34 - 36 grab water sample		Hydropnuch driven from 34' to 36' in separate hole, 3 feet from A-3. Sample collected (A-3@ 34-36').
34							
36							

URS 1333 Broadway, Suite 800 Oakland, California 94612	**LOG OF BORING**
	Borehole ID: A-4
	Total Depth: 36 feet bgs.

PROJECT INFORMATION	DRILLING INFORMATION
Project: Former BP Site #11117 Soil and Water Investigation	**Drilling Company:** Gregg Drilling and Testing, Inc.
Site Location: 7210 Bancroft Ave, Oakland, CA	**Driller:** Paul Rogers
Project Manager: Lynelle Onishi	**Type of Drilling Rig:** Geoprobe
PG: Barbara Jakub	**Drilling Method:** 2" Direct Push
Geologist: Andrew Fowler	**Sampling Method:** Continuous Core
Job Number: 38487353.0A034	**Date(s) Drilled:** 9/26/05
BORING INFORMATION	
Groundwater Depth: 21.6 feet bgs.	**Boring Location:** South west side of property.
Air Knife or Hand Auger Depth: 5.0 feet	**Boring Diameter:** 2"
Coordinates: X Y	**Boring Type:** Exploratory

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample ID	Recovery	Comments
0		ASPHALT					
2		CLAYEY SANDY GRAVEL: Very dark gray (10YR 3/1), dense, dry, 40% angular gravel, 30% fine - coarse angular sand, 20% clay, 10% silt, no odor.	GP				Boring grouted with neat Portland Cement. Top 3" finished to grade with cement.
		SILTY CLAY: Very dark gray (10YR 3/1), stiff, dry, 80% clay, 15% silt, 5% fine med sand, minor gravel, medium plasticity, slight hydrocarbon odor.	CL				
4		SILTY SANDY CLAY: Dark yellowish brown (10YR 4/4), stiff, dry, 50% clay, 30% fine - medium angular sand, 20% silt, no odor. Roots visible.					
6		CLAYEY SANDY GRAVEL: Dark yellowish brown (10YR 4/4), dense, dry, 60% angular gravel up to 2 cm diameter, 30% medium - coarse angular sand, 10% clay, no odor.	GM	16.3	12:55 A-4 @ 5 - 5.5		Top 5' logged from hand auger / airknife cuttings.
8		NO RECOVERY					
10							
12		CLAYEY SAND: Olive gray (5Y 4/2), medium dense, dry, 85% fine - medium angular sand, 15% clay, no odor.	SM				
14		GRAVELLY SAND: Olive gray (5Y 4/2), medium dense, dry, 70% fine - medium angular sand, 20% angular gravel up to 2 cm diameter, 10% clay, no odor.		2.0	13:15 A-4 @ 15 - 15.5		
16		CLAYEY GRAVEL: Dark greenish gray (Gley1 4/10GY), medium dense, dry, 60% angular medium gravel, 25% fine sand, 15% clay, slight hydrocarbon odor.	GM				
18		@17' color change (Gley1 3/5G) green staining. Strong hydrocarbon odor.					
20				16.7	13:25 A-4 @ 19.5 - 20		
22		CLAYEY SILT: Yellowish brown (10YR 5/4), soft, dry, 60% silt, 30% clay, 10% fine sand, minor gravel, medium plasticity, strong hydrocarbon odor.	ML		13:32 A-4 @ 21.6 grab		▼

URS

LOG OF BORING

Borehole ID: A-4

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample I.D.	Recovery	Comments
24				2537	water sample		
26		SAND: Olive brown (2.5Y 4/3), loose, wet, 100% medium sand, minor angular gravel up to 3 cm diameter, strong hydrocarbon odor.	SP		13:35 A-4 @ 23.5 - 24		▽
28		NO RECOVERY: No recovery due to sluffing from 28' to 35'					
30					13:55 A-4 @ 31.5 - 32		Hydropunch driven from 34' to 36' in separate hole, 3 feet from A-4. Sample collected (A-4@34-36').
32				50.3	14:50 A-4 @ 34 - 36 hydro -punch sample		
34							
36		Refusal @ 35' bgs.					

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING

Borehole ID: A-5

Total Depth: 40 feet bgs.

PROJECT INFORMATION	DRILLING INFORMATION
Project: Former BP Site #11117 Soil and Water Investigation	**Drilling Company:** Gregg Drilling and Testing, Inc.
Site Location: 7210 Bancroft Ave, Oakland, CA	**Driller:** Paul Rogers
Project Manager: Lynelle Onishi	**Type of Drilling Rig:** Geoprobe
PG: Barbara Jakub	**Drilling Method:** 2" Direct Push
Geologist: Andrew Fowler	**Sampling Method:** Continuous Core
Job Number: 38487353.0A034	**Date(s) Drilled:** 9/26/05

BORING INFORMATION	
Groundwater Depth: 21.6 feet bgs.	**Boring Location:** East side of property, near 73rd Ave entrance.
Air Knife or Hand Auger Depth: 5.0 feet	**Boring Diameter:** 2"
Coordinates: X Y	**Boring Type:** Exploratory

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample ID	Recovery	Comments
0		ASPHALT					
		SP: Very dark greenish gray (Gley1 3/5GY), loose, dry, coarse angular sand, no odor.	SP				
2		SILTY CLAY: Very dark gray (10YR 3/1), stiff, dry, 80% clay, 15% silt, 5% fine med sand, minor gravel, medium plasticity.	CL				Boring grouted with neat Portland Cement. Top 3" finished to grade with cement.
		CLAYEY SAND: Dark yellowish brown (10YR 4/4), loose, dry, 60% fine - coarse angular sand, 30% clay, 10% silt, no odor.	SP				
4							
6				1.6	10:25 A-5 @ 5 - 5.5		Top 5' logged from hand auger / airknife cuttings.
		SANDY CLAY: Brown (10YR 4/3), medium stiff, dry, 60% clay, 40% medium angular sand, minor angular gravel, medium plasticity.	CL				
8							
		@ 9' grades to clayey sand.	SM				
10				1.9	10:35 A-5 @ 10 - 10.5		
		SANDY SILTY GRAVEL: Olive gray (5Y 5/2), 45% angular gravel up to 5 cm diameter, 35% silt, 15% medium sand, 5% clay.	GM				
12							
14							
		@ 16' color change (Gley1 3/5G). Strong hydrocarbon odor.		12.3	10:45 A-5 @ 15 - 15.5		
16					A-5 @ 19.5 grab water sample		▼
18							
20				3.1	10:47 A-5 @ 19.5 - 20		
		@ 22' Red layer (5YR 4/6) 1" thick of well indurated sandstone. Lies above capillary fringe.		6.2	11:00 A-5 @ 22 -		⧖
22		SAND: Dark greenish gray (Gley1 4/10Y), loose, wet, 100% well sorted,	SP				

URS

LOG OF BORING

Borehole ID: A-5

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample I.D.	Recovery	Comments
24		rounded coarse sand, minor gravel.			22.5		
26		@ 25' gravel increase to 30%		3.6	11:05 A-5 @ 25 - 25.5		
28							
30		CLAYEY SANDY GRAVEL: Dark grayish brown (2.5Y 4/2), medium dense, dry, 60% angular gravel upto 5cm diameter, 20% coarse angular sand, 15% clay, 5% silt, strong hydrocarbon odor, green staining.	GM	12.4	11:10 A-5 @ 30 - 30.5.		Hydropunch driven from 28' to 30' in separate hole, 3 feet from A-5. No water in hydropunch hole after 1 hour.
32							
34							
36		NO RECOVERY: Sluffing.		8.5	11:20 A-5 @ 35 - 35.5		
38							
40							

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING

Borehole ID: A-7

Total Depth: 36.5 feet bgs.

PROJECT INFORMATION	DRILLING INFORMATION
Project: Former BP Station # 11117 Soil and Water Investigation	**Drilling Company:** Gregg Drilling and Testing, Inc.
Site Location: 7210 Bancroft Ave, Oakland, CA	**Driller:** Paul Rogers
Project Manager: Lynelle Onishi	**Type of Drilling Rig:** Geoprobe
PG: Barbara Jakub	**Drilling Method:** 4.5" Simco Augers
Geologist: Andrew Fowler	**Sampling Method:** 18" Splitspoon, 5' Sampling Intervals
Job Number: 38487353.0A034	**Date(s) Drilled:** 11/3/05

BORING INFORMATION	
Groundwater Depth: not encountered	**Boring Location:** Southeast Corner of Parking Lot for DD's Discounts
Air Knife or Hand Auger Depth: 5.0 feet	**Boring Diameter:** 4.5"
Coordinates: X Y	**Boring Type:** Exploratory

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample ID	Recovery	Comments
0		ASPHALT					
2		BLANK: Boring logs for soil boring A-7 were stolen, lithologies were logged on 11/16/05 from samples submitted to Sequoia Analytical. Boring airknifed to 5 feet bgs.					Boring grouted with neat Portland Cement. Top 3" finished to grade with concrete.
4							
6		CLAYEY SILT: Dark yellowish brown (10YR 4/4), medium stiff, dry, 70% silt, 30% clay, minor gravel up to 8 mm, medium plastic.	ML		12:55 A-7 @ 6-6.5'		
8							
10							
12		SANDY GRAVEL: Brown (10YR 4/3), loose, damp, 70% sub-rounded gravel up to 20 mm, 25% medium sand, 5% silt, no plasticity.	GM		13:00 A-7 @ 11-11.5'		
14							
16		SILTY SAND: Brown (10YR 5/3), medium dense, moist, 65% medium to coarse angular sand, 25% clay, 10% sub-rounded gravel up to 10 mm.	SM		13:05 A-7 @ 16-16.5'		
18							
20							
22		@ 21 feet bgs, color change and gravel disappears; Dark yellowish brown (10YR 4/4), moist, 75% medium to coarse angular sand, 25% silt, slight odor.			13:10 A-7 @ 21-21.5'		

URS

LOG OF BORING

Borehole ID: A-7

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample I.D.	Recovery	Comments
24							
26		CLAYEY GRAVEL: Brown (10YR 4/3), loose, moist, 70% sub-rounded to sub-angular gravel up to 10 mm, 25% clay, 5% silt, slight hydrocarbon odor.	GC		13:20 A-7@ 25.5-26'		No water encountered in boring A-7 after 1 hour.
28		NO RECOVERY					
30							▽ Hydropunch driven from 28' to 30' in separate hole, 3 feet from A-7. No water in hydropunch hole after 1 hour.
32							
34					13:45 A-7 @ 36-36.5'		
36		CLAYEY SILT: Brown (10YR 5/3), medium stiff, wet, 80% silt, 20% clay, black specks throughout.	ML				Boring terminated at 36.5'.

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING

Borehole ID: A-8

Total Depth: 36.5 feet bgs.

PROJECT INFORMATION	DRILLING INFORMATION
Project: Former BP Station #11117 Soil and Water Investigation	**Drilling Company:** Gregg Drilling and Testing, Inc.
Site Location: 7210 Bancroft Ave, Oakland, CA	**Driller:** Paul Rogers
Project Manager: Lynelle Onishi	**Type of Drilling Rig:** Geoprobe
PG: Barbara Jakub	**Drilling Method:** 4.5" Simco Augers
Geologist: Andrew Fowler	**Sampling Method:** 18" Splitspoon, 5' Sampling Intervals
Job Number: 38487353.0A034	**Date(s) Drilled:** 11/3/05

BORING INFORMATION	
Groundwater Depth: 24.6 feet bgs.	**Boring Location:** Adjacent to entrance into DD's Discounts
Air Knife or Hand Auger Depth: 5.0 feet	**Boring Diameter:** 4.5"
Coordinates: X Y	**Boring Type:** Exploratory

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample ID	Recovery	Comments
0		ASPHALT					
2		BLANK: Boring logs for soilboring A-8 were stolen, lithologies were logged on 11/16/05 from samples submitted to Sequoia Analytical. Boring Airknifed to 5 feet bgs.					Boring grouted with neat Portland Cement. Top 3" finished to grade with concrete.
4							
6		SILTY SAND: Yellowish brown (10YR 5/4), dense, dry, 80% fine sand, 20% silt, no plasticity. 1" layer; reddish brown (5YR 4/3), very hard, well indurated sandstone.	SM		09:00 A-8 @ 6-6.5'		
8							
10							
12					09:05 A-8 @ 11-11.5'		
14							
16		SANDY GRAVEL: Yellowish brown (10YR 5/4), loose, damp, 65% sub-angular gravel up to 30 mm, 3% medium to coarse sand, 5% silt, no plasticity, no odor.	GM		09:10 A-8 @ 15.5-16'		
18							
20							
22		CLAYEY GRAVEL: Yellowish brown (10YR 5/4), medium dense, damp, 60% sub-rounded to sub-angular gravel up to 20 mm, 20% clay, 10% coarse angular sand, 10% silt.	GC		09:15 A-8 @ 21-21.5'		

URS

LOG OF BORING

Borehole ID: A-8

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample I.D.	Recovery	Comments
24					09:36 A-8 @ 24.6' (water)		▼
26		SANDY GRAVEL: Brown (10YR 5/3), loose, wet, 55% sub-angular gravel up to 35 mm, 35% medium sand and rounded coarse sand, 10% silt.	GM				
28					09:40 A-8 @ 25-25.5'		
30		@ 30 feet bgs, gravel increases; loose, wet, 75% sub-rounded gravel up to 10 mm, 15% coarse sand, 55% silt.			09:45 A-8 @ 30-30.5'		Hydropunch driven from 28' to 30' in separate hole, 3 feet from A-8. No water in hydropunch hole after 1 hour.
32							
34					09:50 A-8 @ 36-36.5'		
36		CLAYEY SILT: Brown (10YR 5/3), medium stiff, wet, 80% silt, 20% clay. Black specs throughout, light olive brown mottling.	ML				Boring terminated at 36.5'.

URS

1333 Broadway, Suite 800
Oakland, California 94612

LOG OF BORING

Borehole ID: A-9

Total Depth: 36.5 feet bgs.

PROJECT INFORMATION	DRILLING INFORMATION
Project: Former BP Site #11117 Soil and Water Investigation	**Drilling Company:** Gregg Drilling and Testing, Inc.
Site Location: 7210 Bancroft Ave, Oakland, CA	**Driller:** Paul Rogers
Project Manager: Lynelle Onishi	**Type of Drilling Rig:** Geoprobe
PG: Barbara Jakub	**Drilling Method:** 4.5" Simco Augers
Geologist: Andrew Fowler	**Sampling Method:** 18" Splitspoon, 5' Sampling Intervals
Job Number: 38487353.0A034	**Date(s) Drilled:** 11/3/05
BORING INFORMATION	
Groundwater Depth: 24.2 feet bgs.	**Boring Location:** Offsite: North corner of site in adjacent parking lot
Air Knife or Hand Auger Depth: 5.0 feet	**Boring Diameter:** 4.5"
Coordinates: X Y	**Boring Type:** Exploratory

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample ID	Recovery	Comments
0		ASPHALT					
2		BLANK: Boring logs for soilboring A-9 were stolen, lithologies were logged on 11/16/05 from samples submitted to Sequoia Analytical. Boring Airknifed to 5 feet bgs.					Boring grouted with neat Portland Cement. Top 3" finished to grade with concrete.
4							
6		SILTY SAND: Yellowish brown (10YR 5/4), medium stiff, damp, 80% medium to coarse sand, 20% silt, low plasticity.	SM		11:15 A-9 @ 6-6.5'		
8							
10							
12		GRAVELLY SAND: Yellowish brown (10YR 5/4), loose, damp, 60% well sorted medium sand, 30% gravel up to 20 mm, 10% silt, no plasticity, no odor.	SP		11:20 A-9 @ 11-11.5'		
14							
16		CLAYEY GRAVEL: Yellowish brown (10YR 5/4), medium dense, damp, 60% sub-rounded to sub-angular gravel up to 30 mm, 20% clay, 10% coarse angular sand, 10% silt, no odor.	GC		11:30 A-9 @ 16-16.5'		
18							
20							
22		SANDY GRAVEL: Brown (10YR 5/3), loose, damp, 55% sub-rounded angular gravel up to 35 mm, 35% medium sand and rounded coarse sand, 10% silt, no plasticity, no odor.	GM		11:31 A-9 @ 21-21.5'		

URS

LOG OF BORING

Borehole ID: A-9

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample I.D.	Recovery	Comments
24					11:35 A-9 @ 24.2' (water)		▼ ▽
26		SILTY SAND: Yellowish brown (10YR 5/4), loose, wet, 65% medium to coarse sub-rounded to sub-angular sand, 30% silt, 5% clay, no plasticity, no odor.	SM				
28					11:40 A-9 @ 25-25.5'		
30							Hydropunch driven from 28' to 30' in separate hole, 3 feet from A-9. No water in hydropunch hole after 1 hour.
32		CLAY: Dark grayish brown (10YR 4/2), medium stiff, dry, 90% clay, 10% silt, medium to high plasticity.	CL		11:45 A-9 @ 31-31.5'		
		CLAYEY GRAVEL: Brown (7.5YR 5/2), loose to medium dense, dry, 80% sub angular gravel up to 10 mm, 15% clay, 5% silt.	GC				
34					11:50 A-9 @ 36-36.5'		
36							Boring terminated at 36.5'.
		CLAYEY SILT: Brown (10YR 5/3), medium stiff, wet, 80% silt, 20% clay, no odor. Black specs throughout.	ML				

URS

1333 Broadway, Suite 800
Oakland, California 94612

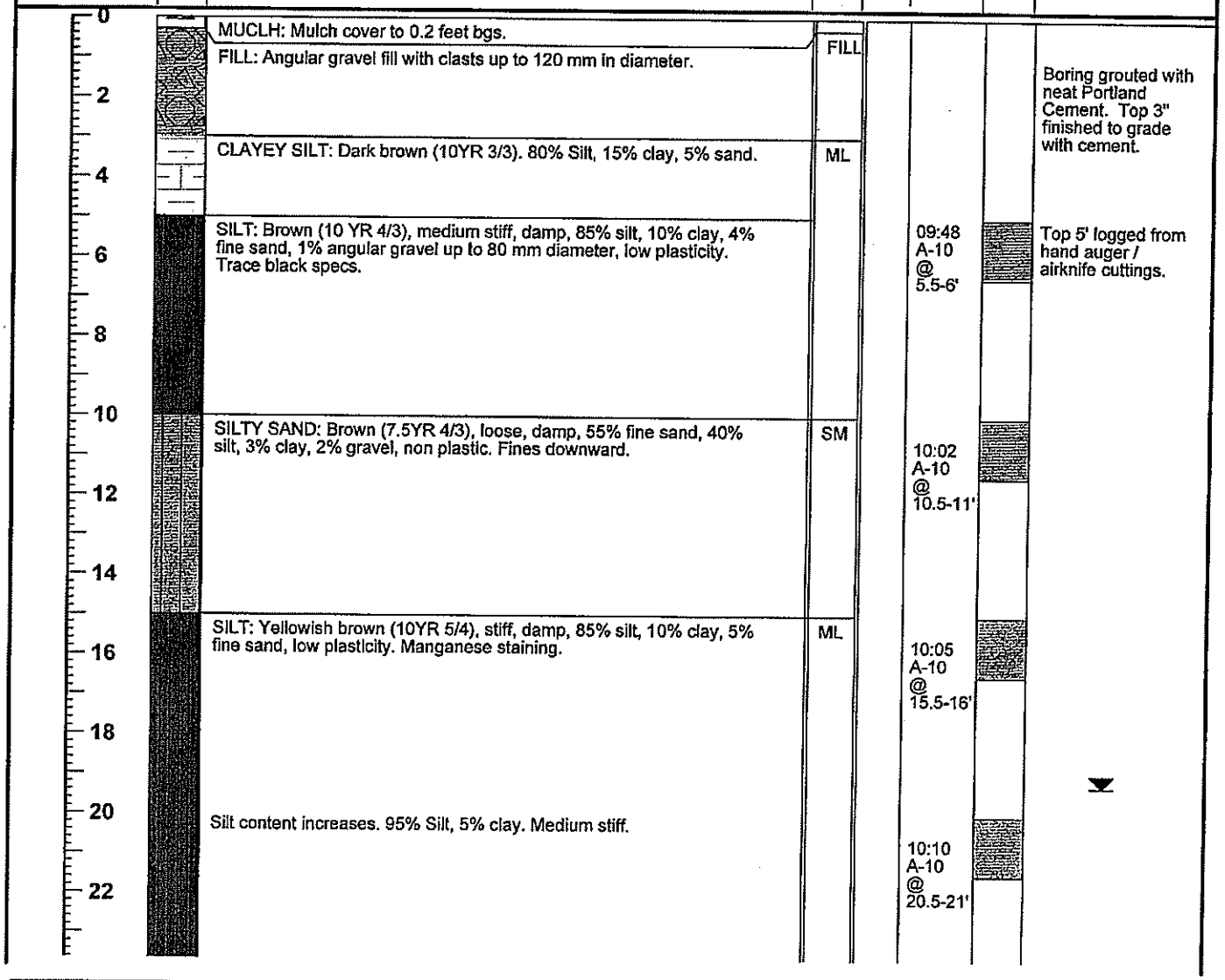
LOG OF BORING

Borehole ID: A-10

Total Depth: 39 feet bgs.

PROJECT INFORMATION	DRILLING INFORMATION
Project: Former BP Site #11117 Soil and Water Investigation	**Drilling Company:** Gregg Drilling and Testing, Inc.
Site Location: 7210 Bancroft Ave, Oakland, CA	**Driller:** Paul Rogers
Project Manager: Lynelle Onishi	**Type of Drilling Rig:** Geoprobe
PG: Barbara Jakub	**Drilling Method:** 4.5" Simco Augers
Geologist: Barbara Jakub	**Sampling Method:** 18" Split Spoon
Job Number: 38487353.0A034	**Date(s) Drilled:** 11/7/05

BORING INFORMATION	
Groundwater Depth: 25 feet bgs	**Boring Location:** In center of planter, across 73rd Ave. from Site.
Air Knife or Hand Auger Depth: 5.0 feet	**Boring Diameter:** 4.5"
Coordinates: X Y	**Boring Type:** Exploratory



Symbol	Lithologic Description	USCS	PID (ppm)	Sample ID	Recovery	Comments
	MUCLH: Mulch cover to 0.2 feet bgs.					
	FILL: Angular gravel fill with clasts up to 120 mm in diameter.	FILL				Boring grouted with neat Portland Cement. Top 3" finished to grade with cement.
	CLAYEY SILT: Dark brown (10YR 3/3). 80% Silt, 15% clay, 5% sand.	ML				
	SILT: Brown (10 YR 4/3), medium stiff, damp, 85% silt, 10% clay, 4% fine sand, 1% angular gravel up to 80 mm diameter, low plasticity. Trace black specs.			09:48 A-10 @ 5.5-6'		Top 5' logged from hand auger / airknife cuttings.
	SILTY SAND: Brown (7.5YR 4/3), loose, damp, 55% fine sand, 40% silt, 3% clay, 2% gravel, non plastic. Fines downward.	SM		10:02 A-10 @ 10.5-11'		
	SILT: Yellowish brown (10YR 5/4), stiff, damp, 85% silt, 10% clay, 5% fine sand, low plasticity. Manganese staining.	ML		10:05 A-10 @ 15.5-16'		
	Silt content increases. 95% Silt, 5% clay. Medium stiff.			10:10 A-10 @ 20.5-21'		

URS

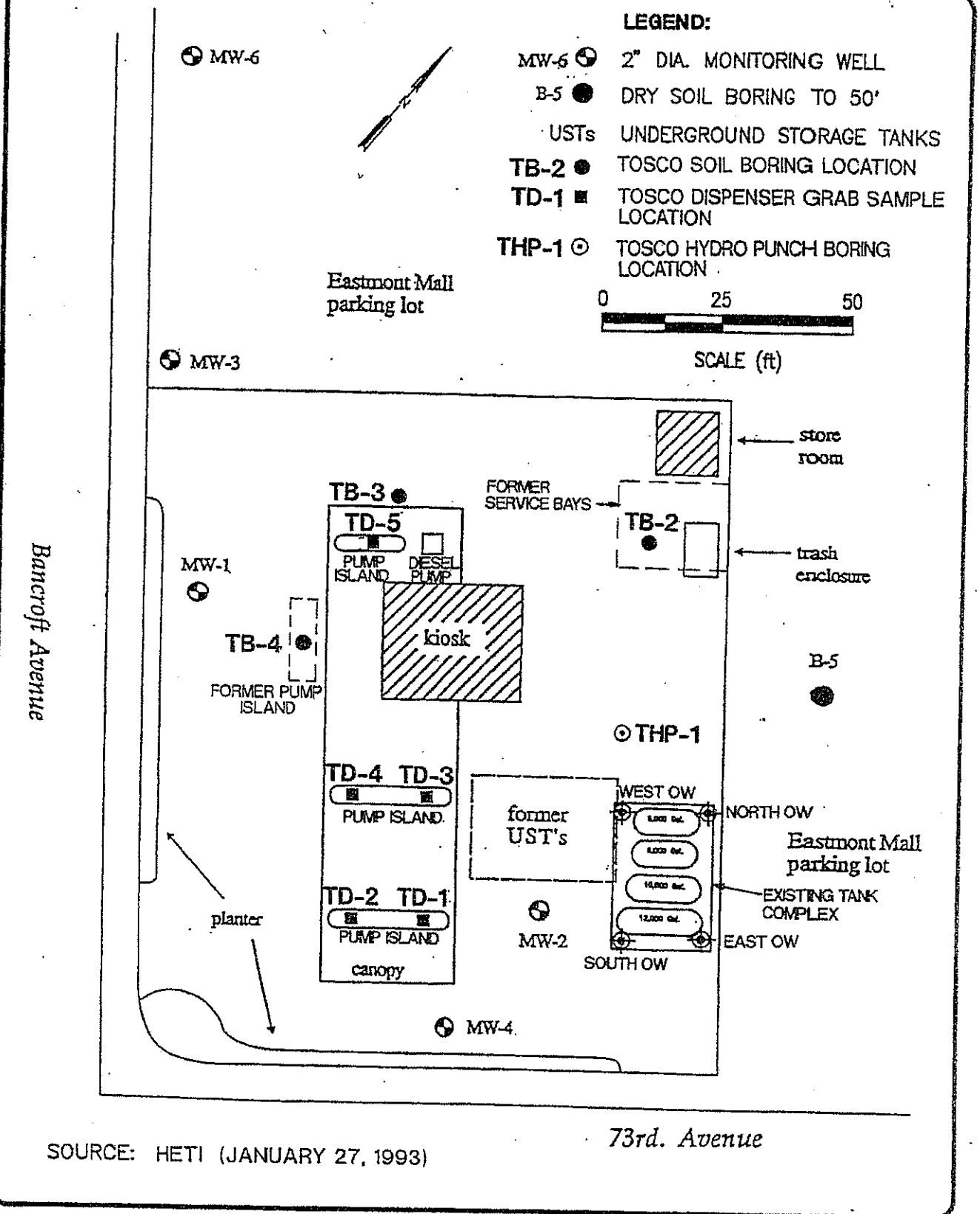
LOG OF BORING

Borehole ID: A-10

Depth (ft bgs)	Symbol	Lithologic Description	USCS	PID (ppm)	Sample I.D.	Recovery	Comments
24							
26		SANDY SILT: Yellowish brown (10YR 5/4), soft, moist, 80% silt, 17% fine sand, 3% clay. Trace black specs and white granules (possibly feldspar) up to 30 mm in diameter.			10:19 A-10 @ 25.5-26'		⊻
28					10:20 A-10 @ 25' (water)		
30		SILT: Yellowish brown (10YR 5/4), soft, wet to saturated, 75% silt, 10% clay, 10% gravel, 5% sand. Angular chert gravel at base up to 30 mm in diameter.			10:33 A-10 @ 30.5-31'		
32							Hydropunch driven from 39' to 41' in separate hole, 3 feet from A-10. Sample taken (A-10@39').
34					10:42 A-10 @ 35.5-36'		
36		SILTY GRAVEL: Yellowish brown (10YR 5/4), dense, wet, 70% angular to sub-angular gravel up to 30 mm in diameter with chert and sandstone clasts, 17% silt, 10% sand, 3% clay.	GM				
38					11:07 A-10 @ 39' (water)		Total depth 39 feet bgs.
40							

APPENDIX B.

HISTORIC SOIL AND WATER ANALYTICAL DATA AND SAMPLE LOCATIONS

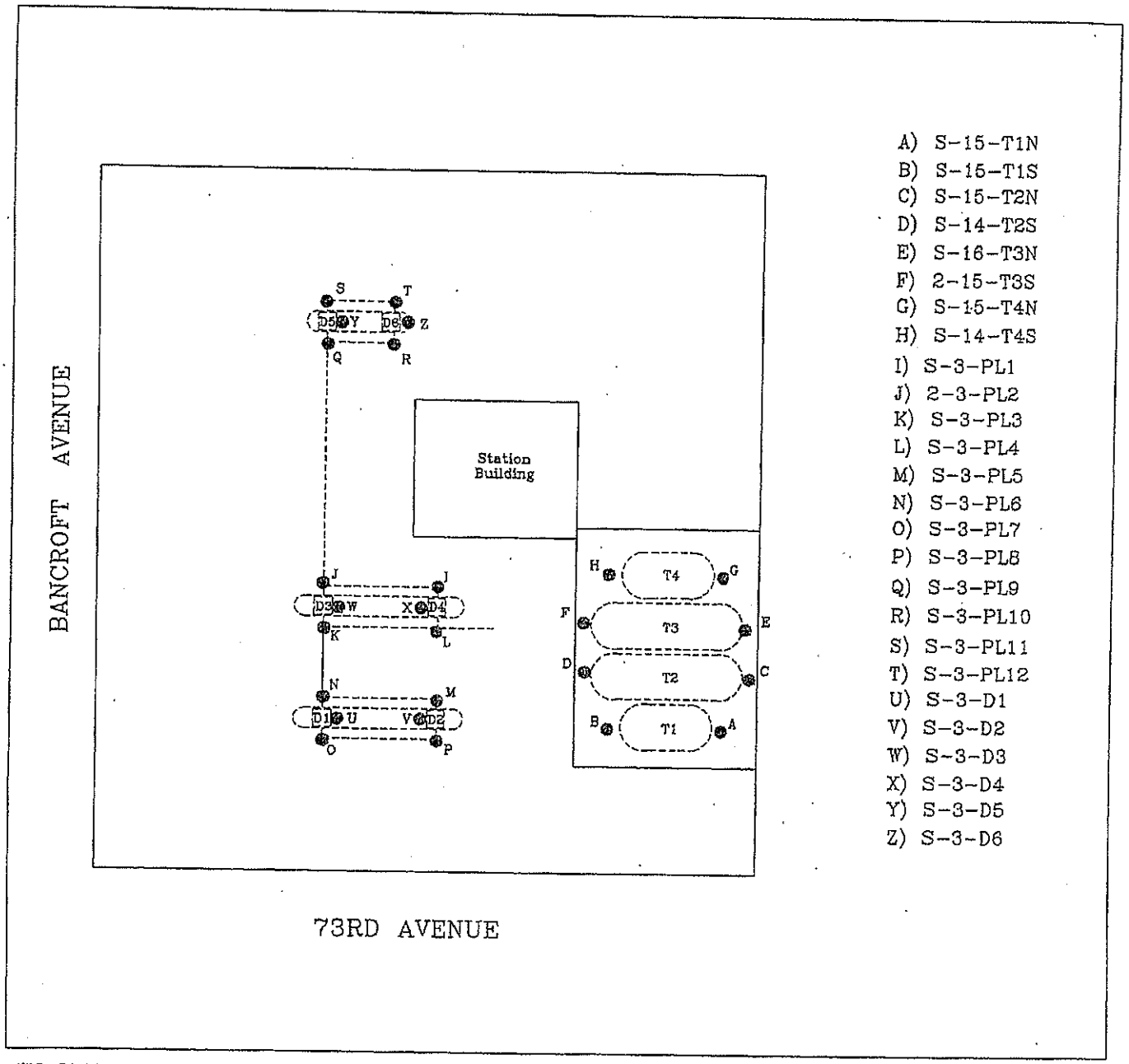


SOURCE: HETI (JANUARY 27, 1993)

EMCON Northwest, Inc.

DATE 12-20-94
DWN. MLP
REV.
APPR.
PROJECT NO. 0952-033.03

Figure 1.
TOSCO #11117
7210 BANCROFT AVENUE
OAKLAND, CALIFORNIA
SITE PLAN



FN 23490002

EXPLANATION

● Soil Sample Location

S-15-T1N — Tank/Product Line/Dispenser number
- Depth
- Soil Sample

APPROXIMATE SCALE

0 30 60 FEET

ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

TOSCO 76 SERVICE STATION 11117
7210 Bancroft Avenue
Oakland, California

PROJECT NO. 2349

PLATE 2

SOIL SAMPLES
SUMMARY OF ANALYTICAL RESULTS

BP Oil Facility No. 11117
7210 Bancroft Avenue
Oakland, California

Sample Description	Date	TPHg (ppm)	B (ppm)	T (ppm)	E (ppm)	X (ppm)
MW-1 @ 5'	12/27/91	ND	ND	ND	ND	ND
MW-1 @ 15'	12/27/91	ND	ND	ND	ND	ND
MW-1 @ 25'	12/27/91	ND	ND	ND	ND	ND
MW-2 @ 5'	12/27/91	ND	ND	ND	ND	ND
MW-2 @ 15'	12/27/91	ND	ND	ND	ND	ND
MW-2 @ 25'	12/27/91	ND	ND	ND	ND	ND
MW-4 @ 15'	7/22/92	240	ND	6.6	5.7	27
MW-4 @ 20'	7/22/92	6,000	34	450	190	780
MW-4 @ 25'	7/22/92	1,100	1.6	36	27	140
B-5 @ 30'	7/22/92	ND	ND	ND	ND	ND
MW-6 @ 30'	7/23/92	ND	ND	ND	ND	ND

TPHg = Total petroleum hydrocarbons as gasoline

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes

ND = Not detected above the laboratory method detection limit

TPHg and BTEX analyses EPA 8015/8020 (DHS modified)

RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
Tosco 76 Service Station 11117
7210 Bancroft Avenue
Oakland, California
(Page 1 of 2)

Sample #	Plate 2 Callout	Date Sampled	Depth (ft bgs)	TEPHd	TPPHg	MTBE	B	T	E	X	Total Lead
				<.....ppm.....>							
Underground Storage Tanks											
S-15-T1N	A	8/14/98	15	630	480	1.6	0.40	0.46	2.3	1.2	NA
S-15-T1S	B	8/14/98	15	800	5,300	ND	ND	100	63	530	NA
S-15-T2N	C	8/14/98	15	NA	440	1.3	0.79	6.2	4.6	35	ND
S-14-T2S	D	8/14/98	14	NA	3.7	0.055	ND	0.019	0.060	0.52	NA
S-16-T3N	E	8/14/98	16	NA	810	5.3	0.95	4.2	16	99	NA
S-15-T3S	F	8/14/98	15	NA	ND	0.065	ND	ND	ND	0.013	NA
S-15-T4N	G	8/14/98	15	NA	ND	0.26	ND	ND	ND	ND	NA
S-14-T4S	H	8/14/98	14	NA	ND	0.028	ND	0.0090	ND	0.016	NA
Product Lines and Dispensers											
S-3-PL1	I	8/14/98	3	NA	240	15	ND	6.0	3.5	25	12
S-3-PL2	J	8/14/98	3	14	3.3	0.10	ND	0.026	0.018	0.18	NA
S-3-PL3	K	8/14/98	3	4.8	ND	0.86	ND	ND	ND	ND	NA
S-3-PL4	L	8/14/98	3	21	6.8	12	0.063	0.0081	0.17	0.46	NA
S-3-PL5	M	8/14/98	3	NA	ND	ND	ND	ND	ND	ND	NA
S-3-PL6	N	8/14/98	3	NA	4.8	ND	ND	0.11	0.0054	0.038	NA
S-3-PL7	O	8/14/98	3	NA	1.8	0.075	ND	0.084	0.019	0.097	NA
S-3-PL8	P	8/14/98	3	NA	ND	ND	ND	ND	ND	ND	NA
S-3-PL9	Q	8/14/98	3	18	ND	ND	ND	ND	ND	ND	NA
S-3-PL10	R	8/14/98	3	NA	ND	ND	ND	ND	ND	ND	NA
S-3-PL11	S	8/14/98	3	190	1.7	ND	ND	ND	0.0068	0.012	NA
S-3-PL12	T	8/14/98	3	ND	1.4	0.048	0.0089	0.025	0.0061	0.035	NA
S-3-D1	U	8/14/98	3	NA	72	10	ND	ND	ND	0.63	NA
S-3-D2	V	8/14/98	3	NA	ND	0.054	ND	ND	ND	ND	NA
S-3-D3	W	8/14/98	3	NA	ND	1.7	ND	0.010	ND	0.010	NA
S-3-D4	X	8/14/98	3	NA	7200	72/ND*	22	170	87	590	40
S-3-D5	Y	8/14/98	3	NA	ND	ND	ND	ND	ND	ND	NA
S-3-D6	Z	8/14/98	3	ND	ND	0.053	ND	ND	ND	ND	NA

RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
Tosco 76 Service Station 11117
7210 Bancroft Avenue
Oakland, California

Sample #	Plate 2 Callout	Date Sampled	Depth (ft bgs)	TEPHd	TPPHg	MTBE	B	T	E	X	Total Lead
				<.....ppm.....>							
Soil-Stockpile											
SP-1-(1-4)	NA	8/14/98	NA	9.3	16	NA	0.011	0.016	0.039	0.23	26
SP-2-(1-4)	NA	8/14/98	NA	17	19	NA	0.022	ND	0.034	0.11	30
SP-3-(1-4)	NA	8/14/98	NA	4.6	2.0	NA	ND	ND	ND	0.011	21
SP-4-(1-4)	NA	8/14/98	NA	5.3	2.4	NA	ND	ND	ND	0.014	23

Notes:

S-15-TIN	=	Soil Sample - depth - UST number/end.
S-3-PL1	=	Soil Sample - depth - product line sample number.
S-3-D1	=	Soil Sample - depth - dispenser number.
SP-1-(1-4)	=	Stockpiled soil sample - stockpile number - soil sleeve number.
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using EPA method 8015 (modified).
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using EPA method 8015 (modified).
MTBE	=	Methyl tertiary butyl ether analyzed using EPA method 8020.
BTEX	=	Benzene, toluene, ethyl benzene, and total xylenes analyzed using EPA method 8020.
Total Lead	=	Total threshold limit concentration of lead analyzed using EPA method 6010.
ft bgs	=	Feet below ground surface.
ppm	=	Parts per million.
NA	=	Not analyzed/not applicable.
ND	=	Not detected at or above laboratory method detection limits.
*	=	MTBE confirmed using EPA method 8260.

Site Number 11117
7210 Bancroft Avenue, Oakland, California

Soil Sample Results of Analyses (ppm)

Sample Number	Depth (feet)	Date Collected	California DHS LUFT Method TPH-G	California DHS LUFT Method Hydrocarbon Scan		BTEX EPA Method 5030/8020			
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethylbenzene	Total Xylenes
TD-1 **	*n/a*	09/08/94	4.4	2,100	85	*nd**	0.077	0.042	0.26
TD-2	*n/a*	09/08/94	*nd*	160	50	*nd*	*nd*	*nd*	*nd*
TD-3	*n/a*	09/08/94	16	5,800	880	*nd**	0.088	0.053	0.51
TD-4	*n/a*	09/08/94	*nd*	110	36	*nd*	*nd*	*nd*	*nd*
TD-5	*n/a*	09/08/94	*nd*	2,400	340	*nd*	*nd*	*nd*	0.008
THP-1-22' ***	22	09/08/94	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*
TB2-S-13.5-14'	13.5-14	09/14/94	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*
TB3-S-11'	11	09/14/94	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*
TB4-S-6.5-7'	6.5-7	09/14/94	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*	*nd*

Groundwater Sample Results of Analyses (ppb)

Sample Number	Depth to Water (feet)	Date Sampled	California DHS LUFT Method TPH-G	California DHS LUFT Method Hydrocarbon Scan		BTEX EPA Method 5030/8020			
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethylbenzene	Total Xylenes
TB2-W-36'	36	09/14/94	*nd*	*nd**	*nd**	*nd*	*nd*	*nd*	*nd*
TB3-W-36'	36	09/14/94	*nd*	*nd**	*nd**	0.7	0.6	*nd*	*nd*

NOTE:
- TPH-G = Total petroleum hydrocarbons as gasoline.
- TPH-D = Total petroleum hydrocarbons as diesel.
- TPH-O = Total petroleum hydrocarbons as oil.
- *nd* = Not detected at or above method reporting limit.
- *n/a* = Not applicable.
- — = Not analyzed.

- TW = Tosco well.
- TB = Tosco boring.
- TD = Tosco dispenser soil sample.
- THP = Tosco HydroPunch.
- SGP = Soil gas probe.
- * = Raised method reporting limits (see laboratory report in Attachment D).
- ** = TD-1 through TD-5 are referred to as PD-1 through PD-5 on lab reports.
- *** = HP-1 is referred to as PHP-1 on lab report.

SOIL SAMPLE ANALYTICAL RESULTS

BP STATION No. 11117

7210 BANCROFT AVENUE, OAKLAND, CALIFORNIA

Sample No.	Date	TPHg (ppm)	B (ppm)	T (ppm)	E (ppm)	X (ppm)
MW-7-25' (1)	10/6/94	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005
MW-8-25'	10/6/94	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005
MW-9-25'	10/6/94	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005

Notes:

Sample No. :	Soil boring designation and sample collection depth.
Date :	Sample collection date.
TPHg :	Total petroleum hydrocarbons as gasoline by EPA Method 8015 (modified).
BTEX :	Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020 (modified).
ppm :	Parts per million (mg/kg).
ND :	Not detected in concentrations exceeding the indicated laboratory method detection limit (MDL).
(1):	Rock and gravel encountered at 25 ft bgs. Sample collected at 26.5 bgs.

Summary of Soil Analytical Data

Sample ID - Depth	TPPH-g	Benzene	Toluene	Ethylbenzene	Xylenes	MtBE
MW-10 - 6'	<0.1 mg/kg	<1 µg/kg	<2 µg/kg	<2 µg/kg	<2 µg/kg	<100 µg/kg
MW-10 - 11'	<0.1 mg/kg	<1 µg/kg	<2 µg/kg	<2 µg/kg	<2 µg/kg	<100 µg/kg
MW-10 - 30'	<0.1 mg/kg	<1 µg/kg	<2 µg/kg	<2 µg/kg	<2 µg/kg	<100 µg/kg
MW-10 - 35'	<0.1 mg/kg	<1 µg/kg	<2 µg/kg	<2 µg/kg	<2 µg/kg	<100 µg/kg

Notes:
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram

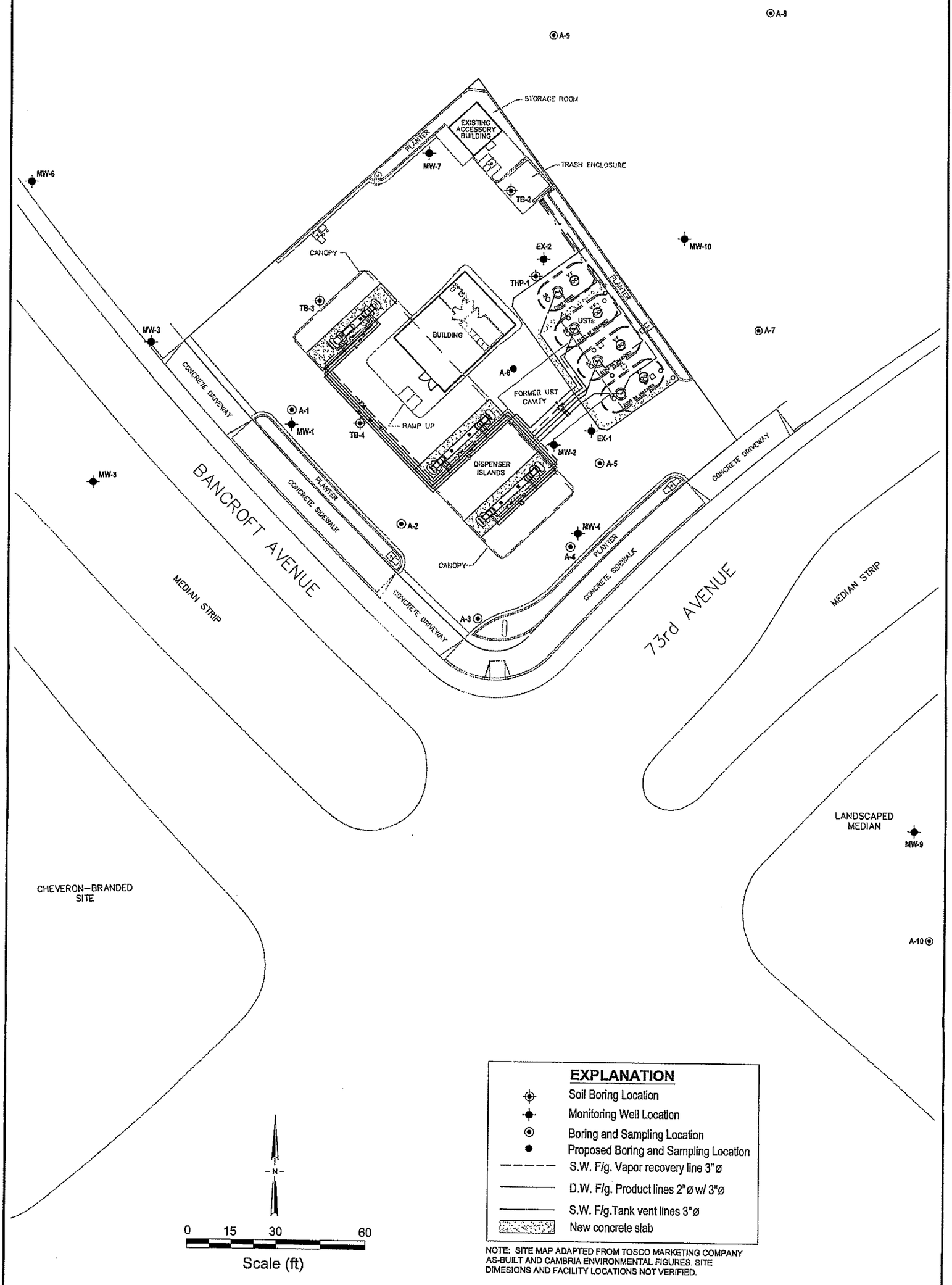
CAMBRIA

Soil Analytical Data - BP Oil Site No. 11117,
7210 Bancroft Avenue, Oakland, California

Sample ID (Depth - ft bgs)	Date Sampled	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	Total Lead (mg/kg)	TOC (% w/w)
	EPA Method:	8015m	8260	8260	8260	8260	8260	6010	Walkley-Black
EX-1-15.5	11/30/99	<1.0	<0.005	<0.005	<0.005	<0.005	0.011	-	-
EX-1-21	11/30/99	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	-	-
EX-1-25.5	11/30/99	-	-	-	-	-	-	-	<0.318
EX-1-36	11/30/99	-	-	-	-	-	-	-	<0.318
EX-2-11	11/30/99	<1.0	<0.005	<0.005	<0.005	<0.005	0.012	-	-
EX-2-15.5	11/30/99	-	-	-	-	-	-	-	<0.318
EX-2-20.5	11/30/99	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	-	-
COMP	11/30/99	1.0	0.016	0.096	0.042	0.236	0.17	5.85	-

Abbreviations and Notes:

TPHg = Total petroleum hydrocarbons as gasoline
MTBE = Methyl tert-butyl ether
TOC = Total organic carbon
mg/kg = Milligrams per kilogram



NOTE: SITE MAP ADAPTED FROM TOSCO MARKETING COMPANY AS-BUILT AND CAMBRIA ENVIRONMENTAL FIGURES. SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

URS	Project No. 38487353 Former BP Station #11117 7210 Bancroft Avenue Oakland, California	SOIL BORING LOCATIONS	FIGURE 2

Soil Analytical Data
Former BP #11117
7210 Bancroft Ave., Oakland, CA

Soil Sample ID	Sample Depth (feet bgs)	Date Sampled	GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TBA (mg/kg)	MTBE (mg/kg)	Lead (mg/kg)
A-1 (6-6.5')	6.0	09/27/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-1 (11-11.5')	11.0	09/27/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-1 (16-16.5')	16.0	09/27/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-1 (21-21.5')	21.0	09/27/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	NA
A-1 (25.5-26')	25.5	09/27/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	NA
A-1 (30.5-31')	30.5	09/27/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-1 (35.5-36')	35.5	09/27/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	NA
A-1 (39-39.5')	39.0	09/27/05	**76**	ND<0.10	ND<0.10	**0.11**	**0.11**	ND<10	ND<0.050	NA
A-1 (46-46.5')	46.0	09/27/05	ND<2.5	ND<0.050	ND<0.050	ND<0.050	ND<0.050	ND<5.0	**0.84**	NA
A-2 (5-5.5')	5.0	09/27/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-2 (10-10.5')	10.0	09/27/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-2 (15-15.5')	15.0	09/27/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	NA
A-2 (19.5-20')	19.5	09/27/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	NA
A-2 (25-25.5')	25.0	09/27/05	**34**	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<10	ND<0.050	NA
A-2 (30-30.5')	30.0	09/27/05	**120**	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<25	ND<0.12	NA
A-2 (33.5-34')	33.5	09/27/05	**17**	ND<0.050	ND<0.050	**0.25**	**0.99**	ND<5.0	ND<0.025	NA
A-3 (5-5.5')	5.0	09/27/05	**0.27**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	**0.0050**	NA
A-3 (14.5-15')	14.5	09/27/05	**0.13**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-3 (19.5-20')	19.5	09/27/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-3 (23.5-24')	23.5	09/27/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-3 (26-26.5')	26.0	09/27/05	**220**	ND<1.0	ND<1.0	**4.5**	**18**	ND<100	ND<0.50	**8.5**

Soil Analytical Data
Former BP #11117
7210 Bancroft Ave., Oakland, CA

Soil Sample ID	Sample Depth (feet bgs)	Date Sampled	GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TBA (mg/kg)	MTBE (mg/kg)	Lead (mg/kg)
A-4 (5-5.5')	5.0	09/26/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-4 (15-15.5')	15.0	09/26/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-4 (19.5-20')	19.5	09/26/05	**0.44**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	NA
A-4 (23.5-24')	23.5	09/26/05	**490**	ND<1.0	**18**	**18**	**87**	ND<100	ND<0.0050	**11**
A-4 (31.5-32')	31.5	09/26/05	**5.1**	**0.15**	**0.088**	**0.24**	**1.1**	ND<5.0	**0.48**	NA
A-5 (5-5.5')	5.0	09/26/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-5 (10-10.5')	10.0	09/26/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-5 (15-15.5')	15.0	09/26/05	**0.34**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	**0.0085**	NA
A-5 (19.5-20')	19.5	09/26/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	**0.0053**	NA
A-5 (22-22.5')	22.0	09/26/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	**0.0058**	NA
A-5 (25-25.5')	25.0	09/26/05	**0.23**	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	**0.022**	**0.035**	NA
A-5 (30-30.5')	30.0	09/26/05	**1.3**	**0.0068**	**0.014**	**0.032**	**0.18**	ND<0.020	**0.015**	NA
A-5 (35-35.5')	35.0	09/26/05	**28**	**0.11**	**0.81**	**0.57**	**3.1**	ND<5.0	**0.030**	NA
A-7 (6-6.5')	6.0	11/03/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-7 (11-11.5')	11.0	11/03/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-7 (16-16.5')	16.0	11/03/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-7 (21-21.5')	21.0	11/03/05	ND<0.098	ND<0.0049	ND<0.0049	ND<0.0049	ND<0.0049	ND<0.020	ND<0.0049	NA
A-7 (25.5-26')	25.5	11/03/05	ND<25	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<50	**0.43**	NA
A-7 (36-36.5')	36.0	11/03/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	**0.0064**	NA

Soil Analytical Data
Former BP #11117
7210 Bancroft Ave., Oakland, CA

Soil Sample ID	Sample Depth (feet bgs)	Date Sampled	GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TBA (mg/kg)	MTBE (mg/kg)	Lead (mg/kg)
A-8 (6-6.5')	6.0	11/03/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-8 (11-11.5')	11.0	11/03/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-8 (15.5-16')	15.5	11/03/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-8 (21-21.5')	21.0	11/03/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-8 (25-25.5')	25.0	11/03/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-8 (30-30.5')	30.0	11/03/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-8 (36-36.5')	36.0	11/03/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-9 (6-6.5')	6.0	11/03/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-9 (11-11.5')	11.0	11/03/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-9 (16-16.5')	16.0	11/03/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-9 (21-21.5')	21.0	11/03/05	ND<0.098	ND<0.0049	ND<0.0049	ND<0.0049	ND<0.0049	ND<0.020	ND<0.0049	NA
A-9 (25-25.5')	25.0	11/03/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-9 (31-31.5')	31.0	11/03/05	ND<2.5	ND<0.050	ND<0.050	ND<0.050	ND<0.050	ND<5.0	**0.16**	NA
A-9 (36-36.5')	36.0	11/03/05	ND<0.099	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-10 (5.5-6')	5.5	11/07/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-10 (10.5-11')	10.5	11/07/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-10 (15.5-16')	15.5	11/07/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-10 (20.5-21')	20.5	11/07/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-10 (25.5-26')	25.5	11/07/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-10 (30.5-31')	30.5	11/07/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA
A-10 (35.5-36')	35.5	11/07/05	ND<0.10	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.020	ND<0.0050	NA

Soil Analytical Data
Former BP #11133
2220 98th Ave., Oakland, CA

Notes: All Samples analyzed by EPA Method 8260B. Di-isopropyl ether, 1,2-dibromoethane, 1,2-dichloroethane, ethyl tertiary butyl ether, tertiary amyl methyl ether and ethanol were not detected at or above their respective laboratory reporting limit.
Total lead analyzed by EPA Method 6000/7000 series for soil disposal purposes.

bgs = below ground surface
GRO = Gasoline range organics
TBA = tert-butyl alcohol
MTBE = Methyl tert-butyl ether
mg/kg = milligrams per kilogram
ND< = Not detected at or above stated laboratory reporting limit
NA = Not analyzed

Soil Boring Groundwater Analytical Data
Former BP #11117
7210 Bancroft Ave., Oakland, CA

Sample ID	DTW or Hydropunch screen interval (feet bgs)	Date Sampled	GRO (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	TBA (ug/L)	MTBE (ug/L)
A-1 (22.6')	22.6	09/27/05	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<20	ND<0.50
A-2 (21.3')	21.3	09/27/05	**510,000**	ND<250	ND<250	**7,200**	**29,000**	ND<10,000	ND<250
A-2 (40'-42')	40-42	09/27/05	**36,000**	**1,800**	**97**	**1,300**	**1,200**	ND<1,000	**110**
A-3 (19.4')	19.4	09/27/05	**25,000**	**12**	**43**	**500**	**1,900**	ND<500	ND<12
A-3 (34'-36')	34-36	09/27/05	**12,000**	**21**	**24**	ND<5.0	**130**	ND<200	**8.3**
A-4 (21.6')	21.6	09/26/05	**150,000**	**2,500**	**7,300**	**5,500**	**18,000**	ND<2,000	**820**
A-4 (34'-36')	34-36	09/26/05	**120,000**	**11,000**	**2,400**	**4,000**	**19,000**	ND<10,000	**39,000**
A-5 (19.5')	19.5	09/26/05	**790**	**10**	ND<2.5	**2.8**	**3.8**	**350**	**510**
A-8 (24.6')	24.6	11/03/05	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<20	ND<0.50
A-9 (24.2')	24.2	11/03/05	**68**	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<20	**20**
A-10 (25')	25	11/07/05	ND<50	ND<0.50	ND<0.50	ND<0.50	**0.50**	ND<20	ND<0.50
A-10 (39')	39	11/07/05	**51**	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<20	**27**

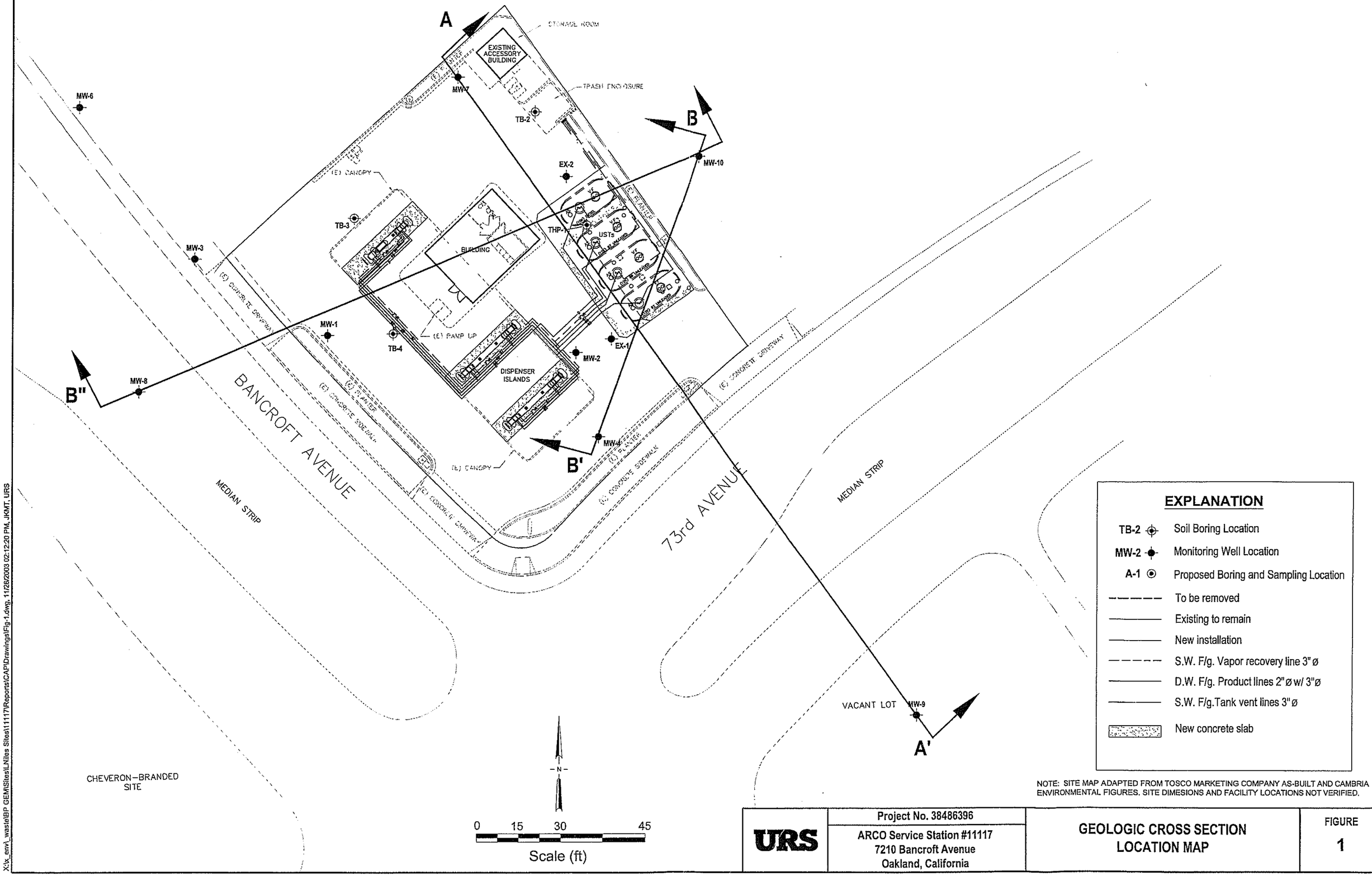
Soil Boring Groundwater Analytical Data
Former BP #11117
7210 Bancroft Ave., Oakland, CA

Notes: All Samples analyzed by EPA Method 8260B. Di-isopropyl ether, 1,2-dibromoethane, 1,2-dichloroethane, ethyl tertiary butyl ether, tertiary amyl methyl ether and ethanol were not detected at or above their respective laboratory reporting limit.
Total lead analyzed by EPA Method 6000/7000 series for soil disposal purposes.

DTW = Depth to water
bgs = below ground surface
GRO = Gasoline range organics
TBA = tert-butyl alcohol
MTBE = Methyl tert-butyl ether
ug/L = micrograms per liter
ND< = Not detected at or above stated laboratory reporting limit
NA = Not analyzed

APPENDIX C.

GEOLOGIC CROSS SECTIONS



EXPLANATION

- TB-2 — Soil Boring Location
- MW-2 — Monitoring Well Location
- A-1 — Proposed Boring and Sampling Location
- To be removed
- Existing to remain
- New installation
- S.W. F/g. Vapor recovery line 3" ø
- D.W. F/g. Product lines 2" ø w/ 3" ø
- S.W. F/g.Tank vent lines 3" ø
- New concrete slab

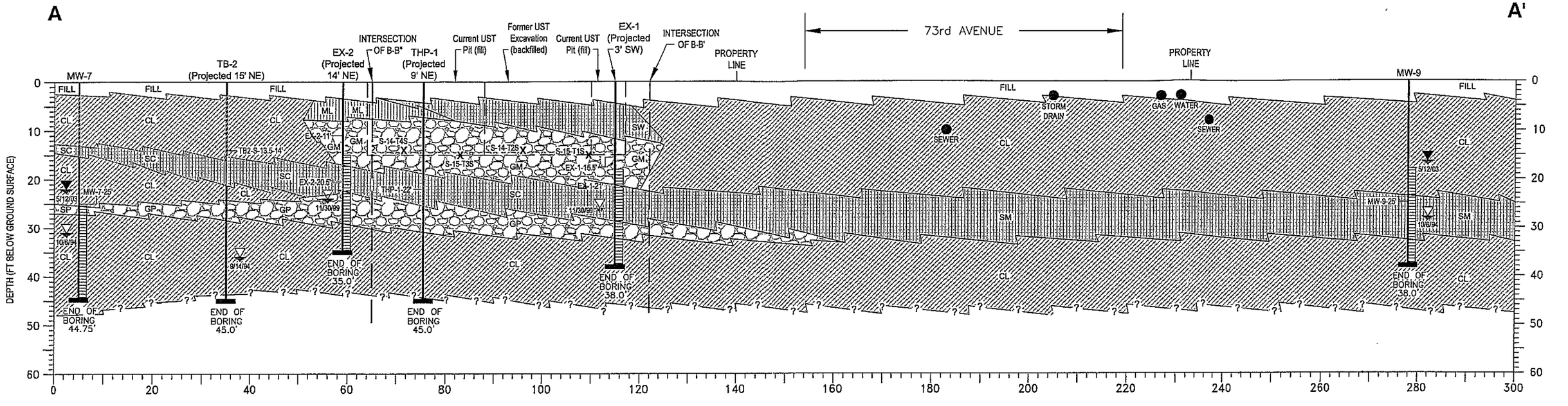
NOTE: SITE MAP ADAPTED FROM TOSCO MARKETING COMPANY AS-BUILT AND CAMBRIA ENVIRONMENTAL FIGURES. SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

URS	Project No. 38486396 ARCO Service Station #11117 7210 Bancroft Avenue Oakland, California	GEOLOGIC CROSS SECTION LOCATION MAP	FIGURE 1

X:\x_env_waste\BP GEM\Sites\LNiles Sites\11117\Reports\CAP\Drawings\Fig-1.dwg, 11/26/2003 02:12:20 PM, JKMT, URS

NORTHWEST
A

SOUTHEAST
A'



SOIL CONCENTRATIONS (ppm)				
Sample ID	Date	TPH-g	Benzene	MTBE
EX-2-11	11/30/99	ND<1.0	ND<0.005	0.012
EX-2-20.5	11/30/99	ND<1.0	ND<0.005	ND<0.005
EX-1-15.5	11/30/99	ND<1.0	ND<0.005	0.011
EX-2-21	11/30/99	ND<1.0	ND<0.005	ND<0.005
MW-7-25	10/6/94	ND<1.0	ND<0.005	--
MW-9-25	10/6/94	ND<1.0	ND<0.005	--
S-14-T4S	8/14/98	ND	ND	0.028
S-15-T3S	8/14/98	ND	ND	0.065
S-14-T2S	8/14/98	3.7	ND	0.055
S-15-T1S	8/14/98	5,300	ND	ND
TB2-S-13.5-14	9/14/94	ND	ND	ND
THP-1-22	9/14/94	ND	ND	ND

LEGEND

CL	Gravelly clays, sandy clays, silty clays, lean clays
ML	Silts and very fine sands
SW-SM, SC	Gravelly and/or silty to clayey sand
GP-GM	Sandy and/or silty gravel
MW-3	Well or Soil Boring Number Distance and Direction of Projection
CL	Soil Type using the Unified Soil Classification System
	Analyzed Soil Sample
5/12/03	Static water level/date
10/6/94	First encountered water/date
END OF BORING 40.0'	Total depth of boring
THP-1-22'	Soil sample analytical results with TPH-g, Benzene, and MTBE concentrations in milligrams per kilogram (mg/kg) shown on table

Utility information provided by PG&E, EBMUD, and City of Oakland

0 10 20 40
Scale (ft)

URS	Project No. 38486396 Former BP Service Station #11117 7210 Bancroft Avenue Oakland, California	GEOLOGIC CROSS SECTION A - A'	FIGURE 2

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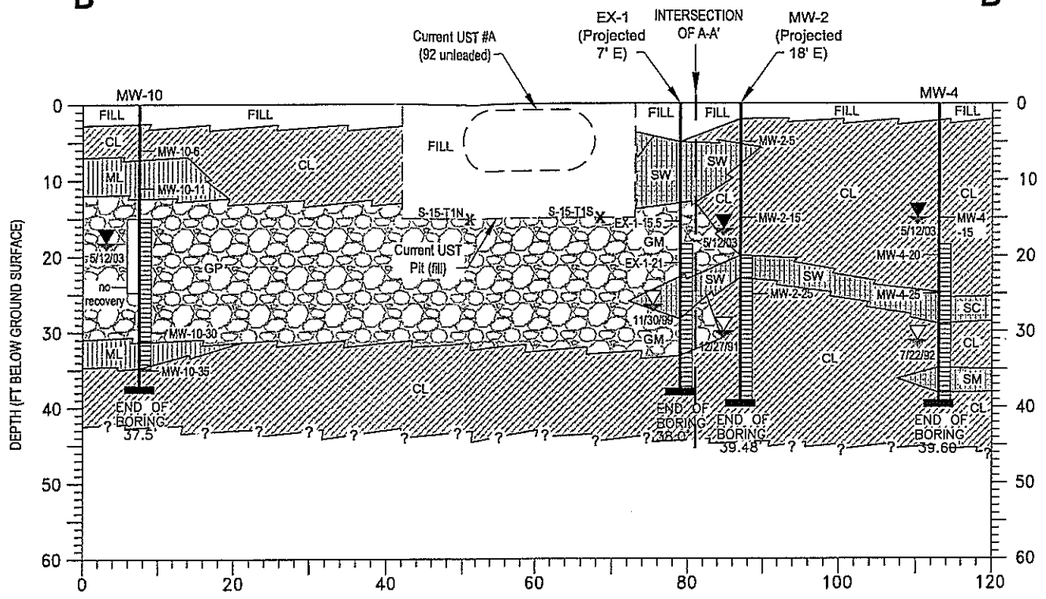
NORTH-NORTHEAST **B**

SOUTH-SOUTHWEST **B'**



SOIL CONCENTRATIONS (ppm)				
Sample ID	Date	TPH-g	Benzene	MTBE
EX-1-15.5	11/30/99	ND<1.0	ND<0.005	0.011
EX-1-21	11/30/99	ND<1.0	ND<0.005	ND<0.005
MW-2-5	12/27/91	ND	ND	ND
MW-2-15	12/27/91	ND	ND	ND
MW-2-25	12/27/91	ND	ND	ND
MW-4-15	7/22/92	240	ND	--
MW-4-20	7/22/92	6,000	34	--
MW-4-25	7/22/03	1,100	1.6	--
MW-10-6	--	ND<0.1	ND<0.001	ND<0.1
MW-10-30	--	ND<0.1	ND<0.001	ND<0.1
MW-10-35	--	ND<0.1	ND<0.001	ND<0.1
S-15-T1N	8/14/98	480	0.4	1.6
S-15-T1S	8/14/98	5,300	ND	ND

LEGEND

CL	Gravelly clays, sandy clays, silty clays, lean clays
ML	Silts and very fine sands
SW-SM, SC	Gravelly and/or silty to clayey sand
GP-GM	Sandy and/or silty gravel
MW-4	Well or Soil Boring Number Distance and Direction of Projection
CL	Soil Type using the Unified Soil Classification System
	Analyzed Soil Sample
5/12/03	Static water level/date
10/6/94	First encountered water/date
END OF BORING 40.0'	Total depth of boring
THP-1-2Z	Soil sample analytical results with TPH-g, Benzene and MTBE concentrations in milligrams per kilogram (mg/kg) shown on table

0 10 20 40

Scale (ft)

URS	Project No. 38486396 Former BP Service Station #11117 7210 Bancroft Avenue Oakland, California	GEOLOGIC CROSS SECTION B - B'	FIGURE 3

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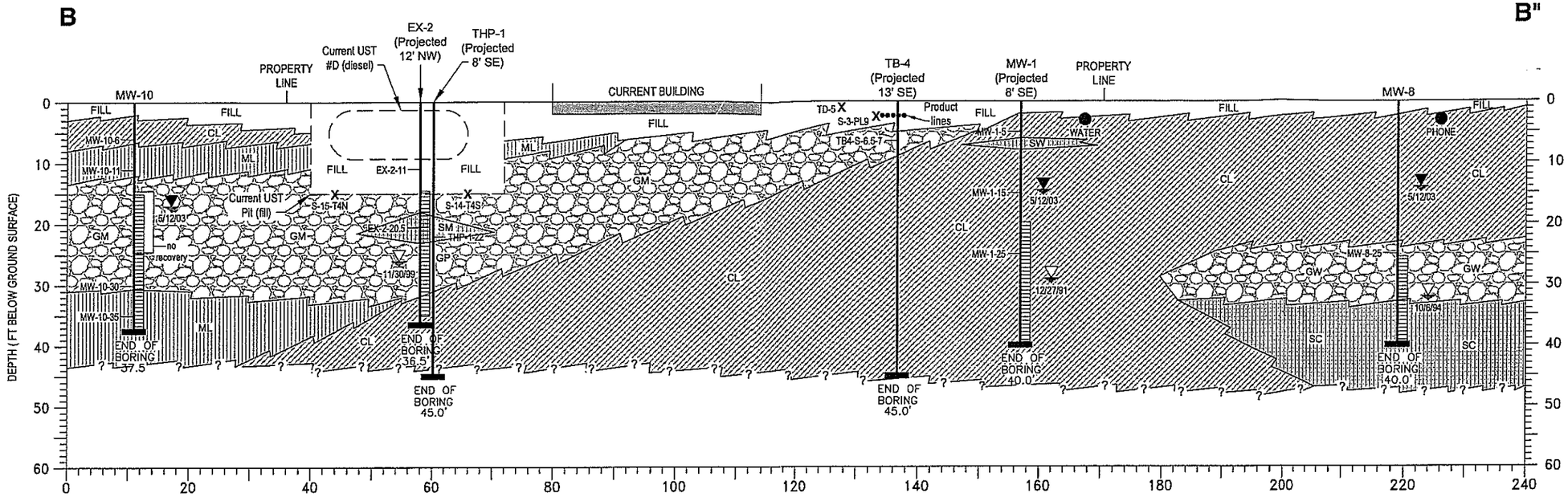
EAST-NORTHEAST
B

WEST-SOUTHWEST
B"



SOIL CONCENTRATIONS (ppm)				
Sample ID	Date	TPH-g	Benzene	MTBE
EX-2-11	11/30/99	ND<1.0	ND<0.005	ND<0.005
EX-2-20.5	11/30/99	ND<1.0	ND<0.005	ND<0.005
MW-1-5	12/27/91	ND	ND	ND
MW-1-15	12/27/91	ND	ND	ND
MW-1-25	12/27/91	ND	ND	ND
MW-8-25	10/6/94	ND<1.0	--	--
MW-10-6	7/7/97	ND<1.0	--	--
MW-10-11	7/7/97	ND<1.0	--	--
MW-10-30	7/7/97	ND<1.0	--	--
MW-10-35	7/7/97	ND<1.0	--	--
S-3-PL9 (proj. 8' NW)	8/14/98	ND	ND	ND
S-14-T4S	8/14/98	ND	ND	0.028
S-15-T4N	8/14/98	ND	ND	0.26
TB4-S-6.5-7	9/14/94	ND	ND	ND
TD-5 (proj. 14' NW)	9/8/94	ND	ND	ND
TPH-1-22	9/8/94	ND	ND	ND

LEGEND

CL	Gravelly clays, sandy clays, silty clays, lean clays
ML	Silts and very fine sands
SW-SM, SC	Gravelly and/or silty to clayey sand
GP-GM	Sandy and/or silty gravel
MW-1	Well or Soil Boring Number Distance and Direction of Projection
CL	Soil Type using the Unified Soil Classification System
	Analyzed Soil Sample
5/12/03	Static water level/date
10/5/94	First encountered water/date
	Total depth of boring
THP-1-22'	Soil sample analytical results with TPH-g, Benzene and MTBE concentrations in milligrams per kilogram (mg/kg) shown on table

Utility information provided by PG&E, EBMUD, and City of Oakland

0 10 20 40
Scale (ft)

URS	Project No. 38486396 Former BP Service Station #11117 7210 Bancroft Avenue Oakland, California	GEOLOGIC CROSS SECTION B - B"	FIGURE 4

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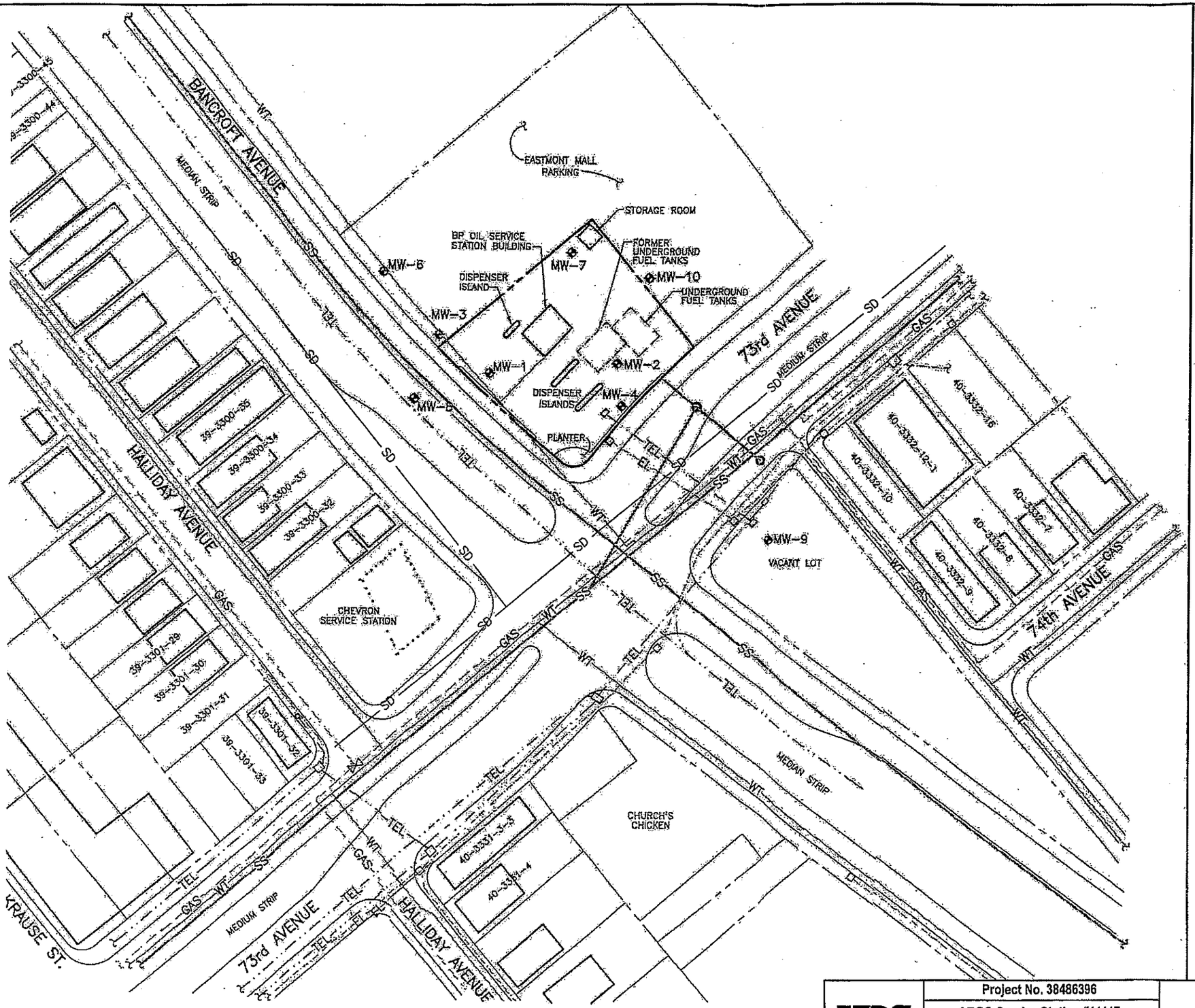
APPENDIX D.

UNDERGROUND UTILITIES SITE MAP



EXPLANATION

- Monitoring Well Location
- Assessor's Parcel Number
- Drop Inlet Grate
- Manhole
- Above Ground Transformer
- Television Cable Vault
- SSCOO Sanitary Sewer Cleanout
- Fire Hydrant
- Valve
- Power Pole

UNDERGROUND UTILITY LINES

- SS — Sanitary Sewer Pipe
- SD — Storm Drain Pipe
- WT — Water Service Pipe
- GAS — Gas Pipe
- EL — Electrical Line
- TEL — Telephone Line
- TCL — Television Cable Line
- Unknown Destination
- End Of Pipe
- (?) Invert Elevation Relative To Bench Mark

NOTE:

Location of utilities are approximate and based upon information provided at the time of preparation. This map is not to be used for any construction or related activities.

N

0 40 80 120

Scale (ft)

NOTE: SITE MAP ADAPTED FROM ALISTO ENGINEERING GROUP FIGURES.
SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

SOURCE: Pacific Gas and Electric Company, Pacific Bell, East Bay Municipal Utility District, City Of Oakland, Alameda County Assessor's Office.

URS	Project No. 38486396 ARCO Service Station #11117 7210 Bancroft Avenue Oakland, California	UTILITIES SITE MAP

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APPENDIX E.

STANDARD CONE PENETROMETER TESTING PROCEDURES
(US EPA EXPEDITED SITE ASSESSMENT GUIDELINES, CHAPTER V)

In Situ Measurements Using Specialized Direct Push Probes

In addition to collecting samples of soil, soil-gas, and groundwater/NAPL samples, specialized DP probes are also available for collecting *in situ* geophysical, geochemical, and geotechnical measurements of subsurface conditions. Because these methods record vertical profiles, they are often called logging instruments. They provide objective information, but the interpretation of measurements may still be subjective, requiring correlation with actual samples. Information that can be collected with these tools includes stratigraphy, depth to groundwater, approximate hydraulic conductivity, and residual and free product location.

Cone penetrometer testing (CPT) is the most common method for collecting *in situ* measurements. In addition, several recent innovations have adapted some logging methods to other DP rigs. The following section discusses CPT and other logging tools currently available with DP rigs. The growth of this technology is very rapid; there are likely to be many new tools in the near future.

Cone Penetrometer Testing

CPT is a method for characterizing subsurface stratigraphy by testing the response of soil to the force of a penetrating cone. It was developed in the 1920s in Holland by the geotechnical industry and became commercially available in the United States in the early 1970s.

CPT is most commonly performed to depths ranging from 50 to 100 feet; however, depths as great as 300 feet are attainable under ideal conditions (*e.g.*, soft, unconsolidated sediments). Typically, 100 to 300 feet of CPT can be performed per day if the decontamination of probe rods (also referred to as cone rods when used with CPT) and the sealing of holes are necessary; productivity can be doubled when this is not necessary. Production rates can be significantly less if site access is limited or if significant soil, soil-gas, or groundwater sampling is performed.

Traditionally, CPT methods have been used less frequently at sites where investigation depths are less than 40 feet because CPT cones have been pushed with heavy, poorly-maneuverable rigs. Recently, lighter, more maneuverable DP rigs have become available to advance CPT cones. This innovation should make CPT more cost-effective for investigating sites that may have contamination located closer to the surface.

CPT uses sensors mounted in the tip or "cone" of the DP rods to measure the soil's resistance to penetration. The cone, presented in Exhibit V-14, is pushed through the soil at a constant rate by a hydraulic press mounted in a heavy truck or other heavy weight.

Several types of sensors are commonly available with CPT cones. These include piezometric head transducers (piezocones), resistivity sleeves, nuclear logging tools, and pH indicators. Most recently, CPT cones have incorporated sensors to measure the type and location of petroleum hydrocarbons in the subsurface (*e.g.*, laser induced fluorescence, fuel fluorescence detector). The electronic signals from the sensors are transmitted through electrical cables which run inside the cone rods and to an on-board computer at the ground surface, where they are processed. CPT cones can often measure several parameters simultaneously. An example of a CPT log with multiple parameters is presented in Exhibit V- 15.

DP rigs that perform CPT can also be used to collect soil, soil-gas, and groundwater samples. In fact, some CPT cones allow the collection of soil-gas or groundwater samples without removing the cone from the hole. Collection of soil samples (and in many cases groundwater samples as well) with CPT, however, currently requires the attachment of DP sampling tools in place of the CPT cone. Because removing cone rods and inserting DP sampling tools is time consuming, most CPT contractors will first advance a CPT hole to define the stratigraphy, then advance another DP hole a few feet away to collect soil or groundwater samples.

The following text describes the cones that are available only with CPT and is followed by a section which describes *in situ* logging tools available for both CPT and other DP systems.

Three-Channel Cone

The most common type of CPT cone is referred to as a three-channel cone because it simultaneously measures the tip resistance, sleeve resistance, and inclination of the cone. The ratio of sleeve resistance to tip resistance, which is referred to as the friction ratio, is used to interpret the soil types encountered (Chiang *et al.*, 1992). In general, sandy soils have high tip resistance and low friction ratios, whereas clayey soils have low tip resistance and higher friction ratios. As a result, this information can also be used to estimate the hydraulic conductivity of sediments. With the use of the other CPT channels, stratigraphic layers as thin as 4 inches can be identified.

Exhibit V-14
Components Of CPT Piezocone

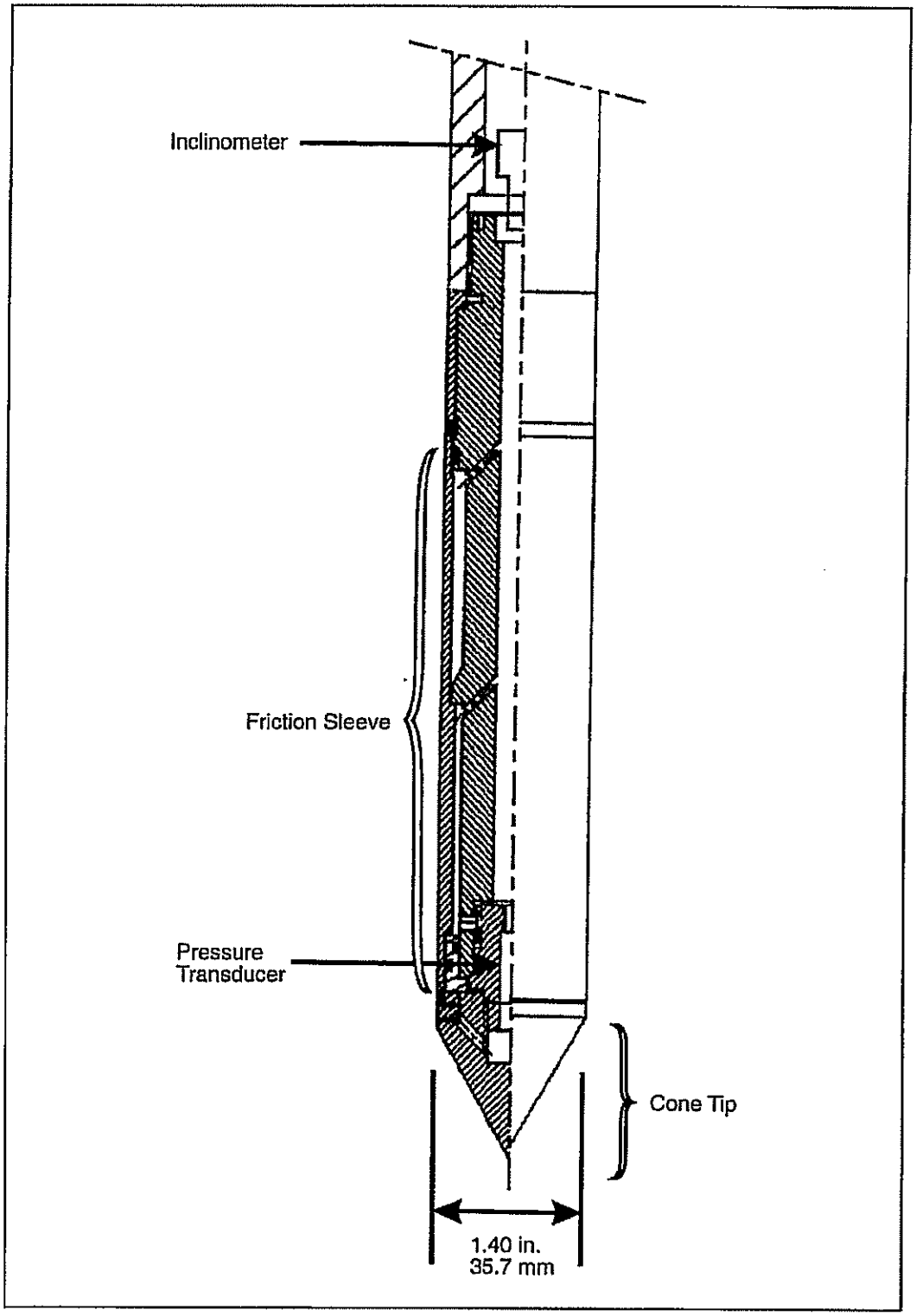
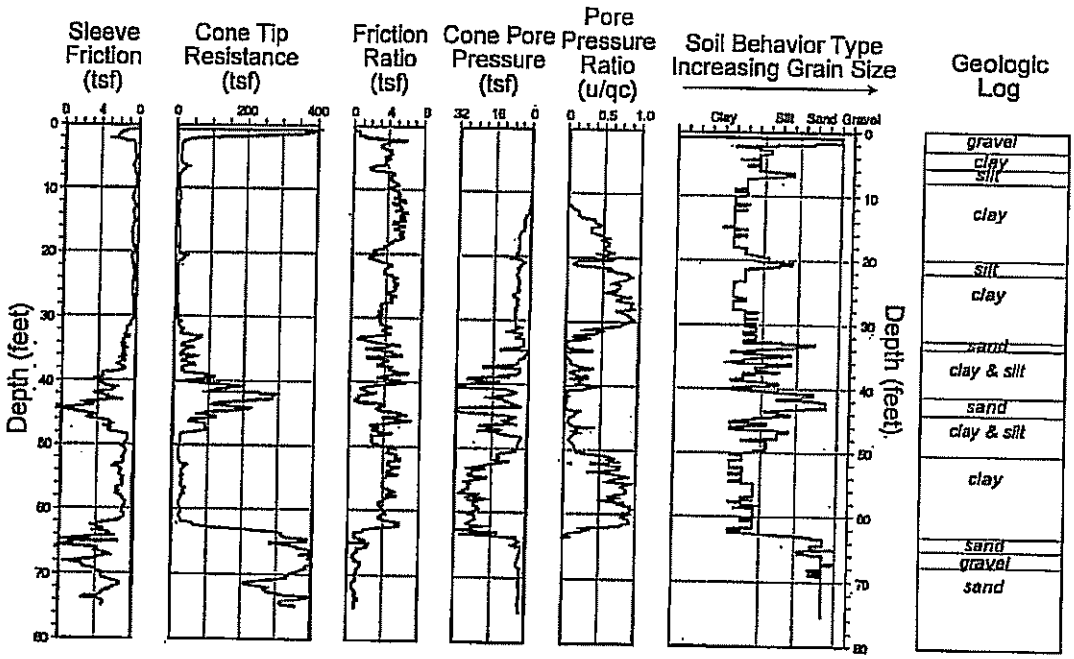
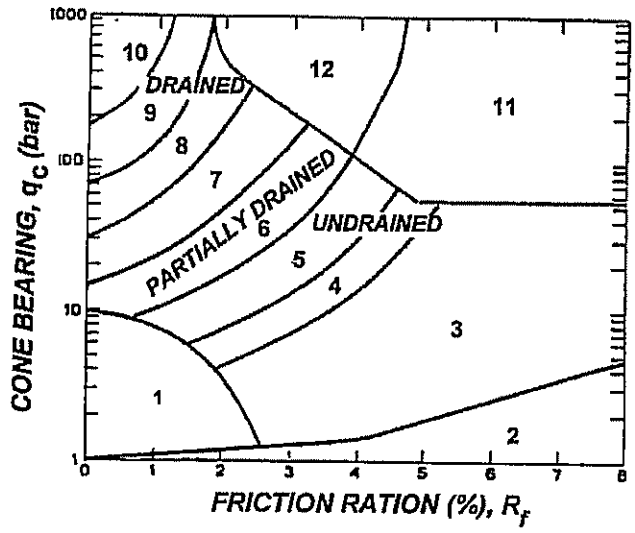


Exhibit V-15
Example CPT Data



Source: Berzins, 1993[1]

Exhibit V-16
CPT Soil Behavior Types



Zone	Soil Behavior Types
1	Sensitive fine grained
2	Organic material
3	Clay
4	Silty clay to clay
5	Clayey silt to silty clay
6	Sandy silt to clayey silt
7	Silty sand to sandy silt
8	Sand to silty sand
9	Sand
10	Gravelly sand to sand
11	Very stiff to fine grained
12	Sand to clayey sand

Source: Berzins, 1993[1]

[1]*Reprinted by permission of the National Ground Water Association, Westerville, Ohio. Copyright 1993. All rights reserved.*

Three-channel cones record soil behavior rather than actual soil type because in addition to grain size, the soil's degree of sorting, roundness, and mineralogy can also influence tip resistance. As a result, a boring log may help in the interpretation of CPT data for site-specific conditions. In general, soil behavior type correlates well with soil type. An empirically produced plot of friction ratios and soil behavior types is presented in Exhibit V-16.

The inclinometer mounted in the three-channel cone provides a measurement of the inclination of the cone from vertical. Rapid increases in inclination indicate that the rods are bending, allowing the CPT operator to terminate the sounding (*i.e.*, cone penetrometer test) before the cone and/or rods are damaged.

Piezocone

The piezocone is similar to the three-channel cone, described above, except that a pressure transducer is also mounted in the cone (previously presented in Exhibit V-14) in order to measure water pressure under dynamic and static conditions. Pore-pressure dissipation tests can be performed by temporarily halting advancement of the tool and letting the pore pressure reach equilibrium. The slope of a plot of pore pressure versus time is proportional to the permeability of the soil and can be used to estimate hydraulic conductivity and define the water table.

Geophysical And Geochemical Logging Probes

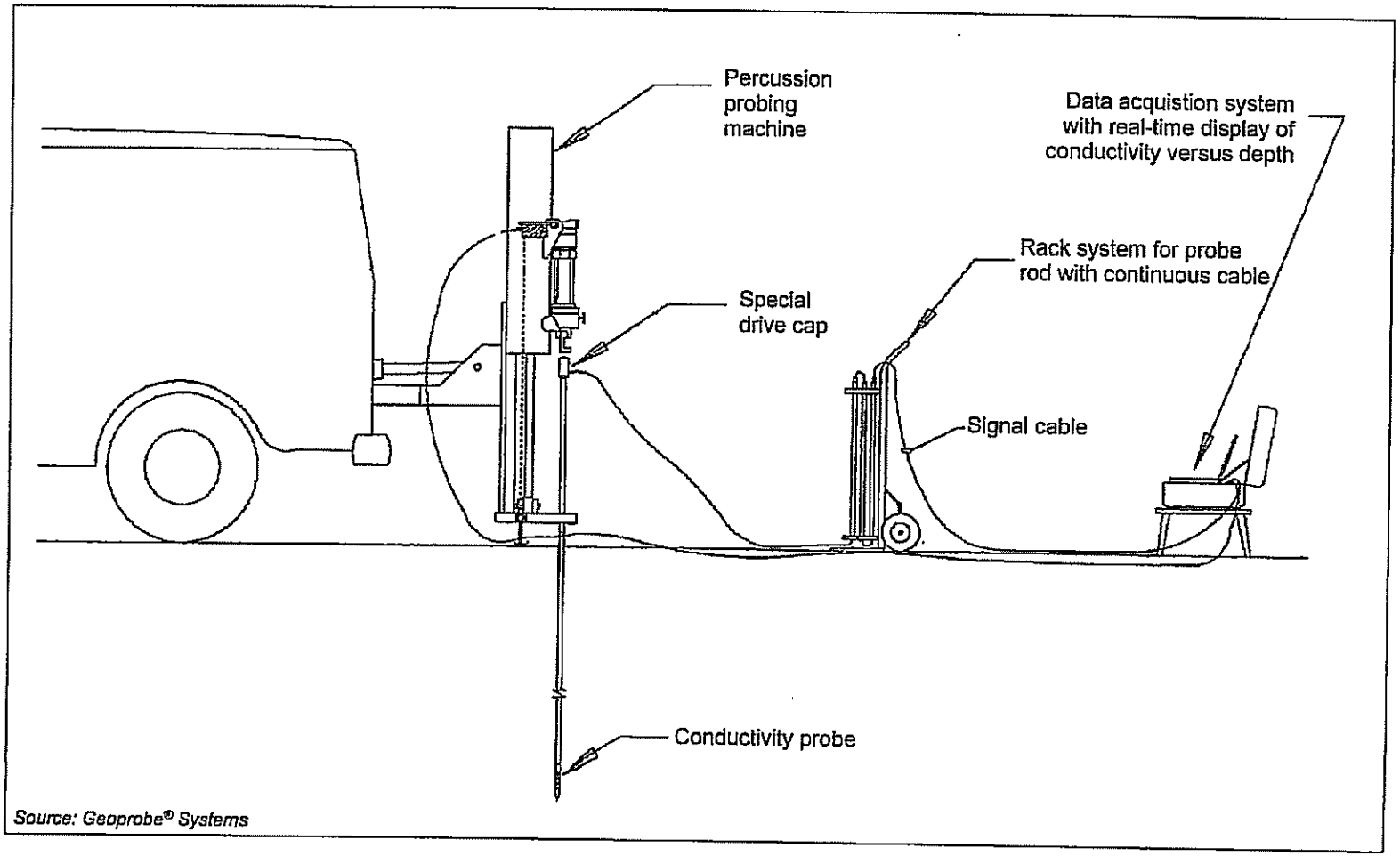
Logging probes are continually being developed for both CPT rigs and other DP probing equipment. The following section describes probes that are available for use with DP technologies in general. Information provided by these probes can be used to interpret site stratigraphy, moisture conditions, and in some cases, contaminant type and distribution.

Conductivity Probes

Conductivity probes measure the electrical conductivity of the subsurface sediments. Conductivity probes are available with CPT probes and, more recently, with small 1-inch diameter DP systems (Christy, 1994). Components of a small-diameter conductivity probe system are depicted in Exhibit V-17.

Because clay units commonly have a greater number of positively charged ions than sand units, clay layers can typically be defined by high conductivity and

Exhibit V-17
Small-Diameter Direct Push Conductivity Probe



Source: Geoprobe® Systems

sand by low conductivity. These measurements, however, must be correlated with other logging information because conductivity may be the result of other conditions (*e.g.*, moisture content, soil density, mineral content, contaminants). Groundwater tends to increase the electrical conductivity of sediments. Consequently, the zone of saturation may be discernible in logging data if the water table is located in a known resistive layer (*e.g.*, sand) and the contrast is sharp. In a similar way, conductivity measurements may occasionally indicate hydrocarbon contamination if a significant quantity of residual or free product is located in a conductive layer (*e.g.*, clay) because hydrocarbons are resistive (*i.e.*, poorly conductive).

Nuclear Logging Tools

Nuclear logging tools are geophysical instruments that either detect natural radiation of a formation or emit radiation and measure the response of the formation. They have an advantage over other geophysical methods in being able to record usable data through metal casings. Nuclear logging tools can be advanced with DP probes to define the site stratigraphy, groundwater conditions, and, occasionally, subsurface contaminant distribution. They can be used with CPT cones, some small diameter probe rods, and inside of the outer drive casing of cased DP systems. There are primarily three nuclear methods--natural gamma, gamma-gamma, and neutron.

Natural gamma tools log the amount of natural gamma particles emitted by sediments. Because clays typically have a greater number of ions than sands, clays tend to have more radioactive isotopes that emit gamma radiation. By logging the change in gamma radiation, it is often possible to characterize the site stratigraphy. Gamma-gamma tools emit gamma radiation and measure the response of the formation. Because the response is related to the density of the soil, this method can also provide information about the stratigraphy as well as the porosity of soil. Neutron methods emit neutrons into a sediment and measure a response which is dependent on the moisture content. These methods can, therefore, be used to define the water table. In addition, if the stratigraphy and moisture conditions are defined with other methods, neutron logs can indicate the presence and thickness of free-phase petroleum hydrocarbons. A complete discussion of geophysical logging is presented in Keys (1989).

Chemical Sensors

Chemical sensors provide screening level analysis of petroleum hydrocarbons at a specific depth, without removing a soil or groundwater sample. When used over an extended area, they can rapidly provide a 3-dimensional characterization of the contaminant source area. There are several *in situ* chemical

sensors that have recently been developed for use with DP technologies, and more may be available in the near future. Currently available methods are laser-induced fluorescence (LIF), fuel fluorescence detectors (FFD), and semipermeable membrane sensors. These three methods are discussed in more detail in Chapter VI, Field Methods For The Analysis Of Petroleum Hydrocarbon.

Discussion And Recommendations

In situ logging methods are ideal for heterogeneous sites with complex geology because they can rapidly provide continuous profiles of the subsurface stratigraphy. In addition, unlike boring logs, these logging methods provide an independent, objective measurement of the site stratigraphy. When *in situ* logging methods are used in combination with boring logs, data can be used to extrapolate/interpolate geologic units across a site. If boring log information is not available, several *in situ* logging parameters collected simultaneously will often provide similar information.

Investigators should be aware that *in situ* logging methods should generally be calibrated by pushing a probe next to at least one boring that has been continuously cored. In addition, while geophysical logging methods for defining stratigraphy produce reliable information about the primary lithology of the strata, they provide very little data regarding secondary soil features like desiccation cracks, fractures, and root holes. In silts and clays, these secondary soil features (*i.e.*, macropores) may control the movement of contaminants into the subsurface and may greatly influence the options for active remediation. At interbedded sites where defining macropores is important, continuous soil coring may be a better alternative. Exhibit V-18 presents a summary of *in situ* logging equipment used with DP technologies.

Exhibit V-18
Summary Of *In Situ* Logging Equipment Used With Direct Push Technologies

	DP Method	Application
Three-Channel Cone	CPT Only	Measures tip resistance, sleeve resistance, and inclination. It is used to determine soil behavior types which can be correlated with boring logs.
Piezocone	CPT Only	Measures the rate at which the water pressure returns to static conditions and can be used to estimate hydraulic conductivity and define the water table.
Conductivity Probe	DP	Measures the conductivity of stratigraphic layers and can be used in conjunction with other methods to determine soil type and, sometimes, contaminant location.
Natural Gamma	DP	Measures the natural gamma radiation emitted by a formation and can be used to determine stratigraphy
Gamma-Gamma	DP	Measures the response of a formation to gamma radiation and can be used to determine soil density/porosity.
Neutron Probes	DP	Measures the response of a formation to neutron bombardment and can be used to determine moisture content of soils.
Chemical Sensors	DP	Measures the presence of free or residual product and can be used to delineate source areas.

CPT = Available with cone penetrometer testing equipment only
DP = Available with CPT and other direct push equipment