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SITE CONCEPTUAL MODEL UPDATE

FOURTH QUARTER 2005

ARCO STATION 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA
LARWQCB FILE NO. 907440407
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1.0 INTRODUCTION

SECOR International Incorporated (SECOR), on behalf of the Atlantic Richfield Company (Atlantic Richfield), presents this *Site Conceptual Model Update (SCMU)* for ARCO Station No. 1054 (Site) located at 980 West Pacific Coast Highway in the City of Wilmington (Figures 1 and 2). This report was prepared in response to the Los Angeles Regional Water Quality Control Board (LARWQCB) letter dated March 11, 2002 titled *Implementation of Final Draft Guidelines for the Investigation and Cleanup of MTBE and Other Oxygenates* (Appendix A). The LARWQCB assigned the Site an investigation and cleanup priority of B1.

The Priority Class B1 was assigned based upon the proximity of the receptor Well No. 04S/13W-30K01S, located approximately 2,500 feet northwest from the Site.

On August 26, 2002, Atlantic Richfield entered into a Final Judgment Pursuant to Stipulation, The People of the State of California (plaintiff) versus Atlantic Richfield Company (defendant), for ARCO 1054.

The previous SCMU has been updated to include the following phases of work completed during the Fourth Quarter 2005:

- Fourth Quarter 2005 groundwater monitoring and sampling; and
- Biweekly oxygen diffusion system maintenance

SECOR has prepared this report to present a detailed written and graphical description of the Site characteristics and known distribution of petroleum hydrocarbon constituents in soil and groundwater beneath the Site. The SCMU is based on currently available information.

2.0 SITE INFORMATION

2.1 Site Location and Description

The Site is located at 980 West Pacific Coast Highway in Wilmington, a community within the city of Los Angeles, California (Figures 1 and 2). ARCO Station No. 1054 is an active gasoline service station and am/pm™ mini-mart located on the southeast corner of West Pacific Coast Highway and Wilmington Boulevard. The Site is located at an elevation of approximately 37 feet above mean sea level (msl). The local topography slopes gently to the southeast in the vicinity of the Site. The Site is roughly square in shape with approximately 125 feet fronting Wilmington Boulevard and approximately 135 feet fronting West Pacific Coast Highway. Four 10,000-gallon capacity double-wall fiberglass underground storage tanks (USTs) containing variable grades of unleaded gasoline are located in the southwest portion of the Site. Two dispenser islands containing one pump each are located to the north of the existing USTs and two dispenser islands containing one pump each are located in the northeast portion of the Site. A mini-mart is located in the central portion of the Site. Gasoline USTs were formerly located to the east of the existing mini-mart building (Figure 3).

2.2 Site Vicinity Land Use

Properties in the vicinity of the Site are zoned by the City of Los Angeles for general commercial (C-3) and single family residential (R-1). Mobil Oil Station (United Oil Company Station #07) is located

approximately 100 feet northwest of the Site on the northwest corner of West Pacific Coast Highway and Wilmington Boulevard. Mobil Oil Station is an active LARWQCB case file #907440343. Weekly liquid-phase hydrocarbons (LPH) removal activities and quarterly groundwater monitoring, sampling, and reporting has been conducted at the Mobil Oil property since the First Quarter 2000 (ATLAS, 2002). Laboratory results of groundwater samples analyzed during Fourth Quarter 2005 from the United Oil property identified maximum concentrations of 85,000 micrograms per liter (µg/L) total petroleum hydrocarbons characterized as gasoline (TPHg), 3,100 µg/L benzene, 25,000 µg/L methyl tertiary butyl ether (MTBE), and 3,300 µg/L tertiary butanol (TBA) (FREY, 2005). A Site vicinity map is provided as Figure 2.

2.3 Previous Site Investigations

In March 1989, integrity tests were conducted on the three 12,000-gallon, single-walled fiberglass gasoline USTs and associated piping. All components passed the integrity tests and were certified tight (ENSR, 1990).

On March 8, 1990, three vadose zone monitoring wells (MW1 through MW3) were installed to depths ranging from 20 to 40.5 feet below ground surface (bgs) near the location of the USTs as part of a Leak Detection Investigation. Soil samples were analyzed for gasoline range total petroleum hydrocarbons (TPHg) according to Environmental Protection Agency (EPA) method 8015M and for benzene, toluene, ethylbenzene, and total xylenes (collectively BTEX) according to EPA method 8020. No hydrocarbon concentrations were detected above laboratory detection limits in any soil sample analyzed (ENSR, 1990). Historical soil analytical data is provided in Table 1.

In October and November, 1991, EA Engineering, Science, and Technology (EA) conducted a soil vapor contaminant assessment at the Site, pursuant to the request of Atlantic Richfield. The purpose of the investigation was to assess the distribution and extent of residual petroleum hydrocarbons in the subsurface soil at the Site. Shallow soil vapor samples were collected at 21 locations, at depths between five and 15 feet bgs. Vapor sampling points (V1 through V21) were installed in the vicinities of the UST area (east side of property) and the pump islands. The soil vapor assessment identified detectable hydrocarbon concentrations in the subsurface soil vapor at the northern end of the UST area and the southern end of the western pump island. The maximum total volatile hydrocarbons (TVH) concentration was identified in vapor point V5 (installed in the northern vicinity of the UST area) at a depth of 10 feet bgs as 6,748 parts per million (EA, 1991). Historical soil vapor analytical data is provided in Table 2.

On May 26, 1992, EA installed two angle (25 degree) soil borings (EA-1 and EA-2) in the UST area to approximately 55 feet bgs. Total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) was not identified above the laboratory reporting limits (LRL) in the soil samples collected from EA-1 or EA-2 (EA, 1992).

On December 8, 1992, W. W. Irwin (Irwin) installed one soil boring (B-1) in the area of the proposed new UST location to a total depth of 21.5 feet bgs. TPHg was not identified above the laboratory reporting limits in the soil samples collected from B-1 (Irwin, 1992).

On December 30, 1992, wells MW1 through MW3 were abandoned from around the perimeter of the UST area, prior to excavation work to remove the USTs (Irwin, 1993a).

On January 14, 1993, three 12,000-gallon single-walled fiberglass USTs and associated product piping was removed during tank replacement operations. The excavation for the removed USTs encompassed an area approximately 25 feet wide by 80 feet long by 15 feet deep. Nine soil samples (TK1 through TK9) were collected below the ends and center of the UST inverts at approximately 14.5 feet bgs. The maximum TPHg concentration was identified as 290 milligram per kilogram (mg/kg; TK-7) and the maximum benzene concentration was identified as 0.066 mg/kg (TK-7). Eight soil samples (DSP-1 through DSP-8) were collected beneath the fuel dispensers. Thirteen soil samples (PL-1 through PL-13) were collected along the product lines. The maximum TPHg concentration was identified as 5,600 mg/kg (DSP-7) and the maximum benzene concentration was identified as 19 mg/kg (PL-1). Approximately 750 cubic yards of material (pea gravel) was removed from the UST excavation and from beneath the fuel dispensers and product lines and transported to a recycling facility for proper disposal (Irwin, 1993b).

In July 1993, seven soil borings (W-1 through W-6, and B-4) were installed to determine the vertical and lateral extent of hydrocarbon-impacted soil. Soil borings W-1, W-2, W-3, W-5, and W-6 were converted to SVE wells and installed to total depths of 20, 15, 10, 15, and 20 feet bgs, respectively. The maximum TPHg concentration was identified as 30 mg/kg in boring W-5 at 10 feet bgs. The maximum benzene concentration was identified as 1.05 mg/kg in boring W-6 at five feet bgs (Irwin, 1993c).

In January 2001, SECOR provided oversight for the removal and replacement of the dispensers and associated product piping at the Site. Eight dispensers (D-1 through D-8) and associated product piping were excavated and removed, as well as exposing the top of the USTs for installation of collars and sumps. Following removal of the dispenser islands and product lines, SECOR collected a total of eight soil samples beneath the product dispensers and three soil samples beneath the product piping. Analytical results identified maximum concentrations of TPHg in soil sample D-6-3' at 580 mg/kg, benzene in soil sample D-6-3' at 2.6 mg/kg, and MTBE in soil sample D-7-3' at 15 mg/kg (SECOR, 2001).

In November 2001, SECOR conducted a site assessment to delineate the lateral and vertical extent of petroleum hydrocarbons at the Site. Four soil borings were installed and converted to groundwater monitoring wells (GMW-1 through GMW-4) and four 25° angle soil borings were installed and converted to SVE wells (SVE-1 through SVE-4). Groundwater was encountered at approximately 60 feet bgs. Analytical results identified maximum concentrations of TPHg in soil sample SVE-2-15 at 1,700 mg/kg, MTBE in soil sample SVE-1-15 at 36 mg/kg, and benzene was not detected above the LRL (SECOR, 2002b).

The Site was transferred from the Los Angeles Fire Department (LAFD) to the LARWQCB on February 27, 2002 and opened as active case file #907440407 on March 11, 2002.

In July 2002, SECOR installed two additional on-Site groundwater monitoring wells (GMW-5 and GMW-6) and four off-Site groundwater monitoring wells (GMW-7 through GMW-10) to further delineate petroleum hydrocarbon-impacted soil and groundwater. Groundwater was encountered during drilling at depths ranging between 55 and 60 feet bgs. Analytical results identified a maximum MTBE concentration in soil sample GMW-10-55 at 0.014 mg/kg. Benzene and TPHg were not detected above the LRL in any of the soil samples collected (SECOR, 2002c).

In October 2002, SECOR installed three dual-nested SVE/groundwater wells (SVE-5A/B through SVE-7A/B). The wells were installed to perform a SVE test and determine the feasibility of using SVE technology to mitigate petroleum hydrocarbons in soil at the Site. Analytical results identified a maximum MTBE

concentration in soil sample SVE-7-15 at 2.7 mg/kg. Benzene and TPHg were not detected above the LRL in any of the soil samples collected. Polynuclear Aromatic Hydrocarbons (PAHs) were not detected above the LRL in any of the soil samples collected (Table 3).

In October 2002, SECOR performed a SVE feasibility test using wells SVE-5A, SVE-6A, and SVE-7A as the extraction wells and SVE-1 through SVE-4 and SVE-5B through SVE-7B as the observation wells. Based on the system parameters recorded during the SVE steady state testing, the extraction well vapor flow rates ranged from 24 to 29 standard cubic feet per minute (scfm) in well SVE-7A and from 34 to 35 scfm in well SVE-7B. These reported flow rates corresponded to vacuum readings, obtained from a straight section of pipe connected to the vacuum hose from the top of the well casing, of 166.4" to 174.8" H_2O for well SVE-7A and 1.9" to 2.2" H_2O in well SVE-7B. The radius of influence was estimated to be as great as 65 feet with a recommended design radius of influence of 30 feet for the lower sand zone and 20 feet in the lower permeability upper zone. Analytical data showed that petroleum hydrocarbons were detected in vapor samples collected from each of the wells. TPHg concentrations in extracted soil vapor ranged from 7.8 parts per million by volume (ppmv) to 260 ppmv, benzene was not detected at concentrations exceeding the LRL, and MTBE concentrations in extracted soil vapor ranged from 6.9 to 270 ppmv. Based on the high vapor concentrations and the good air flow observed during the test, SVE was determined to be a feasible remedial alternative for this Site. An estimated 0.1 pounds of vapor-phase hydrocarbons were recovered during the SVE testing (SECOR, 2002d).

Based on a performed bio-evaluation of groundwater, it was determined that there was favorable biological activity at the Site and that biostimulation could be successfully carried out by the use of an oxygen diffusion technique to provide oxygen to the microorganisms already present beneath the Site (SECOR, 2002d).

On November 15, 2002, SECOR submitted a remedial action plan (RAP) proposing to use biostimulation to augment the natural attenuation of hydrocarbons. On April 18, 2003, SECOR installed the oxygen emitters in three deep nested SVE wells (SVE-5B, SVE-6B, and SVE-7B) located on the southwest portion of the Site.

The existing groundwater monitoring wells and SVE wells are constructed using four-inch and two-inch diameter Schedule 40 PVC casing material with screened portions consisting of 0.020-inch slot size. Total depths of the groundwater monitoring wells range from 70 to 85 feet bgs with the screen intervals extending from between 25 and 50 feet bgs to the total depth of the well. Table 4 presents a summary of the well construction details. Total depths of the existing SVE wells range from 15 to 65 feet bgs with the screen intervals extending from between 5 and 30 feet bgs to the depth of the well.

Quarterly groundwater monitoring and sampling has been conducted at the Site from December 2001 through the present. A copy of the Fourth Quarter 2005 Monitoring Report is included in Appendix B. Included in the quarterly status report are a summary of historical groundwater analytical and elevation data, a groundwater contour and hydrocarbon concentration map, isoconcentration maps for Gasoline Range Organics (GRO; carbon range C4 through C12), benzene, MTBE, and TBA, and hydrographs for individual wells.

3.0 WELL RECEPTOR SURVEY

SECOR researched the location of potential municipal/public groundwater supply wells using the following sources: 1) Los Angeles Department of Public Works (LADPW) Division of Hydrologic Records database; and 2) The Water Replenishment District of Southern California (WRD).

According to the LADPW and WRD, there are 25 observation wells, 16 production wells, and one inactive irrigation well within one mile of the Site. The closest active production well, State Well 4S/13W-30K01S (Well ID 320C), is located approximately 2,500 feet northwest of the Site and is owned by the Los Angeles Department of Water and Power. According to the LARWQCB, Well ID 320C was reported to be located approximately 1,230 feet northeast of the Site. Further investigation with the LADPW indicated that Well ID 320C is located approximately 300 feet south of R Street and 100 feet east of Eudora Avenue at Latitude of 33.79567 and Longitude of 118.27928. This well location was visually confirmed by SECOR, which indicates that Well 320C is located approximately 2,500 feet northwest of the Site. Well ID 320C was last gauged on April 11, 2001, the depth to groundwater was measured at approximately 76.8 feet bgs. Well receptor information is summarized in Fourth Quarter 2005 Monitoring Report (Appendix B; Table 2) and approximate well locations are shown on Figure 1.

4.0 GEOLOGY AND HYDROGEOLOGY

Physiographically, the Site is situated in the southern portion of the Torrance Plain. The rectangular shaped Torrance Plain extends approximately 28 miles from Santa Monica in the northwest to Long Beach in the southeast and is five to 12 miles wide. The relatively flat Torrance Plain consists of marine and nonmarine sediments. The Palos Verdes Hills, a prominent topographic feature, borders the southwest margin of the plain and the Newport-Inglewood zone of deformation borders the inland margin of Torrance Plain.

Hydrogeologically, the Site is located in the West Coast Groundwater Basin. The groundwater basin is bounded on the north-northwest by the Ballona Gap and the Newport Inglewood Uplift, on the east by the Rosecrans, Dominguez and Signal Hills, on the southwest by the Palos Verdes Hills, on the south by San Pedro Bay and on the west by the Santa Monica Bay of the Pacific Ocean. The Newport-Inglewood Uplift, located along the east side of the Torrance Plain, acts as a partial barrier to groundwater flow between the Central and West Coast Groundwater Basins. The Wilmington Anticline is located approximately two miles northeast and the Wilmington Syncline is located approximately 2.5 miles southwest of the Site. The Lakewood and San Pedro Formations are continuous across these structural deformations (CDWR, 1961).

Site and vicinity soils are mapped as Upper Pleistocene Lakewood Formation (Qlw). The primary water-producing aquifers for the West Coast Groundwater Basin are those within the lower Lakewood Formation and the underlying San Pedro Formation. The Lakewood Formation generally consists of marine and continental gravel, sand, sandy silt, silt and clay and also contains a semi-perched aquifer, the Bellflower Aquiclude and the Gage Aquifer. The semi-perched aquifer is separated from the shallow-most principal aquifer (Gage) by up to 80 feet of clay-rich sediments of the Bellflower Aquiclude. The

Gage Aquifer occurs from approximately 135 to 185 feet bgs in the vicinity of the Site, consisting of sand and gravel with interbedded clay and silt, and is considered low to moderately permeable.

The Lynwood and Silverado Aquifers of the San Pedro Formation are composed of coarse-grained sands and gravels. The Lynwood Aquifer occurs approximately 185 to 435 feet bgs and the Silverado Aquifer occurs approximately 435 to 835 feet bgs in the vicinity of the Site.

Information obtained from soil borings advanced on- and off-Site indicate that underlying sediments consist primarily of fine grained sandy silt and silty clay to a depth of approximately 20 feet bgs and coarser grained, poorly graded sand from approximately 20 to 85 feet bgs (total depth explored). Saturated conditions were encountered in sand from approximately 55.42 to 85.25 feet bgs. The shallow sediments encountered beneath the Site correlate with Upper Pleistocene-age flood plain deposits and alluvial deposits of the Los Angeles and San Gabriel River systems (CDWR, 1961). Figure 3 presents the cross-section index. The generalized subsurface lithology is shown on Geologic Cross Sections A-A', B-B' and C-C' (Figures 5, 6, and 7).

5.0 HYDROCARBON-IMPACTED SOIL AND GROUNDWATER

5.1 Hydrocarbon Distribution in Soil

Analytical data collected from the UST removal and replacement operation, product dispenser and product line piping upgrades and site assessments appear to have defined the lateral and vertical extent of the hydrocarbon-impacted soil in the subsurface. The soil data indicates that hydrocarbon impacts have been detected around the former USTs, the northern and western product dispensers and associated product piping traces. The distribution of petroleum hydrocarbons in soil were determined using soil analytical data collected in 1993 and before, and soil analytical collected in 2001 and 2002. Presented below is a summary of hydrocarbon impacts in each of these areas.

5.1.1 *Former UST Complex*

Hydrocarbon-impacted soil in the vicinity of the former USTs occurs at approximately five feet bgs north of the former USTs and is generally restricted to the base of former USTs (15 feet bgs) near the center of the former UST area. Hydrocarbon impacts were detected in soil samples collected from product piping trenches, the bottom of the former UST complex, overburden soils stockpile and SVE well W-1. A concentration of 290 mg/kg TPHg was detected in soil sample TK7-14.5 collected from beneath the former USTs. The maximum TPHg (1,200 mg/kg), benzene (0.59 mg/kg), toluene (1.4 mg/kg), ethylbenzene (1.9 mg/kg), and total xylenes (24 mg/kg) concentrations were identified in soil sample PL-13 collected from the north end of the former UST area at approximately 5 feet bgs.

5.1.2 *Northern Fuel Dispensers and Product Piping*

In the vicinity of the northern dispenser islands and former product piping run, elevated hydrocarbons are generally restricted to the upper fifteen feet of soil in the immediate lateral vicinity of the dispensers. Hydrocarbon impacts were identified in soil samples collected beneath the dispensers and product piping and from SVE wells SVE-1 and SVE-2. The maximum TPHg (5,600 mg/kg), benzene (4.1 mg/kg), toluene (40 mg/kg), ethylbenzene (32 mg/kg), and total xylenes (290 mg/kg) concentrations were identified in the

soil sample collected from beneath the northeastern dispenser (DSP-7) at approximately five feet bgs. A maximum concentration of 36 mg/kg MTBE was identified in the soil sample collected from SVE well SVE-1 at 15 feet bgs, during the November 2001 site assessment activities.

5.1.3 *Western Fuel Dispensers and Product Piping*

Hydrocarbon impacted soil in the vicinity of the western dispenser island occurs in the upper ten feet of soil on the northern end and extends to approximately 25 feet bgs at the southern end of the dispenser island. Minor concentrations of MTBE were detected in soil samples collected between 60 and 65 feet bgs on the southern end of the western dispenser island in November 2001. Hydrocarbon impacts were identified in soil samples collected beneath the dispensers, associated product piping and SVE wells W-5, SVE-3, and SVE-4. The maximum concentrations of TPHg (1,800 mg/kg), benzene (9.0 mg/kg), toluene (74 mg/kg), ethylbenzene (25 mg/kg), and total xylenes (240 mg/kg) were identified in soil sample DSP-1 at 5 feet bgs. A maximum concentration of 21 mg/kg MTBE was identified in the soil sample collected from SVE well SVE-4 at 15 feet bgs, during the November 2001 site assessment activities.

Figure 3 shows the soil sample locations and Table 1 provides a summary of historical soil analytical data.

5.2 Hydrocarbon Distribution in Groundwater

5.2.1 *Fourth Quarter 2005 Groundwater Monitoring*

On November 9, 2005, SECOR conducted the Fourth Quarter 2005 Groundwater Monitoring and Sampling event at the Site. A total of 10 groundwater monitoring wells (GMW-1 through GMW-10) were gauged and sampled. Groundwater elevations in the on- and off-Site groundwater monitoring wells ranged from -16.14 to -17.56 feet AMSL. The groundwater flow direction was to the northwest at a gradient of approximately 0.006 feet per foot.

All groundwater samples were relinquished to Del Mar Analytical of Irvine, California (Del Mar) for potential chemical analysis. SECOR and Del Mar adhered to strict chain-of-custody procedures from sample collection to sample analysis. All groundwater samples were analyzed for the following analytes and in accordance with the appropriate Environmental Protection Agency (EPA) method:

- Gasoline Range Organics (GRO; carbon range C4 through C12) by modified EPA Method 8015M;
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX), di-isopropyl ether (DIPE), ethyl-tertiary-butyl ether (ETBE), tertiary-amyl-methyl ether (TAME), tertiary butanol (TBA), MTBE, and ethanol by EPA Method 8260B; and

Detectable concentrations of dissolved-phase hydrocarbons were identified above the laboratory RL in 2 of the 10 groundwater samples. Maximum hydrocarbon concentrations were identified as follows: MTBE - 38 µg/L (GMW-3). GRO, benzene, and TBA were not identified in any groundwater samples above the laboratory RLs. PAHs were not analyzed during Fourth Quarter 2005 sampling event due to sampling error. A copy of the Fourth Quarter 2005 Groundwater Monitoring Report is included in Appendix B. Included in the quarterly status report are a summary of historical groundwater analytical and elevation data, a groundwater contour and hydrocarbon concentration map, isoconcentration maps for GRO, benzene, MTBE, and TBA, and hydrographs for individual wells.

5.2.2 Dissolved-Phase Hydrocarbon Plume

Review of the most recent groundwater analytical data shows that MTBE concentrations have increased slightly in well GMW-3, decreased slightly in well GMW-10, and was below the LRL in all other wells. GRO, benzene, and TBA concentrations are not present above the LRL in any of the on- or off-Site wells.

The dissolved-phase MTBE plume extends from the area of the existing USTs off-Site to the northwest to down-gradient monitoring well GMW-10. The current lateral extent of the dissolved-phase plume is defined to the north by well GMW-6, the northeast by well GMW-2, the east by wells GMW-2 and GMW-5, the southeast by well GMW-5, the south by well GMW-7, the southwest by well GMW-8, and the west by well GMW-9, all of which did not contain any hydrocarbon concentrations above the LRL. The lateral extent of the dissolved-phase hydrocarbon plume is not completely defined down-gradient of the Site to the northwest.

Historical hydrocarbon concentrations in groundwater versus time graphs have been prepared representing wells GMW-1 through GMW-10 and are presented in the Fourth Quarter 2005 Monitoring Report provided in Appendix B.

5.2.3 Groundwater Natural Biodegradation Parameters

To aid in the evaluation of biological conditions in groundwater, additional groundwater samples were collected during the Second Quarter 2004 groundwater sampling event from wells GMW-1 through GMW-10. Groundwater samples collected were analyzed for hydrocarbon utilizing bacteria (HUB) according to American Society for Testing Materials (ASTM) G-22, for natural biodegradation parameters (inorganics) according to Standards Method (SM) 4500-CO2, SM 2320B, SM 5540-C, SM 2540C, EPA 405.1, EPA 410.4, EPA 300.0 and for general water chemistry (methane and metals) according to EPA 200.7 and EPA 6010B-Diss. Groundwater analysis detected high levels of Total Dissolved Solids (TDS) [ranging from 1,100 milligram per liter (mg/L) to 2,000 mg/L], sodium (ranging from 240 mg/L to 500 mg/L), chloride (ranging from 160 mg/L to 560 mg/L), and calcium carbonate (CaCO3) (ranging from 420 mg/L to 700 mg/L) in groundwater samples indicating that the groundwater has brackish qualities and is not of beneficial use for drinking water. Elevated levels of HUB and dissolved oxygen (DO), nitrate, and sulfate were detected in groundwater samples indicating favorable biological activity in groundwater at the Site. Groundwater natural biodegradation analytical data is provided within the Fourth Quarter 2005 Monitoring Report (Appendix B; Table 5).

5.3 Fourth Quarter 2005 Remediation Progress Report

A Remedial Action Plan (RAP), proposing biostimulation through the use of an oxygen diffusion technique, was submitted to the LARWQCB by SECOR on November 15, 2002 and approved in a letter dated December 26, 2002. On April 18, 2003, SECOR installed the oxygen diffusion system in on-Site wells SVE-5B, SVE-6B, and SVE-7B, located northwest of the existing USTs (Figure 2). The oxygen diffusion system used at the Site is a patented method (Wilson and Mackay, 1997) that uses DO diffusion to increase the oxygen concentration in groundwater, therefore increasing biological activity and the biodegradation of TPHg, BTEX, and MTBE in groundwater. The system consists of sealed low density polyethylene (LDPE) tubing coiled around a cylinder that fits into a 4-inch diameter well. An oxygen tank and regulator, which can also be placed inside the 4-inch diameter well, feeds DO into the LDPE tubing at

a constant pressure not to exceed 25 pounds per square inch (psi). The DO diffuses through the walls of the LDPE tubing into the water without bubbling or going into a separate phase. Schematic details of the system are provided on Figure 4.

Upon installation of the oxygen diffusion system, SECOR instituted twice monthly oxygen usage monitoring, regulator adjustment, tubing inspection and measurement of DO concentrations in groundwater. During First Quarter 2004, DO maintenance decreased to once per month; however increased to biweekly as of Third Quarter 2005. During Fourth Quarter 2005, the DO flow rate ranged from 0 to 15 psi. DO concentrations ranged from 0.10 to 27.10 milligrams per liter (mg/L). The field data sheets are included in the Fourth Quarter 2005 Monitoring Report (Appendix B). A summary of the field data is provided in the Fourth Quarter 2005 Monitoring Report (Appendix B; Tables 1a & 1b).

Diffusing oxygen in the subsurface will assist the biodegradation of the dissolved phase hydrocarbons as the addition of DO will provide electron acceptors to the aquifer.

5.4 Release Mass Estimation

SECOR estimated the mass of hydrocarbon release in the soil beneath the Site by identifying the area of contamination for TPHg, benzene, and MTBE above a predetermined concentration (creating a soil plume map). Plume maps were created every 5 feet of depth with isoconcentration intervals of 10,000 mg/kg, 1,000 mg/kg, 100 mg/kg, 10 mg/kg, and 1 mg/kg. Using a density of 120 pounds per cubic foot, the mass of soil was calculated within each isoconcentration interval. To calculate hydrocarbon mass, an average concentration within this interval was used to estimate the total mass of that compound. The log-mean was used as the average concentration for intervals between isoconcentration contours.

The log-mean concentration is defined by the following equation:

$Clm = CH – CL/[\ln(CH / CL)]$

Clm = Log-Mean concentration

CH = the higher contour interval concentration

CL = the lower contour interval concentration

The log-mean concentration is used to account for the fact that low concentrations account for a greater percentage of the area. Based on these plume maps, there appears to be three areas of hydrocarbon impacted soil on-Site, the north side of the former USTs, the northern dispenser islands and associated product piping, and the western dispenser islands and associated product piping. Based on this information, SECOR estimates that there may be approximately 259.6 pounds of TPHg, 0.8 pounds of benzene, and 3.0 pounds of MTBE in the soil beneath the Site. The isoconcentration plume maps used for the estimation are included in Appendix C, along with the summary tables of the calculations.

Due to the nature of soil investigations and the natural biodegradation of the target contaminants, these values should be considered order-of-magnitude estimates only and the current mass of these compounds could be substantially less or greater than these values.

6.0 PLUME TRAVEL TIME DETERMINATION

In July 2005, SECOR estimated the hydrocarbon plume travel time from the Site to the nearest receptor (Well No. 04S/13W/30-K01S, ~2,500 feet away) using BIOSCREEN, a Microsoft Excel spreadsheet analytical model based on the Domenico analytical solute transport model. The plume travel time was estimated to be infinite; a 13 μg/L concentration of MTBE will never be reached in the receptor located 2,500 feet from the Site (SECOR, 2005).

7.0 REMEDIAL ACTION PLAN

7.1 Source Removal Activities

In May 1992, approximately 1.5 cubic yards (yd^3) of hydrocarbon impacted soil and 10 gallons of water mixed with LPH was removed from Site after a drilling auger ruptured a fiberglass product line and copper water line (EA, 1992).

The likely sources of petroleum hydrocarbons in soil and groundwater at the Site (USTs, dispensers and associated piping) were removed and replaced in January 1993 as well as an estimated 750 yd^3 of hydrocarbon impacted soil and pea gravel excavated from the former UST area, along piping traces and from beneath former dispensers (Irwin, 1993A; Irwin 1993B).

In January 2001, facility upgrade activities removed and replaced eight product dispensers and associated product piping (SECOR, 2001).

In October 2002, approximately 0.1 pounds of vapor-phase hydrocarbons were estimated to be removed from subsurface soils during SVE pilot tests (SECOR, 2002C).

7.2 Soil and Plume Remediation Activities

SECOR has implemented the use of biostimulation to augment the natural attenuation of hydrocarbons already occurring in soil and groundwater at the Site, as approved by the LARWQCB. During First Quarter 2003, a license and purchase agreement was obtained from the manufacturer of a patented oxygen diffusion emitter system. Upon receipt, SECOR installed the oxygen emitters in three deep nested SVE wells (SVE-5B, GMW-2-6B and SVE-7B) located on the southwest portion of the Site (Figure 2). The diffused oxygen has assisted to increase the biodegradation of dissolved-phase hydrocarbons as well as add DO as an electron acceptor to the aquifer. Operation of the oxygen diffusion system appears to be effective in mitigating the presence of petroleum hydrocarbon concentrations in groundwater.

8.0 VERIFICATION MONITORING

SECOR has conducted quarterly groundwater monitoring at the Site since Fourth Quarter 2001. In order to evaluate and monitor the hydrocarbon impact to the groundwater, SECOR will continue to conduct quarterly groundwater sampling and monitoring at the Site. Groundwater monitoring data will be provided in quarterly reports and submitted to the LARWQCB fifteen days after the end of the quarterly monitoring period.

9.0 LIMITATIONS

This report has been prepared for the exclusive use of Atlantic Richfield Company and its representatives as it pertains to the property located at 980 West Pacific Coast Highway, Wilmington, California. Evaluations of the geologic conditions at the Site for the purpose of this investigation may be inherently limited due to the number of observation points. There are no representations, warranties, or guarantees that the points utilized for sampling are representative of the entire Site. Data collected may reflect the conditions at specific locations at a specific point in time.

All work was performed under the supervision of a State of California Registered Geologist as defined in the Registered Geologist Act of the California Code of Regulations. The information contained in this report represents SECOR's professional opinions, and is based in part on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. No other interpretations, warranties, guarantees, expressed or implied, are included or intended in the contents of this report.

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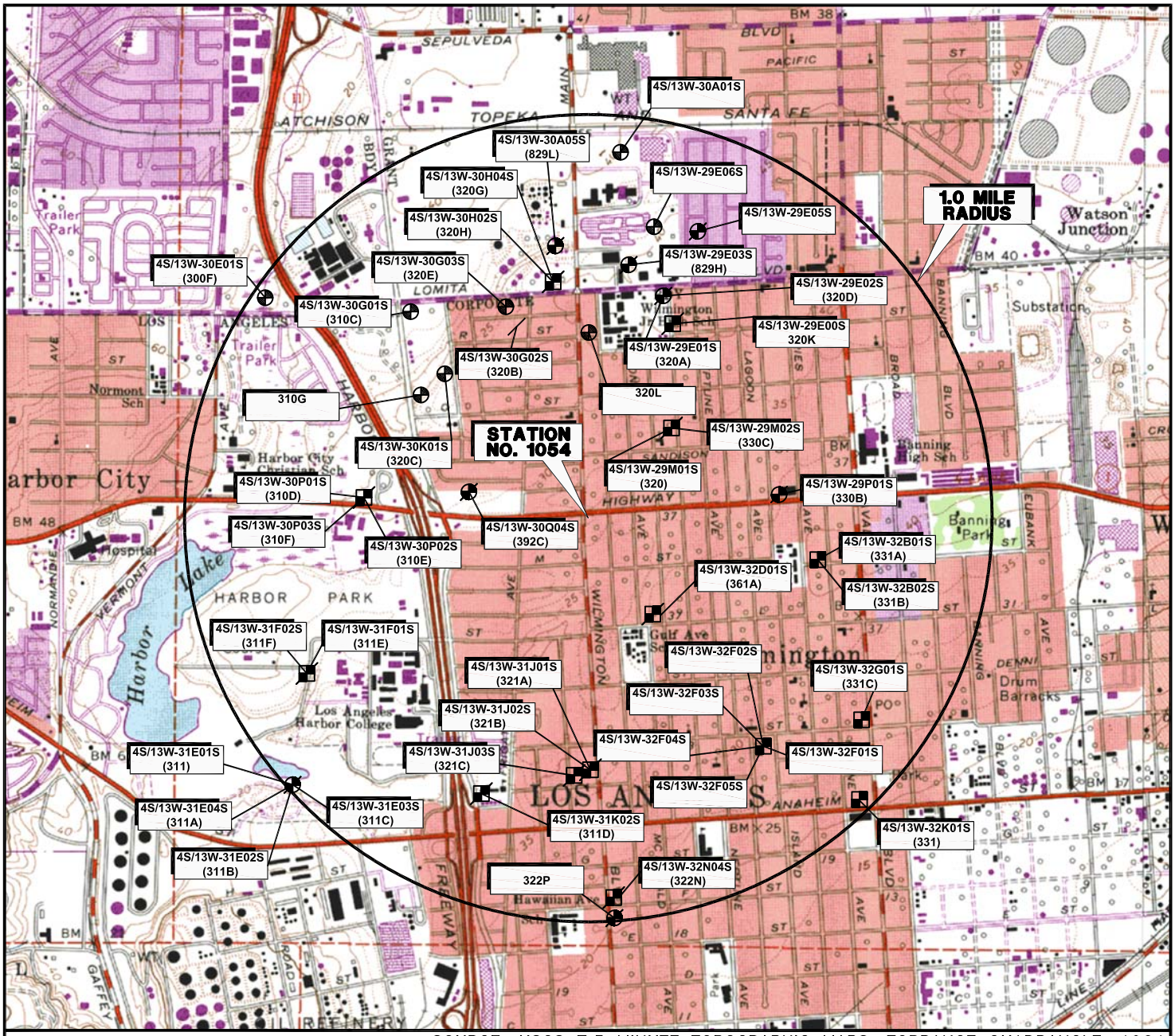
Figures



SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAPS, TORRANCE QUADRANGLE, 1964
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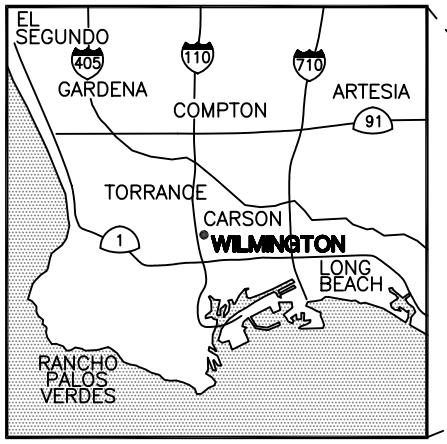
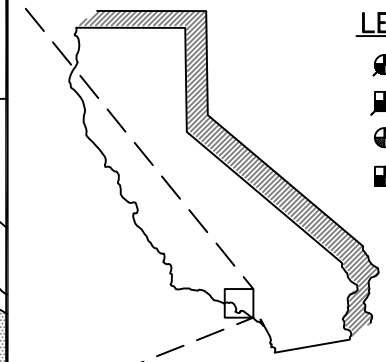




LEGEND

- PRODUCTION WELL (DESTROYED/INACTIVE)
- OBSERVATION WELL (DESTROYED/INACTIVE)
- PRODUCTION WELL
- OBSERVATION WELL

N

0 2000 4000

APPROXIMATE SCALE (FEET)

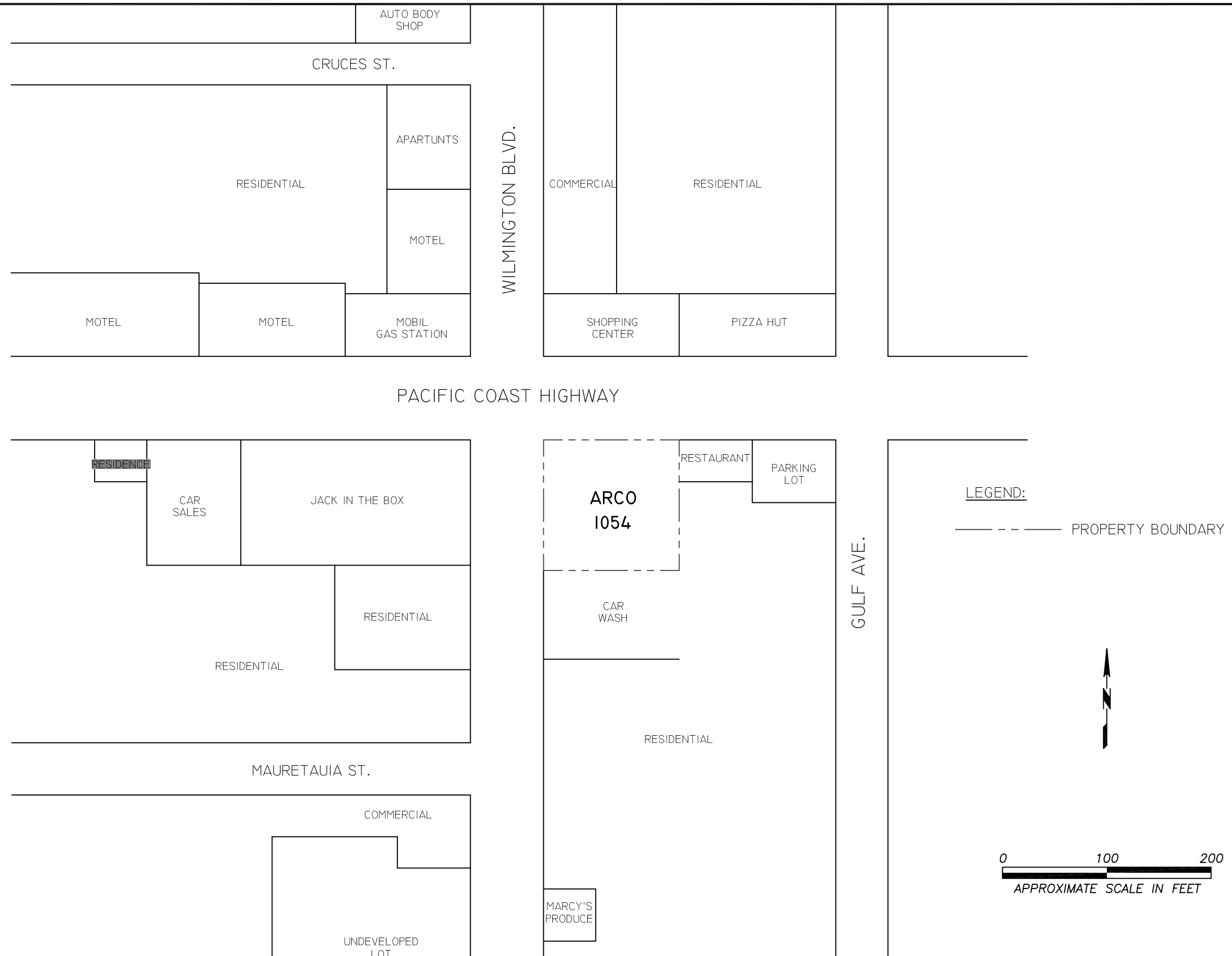
SECOR
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
(805) 230-1266/230-1277 (Fax)

PREPARED FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 West Pacific Coast Highway
Wilmington, California

SITE LOCATION MAP SHOWING IDENTIFIED WELLS WITHIN A ONE-MILE RADIUS

FIGURE: **1**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.04/0336	RLE	L. Moreno	R. Handbury	01/15/05



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FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

SITE VICINITY MAP

FIGURE: **2**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.04/0336	RLE	L. Moreno	R. Handbury	01/15/05

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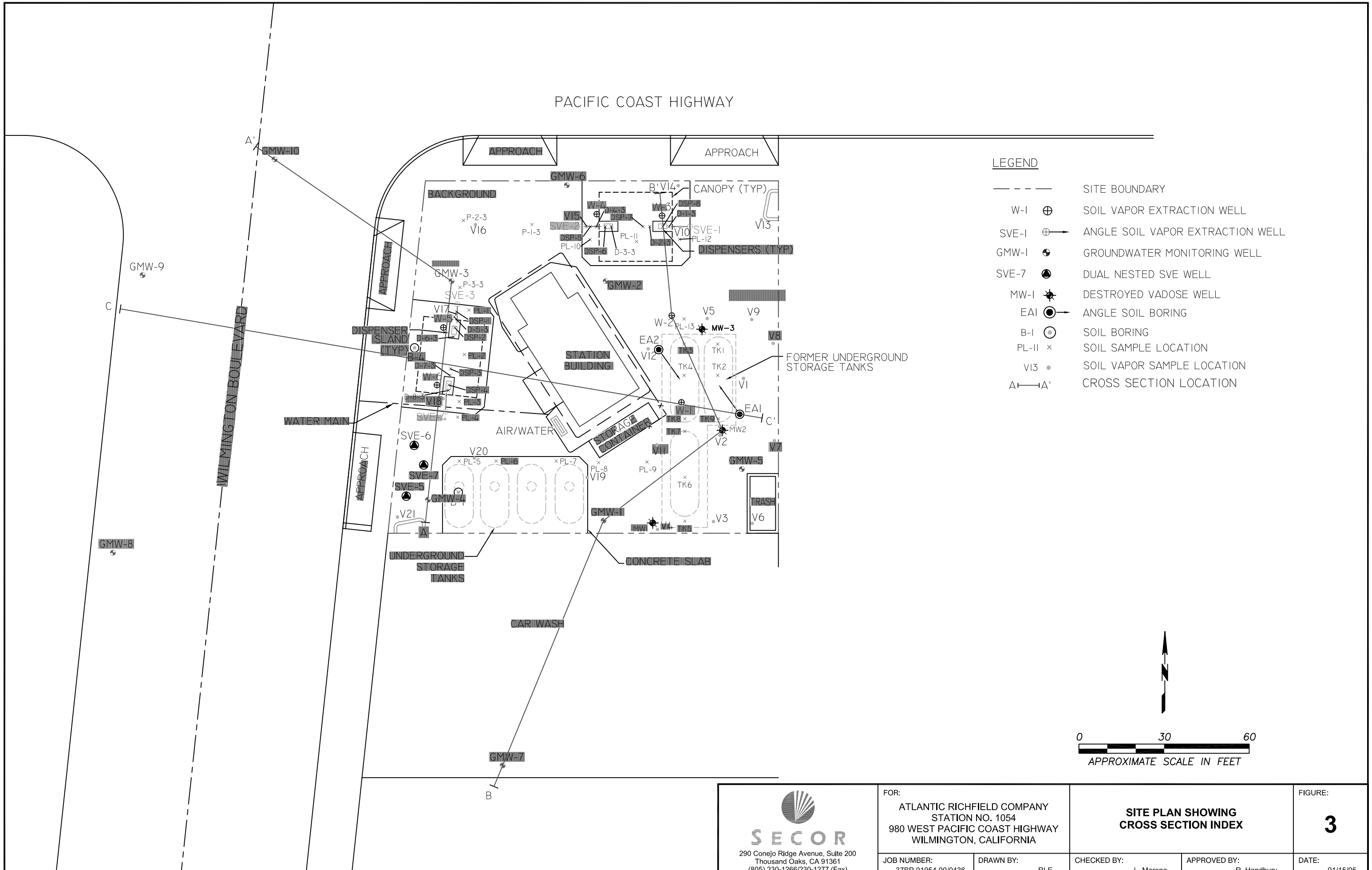

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FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

SITE PLAN SHOWING CROSS SECTION INDEX

FIGURE: **3**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.00/0436	RLE	L. Moreno	R. Handbury	01/15/05

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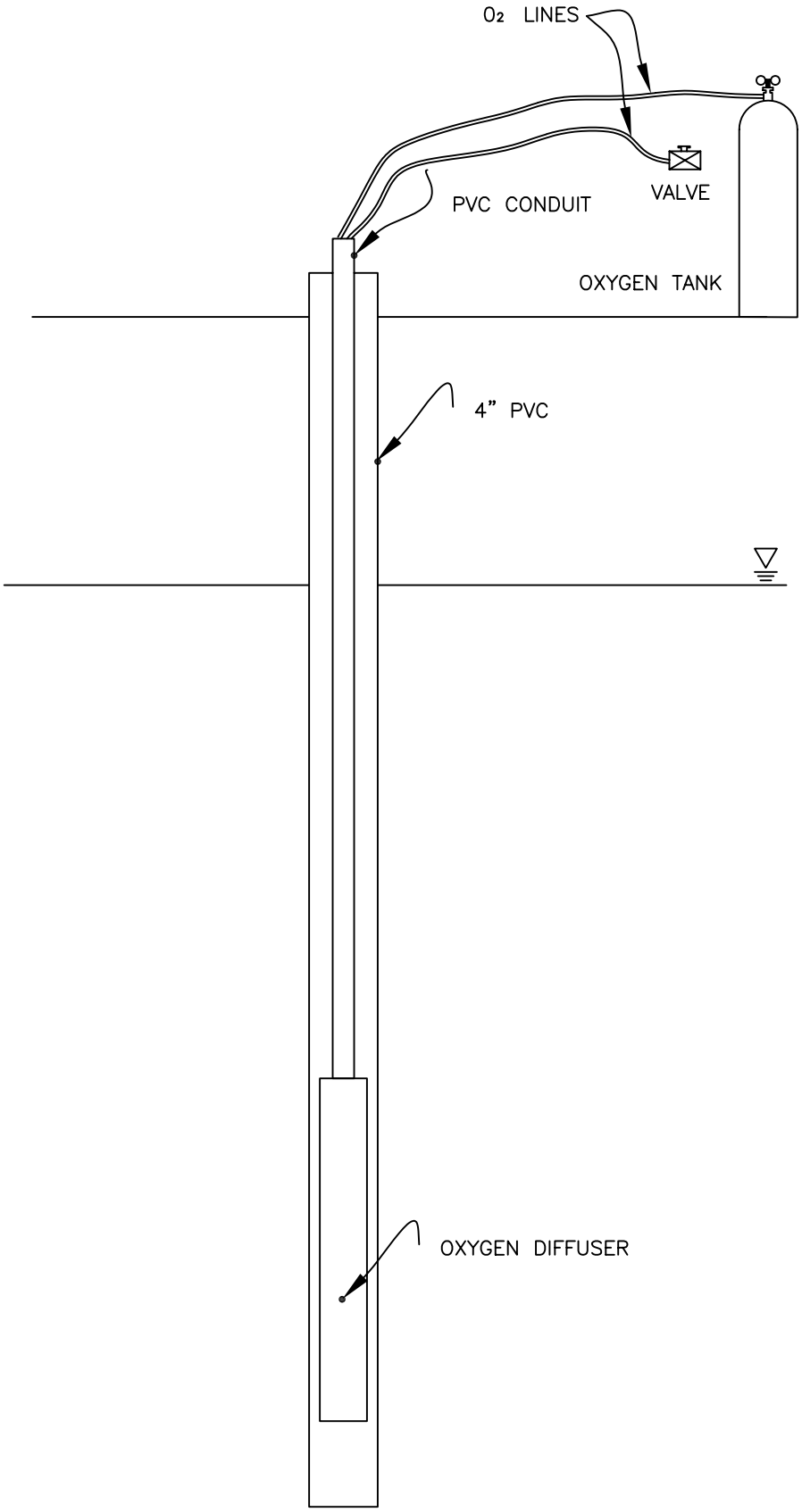

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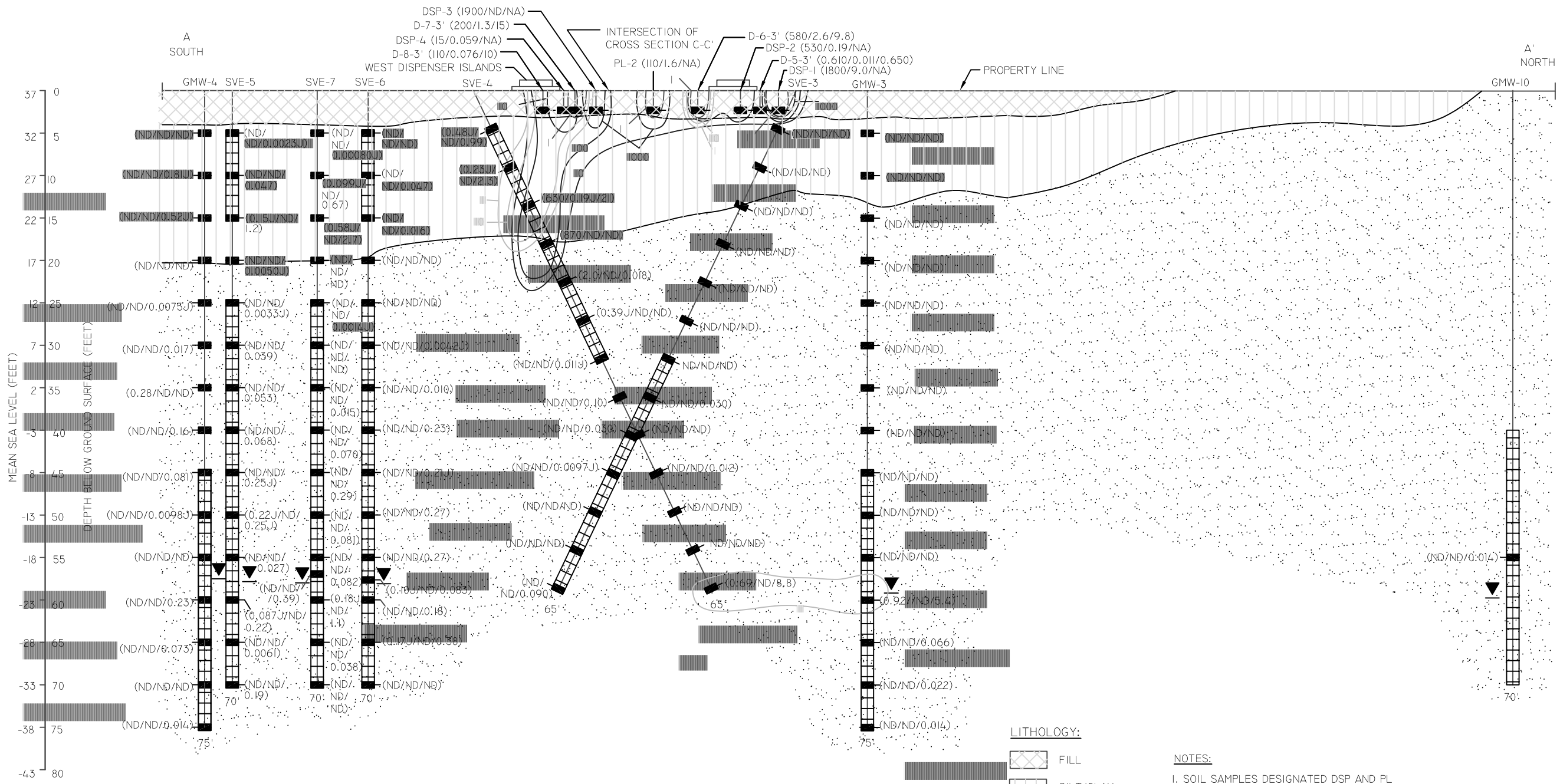
FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 West Pacific Coast Highway
Wilmington, California

SCHEMATIC OF DIFFUSIVE OXYGEN EMITTER SYSTEM

FIGURE: **4**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.04/0336	#14	R. Handbury	R. Handbury	01/15/05



EXPLANATION:

ND/ND/0.014	TPHg/BENZENE/MTBE CONCENTRATIONS IN *mg/kg*
ND	BELOW LABORATORY DETECTION LIMITS
NA	NOT ANALYZED
TPHg	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
MTBE	METHYL TERTIARY BUTYL ETHER
mg/kg	MILLIGRAMS PER KILOGRAM
10	TPHg CONCENTRATION CONTOUR
1	BENZENE CONCENTRATION CONTOUR
1	MTBE CONCENTRATION CONTOUR

LITHOLOGY:

- FILL
- SILT/CLAY
- SAND
- WELL SCREEN
- SOIL SAMPLE LOCATION
- STABILIZED GROUNDWATER

NOTES:

1. SOIL SAMPLES DESIGNATED DSP AND PL COLLECTED IN 1993.
2. SOIL SAMPLES DESIGNATED D, SVE-3, SVE-4 AND GMW-3 COLLECTED IN 2001.
3. SOIL SAMPLES DESIGNATED GMW-4, GMW-10 AND SVE-5 THRU SVE-7 COLLECTED IN 2002.

0 15 30

APPROXIMATE HORIZONTAL AND VERTICAL SCALE IN FEET

SECOR

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FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

GEOLOGIC CROSS SECTION
A-A'

FIGURE: **5**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.04/0336	RLE	L. Moreno	R. Handbury	01/15/05

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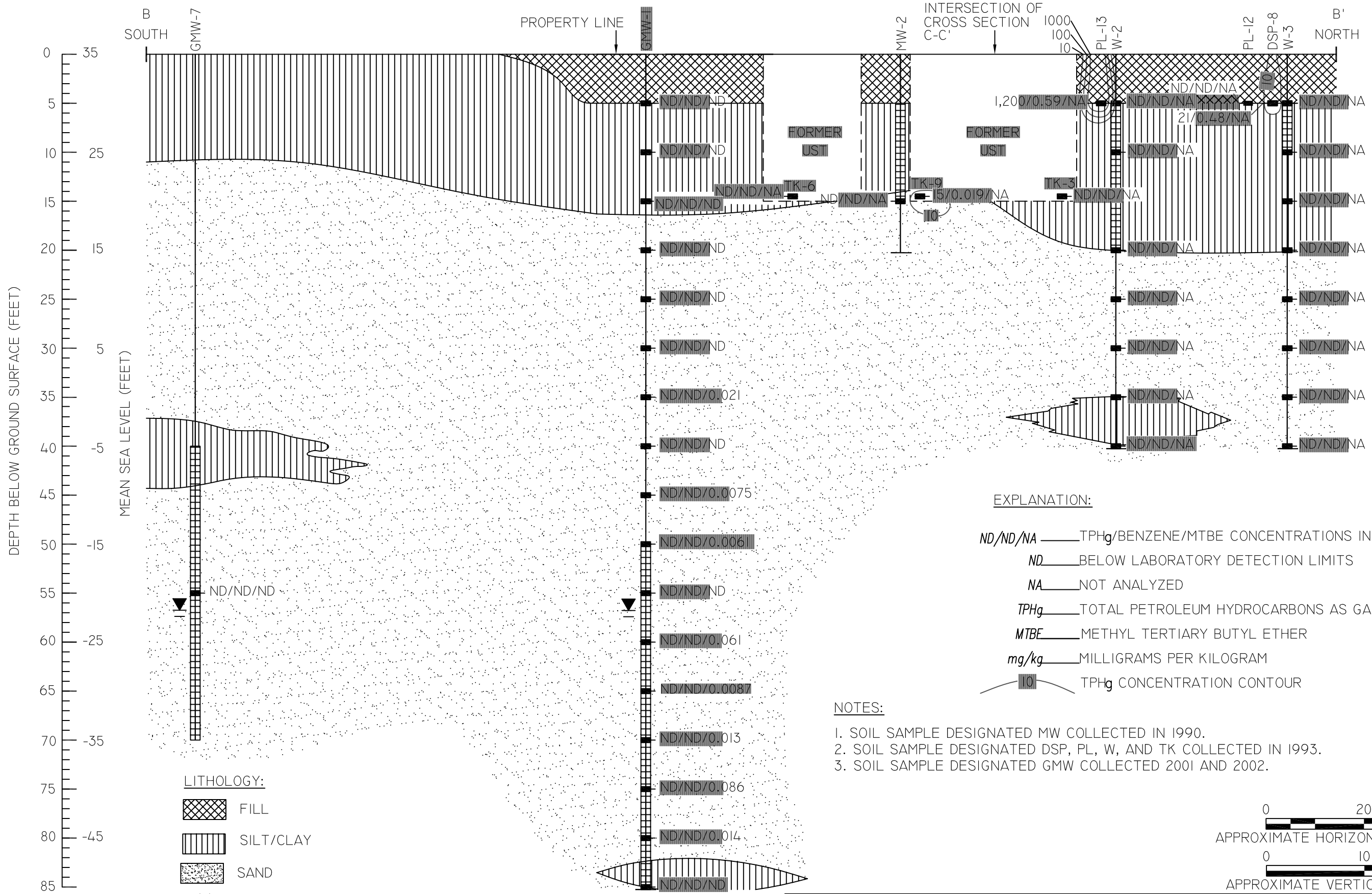
B
SOUTH
GMW-7
PROPERTY LINE
GMW-1
MW-2
INTERSECTION OF
CROSS SECTION
C-C'
1000
100
10
PL-13
W-2
PL-12
DSP-8
W-3
B'
NORTH
DEPTH BELOW GROUND SURFACE (FEET)
MEAN SEA LEVEL (FEET)
0 35
5 25
10 15
15 5
20 -5
25 -15
30 -25
35 -35
40 -45
45
50
55
60
65
70
75
80
85
ND/ND/ND
ND/ND/ND
ND/ND/NA
TK-6
ND/ND/NA
ND/ND/ND
FORMER
UST
FORMER
UST
TK-9
15/0.019/NA
10
1,200/0.59/NA
TK-5
ND/ND/NA
ND/ND/NA
21/0.48/NA
10
ND/ND/NA
ND/ND/NA
ND/ND/NA
ND/ND/NA
ND/ND/NA
ND/ND/NA
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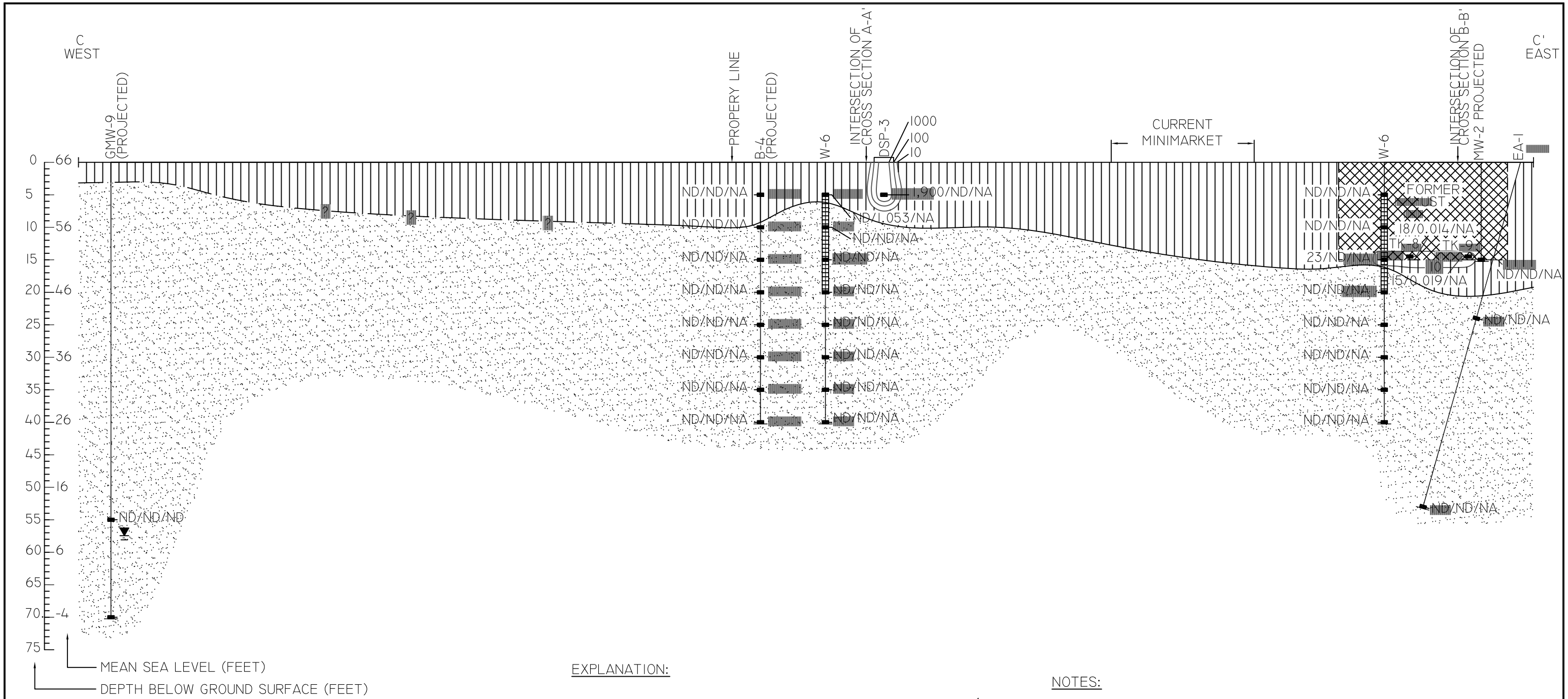

EXPLANATION:

ND/ND/NA ____ TPHg/BENZENE/MTBE CONCENTRATIONS IN *mg/kg*
ND ____ BELOW LABORATORY DETECTION LIMITS
NA ____ NOT ANALYZED
TPHG ____ TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
MTBE ____ METHYL TERTIARY BUTYL ETHER
mg/kg ____ MILLIGRAMS PER KILOGRAM
10 TPHg CONCENTRATION CONTOUR

NOTES:

1. SOIL SAMPLE DESIGNATED MW COLLECTED IN 1990.
2. SOIL SAMPLE DESIGNATED EA. COLLECTED IN 1992.
3. SOIL SAMPLE DESIGNATED DSP, B, W, AND TK COLLECTED IN 1993.
4. SOIL SAMPLE DESIGNATED GMW-9 COLLECTED 2002.

LITHOLOGY:

FILL
SILT/CLAY
SAND
WELL SCREEN
SOIL SAMPLE LOCATION
STABILIZED GROUNDWATER

0 15 30
APPROXIMATE HORIZONTAL AND VERTICAL SCALE IN FEET

SECOR 290 Conejo Ridge Avenue, Suite 200 Thousand Oaks, CA 91361 (805) 230-1266/230-1277 (Fax)	FOR: ATLANTIC RICHFIELD COMPANY STATION NO. 1054 980 WEST PACIFIC COAST HIGHWAY WILMINGTON, CALIFORNIA		**GEOLOGIC CROSS SECTION C-C'**		FIGURE: **7**
	JOB NUMBER: 37BP.01054.04/0336	DRAWN BY: RLE	CHECKED BY: L. Moreno	APPROVED BY: R. Handbury	DATE: 01/15/05

FILEPATH:M:\ARCO\1054 Wilmington\SCMU_1-06\CS_B-B&C-C_FIG6-7.dwg | rerdman | Dec 01, 2005 at 7:10 | Layout: 7

Tables

Table 1
Soil Analytical Data
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

SOIL SAMPLE ID	DATE	SAMPLE DEPTH feet bgs	TPHg mg/kg	BENZENE mg/kg	TOLUENE mg/kg	ETHYL-BENZENE mg/kg	TOTAL XYLENES mg/kg	LEAD mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg
Soil Samples analyzed by EPA 8015M and 8020													
Vadoze Zone Monitoring Well Soil Samples													
MW1-15	3/8/1990	15	<0.5	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA
MW2-15	3/8/1990	15	<0.5	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA
MW3-10	3/8/1990	10	<0.5	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA
MW3-15	3/8/1990	15	<0.5	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA
Soil Boring Soil Samples													
EA-1-25'	5/26/1992	25	<1.0	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA
EA-1-55'	5/26/1992	55	<1.0	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA
EA-2-25'	5/26/1992	25	<1.0	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA
EA-2-55'	5/26/1992	55	<1.0	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA
B-1-15	12/8/1992	15	<10.0	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA
B-1-20	12/8/1992	20	<10.0	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA
Facility Upgrade Soil Samples analyzed by EPA 8015M, 8020 and 7421													
UST Excavation Soil Samples													
TK1-14.5'	1/14/1993	14.5	<10	<0.005	<0.005	<0.005	<0.015	9	NA	NA	NA	NA	NA
TK2-14.5'	1/14/1993	14.5	<10	<0.005	<0.005	<0.005	<0.015	9	NA	NA	NA	NA	NA
TK3-14.5'	1/14/1993	14.5	<10	<0.005	<0.005	<0.005	<0.015	5	NA	NA	NA	NA	NA
TK4-14.5'	1/14/1993	14.5	<10	<0.005	<0.005	<0.005	<0.015	ND	NA	NA	NA	NA	NA
TK5-14.5'	1/14/1993	14.5	<10	<0.005	<0.005	<0.005	<0.015	ND	NA	NA	NA	NA	NA
TK6-14.5'	1/14/1993	14.5	<10	<0.005	<0.005	<0.005	<0.015	7	NA	NA	NA	NA	NA
TK7-14.5'	1/14/1993	14.5	290	0.066	0.062	0.085	1.2	ND	NA	NA	NA	NA	NA
TK8-14.5'	1/14/1993	14.5	18	0.014	0.007	<0.005	0.033	ND	NA	NA	NA	NA	NA
TK9-14.5'	1/14/1993	14.5	15	0.019	0.017	<0.005	<0.015	ND	NA	NA	NA	NA	NA
Product Piping Soil Samples													
PL-1	1/19/1993	5	820	19	63	0.70	73	ND	NA	NA	NA	NA	NA
PL-2	1/19/1993	5	110	1.6	7.2	1.9	9.7	ND	NA	NA	NA	NA	NA
PL-3	1/19/1993	5	<10	0.012	0.019	0.006	0.027	12	NA	NA	NA	NA	NA
Facility Upgrade Soil Samples continued analyzed by EPA 8015M, 8020 and 7421													
Product Piping Soil Samples													
PL-4-5'	2/3/1993	5	<10	<0.005	<0.005	<0.005	<0.015	8	NA	NA	NA	NA	NA
PL-4-10'	2/3/1993	10	<10	<0.005	<0.005	<0.005	<0.015	8	NA	NA	NA	NA	NA
PL-5	1/19/1993	5	<10	0.008	0.020	<0.005	<0.015	6	NA	NA	NA	NA	NA
PL-6	2/3/1993	5	19	0.008	<0.005	0.074	<0.015	6	NA	NA	NA	NA	NA
PL-7	1/19/1993	5	<10	<0.005	<0.005	<0.005	<0.015	7	NA	NA	NA	NA	NA
PL-8	1/19/1993	5	<10	<0.005	<0.005	<0.005	<0.015	7	NA	NA	NA	NA	NA
PL-9	1/19/1993	5	<10	<0.005	<0.005	<0.005	<0.015	ND	NA	NA	NA	NA	NA
PL-10	1/19/1993	5	<10	<0.005	<0.005	<0.005	<0.015	9	NA	NA	NA	NA	NA
PL-11	1/19/1993	5	<10	<0.005	<0.005	<0.005	<0.015	7	NA	NA	NA	NA	NA
PL-12	1/19/1993	5	<10	<0.005	<0.005	<0.005	<0.015	6	NA	NA	NA	NA	NA
PL-13	1/19/1993	5	1200	0.59	1.4	1.9	24	7	NA	NA	NA	NA	NA

Table 1
Soil Analytical Data
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

SOIL SAMPLE ID	DATE	SAMPLE DEPTH feet bgs	TPHg mg/kg	BENZENE mg/kg	TOLUENE mg/kg	ETHYL-BENZENE mg/kg	TOTAL XYLENES mg/kg	LEAD mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg
Dispenser Soil Samples													
DSP-1	1/19/1993	5	1800	9.0	74	25	240	13	NA	NA	NA	NA	NA
DSP-2	1/19/1993	5	530	0.19	2.6	6.5	32	35	NA	NA	NA	NA	NA
DSP-3	1/19/1993	5	1900	<0.1	1.9	2.0	27	26	NA	NA	NA	NA	NA
DSP-4	1/19/1993	5	15	0.059	0.035	0.025	0.17	29	NA	NA	NA	NA	NA
DSP-5	1/19/1993	5	99	1.6	6.4	1.7	7.9	7	NA	NA	NA	NA	NA
DSP-6	1/19/1993	5	<10	<0.005	<0.005	<0.005	<0.015	8	NA	NA	NA	NA	NA
DSP-7	1/19/1993	5	5600	4.1	40	32	290	12	NA	NA	NA	NA	NA
DSP-8	1/19/1993	5	21	0.48	0.66	0.062	0.80	6	NA	NA	NA	NA	NA
Background Soil Sample													
BACKGROUND	2/3/1993		NA	NA	NA	NA	NA	11	NA	NA	NA	NA	NA
Pea Gravel Stock Pile Samples													
PG-1	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-2	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-3	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
Facility Upgrade Soil Samples continued analyzed by EPA 8015M and 8020													
Pea Gravel Stock Pile Samples													
PG-4	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-5	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-6	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-7	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-8	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-9	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-10	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-11	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-12	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-13	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-14	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
PG-15	1/26/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
Soil Stock Pile Samples													
SP-1	2/5/1993	SP	57	<0.005	0.013	0.024	0.049	NA	NA	NA	NA	NA	NA
SP-2	2/5/1993	SP	82	<0.005	0.016	0.025	0.12	NA	NA	NA	NA	NA	NA
SP-3	2/5/1993	SP	38	<0.005	0.013	0.016	0.036	NA	NA	NA	NA	NA	NA
SP-4	2/5/1993	SP	<10	<0.005	0.011	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-5	2/5/1993	SP	29	<0.005	0.009	0.016	0.086	NA	NA	NA	NA	NA	NA
SP-6	2/5/1993	SP	16	<0.005	0.023	0.011	0.036	NA	NA	NA	NA	NA	NA
SP-7	2/5/1993	SP	<10	<0.005	0.009	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-8	2/5/1993	SP	35	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-9	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-10	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-11	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-12	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-13	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA

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SOIL SAMPLE ID	DATE	SAMPLE DEPTH feet bgs	TPHg mg/kg	BENZENE mg/kg	TOLUENE mg/kg	ETHYL-BENZENE mg/kg	TOTAL XYLENES mg/kg	LEAD mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg
Facility Upgrade Soil Samples continued analyzed by EPA 8015M and 8020													
Soil Stock Pile Samples													
SP-14	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-15	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-16	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-17	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-18	3/2/1993	SP	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-19	3/2/1993	SP	20	0.064	0.17	0.19	0.69	NA	NA	NA	NA	NA	NA
SP-20	3/2/1993	SP	240	0.79	4.4	2.7	11	NA	NA	NA	NA	NA	NA
SP-21	3/2/1993	SP	<10	0.020	0.11	0.039	0.27	NA	NA	NA	NA	NA	NA
SP-22	3/2/1993	SP	<10	<0.005	0.010	<0.005	<0.015	NA	NA	NA	NA	NA	NA
SP-23	3/2/1993	SP	1300	9.8	24	22	100	NA	NA	NA	NA	NA	NA
Soil Vapor Extraction Well Soil Samples													
W-1-5'	7/22/1993	5	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-1-10'	7/22/1993	10	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-1-15'	7/22/1993	15	23	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-1-20'	7/22/1993	20	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-1-25'	7/22/1993	25	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-1-30'	7/22/1993	30	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-1-35'	7/22/1993	35	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-1-40'	7/22/1993	40	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-2-5'	7/21/1993	5	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-2-10'	7/21/1993	10	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-2-15'	7/21/1993	15	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-2-20'	7/21/1993	20	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-2-25'	7/21/1993	25	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-2-30'	7/21/1993	30	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-2-35'	7/21/1993	35	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA

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SOIL SAMPLE ID	DATE	SAMPLE DEPTH feet bgs	TPHg mg/kg	BENZENE mg/kg	TOLUENE mg/kg	ETHYL-BENZENE mg/kg	TOTAL XYLENES mg/kg	LEAD mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg
Soil Vapor Extraction Well Soil Samples continued analyzed by EPA 8015M and 8020													
W-2-40'	7/21/1993	40	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-3-5'	7/21/1993	5	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-3-10'	7/21/1993	10	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-3-15'	7/21/1993	15	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-3-20'	7/21/1993	20	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-3-25'	7/21/1993	25	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-3-30'	7/21/1993	30	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-3-35'	7/21/1993	35	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-3-40'	7/21/1993	40	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-5-5'	7/20/1993	5	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-5-10'	7/20/1993	10	30	0.733	1.473	0.476	3.245	NA	NA	NA	NA	NA	NA
W-5-15'	7/20/1993	15	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-5-20'	7/20/1993	20	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-5-25'	7/20/1993	25	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-5-30'	7/20/1993	30	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-5-35'	7/20/1993	35	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-5-40'	7/20/1993	40	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-6-5'	7/20/1993	5	<10	1.053	0.340	0.092	0.507	NA	NA	NA	NA	NA	NA
W-6-10'	7/20/1993	10	<10	<0.005	0.269	<0.005	0.602	NA	NA	NA	NA	NA	NA
W-6-15'	7/20/1993	15	<10	<0.005	0.109	<0.005	0.155	NA	NA	NA	NA	NA	NA
W-6-20'	7/20/1993	20	<10	<0.005	0.144	<0.005	0.305	NA	NA	NA	NA	NA	NA
W-6-25'	7/20/1993	25	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-6-30'	7/20/1993	30	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-6-35'	7/20/1993	35	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-6-40'	7/20/1993	40	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
Soil Boring Soil Samples analyzed by EPA 8015M and 8020													
W-4-5'	7/21/1993	5	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-4-10'	7/21/1993	10	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-4-15'	7/21/1993	15	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-4-20'	7/21/1993	20	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-4-25'	7/21/1993	25	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-4-30'	7/21/1993	30	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-4-35'	7/21/1993	35	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
W-4-40'	7/21/1993	40	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
B-4-5'	7/20/1993	5	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
B-4-10'	7/20/1993	10	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
B-4-15'	7/20/1993	15	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
B-4-20'	7/20/1993	20	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
B-4-25'	7/20/1993	25	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
B-4-30'	7/20/1993	30	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
B-4-35'	7/20/1993	35	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA
B-4-40'	7/20/1993	40	<10	<0.005	<0.005	<0.005	<0.015	NA	NA	NA	NA	NA	NA

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SOIL SAMPLE ID	DATE	SAMPLE DEPTH feet bgs	TPHg mg/kg	BENZENE mg/kg	TOLUENE mg/kg	ETHYL-BENZENE mg/kg	TOTAL XYLENES mg/kg	LEAD mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg
Facility Upgrade Soil Samples analyzed by EPA 8015M and 8260B													
Dispenser Soil Samples													
D-1-3'	1/17/2001	3	<0.22	<0.0017	<0.0017	<0.0017	<0.0017	NA	<0.140	<0.0042	<0.0042	<0.0042	0.07
D-2-3'	1/17/2001	3	0.28	<0.0015	<0.0015	<0.0015	<0.0015	NA	0.0039	<0.0039	<0.0039	<0.0039	<0.015
D-3-3'	1/17/2001	3	1.3	<0.0017	<0.0017	0.041	0.250	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.017
D-4-3'	1/17/2001	3	<0.20	<0.0017	<0.0017	<0.0017	<0.0017	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.017
D-5-3	1/17/2001	3	0.61	0.011	<0.0016	0.035	0.064	NA	0.63	<0.0041	<0.0041	<0.0041	0.25
D-6-3'	1/17/2001	3	580	2.6	74	15	180	NA	9.8	<0.190	<0.190	<0.190	0.98
D-7-3'	1/17/2001	3	200	1.3	13	7.1	35	NA	15	<0.230	<0.230	<0.230	14
D-8-3'	1/17/2001	3	110	0.076	0.19	0.13	0.58	NA	10	<0.0038	<0.0038	0.022	0.500
Facility Upgrade Soil Samples continued analyzed by EPA 8015M and 8260B													
Product Piping Soil Samples													
P-1-3'	1/17/2001	3	<0.18	<0.0018	<0.0018	<0.0018	<0.0018	NA	<0.0045	<0.0045	<0.0045	<0.0045	<0.018
P-2-3'	1/17/2001	3	<0.16	<0.0020	<0.0020	<0.0020	<0.0020	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.020
P-3-3'	1/17/2001	3	<0.23	<0.0017	<0.0017	<0.0017	<0.0017	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.017
Groundwater Monitoring Well Soil Samples													
GMW-1-5	11/14/2001	5	<0.25	< 0.0018	< 0.0018	< 0.0018	< 0.0018	NA	< 0.0045	< 0.0045	< 0.0045	< 0.0045	< 0.018
GMW-1-10	11/14/2001	10	< 0.21	< 0.0017	< 0.0017	< 0.0017	< 0.0017	NA	< 0.0043	< 0.0043	< 0.0043	< 0.0043	< 0.017
GMW-1-15	11/14/2001	15	< 0.35	< 0.0026	< 0.0026	< 0.0026	< 0.0026	NA	< 0.0066	< 0.0066	< 0.0066	< 0.0066	< 0.026
GMW-1-20	11/14/2001	20	< 0.35	< 0.0026	< 0.0026	< 0.0026	< 0.0026	NA	< 0.0066	< 0.0066	< 0.0066	< 0.0066	< 0.026
GMW-1-25	11/14/2001	25	< 0.35	< 0.0026	< 0.0026	< 0.0026	< 0.0026	NA	< 0.0064	< 0.0064	< 0.0064	< 0.0064	< 0.026
GMW-1-30	11/14/2001	30	< 0.28	< 0.0025	< 0.0025	< 0.0025	< 0.0025	NA	< 0.0062	< 0.0062	< 0.0062	< 0.0062	< 0.025
GMW-1-35	11/14/2001	35	< 0.31	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	0.021	< 0.0057	< 0.0057	< 0.0057	< 0.023
GMW-1-40	11/14/2001	40	< 0.28	< 0.0029	< 0.0029	< 0.0029	< 0.0029	NA	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.029
GMW-1-45	11/14/2001	45	< 0.28	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	0.0075 J	< 0.0057	< 0.0057	< 0.0057	0.83
GMW-1-50	11/14/2001	50	< 0.30	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	0.0061 J	< 0.0057	< 0.0057	< 0.0057	0.16
GMW-1-55	11/14/2001	55	< 0.30	< 0.0024	< 0.0024	< 0.0024	< 0.0024	NA	< 0.0060	< 0.0060	< 0.0060	< 0.0060	0.53
GMW-1-60	11/14/2001	60	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.061	< 0.0050	< 0.0050	< 0.0050	0.057
GMW-1-65	11/14/2001	65	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.0087 J	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-1-70	11/14/2001	70	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.013	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-1-75	11/14/2001	75	< 0.21	< 0.0018	< 0.0018	< 0.0018	< 0.0018	NA	0.086	< 0.0044	< 0.0044	< 0.0044	< 0.018
GMW-1-80	11/14/2001	80	< 0.23	< 0.0018	< 0.0018	< 0.0018	< 0.0018	NA	0.014	< 0.0045	< 0.0045	< 0.0045	< 0.018
GMW-1-85	11/14/2001	85	< 0.25	< 0.0018	< 0.0018	< 0.0018	< 0.0018	NA	< 0.0045	< 0.0045	< 0.0045	< 0.0045	< 0.018
GMW-2-5	11/14/2001	5	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-2-10	11/14/2001	10	< 0.22	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-2-15	11/14/2001	15	< 0.22	< 0.0017	< 0.0017	< 0.0017	< 0.0017	NA	< 0.0042	< 0.0042	< 0.0042	< 0.0042	< 0.017
GMW-2-20	11/14/2001	20	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020

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Groundwater Monitoring Well Soil Samples continued analyzed by EPA 8015M and 8260B													
GMW-2-25	11/14/2001	25	< 0.22	< 0.0024	< 0.0024	< 0.0024	< 0.0024	NA	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.024
GMW-2-30	11/14/2001	30	< 0.28	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.023
GMW-2-35	11/14/2001	35	< 0.25	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.023
GMW-2-40	11/14/2001	40	< 0.29	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.023
GMW-2-45	11/14/2001	45	< 0.31	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-2-50	11/14/2001	50	< 0.25	< 0.0026	< 0.0026	< 0.0026	< 0.0026	NA	< 0.0064	< 0.0064	< 0.0064	< 0.0064	< 0.026
GMW-2-55	11/14/2001	55	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.0052 J	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-2-60	11/14/2001	60	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.0068 J	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-2-65	11/14/2001	65	< 0.21	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-2-70	11/14/2001	70	< 0.25	< 0.0017	< 0.0017	< 0.0017	< 0.0017	NA	< 0.0042	< 0.0042	< 0.0042	< 0.0042	< 0.017
GMW-2-75	11/14/2001	75	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-2-80	11/14/2001	80	< 0.22	< 0.0018	< 0.0018	< 0.0018	< 0.0018	NA	< 0.0045	< 0.0045	< 0.0045	< 0.0045	< 0.018
GMW-3-5	11/15/2001	5	< 0.22	< 0.0016	< 0.0016	< 0.0016	< 0.0016	NA	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.016
GMW-3-10	11/15/2001	10	< 0.25	< 0.0017	0.0019 J	< 0.0017	0.0030 J	NA	< 0.0043	< 0.0043	< 0.0043	< 0.0043	< 0.017
GMW-3-15	11/15/2001	15	< 0.28	< 0.0025	< 0.0025	< 0.0025	< 0.0025	NA	< 0.0062	< 0.0062	< 0.0062	< 0.0062	< 0.025
GMW-3-20	11/15/2001	20	< 0.25	< 0.0028	< 0.0028	< 0.0028	< 0.0028	NA	< 0.0069	< 0.0069	< 0.0069	< 0.0069	< 0.028
GMW-3-25	11/15/2001	25	< 0.31	< 0.0026	< 0.0026	< 0.0026	< 0.0026	NA	< 0.0064	< 0.0064	< 0.0064	< 0.0064	< 0.026
GMW-3-30	11/15/2001	30	<0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-3-35	11/15/2001	35	<0.25	< 0.0026	< 0.0026	< 0.0026	< 0.0026	NA	< 0.0064	< 0.0064	< 0.0064	< 0.0064	< 0.026
GMW-3-40	11/15/2001	40	<0.25	< 0.0017	< 0.0017	< 0.0017	< 0.0017	NA	< 0.0042	< 0.0042	< 0.0042	< 0.0042	< 0.017
GMW-3-45	11/15/2001	45	<0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-3-50	11/15/2001	50	<0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-3-55	11/15/2001	55	<0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-3-60	11/15/2001	60	0.92	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	5.4	< 0.0050	< 0.0050	0.015	0.67
GMW-3-65	11/15/2001	65	<0.25	< 0.0018	< 0.0018	< 0.0018	< 0.0018	NA	0.066	< 0.0045	< 0.0045	< 0.0045	< 0.018
GMW-3-70	11/15/2001	70	< 0.21	< 0.0017	< 0.0017	< 0.0017	< 0.0017	NA	0.022	< 0.0043	< 0.0043	< 0.0043	< 0.017
GMW-3-75	11/15/2001	75	< 0.22	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.014	< 0.0050	< 0.0050	< 0.0050	< 0.020

Table 1
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SOIL SAMPLE ID	DATE	SAMPLE DEPTH feet bgs	TPHg mg/kg	BENZENE mg/kg	TOLUENE mg/kg	ETHYL-BENZENE mg/kg	TOTAL XYLENES mg/kg	LEAD mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg
Groundwater Monitoring Well Soil Samples continued analyzed by EPA 8015M and 8260B													
GMW-4-5	11/15/2001	5	< 0.22	< 0.0016	< 0.0016	< 0.0016	< 0.0016	NA	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.016
GMW-4-10	11/15/2001	10	< 0.28	< 0.0017	< 0.0017	< 0.0017	< 0.0017	NA	0.81 J	< 0.0043	< 0.0043	0.010	0.13
GMW-4-15	11/15/2001	15	< 0.25	< 0.0017	< 0.0017	< 0.0017	< 0.0017	NA	0.52 J	< 0.0042	< 0.0042	< 0.0042	0.023 J
GMW-4-20	11/15/2001	20	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
GMW-4-25	11/15/2001	25	< 0.30	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	0.0075 J	< 0.0058	< 0.0058	< 0.0058	< 0.023
GMW-4-30	11/15/2001	30	< 0.25	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	0.017	< 0.0057	< 0.0057	< 0.0057	< 0.023
GMW-4-35	11/15/2001	35	0.28	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.66	< 0.0050	< 0.0050	< 0.0050	5.5 J
GMW-4-40	11/15/2001	40	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.16	< 0.0050	< 0.0050	< 0.0050	0.44
GMW-4-45	11/15/2001	45	< 0.29	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.081	< 0.0050	< 0.0050	< 0.0050	0.18
GMW-4-50	11/15/2001	50	< 0.25	< 0.0026	< 0.0026	< 0.0026	< 0.0026	NA	0.0098 J	< 0.0066	< 0.0066	< 0.0066	< 0.026
GMW-4-55	11/15/2001	55	< 0.28	< 0.0024	< 0.0024	< 0.0024	< 0.0024	NA	< 0.0060	< 0.0060	< 0.0060	< 0.0060	0.19
GMW-4-60	11/15/2001	60	< 0.21	< 0.0017	< 0.0017	< 0.0017	< 0.0017	NA	0.23	< 0.0042	< 0.0042	< 0.0042	< 0.017
GMW-4-65	11/15/2001	65	< 0.22	< 0.0018	< 0.0018	< 0.0018	< 0.0018	NA	0.073	< 0.0044	< 0.0044	< 0.0044	< 0.018
GMW-4-70	11/15/2001	70	< 0.22	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.45	< 0.0050	< 0.0050	< 0.0050	0.030 J
GMW-4-75	11/15/2001	75	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.014	< 0.0050	< 0.0050	< 0.0050	< 0.020
Soil Vapor Extraction Well Soil Samples													
SVE-1-5	11/16/2001	5	< 0.20	< 0.0016	0.0021 J	< 0.0016	0.0049 J	NA	0.0075 J	< 0.0040	< 0.0040	< 0.0040	< 0.016
SVE-1-10	11/16/2001	10	< 0.19	< 0.0016	< 0.0016	< 0.0016	< 0.0016	NA	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.016
SVE-1-15	11/16/2001	15	< 22	< 0.0017	< 0.0017	0.017	0.96	NA	36	< 0.0043	< 0.0043	0.0049 J	0.084
SVE-1-20	11/16/2001	20	< 0.21	< 0.0018	< 0.0018	< 0.0018	0.0020 J	NA	< 0.61	< 0.0045	< 0.0045	0.0070 J	0.28
SVE-1-25	11/16/2001	25	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-1-30	11/16/2001	30	< 0.30	< 0.0020	< 0.0020	< 0.0020	0.014	NA	0.039	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-1-35	11/16/2001	35	< 0.30	< 0.0024	< 0.0024	< 0.0024	< 0.0024	NA	0.012	< 0.0060	< 0.0060	< 0.0060	< 0.024
SVE-1-40	11/16/2001	40	< 0.25	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.023
SVE-1-45	11/16/2001	45	< 0.25	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	0.0065 J	< 0.0058	< 0.0058	< 0.0058	< 0.023
SVE-1-50	11/16/2001	50	< 0.25	< 0.0020	< 0.0020	< 0.0020	0.038	NA	0.14	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-1-55	11/16/2001	55	< 0.25	< 0.0020	< 0.0020	< 0.0020	0.0025 J	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020

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SOIL SAMPLE ID	DATE	SAMPLE DEPTH feet bgs	TPHg mg/kg	BENZENE mg/kg	TOLUENE mg/kg	ETHYL-BENZENE mg/kg	TOTAL XYLENES mg/kg	LEAD mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg
Soil Vapor Extraction Well Soil Samples continued analyzed by EPA 8015M and 8260B													
SVE-1-60	11/16/2001	60	< 0.32	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.0071 J	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-1-65	11/16/2001	65	< 0.25	< 0.0018	< 0.0018	< 0.0018	< 0.0018	NA	< 0.0045	< 0.0045	< 0.0045	< 0.0045	< 0.018
SVE-2-5	11/16/2001	5	< 0.20	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.024	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-2-10	11/16/2001	10	260	< 0.0017	0.0020 J	0.098	0.22	NA	0.029	< 0.0042	< 0.0042	< 0.0042	< 0.017
SVE-2-15	11/16/2001	15	1700	< 0.17	0.17 J	< 0.17	0.19 J	NA	< 0.43	< 0.43	< 0.43	< 0.43	< 1.7
SVE-2-20	11/16/2001	20	< 0.32	< 0.0024	< 0.0024	< 0.0024	< 0.0024	NA	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.024
SVE-2-25	11/16/2001	25	0.33 J	< 0.0026	< 0.0026	< 0.0026	< 0.0026	NA	< 0.0064	< 0.0064	< 0.0064	< 0.0064	< 0.026
SVE-2-30	11/16/2001	30	< 0.36	< 0.0027	< 0.0027	< 0.0027	< 0.0027	NA	< 0.0068	< 0.0068	< 0.0068	< 0.0068	< 0.027
SVE-2-35	11/16/2001	35	< 0.29	< 0.0024	< 0.0024	< 0.0024	< 0.0024	NA	< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.024
SVE-2-40	11/16/2001	40	< 0.30	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	< 0.0058	< 0.0058	< 0.0058	< 0.0058	< 0.023
SVE-2-45	11/16/2001	45	< 0.28	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-2-50	11/16/2001	50	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.0064 J	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-2-55	11/16/2001	55	< 0.25	0.0020 J	0.0026 J	< 0.0020	0.0036 J	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-2-60	11/16/2001	60	< 0.28	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-3-5	11/19/01	5	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-3-10	11/19/01	10	< 0.20	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.043 J
SVE-3-15	11/19/01	15	< 0.25	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-3-20	11/19/01	20	< 0.33	< 0.0025	< 0.0025	< 0.0025	< 0.0025	NA	< 0.0063	< 0.0063	< 0.0063	< 0.0063	< 0.025
SVE-3-25	11/19/01	25	< 0.35	< 0.0024	< 0.0024	< 0.0024	< 0.0024	NA	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.024
SVE-3-30	11/19/01	30	< 0.29	< 0.0024	< 0.0024	< 0.0024	< 0.0024	NA	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.024
SVE-3-35	11/19/01	35	< 0.31	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020
SVE-3-40	11/19/01	40	< 0.29	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.030	< 0.0050	< 0.0050	< 0.0050	0.023 J
SVE-3-45	11/19/01	45	< 0.29	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.023
SVE-3-50	11/19/01	50	< 0.29	< 0.0023	< 0.0023	< 0.0023	< 0.0023	NA	0.0097 J	< 0.0057	< 0.0057	< 0.0057	0.066
SVE-3-55	11/19/01	55	< 0.29	< 0.0026	< 0.0026	< 0.0026	0.0036 J	NA	< 0.0064	< 0.0064	< 0.0064	< 0.0064	< 0.026
SVE-3-60	11/19/01	60	< 0.30	< 0.0028	< 0.0028	< 0.0028	< 0.0028	NA	< 0.0069	< 0.0069	< 0.0069	< 0.0069	< 0.028
SVE-3-65	11/19/01	65	< 0.29	< 0.0020	< 0.0020	< 0.0020	< 0.0020	NA	0.090	< 0.0050	< 0.0050	< 0.0050	0.086

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Soil Vapor Extraction Well Soil Samples continued analyzed by EPA 8015M and 8260B													
SVE-4-5	11/19/01	5	0.48 J	<0.074	<0.074	3.2	12	NA	0.99	<0.19	<0.19	<0.19	<0.74
SVE-4-10	11/19/01	10	0.23 J	<0.074	<0.074	<0.074	<0.074	NA	2.3	<0.19	<0.19	<0.19	1.8 J
SVE-4-15	11/19/01	15	630	0.19 J	<0.018	1.5	6.8	NA	21	<0.20	<0.20	0.38 J	7.1
SVE-4-20	11/19/01	20	870	<0.12	0.23 J	0.94	8.2	NA	<0.30	<0.30	<0.30	<0.30	<1.2
SVE-4-25	11/19/01	25	2.0	<0.0025	0.0070	0.036	0.26	NA	0.018	<0.0062	<0.0062	<0.0062	0.11
SVE-4-30	11/19/01	30	0.39 J	<0.0023	<0.0023	<0.0023	<0.0023	NA	<0.0059	<0.0059	<0.0059	<0.0059	< 0.023
SVE-4-35	11/19/01	35	<0.25	<0.0024	<0.0024	<0.0024	<0.0024	NA	0.011 J	<0.0061	<0.0061	<0.0061	<0.024
SVE-4-40	11/19/01	40	<0.31	<0.0020	<0.0020	<0.0020	<0.0020	NA	0.010	<0.0050	<0.0050	<0.0050	<0.024
SVE-4-45	11/19/01	45	<0.25	<0.0020	<0.0020	<0.0020	<0.0020	NA	0.030	<0.0050	<0.0050	<0.0050	<0.020
SVE-4-50	11/19/01	50	<0.31	<0.0024	<0.0024	<0.0024	<0.0024	NA	0.012	<0.0059	<0.0059	<0.0059	0.067
SVE-4-55	11/19/01	55	<0.38	<0.0024	<0.0024	<0.0024	<0.0024	NA	<0.0061	<0.0061	<0.0061	<0.0061	0.052 J
SVE-4-60	11/19/01	60	<0.32	<0.0024	<0.0024	<0.0024	<0.0024	NA	<0.0059	<0.0059	<0.0059	<0.0059	<0.024
SVE-4-65	11/19/01	65	0.68	<0.095	<0.095	<0.095	0.13 J	NA	8.8	<0.24	<0.24	<0.24	<0.95
Groundwater Monitoring Well Soil Samples													
GMW-5-5	07/18/02	5'	<0.81	<0.0016	<0.0016	<0.0016	<0.0032	NA	<0.0041	<0.0041	<0.0041	<0.0041	<0.041
GMW-5-10	07/18/02	10'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-5-15	07/18/02	15'	<1.0	<0.0017	<0.0017	<0.0017	<0.0034	NA	<0.0043	<0.0043	<0.0043	<0.0043	<0.043
GMW-5-20	07/18/02	20'	<1.1	<0.0022	<0.0022	<0.0022	<0.0045	NA	<0.0056	<0.0056	<0.0056	<0.0056	<0.056
GMW-5-25	07/18/02	25'	<1.1	<0.0020	<0.0020	<0.0020	0.00073 J	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-5-30	07/18/02	30'	<1.2	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-5-35	07/18/02	35'	<1.0	<0.0023	<0.0023	<0.0023	<0.0046	NA	<0.0058	<0.0058	<0.0058	<0.0058	<0.058
GMW-5-40	07/18/02	40'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-5-45	07/18/02	45'	<1.0	<0.0028	<0.0028	<0.0028	<0.0055	NA	<0.0069	<0.0069	<0.0069	<0.0069	<0.069
GMW-5-50	07/18/02	50'	<1.2	<0.0024	<0.0024	<0.0024	<0.0047	NA	0.0015 J	<0.0059	<0.0059	<0.0059	<0.059
GMW-5-55	07/18/02	55'	<1.0	<0.0023	<0.0023	<0.0023	<0.0046	NA	0.00097 J	<0.0057	<0.0057	<0.0057	<0.057
GMW-5-60	07/18/02	60'	<0.85	<0.0017	<0.0017	<0.0017	<0.0035	NA	0.00070 J	<0.0044	<0.0044	<0.0044	<0.044
GMW-5-65	07/18/02	65'	<0.79	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050

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Groundwater Monitoring Well Soil Samples continued analyzed by EPA 8015M and 8260B													
GMW-5-70	07/18/02	70'	<0.77	<0.0018	<0.0018	<0.0018	<0.0036	NA	<0.0045	<0.0045	<0.0045	<0.0045	<0.045
GMW-6-5	07/18/02	5'	<0.87	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-6-10	07/18/02	10'	<0.88	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-6-15	07/18/02	15'	<1.2	<0.0025	<0.0025	<0.0025	<0.0049	NA	<0.0062	<0.0062	<0.0062	<0.0062	<0.062
GMW-6-20	07/18/02	20'	<1.2	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-6-25	07/18/02	25'	<1.1	<0.0023	<0.0023	<0.0023	<0.0046	NA	<0.0057	<0.0057	<0.0057	<0.0057	<0.057
GMW-6-30	07/18/02	30'	<1.1	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-6-35	07/18/02	35'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-6-40	07/18/02	40'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.00084 J	<0.0050	<0.0050	<0.0050	<0.050
GMW-6-45	07/18/02	45'	<1.2	<0.0022	<0.0022	<0.0022	<0.0045	NA	<0.0056	<0.0056	<0.0056	<0.0056	<0.056
GMW-6-50	07/18/02	50'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-6-55	07/18/02	55'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-6-60	07/18/02	60'	<0.84	<0.0018	<0.0018	<0.0018	<0.0036	NA	0.0039 J	<0.0045	<0.0045	<0.0045	<0.045
GMW-6-65	07/18/02	65'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.0025 J	<0.0050	<0.0050	<0.0050	<0.050
GMW-6-70	07/18/02	70'	<0.84	<0.0017	<0.0017	<0.0017	<0.0033	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.042
GMW-7-55	07/17/02	55'	<1.0	<0.0024	<0.0024	<0.0024	<0.0048	NA	<0.0060	<0.0060	<0.0060	<0.0060	<0.060
GMW-8-55	07/16/02	55'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-9-55	07/16/02	55'	<1.2	<0.0020	<0.0020	<0.0020	<0.0040	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
GMW-10-55	07/17/02	55'	<1.2	<0.0025	<0.0025	<0.0025	<0.0051	NA	0.014	<0.0063	<0.0063	<0.0063	0.032 J
Soil Vapor Extraction Well Soil Samples													
SVE-5-5	10/09/02	5'	<0.76	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.0023 J	<0.0050	<0.0050	<0.0050	<0.050
SVE-5-10	10/09/02	10'	<0.88	<0.0018	<0.0018	<0.0018	<0.0035	NA	0.047	<0.0044	<0.0044	<0.0044	<0.044
SVE-5-15	10/09/02	15'	0.15 J	<0.0016	<0.0016	<0.0016	<0.0033	NA	1.2	<0.0041	<0.0041	0.00057 J	<0.041
SVE-5-20	10/09/02	20'	<1.1	<0.0023	<0.0023	<0.0023	<0.0046	NA	0.0050 J	<0.0058	<0.0058	<0.0058	<0.058
SVE-5-25	10/09/02	25'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.0033 J	<0.0050	<0.0050	<0.0050	<0.050
SVE-5-30	10/09/02	30'	<1.5	<0.0025	<0.0025	<0.0025	<0.0051	NA	0.039	<0.0063	<0.0063	<0.0063	<0.063

Table 1
Soil Analytical Data
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

SOIL SAMPLE ID	DATE	SAMPLE DEPTH feet bgs	TPHg mg/kg	BENZENE mg/kg	TOLUENE mg/kg	ETHYL-BENZENE mg/kg	TOTAL XYLENES mg/kg	LEAD mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg
Soil Vapor Extraction Well Soil Samples continued analyzed by EPA 8015M and 8260B													
SVE-5-35	10/09/02	35'	<1.2	<0.0028	<0.0028	<0.0028	<0.0057	NA	0.053	<0.0071	<0.0071	<0.0071	<0.071
SVE-5-40	10/09/02	40'	<1.0	<0.0023	<0.0023	<0.0023	<0.0045	NA	0.068	<0.0057	<0.0057	<0.0057	<0.057
SVE-5-45	10/09/02	45'	<1.2	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.25 J	<0.0050	<0.0050	<0.0050	<0.050
SVE-5-50	10/09/02	50'	0.22 J	<0.0023	<0.0023	<0.0023	<0.0046	NA	0.25 J	<0.0057	<0.0057	0.00059 J	0.0067 J
SVE-5-55	10/09/02	55'	<1.3	<0.0025	<0.0025	<0.0025	<0.0050	NA	0.027	<0.0063	<0.0063	<0.0063	0.038 J
SVE-5-60	10/09/02	60'	0.087 J	<0.0017	<0.0017	<0.0017	<0.0035	NA	0.22	<0.0044	<0.0044	<0.0044	<0.044
SVE-5-65	10/09/02	65'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.0061	<0.0050	<0.0050	<0.0050	<0.050
SVE-5-70	10/09/02	70'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.19	<0.0050	<0.0050	<0.0050	<0.050
SVE-6-5	10/09/02	5'	<0.83	<0.0015	<0.0015	<0.0015	<0.0030	NA	<0.0038	<0.0038	<0.0038	<0.0038	<0.038
SVE-6-10	10/09/02	10'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.047	<0.0050	<0.0050	<0.0050	<0.050
SVE-6-15	10/09/02	15'	<0.81	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.016	<0.0050	<0.0050	<0.0050	<0.050
SVE-6-20	10/09/02	20'	<1.2	<0.0031	<0.0031	<0.0031	<0.0063	NA	<0.0078	<0.0078	<0.0078	<0.0078	<0.078
SVE-6-25	10/09/02	25'	<1.1	<0.0023	<0.0023	<0.0023	<0.0046	NA	<0.0057	<0.0057	<0.0057	<0.0057	<0.057
SVE-6-30	10/09/02	30'	<0.86	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.0042 J	<0.0050	<0.0050	<0.0050	<0.050
SVE-6-35	10/09/02	35'	<1.4	<0.0039	<0.0039	<0.0039	<0.0078	NA	0.010	<0.0098	<0.0098	<0.0098	<0.098
SVE-6-40	10/09/02	40'	<1.3	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.23	<0.0050	<0.0050	<0.0050	0.023 J
SVE-6-45	10/09/02	45'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.21 J	<0.0050	<0.0050	0.0014 J	0.056
SVE-6-50	10/09/02	50'	<1.3	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.27	<0.0050	<0.0050	0.00053 J	0.054
SVE-6-55	10/09/02	55'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.27	<0.0050	<0.0050	<0.0050	0.14
SVE-6-57	10/09/02	57'	0.10 J	<0.0023	<0.0023	<0.0023	<0.0046	NA	0.083	<0.0058	<0.0058	<0.0058	0.64
SVE-6-60	10/09/02	60'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.18	<0.0050	<0.0050	<0.0050	0.20
SVE-6-65	10/09/02	65'	0.17 J	<0.0018	<0.0018	<0.0018	<0.0035	NA	0.38	<0.0044	<0.0044	0.0012 J	0.16
SVE-6-70	10/09/02	70'	<1.0	<0.0017	<0.0017	<0.0017	<0.0033	NA	<0.0042	<0.0042	<0.0042	<0.0042	<0.042
SVE-7-5	10/09/02	5'	<1.0	<0.0016	<0.0016	<0.0016	<0.0031	NA	0.00080 J	<0.0039	<0.0039	<0.0039	<0.039
SVE-7-10	10/09/02	10'	0.099 J	<0.0016	<0.0016	<0.0016	<0.0033	NA	0.67	<0.0041	<0.0041	0.00058 J	<0.041
SVE-7-15	10/09/02	15'	0.58 J	<0.0018	<0.0018	<0.0018	<0.0035	NA	2.7	<0.0044	<0.0044	0.0042 J	0.090
SVE-7-20	10/09/02	20'	<1.3	<0.0025	<0.0025	<0.0025	<0.0051	NA	<0.0064	<0.0064	<0.0064	<0.0064	<0.064

Table 1
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Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

SOIL SAMPLE ID	DATE	SAMPLE DEPTH feet bgs	TPHg mg/kg	BENZENE mg/kg	TOLUENE mg/kg	ETHYL-BENZENE mg/kg	TOTAL XYLENES mg/kg	LEAD mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg
Soil Vapor Extraction Well Soil Samples continued analyzed by EPA 8015M and 8260B													
SVE-7-25	10/09/02	25'	<1.2	<0.0024	<0.0024	<0.0024	<0.0047	NA	0.0014 J	<0.0059	<0.0059	<0.0059	<0.059
SVE-7-30	10/09/02	30'	<1.3	<0.0026	<0.0026	<0.0026	<0.0052	NA	<0.0065	<0.0065	<0.0065	<0.0065	<0.065
SVE-7-35	10/09/02	35'	<1.4	<0.0033	<0.0033	<0.0033	<0.0066	NA	0.015	<0.0083	<0.0083	<0.0083	<0.083
SVE-7-40	10/09/02	40'	<1.4	<0.0018	<0.0018	<0.0018	<0.0036	NA	0.070	<0.0045	<0.0045	<0.0045	<0.045
SVE-7-45	10/09/02	45'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.29	<0.0050	<0.0050	<0.0050	<0.050
SVE-7-50	10/09/02	50'	<1.4	<0.0026	<0.0026	<0.0026	<0.0053	NA	0.081	<0.0066	<0.0066	<0.0066	0.050 J
SVE-7-55	10/09/02	55'	<1.3	<0.0027	<0.0027	<0.0027	<0.0054	NA	0.027	<0.0068	<0.0068	<0.0068	1.4
SVE-7-57	10/09/02	57'	<1.0	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.39	<0.0050	<0.0050	0.00074 J	0.053
SVE-7-60	10/09/02	60'	0.18 J	<0.0018	<0.0018	<0.0018	<0.0036	NA	1.1	<0.0045	<0.0045	0.0016 J	0.13
SVE-7-65	10/09/02	65'	<1.1	<0.0020	<0.0020	<0.0020	<0.0040	NA	0.038	<0.0050	<0.0050	<0.0050	<0.050
SVE-7-70	10/09/02	70'	<1.0	<0.0024	<0.0024	<0.0024	<0.0048	NA	<0.0060	<0.0060	<0.0060	<0.0060	<0.060

NOTES:

TPHg = Total peroleum hydrocarbons as gasoline
MTBE = Methyl teriary butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tertiary butyl ether
TAME = Tertiary amyl methyl ether
TBA = Teriary butanol
mg/kg = milligrams per kilogram
SP = Stock Pile
feet bgs = feet below ground surface
< =Analyte not detected at or above reporting limit or method detection if limit specified
J = Analyte detected at a level less than the Reporting Limit and greater than the Method Detection Limit

Table 2
Soil Vapor Analytical Data
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Sample ID	Date	DEPTH feet bgs	PEAKS PRIOR TO BENZENE ppm	BENZENE ppm	TOLUENE ppm	ETHYL-BENZENE ppm	m,p-XYLENES ppm	o- XYLENE ppm	TOTAL VOLATILE HYDROCARBONS ppm
V1	10/25/1991	5	ND	ND	ND	ND	ND	ND	ND
V1	10/25/1991	10	197	2	7	ND	1	1	228
V1	10/25/1991	14	206	2	5	ND	1	1	235
V2	10/25/1991	15	3814	26	84	ND	4	ND	4278
V3	10/25/1991	10	13	ND	1	ND	ND	ND	15
V4	10/25/1991	10	20	1	2	ND	ND	ND	26
V5	10/25/1991	10	5692	NI	796	36	87	26	6748
V6	10/25/1991	5	49	6	26	1	2	1	98
V7	10/25/1991	5	26	1	2	ND	1	1	34
V8	10/25/1991	5	19	1	4	ND	1	ND	30
V9	10/25/1991	5	3	1	2	ND	1	ND	8
V10	10/25/1991	5	3	ND	1	ND	1	ND	8
V11	10/25/1991	5	1	ND	1	ND	1	ND	4
V12	10/25/1991	5	1	ND	1	ND	1	ND	4
V13	10/25/1991	5	ND	ND	ND	ND	ND	ND	1
V14	10/25/1991	5	NS	NS	NS	NS	NS	NS	NS
V15	11/7/1991	5	ND	ND	ND	ND	ND	ND	ND
V16	11/7/1991	5	ND	ND	ND	ND	ND	ND	ND
V17	11/7/1991	5	ND	ND	ND	ND	ND	ND	ND
V18	11/7/1991	5	124	34	610	33	124	16	1,571
V19	11/7/1991	10	ND	ND	ND	ND	ND	ND	ND
V20	11/7/1991	5	ND	ND	ND	ND	ND	ND	ND
V21	11/7/1991	5	ND	ND	ND	ND	ND	ND	ND

Notes:
ND = Not detected above laboratory limits
NS = Not sampled
feet bgs = feet below ground surface
ppm = parts per million

Table 3
Soil Polynuclear Aromatic Hydrocabons Analytical Data
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

WELL ID	SAMPLE DEPTH feet bgs	DATE	Acenaphthene mg/kg	Acenaphthylene mg/kg	Anthracene mg/kg	Benzo(a)anthracene mg/kg	Benzo(b)fluoranthene mg/kg	Benzo(k)fluoranthene mg/kg	Benzo(g,h,i)perylene mg/kg	Benzo(a)pyrene mg/kg	Chrysene mg/kg	Dibenz(a,h)anthracene mg/kg	Fluoranthene mg/kg	Fluorene mg/kg	Indeno(1,2,3-cd)pyrene mg/kg	2-Methylnaphthalene mg/kg	Naphthalene mg/kg	Phenanthrene mg/kg	Pyrene mg/kg
SVE-5B	50	10/09/02	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.42	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
SVE-6B	65	10/09/02	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.42	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
SVE-7B	15	10/09/02	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.42	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33

Notes:
mg/kg = Milligrams per kilogram
< = less than laboratory limits

Table 4
Well Construction Details
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date Installed	Blank Casing Interval feet bgs	Screen Interval feet bgs	Total Depth feet bgs	Well Diameter inches	Casing Elevation feet amsl	Screen Slot Size inches	Bentonite Seal feet bgs	Grout Interval feet bgs	Well Type	Location
MW1	03/08/90	0 - 5	5 - 20	20	4	--	0.010	2.5 - 3.5	1-2.5	VZ	former UST area
MW2	03/08/90	0 - 5	5 - 20	20	4	--	0.010	2.5 - 3.5	1-2.5	VZ	former UST area
MW3	03/08/90	0 - 7	7 - 17	17	4	--	0.010	4 - 5.5	1-4	VZ	former UST area
W-1	07/22/93	0 - 5	5 - 20	20	4	--	0.020	1 - 4	--	SVE	former UST area
W-2	07/21/93	0 - 5	5 - 20	20	4	--	0.020	1 - 4	--	SVE	North of former
W-3	07/21/93	0 - 5	5 - 10	10	4	--	0.020	1 - 4	--	SVE	NE of N Disp
W-5	07/20/93	0 - 5	5 - 15	15	4	--	0.020	1 - 4	--	SVE	NW of W Disp
W-6	07/20/93	0 - 5	5 - 20	20	4	--	0.020	1 - 4	--	SVE	SW of W Disp
GMW-1	11/14/01	0 - 50	50 - 85	85	2	37.96	0.020	46 - 48	2-46	GW	South side of
GMW-2	11/14/01	0 - 50	50 - 80	80	2	37.96	0.020	46 - 48	2-46	GW	SW of N Disp
GMW-3	11/15/01	0 - 45	45 - 75	75	2	38.04	0.020	41 - 43	2-41	GW	Northwest
GMW-4	11/15/01	0 - 45	45 - 75	75	2	37.17	0.020	41 - 43	2-41	GW	Southwest
SVE-1	11/16/01	0 - 30	30 - 65	65	2	--	0.020	26 - 28	2-26	SVE	East end of
SVE-2	11/16/01	0 - 5	5 - 30	30	2	--	0.020	2 - 4	--	SVE	West end of
SVE-3	11/19/01	0 - 30	30 - 65	65	2	--	0.020	28 - 30	2-28	SVE	North end of
SVE-4	11/19/01	0 - 5	5 - 30	30	2	--	0.020	2 - 4	--	SVE	South end of
GMW-5	07/18/02	0 - 40	40 - 70	70	2	37.20	0.020	2 - 38	--	GW	Southeast
GMW-6	07/18/02	0 - 40	40 - 70	70	2	37.44	0.020	2 - 38	--	GW	North portion of
GMW-7	07/17/02	0 - 40	40 - 70	70	2	35.66	0.020	2 - 38	--	GW	80' South of site
GMW-8	07/16/02	0 - 40	40 - 70	70	2	35.37	0.020	2 - 38	--	GW	70' West of site
GMW-9	07/16/02	0 - 40	40 - 70	70	2	36.19	0.020	2 - 38	--	GW	70' West of site

Table 4
Well Construction Details
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date Installed	Blank Casing Interval feet bgs	Screen Interval feet bgs	Total Depth feet bgs	Well Diameter inches	Casing Elevation feet amsl	Screen Slot Size inches	Bentonite Seal feet bgs	Grout Interval feet bgs	Well Type	Location
GMW-10	07/17/02	0 - 40	40 - 70	70	2	37.62	0.020	2 - 38	--	GW	30' West of site
SVE-5 A	10/08/02	0 - 5	5 - 15	15	2	--	0.020	1 - 3	--	Dual nested	Southwest
SVE-5 B	10/08/02	0 - 25	25 - 70	70	4	--	0.020	17 - 23	--	Dual nested	Southwest
SVE-6 A	10/09/02	0 - 5	5 - 15	15	2	--	0.020	1 - 3	--	Dual nested	Southwest
SVE-6 B	10/09/02	0 - 25	25 - 70	70	4	--	0.020	17 - 23	--	Dual nested	Southwest
SVE-7 A	10/09/02	0 - 5	5 - 15	15	2	--	0.020	1 - 3	--	Dual nested	Southwest
SVE-7 B	10/09/02	0 - 25	25 - 70	70	4	--	0.020	17 - 23	--	Dual nested	Southwest

Notes:
bgs = below ground surface
-- = not applicable / no data to date
amsl = above mean sea level
SVE = soil vapor extraction
GW = groundwater monitoring
VZ = vadoze zone

APPENDIX A

AGENCY CORRESPONDENCE

Winston H. Hickox
Secretary for
Environmental
Protection

Los Angeles Region
Over 50 Years Serving Coastal Los Angeles and Ventura Counties
Recipient of the 2001 Environmental Leadership Award from Keep California Beautiful

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.swrcb.ca.gov/rwqcb4

Gray Davis
Governor

March 11, 2002

FILE COPY

Mr. Raymond Vose
Atlantic Richfield Company
4 Centerpointe Dr.
La Palma, CA 90623-1066

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. Z 415 467 872

IMPLEMENTATION OF FINAL DRAFT GUIDELINES FOR INVESTIGATION AND CLEANUP OF MTBE AND OTHER OXYGENATES: 1. DEVELOPMENT OF PRELIMINARY SITE CONCEPTUAL MODEL; 2. INTERIM REMEDIAL ACTION REPORT; 3. SITE CHARACTERIZATION REPORT; 4. FINAL REMEDIAL ACTION PLAN; AND 5. PERIODIC PROGRESS, UPDATE, AND MONITORING REPORTS.
ARCO FACILITY #1054
980 WEST PACIFIC COAST HIGHWAY, WILMINGTON, CA
(ID# 907440407) (B1 SITE)

Dear Mr. Vose:

BACKGROUND

On February 27, 2002, the City of Los Angeles, Fire Department, referred the subject case to this Regional Board for further action. We have reviewed the "Site Characterization Report " dated January 18, 2002, prepared by Secor International Incorporated for the site. Analytical test results of the groundwater sample collected from Well GMW-4 indicated TPH_G concentration at 8,500 µg/L and Methyl tertiary butyl ether (MTBE) at 19,000 µg/L.

MTBE has been used as an octane booster in the United States since the late 1970's and added to gasoline to comply with Clean Air Act mandates since 1979. The use of MTBE increased dramatically in the early 1990's as a result of Clean Air Act Amendment requirements for reformulated gasoline. Although MTBE in gasoline helps lessen air pollution, it has become a significant contaminant in groundwater. Relative to other fuel hydrocarbons, MTBE has a high solubility in water, a low retardation rate in groundwater aquifers, and is slow to biodegrade. These properties, combined with its high percentage in gasoline (11% to 15%), cause the potential for high source area concentrations, long plumes in groundwater, and long residence times in the subsurface environment. MTBE also has taste and odor characteristics that can impair water quality at very low concentrations. There have been impacts on drinking water wells at dozens of sites throughout California. Most notably, in the greater Los Angeles area, within the Chamock Sub-Basin, a primary local source of drinking water for the City of Santa Monica and the Southern California Water Company.

Governor Davis issued Executive Order D-5-99 on March 25, 1999, and signed Senate Bill 989 on October 8, 1999. These documents recognize that if not managed properly, MTBE can cause significant adverse impacts to current and future beneficial uses of

ground and surface waters. As a result, Final Draft Guidelines for Investigation and Cleanup of MTBE and Other Oxygenates (Final Draft Guidelines) have been developed by the State Water Resources Control Board, Division of Clean Water Programs-Underground Storage Tank Program. The Final Draft Guidelines (copy attached) are intended to assist managers and staff at state and local regulatory agencies with the task of overseeing the investigation and cleanup of sites where there have been or may have been releases of MTBE-laden petroleum fuels or other oxygenates [i.e., tertiary butyl alcohol (TBA), ethyl tertiary butyl ether (ETBE), di-isopropyl ether (DIPE), tertiary amyl methyl ether (TAME), methanol (MeOH), and ethanol (EtOH)]. The Final Draft Guidelines provide definitions for areas that are most vulnerable to groundwater contamination, provide a priority ranking scheme for oxygenate release sites, outline a decision making framework for determining appropriate actions, and propose a timeframe for completing site management milestones.

The Final Draft Guidelines provide a framework for prioritizing resources to work on sites with MTBE or other fuel oxygenate contamination. A complete description of the seven-step process is contained within the Final Draft Guidelines (Pages 6 through 11). The Los Angeles Regional Water Quality Control Board (LARWQCB) is conservatively interpreting the Final Draft Guidelines, which will result in certain Underground Storage Tank (UST) leak cases being included within higher priorities for investigation and cleanup. During March 2001, the LARWQCB issued directive letters to all sites identified with investigation and cleanup priority of A1 [i.e., all sites less than 1,000 feet to a receptor, sites less than 3,000 feet to a receptor that have failed to provide required test results for MTBE and other fuel oxygenates, selected free product sites, and sites in close proximity to sensitive receptors (i.e., schools)]. We have reviewed the information contained in the case file for this site and have assigned an initial investigation and cleanup priority of B1 [i.e., all sites greater than 1,000 feet and less than 3,000 feet from a receptor, selected free product sites, sites in close proximity to sensitive receptors, and/or sites containing high concentrations of oxygenates].

IMPLEMENTATION OF FINAL DRAFT GUIDELINES

Step 1: Initial Investigation/Scoping

In accordance with Step 1 (Initial Investigation/Scoping), We have reviewed the "Site Characterization Report " dated January 18, 2002, prepared by Secor International Incorporated for the site. Based upon our review and evaluation, we find that groundwater beneath the subject site is impacted by petroleum hydrocarbons and/or the gasoline additive MTBE released from UST systems. The site is located within an area determined to be vulnerable to groundwater contamination, as defined in the Final Draft Guidelines. The site overlies an aquifer used as a community water supply and the distance to the closest municipal or domestic supply well (No. 04S13W30K01S) is

approximately 1,229 feet from the site (see attached map). Based upon this information we have assigned an Initial Investigation Priority Class B to the site. You have been identified as the responsible party for the site and, as such, are directed to perform the following corrective action steps:

1. Develop a Preliminary Site Conceptual Model;
2. Develop a technical report detailing the results of all soil and groundwater assessment completed and submit a workplan to complete any remaining soil and/or groundwater investigations necessary to fully define the lateral and vertical extent of any free product or dissolved petroleum hydrocarbon plume(s), to include MTBE or other fuel oxygenate contamination onsite and offsite;
3. Develop a technical report detailing the results of any corrective actions completed and submit a workplan to perform any interim cleanup necessary to contain or control the spread or migration of any residual contamination;
4. Complete an evaluation to estimate plume travel time;
5. Determine a final cleanup remedy;
6. Perform quarterly groundwater monitoring and provide updates to the Site Conceptual Model; and
7. Perform a verification-monitoring program.

All steps are to be developed and performed on an expedited schedule to reduce any adverse impacts to water quality resulting from UST system leaks that have resulted at the site.

Step 2: Develop Preliminary Site Conceptual Model/Assign Investigation Priority Classification

Develop a Preliminary Site Conceptual Model (PSCM) Report consistent with the Final Draft Guidelines-Appendix C (Page 15). As stated above, we have already assigned an Initial Investigation Priority Class B to the site. Under this Initial Investigation Priority and for the purpose of developing the PSCM, the travel time to the nearest production well/receptor is conservatively estimated to be greater than one year and less than 3 years. The technical report (Preliminary Site Conceptual Model) containing the results of this evaluation shall be submitted to this Regional Board by **April 15, 2002.**

The PSCM must incorporate, at a minimum; all the components listed under Appendix C of the "Final Draft Guidelines for Investigation and Cleanup of MTBE and Other Oxygenates" dated March 27, 2000. The PSCM should provide a detailed written and graphical representation of the release scenario, site characteristics (geology, hydrogeology, isoconcentration contour maps for TPH, benzene and MTBE etc.) and the likely distribution of chemicals at the site. It should also identify all pathways for impact to potential receptors from potential sources through transport of chemicals in air, soil and water. The information contained within the PSCM for site assessment activities is critical

in making determinations on the extent of assessment completed and whether any additional hydrogeologic assessment work is necessary at the site.

If the Site Characterization Report indicates that additional soil borings or groundwater monitoring wells are needed to fully define the extent of soil and/or groundwater contamination, then a workplan to complete any remaining assessment must be incorporated into your revised PSCM. The same type of evaluation is required for any cleanup action taken to date or needed to implement a final cleanup plan at the site. Technical reports previously submitted to the Regional Board detailing the results of any soil and/or groundwater assessment, periodic monitoring, or cleanup do not have to be resubmitted. However, you need to repackage the information, so that the PSCM is a complete stand-alone document. Periodic updates to the PSCM are required on a quarterly basis as required in Step 5 below and as defined in Step 5 of the Final Draft Guidelines.

Step 3: Interim Remedial Action

Develop an Interim Remedial Action (IRA) Report detailing the results of any cleanup actions completed to date. At a minimum, the site IRA should:

1. Provide documentation that all existing UST systems operating do not have any ongoing releases. Use the Final Draft Guidelines, Appendix D (Finding Leaks in Tank Systems) as a guide for completing this evaluation;
2. Provide realistic estimates of the total volume(s) of fuels released;
3. Identify all method(s) used for cleanup of petroleum hydrocarbon fuel contamination (i.e., excavation, free product removal, vapor extraction, pump and treat, etc.). Identify any active cleanup systems in place, operational or not, together with complete details on system design, operation status, and cleanup effectiveness;
4. Provide the total mass in pounds for total petroleum hydrocarbon gasoline fuels (TPH_G), total petroleum hydrocarbon diesel fuels (TPH_D), benzene, toluene, ethylbenzene, and xylenes (BTEX), MTBE, and other fuel oxygenates removed from the subsurface from all cleanup operations employed to date; and
5. Identify the IRA that should be implemented to further reduce the residual mass of petroleum hydrocarbon fuels, BTEX compounds, MTBE, and other oxygenates in soil, groundwater and/or vapor phase beneath the site. The IRA should be compatible with and developed into a final remedial action plan for the site.

The technical report (Interim Remedial Action) containing the results of the IRA evaluation together with a detailed workplan to conduct any interim remedial action measures necessary to control or contain the spread of residual contamination shall be submitted to this Regional Board by April 15, 2002.

Step 4: Site Characterization/Determine Plume Travel Time

Develop a comprehensive Site Characterization (SC) Report detailing the results of all soil and groundwater assessments completed at the site. At a minimum, the report should include:

1. Site maps depicting the locations of all soil samples, soil test borings, groundwater monitoring wells, vapor extraction, or air sparging wells;
2. A detailed location map of the area surrounding the site to include streets, property locations and land uses (i.e., residential, commercial or industrial with site name, etc.) 250 feet upgradient, 250 feet lateral to the direction of groundwater flow, and a minimum of 500 feet downgradient of any identified contamination plume(s);
3. Soil boring logs and well drilling logs from prior work;
4. Develop scaled lithologic cross sections for the site based upon the existing soil and groundwater data/information. A minimum of three cross sections shall be developed from soil sampling programs and from the installation of groundwater monitoring wells and/or vapor wells. Cross sections shall provide the lithologic column with Unified Soil Classification System abbreviations and symbols;
5. Scaled groundwater contour maps depicting the direction of groundwater flow and gradient across the subject site. If the groundwater flow direction fluctuates over time, then historical groundwater contour maps reflecting these changes shall be provided;
6. Groundwater contaminant plume maps for TPH_G, TPH_D, BTEX, MTBE, and for all fuel oxygenates detected shall be illustrated in plan view and contain constituent concentrations;
7. A tabular summary showing: monitoring well identification number, monitoring well screened and blank intervals, completion depths, survey elevations, survey reference point, slot size(s), annular seal interval, water elevation ranges, and free product thickness, if any; and
8. A tabular data summary showing all historical soil and groundwater chemical and physical data to date.

The technical report (Site Characterization Report) detailing the results of all soil and groundwater assessments completed together with a workplan to conduct any supplemental hydrogeologic assessment needed to fully define the extent of any remaining free product and/or dissolved petroleum hydrocarbons, including oxygenates, to non-detect levels, shall be submitted to this Regional Board by **April 15, 2002.**

Determine Plume Travel Time

Acceptable methods that can be used to estimate plume travel time to reach a receptor should include the application of mainstream or industry-recognized fate and transport analytical models (e.g., Domenico Analytical Solution, 1987; Finite-Mass Advection/Dispersion Analytical Model by Fried, 1975; Freeze and Cherry 1975; and Bear 1972). Alternatively, advection/dispersion analytical models in Excel format developed by Regional Board staff may also be used (applicable to cases with a one-time release or continuous source release) and are available on our website

(http://www.swrcb.ca.gov/rwqcb4 under LARWQCB Programs – UST - Models). Extensive or detailed modeling effort is not required nor is that the objective of this phase of the investigation. However, the analytical model used should be calibrated with available site-specific data, using conservative assumptions for mass released, source area, source concentration, groundwater velocity, groundwater direction (constant), dispersivities, decay rate, etc. Available site-specific data on geology or hydrogeology may be quite useful in this regard. For example, groundwater site characterization evaluation, type of soil and aquifer materials, and uninterrupted vertical profile of site stratigraphy may be used together to make conservative estimates of groundwater velocity. A technical report (as an integral part of the Site Conceptual Model Report) on this phase of the investigation shall, at a minimum include:

1. Detailed documentation of the analytical model used, including its limitations, conditions, and assumptions;
2. Detailed descriptions and layouts of the process used to arrive at the model conclusions and justification for the model assumptions applied, including literature sources;
3. Detailed and extensive discussions on model conclusions;
4. Recommendations on any additional site work that can reduce model uncertainties and further refine the Site Conceptual Model;
5. Any site- or region-specific data applied during the modeling process, including hydrogeologic data and historical soil and groundwater analytical data to date (if applicable); and
6. Any information on atypical site-specific conditions that may cause solutions to the analytical model to be unrealistic or less-conservative, such as:

   a. Whether the site is near an area with aggressive pumping (characteristic of municipal or drinking water wells) which can alter the natural flow of water and thus affect the direction of groundwater flow and velocity;
   b. The presence of heterogeneous aquifer materials that may cause contaminants to travel at greater velocities than the flow pathway applied for the analytical model (e.g. the existence of fractured rock and limestone caverns);
   c. The existence of conduits and geologic faults, and
   d. Multiple or continuous releases; and releases from different locations, that can create multiple sources or cause increases in contaminant source concentrations.

The technical report containing an evaluation to estimate Plume Travel Time, in accordance with the guidance provided above, shall be submitted to this Regional Board by **July 15, 2002.**

Step 5: Update Site Conceptual Model/Assign Cleanup Priority Classification

Update Site Conceptual Model

This step provides for the update to the PSCM on a periodic basis, to incorporate any new and/or updated information or data (i.e., results of any additional assessment and/or any remedial activities completed during the reporting period, a complete discussion of current site conditions, a complete discussion and trend analysis on analytical groundwater data, and provide a technical Workplan for additional assessment and/or cleanup as determined by a review and evaluation of historical and current data, etc.). Quarterly technical reports shall be submitted to update the PSCM developed as part of Step 2. The SCM validation process shall be initiated starting with the quarter after the PSCM is established. The first update to the PSCM is due to this Regional Board by **July 15, 2002**, for the April through June 2002 quarter. The Site Conceptual Model Update is a stand-alone document that provides a complete update to the PSCM. The Site Conceptual Model Update must contain all the components that are currently required in the Quarterly Groundwater Monitoring Reports, therefore, a separate Quarterly Groundwater Monitoring Report is not required.

Assign Cleanup Priority Classification

As stated above, we have assigned an initial Cleanup Priority Classification of 1 to the site, based upon the proximity of the site to sensitive receptors and a conservative estimate of plume travel time. Based upon this initial cleanup classification, a Final Remedial Action Plan (RAP) is to be developed and implemented within one year from the date of this letter.

Step 6: Corrective Action/Remediation

The need for performing active cleanup may vary based upon many factors (e.g., release history, mass released into the environment, hot spot areas, site specific and regional geology, and interim cleanup actions implemented, etc.). As stated above in Step 3, a technical report containing the results of the IRA evaluation together with a workplan to conduct any interim remedial action necessary to control or contain the spread of residual contamination at the subject site shall be submitted to this Regional Board by **April 15, 2002**. In order to reduce any ongoing threat to water quality and potential impacts to nearby sensitive receptors from UST releases, a technical report containing a Final RAP, together with a time schedule for implementation shall be developed and submitted to this Regional Board by **October 15, 2002**.

Step 7: Verification Monitoring

Verification monitoring is an integral part of performing interim and final cleanup remedies at UST release sites. These monitoring programs will be necessary in order

to determine whether any interim and/or final RAP implemented has achieved its intended purpose and will be required for all sites to determine the effectiveness of remedial actions implemented. The nature and scope of the verification-monitoring program shall be determined subsequent to completing full implementation of the RAP and shall be approved by this Regional Board prior to implementation.

LANDOWNER OR IMPACTED SITE NOTIFICATION REQUIREMENTS

Additionally, pursuant to recent changes of the California Health and Safety Code (section 25299.37.2) and Division 7 of the Porter Cologne Water Quality Control Act under Assembly Bill 681, this Regional Board is required to notify all current fee title holders of record for the site or sites impacted by releases from underground storage tanks prior to considering corrective action and cleanup or case closure.

If site assessment and/or monitoring data provided for corrective action work ongoing at the site indicate that release(s) from the underground storage tank systems have impacted offsite property(ies), then please provide the name, mailing address, and phone number for all record fee title holders for the site and any offsite property(ies) impacted by releases from the subject site, together with a copy of the county record of current ownership (grant deed or deed of trust), available from the County Recorder's Office, for each property affected, or by completing this Regional Board's "Certification Declaration for Compliance with Fee Title Holder Notification Requirements," (copy attached) for each site. **If this information has been provided in the past, then you need not provide it again.** Copies of all technical reports required above together with any periodic updates are to be sent directly to the property owner of the site and to any other property owner(s) impacted by UST releases from the site. The cover letter transmitting your technical reports to this Regional Board shall state that the technical reports were sent directly to all property owner(s) of the site as well as any offsite property owner impacted by the UST release(s). The cover letter shall provide a list of all property owners sent technical reports and the date the technical reports were sent.

NEW REGULATORY REQUIREMENT FOR ELECTRONIC SUBMISSION OF LABORATORY DATA TO THE STATE GEOTRACKER INTERNET DATABASE

On June 28, 2001, the State Water Resources Control Board-Underground Storage Tank Program manager, Mrs. Liz Haven, sent you a letter (copy attached) informing you of the new requirements for submission of electronic laboratory data for Underground Storage Tank Program reports. These requirements are contained in emergency regulations (CCR Title 23, Chapter 16, Article 12, Sections 2729 and 2729.1) recently adopted by the State Water Resources Control Board (Board), and became effective September 1, 2001. The Board adopted these regulations to implement Assembly Bill 2886 (Chapter 727, Statutes of 2000, "AB 2886"). The regulations and other background information are available on the Internet by going to

http://geotracker.swrcb.ca.gov and clicking on "AB 2886". The emergency regulations (Water Code Sections 13195-13198) require persons to ensure electronic submission of laboratory data (i.e. soil or water chemical analysis) and locational data (i.e. location and elevation of groundwater monitoring wells), via the Internet to the SWRCB's GeoTracker database.

In accordance with the above regulations, you are required to submit all future laboratory data over the Internet in the Electronic Deliverable Format to the SWRCB's GeoTracker database for any soil and/or groundwater samples obtained after September 1, 2001. This would include any sampling completed for underground storage tank system removal, site assessment activities, periodic groundwater monitoring, and post cleanup verification sampling. In accordance with the above regulations, you are also required to submit locational data for all groundwater monitoring wells (i.e., latitude, longitude, and elevation survey data) together with groundwater information (i.e., elevation, depth to free product, monitoring well status, etc.) and a site map commencing January 1, 2002. Hard copy paper reports are still required.

REPORTING REQUIREMENTS

The Final Draft Guidelines, Appendix B (Technical References) contains a partial listing of documents related to site investigation and remediation that can be used for development of workplans required by this Regional Board. The technical reports shall be submitted to this Regional Board according to the schedule contained in Table 1-Technical Report Type and Due Dates listed below. The technical reports for items: 1-[Preliminary Site Conceptual Model (PSCM) Report]; 2-[Interim Remedial Action (IRA) Report and Workplan]; and 3-[Site Characterization (SC) Report and Workplan] identified in Table 1 below must be submitted as a single stand alone technical report. **Pursuant to section 13267(b) of the California Water Code, failure to submit the required technical report acceptable to the Executive Officer, by the due dates specified, may result in the imposition of civil liability penalties by this Regional Board of up to $1,000.00 per day for each day each technical report is not received pursuant to section 13268 of the California Water Code. This Regional Board can assess these civil liability penalties at any time after the due dates specified below and without further warning.**

Table 1-Technical Report Type and Due Dates

Technical Report Type [1,2,3,4]	Due Dates
1. Preliminary Site Conceptual Model (PSCM) Report (Step 2-Final Draft Guidelines)	April 15, 2002
2. Interim Remedial Action (IRA) Report and Workplan (Step 3-Final Draft Guidelines)	April 15, 2002
3. Site Characterization (SC) Report and Workplan (Step 4-Final Draft Guidelines)	April 15, 2002

4. Estimate of Plume Travel Time (Step 4-Final Draft Guidelines)	July 15, 2002 (Yearly thereafter by July 15)
5. Update Site Conceptual Model (SCM) Reports (Step 5-Final Draft Guidelines)	July 15, 2002 (Quarterly thereafter by the following dates, October 15, January 15, April 15, and July 15)
6. Final Remedial Action Plan (RAP) (Step 6-Final Draft Guidelines)	October 15, 2002
7. Quarterly Monitoring and Progress Reports[5]	July 15, 2002 (Quarterly thereafter by the following dates October 15, January 15, April 15, and July 15)

[1]-At a minimum, all workplans and final reports shall conform to the Guidelines for Report Submittals published by the Los Angeles County Department of Public Works and the California Underground Storage Tank Regulations.
[2]-All workplans are to contain an appropriate Health and Safety Plan commensurate with the level of work to be completed.
[3]-All analytical testing and sampling shall conform to the Leaking Underground Storage Tanks Program-Update Laboratory Testing Requirements, dated June 22, 2000.
[4]-All technical reports shall be prepared by or under the direction of a registered geologist, certified engineering geologist, or registered civil engineer with appropriate experience.
[5]-Quarterly Groundwater Monitoring and Progress Reports are to be included as part of the Site Conceptual Model Updates.

If you have any questions or need additional information, please call Dr. Yue Rong at (213) 576-6710 or Mrs. Mercedes Hsu at (213) 576-6712.

Sincerely,

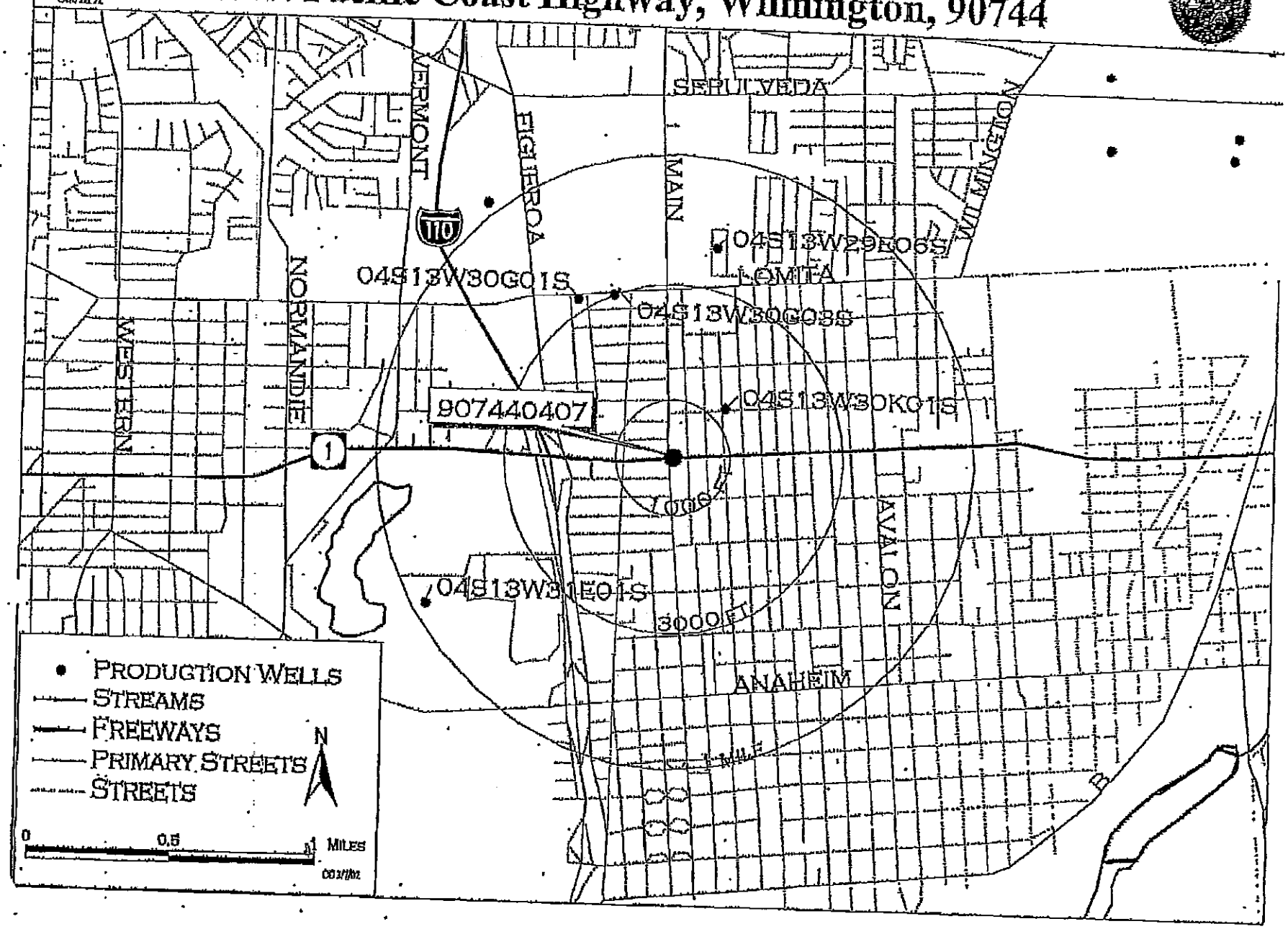
Dennis A. Dickerson
Executive Officer

Enclosures:

1. Final Draft Guidelines for Investigation and Cleanup of MTBE and Other Oxygenates (March 27, 2000)
2. Underground Storage Tank and Production Well Receptor Map
3. Guidelines for Report Submittals published by the Los Angeles County Department of Public Works (June 1993)
4. Leaking Underground Storage Tanks Program-Update Laboratory Testing Requirements (June 22, 2000)
5. Leaking Underground Storage Tank Program Certification Declaration for Compliance with Fee Title Holder Notification Requirements
6. New Regulatory Requirements for Electronic Submittal of Laboratory Data to the State Geotracker Internet Database (June 28, 2001)

cc: Mr. Robert Sams, Office of Chief Counsel, State Water Resources Control Board
Mr. Michael Lauffer, Office of Chief Counsel, State Water Resources Control Board
Mr. Hari Patel, State Water Resources Control Board, Underground Tank Cleanup Fund
Mr. Jose Reynoso, Water Well Permits, Los Angeles County Department of Health Services
Ms. Elise Ruden, Deputy City Attorney, City of Los Angeles Environmental Protection Section
Captain Al Gonzales, Los Angeles City Fire Department, Underground Tanks
Mr. Willaard Garrett, SECOR International Incorporated

980 West Pacific Coast Highway, Wilmington, 90744



California Regional Water Quality Control Board

Los Angeles Region

Over 50 Years Serving Coastal Los Angeles and Ventura Counties
Recipient of the 2001 Environmental Leadership Award from Keep California Beautiful

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 – Internet Address: http://www.swrcb.ca.gov/rwqcb4

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

March 29, 2002

MAR 0 7 2002

Mr. Raymond Vose
Atlantic Richfield Company
4 Centerpointe Dr.
La Palma, CA 90623-1066

UNDERGROUND STORAGE TANK PROGRAM
ARCO FACILITY #1054
980 WEST PACIFIC COAST HIGHWAY, WILMINGTON, CA
(ID# 907440407) (B1 SITE)

Dear Mr. Vose:

On your behalf, SECOR International Incorporated submitted a letter dated March 18, 2002, requesting an extension for the technical reports due dates outlined in the Regional Board's March 11, 2002, letter. You requested a three-month period for report generation and submittal.

We have reviewed your request and have revised the schedule for the submittal of technical reports as follows:

Technical Report Type and Due Dates

Technical Report Type	Due Dates
1. Preliminary Site Conceptual Model (PSCM) Report (Step 2-Final Draft Guidelines)	May 15, 2002
2. Interim Remedial Action (IRA) Report and Workplan (Step 3-Final Draft Guidelines)	May 15, 2002
3. Site Characterization (SC) Report and Workplan (Step 4-Final Draft Guidelines)	May 15, 2002
4. Estimate of Plume Travel Time (Step 4-Final Draft Guidelines)	August 15, 2002 (Yearly thereafter by July 15)
5. Update Site Conceptual Model (SCM) Reports (Step 5-Final Draft Guidelines)	July 15, 2002 (Quarterly thereafter by the following dates, October 15, January 15, April 15, and July 15)
6. Final Remedial Action Plan (RAP) (Step 6-Final Draft Guidelines)	November 15, 2002
7. Quarterly Monitoring and Progress Reports	July 15, 2002 (Quarterly thereafter by the following dates October 15, January 15, April 15, and July 15)

Pursuant to Section 13267(b) of the California Water Code, failure to submit the required technical report acceptable to the Executive Officer, by the due dates specified, may result in the imposition of civil liability penalties by this Regional Board of up to $1,000.00 per day for each day each technical report is not received pursuant to section 13268 of the California Water

Code. This Regional Board can assess these civil liability penalties at any time after the due dates specified above and without further warning.

If you have any questions or need additional information, please call Dr. Yue Rong at (213) 576-6710 or Mrs. Mercedes Hsu at (213) 576-6712.

Sincerely,

Dennis A. Dickerson
Executive Officer

cc: Mr. Robert Sams, Office of Chief Counsel, State Water Resources Control Board
Mr. Hari Patel, State Water Resources Control Board, Underground Tank Cleanup Fund
Mr. Jose Reynoso, Water Well Permits, Los Angeles County Department of Health Services
Ms. Elise Ruden, Deputy City Attorney, City of Los Angeles Environmental Protection Section
Captain Al Gonzales, Los Angeles City Fire Department, Underground Tanks
Mr. Kelly Brown, SECOR International Incorporated

APPENDIX B

FOURTH QUARTER 2005 MONITORING REPORT

SECOR

SECOR INTERNATIONAL INCORPORATED www.secor.com

ATLANTIC RICHFIELD COMPANY QUARTERLY REPORT
Quarter 4, 2005 (January 15, 2006)

Station No.: 1054 Address: 980 Pacific Coast Highway, Wilmington, California
Atlantic Richfield Company Environmental Engineer/Phone No.: Jack Oman / (714) 730-1898
Consulting Co./Contact Person/Phone No.:SECOR/Rachel Handbury/(805) 230-1266 Ext 223
SECOR Project No.: 37BP.01054.04.0336
Primary Agency/Regulatory ID No.: LARWQCB/Mercedes Hsu/ # 9074400407
Other Agencies to Receive Copies: None

WORK PERFORMED THIS QUARTER [Fourth - 2005]:

1. Conducted quarterly groundwater sampling.
2. Performed oxygen diffusion system maintenance.
3. Prepared and submitted Groundwater Monitoring Summary and Site Conceptual Model Update.

WORK PROPOSED FOR NEXT QUARTER [First - 2006]:

1. Conduct quarterly groundwater sampling.
2. Perform oxygen diffusion system maintenance.
3. Submit Quarterly Groundwater Monitoring Summary and Site Conceptual Model Update.

Current Phase of Project:	Remediation/Monitoring	(Assmnt, Remed. etc)
Frequency of Sampling:	GW-Quarterly	(Quarterly, etc.)
Frequency of Monitoring:	Oxygen Diffusion-Monthly GW-Quarterly	(Monthly, etc.)
Separate Phase Hydrocarbon Present On-Site	No	(Yes/No)
Cumulative SPH Recovered to Date:	NA	(gallons)
SPH Recovered This Quarter:	None	(gallons)
Bulk Soil Removed to Date:	NA	(cubic yards)
Bulk Soil Removed This Quarter:	0	(cubic yards)
Active Water Wells or Surface Waters (3000-ft radius) Radius & Their Respective Directions:	4S/13W-30K01S - 2,500' NW 4S/13W-32B01S - 3,000' ESE 4S/13W-30G03S - 3,000' NE	(Distance and Direction)
Current Remediation Techniques:	Oxygen Diffusion	(SVES, SPH Removal, etc.)
Permits for Discharge:	NA	(NPDES, POTW, etc.)
Approximate Depth to Groundwater:	Range: 51.82 to 55.40	(Measured Feet)
Groundwater Gradient:	Northeast	(Direction)
	0.006 feet/foot	(Magnitude)

REGISTERED GEOLOGIST
DONALD C. INDERMILL
No. 5102
Exp. 31 Mar 2006
STATE OF CALIFORNIA

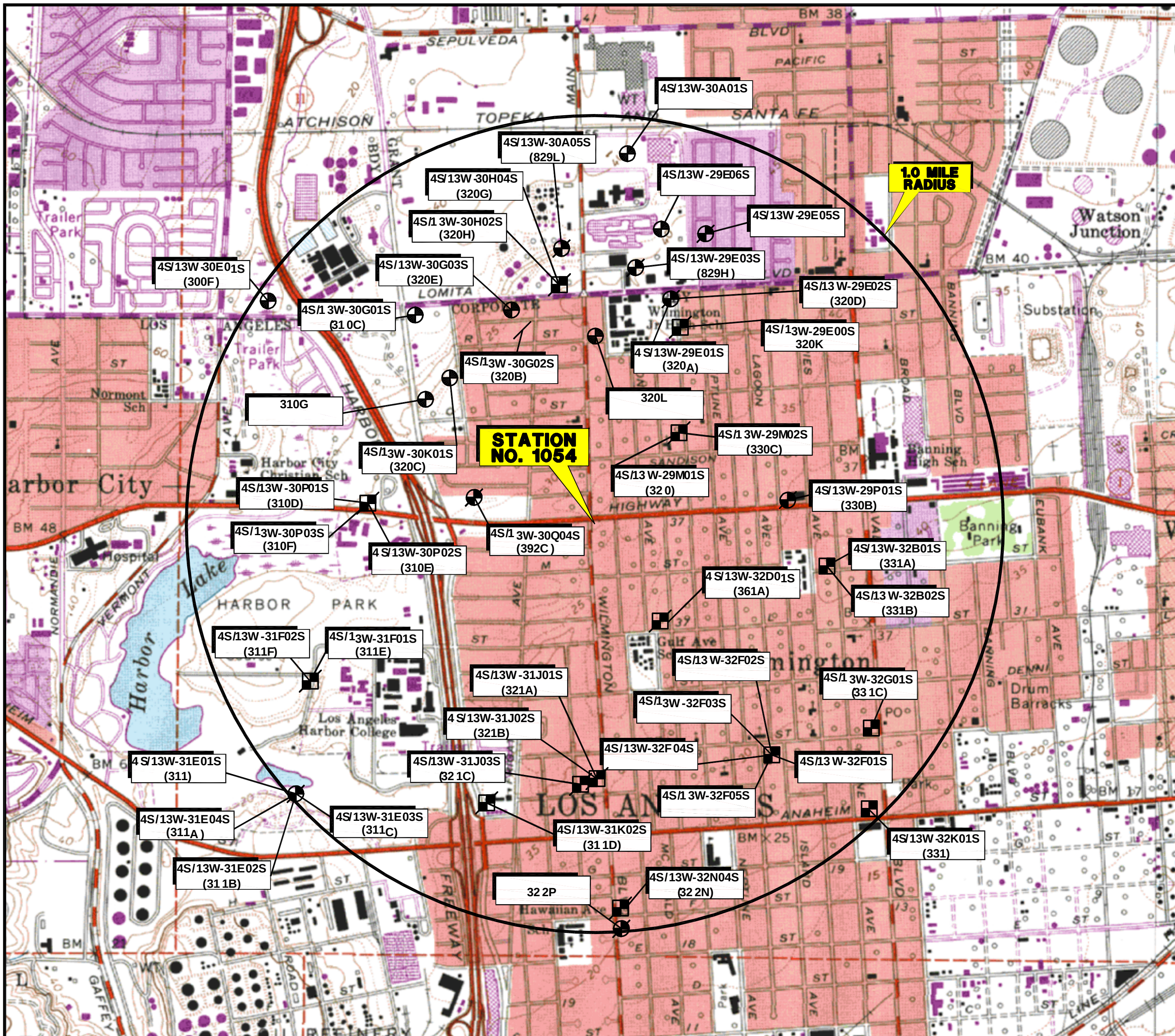
Agency Directive Requirement: Perform all assessment/monitoring/remediation in accordance to the Final Judgment Pursuant to Stipulation, The People of the State of California (plaintiff) versus Atlantic Richfield Company (defendant).

ATTACHED:

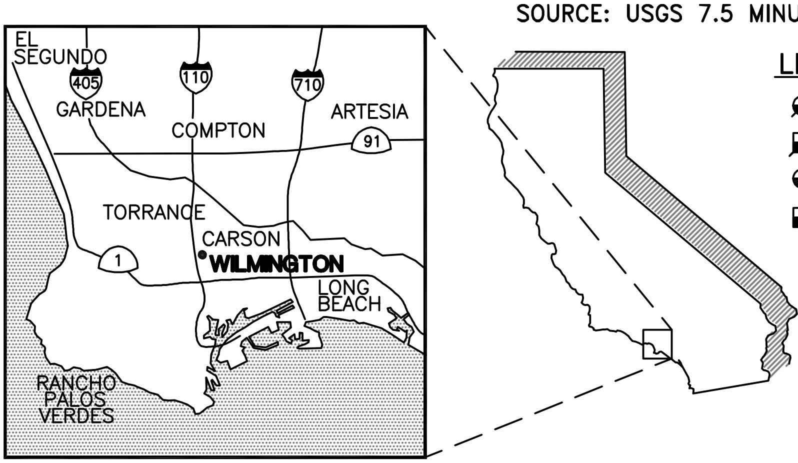
Figure 1 - Site Location Map Showing Identified Wells Within A One-Mile Radius
Figure 2 - Site Map Showing Soil Boring and Well Locations
Figure 3 - Site Map Showing Groundwater Contour & Hydrocarbon Concentration Map
Figure 4 - GRO Isoconcentration Map
Figure 5 - Benzene Isoconcentration Map
Figure 6 - MTBE Isoconcentration Map
Figure 7 - TBA Isoconcentration Map
Table 1a - Baseline Parameters in Groundwater
Table 1b - Diffusive Oxygen Emitter System Field Monitoring Data
Table 2 - Summary of Wells Within One Mile Radius
Table 3 - Summary of Groundwater Analytical and Elevation Results
Table 4 - Groundwater Polynuclear Hydrocarbon Analytical Data
Table 5 - Natural Biodegradation Analytical Data
Table 6 - Groundwater and Sampling Schedule
Appendix A - Well Hydrographs and Hydrocarbon Concentrations
Appendix B - Laboratory Report and Chain of Custody
Appendix C - Groundwater and Oxygen Diffuser Field Data Sheets
Appendix D - Waste Disposal Documents

cc: Mr. Rodney Campbell (adjacent property owner), 17019 Atkinson Avenue, Torrance, CA 90504 – 01/15/06
Mr. John V. Payne, FREY Environmental, Inc., 2817A Lafayette Avenue, Newport Beach, CA, 92663 – 01/15/06

Figures

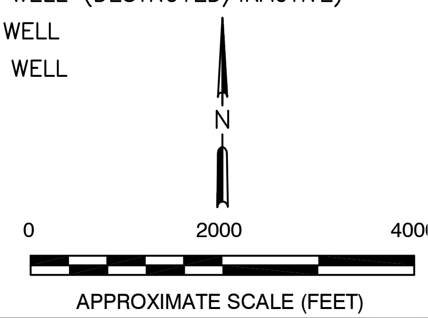


SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAPS, TORRANCE QUADRANGLE, 1964 PHOTOREVISED, 1981



LEGEND

- PRODUCTION WELL (DESTROYED/INACTIVE)
- OBSERVATION WELL (DESTROYED/INACTIVE)
- PRODUCTION WELL
- OBSERVATION WELL



SECOR
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
(805) 230-1266/230-1277 (Fax)

FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 West Pacific Coast Highway
Wilmington, California

SITE LOCATION MAP SHOWING IDENTIFIED WELLS WITHIN A ONE-MILE RADIUS

FIGURE: 1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.04.0336	RLE	L. Moreno	R. Handbury	01/15/06

NOTES:

1. GROUNDWATER MONITORING AND SOIL VAPOR EXTRACTION WELLS SURVEYED BY JOHNSON–FRANK & ASSOCIATES, INC., DATED JULY 22, 2002. CAD FILE COORDINATES; NAD 82 CALIFORNIA STATE PLANE ZONE 5 (FT.). SITE FEATURES AND LOCATIONS ARE APPROXIMATE.

SECOR
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
(805) 230-1266/230-1277 (Fax)

FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 West Pacific Coast Highway
Wilmington, California

SITE MAP SHOWING SOIL BORING AND WELL LOCATIONS

FIGURE: **2**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.04/0336	RLE	L. Moreno	R. Handbury	01/15/06

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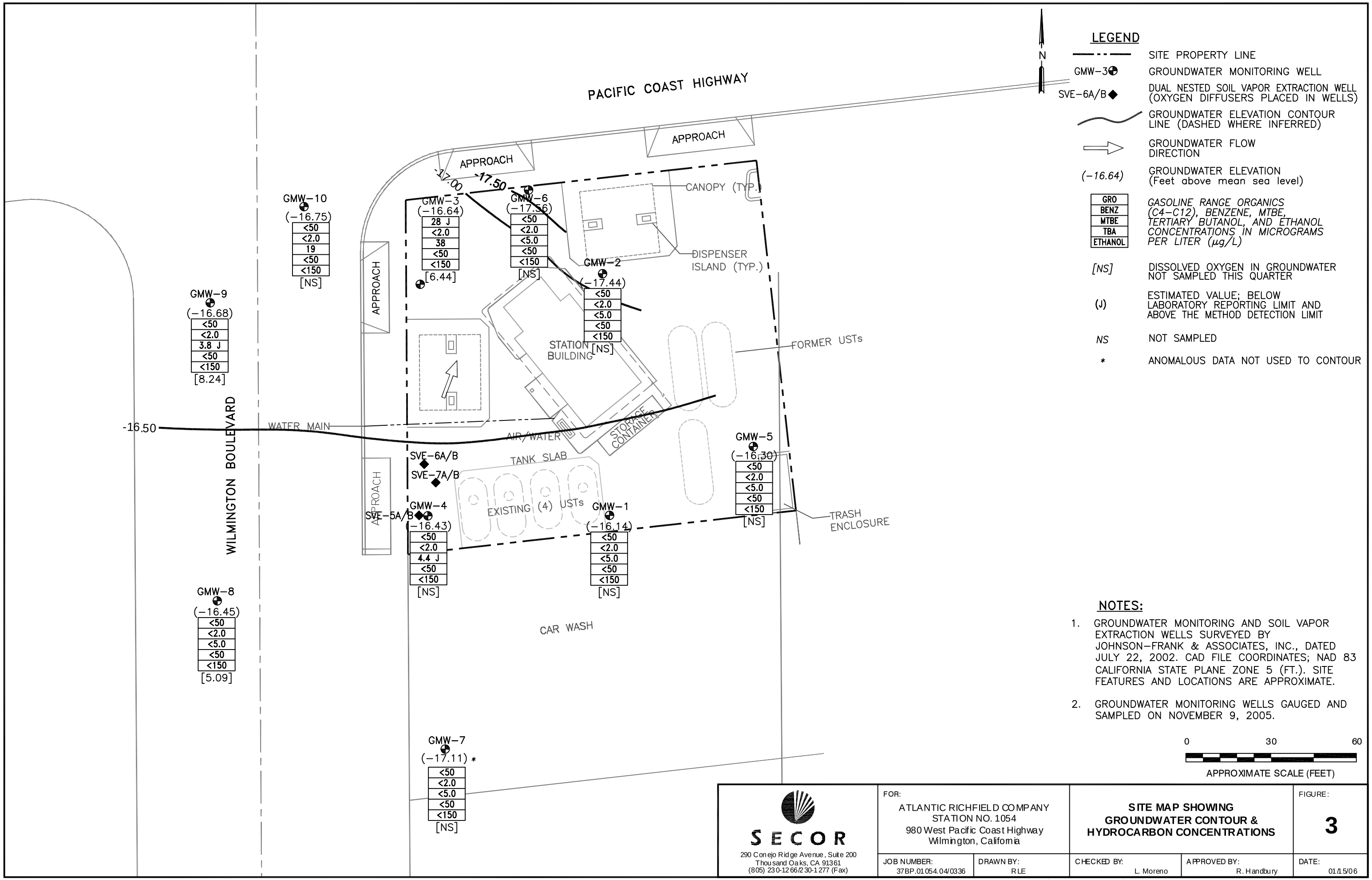
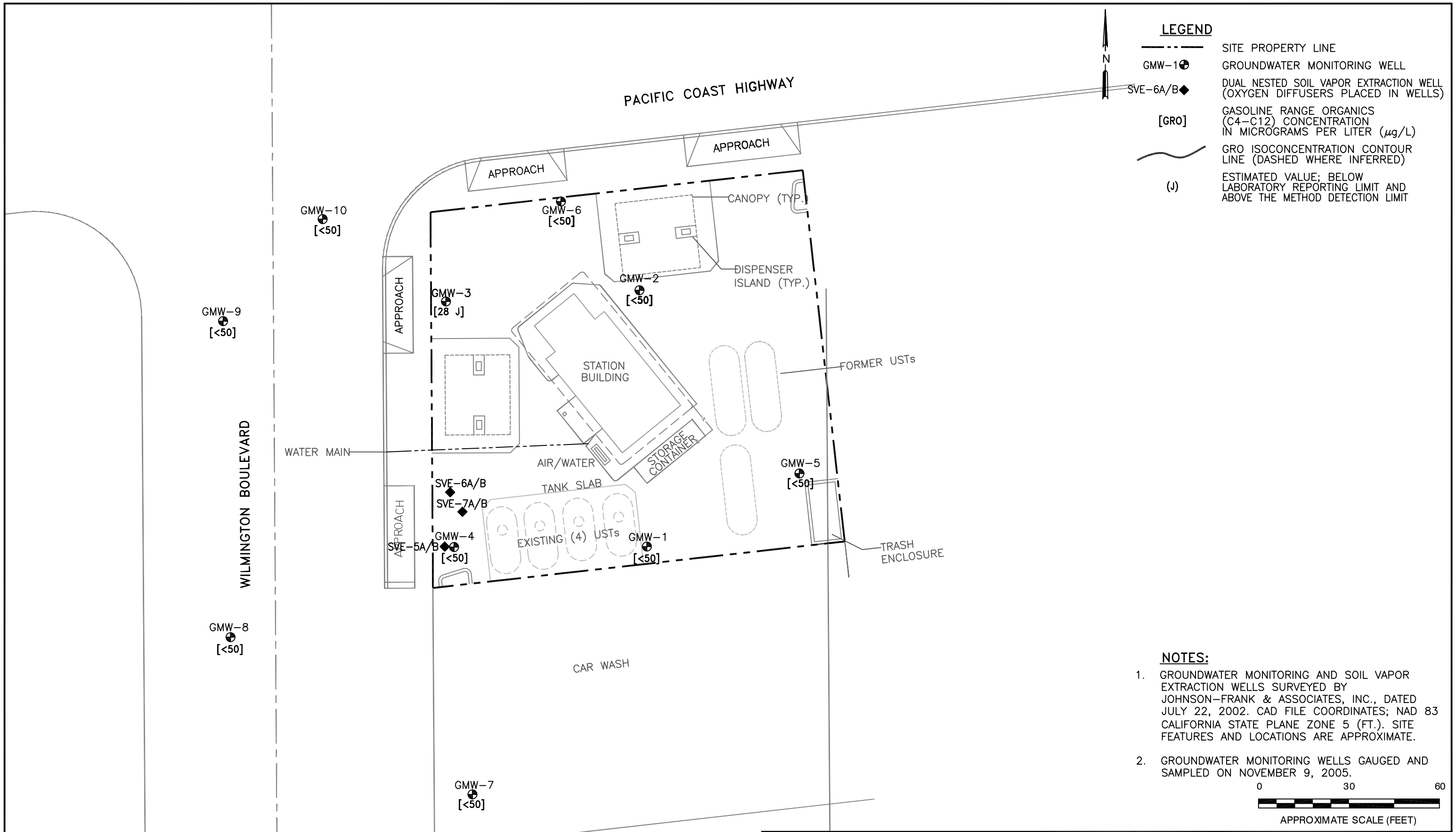

PACIFIC COAST HIGHWAY
APPROACH
APPROACH
APPROACH
APPROACH
WILMINGTON BOULEVARD
-17.00
-17.50
-16.50
WATER MAIN
CANOPY (TYP.)
DISPENSER ISLAND (TYP.)
STATION BUILDING
FORMER USTs
STORAGE CONTAINER
AIR/WATER
TANK SLAB
EXISTING (4) USTs
CAR WASH
TRASH ENCLOSURE
GMW-10 (-16.75) <50 <2.0 19 <50 <150 [NS]
GMW-3 (-16.64) 28 J <2.0 38 <50 <150 [6.44]
GMW-6 (-17.36) <50 <2.0 <5.0 <50 <150 [NS]
GMW-2 (-17.44) <50 <2.0 <5.0 <50 <150 [NS]
GMW-9 (-16.68) <50 <2.0 3.8 J <50 <150 [8.24]
GMW-5 (-16.30) <50 <2.0 <5.0 <50 <150 [NS]
SVE-6A/B
SVE-7A/B
SVE-5A/B
GMW-4 (-16.43) <50 <2.0 4.4 J <50 <150 [NS]
GMW-1 (-16.14) <50 <2.0 <5.0 <50 <150 [NS]
GMW-8 (-16.45) <50 <2.0 <5.0 <50 <150 [5.09]
GMW-7 (-17.11) * <50 <2.0 <5.0 <50 <150 [NS]
N
LEGEND
SITE PROPERTY LINE
GMW-3 GROUNDWATER MONITORING WELL
SVE-6A/B DUAL NESTED SOIL VAPOR EXTRACTION WELL (OXYGEN DIFFUSERS PLACED IN WELLS)
GROUNDWATER ELEVATION CONTOUR LINE (DASHED WHERE INFERRED)
GROUNDWATER FLOW DIRECTION
(-16.64) GROUNDWATER ELEVATION (Feet above mean sea level)
GRO BENZ MTBE TBA ETHANOL GASOLINE RANGE ORGANICS (C4-C12), BENZENE, MTBE, TERTIARY BUTANOL, AND ETHANOL CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)
[NS] DISSOLVED OXYGEN IN GROUNDWATER NOT SAMPLED THIS QUARTER
(J) ESTIMATED VALUE; BELOW LABORATORY REPORTING LIMIT AND ABOVE THE METHOD DETECTION LIMIT
NS NOT SAMPLED
* ANOMALOUS DATA NOT USED TO CONTOUR
NOTES:
1. GROUNDWATER MONITORING AND SOIL VAPOR EXTRACTION WELLS SURVEYED BY JOHNSON-FRANK & ASSOCIATES, INC., DATED JULY 22, 2002. CAD FILE COORDINATES; NAD 83 CALIFORNIA STATE PLANE ZONE 5 (FT.). SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER MONITORING WELLS GAUGED AND SAMPLED ON NOVEMBER 9, 2005.
0 30 60
APPROXIMATE SCALE (FEET)
SECOR
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
(805) 230-1266/230-1277 (Fax)
FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 West Pacific Coast Highway
Wilmington, California
SITE MAP SHOWING GROUNDWATER CONTOUR & HYDROCARBON CONCENTRATIONS
FIGURE: 3
JOB NUMBER: 37BP.01054.04/0336
DRAWN BY: RLE
CHECKED BY: L. Moreno
APPROVED BY: R. Handbury
DATE: 01/15/06
FILEPATH:M:\ARCO\QTRLY-GW.MAP\1054\1054-GW\dwg\Q4\Q4-05\1054-Q4GW05.dwg| rerdman|Jan 10, 2006 at 10:59| Layout: GW_FIG3



LEGEND

—·—·—	SITE PROPERTY LINE
GMW-1 ⊕	GROUNDWATER MONITORING WELL
SVE-6A/B ◆	DUAL NESTED SOIL VAPOR EXTRACTION WELL (OXYGEN DIFFUSERS PLACED IN WELLS)
[GRO]	GASOLINE RANGE ORGANICS (C4–C12) CONCENTRATION IN MICROGRAMS PER LITER (μg/L)
~	GRO ISOCONCENTRATION CONTOUR LINE (DASHED WHERE INFERRED)
(J)	ESTIMATED VALUE; BELOW LABORATORY REPORTING LIMIT AND ABOVE THE METHOD DETECTION LIMIT

NOTES:

1. GROUNDWATER MONITORING AND SOIL VAPOR EXTRACTION WELLS SURVEYED BY JOHNSON–FRANK & ASSOCIATES, INC., DATED JULY 22, 2002. CAD FILE COORDINATES; NAD 83 CALIFORNIA STATE PLANE ZONE 5 (FT.). SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER MONITORING WELLS GAUGED AND SAMPLED ON NOVEMBER 9, 2005.

0 30 60

APPROXIMATE SCALE (FEET)

SECOR
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
(805) 230-1266/230-1277 (Fax)

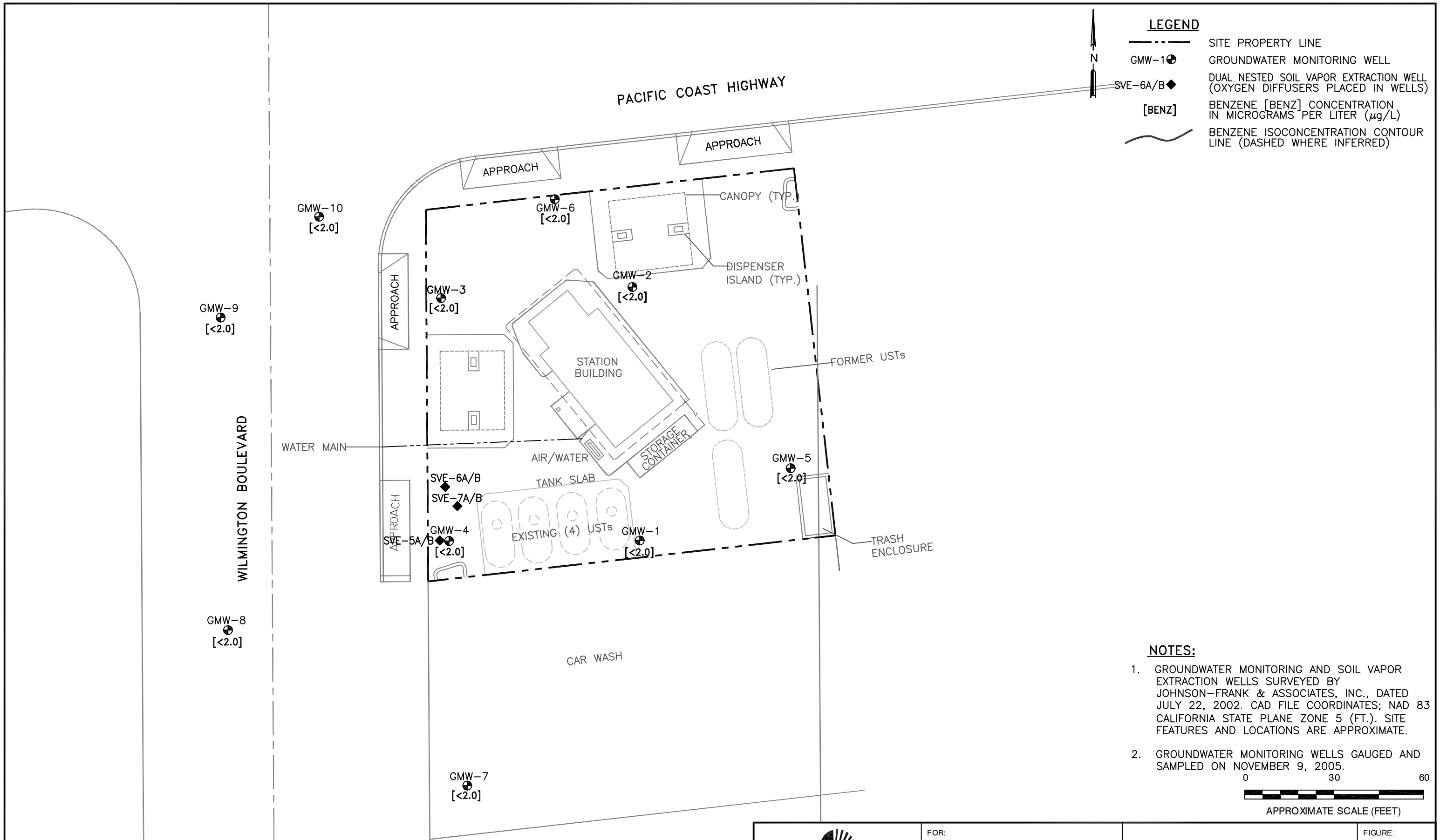
FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 West Pacific Coast Highway
Wilmington, California

GRO ISOCONCENTRATION MAP

FIGURE: **4**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.04/0336	RLE	L. Moreno	R. Handbury	01/15/06

FILEPATH:M:\ARCO\QTRLY-GW.MAP\1054\1054-GW\dwg\Q4\Q4-05\1054-Q4GW05.dwg| rerdman|Jan 10, 2006 at 10:59| Layout: GRO_FIG4



NOTES:

1. GROUNDWATER MONITORING AND SOIL VAPOR EXTRACTION WELLS SURVEYED BY JOHNSON–FRANK & ASSOCIATES, INC., DATED JULY 22, 2002. CAD FILE COORDINATES; NAD 83 CALIFORNIA STATE PLANE ZONE 5 (FT.). SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER MONITORING WELLS GAUGED AND SAMPLED ON NOVEMBER 9, 2005.

0 30 60

APPROXIMATE SCALE (FEET)

SECOR
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
(805) 230-1266/230-1277 (Fax)

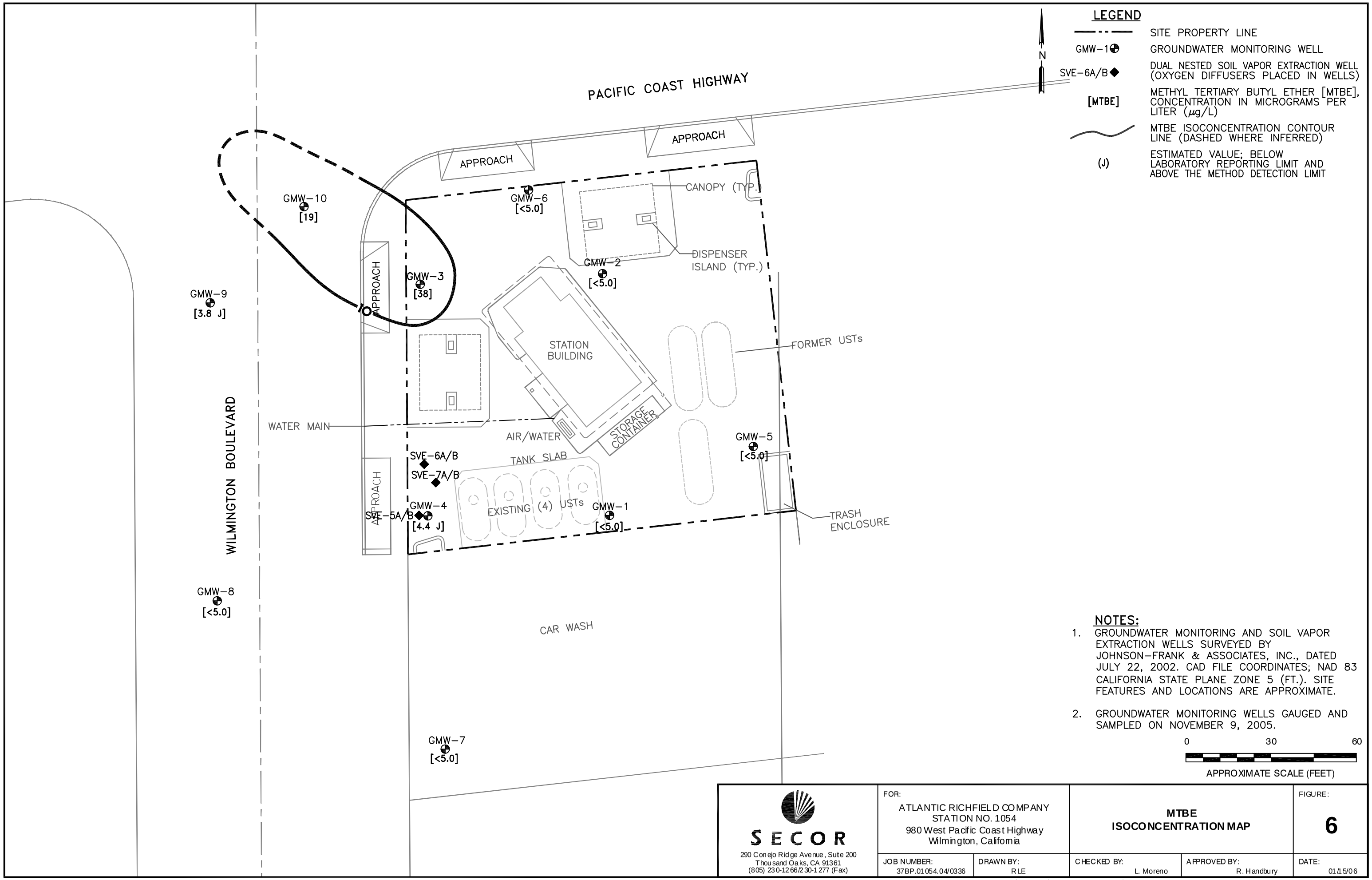
FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 West Pacific Coast Highway
Wilmington, California

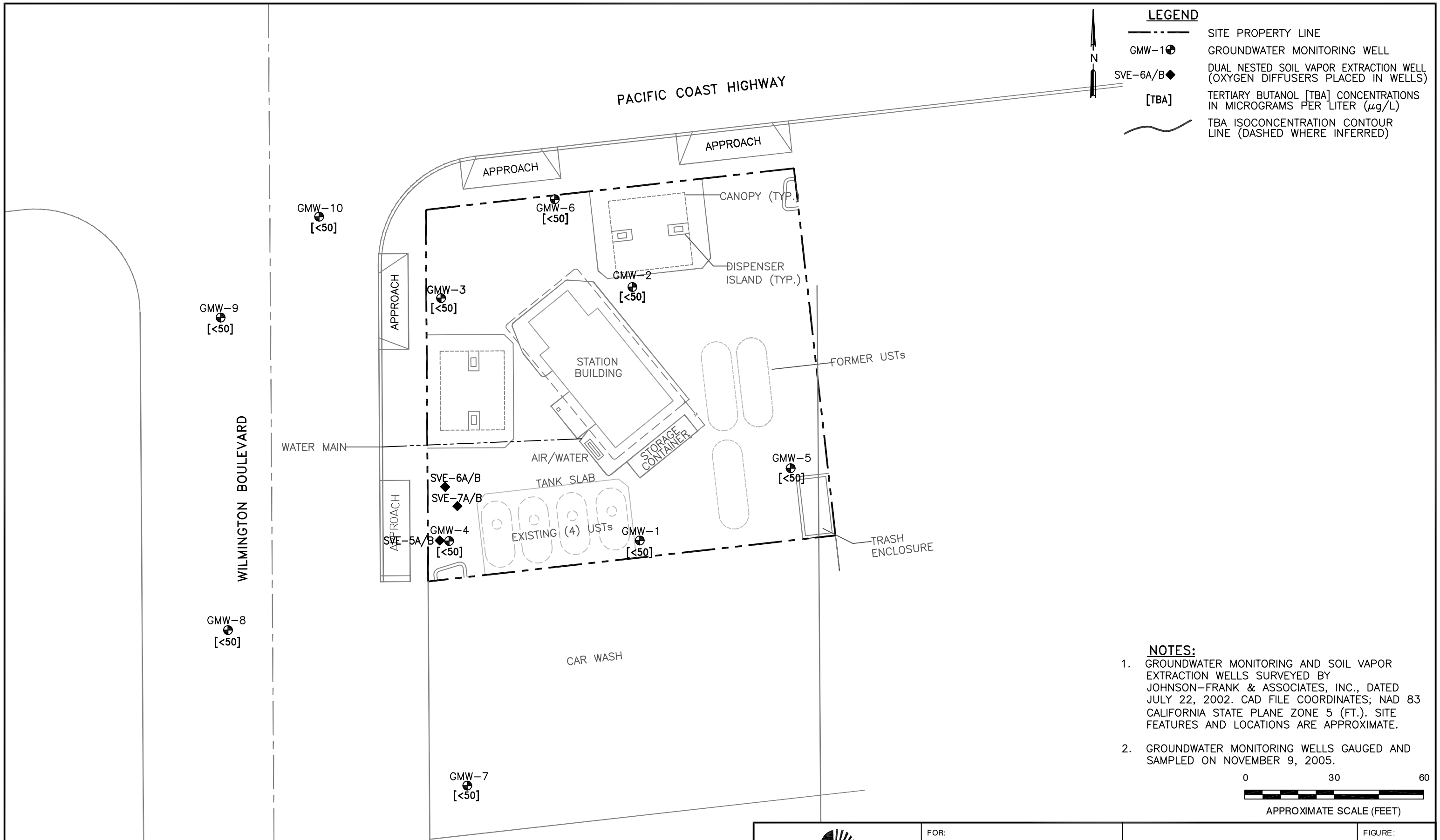
BENZENE ISOCONCENTRATION MAP

FIGURE: **5**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.04/0336	RLE	L. Moreno	R. Handbury	01/15/06

FILEPATH:M:\ARCO\QTRLY-GW.MAP\1054\1054-GW\dwg\Q4\Q4-05\1054-Q4GW05.dwg| rerdman|Jan 10, 2006 at 11:00| Layout: BENZENE_FIG5


PACIFIC COAST HIGHWAY
WILMINGTON BOULEVARD
N
APPROACH
APPROACH
APPROACH
APPROACH
GMW-10
[19]
GMW-9
[3.8 J]
GMW-8
[<5.0]
GMW-7
[<5.0]
GMW-6
[<5.0]
GMW-3
[38]
GMW-2
[<5.0]
GMW-5
[<5.0]
GMW-4
[4.4 J]
GMW-1
[<5.0]
SVE-6A/B
SVE-7A/B
SVE-5A/B
CANOPY (TYP.)
DISPENSER ISLAND (TYP.)
STATION BUILDING
FORMER USTs
STORAGE CONTAINER
WATER MAIN
AIR/WATER
TANK SLAB
EXISTING (4) USTs
TRASH ENCLOSURE
CAR WASH
LEGEND
SITE PROPERTY LINE
GMW-1 GROUNDWATER MONITORING WELL
SVE-6A/B DUAL NESTED SOIL VAPOR EXTRACTION WELL (OXYGEN DIFFUSERS PLACED IN WELLS)
[MTBE] METHYL TERTIARY BUTYL ETHER [MTBE], CONCENTRATION IN MICROGRAMS PER LITER (μg/L)
MTBE ISOCONCENTRATION CONTOUR LINE (DASHED WHERE INFERRED)
(J) ESTIMATED VALUE; BELOW LABORATORY REPORTING LIMIT AND ABOVE THE METHOD DETECTION LIMIT
NOTES:
1. GROUNDWATER MONITORING AND SOIL VAPOR EXTRACTION WELLS SURVEYED BY JOHNSON-FRANK & ASSOCIATES, INC., DATED JULY 22, 2002. CAD FILE COORDINATES; NAD 83 CALIFORNIA STATE PLANE ZONE 5 (FT.). SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER MONITORING WELLS GAUGED AND SAMPLED ON NOVEMBER 9, 2005.
0 30 60
APPROXIMATE SCALE (FEET)
SECOR
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
(805) 230-1266/230-1277 (Fax)
FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 West Pacific Coast Highway
Wilmington, California
MTBE
ISOCONCENTRATION MAP
FIGURE:
6
JOB NUMBER: 37BP.01054.04/0336
DRAWN BY: RLE
CHECKED BY: L. Moreno
APPROVED BY: R. Handbury
DATE: 01/15/06
FILEPATH:M:\ARCO\QTRLY-GW.MAP\1054\1054-GW\dwg\Q4\Q4-05\1054-Q4GW05.dwg| rerdman|Jan 10, 2006 at 11:00| Layout: MTBE_FIG6



NOTES:

1. GROUNDWATER MONITORING AND SOIL VAPOR EXTRACTION WELLS SURVEYED BY JOHNSON–FRANK & ASSOCIATES, INC., DATED JULY 22, 2002. CAD FILE COORDINATES; NAD 83 CALIFORNIA STATE PLANE ZONE 5 (FT.). SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER MONITORING WELLS GAUGED AND SAMPLED ON NOVEMBER 9, 2005.

0 30 60

APPROXIMATE SCALE (FEET)

SECOR
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
(805) 230-1266/230-1277 (Fax)

FOR:
ATLANTIC RICHFIELD COMPANY
STATION NO. 1054
980 West Pacific Coast Highway
Wilmington, California

TBA
ISOCONCENTRATION MAP

FIGURE: **7**

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
37BP.01054.04/0336	RLE	L. Moreno	R. Handbury	01/15/06

FILEPATH:M:\ARCO\QTRLY-GW.MAP\1054\1054-GW\dwg\Q4\Q4-05\1054-Q4GW05.dwg| rerdman|Jan 10, 2006 at 11:00| Layout: TBA_FIG7

Tables

Table 1a
Baseline Parameters in Groundwater
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date	Electric Conductivity uS/cm	pH	Oxidation Reduction Potential mV	Ferrous Iron mg/L	Dissolved Oxygen mg/L	Temperature ° C
GMW-1	05/23/03	1.11	7.91	88	0.0	0.43	22.7
	09/12/03	2.28	8.03	92	0.8	0.88	21.1
	10/30/03	2.39	7.59	-	-	-	19.4
	01/12/04	2.42	8.07	-	-	0.92	17.6
	03/18/05	-	7.01	-	-	2.11	-
	06/16/05	2.31	-	-	-	-	22.5
	06/23/05	-	-	-	-	-	-
	07/01/05	-	-	-	-	-	-
	11/09/05	2.56	6.88	-	-	-	17.5
GMW-2	05/23/03	1.15	7.96	86	0.0	0.52	23.9
	09/12/03	2.76	8.03	159	0.0	0.63	26.3
	10/30/03	2.57	8.00	-	-	-	19.3
	01/12/04	2.80	7.89	-	-	0.81	19.3
	03/18/05	-	7.01	-	-	2.14	-
	06/16/05	2.84	-	-	-	-	22.6
	06/23/05	-	-	-	-	-	-
	07/01/05	-	-	-	-	-	-
	11/09/05	3.12	6.72	-	-	-	17.6
GMW-3	04/18/03	-	-	-	-	0.84	-
	05/16/03	-	-	-	-	0.00	-
	05/23/03	0.95	7.97	85	0.0	0.71	22.9
	06/13/03	-	-	-	-	0.00	23.4
	07/11/03	-	-	-	-	0.00	28.1
	08/11/03	-	-	-	-	0.00	30.5
	09/12/03	2.12	7.98	153	0.0	0.82	23.8
	10/10/03	-	-	-	-	0.00	21.7
	10/30/03	2.16	7.80	-	-	-	21.9
	11/07/03	-	-	-	-	0.00	23.1
	12/04/03	-	-	-	-	0.00	22.9
	01/12/04	2.14	7.88	-	-	0.74	19.8
	02/05/04	-	-	-	-	0.00	21.6
	03/10/04	-	-	-	-	0.00	22.8
	04/02/04	-	-	-	-	0.00	22.8
	05/11/04	-	-	-	-	0.00	23.3
	06/03/04	-	-	-	-	0.00	23.3
	07/08/04	-	-	-	-	0.00	23.5
	08/06/04	-	-	-	-	0.00	23.6
	09/10/04	-	-	-	-	0.00	25.0
	01/13/05	-	-	-	-	0.00	22.6
	02/10/05	-	-	-	-	0.00	22.0
	03/03/05	-	-	-	-	0.00	22.3
	03/18/05	-	6.91	-	-	2.66	-
	04/07/05	-	-	-	-	0.00	22.1
	05/12/05	-	-	-	-	2.11	22.0
	06/16/05	2.22	-	-	-	--	22.9
	06/23/05	-	-	-	-	2.14	22.5
	07/25/05	-	-	-	-	2.80	23.9
	08/10/05	-	-	-	-	2.20	24.2
	08/24/05	-	-	-	-	1.10	24.4
	09/08/05	-	-	-	-	0.50	23.3
	10/03/05	-	-	-	-	0.70	22.7
	10/17/05	-	-	-	-	1.70	22.3

Table 1a
Baseline Parameters in Groundwater
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date	Electric Conductivity uS/cm	pH	Oxidation Reduction Potential mV	Ferrous Iron mg/L	Dissolved Oxygen mg/L	Temperature ° C
	11/01/05	-	-	-	-	1.70	23.1
	11/09/05	2.38	6.42	-	-	6.44	19.1
	11/14/05	-	-	-	-	2.00	23.1
	12/12/05	-	-	-	-	2.60	23.2
	12/30/05	-	-	-	-	0.20	23.0
GMW-4	04/18/03	-	-	-	-	0.71	-
	05/16/03	-	-	-	-	0.00	-
	05/23/03	0.87	7.99	56	0.0	0.70	21.3
	06/13/03	-	-	-	-	0.00	23.4
	07/11/03	-	-	-	-	0.16	29.8
	08/11/03	-	-	-	-	0.00	30.3
	09/12/03	1.97	7.85	134	0.8	0.27	21.3
	10/10/03	-	-	-	-	0.00	21.5
	10/30/03	2.12	7.33	-	-	-	20.8
	11/07/03	-	-	-	-	0.00	27.9
	12/04/03	-	-	-	-	0.00	22.7
	01/12/04	2.11	7.72	-	-	0.86	17.8
	02/05/04	-	-	-	-	0.00	21.5
	03/10/04	-	-	-	-	0.00	22.9
	04/02/04	-	-	-	-	0.00	22.7
	05/11/04	-	-	-	-	0.00	23.7
	06/03/04	-	-	-	-	0.00	23.3
	07/08/04	-	-	-	-	0.00	23.6
	08/06/04	-	-	-	-	0.00	24.1
	09/10/04	-	-	-	-	0.00	24.8
	01/13/05	-	-	-	-	0.00	22.7
	02/10/05	-	-	-	-	0.00	21.2
	03/03/05	-	-	-	-	0.00	23.1
	03/18/05	-	7.00	-	-	2.09	-
	04/07/05	-	-	-	-	0.00	22.4
	05/12/05	-	-	-	-	2.58	22.6
	06/16/05	2.02	-	-	-	-	22.7
	06/23/05	-	-	-	-	1.98	22.2
	07/25/05	-	-	-	-	3.40	25.1
	08/10/05	-	-	-	-	1.60	23.1
	08/24/05	-	-	-	-	1.20	23.2
	09/08/05	-	-	-	-	0.60	23.0
	10/03/05	-	-	-	-	0.70	22.6
	10/17/05	-	-	-	-	1.36	22.6
	11/01/05	-	-	-	-	27.10	22.6
	11/09/05	2.24	6.21	-	-	-	18.0
	11/14/05	-	-	-	-	1.90	22.1
	12/12/05	-	-	-	-	3.80	24.0
	12/30/05	-	-	-	-	0.20	22.6
GMW-5	05/23/03	0.80	7.96	53	0.0	0.47	
	09/12/03	2.09	7.93	167	0.0	0.92	26.2
	10/30/03	2.03	7.69	-	-	-	20.8
	01/12/04	2.11	7.81	-	-	0.73	20.0
	03/18/05	-	7.03	-	-	2.25	-
	06/16/05	2.35	-	-	-	-	22.6
	11/09/05	3.03	6.98	-	-	-	17.6

Table 1a
Baseline Parameters in Groundwater
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date	Electric Conductivity uS/cm	pH	Oxidation Reduction Potential mV	Ferrous Iron mg/L	Dissolved Oxygen mg/L	Temperature ° C
GMW-6	04/18/03	-	-	-	-	0.54	-
	05/16/03	-	-	-	-	0.00	-
	05/23/03	0.97	7.83	82	0.0	0.49	23.3
	06/13/03	-	-	-	-	0.00	22.6
	07/11/03	-	-	-	-	0.00	28.3
	08/11/03	-	-	-	-	0.00	30.3
	09/12/03	2.27	7.98	164	0.6	0.74	24.9
	10/10/03	-	-	-	-	0.00	21.8
	10/30/03	2.26	7.75	-	-	-	21.3
	11/07/03	-	-	-	-	0.00	23.3
	12/04/03	-	-	-	-	0.00	22.9
	01/12/04	2.47	7.76	-	-	0.39	21.0
	02/05/04	-	-	-	-	0.00	21.6
	03/10/04	-	-	-	-	0.00	22.6
	04/02/04	-	-	-	-	0.00	22.7
	05/11/04	-	-	-	-	0.00	23.6
	06/03/04	-	-	-	-	0.00	23.3
	07/08/04	-	-	-	-	0.00	23.6
	08/06/04	-	-	-	-	0.00	24.3
	09/10/04	-	-	-	-	0.00	24.4
	01/13/05	-	-	-	-	0.00	22.8
	02/10/05	-	-	-	-	0.00	22.4
	03/03/05	-	-	-	-	0.00	22.7
	03/18/05	-	6.98	-	-	2.87	-
	04/07/05	-	-	-	-	0.00	22.22
	05/12/05	-	-	-	-	1.77	22.83
	06/16/05	2.61	-	-	-	-	22.9
	06/23/05	-	-	-	-	2.01	22.6
	07/25/05	-	-	-	-	3.70	24.0
	08/10/05	-	-	-	-	1.80	23.8
	08/24/05	-	-	-	-	0.90	23.8
	09/08/05	-	-	-	-	0.40	23.5
	10/03/05	-	-	-	-	0.90	23.2
	10/17/05	-	-	-	-	1.04	22.9
	11/01/05	-	-	-	-	0.70	23.0
	11/09/05	2.29	6.89	-	-	-	18.8
	11/14/05	-	-	-	-	1.70	22.6
	12/12/05	-	-	-	-	3.60	23.6
	12/30/05	-	-	-	-	0.10	23.1
GMW-7	05/23/03	1.09	7.81	89	0.0	0.61	20.2
	09/12/03	2.86	7.21	132	0.2	0.69	20.5
	10/30/03	2.97	6.59	-	-	-	20.2
	01/12/04	3.01	7.85	-	-	0.57	18.2
	03/18/05	-	6.72	-	-	2.96	-
	11/09/05	2.91	6.27	-	-	-	17.4
GMW-8	05/23/03	1.05	7.96	88	0.0	0.78	23.3
	09/12/03	2.50	8.00	161	0.0	0.91	23.5
	10/30/03	2.60	7.83	-	-	-	21.1
	01/12/04	2.8	8.00	-	-	0.37	19.6
	03/18/05	-	6.96	-	-	3.01	-
	06/16/05	2.8	-	-	-	-	22.8
	11/09/05	3.0	6.27	-	-	5.09	17.1

Table 1a
Baseline Parameters in Groundwater
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date	Electric Conductivity uS/cm	pH	Oxidation Reduction Potential mV	Ferrous Iron mg/L	Dissolved Oxygen mg/L	Temperature ^{o} C
GMW-9	05/23/03	0.90	7.84	85	0.0	0.44	22.7
	09/12/03	2.11	8.04	161	0.0	0.96	23.6
	10/30/03	2.21	7.58	-	-	-	20.7
	01/12/04	2.40	8.10	-	-	0.83	19.7
	03/18/05	-	7.03	-	-	2.62	-
	06/16/05	2.64	-	-	-	-	23.4
	11/09/05	2.57	6.35	-	-	8.24	17.4
GMW-10	05/23/03	0.71	8.00	86	0.0	0.31	19.7
	09/12/03	1.83	7.89	151	0.0	0.86	22.3
	10/30/03	1.86	7.56	-	-	-	20.4
	01/12/04	1.91	8.04	-	-	0.63	19.0
	06/16/05	1.95	-	-	-	-	23.5
	11/09/05	2.08	6.65	-	-	-	18.2

Notes:
uS/cm = micro siemen per centimeter
mg/L = milligrams per liter
^{o} C = degrees celsius
-- = Not measured

Table 1b
Diffusive Oxygen Emitter System
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date	Arrival Oxygen Tank psi	Departure Oxygen Tank psi	Arrival Oxygen Diffuser psi	Departure Oxygen Diffuser psi	Dissolved Oxygen mg/L	Temperature ^{o}C
SVE-5B	04/18/03	2,000	2,000	20	20	1.24	--
	04/24/03	1,200	1,200	30	20	--	--
	04/25/03	1,200	2,000	20	15	--	--
	05/16/03	0	1,700	0	15	0.0	25.9
	05/30/03	1,600	1,600	8	15	2.84	23.6
	06/13/03	1,000	1,000	18	15	6.86	23.1
	06/26/03	0	1,900	6	15	4.24	25.1
	07/11/03	1,200	1,200	18	15	12.61	28.0
	07/17/03	1,100	1,100	15	15	5.12	33.2
	07/30/03	700	1,900	25	15	6.37	23.4
	08/11/03	1,500	1,500	16	15	5.84	25.3
	08/26/03	200	2,100	30	20	15.94	23.5
	09/11/03	800	800	30	15	10.62	23.7
	09/26/03	0	2,000	10	20	1.20	23.1
	10/10/03	1,400	1,400	20	15	7.85	21.9
	10/24/03	100	2,000	28	15	7.45	23.2
	11/07/03	0	1,900	0	15	1.03	23.3
	11/20/03	1,400	1,400	18	15	5.50	23.2
	12/04/03	700	700	24	15	5.09	22.8
	12/18/03	0	1,900	18	15	2.81	22.4
	01/08/04	1,400	1,400	12	15	2.36	22.6
	01/22/04	1,000	1,000	18	15	3.82	22.8
	02/05/04	700	700	26	15	3.81	21.6
	03/10/04	0	1,500	10	15	3.76	22.6
	04/02/04	1,600	1,600	10	10	2.38	22.6
	05/11/04	1,200	1,200	14	10	1.72	23.4
	06/03/04	800	800	14	10	5.16	23.3
	07/08/04	0	1,800	0	10	3.18	23.9
	08/06/04	0	1,900	0	10	3.35	23.6
	09/10/04	0	1,800	0	10	3.26	24.9
	10/07/04	0	2,000	0	10	8.67	23.5
	11/12/04	0	1,800	0	15	1.18	22.7
	12/02/04	0	2,000	0	15	2.31	21.7
	01/13/05	0	2,000	0	15	1.22	22.2
	02/10/05	0	1,800	0	15	7.82	20.2
	03/03/05	0	1,800	0	15	3.08	22.6
	04/07/05	0	1,900	0	15	1.63	22.3
	05/12/05	0	1,800	0	15	2.17	22.1
	06/23/05	0	2,000	5	15	2.36	23.0
	07/25/05	0	1,800	0	10	3.60	25.9
	08/10/05	0	1,800	0	10	3.00	23.6
	08/24/05	0	2,000	0	15	2.40	23.6
	09/08/05	800	800	24	24	20.50	23.2
	10/03/05	400	2,000	15	15	4.70	22.3
	10/17/05	100	1,800	15	15	16.90	22.4
	11/01/05	0	1,800	0	15	3.30	21.4
	11/14/05	50	1,800	15	15	3.60	22.0
	12/12/05	0	2,000	0	10	3.80	25.1
	12/30/05	0	2,000	0	15	3.90	23.0

Table 1b
Diffusive Oxygen Emitter System
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date	Arrival Oxygen Tank psi	Departure Oxygen Tank psi	Arrival Oxygen Diffuser psi	Departure Oxygen Diffuser psi	Dissolved Oxygen mg/L	Temperature ^{o}C
SVE-6B	04/18/03	2,000	2,000	20	20	1.89	--
	04/24/03	1,000	1,000	30	20	--	--
	04/25/03	1,000	2,000	20	15	--	--
	05/16/03	0	1,900	0	15	2.05	23.8
	05/30/03	1,500	1,500	15	15	12.67	24.7
	06/13/03	500	500	22	15	>20	25.9
	06/26/03	0	1,800	0	15	0.12	23.7
	07/11/03	1,000	1,000	20	15	OR	28.1
	07/17/03	200	2,000	25	15	OR	31.9
	07/30/03	900	900	25	15	OR	23.7
	08/11/03	0	1,900	0	15	6.69	26.5
	08/26/03	1,500	1,500	18	20	15.03	24.7
	09/11/03	0	1,900	0	15	2.94	24.6
	09/26/03	1,200	1,200	18	20	17.33	23.7
	10/10/03	0	1,900	0	15	3.43	21.6
	10/24/03	100	1,800	26	15	21.09	23.6
	11/07/03	1,300	1,300	18	15	12.85	22.8
	11/20/03	200	1,900	26	15	29.98	23.4
	12/04/03	1,600	1,600	12	15	11.10	23.4
	12/18/03	900	900	20	15	OR	23.9
	01/08/04	0	1,700	0	15	2.94	23.2
	01/22/04	1,400	1,400	10	15	2.49	23.2
	02/05/04	1,100	1,100	15	15	7.16	21.5
	03/10/04	0	1,800	10	15	2.54	22.9
	04/02/04	0	1,800	0	10	2.21	22.8
	05/11/04	0	2,000	0	10	1.49	23.5
	06/03/04	0	2,000	0	10	1.28	23.4
	07/08/04	0	1,800	0	10	2.67	24.7
	08/06/04	1,000	1,000	12	10	13.73	23.8
	09/10/04	0	1,800	0	10	3.17	24.6
	10/07/04	0	2,000	10	10	8.19	23.3
	11/12/04	0	1,900	0	15	5.54	20.9
	12/02/04	0	2,000	0	15	1.98	22.1
	01/13/05	0	1,900	0	15	1.41	22.8
	02/10/05	0	2,000	0	15	1.59	23.2
	03/03/05	0	2,000	0	15	2.44	23.2
	04/07/05	0	1,800	0	15	1.08	22.8
	05/12/05	0	2,000	0	15	2.68	22.1
	06/23/05	0	2,000	5	15	2.19	23.2
	07/25/05	0	2,000	0	10	4.10	23.5
	08/10/05	2,000	2,000	10	10	3.60	23.3
	08/24/05	0	0	0	0	2.90	23.3
	09/08/05	0	1,800	0	15	0.80	23.1
	10/03/05	200	1,900	15	15	3.10	22.6
	10/17/05	50	2,000	15	15	3.78	22.3
	11/01/05	0	1,800	0	15	6.10	23.3
	11/14/05	100	1,800	15	15	3.80	22.6
	12/12/05	0	2,000	0	10	4.30	23.6
	12/30/05	0	1,800	0	15	4.10	23.5

Table 1b
Diffusive Oxygen Emitter System
Atantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date	Arrival Oxygen Tank psi	Departure Oxygen Tank psi	Arrival Oxygen Diffuser psi	Departure Oxygen Diffuser psi	Dissolved Oxygen mg/L	Temperature °C
SVE-7B	04/18/03	1,800	1,800	20	20	1.36	--
	04/24/03	1,200	1,200	20	20	--	--
	04/25/03	1,200	2,000	20	15	--	--
	05/16/03	700	700	20	15	0.0	26.9
	05/30/03	0	1,900	0	15	0.96	26.6
	06/13/03	2,000	2,000	10	15	3.78	24.3
	06/26/03	1,500	1,500	10	15	1.49	23.9
	07/11/03	0	2,000	30	15	OR	28.2
	07/17/03	1,800	1,800	12	15	OR	32.4
	07/30/03	1,100	1,100	20	15	8.21	24.0
	08/11/03	600	600	18	15	OR	25.5
	08/26/03	0	2,000	0	20	0.97	24.3
	09/11/03	1,500	1,500	20	15	2.58	23.9
	09/26/03	0	2,000	8	20	1.64	23.5
	10/10/03	700	700	25	15	7.45	21.0
	10/24/03	0	1,900	0	15	2.26	23.8
	11/07/03	1,600	1,600	12	15	2.12	23.2
	11/20/03	1,200	1,200	16	15	5.34	23.4
	12/04/03	700	700	13	15	8.77	23.5
	12/18/03	0	1,900	10	15	1.61	23.3
	01/08/04	900	900	15	15	2.03	23.3
	01/22/04	600	600	15	15	2.43	22.9
	02/05/04	0	1,700	20	15	1.55	21.5
	03/10/04	0	1,800	15	15	2.51	23.1
	04/02/04	0	1,800	0	10	2.97	23.3
	05/11/04	1,800	1,800	8	10	1.34	24.0
	06/03/04	1,600	1,600	16	10	2.69	23.3
	07/08/04	0	1,800	0	10	3.22	23.3
	08/06/04	1,000	1,000	14	10	1.60	23.8
	09/10/04	0	1,900	0	10	2.98	24.1
	10/07/04	0	1,800	5	10	4.01	23.2
	11/12/04	0	2,000	0	15	1.28	23.0
	12/02/04	0	1,800	0	15	1.66	22.3
	01/13/05	0	2,000	0	15	1.41	23.1
	02/10/05	0	2,000	0	15	1.09	23.2
	03/03/05	0	1,900	0	15	1.95	22.9
	04/07/05	0	1,800	0	15	0.97	22.6
	05/12/05	0	1,900	0	15	3.09	22.4
	06/23/05	0	1,900	0	15	2.88	23.3
	07/25/05	0	1,800	0	10	4.50	23.6
	08/10/05	2,000	2,000	10	10	3.50	23.6
	08/24/05	2,000	2,000	15	15	6.00	26.5
	09/08/05	700	700	15	15	1.90	23.2
	10/03/05	500	1,900	15	15	3.40	22.6
	10/17/05	0	1,800	10	15	2.11	22.6
	11/01/05	1,000	1,000	15	15	3.30	22.4
	11/14/05	100	2,000	15	15	3.30	23.0
	12/12/05	0	2,000	0	10	4.00	23.8
	12/30/05	700	700	15	15	6.30	23.1

Notes:
psi = pounds per square inch
mg/L = milligrams per liter
OR = Out of Range = >20mg/L
*C = degrees celsius
-- = Not measured

TABLE 2

SUMMARY OF WELLS WITHIN ONE MILE RADIUS
ARCO FACILITY 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

WELL ID	WELL OWNER	DISTANCE FROM SITE (feet)	TOP OF CASING (feet amsl)	DEPTH TO WATER (feet bgs)	DATE MEASURED	TOTAL DEPTH (feet)	SCREENED INTERVAL (feet)	STATUS	TYPE
361A (4S/13W-32D01S)	LACFCD	1,500' SE	32.8	NA	NA	43	NA	DESTROYED November 28, 1962	OBSERVATION
392C (4S/13W-30Q04S)	Stewart Curtis Packers Inc.	1,500' W	22.9	NA	NA	119	87-109	DESTROYED	PRODUCTION
320 (4S/13W-29M01S)	Robert Tracy	1,500' NE	32.0	NA	NA	110	NA	INACTIVE	PRODUCTION
330C (4S/13W-29M02S)	Ira A. Gilmore	1,500' NE	32.8	NA	NA	80-100	NA	CAPPED - Not used since 1947	OBSERVATION
320L	LACDPW	2,300' N	40.9	82.0	Apr-99	675	205-630	ACTIVE	NA
330B (4S/13W-29P01S)	Mrs. Edith Schneider	2,400' E	32.8	NA	NA	120	NA	INACTIVE	DOMESTIC/ IRRIGATION
310G	NA	2,400' NW	NA	NA	NA	NA	NA	NA	NA
320C (4S/13W-30K01S)	LADWP	2,500' NW	35.7	76.8	4/11/01	675	215-335, 370-400	ACTIVE	PRODUCTION
320B (4S/13W-30G02S)	LADWP	2,500' NW	32.8	NA	NA	695	NONE	DESTROYED	PRODUCTION
320K (4S/13W-29E00S)	NA	2,700' NE	39.3	99.1	Mar-80	NA	NA	INACTIVE	OBSERVATION
310D (4S/13W-30P01S)	LACFCD	3,000' E	22.0	NA	NA	900	548-558	DESTROYED October 28, 1966	OBSERVATION
310E (4S/13W-30P02S)	LACFCD	3,000' E	22.0	NA	NA	345	317-327	DESTROYED October 28, 1966	OBSERVATION
310F (4S/13W-30E01S)	LACFCD	3,000' E	22.0	NA	NA	157	115-125	DESTROYED October 28, 1966	OBSERVATION
331A (4S/13W-32B01S)	LACFCD	3,000' ESE	39.3	NA	NA	423	275-365	ACTIVE	OBSERVATION

TABLE 2

SUMMARY OF WELLS WITHIN ONE MILE RADIUS
ARCO FACILITY 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

WELL ID	WELL OWNER	DISTANCE FROM SITE (feet)	TOP OF CASING (feet amsl)	DEPTH TO WATER (feet bgs)	DATE MEASURED	TOTAL DEPTH (feet)	SCREENED INTERVAL (feet)	STATUS	TYPE
331B (4S/13W-32B02S)	LACFCD	3,000' ESE	39.3	NA	NA	423	95-235	INACTIVE	OBSERVATION
320A (4S/13W-29E01S)	Marie C. Hoffman	3,000' NE	39.3	NA	NA	90	NA	INACTIVE	PRODUCTION
320D (4S/13W-29E02S)	W.C. Schultz	3,000' NE	39.3	NA	NA	80	NA	INACTIVE	PRODUCTION
320E (4S/13W-30G03S)	LADWP	3,000' NE	27.0	76.8	4/11/01	457	200-333, 515-715, 740-810	ACTIVE	PRODUCTION
320G (4S/13W-30H04S)	LACFCD	3,100' NNW	39.3	NA	NA	870	611-621	DESTROYED April 13, 1969	OBSERVATION
320H (4S/13W-30H02S)	LACFCD	3,100' NNW	39.3	NA	NA	262	234-244	DESTROYED April 13, 1969	OBSERVATION
321A (4S/13W-31J01S)	LACFCD	3,200' S	19.6	NA	NA	1,005	659-669	INACTIVE	OBSERVATION
321B (4S/13W-31J02S)	LACFCD	3,200' S	19.6	NA	NA	345	298-308	INACTIVE	OBSERVATION
321C (4S/13W-31J03S)	LACFCD	3,200' S	22.9	NA	NA	135	114.5-125	INACTIVE	OBSERVATION
829H (4S/13W-29E03S)	West Kern Oil Corp./ Barnhart-Morrow Consolidated Oil Co.	3,200' NNE	39.3	NA	NA	312	214-222, 275-284	CAPPED May 9, 1961	PRODUCTION
310C (4S/13W-30G01S)	LADWP	3,500' NW	37.1	78.8	4/11/01	682	210-340, 400-420	ACTIVE	PRODUCTION
4S/13W-32F01S	Water Replenishment District	3,700' SE	26.2	72.82	3/29/04	1,030'	950'-970'	ACTIVE	OBSERVATION
4S/13W-32F02S	Water Replenishment District	3,700' SE	26.2	67.56	3/29/04	775'	755'-775'	ACTIVE	OBSERVATION

TABLE 2

SUMMARY OF WELLS WITHIN ONE MILE RADIUS
ARCO FACILITY 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

WELL ID	WELL OWNER	DISTANCE FROM SITE (feet)	TOP OF CASING (feet amsl)	DEPTH TO WATER (feet bgs)	DATE MEASURED	TOTAL DEPTH (feet)	SCREENED INTERVAL (feet)	STATUS	TYPE
4S/13W-32F03S	Water Replenishment District	3,700' SE	26.2	62.64	3/29/04	560'	540'-560'	ACTIVE	OBSERVATION
4S/13W-332F04S	Water Replenishment District	3,700' SE	26.2	61.70	3/29/04	410'	390'-410'	ACTIVE	OBSERVATION
4S/13W-32F05S	Water Replenishment District	3,700' SE	26.2	39.44	3/29/04	140'	120'-140'	ACTIVE	OBSERVATION
829L (4S/13W-30A05S)	Fletcher Oil Co.	3,700' N	32.8	NA	NA	402	NA	CAPPED	PRODUCTION
311D (4S/13W-31K02S)	LACFCD	3,800' SW	36.0	NA	NA	163	85-145	INACTIVE	OBSERVATION
4S/13W-29E06S	Dominguez Water Company	3,850' NE	32.8	NA	NA	NA	NA	ACTIVE	PRODUCTION
4S/13W-29E05S	NA	3,900' NE	39.3	NA	NA	NA	NA	DESTROYED	PRODUCTION
311E (4S/13W-31F01S)	LACFCD	4,000' SW	29.5	NA	NA	243	155-215	INACTIVE	OBSERVATION
311F (4S/13W-31F02S)	LACFCD	4,000' SW	29.5	NA	NA	243	85-95	INACTIVE	OBSERVATION
331C (4S/13W-32G01S)	LACFCD	4,250' SE	26.2	NA	NA	183	92-152	ACTIVE	OBSERVATION
4S/13W-30A01S	NA	4,700' NNE	32.8	NA	NA	NA	NA	UNKNOWN	NA
322N (4S/13W-32N04S)	LACFCD	4,900' S	22.1	NA	NA	NA	21.3-24.8	INACTIVE	OBSERVATION
331 (4S/13W-32K01S)	LACFCD	5,000' SE	19.6	NA	NA	203	78-154	ACTIVE	OBSERVATION
322P	NA	5,050' S	NA	NA	NA	NA	NA	INACTIVE	NA
300F (4S/13W-30E01S)	Oliver McCoy	5,100' NE	58.0	NA	NA	285	NA	INACTIVE	PRODUCTION

TABLE 2

SUMMARY OF WELLS WITHIN ONE MILE RADIUS
ARCO FACILITY 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

WELL ID	WELL OWNER	DISTANCE FROM SITE (feet)	TOP OF CASING (feet amsl)	DEPTH TO WATER (feet bgs)	DATE MEASURED	TOTAL DEPTH (feet)	SCREENED INTERVAL (feet)	STATUS	TYPE
311 (4S/13W-31E01S)	LADWP	5,200' SW	29.5	39.8	4/11/40	716	NA	DESTROYED 1946	PRODUCTION
311A (4S/13W-31E04S)	LADWP	5,200' SW	29.5	NA	NA	680	440-560, 605-655	CAPPED 1956	OBSERVATION
311B (4S/13W-31E02S)	LADWP	5,200' SW	29.5	NA	NA	480	435-500	INACTIVE	PRODUCTION
311C (4S/13W-31E03S)	LADWP	5,200' SW	29.5	NA	NA	671	206-213, 235-240, 340-420, 440-450, 475-	DESTROYED	PRODUCTION

Notes:

bgs = below ground surface
amsl = above mean sea level
NA=not available
LACFCD=Los Angeles County Flood Control District
LAWD=Los Angeles Water Department
LACDPW=Los Angeles County Department of Public Works
LADWP=Los Angeles Department of Water and Power

TABLE 3
Summary of Groundwater Analytical & Elevation Results
ARCO Station No. 1054
980 W. Pacific Coast Highway, Wilmington, California

Well No.	Date	Notes	TOC Elevation (ft-MSL)	Depth to Water (feet)	Measured SPH Thickness (feet)	Calc. GW Elev. (ft-MSL)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Sample ID	Comments
GMW-1	12/14/01		35.59	58.19	0.00	-22.60	99 J	< 1.0	< 1.0	< 1.0	< 1.0	4,700	150	< 2.0	< 2.0	12	-	GMW-1	
	03/04/02			58.30	0.00	-22.71	940	<1.0	<1.0	<1.0	1.6 J	4,200	280	<2.0	<2.0	5.8	-	GMW-1	
	05/01/02			57.96	0.00	-22.37	780	<5.0	<5.0	<5.0	<5.0	2,400	220	<5.0	<5.0	<5.0	-	GMW-1	
	07/22/02		37.96	57.92	0.00	-19.96	76	<4.0	<4.0	<4.0	<8.0	880	31 J	<10	<10	1.7 J	-	GMW-1	
	08/14/02	NS		57.94	0.00	-19.98	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			57.75	0.00	-19.79	87	<2.0	0.17 J	<2.0	<4.0	160	17 J	<5.0	<5.0	0.40 J	-	GMW-1	
	01/28/03			57.35	0.00	-19.39	11 J	<2.0	<2.0	<2.0	<4.0	7.8	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	05/23/03			57.12	0.00	-19.16	8.9 J	<2.0	<2.0	<2.0	<4.0	2.3 J	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	09/12/03			56.92	0.00	-18.96	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	10/30/03			56.73	0.00	-18.77	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	01/12/04			56.70	0.00	-18.74	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	06/15/04			56.26	0.00	-18.30	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	07/29/04			56.04	0.00	-18.08	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	10/26/04			55.83	0.00	-17.87	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	03/18/05			55.36	0.00	-17.40	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	06/16/05			54.71	0.00	-16.75	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	08/10/05			54.48	0.00	-16.52	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
	11/09/05			54.10	0.00	-16.14	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-1	
GMW-2	12/14/01		35.71	58.59	0.00	-22.88	< 50	< 1.0	< 1.0	< 1.0	< 1.0	7.6	<10	< 2.0	< 2.0	< 2.0	-	GMW-2	
	03/04/02			58.65	0.00	-22.94	<50	<1.0	<1.0	<1.0	1.3 J	2.4 J	<10	<2.0	<2.0	<2.0	-	GMW-2	
	05/01/02			58.42	0.00	-22.71	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<25	<5.0	<5.0	<5.0	-	GMW-2	
	07/22/02		37.96	58.23	0.00	-20.27	<50	0.17 J	<2.0	0.15 J	<4.0	2.7 J	<50	<5.0	<5.0	<5.0	-	GMW-2	
	08/14/02	NS		58.21	0.00	-20.25	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			58.05	0.00	-20.09	11 J	<2.0	<2.0	<2.0	<4.0	3.1 J	<50	<5.0	<5.0	<5.0	-	GMW-2	
	01/28/03			57.85	0.00	-19.89	<50	<2.0	<2.0	<2.0	<4.0	0.38 J	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	05/23/03			57.65	0.00	-19.69	22 J	<2.0	<2.0	<2.0	<4.0	0.75 J	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	09/12/03			57.23	0.00	-19.27	<50	<2.0	<2.0	<2.0	<4.0	0.56 J	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	10/30/03			57.05	0.00	-19.09	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	01/12/04			56.97	0.00	-19.01	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	06/15/04			56.56	0.00	-18.60	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	07/29/04			56.45	0.00	-18.49	22 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	10/26/04			56.20	0.00	-18.24	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	03/18/05			55.76	0.00	-17.80	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	06/16/05			55.10	0.00	-17.14	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	08/10/05			54.86	0.00	-16.90	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-2	
	11/09/05			55.40	0.00	-17.44	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-2	

TABLE 3
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Well No.	Date	Notes	TOC Elevation (ft-MSL)	Depth to Water (feet)	Measured SPH Thickness (feet)	Calc. GW Elev. (ft-MSL)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Sample ID	Comments
GMW-3	12/14/01		35.68	58.84	0.00	-23.16	130	< 1.0	< 1.0	< 1.0	< 1.0	4,400	330	< 2.0	< 2.0	9.7	-	GMW-3	
	03/04/02			58.89	0.00	-23.21	2,800	<1.0	<1.0	<1.0	1.4 J	6,300	570	<2.0	<2.0	13	-	GMW-3	
	05/01/02			58.61	0.00	-22.93	5,400	<5.0	<5.0	<5.0	<5.0	15,000	680	<5.0	<5.0	19	-	GMW-3	
	07/22/02		38.04	58.44	0.00	-20.40	660	<40	<40	<40	<80	8,300	910 J	<100	<100	15 J	-	GMW-3	
	08/14/02	NS		58.40	0.00	-20.36	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			58.25	0.00	-20.21	350	<8.0	<8.0	<8.0	<16	520	11,000	<20	<20	<20	-	GMW-3	
	01/28/03			57.99	0.00	-19.95	32 J	< 2.0	< 2.0	< 2.0	<4.0	16	3,900	<5.0	<5.0	<5.0	<150	GMW-3	
	05/23/03			57.85	0.00	-19.81	19 J	< 2.0	< 2.0	< 2.0	<4.0	120	240	<5.0	<5.0	<5.0	<150	GMW-3	
	09/12/03			57.42	0.00	-19.38	53	< 2.0	< 2.0	< 2.0	<4.0	120	59	<5.0	<5.0	<5.0	<150	GMW-3	
	10/30/03			57.25	0.00	-19.21	47 J	< 2.0	< 2.0	< 2.0	<4.0	120	70	<5.0	<5.0	<5.0	<150	GMW-3	
	01/12/04			57.09	0.00	-19.05	28 J	< 2.0	< 2.0	< 2.0	<4.0	5.8	< 50	<5.0	<5.0	<5.0	<150	GMW-3	
	06/15/04			56.74	0.00	-18.70	<50	< 2.0	< 2.0	< 2.0	<4.0	21	< 50	<5.0	<5.0	<5.0	<150	GMW-3	
	07/29/04			56.68	0.00	-18.64	41 J	<2.0	<2.0	<2.0	<4.0	35	<50	<5.0	<5.0	<5.0	<150	GMW-3	
	10/26/04			56.40	0.00	-18.36	32 J	<2.0	<2.0	<2.0	<4.0	62	<50	<5.0	<5.0	<5.0	<150	GMW-3	
	03/18/05			55.93	0.00	-17.89	35 J	<2.0	<2.0	<2.0	<4.0	23	<50	<5.0	<5.0	<5.0	<150	GMW-3	
	06/16/05			55.27	0.00	-17.23	<50	<2.0	<2.0	<2.0	<4.0	14	<50	<5.0	<5.0	<5.0	<150	GMW-3	
	08/10/05			55.06	0.00	-17.02	<50	<2.0	<2.0	<2.0	<4.0	19	<50	<5.0	<5.0	<5.0	<150	GMW-3	
	11/09/05			54.68	0.00	-16.64	28 J	<2.0	<2.0	<2.0	<4.0	38	<50	<5.0	<5.0	<5.0	<150	GMW-3	

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Well No.	Date	Notes	TOC Elevation (ft-MSL)	Depth to Water (feet)	Measured SPH Thickness (feet)	Calc. GW Elev. (ft-MSL)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Sample ID	Comments
GMW-4	12/14/01		34.84	57.65	0.00	-22.81	8,500	< 1.0	< 1.0	< 1.0	< 1.0	19,000	430	< 2.0	< 2.0	54	-	GMW-4	
	03/04/02			57.80	0.00	-22.96	7,800	<1.0	<1.0	<1.0	1.3 J	16,000	2,800	<2.0	<2.0	33	-	GMW-4	
	05/01/02			57.55	0.00	-22.71	4,300	<5.0	<5.0	<5.0	<5.0	11,000	540	<5.0	<5.0	18	-	GMW-4	
	07/22/02		37.17	57.35	0.00	-20.18	200	<10	<10	<10	<20	2,300	180 J	<25	<25	3.0 J	-	GMW-4	
	08/14/02	NS		57.35	0.00	-20.18	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			57.28	0.00	-20.11	170	<2.0	0.15 J	<2.0	<4.0	420	39 J	<5.0	<5.0	0.66 J	-	GMW-4	
	01/28/03			57.00	0.00	-19.83	31 J	<2.0	<2.0	<2.0	<4.0	140	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	05/23/03			56.79	0.00	-19.62	24 J	<2.0	<2.0	<2.0	<4.0	91	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	09/12/03			56.35	0.00	-19.18	<50	<2.0	<2.0	<2.0	<4.0	40	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	10/30/03			56.19	0.00	-19.02	<50	<2.0	<2.0	<2.0	<4.0	30	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	01/12/04			56.11	0.00	-18.94	<50	<2.0	<2.0	<2.0	<4.0	38	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	06/15/04			55.66	0.00	-18.49	<50	<2.0	<2.0	<2.0	<4.0	14	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	07/29/04			55.59	0.00	-18.42	23 J	<2.0	<2.0	<2.0	<4.0	20	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	07/29/04	DUP		-	-	-	<50	<2.0	<2.0	<2.0	<4.0	25	<50	<5.0	<5.0	<5.0	<150	Dup-1054-20040729	
	10/26/04			55.34	0.00	-18.17	<50	<2.0	<2.0	<2.0	<4.0	8.4	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	10/26/04	DUP		-	-	-	27 J	<2.0	<2.0	<2.0	<4.0	8.9	<50	<5.0	<5.0	<5.0	<150	DUP-1054-20041026	
	03/18/05			54.86	0.00	-17.69	<50	<2.0	<2.0	<2.0	<4.0	5.4	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	03/18/05	DUP		-	-	-	<50	<2.0	<2.0	<2.0	<4.0	5.2	<50	<5.0	<5.0	<5.0	<150	DUP-1054-20050318	
	06/16/05			54.20	0.00	-17.03	<50	<2.0	<2.0	<2.0	<4.0	5.0	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	06/16/05	DUP		-	-	-	<50	<2.0	<2.0	<2.0	<4.0	4.5 J	<50	<5.0	<5.0	<5.0	<150	DUP-1054-20050616	
	08/10/05			53.08	0.00	-15.91	<50	<2.0	<2.0	<2.0	<4.0	5.5	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	08/10/05	DUP		-	-	-	<50	<2.0	<2.0	<2.0	<4.0	4.9 J	<50	<5.0	<5.0	<5.0	<150	DUP-1054-20050810	
	11/09/05			53.60	0.00	-16.43	<50	<2.0	<2.0	<2.0	<4.0	3.9 J	<50	<5.0	<5.0	<5.0	<150	GMW-4	
	11/09/05	DUP		-	-	-	<50	<2.0	<2.0	<2.0	<4.0	4.4 J	<50	<5.0	<5.0	<5.0	<150	DUP-1054-20051109	

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GMW-5	07/22/02		37.20	57.26	0.00	-20.06	9.8 J	<2.0	<2.0	0.17 J	0.98 J	13	<50	<5.0	<5.0	<5.0	-	GMW-5	
	08/14/02	NS		57.16	0.00	-19.96	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			57.02	0.00	-19.82	11 J	<2.0	<2.0	<2.0	<4.0	2.6 J	<50	<5.0	<5.0	<5.0	-	GMW-5	
	01/28/03			56.84	0.00	-19.64	<50	<2.0	<2.0	<2.0	<4.0	2.5 J	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	05/23/03			56.60	0.00	-19.40	10 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	09/12/03			56.18	0.00	-18.98	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	10/30/03			56.02	0.00	-18.82	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	01/12/04			55.91	0.00	-18.71	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	06/15/04			55.51	0.00	-18.31	30 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	07/29/04			55.42	0.00	-18.22	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	10/26/04			55.19	0.00	-17.99	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	03/18/05			54.69	0.00	-17.49	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	06/16/05			54.05	0.00	-16.85	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	08/10/05			53.81	0.00	-16.61	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	
	11/09/05			53.50	0.00	-16.30	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-5	

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GMW-6	07/22/02		37.44	57.90	0.00	-20.46	11 J	0.19 J	<2.0	<2.0	0.26 J	24	<50	<5.0	<5.0	<5.0	-	GMW-6	
	08/14/02	NS		57.80	0.00	-20.36	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			57.67	0.00	-20.23	13 J	<2.0	0.13 J	<2.0	0.41 J	15	<50	<5.0	<5.0	<5.0	-	GMW-6	
	01/28/03			57.49	0.00	-20.05	9.6 J	<2.0	<2.0	<2.0	<4.0	15	6.7 J	<5.0	<5.0	<5.0	<150	GMW-6	
	05/23/03			57.25	0.00	-19.81	38 J	<2.0	<2.0	<2.0	<4.0	7.8	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	09/12/03			56.85	0.00	-19.41	<50	<2.0	<2.0	<2.0	<4.0	3.5 J	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	10/30/03			57.68	0.00	-20.24	<50	<2.0	<2.0	<2.0	<4.0	1.9 J	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	01/12/04			56.53	0.00	-19.09	<50	<2.0	<2.0	<2.0	<4.0	1.2 J	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	06/15/04			56.15	0.00	-18.71	<50	<2.0	<2.0	<2.0	<4.0	0.56 J	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	07/29/04			56.05	0.00	-18.61	<50	<2.0	<2.0	<2.0	<4.0	0.67 J	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	10/26/04			55.82	0.00	-18.38	<50	<2.0	<2.0	<2.0	<4.0	0.77 J	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	03/18/05			55.34	0.00	-17.90	<50	<2.0	<2.0	<2.0	<4.0	1.1 J	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	06/16/05			54.69	0.00	-17.25	<50	<2.0	<2.0	<2.0	<4.0	0.53 J	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	08/10/05			54.45	0.00	-17.01	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-6	
	11/09/05			55.00	0.00	-17.56	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-6	
GMW-7	07/22/02		35.67	55.67	0.00	-20.00	<50	<2.0	<2.0	<2.0	<4.0	48	<50	<5.0	<5.0	<5.0	-	GMW-7	
	08/14/02	NS		55.56	0.00	-19.89	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02	NS		55.42	0.00	-19.75	-	-	-	-	-	-	-	-	-	-	-	-	
	01/28/03	NS		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	05/23/03			55.00	0.00	-19.33	17 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	
	09/12/03			54.56	0.00	-18.89	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	
	10/30/03			54.40	0.00	-18.73	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	
	01/12/04			54.33	0.00	-18.66	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	
	06/15/04			53.88	0.00	-18.21	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	
	07/29/04			53.82	0.00	-18.15	27 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	
	10/26/04			53.58	0.00	-17.91	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	
	03/18/05			53.07	0.00	-17.40	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	
	06/16/05	INA		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	08/10/05			52.28	0.00	-16.61	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	
	11/09/05			52.78	0.00	-17.11	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-7	

TABLE 3
Summary of Groundwater Analytical & Elevation Results
ARCO Station No. 1054
980 W. Pacific Coast Highway, Wilmington, California

Well No.	Date	Notes	TOC Elevation (ft-MSL)	Depth to Water (feet)	Measured SPH Thickness (feet)	Calc. GW Elev. (ft-MSL)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Sample ID	Comments
GMW-8	07/22/02		35.37	58.20	0.00	-22.83	<50	<2.0	<2.0	<2.0	<4.0	0.72 J	<50	<5.0	<5.0	<5.0	-	GMW-8	
	08/14/02	NS		55.61	0.00	-20.24	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			55.49	0.00	-20.12	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	-	GMW-8	
	01/28/03			55.24	0.00	-19.87	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	05/23/03			55.03	0.00	-19.66	7.6 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	09/12/03			54.57	0.00	-19.20	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	10/30/03			54.40	0.00	-19.03	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	01/12/04			54.34	0.00	-18.97	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	06/15/04			53.91	0.00	-18.54	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	07/29/04			53.81	0.00	-18.44	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	10/26/04			53.57	0.00	-18.20	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	03/18/05			53.09	0.00	-17.72	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	06/16/05			52.48	0.00	-17.11	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	08/10/05			52.24	0.00	-16.87	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
	11/09/05			51.82	0.00	-16.45	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	GMW-8	
GMW-9	07/22/02		36.19	56.78	0.00	-20.59	220	0.16 J	<2.0	<2.0	0.20 J	960	29 J	<5.0	<5.0	1.6 J	-	GMW-9	
	08/14/02	NS		56.69	0.00	-20.50	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			56.57	0.00	-20.38	170	<2.0	<2.0	<2.0	<4.0	510	41 J	<5.0	<5.0	0.69 J	-	GMW-9	
	01/28/03			56.35	0.00	-20.16	91	<2.0	<2.0	<2.0	<4.0	540	<50	<5.0	<5.0	0.70 J	<150	GMW-9	
	05/23/03			56.12	0.00	-19.93	24 J	<2.0	<2.0	<2.0	<4.0	140	10 J	<5.0	<5.0	<5.0	<150	GMW-9	
	09/12/03			55.68	0.00	-19.49	<50	<2.0	<2.0	<2.0	<4.0	22	<50	<5.0	<5.0	0.37 J	<150	GMW-9	
	10/30/03			55.51	0.00	-19.32	<50	<2.0	<2.0	<2.0	<4.0	26	<50	<5.0	<5.0	<5.0	<150	GMW-9	
	01/12/04			55.45	0.00	-19.26	<50	<2.0	<2.0	<2.0	<4.0	14	<50	<5.0	<5.0	<5.0	<150	GMW-9	
	06/15/04			54.98	0.00	-18.79	<50	<2.0	<2.0	<2.0	<4.0	6.2	<50	<5.0	<5.0	<5.0	<150	GMW-9	
	07/29/04			54.92	0.00	-18.73	<50	<2.0	<2.0	<2.0	<4.0	4.1 J	<50	<5.0	<5.0	<5.0	<150	GMW-9	
	10/26/04			54.68	0.00	-18.49	<50	<2.0	<2.0	<2.0	<4.0	2.3 J	<50	<5.0	<5.0	<5.0	<150	GMW-9	
	03/18/05			54.20	0.00	-18.01	<50	<2.0	<2.0	<2.0	<4.0	2.4 J	<50	<5.0	<5.0	<5.0	<150	GMW-9	
	06/16/05			53.56	0.00	-17.37	<50	<2.0	<2.0	<2.0	<4.0	1.4 J	<50	<5.0	<5.0	<5.0	<150	GMW-9	
	08/10/05			53.35	0.00	-17.16	<50	<2.0	<2.0	<2.0	<4.0	1.2 J	<50	<5.0	<5.0	<5.0	<150	GMW-9	
	11/09/05			52.87	0.00	-16.68	<50	<2.0	<2.0	<2.0	<4.0	3.8 J	<50	<5.0	<5.0	<5.0	<150	GMW-9	

TABLE 3
Summary of Groundwater Analytical & Elevation Results
ARCO Station No. 1054
980 W. Pacific Coast Highway, Wilmington, California

Well No.	Date	Notes	TOC Elevation (ft-MSL)	Depth to Water (feet)	Measured SPH Thickness (feet)	Calc. GW Elev. (ft-MSL)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Sample ID	Comments
GMW-10	07/22/02		37.62	55.67	0.00	-18.05	4,700	<80	<80	<80	<160	23,000	1,700 J	<200	<200	31 J	-	GMW-10	
	08/14/02	NS		58.31	0.00	-20.69	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			58.04	0.00	-20.42	4,800	<80	13 J	<80	12 J	15,000	1,600 J	<200	<200	19 J	-	GMW-10	
	01/28/03			57.82	0.00	-20.20	300	<8.0	<8.0	<8.0	<16	1,300	14,000	<20	<20	1.4 J	<600	GMW-10	
	05/23/03			57.59	0.00	-19.97	22 J	<20	<20	<20	<40	12 J	2,800	<50	<50	<50	<1,500	GMW-10	
	09/12/03			57.15	0.00	-19.53	110	<4.0	<4.0	<4.0	<8.0	190	130	<10	<10	<10	<300	GMW-10	
	10/30/03			56.98	0.00	-19.36	56	<2.0	<2.0	<2.0	<4.0	200	46 J	<5.0	<5.0	<5.0	<150	GMW-10	
	01/12/04			56.89	0.00	-19.27	28 J	<2.0	<2.0	<2.0	<4.0	76	5.7 J	<5.0	<5.0	<5.0	<150	GMW-10	
	06/15/04			56.45	0.00	-18.83	<50	<2.0	<2.0	<2.0	<4.0	39	6.9 J	<5.0	<5.0	<5.0	<150	GMW-10	
	07/29/04			56.36	0.00	-18.74	44 J	<2.0	<2.0	<2.0	<4.0	49	<50	<5.0	<5.0	<5.0	<150	GMW-10	
	10/26/04			56.14	0.00	-18.52	37 J	<2.0	<2.0	<2.0	<4.0	42	<50	<5.0	<5.0	<5.0	<150	GMW-10	
	03/18/05	INA		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	06/16/05			55.03	0.00	-17.41	26 J	<2.0	<2.0	<2.0	<4.0	39	<50	<5.0	<5.0	<5.0	<150	GMW-10	
	08/10/05			54.80	0.00	-17.18	<50	<2.0	<2.0	<2.0	<4.0	25	<50	<5.0	<5.0	<5.0	<150	GMW-10	
	11/09/05			54.37	0.00	-16.75	<50	<2.0	<2.0	<2.0	<4.0	19	<50	<5.0	<5.0	<5.0	<150	GMW-10	

TABLE 3
Summary of Groundwater Analytical & Elevation Results
ARCO Station No. 1054
980 W. Pacific Coast Highway, Wilmington, California

Well No.	Date	Notes	TOC Elevation (ft-MSL)	Depth to Water (feet)	Measured SPH Thickness (feet)	Calc. GW Elev. (ft-MSL)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Sample ID	Comments
SVE-5B	10/18/02		-	56.95	0.00	-	110	<2.0	<2.0	<2.0	<4.0	240	24 J	<5.0	<5.0	0.53 J	-	SVE-5B	
	01/28/03			56.78	0.00	-	100	<2.0	<2.0	<2.0	<4.0	150	<50	<5.0	<5.0	<5.0	<150	SVE-5B	
	04/23/03	NS		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	oxygen diffuser
SVE-6B	10/18/02		-	57.34	0.00	-	690	<2.0	0.17 J	<2.0	<4.0	2,100	290	<5.0	<5.0	3.2 J	-	SVE-6B	
	01/28/03			57.18	0.00	-	400	<4.0	<4.0	<4.0	<8.0	690	350	<10	<10	0.68 J	<300	SVE-6B	
	04/23/03	NS		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	oxygen diffuser
SVE-7B	10/18/02		-	57.28	0.00	-	1,200	<2.0	<2.0	<2.0	<4.0	3,800	300	<5.0	<5.0	6.3	-	SVE-7B	
	01/28/03			57.13	0.00	-	280	<2.0	<2.0	<2.0	<4.0	440	280	<5.0	<5.0	0.53 J	<150	SVE-7B	
	04/23/03	NS		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	oxygen diffuser

TABLE 3
Summary of Groundwater Analytical & Elevation Results
ARCO Station No. 1054
980 W. Pacific Coast Highway, Wilmington, California

Well No.	Date	Notes	TOC Elevation (ft-MSL)	Depth to Water (feet)	Measured SPH Thickness (feet)	Calc. GW Elev. (ft-MSL)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Sample ID	Comments
Trip Blank	05/01/02		-	-	-	-	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<25	<5.0	<5.0	<5.0	-	MW-100	
	07/22/02	NS		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	10/18/02			-	-	-	14 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	-	MW-100	
	01/28/03			-	-	-	9.6 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	MW-100	
	05/23/03			-	-	-	17 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	MW-100	
	09/12/03			-	-	-	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	MW-100	
	10/30/03			-	-	-	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	MW-100	
	01/12/04			-	-	-	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	MW-100	
	06/16/04			-	-	-	25 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	TB-1054-20040616	
	07/29/04			-	-	-	30 J	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	TB-1054-20040729	
	10/26/04			-	-	-	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	TB-1054-20041026	
	03/18/05	NS		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	06/16/05			-	-	-	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	TB-1054-20050616	
	08/10/05			-	-	-	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	TB-1054-20050810	
	11/09/05			-	-	-	<50	<2.0	<2.0	<2.0	<4.0	<5.0	<50	<5.0	<5.0	<5.0	<150	TB-1054-20051109	

Notes:

GRO = Gasoline range organics
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total xylenes
MTBE = Methyl tert-butyl ether
TBA = Tert-butyl alcohol
DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
TAME = Tert-amyl methyl ether
SPH = Separate phase hydrocarbons
TOC = Top of casing (surveyed)
Calc. GW Elev. = Calculated groundwater elevation = TOC - Depth to Water + 0.75*(Measured SPH Thickness); assuming a specific gravity of 0.75 for SPH
ft-MSL = feet above mean sea level
µg/L = Micrograms per liter
< = Analyte was not detected above the specified method reporting limit
- = Not measured or analyzed
J = Estimated value (less than the method reporting limit and greater than or equal to the method detection limit)
Refer to the reports in which data was first presented for more information on historical data.

GRO analyzed by EPA Method 8015 Modified. The carbon chain range used is C4-C12.
BTEX and oxygenates analyzed by EPA Method 8260B.
DUP = Duplicate sample
NS = Well not sampled

Table 4
Groundwater Polynuclear Hydrocarbon Analytical Data
Atlantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date Sampled	Acenaphthene µg/L	Acenaphthylene µg/L	Anthracene µg/L	Benzo (a) anthracene µg/L	Benzo (b) fluoranthene µg/L	Benzo (k) fluoranthene µg/L	Benzo (g.h.i) perylen µg/L	Benzo (a) pyrene µg/L	Chrysene µg/L	Dibenz (a,h) anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno (1,2,3-cd) pyrene µg/L	2-methylnaphthalene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L
GMW-1	10/18/02	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	01/28/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	06/25/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<100	<100	<100	<100	<100	<100	<100	<100	<100	<200	<100	<100	<200	<100	<100	<100	<100
	01/12/04	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	06/16/04	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<9.4	<4.7	<4.7	<9.4	<4.7	<4.7	<4.7	<4.7
	07/29/04	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<11	<5.3	<5.3	<11	<5.3	<5.3	<5.3	<5.3
	10/26/04	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0
	03/18/05	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<10	<5.1	<5.1	<10	<5.1	<5.1	<5.1	<5.1
	08/10/05	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
GMW-2	10/18/02	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8
	01/28/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8
	06/25/03	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<10	<5.1	<5.1	<10	<5.1	<5.1	<5.1	<5.1
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	01/12/04	21	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	4.9[J]	<20	13	25	<10	<10
	06/16/04	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	07/29/04	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<11	<5.6	<5.6	<11	<5.6	<5.6	<5.6	<5.6
	10/26/04	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<9.9	<5.0	<5.0	<9.9	<5.0	<5.0	<5.0	<5.0
	03/18/05	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	08/10/05	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
GMW-3	10/18/02	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8
	01/28/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8
	06/25/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	01/12/04	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	06/16/04	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8
	07/29/04	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<11	<5.6	<5.6	<11	<5.6	<5.6	<5.6	<5.6
	10/26/04	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	03/18/05	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	08/10/05	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
GMW-4	10/18/02	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	01/28/03	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	06/25/03	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.7	<4.9	<4.9	<9.7	<4.9	<4.9	<4.9	<4.9
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	01/12/04	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	06/16/04	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	07/29/04	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<11	<5.6	<5.6	<11	<5.6	<5.6	<5.6	<5.6
Dup-1054-20040729	07/29/04	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<11	<5.6	<5.6	<11	<5.6	<5.6	<5.6	<5.6
	10/26/04	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0
	03/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<9.9	<5.0	<5.0	<9.9	<5.0	<5.0	<5.0	<5.0
Dup-1054-20050318	03/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0
	08/10/05	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9

Table 4
Groundwater Polynuclear Hydrocarbon Analytical Data
Atlantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date Sampled	Acenaphthene µg/L	Acenaphthylene µg/L	Anthracene µg/L	Benzo (a) anthracene µg/L	Benzo (b) fluoranthene µg/L	Benzo (k) fluoranthene µg/L	Benzo (g.h.i) perylen µg/L	Benzo (a) pyrene µg/L	Chrysene µg/L	Dibenz (a,h) anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno (1,2,3-cd) pyrene µg/L	2-methylnaphthalene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L
GMW-5	10/18/02	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	01/28/03	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	06/25/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	01/12/04	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	06/15/04	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8
	07/29/04	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<11	<5.3	<5.3	<11	<5.3	<5.3	<5.3	<5.3
	10/26/04	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<10	<5.1	<5.1	<10	<5.1	<5.1	<5.1	<5.1
	03/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0
	08/10/05	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
GMW-6	10/18/02	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	01/28/03	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	06/25/03	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.7	<4.9	<4.9	<9.7	<4.9	<4.9	<4.9	<4.9
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	01/12/04	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	06/16/04	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<9.5	<4.7	<4.7	<9.5	<4.7	<4.7	<4.7	<4.7
	07/29/04	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<11	<5.3	<5.3	<11	<5.3	<5.3	<5.3	<5.3
	10/26/04	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<9.9	<5.0	<5.0	<9.9	<5.0	<5.0	<5.0	<5.0
	03/18/05	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8
	08/10/05	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
GMW-7	10/18/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	01/28/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	06/25/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	01/12/04	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	06/16/04	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	07/29/04	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<12	<5.9	<5.9	<12	<5.9	<5.9	<5.9	<5.9
	10/26/04	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<9.4	<4.7	<4.7	<9.4	<4.7	<4.7	<4.7	<4.7
	03/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0
GMW-8	10/18/02	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	01/28/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	06/25/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.7	<4.8	<4.8	<9.7	<4.8	<4.8	<4.8	<4.8
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	01/12/04	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	06/15/04	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<9.4	<4.7	<4.7	<9.4	<4.7	<4.7	<4.7	<4.7
	07/29/04	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<11	<5.3	<5.3	<11	<5.3	<5.3	<5.3	<5.3
	10/26/04	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<11	<5.3	<5.3	<11	<5.3	<5.3	<5.3	<5.3
	03/18/05	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<10	<5.1	<5.1	<10	<5.1	<5.1	<5.1	<5.1

Table 4
Groundwater Polynuclear Hydrocarbon Analytical Data
Atlantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date Sampled	Acenaphthene µg/L	Acenaphthylene µg/L	Anthracene µg/L	Benzo (a) anthracene µg/L	Benzo (b) fluoranthene µg/L	Benzo (k) fluoranthene µg/L	Benzo (g.h.i) perylen µg/L	Benzo (a) pyrene µg/L	Chrysene µg/L	Dibenz (a,h) anthracene µg/L	Fluoranthene µg/L	Fluorene µg/L	Indeno (1,2,3-cd) pyrene µg/L	2-methylnaphthalene µg/L	Naphthalene µg/L	Phenanthrene µg/L	Pyrene µg/L
GMW-9	10/18/02	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	01/28/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	06/25/03	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.7	<4.9	<4.9	<9.7	<4.9	<4.9	<4.9	<4.9
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	01/12/04	9.1[J]	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	4.5[J]	8.3[J]	<10	<10
	06/15/04	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	07/29/04	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<11	<5.6	<5.6	<11	<5.6	<5.6	<5.6	<5.6
	10/26/04	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0
	03/18/05	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0
GMW-10	10/18/02	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	01/28/03	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8	<4.8	<9.6	<4.8	<4.8	<4.8	<4.8
	06/25/03	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.7	<4.9	<4.9	<9.7	<4.9	<4.9	<4.9	<4.9
	09/12/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	10/30/03	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	01/12/04	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<20	<10	<10	<10	<10
	06/15/04	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.5	<4.8	<4.8	<9.5	<4.8	<4.8	<4.8	<4.8
	07/29/04	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<11	<5.3	<5.3	<11	<5.3	<5.3	<5.3	<5.3
	10/26/04	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<9.9	<5.0	<5.0	<9.9	<5.0	<5.0	<5.0	<5.0
	08/10/05	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
SVE-5B	10/18/02	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10	<5.2	<5.2	<10	<5.2	<5.2	<5.2	<5.2
	01/28/03	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10	<5.2	<5.2	<10	<5.2	<5.2	<5.2	<5.2
SVE-6B	10/18/02	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	01/28/03	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
SVE-7B	10/18/02	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9
	01/28/03	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<9.8	<4.9	<4.9	<9.8	<4.9	<4.9	<4.9	<4.9

Notes:
µg/L = Micrograms per liter
< = less than laboratory limits
-- = Not analyzed / sampled / applicable
[J] = Analyte detected at a level less than the reporting limit and greater than or equal to the method detection limit.

Table 5
Natural Biodegradation Analytical Data
Atlantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well ID	Date Sampled	Calcium mg/L	Copper mg/L	Ferrous Iron mg/L	Iron mg/L	Magnesium mg/L	Manganese mg/L	Sodium mg/L	Zinc mg/L	ORP mV	Carbon Dioxide mg/L	Bicarbonate Alkalinity mg/L	Carbonate Alkalinity mg/L	Hydroxide Alkalinity mg/L	BOD mg/L	COD mg/L	Chloride mg/L	Dissolved Oxygen mg/L	Hardness (as$CaCO_3$) mg/L	pH	Nitrate mg/L	Nitrite mg/L	Sulfate mg/L	Surfactants mg/L	Specific Conductance umhos/cm	Methane mg/L	HUB number/ml	TDS mg/L
GMW-1	06/16/04	130	0.019	<0.040	64	41	0.40	340	0.078	320	62	500	<2.0	<2.0	<2.0	18[J]	300	7.5	490	7.02	12	<0.15	190	<0.10	2,200	0.020[J]	23	1,400
GMW-2	06/16/04	120	0.0062[J]	<0.040	17	32	0.25	500	0.021	320	37	420	<2.0	<2.0	<2.0	<20	560	7.4	420	7.21	<0.11	<0.15	250	0.054[J]	3,000	0.021[J]	<3	1,800
GMW-3	06/16/04	160	0.0056[J]	<0.040	8.6	46	0.49	290	0.023	310	69	480	<2.0	<2.0	<2.0	<20	260	8.5	590	7.05	11	0.82	170	0.049[J]	2,200	0.018[J]	<3	1,400
GMW-4	05/23/03	--	--	* 0.00	--	--	--	--	--	--	99	--	--	--	<2.0	<20	--	* 0.70	--	* 7.99	15	--	220	--	--	<0.50	<3	--
	06/16/04	130	0.0078[J]	<0.040	9.1	37	0.40	310	0.052	300	58	430	<2.0	<2.0	<2.0	<20	250	7.0	490	7.06	8.6	<0.15	200	0.045[J]	2,100	0.018[J]	15	1,300
GMW-5	10/18/02	180	<0.010	<0.040	0.22	53	<0.020	300	<0.020	450	100	500	<2.0	<2.0	<2.0	<20	380	5.00	680	7.39	24	<0.30	160	0.13	2,500	<2.6	1,500	1,500
	05/23/03	--	--	* 0.00	--	--	--	--	--	--	88	--	--	--	<2.0	<20	--	* 0.47	--	* 7.96	32	--	150	--	--	<0.50	1,100	--
	06/15/04	120	0.010	0.37	12	36	0.16	260	0.030	320	84	500	<2.0	<2.0	<2.0	<20	160	8.2	460	7.17	15	<0.15	120	0.052[J]	1,800	0.017[J]	93	1,100
GMW-6	06/16/04	160	0.0053[J]	<0.040	5.8	43	0.16	370	0.012[J]	310	14	500	<2.0	<2.0	<2.0	15[J]	370	7.7	580	7.07	9.1	<0.15	210	0.049[J]	2,500	0.023[J]	<3	1,600
GMW-7	06/16/04	180	0.0036[J]	<0.040	3.5	58	0.037	360	<0.020	340	110	490	<2.0	<2.0	<2.0	<20	500	8.0	700	6.89	19	<0.15	140	0.082[J]	2,900	0.016[J]	43	1,800
GMW-8	06/15/04	170	0.016	0.74	21	54	0.25	460	0.072	340	140	510	<2.0	<2.0	0.59[J]	23	450	8.7	640	7.13	28	<0.75	180	0.11	3,100	0.014[J]	43	2,000
GMW-9	05/23/03	--	--	* 0.00	--	--	--	--	--	--	79	--	--	--	<2.0	<20	--	* 0.44	--	* 7.84	14	--	230	--	--	<0.50	<3	--
	06/15/04	190	0.0060[J]	0.32	6.4	56	0.50	380	0.015[J]	330	88	440	<2.0	<2.0	<2.0	<20	510	8.3	700	7.11	12	<0.30	220	0.045[J]	2,900	0.014[J]	460	1,800
GMW-10	10/18/02	180	<0.010	<0.040	0.15	52	0.46	270	<0.020	460	95	510	<2.0	<2.0	5.6	55	340	4.7	680	7.36	12	<0.30	180	0.15	2,400	3.0	7,500	1,400
	05/23/03	--	--	* 0.00	--	--	--	--	--	--	99	--	--	--	6.2	<20	--	* 0.31	--	* 8.00	14	--	210	--	--	<0.50	210	--
	06/15/04	160	0.0019[J]	0.097	1.1	42	0.44	240	0.19	320	77	460	<2.0	<2.0	<2.0	<20	210	7.5	580	7.22	11	<0.30	190	0.059[J]	2,000	0.012[J]	4	1,300

Notes:
ORP = Oxidation Reduction Potential
HUB = Hydrocarbon Utilizing Bacteria
BOD = Biochemical Oxygen Demand
COD = Chemical Oxygen Demand
TDS = Total Dissolved Solids
* = indicates field measurement
mg/L = Milligrams per liter
mV = milli volts
ml = milliliter
mg/L = Micrograms per liter
$CaCO_3$ = Calcium carbonate
cm = centimeters

Table 6
Groundwater Sampling Schedule
Atlantic Richfield Company Station No. 1054
980 West Pacific Coast Highway
Wilmington, California

Well Number	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
GMW-1	a,c	a,c	a,c	a,c
GMW-2	a,c	a,c	a,c	a,c
GMW-3	a,c	a,c	a,c	a,c
GMW-4	a,c	a,c	a,c	a,c
GMW-5	a,c	a,c	a,c	a,c
GMW-6	a,c	a,c	a,c	a,c
GMW-7	a,c	a,c	a,c	a,c
GMW-8	a,c	a,c	a,c	a,c
GMW-9	a,c	a,c	a,c	a,c
GMW-10	a,c	a,c	a,c	a,c

Notes:

a = TPHg by EPA 8015m, BTEX, MTBE, DIPE, ETBE, TAME, TBA and Ethanol by EPA 8260B

Collect two 1-liter non preserved amber bottles for polynuclear aromatic hydrocarbons (EPA 8270C)

b = BOD, COD, Methane, CO2, HUB, Nitrate and Sulfate

c = Purge

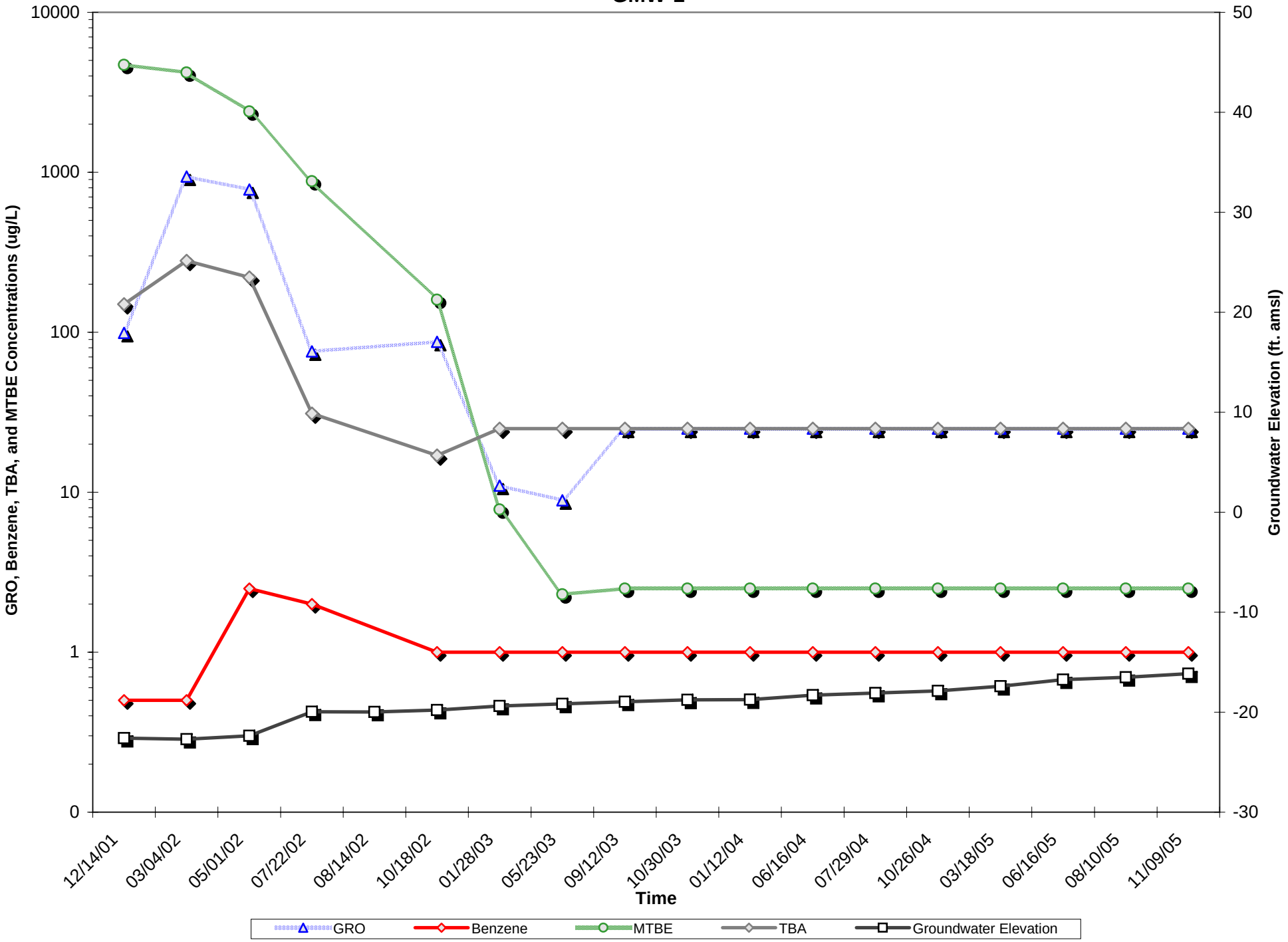
d = no purge

FIELD READINGS: DO, pH, temp., conductivity, ferrous iron and ORP

Appendix A
Well Hydrographs and Hydrocarbon Concentrations

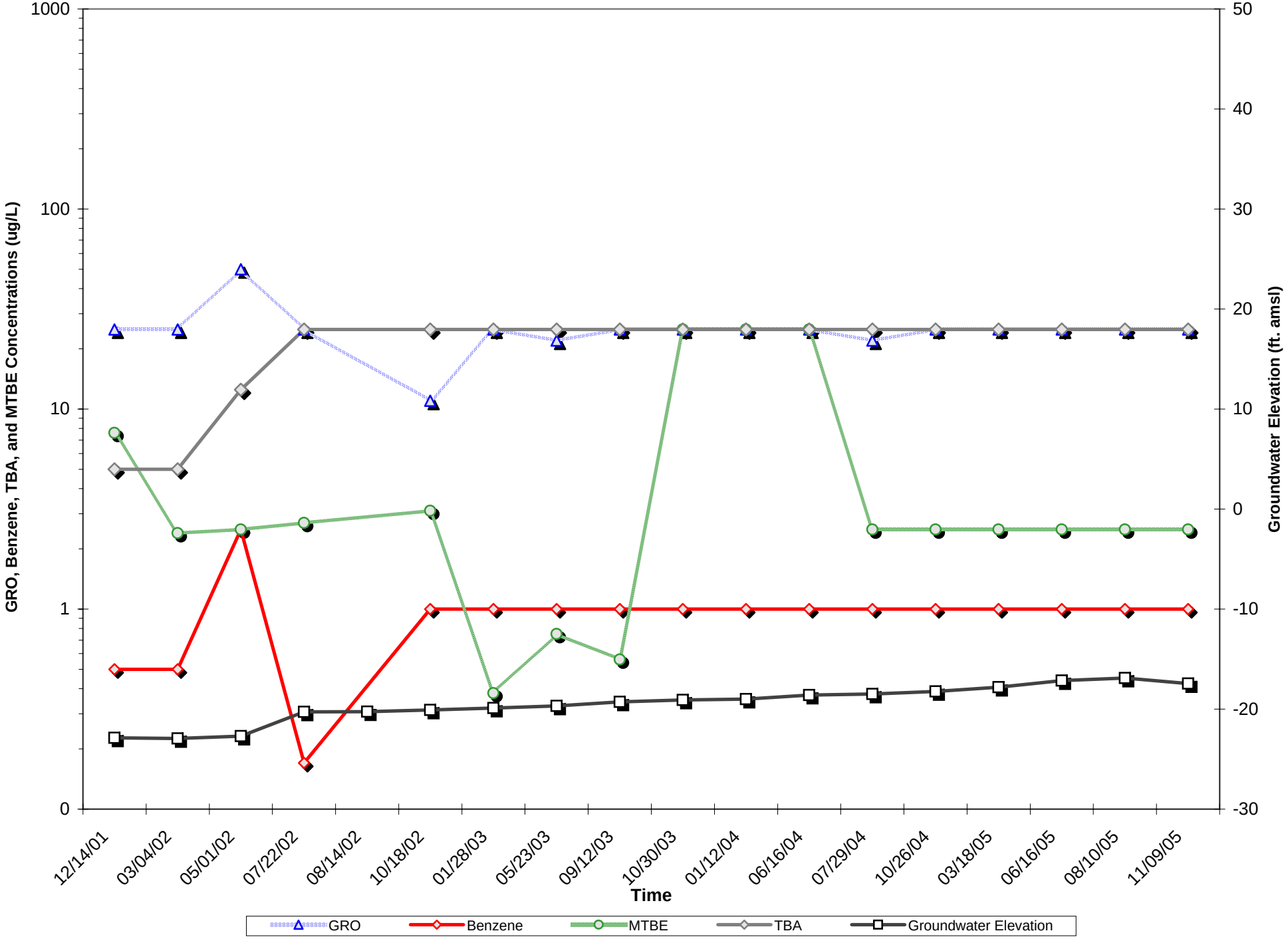
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-1



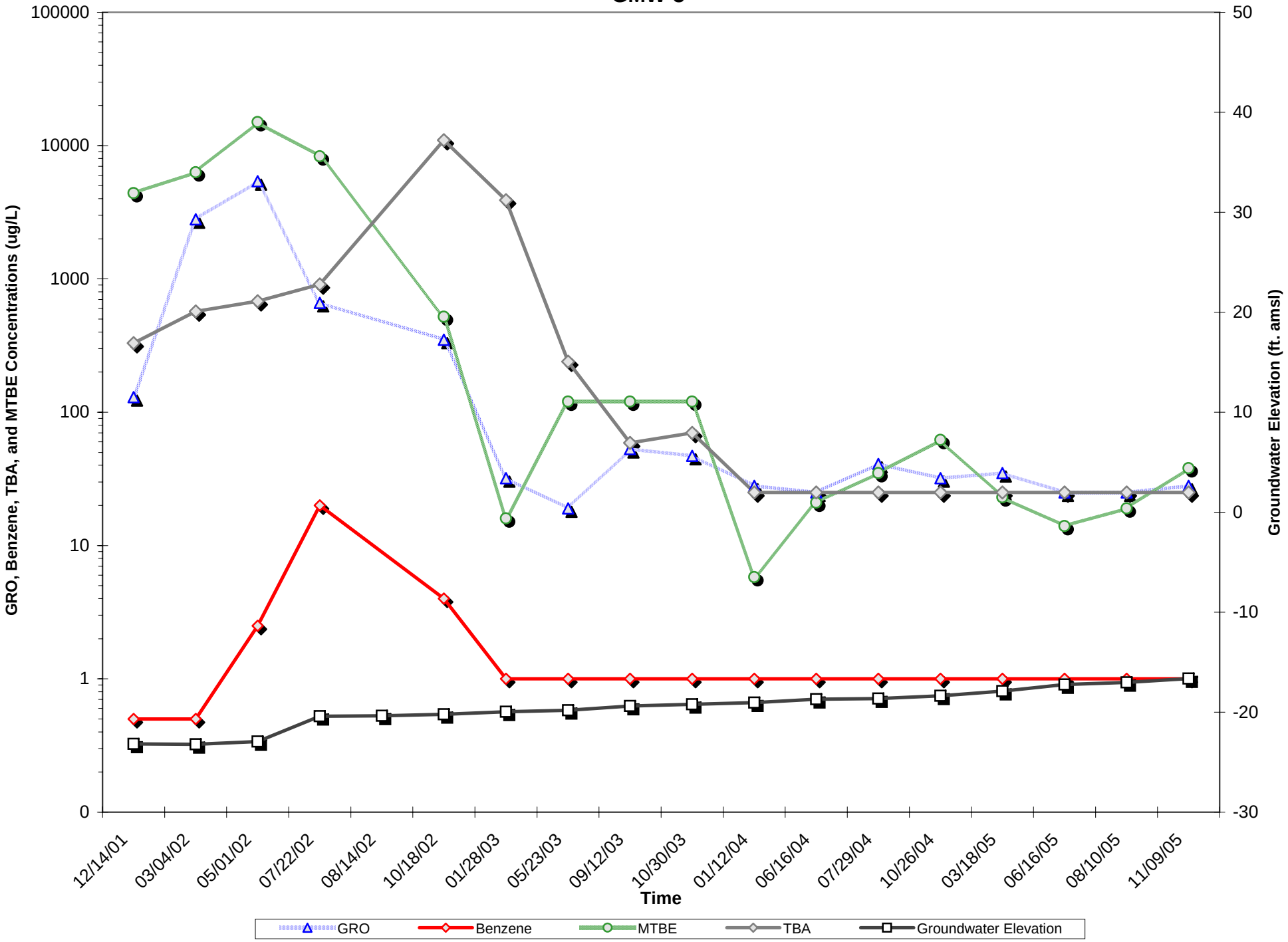
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-2



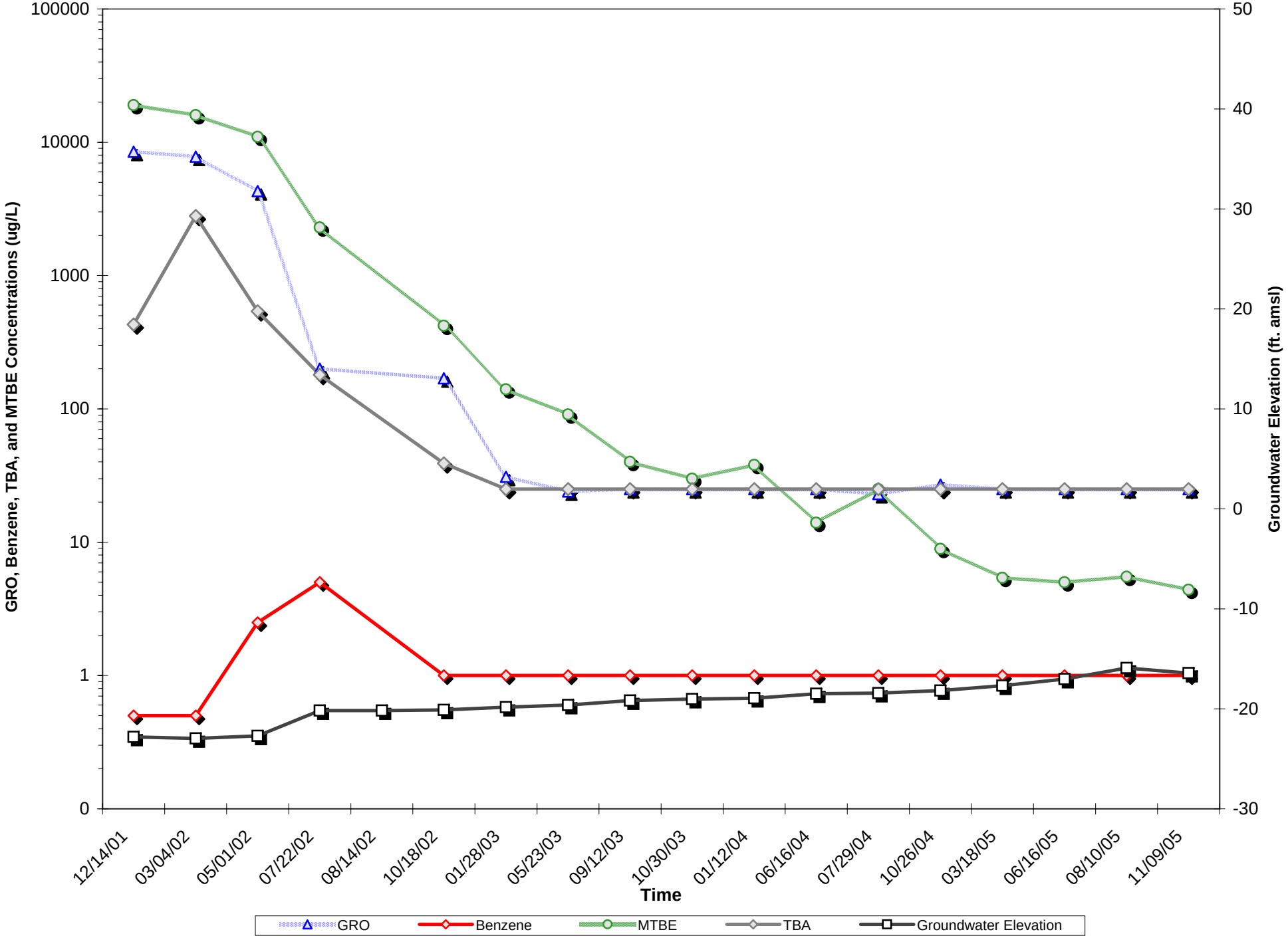
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-3



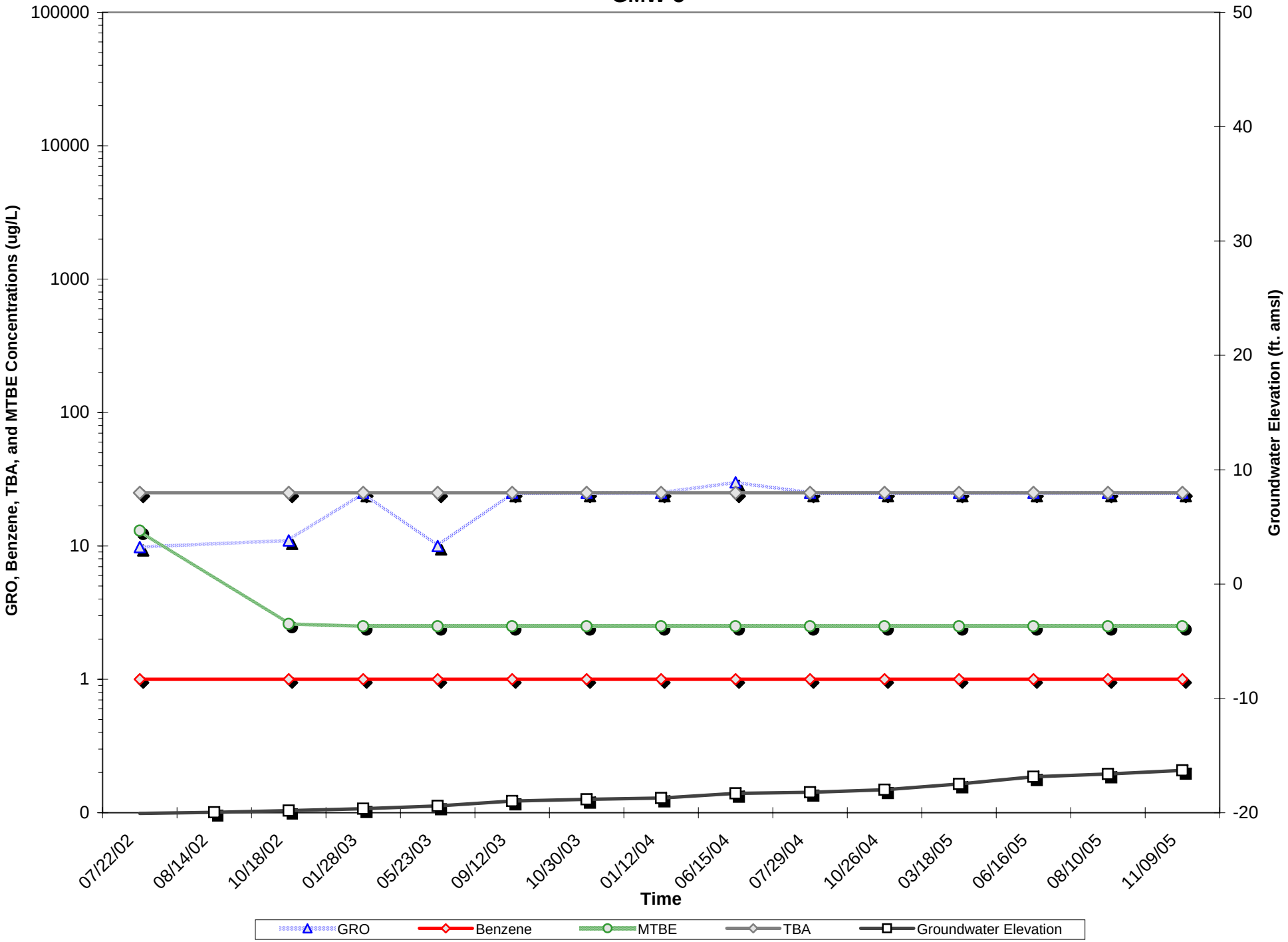
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-4



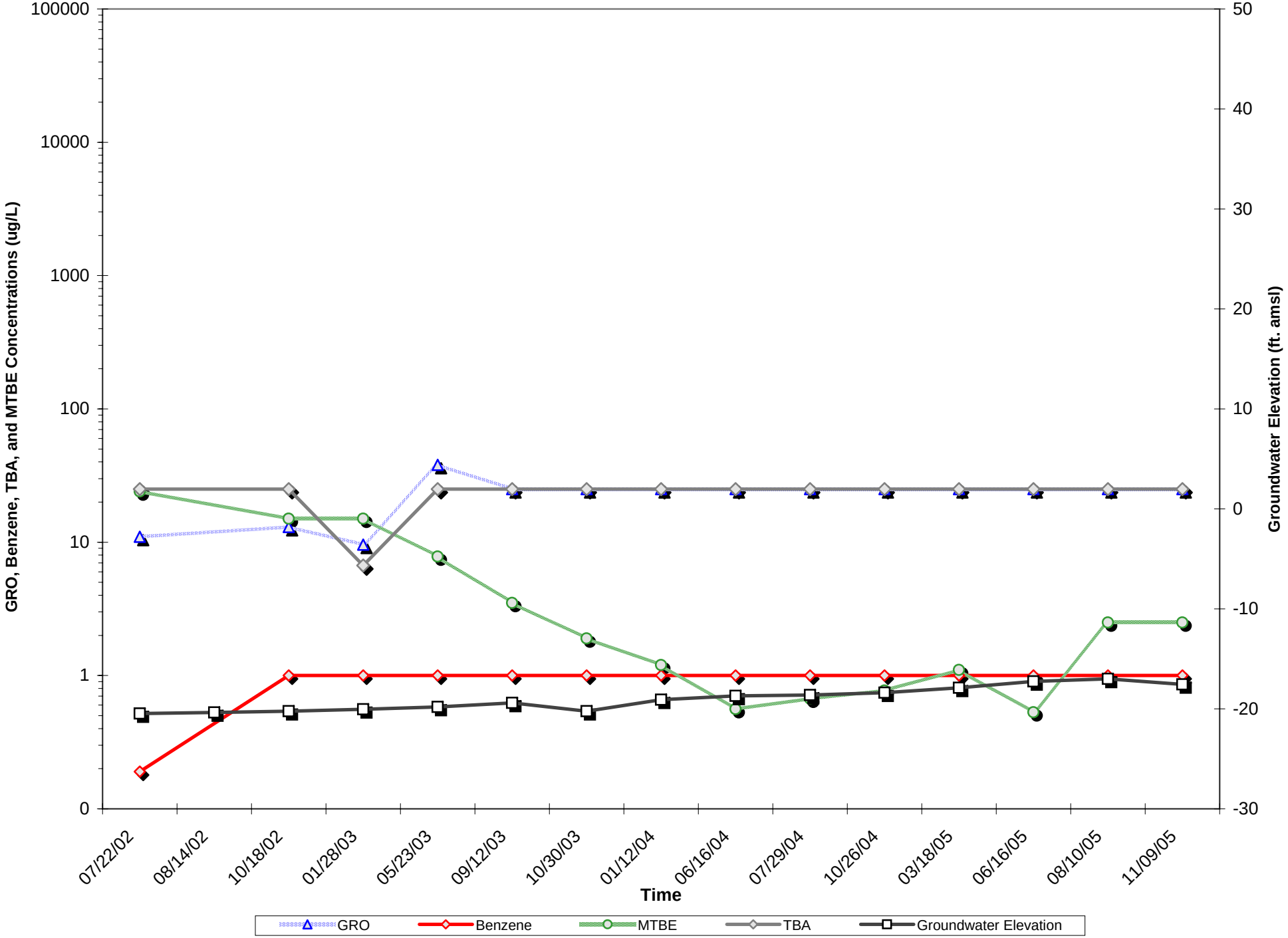
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-5



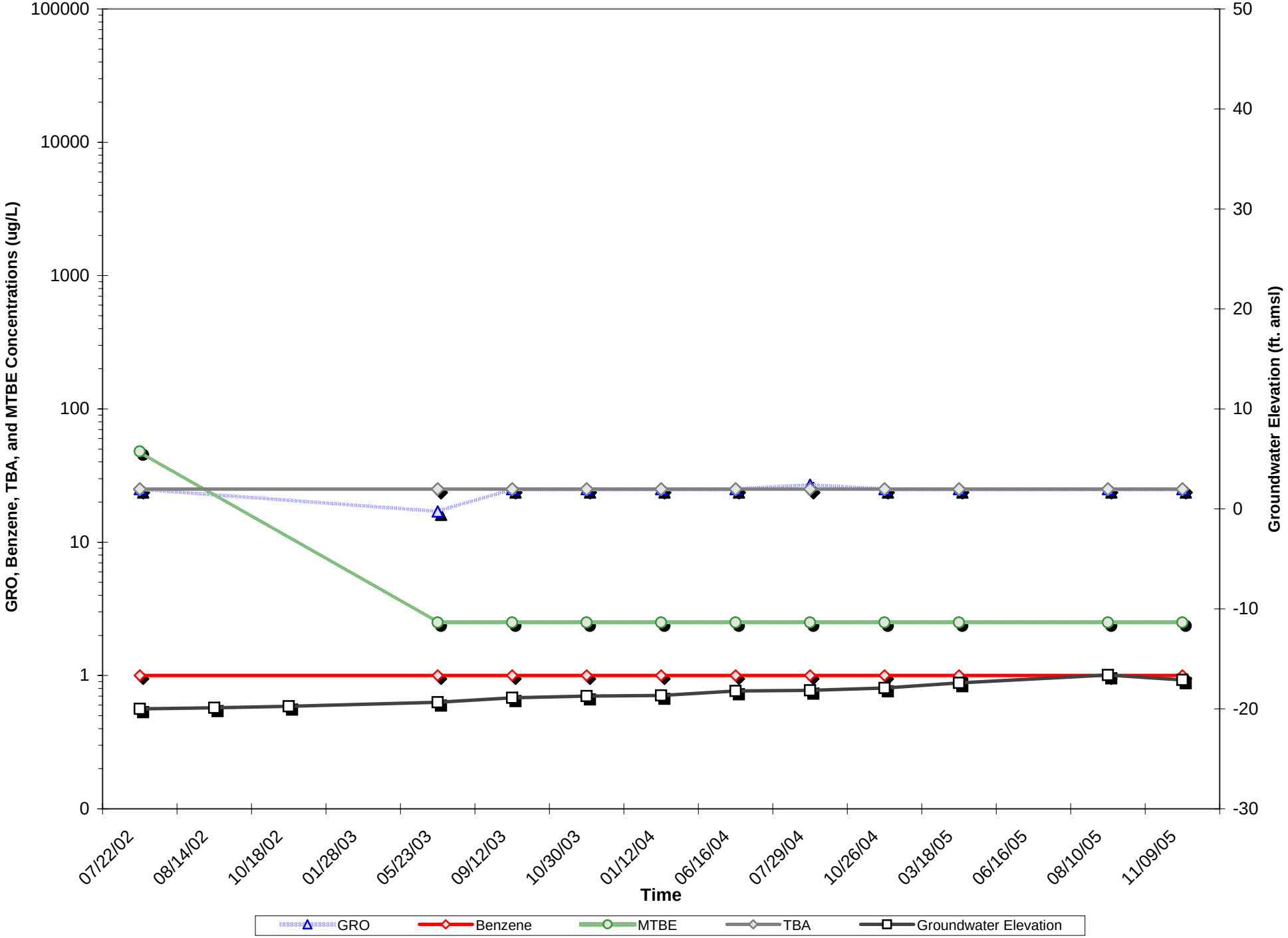
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-6



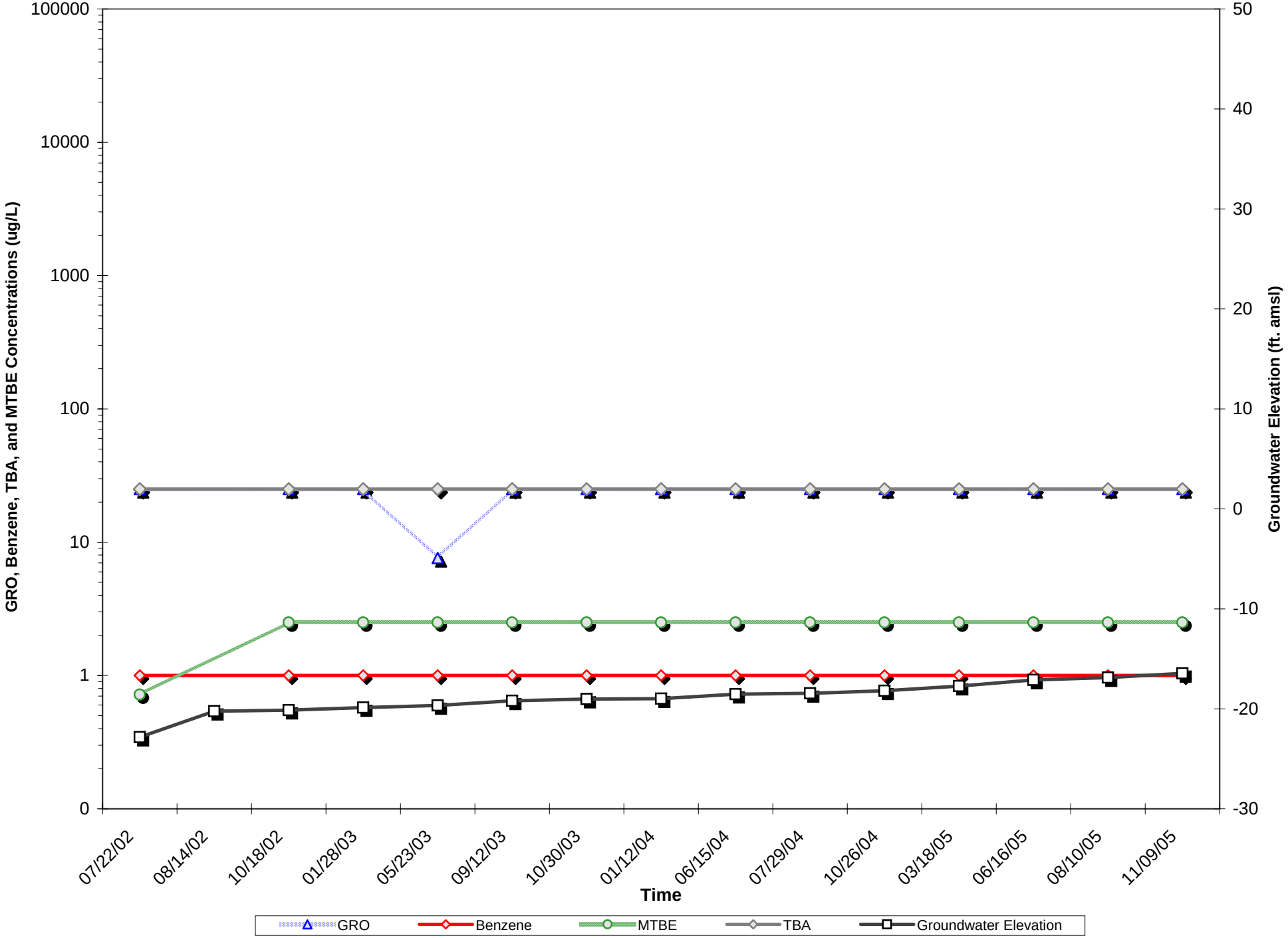
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-7



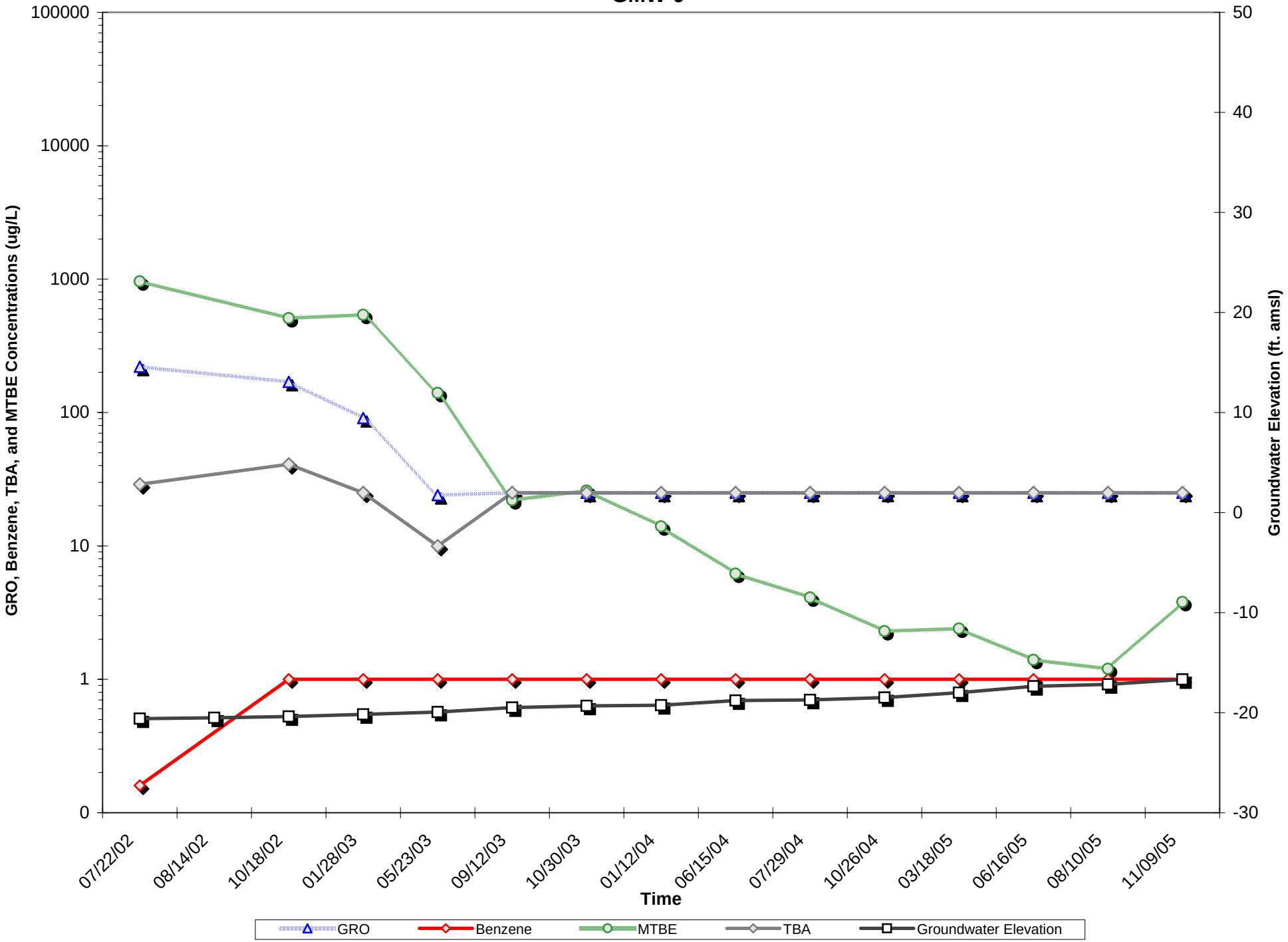
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-8



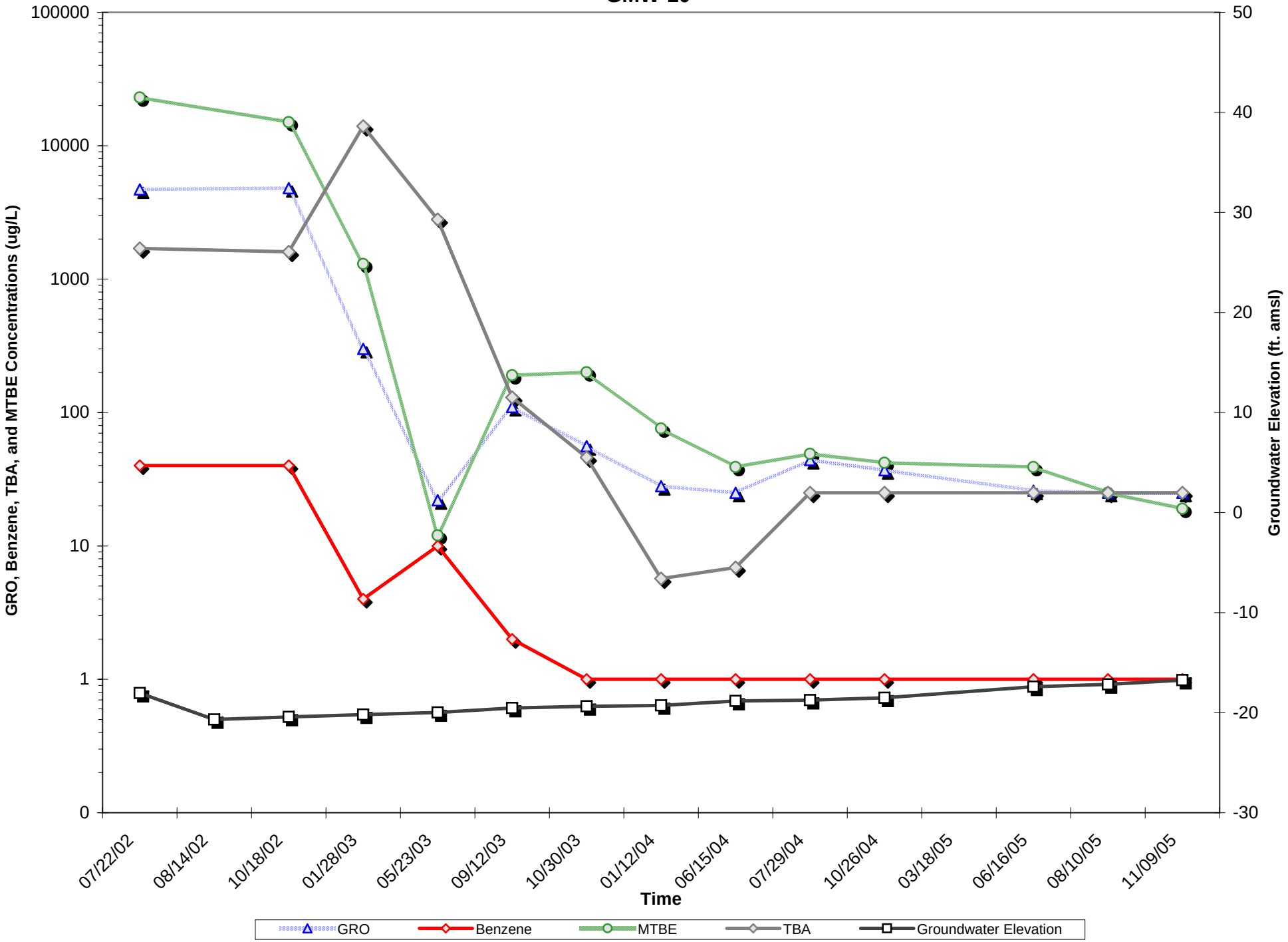
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-9



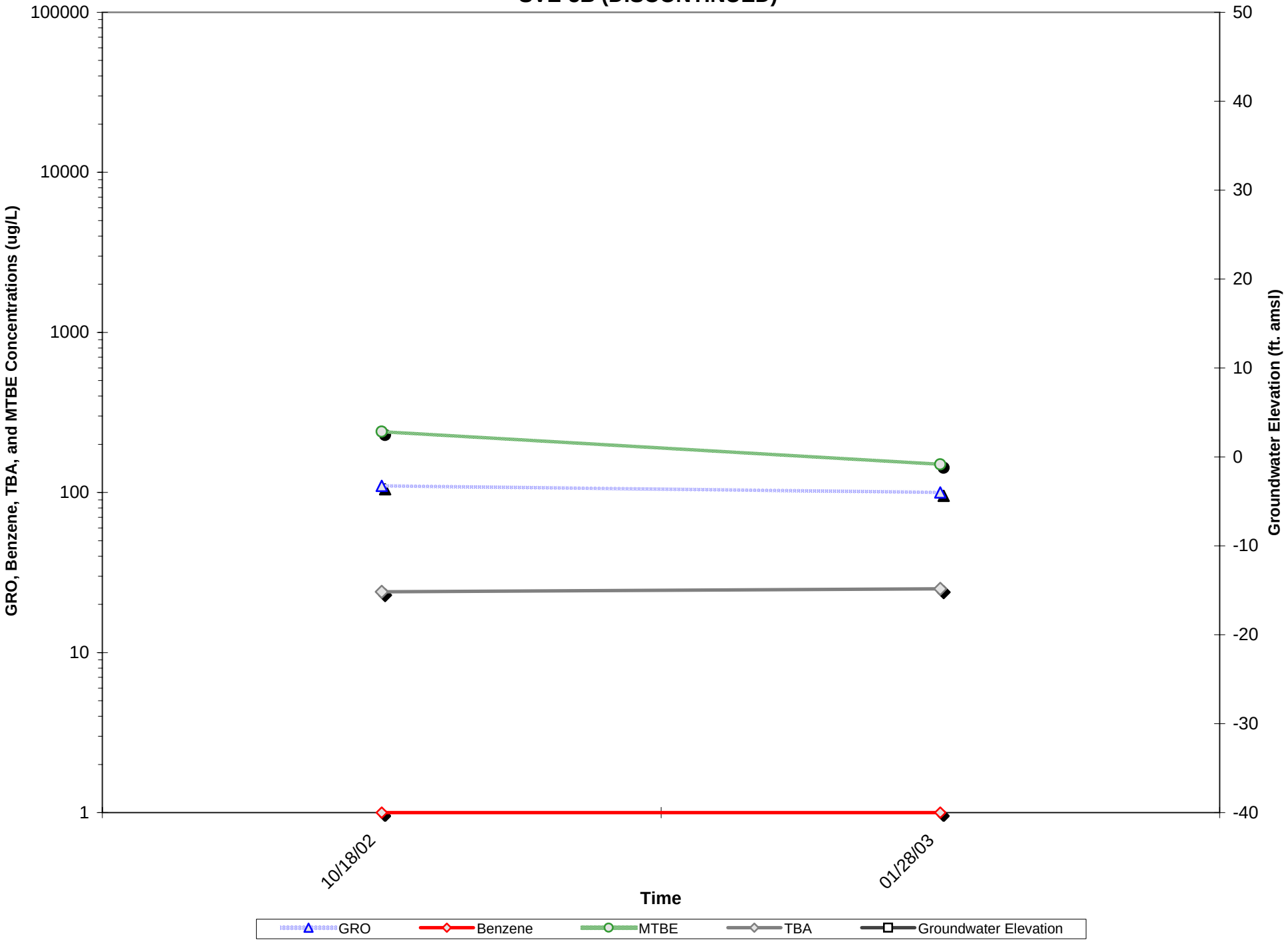
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
GMW-10



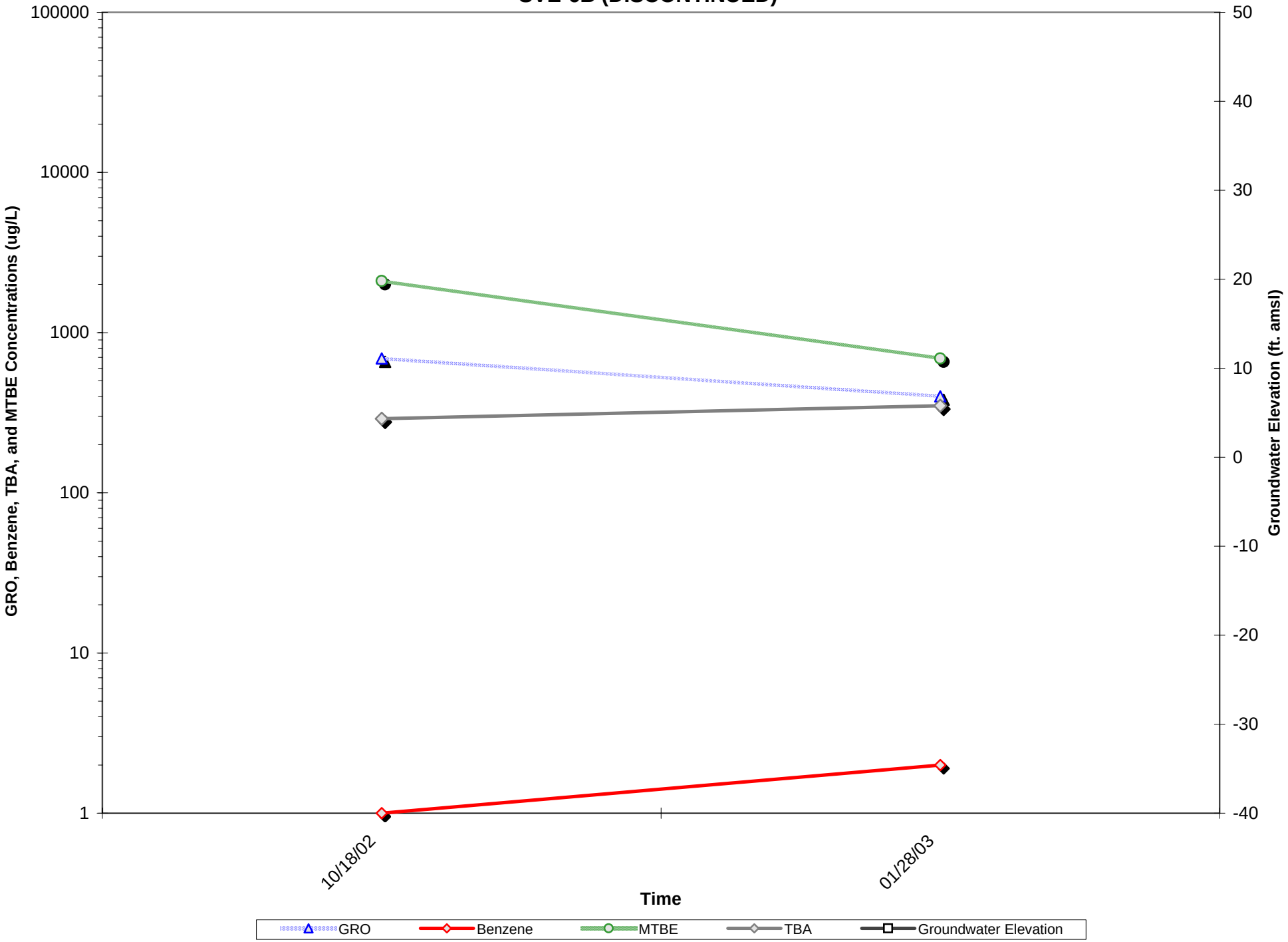
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
SVE-5B (DISCONTINUED)



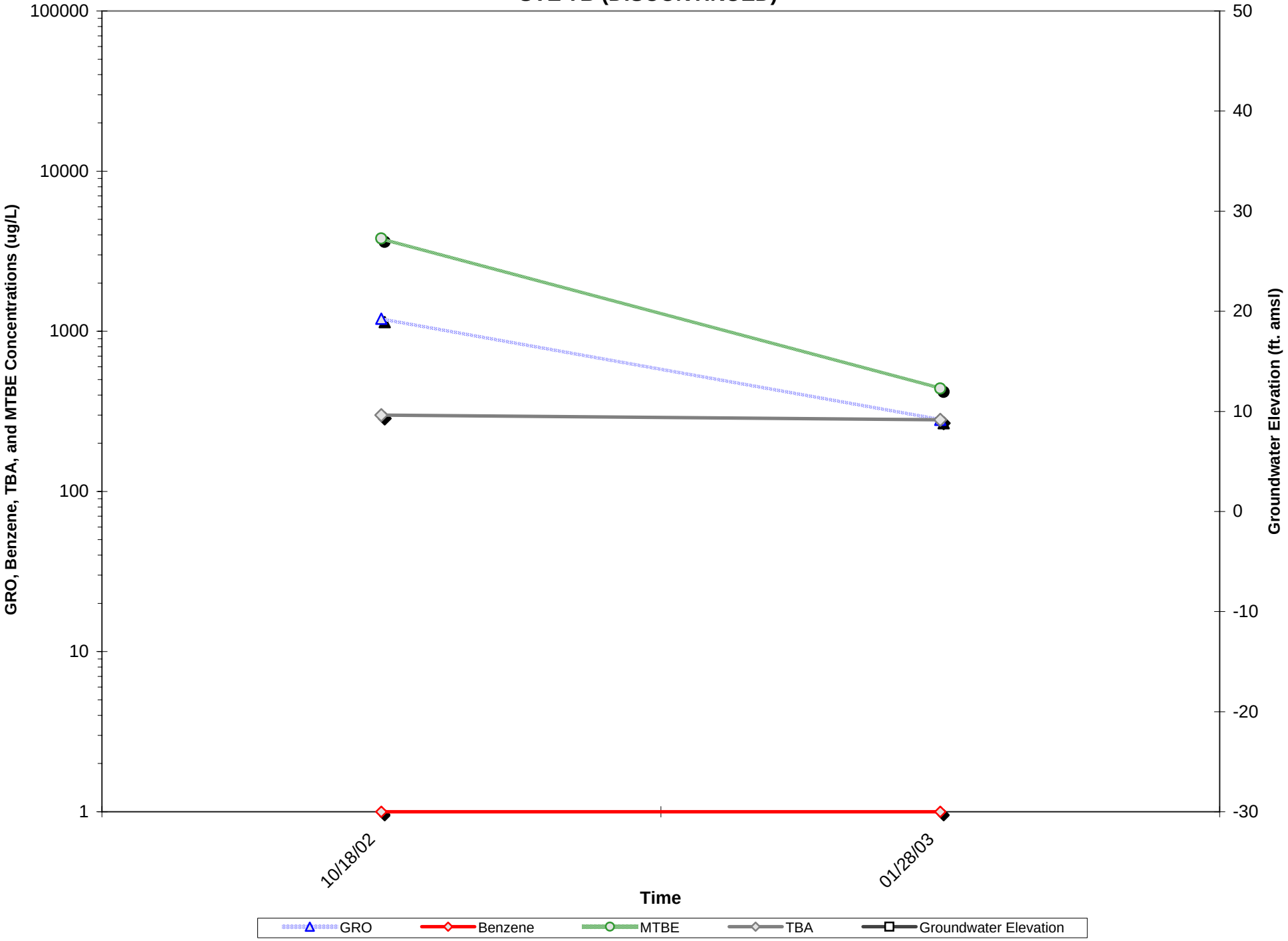
Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
SVE-6B (DISCONTINUED)



Note: Non-detect (ND) graphed at one-half detection limits per US-EPA protocols. Refer to Table 3 for source data.

ARCO STATION NO. 1054
SVE-7B (DISCONTINUED)



Appendix B
Laboratory Report and Chain of Custody

Del Mar Analytical

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LABORATORY REPORT

Prepared For: SECOR International, Inc.-Thousand Oaks
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project: ARCO 1054, Wilmington

Sampled: 11/08/05
Received: 11/10/05
Issued: 11/29/05 12:57

NELAP #01108CA California ELAP#1197 CSDLAC #10117

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the BPGCLN Technical Specifications, applicable federal, state, local regulations and certification requirements as well as the methodologies as described in laboratory SOPs reviewed by the BPGCLN. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report. This entire report was reviewed and approved for release.

CASE NARRATIVE

SAMPLE RECEIPT: Samples were received intact, at 3°C, on ice and with chain of custody documentation.

HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.

PRESERVATION: Samples requiring preservation were verified prior to sample analysis.

QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers.

COMMENTS: Results that fall between the MDL and RL are 'J' flagged.

SUBCONTRACTED: No analyses were subcontracted to an outside laboratory.

LABORATORY ID	CLIENT ID	MATRIX
IOK1089-01	GMW-1	Water
IOK1089-02	GMW-2	Water
IOK1089-03	GMW-3	Water
IOK1089-04	GMW-4	Water
IOK1089-05	GMW-5	Water
IOK1089-06	GMW-6	Water
IOK1089-07	GMW-7	Water
IOK1089-08	GMW-8	Water
IOK1089-09	GMW-9	Water
IOK1089-10	GMW-10	Water
IOK1089-11	DUP-1054-20051109	Water

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

Del Mar Analytical

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SECOR International, Inc.-Thousand Oaks
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

LABORATORY ID	CLIENT ID	MATRIX
IOK1089-12	TB-1054-20051109	Water

Reviewed By:

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

Del Mar Analytical

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SECOR International, Inc.-Thousand Oaks
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

VOLATILE FUEL HYDROCARBONS (EPA 5030/8015M)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK1089-01 (GMW-1 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/21/05	
Surrogate: 4-BFB (FID) (65-140%)					*109 %*				
Sample ID: IOK1089-02 (GMW-2 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/21/05	
Surrogate: 4-BFB (FID) (65-140%)					*114 %*				
Sample ID: IOK1089-03 (GMW-3 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	**28**	1	11/21/05	11/21/05	J,DX
Surrogate: 4-BFB (FID) (65-140%)					*113 %*				
Sample ID: IOK1089-04 (GMW-4 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/21/05	
Surrogate: 4-BFB (FID) (65-140%)					*120 %*				
Sample ID: IOK1089-05 (GMW-5 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/21/05	
Surrogate: 4-BFB (FID) (65-140%)					*120 %*				
Sample ID: IOK1089-06 (GMW-6 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/21/05	
Surrogate: 4-BFB (FID) (65-140%)					*119 %*				
Sample ID: IOK1089-07 (GMW-7 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/22/05	
Surrogate: 4-BFB (FID) (65-140%)					*114 %*				
Sample ID: IOK1089-08 (GMW-8 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/22/05	
Surrogate: 4-BFB (FID) (65-140%)					*118 %*				

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

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SECOR International, Inc.-Thousand Oaks
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington
Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

VOLATILE FUEL HYDROCARBONS (EPA 5030/8015M)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK1089-09 (GMW-9 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/22/05	
Surrogate: 4-BFB (FID) (65-140%)					*115 %*				
Sample ID: IOK1089-10 (GMW-10 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/22/05	
Surrogate: 4-BFB (FID) (65-140%)					*118 %*				
Sample ID: IOK1089-11 (DUP-1054-20051109 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21119	24	50	ND	1	11/21/05	11/22/05	
Surrogate: 4-BFB (FID) (65-140%)					*120 %*				
Sample ID: IOK1089-12 (TB-1054-20051109 - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015B	5K21042	24	50	ND	1	11/21/05	11/21/05	
Surrogate: 4-BFB (FID) (65-140%)					*124 %*				

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Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

BTEX/OXYGENATES by GC/MS (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK1089-01 (GMW-1 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	ND	1	11/18/05	11/18/05	
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*113 %*				
Surrogate: Toluene-d8 (80-120%)					*101 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*92 %*				
Sample ID: IOK1089-02 (GMW-2 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	ND	1	11/18/05	11/18/05	
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*109 %*				
Surrogate: Toluene-d8 (80-120%)					*99 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*96 %*				

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Lisa Reightley
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SECOR International, Inc.-Thousand Oaks
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

BTEX/OXYGENATES by GC/MS (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK1089-03 (GMW-3 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	**38**	1	11/18/05	11/18/05	
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*114 %*				
Surrogate: Toluene-d8 (80-120%)					*100 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*94 %*				
Sample ID: IOK1089-04 (GMW-4 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	**3.9**	1	11/18/05	11/18/05	J,DX
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*114 %*				
Surrogate: Toluene-d8 (80-120%)					*102 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*95 %*				

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

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SECOR International, Inc.-Thousand Oaks
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

BTEX/OXYGENATES by GC/MS (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK1089-05 (GMW-5 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	ND	1	11/18/05	11/18/05	
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*113 %*				
Surrogate: Toluene-d8 (80-120%)					*100 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*97 %*				
Sample ID: IOK1089-06 (GMW-6 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	ND	1	11/18/05	11/18/05	
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*109 %*				
Surrogate: Toluene-d8 (80-120%)					*102 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*94 %*				

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Lisa Reightley
Project Manager

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SECOR International, Inc.-Thousand Oaks
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

BTEX/OXYGENATES by GC/MS (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK1089-07 (GMW-7 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	ND	1	11/18/05	11/18/05	
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*111 %*				
Surrogate: Toluene-d8 (80-120%)					*97 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*96 %*				
Sample ID: IOK1089-08 (GMW-8 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	ND	1	11/18/05	11/18/05	
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*115 %*				
Surrogate: Toluene-d8 (80-120%)					*98 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*100 %*				

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Lisa Reightley
Project Manager

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Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

BTEX/OXYGENATES by GC/MS (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK1089-09 (GMW-9 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	**3.8**	1	11/18/05	11/18/05	J,DX
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*117 %*				
Surrogate: Toluene-d8 (80-120%)					*105 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*95 %*				
Sample ID: IOK1089-10 (GMW-10 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/19/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/19/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/19/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/19/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/19/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/19/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/19/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/19/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/19/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	**19**	1	11/18/05	11/19/05	
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/19/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/19/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*112 %*				
Surrogate: Toluene-d8 (80-120%)					*101 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*100 %*				

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

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SECOR International, Inc.-Thousand Oaks
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

BTEX/OXYGENATES by GC/MS (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK1089-11 (DUP-1054-20051109 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/19/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/19/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/19/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/19/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/19/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/19/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/19/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/19/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/19/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	**4.4**	1	11/18/05	11/19/05	J,DX
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/19/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/19/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*118 %*				
Surrogate: Toluene-d8 (80-120%)					*100 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*98 %*				
Sample ID: IOK1089-12 (TB-1054-20051109 - Water)									
Reporting Units: ug/l									
Benzene	EPA 8260B	5K18017	0.28	2.0	ND	1	11/18/05	11/18/05	
Ethylbenzene	EPA 8260B	5K18017	0.25	2.0	ND	1	11/18/05	11/18/05	
Toluene	EPA 8260B	5K18017	0.36	2.0	ND	1	11/18/05	11/18/05	
m,p-Xylenes	EPA 8260B	5K18017	0.52	2.0	ND	1	11/18/05	11/18/05	
o-Xylene	EPA 8260B	5K18017	0.24	2.0	ND	1	11/18/05	11/18/05	
Xylenes, Total	EPA 8260B	5K18017	0.52	4.0	ND	1	11/18/05	11/18/05	
Di-isopropyl Ether (DIPE)	EPA 8260B	5K18017	0.25	5.0	ND	1	11/18/05	11/18/05	
Ethyl tert-Butyl Ether (ETBE)	EPA 8260B	5K18017	0.28	5.0	ND	1	11/18/05	11/18/05	
tert-Amyl Methyl Ether (TAME)	EPA 8260B	5K18017	0.33	5.0	ND	1	11/18/05	11/18/05	
Methyl-tert-butyl Ether (MTBE)	EPA 8260B	5K18017	0.32	5.0	ND	1	11/18/05	11/18/05	
tert-Butanol (TBA)	EPA 8260B	5K18017	3.1	50	ND	1	11/18/05	11/18/05	
Ethanol	EPA 8260B	5K18017	100	150	ND	1	11/18/05	11/18/05	IO
Surrogate: Dibromofluoromethane (80-120%)					*108 %*				
Surrogate: Toluene-d8 (80-120%)					*100 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)					*94 %*				

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Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

METHOD BLANK/QC DATA

VOLATILE FUEL HYDROCARBONS (EPA 5030/8015M)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5K21042 Extracted: 11/21/05											
Blank Analyzed: 11/21/2005 (5K21042-BLK1)											
GRO (C4 - C12)	ND	50	24	ug/l							
Surrogate: 4-BFB (FID)	*11.7*			*ug/l*	*10.0*		*117*	*65-140*			
LCS Analyzed: 11/21/2005 (5K21042-BS1)											
GRO (C4 - C12)	896	50	24	ug/l	800		112	65-140			
Surrogate: 4-BFB (FID)	*37.9*			*ug/l*	*30.0*		*126*	*65-140*			
Matrix Spike Analyzed: 11/21/2005 (5K21042-MS1)						**Source: IOK0936-01**					
GRO (C4 - C12)	304	50	24	ug/l	220	ND	138	60-145			
Surrogate: 4-BFB (FID)	*14.0*			*ug/l*	*10.0*		*140*	*65-140*			
Matrix Spike Dup Analyzed: 11/21/2005 (5K21042-MSD1)						**Source: IOK0936-01**					
GRO (C4 - C12)	307	50	24	ug/l	220	ND	140	60-145	1	20	
Surrogate: 4-BFB (FID)	*13.8*			*ug/l*	*10.0*		*138*	*65-140*			
Batch: 5K21119 Extracted: 11/21/05											
Blank Analyzed: 11/21/2005 (5K21119-BLK1)											
GRO (C4 - C12)	ND	50	24	ug/l							
Surrogate: 4-BFB (FID)	*10.5*			*ug/l*	*10.0*		*105*	*65-140*			
LCS Analyzed: 11/21/2005 (5K21119-BS1)											
GRO (C4 - C12)	901	50	24	ug/l	800		113	65-140			
Surrogate: 4-BFB (FID)	*32.0*			*ug/l*	*30.0*		*107*	*65-140*			
Matrix Spike Analyzed: 11/21/2005 (5K21119-MS1)						**Source: IOK1089-01**					
GRO (C4 - C12)	261	50	24	ug/l	220	ND	119	60-145			
Surrogate: 4-BFB (FID)	*12.1*			*ug/l*	*10.0*		*121*	*65-140*			

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METHOD BLANK/QC DATA

VOLATILE FUEL HYDROCARBONS (EPA 5030/8015M)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5K21119 Extracted: 11/21/05											
Matrix Spike Dup Analyzed: 11/21/2005 (5K21119-MSD1)						**Source: IOK1089-01**					
GRO (C4 - C12)	250	50	24	ug/l	220	ND	114	60-145	4	20	
Surrogate: 4-BFB (FID)	*12.6*			*ug/l*	*10.0*		*126*	*65-140*			

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METHOD BLANK/QC DATA

BTEX/OXYGENATES by GC/MS (EPA 8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5K18017 Extracted: 11/18/05											
Blank Analyzed: 11/18/2005 (5K18017-BLK1)											
Benzene	ND	2.0	0.28	ug/l							
Ethylbenzene	ND	2.0	0.25	ug/l							
Toluene	ND	2.0	0.36	ug/l							
m,p-Xylenes	ND	2.0	0.52	ug/l							
o-Xylene	ND	2.0	0.24	ug/l							
Xylenes, Total	ND	4.0	0.52	ug/l							
Di-isopropyl Ether (DIPE)	ND	5.0	0.25	ug/l							
Ethyl tert-Butyl Ether (ETBE)	ND	5.0	0.28	ug/l							
tert-Amyl Methyl Ether (TAME)	ND	5.0	0.33	ug/l							
Methyl-tert-butyl Ether (MTBE)	ND	5.0	0.32	ug/l							
tert-Butanol (TBA)	ND	50	3.1	ug/l							
Ethanol	ND	150	100	ug/l							
Surrogate: Dibromofluoromethane	*27.5*			*ug/l*	*25.0*		*110*	*80-120*			
Surrogate: Toluene-d8	*25.5*			*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.5*			*ug/l*	*25.0*		*98*	*80-120*			
LCS Analyzed: 11/18/2005 (5K18017-BS1)											
Benzene	28.3	2.0	0.28	ug/l	25.0		113	65-120			
Ethylbenzene	26.5	2.0	0.25	ug/l	25.0		106	70-125			
Toluene	27.4	2.0	0.36	ug/l	25.0		110	70-125			
m,p-Xylenes	49.7	2.0	0.52	ug/l	50.0		99	70-125			
o-Xylene	24.4	2.0	0.24	ug/l	25.0		98	70-125			
Xylenes, Total	74.0	4.0	0.52	ug/l	75.0		99	70-125			
Di-isopropyl Ether (DIPE)	27.7	5.0	0.25	ug/l	25.0		111	60-135			
Ethyl tert-Butyl Ether (ETBE)	26.1	5.0	0.28	ug/l	25.0		104	60-135			
tert-Amyl Methyl Ether (TAME)	27.6	5.0	0.33	ug/l	25.0		110	60-135			
Methyl-tert-butyl Ether (MTBE)	27.5	5.0	0.32	ug/l	25.0		110	55-140			
tert-Butanol (TBA)	134	50	3.1	ug/l	125		107	65-135			
Ethanol	327	150	100	ug/l	250		131	35-160			
Surrogate: Dibromofluoromethane	*27.4*			*ug/l*	*25.0*		*110*	*80-120*			
Surrogate: Toluene-d8	*25.2*			*ug/l*	*25.0*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.9*			*ug/l*	*25.0*		*100*	*80-120*			

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Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

METHOD BLANK/QC DATA

BTEX/OXYGENATES by GC/MS (EPA 8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5K18017 Extracted: 11/18/05											
Matrix Spike Analyzed: 11/18/2005 (5K18017-MS1)						**Source: IOK1089-01**					
Benzene	25.9	2.0	0.28	ug/l	25.0	ND	104	60-125			
Ethylbenzene	26.7	2.0	0.25	ug/l	25.0	ND	107	65-130			
Toluene	26.1	2.0	0.36	ug/l	25.0	ND	104	65-125			
m,p-Xylenes	50.7	2.0	0.52	ug/l	50.0	ND	101	60-130			
o-Xylene	25.6	2.0	0.24	ug/l	25.0	ND	102	60-125			
Xylenes, Total	76.3	4.0	0.52	ug/l	75.0	ND	102	60-130			
Di-isopropyl Ether (DIPE)	26.3	5.0	0.25	ug/l	25.0	ND	105	60-140			
Ethyl tert-Butyl Ether (ETBE)	24.0	5.0	0.28	ug/l	25.0	ND	96	55-135			
tert-Amyl Methyl Ether (TAME)	25.3	5.0	0.33	ug/l	25.0	ND	101	55-140			
Methyl-tert-butyl Ether (MTBE)	26.0	5.0	0.32	ug/l	25.0	ND	104	50-150			
tert-Butanol (TBA)	131	50	3.1	ug/l	125	ND	105	60-145			
Ethanol	342	150	100	ug/l	250	ND	137	35-160			
Surrogate: Dibromofluoromethane	*27.3*			*ug/l*	*25.0*		*109*	*80-120*			
Surrogate: Toluene-d8	*26.0*			*ug/l*	*25.0*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*25.8*			*ug/l*	*25.0*		*103*	*80-120*			
Matrix Spike Dup Analyzed: 11/18/2005 (5K18017-MSD1)						**Source: IOK1089-01**					
Benzene	24.6	2.0	0.28	ug/l	25.0	ND	98	60-125	5	20	
Ethylbenzene	26.4	2.0	0.25	ug/l	25.0	ND	106	65-130	1	20	
Toluene	25.1	2.0	0.36	ug/l	25.0	ND	100	65-125	4	20	
m,p-Xylenes	48.3	2.0	0.52	ug/l	50.0	ND	97	60-130	5	25	
o-Xylene	24.0	2.0	0.24	ug/l	25.0	ND	96	60-125	6	20	
Xylenes, Total	72.3	4.0	0.52	ug/l	75.0	ND	96	60-130	5	20	
Di-isopropyl Ether (DIPE)	26.2	5.0	0.25	ug/l	25.0	ND	105	60-140	0	25	
Ethyl tert-Butyl Ether (ETBE)	23.6	5.0	0.28	ug/l	25.0	ND	94	55-135	2	25	
tert-Amyl Methyl Ether (TAME)	24.3	5.0	0.33	ug/l	25.0	ND	97	55-140	4	30	
Methyl-tert-butyl Ether (MTBE)	25.0	5.0	0.32	ug/l	25.0	ND	100	50-150	4	25	
tert-Butanol (TBA)	141	50	3.1	ug/l	125	ND	113	60-145	7	25	
Ethanol	395	150	100	ug/l	250	ND	158	35-160	14	30	
Surrogate: Dibromofluoromethane	*27.1*			*ug/l*	*25.0*		*108*	*80-120*			
Surrogate: Toluene-d8	*24.1*			*ug/l*	*25.0*		*96*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*25.4*			*ug/l*	*25.0*		*102*	*80-120*			

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Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

DATA QUALIFIERS AND DEFINITIONS

IO	Contract limits originate from BP-GCLN Technical Requirements
J,DX	EPA Flag - Estimated value,Value < lowest standard (MQL), but > than MDL
ND	Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD	Relative Percent Difference

ADDITIONAL COMMENTS

For 8260 analyses:

Due to the high water solubility of alcohols and ketones, the calibration criteria for these compounds is <30% RSD. The average % RSD of all compounds in the calibration is 15%, in accordance with EPA methods.

For GRO (C4-C12):

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

8015 Analysis EDF Parlabel Cross Reference

Analyte	EDF Parlabel
GRO (C4 - C12)	GROC4C12

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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

SECOR International, Inc.-Thousand Oaks
290 Conejo Ridge Avenue, Suite 200
Thousand Oaks, CA 91361
Attention: Lisa Moreno

Project ID: ARCO 1054, Wilmington

Report Number: IOK1089

Sampled: 11/08/05
Received: 11/10/05

Certification Summary

Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EDD	Water		
EPA 8015B	Water	X	X
EPA 8260B	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at www.dmalabs.com.

Del Mar Analytical, Irvine
Lisa Reightley
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

USC

Chain of Custody Record

Project Name: Q4-2005 GROUNDWATER
BP BU/AR Region/Enfos Segment: RETAIL (Coastal +C.LA)
State or Lead Regulatory Agency:
Requested Due Date (11/23/05): Standard TAT

On-site Time:	Temp:
Off-site Time:	Temp:
Sky Conditions:	pouring rain
Meteorological Events:	
Wind Speed: 5-15	Direction:

Lab Name:	Del Mar Analytical	BP/AR Facility No.:	1054	Consultant/Contractor:	SECOR International, Inc
Address:	17461 Derian Ave Ste 100	BP/AR Facility Address:	980 Pacific Coast Hwy. W, Wilmington,CA	Address:	290 Conejo Ridge Ave Sute 200
	Irvine, CA 92614	Site Lat/Long:	33.790/-118.275		Thousand Oaks, CA 91361
Lab PM:	Chris Roberts	California Global ID No.:	T0603709734	Consultant/Contractor Project No.:	37BP.01054.04
Tele/Fax:	949-261-1022	Enfos Project No.:	G09VW-0001	Consultant/Contractor PM:	Lisa Moreno/Rachel Handbury
BP/AR PM Contact:	Jack Oman	Provision or RCOP (circle one)		Tele/Fax:	805-230-1266/805-230-1277
Address:	4 Centerpoint Dr	Phase/WBS:	3	Report Type & QC Level:	Standard
	La Palma, CA	Sub Phase/Task:	Analytical	E-mail EDD To:	bauchard @secor.com
Tele/Fax:	714-730-1898	Cost Element:	Sub Contracted Cost	Invoice to: Consultant or BP or Atlantic Richfield Co. (circle one)	

Lab Bottle Order No: IOK1089

Item No.	Sample Description	Time	Date	Soil/Solid	Water/Liquid	Air	Laboratory No.	No. of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	Methanol		GRO C4-C12 (8015)	BTEX/OXY/ET (8260)	PAH's 8270C								Sample Point Lat/Long and Comments
1	GMW-1	1030	11-8-05		X			4				X			X	X	X								
2	GMW-2	1510	↓		X			↓				X			X	X	X								
3	GMW-3	1400			X							X			X	X	X								
4	GMW-4	1310			X							X			X	X	X								
5	GMW-5	1600			X							X			X	X	X								
6	GMW-6	1430			X							X			X	X	X								
7	GMW-7	1240			X							X			X	X	X								
8	GMW-8	[illegible]	1140		X							X			X	X	X								
9	GMW-9	1100			X							X			X	X	X								
10	GMW-10	0940			X							X			X	X	X								
11	DUP-1054-20051109	1700			X							X			X	X	X								
12	TB-1054-20051109	—	11-8-05		X							X													
13	EB-1054-20051109	1030			X							X													HOLD SAMPLE
14																									
15																									

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	AARON KAHN	AARON KAHN	11/9/05	1800	[illegible] DMAT	11/10/05	11:00
Sampler's Company:	SECOR International Inc.	[illegible] DMAT	11/10/05	1435	C. Rojas	11/10/05	14:35
Shipment Date:	11-9-05						
Shipment Method:							
Shipment Tracking No:							

Special Instructions:

Custody Seals In Place Yes____ No X Temp Blank Yes____ No X Cooler Temperature on Receipt 3°F/C Trip Blank Yes X No____

Distribution: White Copy - Laboratory / Yellow Copy - BP/Atlantic Richfield Co. / Pink Copy - Consultant/Contractor

BP COC Rev. 4 10/1/04

Appendix C
Groundwater Sampling and O&M Field Data Sheets

Subjective and Well -Head Evaluation Form

Project No.: Q4-2005 Groundwater Location: Wilmington Date: 11/9/2005

Station No.: 1054 Field Technician: Aaron Day of Week: Wednesday

DTW ORDER	WELL ID	SURFICIAL SEAL	CONCRETE SEAL	LID SECURE	GASKET	LOCK	EXPANDING CAP	TOTAL DEPTH (feet)	DEPTH TO WATER (feet)	FLOATING PRODUCT THICKNESS (feet)	DISSOLVED OXYGEN READING (mg/L)	COMMENTS
	GMW-1	✓	✓	✓	✓	✓	✓	84.93	54.10	—	—	
	GMW-2	✓	✓	✓	✓	✓	✓	80.00	55.40	—	—	
	GMW-3	✓	✓	✓	✓	✓	✓	74.00	54.68	—	6.44	
	GMW-4	✓	✓	✓	✓	✓	✓	74.80	53.60	—	—	DUP
	GMW-5							69.94	53.50	—	—	
	GMW-6	✓	✓	✓	✓	✓	✓	70.06	55.00	—	—	
	GMW-7	✓	✓	✓	✓	✓	✓	70.00	52.76	—	—	
	GMW-8	X	X	✓		X	✓	69.91	51.02	—	5.04	BAD SHAPE
	GMW-9	X	X	✓	X	X	✓	70.00	52.87	~~8.29~~ —	8.24	
	GMW-10	✓	✓	✓	✓	✓	✓	70.00	54.37	—	—	water in box

Note: Use G=Good and P=poor for well condition

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-1
SAMPLER: Aaron	FACILITY NO: 1054
DATE: ~~08/10/05~~ 11-9-05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet): 84.93	CALCULATED PURGE (gal): ~~15~~ 16
DEPTH TO WATER (feet): 54.10	ACTUAL PURGE VOL (gal): ~~20~~ 15
Standing Water in Casing (feet) 30.83 x 0.20= 6.16	+ DTW 60.26=80% Recharge Water Level

(2) (inches)	Standing Water in Casing (feet)	x 0.5= 15.415	3 Casing Volumes (gal.)
4 (inches)	Standing Water in Casing (feet)	x 2.0=	3 Casing Volumes (gal.)
6 (inches)	Standing Water in Casing (feet)	x 4.4=	3 Casing Volumes (gal.)
8 (inches)	Standing Water in Casing (feet)	x 7.8=	3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 1613 End (2400 Hr.): 1630

Date Sampled: 11-9-05 Time (2400 Hr.): 1625 DTW @ Samp. Time: 54.64

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1):

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
1620	~~4~~ 5	61.3	2.33	6.90	Orange	slight turbidity	5
1622	~~8~~ 10	62.1	2.29	6.87	" "		10
1623	~~12~~ 15	63.5	2.56	6.88	Almost clear	clear	15
	~~16~~						

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	~~Bailer (Teflon)~~
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	~~Dedicated~~
OTHER: VAC TRUCK		OTHER:	

Well Condition (cap, cement, padlock, screws, lid, etc.):

Floating Product Thickness (feet): Color: Padlock Number:

COMMENTS:

40 ml VOA, HCL: 4 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY, NO SAMPLE COLLECTED: REVIEWED BY: DATE: 11/10/05

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-2
SAMPLER: Aaron	FACILITY NO: 1054
DATE: ~~08/10/05~~ 11-9-05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet): 80.00	CALCULATED PURGE (gal): 12.30
DEPTH TO WATER (feet): 55.40	ACTUAL PURGE VOL (gal): 12
Standing Water in Casing (feet) 24.60 x 0.20= 5.0	+ DTW 60.40 =80% Recharge Water Level

(2) (inches)	Standing Water in Casing (feet)	x 0.5= 12.30	3 Casing Volumes (gal.)
4 (inches)	Standing Water in Casing (feet)	x 2.0=	3 Casing Volumes (gal.)
6 (inches)	Standing Water in Casing (feet)	x 4.4=	3 Casing Volumes (gal.)
8 (inches)	Standing Water in Casing (feet)	x 7.8=	3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 1454 End (2400 Hr.): 1510

Date Sampled: 11-9-2005 Time (2400 Hr.): 1510 DTW @ Samp. Time: 54.46

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1): MW-2

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
1501	~~3~~ 4	64.4	3.10	6.50	clear	clear	4
1503	~~6~~ 8	64.1	3.13	6.60	"	"	8
1504	~~9~~ 12	63.7	3.12	6.72	"	"	12
	12						

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	Bailer (Teflon)
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	Dedicated

OTHER: VAC TRUCK	OTHER:

Well Condition (cap, cement, padlock, screws, lid, etc.):

Floating Product Thickness (feet): Color: Padlock Number:

COMMENTS:

40 ml VOA, HCL: 4 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY. NO SAMPLE COLLECTED: REVIEWED BY: DATE: 11/16/05

Atlantic Richfield Company No. # 1054

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-3
SAMPLER: Aaron	FACILITY NO: 1054
DATE: 08/10/05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet):	74.00	CALCULATED PURGE (gal):	8
DEPTH TO WATER (feet):	54.68	ACTUAL PURGE VOL (gal):	8
Standing Water in Casing (feet)	19.32 x 0.20= 3.80	+ DTW 58.48	=80% Recharge Water Level

(2) (inches)	Standing Water in Casing (feet)	x 0.5= 8.16	3 Casing Volumes (gal.)
4 (inches)	Standing Water in Casing (feet)	x 2.0=	3 Casing Volumes (gal.)
6 (inches)	Standing Water in Casing (feet)	x 4.4=	3 Casing Volumes (gal.)
8 (inches)	Standing Water in Casing (feet)	x 7.8=	3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 1345 End (2400 Hr.): 1415

Date Sampled: 11-9-05 Time (2400 Hr.): 1400 DTW @ Samp. Time: 54.64

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1):

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
1357	3	64.9	2.36	5.88	clear	clear	3
1358	6	65.9	2.41	6.06	" "	↓	6
1359	9	66.3	2.38	6.42	" "	↓	9

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	Bailer (Teflon)
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	Dedicated

OTHER: VAC TRUCK	OTHER:

Well Condition (cap, cement, padlock, screws, lid, etc.):

Floating Product Thickness (feet): Color: Padlock Number:

COMMENTS:

40 ml VOA, HCL: ✓ 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY. NO SAMPLE COLLECTED: REVIEWED BY: [signature] DATE: 11/10/05

Atlantic Richfield Company No. # 1054

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-4
SAMPLER: Aaron	FACILITY NO: 1054
DATE: 08/10/05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet): 74.80	CALCULATED PURGE (gal): 10
DEPTH TO WATER (feet): 53.60	ACTUAL PURGE VOL (gal): 10
Standing Water in Casing (feet) 21.20 x 0.20= 4.2	+ DTW 57.80 =80% Recharge Water Leve

(2) (inches)	Standing Water in Casing (feet)	x 0.5= 10.6	3 Casing Volumes (gal.)
4 (inches)	Standing Water in Casing (feet)	x 2.0=	3 Casing Volumes (gal.)
6 (inches)	Standing Water in Casing (feet)	x 4.4=	3 Casing Volumes (gal.)
8 (inches)	Standing Water in Casing (feet)	x 7.8=	3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 1300 End (2400 Hr.): 1310

Date Sampled: 11-9-05 Time (2400 Hr.): 1310 DTW @ Samp. Time:

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1): DUP

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
1304	2	63.2	2.08	5.9	clear	clear	2
1306	5	63.9	2.11	6.26	"	"	5
1308	10	64.4	2.24	6.21	" "	" "	10

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	~~Bailer (Teflon)~~
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	~~Dedicated~~

OTHER: VAC TRUCK	OTHER:

Well Condition (cap, ~~cement, padlock~~, screws, lid, etc.):

Floating Product Thickness (feet): Color: Padlock Number:

COMMENTS: GREAT Well

40 ml VOA, HCL: 8 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY. NO SAMPLE COLLECTED: REVIEWED BY: Moreno DATE: 11/10/05

Atlantic Richfield Company No. # 1054

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-5
SAMPLER: Aaron	FACILITY NO: 1054
DATE: 08/10/05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet): 69.94	CALCULATED PURGE (gal): 8.23
DEPTH TO WATER (feet): 53.50	ACTUAL PURGE VOL (gal): ~~5~~ 10
Standing Water in Casing (feet) 16.44 x 0.20= 3.2	+ DTW 56.70 =80% Recharge Water Level

(2) (inches)	Standing Water in Casing (feet)	x 0.5= 8.23	3 Casing Volumes (gal.)
4 (inches)	Standing Water in Casing (feet)	x 2.0=	3 Casing Volumes (gal.)
6 (inches)	Standing Water in Casing (feet)	x 4.4=	3 Casing Volumes (gal.)
8 (inches)	Standing Water in Casing (feet)	x 7.8=	3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 1546 End (2400 Hr.): 1609

Date Sampled: 11-9-05 Time (2400 Hr.): 1600 DTW @ Samp. Time: 53.50

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1): MW-5

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
1556	4	61.6	3.10	6.95	MW	slight	
1557	8	63.0	3.02	6.96	" "	" "	
1558	~~5~~ 10	63.6	3.03	6.98	" "	" "	

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	Bailer (Teflon)
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	Dedicated

OTHER: VAC TRUCK	OTHER:

Well Condition (cap, cement, padlock, screws, lid, etc.):

Floating Product Thickness (feet): Color: Padlock Number:

COMMENTS:

40 ml VOA, HCL: 4 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY, NO SAMPLE COLLECTED: REVIEWED BY: Moreno DATE: 11/10/05

Atlantic Richfield Company No. # 1054

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-6
SAMPLER: Aaron	FACILITY NO: 1054
DATE: 08/10/05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet):	70.04	CALCULATED PURGE (gal):	8
DEPTH TO WATER (feet):	55.00	ACTUAL PURGE VOL (gal):	8
Standing Water in Casing (feet)	14.94 x 0.20= 3.0	+ DTW 55.0	=80% Recharge Water Leve

(2) (inches)	Standing Water in Casing (feet)	x 0.5= ~7.5	3 Casing Volumes (gal.)
4 (inches)	Standing Water in Casing (feet)	x 2.0=	3 Casing Volumes (gal.)
6 (inches)	Standing Water in Casing (feet)	x 4.4=	3 Casing Volumes (gal.)
8 (inches)	Standing Water in Casing (feet)	x 7.8=	3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 1427 End (2400 Hr.): 1445

Date Sampled: 11-9-05 Time (2400 Hr.): 1430 DTW @ Samp. Time: 54.02

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1): mw-6

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
1431	3	64.9	2.24	6.14	clear	clear	3
1432	6	65.5	2.22	6.53	" "	" "	4
1433	8	65.8	2.29	6.59	" "	" "	7

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	Bailer (Teflon)
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	Dedicated

OTHER: VAC TRUCK	OTHER:

Well Condition (cap, cement, padlock, screws, lid, etc.):		
Floating Product Thickness (feet):	Color:	Padlock Number:

COMMENTS:

40 ml VOA, HCL: 4 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY. NO SAMPLE COLLECTED: REVIEWED BY: Moreno DATE: 11/10/05

Atlantic Richfield Company No. # 1054

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-7
SAMPLER: Aaron	FACILITY NO: 1054
DATE: ~~08/10/05~~ 11-8-05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet): 70.00	CALCULATED PURGE (gal): 8.61
DEPTH TO WATER (feet): 52.78	ACTUAL PURGE VOL (gal): 6
Standing Water in Casing (feet) 17.22 x 0.20= 3.4	+ DTW =80% Recharge Water Leve

(2) (inches)	Standing Water in Casing (feet) 17.22	x 0.5=	3 Casing Volumes (gal.)
4 (inches)	Standing Water in Casing (feet)	x 2.0=	3 Casing Volumes (gal.)
6 (inches)	Standing Water in Casing (feet)	x 4.4=	3 Casing Volumes (gal.)
8 (inches)	Standing Water in Casing (feet)	x 7.8=	3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 1223 End (2400 Hr.): 1240

Date Sampled: 11-9-05 Time (2400 Hr.): 1240 DTW @ Samp. Time: 51.87

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1): MW-7

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
1231	2	61.1	2.89	5.95			
1232	4	62.2	2.89	6.15			
1233	6	63.3	2.91	6.27			
	~~8~~						

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	Bailer (Teflon)
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	~~Dedicated~~

OTHER: VAC TRUCK	OTHER:

Well Condition (cap, cement, padlock, screws, lid, etc.):		
Floating Product Thickness (feet):	Color:	Padlock Number:

COMMENTS:

40 ml VOA, HCL: 4 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY. NO SAMPLE COLLECTED: REVIEWED BY: DATE: 11/10/05

Atlantic Richfield Company No. # 1054

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-8
SAMPLER: Aaron	FACILITY NO: 1054
DATE: 08/10/05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet): 69.91	CALCULATED PURGE (gal): 10
DEPTH TO WATER (feet): 51.82	ACTUAL PURGE VOL (gal): 6
Standing Water in Casing (feet) 18 x 0.20= 3.6	+ DTW 55 =80% Recharge Water Leve

(2) (inches)	18	Standing Water in Casing (feet)	x 0.5= 9	3 Casing Volumes (gal.)
4 (inches)		Standing Water in Casing (feet)	x 2.0=	3 Casing Volumes (gal.)
6 (inches)		Standing Water in Casing (feet)	x 4.4=	3 Casing Volumes (gal.)
8 (inches)		Standing Water in Casing (feet)	x 7.8=	3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 1125 End (2400 Hr.):

Date Sampled: 11/9/2005 Time (2400 Hr.): 1140 DTW @ Samp. Time:

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1): mw - 8

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
1141	2	60.2	2.94	5.90			
1142	4	61.7	3.05	6.29			
1143	6	62.8	3.04	6.27			
	8						
	10						

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	Bailer (Teflon)
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	Dedicated

OTHER: VAC TRUCK	OTHER:

Well Condition (cap, cement, padlock, screws, lid, etc.):

Floating Product Thickness (feet): Color: Padlock Number:

COMMENTS:

40 ml VOA, HCL: 4 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY. NO SAMPLE COLLECTED: REVIEWED BY: Romero DATE: 11/10/05

Atlantic Richfield Company No. # 1054

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-9
SAMPLER: Aaron	FACILITY NO: 1054
DATE: 08/10/05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet): 52.87 70.00	CALCULATED PURGE (gal): 9.00
DEPTH TO WATER (feet):	ACTUAL PURGE VOL (gal): ~~9.00~~ 6
Standing Water in Casing (feet) 17.13 x 0.20= 3.4	+ DTW 56. =80% Recharge Water Level

(2) (inches)	Standing Water in Casing (feet)	x 0.5= 8.55		3 Casing Volumes (gal.)
4 (inches)	Standing Water in Casing (feet)	x 2.0=		3 Casing Volumes (gal.)
6 (inches)	Standing Water in Casing (feet)	x 4.4=		3 Casing Volumes (gal.)
8 (inches)	Standing Water in Casing (feet)	x 7.8=		3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 1052 End (2400 Hr.):

Date Sampled: 11-9-2005 Time (2400 Hr.): 1100 DTW @ Samp. Time: 52.94

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1):

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
1100	2	60.4	2.42	6.17	clear	clear	2
1101	4	62.1	2.44	6.23	"	"	4
1102	6	63.3	2.57	6.35	"	"	4
	~~8~~						
	~~10~~						

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	Bailer (Teflon)
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	Dedicated

OTHER: VAC TRUCK	OTHER:

Well Condition (cap, cement, padlock, screws, lid, etc.):

Floating Product Thickness (feet): Color: Padlock Number:

COMMENTS:

40 ml VOA, HCL: 4 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY. NO SAMPLE COLLECTED: REVIEWED BY: Amorene DATE: 11/10/05

Atlantic Richfield Company No. # 1054

SECOR INTERNATIONAL INC.

OXYGEN DIFUSSER SYSTEM MONITORING LOG

Client/Site: ACO Facility 01054

Project No. : 37BP.01054.04.0335

Address: 980 West Pacific Coast Highway, Wilmington, CA

Technician: R. Newberry

Date: 10-3-05

Equipment: D. O. Meter

OXYGEN DIFUSSER WELL DATA

Well ID	Tank PSI Before	Tank PSI After	Diffuser PSI Before	Diffuser PSI After	Dissolved Oxygen (mg/l)	Temperature (°C)
SVE-5	400	2000	15	15	4.7	72.1
SVE-6	200	1900	15	15	8.1	72.6
SVE-7	500	1900	15	15	3.4	72.7

OBSERVATION WELL DATA

Well ID	Dissolved Oxygen mg/l	Temperature °C	pH	Depth to Water feet bgs	Electric Conductivity uS/cm	ORP mV	Iron (Fe^{2+}) mg/l
*GMW-1							
*GMW-2							
GMW-3	0.7	72.8					
GMW-4	1.1	72.6					
*GMW-5							
GMW-6	0.9	73.7					
*GMW-7							
*GMW-8							
*GMW-9							
*GMW-10							
* = Quarterly							

NOTES:

Did O&M, collected data

SECOR INTERNATIONAL INC.

OXYGEN DIFUSSER SYSTEM MONITORING LOG

Client/Site: ACO Facility 01054

Project No. : 37BP.01054.04.0335

Address: 980 West Pacific Coast Highway, Wilmington, CA

Technician: R. Newberry

Equipment: D.O-Meter

Date: 10-17-05

OXYGEN DIFUSSER WELL DATA

Well ID	Tank PSI Before	Tank PSI After	Diffuser PSI Before	Diffuser PSI After	Dissolved Oxygen (mg/l)	Temperature (°C)
SVE-5	100	1800	15	15	16.9	72.4
SVE-6	50	2000	15	15	3.78	72.2
SVE-7	0	1800	10	15	2.11	72.7

OBSERVATION WELL DATA

Well ID	Dissolved Oxygen mg/l	Temperature °C	pH	Depth to Water feet bgs	Electric Conductivity uS/cm	ORP mV	Iron (Fe^{2+}) mg/l
*GMW-1							
*GMW-2							
GMW-3	1.70	72.1					
GMW-4	1.36	72.6					
*GMW-5							
GMW-6	1.04	73.2					
*GMW-7							
*GMW-8							
*GMW-9							
*GMW-10							
* = Quarterly							

NOTES:

SECOR INTERNATIONAL INC.

OXYGEN DIFUSSER SYSTEM MONITORING LOG

Client/Site: ACO Facility 01054

Project No. : 37BP.01054.04.0335

Address: 980 West Pacific Coast Highway, Wilmington, CA

Technician: R. Newberry

Date: 10-17-05

Equipment: D.O. Meter

OXYGEN DIFUSSER WELL DATA

Well ID	Tank PSI Before	Tank PSI After	Diffuser PSI Before	Diffuser PSI After	Dissolved Oxygen (mg/l)	Temperature (°C)
SVE-5	100	1800	15	15	16.8	72.4
SVE-6	50	2000	15	15	3.78	72.2
SVE-7	0	1800	10	15	2.11	72.7

OBSERVATION WELL DATA

Well ID	Dissolved Oxygen mg/l	Temperature °C	pH	Depth to Water feet bgs	Electric Conductivity uS/cm	ORP mV	Iron (Fe^{2+}) mg/l
*GMW-1							
*GMW-2							
GMW-3	1.70	72.1					
GMW-4	1.36	72.6					
*GMW-5							
GMW-6	1.04	73.2					
*GMW-7							
*GMW-8							
*GMW-9							
*GMW-10							
* = Quarterly							

NOTES:

SECOR INTERNATIONAL INC.

OXYGEN DIFUSSER SYSTEM MONITORING LOG

Client/Site: ACO Facility 01054

Project No. : 37BP.01054.04.0335

Address: 980 West Pacific Coast Highway, Wilmington, CA

Technician: Ray Newberry

Equipment: D.O. METER

Date: 11/1/05

OXYGEN DIFUSSER WELL DATA

Well ID	Tank PSI Before	Tank PSI After	Diffuser PSI Before	Diffuser PSI After	Dissolved Oxygen (mg/l)	Temperature (°C)
SVE-5	0	1800	0	15	3.3	70.5°
SVE-6	0	1800	0	15	6.1	73.9
SVE-7	1000	1000	15	15	3.3	72.3°

OBSERVATION WELL DATA

Well ID	Dissolved Oxygen mg/l	Temperature °C	pH	Depth to Water feet bgs	Electric Conductivity uS/cm	ORP mV	Iron (Fe^{2+}) mg/l
*GMW-1							
*GMW-2							
GMW-3	1.7	73.6°					
GMW-4	27.1	72.7					
*GMW-5							
GMW-6	0.7	73.4°					
*GMW-7							
*GMW-8							
*GMW-9							
*GMW-10							
* = Quarterly							

NOTES:

SITE ACTIVITY REPORT

Name: RNewberry
Site Address: 1054 J

Date: 11-14
Project #:
Page 1 of 1

Purpose of Visit:

- ____ Groundwater Monitoring
- ____ Remedial System O/M
- ____ UST Removal/Excavation
- ____ Air Monitoring
- ____ Product Bailing
- ____ Soil Sampling
- ____ Site Recon
- ____ Construction Oversight

Project Preparation: ____
Time Arrived on Site: ____
Time Depart from Site: ____
Total Travel Time : ____
Total Project Time: ____

____ Number of Drums on Site
____ Trash Removed

Comments:

WELL #	TANK PSI	DIFF	D.O.	TEMP
SVE-5	50 / 1800	15/15	3.6	71.6
SVE-6	100 / 1800	15/15	3.8	72.7
SVE 7	100 / 2000	15/15	3.3	73.3
GMW-3			2.0	73.6
GMW-4			1.9	71.8
GMW-6			1.7	72.7

SECOR INTERNATIONAL INC.

OXYGEN DIFUSSER SYSTEM MONITORING LOG

Client/Site: ACO Facility 01054

Project No. : 37BP.01054.04.0335

Address: 980 West Pacific Coast Highway, Wilmington, CA.

Technician: R. NEWBERRY

Equipment: D.O. METER

Date: 11-14-05

OXYGEN DIFUSSER WELL DATA

Well ID	Tank PSI Before	Tank PSI After	Diffuser PSI Before	Diffuser PSI After	Dissolved Oxygen (mg/l)	Temperature (°C)
SVE-5	50	1800	15	15	3.6	71.6
SVE-6	100	1800	15	15	3.8	72.6
SVE-7	100	2000	15	15	3.3	73.3

OBSERVATION WELL DATA

Well ID	Dissolved Oxygen mg/l	Temperature °C	pH	Depth to Water feet bgs	Electric Conductivity uS/cm	ORP mV	Iron (Fe^{2+}) mg/l
*GMW-1							
*GMW-2							
GMW-3	2.0	73.6					
GMW-4	1.9	71.8					
*GMW-5							
GMW-6	1.7	72.7					
*GMW-7							
*GMW-8							
*GMW-9							
*GMW-10							
* = Quarterly							

NOTES:

SECOR INTERNATIONAL INC.

OXYGEN DIFUSSER SYSTEM MONITORING LOG

Client/Site: ACO Facility 01054

Project No. : 37BP.01054.04.0335

Address: 980 West Pacific Coast Highway, Wilmington, CA

Technician: Scott McKnew

Date: 12/12/05

Equipment: Oakton D.O. Meter
HAND TOOLS

OXYGEN DIFUSSER WELL DATA

Well ID	Tank PSI Before	Tank PSI After	Diffuser PSI Before	Diffuser PSI After	Dissolved Oxygen (mg/l)	Temperature (°C)	
SVE-5	0.0	2000	0.0	10	3.8	77.2	25.11
SVE-6	0.0	2000	0.0	10	4.3	74.5	23.61
* SVE-7	0.0	2000	0.0	10	4.0	74.8	23.78

OBSERVATION WELL DATA

Well ID	Dissolved Oxygen mg/l	Temperature °C	pH	Depth to Water feet bgs	Electric Conductivity uS/cm	ORP mV	Iron (Fe^{2+}) mg/l
*GMW-1							
*GMW-2							
GMW-3	2.6	73.8	23.2				
GMW-4	3.8	75.2	24				
*GMW-5							
GMW-6	3.6	74.4	23.6				
*GMW-7							
*GMW-8							
*GMW-9							
*GMW-10							
* = Quarterly							

NOTES:

* Monitored above wells for D.O. & Temp Readings. Also Inspected O2 Bottles for Change out. (Changed out SVE-5, 6, 7)

SECOR INTERNATIONAL INC.

OXYGEN DIFUSSER SYSTEM MONITORING LOG

Client/Site: ACO Facility 01054

Project No. : 37BP.01054.04.0335

Address: 980 West Pacific Coast Highway, Wilmington, CA

Technician: Scott McKnew

Date: 12-30-05

Equipment: D.O. Meter O2 bottles

OXYGEN DIFUSSER WELL DATA

Well ID	Tank PSI Before	Tank PSI After	Diffuser PSI Before	Diffuser PSI After	Dissolved Oxygen (mg/l)	Temperature (°C)	
SVE-5	0	2000	0	15	3.9	73.4	23.0
SVE-6	0	1800	0	15	4.1	74.3	23.5
SVE-7	700	700	15	15	6.3	73.6	23.1

OBSERVATION WELL DATA

Well ID	Dissolved Oxygen mg/l	Temperature °C	pH	Depth to Water feet bgs	Electric Conductivity uS/cm	ORP mV	Iron (Fe^{2+}) mg/l
*GMW-1							
*GMW-2							
GMW-3 *	0.2	73.4 23					
GMW-4	0.2	72.7 22.6					
*GMW-5							
GMW-6 *	0.1	73.5 23.1					
*GMW-7							
*GMW-8							
*GMW-9							
*GMW-10							
* = Quarterly							

NOTES:

Secured & Departed Site
Changed out O2 Bottles IN SVE-5 & SVE-6

GROUNDWATER SAMPLE FIELD DATA SHEET

ATLANTIC RICHFIELD COMPANY

PROJECT NO: Q4-2005 Groundwater	SAMPLE ID: GMW-10
SAMPLER: Aaron	FACILITY NO: 1054
DATE: ~~08/10/05~~ 11/9/05	LOCATION: Wilmington

CASING DIAMETER (inches) (2) 3 4 6 8 12 OTHER:

DEPTH OF WELL (feet): 70.00	CALCULATED PURGE (gal): 7.83 → 8
DEPTH TO WATER (feet): 54.37	ACTUAL PURGE VOL (gal): 6
Standing Water in Casing (feet) 15.66 x 0.20= 3.132 + DTW 57.502 =80% Recharge Water Leve	

(2) (inches)	Standing Water in Casing (feet)	x 0.5= 7.83		3 Casing Volumes (gal.)
4 (inches)	Standing Water in Casing (feet)	x 2.0=		3 Casing Volumes (gal.)
6 (inches)	Standing Water in Casing (feet)	x 4.4=		3 Casing Volumes (gal.)
8 (inches)	Standing Water in Casing (feet)	x 7.8=		3 Casing Volumes (gal.)

Date Purged: 11/9/2005 Start (2400 Hr.): 0916 End (2400 Hr.): 0958

Date Sampled: 11-9-05 Time (2400 Hr.): 0970 DTW @ Samp. Time:

FIELD QC SAMPLES COLLECTED AT THIS WELL (IE: FB-1, X-DUP-1): MW - 10

TIME (2400 Hr.)	VOLUME (gallons)	TEMP (degrees F)	E.C. (uS/cm) X1000	pH (units)	COLOR (visual)*	TURBIDITY (visual)**	TOTALIZE (gallons)
0931	2	62.6	1.95	6.65			
0932	4	64.3	2.04	6.66			
0932	6	64.7	2.08	6.65			
	8						

* (Color) Clear, Cloudy, Yellow, Brown ** (Turbidity) Heavy, Moderate, Light, Trace

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
2" Bladder Pump	Bailer (Teflon)	2" Bladder Pump	Bailer (Stainless Steel
Contrifugal Pump	Bailer (PVC)	Submersible Pump	~~Bailer (Teflon)~~
Submersible Pump	Bailer (Stainless Steel)	Dipper	Bailer (Disposable Teflon)
Redi-Flo2	Dedicated	Well Wizard	~~Dedicated~~

OTHER: VAC TRUCK	OTHER:

Well Condition (cap, cement, padlock, screws, lid, etc.):
Floating Product Thickness (feet): Color: Padlock Number:

COMMENTS:

40 ml VOA, HCL: 4 1 liter amber, none: 16 ox poly, HNO3:

WATER LEVEL ONLY. NO SAMPLE COLLECTED: REVIEWED BY: DATE: 11/10/05

Atlantic Richfield Company No. # 1054

Appendix D
Waste Disposal Documents

NO. 27522

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

NAME: BP West Coast Products LLC

ADDRESS: P.O. Box 80249

CITY STATE ZIP: Rancho Santa Margarita, CA 92688

PHONE NO: (949) 753-5820

SITE CONTACT:

PROFILE NO:

GENERATING SITE:
ARCO STATION # 1054
980 W. PACIFIC COAST HIGHWAY
WILMINGTON

CONTAINERS: No. 1 GALLONS 100 Gallons WEIGHT

TYPE: [X] TANK TRUCK [ ] DUMP TRUCK [ ] DRUMS [ ] CARTONS [ ] OTHER

WASTE DESCRIPTION: NON-HAZARDOUS WATER

GENERATING PROCESS: GROUNDWATER SAMPLING

COMPONENTS OF WASTE	PPM	%	COMPONENTS OF WASTE	PPM	%
1 WATER		99-100%	4		
2 TPH		< 1%	5		
3			6 BESI # 118036		

PROPERTIES: pH 7 [ ] SOLID [X] LIQUID [ ] SLUDGE [ ] SLURRY [ ] OTHER

HANDLING INSTRUCTIONS: WEAR APPROPRIATE PROTECTIVE CLOTHING

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

Larry Moothart as Agent of BP West Coast Products LLC — TYPED OR PRINTED FULL NAME & SIGNATURE — DATE 11/09/05

TRANSPORTER

NAME: NIETO AND SONS TRUCKING, INC.

EPA I.D. NO:

ADDRESS: 1281 BREA CANYON ROAD

SERVICE ORDER NO:

CITY STATE ZIP: BREA, CALIFORNIA 92821

PICK UP DATE: 11/09/05

PHONE NO: (714) 990-6855

TRUCK, UNIT, I.D. NO. 211

TYPED OR PRINTED FULL NAME & SIGNATURE — DATE 11/09/05

TSD FACILITY

NAME: DeMenno Kerdoon

EPA I.D. NO:

ADDRESS: 2000 N. Alameda Street

CITY STATE ZIP: Compton, CA 90222

DISPOSAL METHOD: [ ] LANDFILL [X] RECYCLER — Recycler

PHONE NO: 310-537-7100

FAC# 1054

ID# 114526

TYPED OR PRINTED FULL NAME & SIGNATURE — DATE 11/16/05

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	
C/Q		RT/CD	HWDF NONE	DISCREPANCY

APPENDIX C

HYDROCARBON SOIL MAPS AND MASS RELEASE CALCULATIONS

TPH Mass Estimation
ARCO 1054

Density 120

Thickness ft	Concentration mg/kg	A axis ft	B Axis ft	Volume ft3	Mass lbs
5 foot depth					
5	13000	0	0	0.0	0.0
5	3900	4	4	62.8	29.4
5	390	5	5	35.3	1.7
5	39	7	7	157.0	0.7
5	13000	0	0	0.0	0.0
5	3900	4	4	62.8	29.4
5	390	5	5	35.3	1.7
5	39	7	7	157.0	0.7
5	13000	0	0	0.0	0.0
5	3900	4	4	62.8	29.4
5	390	8	32	942.0	44.1
5	39	11	34	526.0	2.5
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390	4	4	62.8	2.9
5	39	5	5	35.3	0.2
10 foot depth					
5	13000			0.0	0.0
5	3900	0	0	0.0	0.0
5	390	4	4	62.8	2.9
5	39	6	6	78.5	0.4
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	39	6	6	141.3	0.7
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	39			0.0	0.0
15 foot depth					
5	13000			0.0	0.0
5	3900	7	6	164.9	77.1
5	390	9	8	117.8	5.5
5	39	11	10	314.0	1.5
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390	7	4	109.9	5.1
5	39	18	11	667.3	3.1
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390	8	6	188.4	8.8
5	39	12	9	235.5	1.1
20 foot depth					
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390	9	6	212.0	9.9
5	39	12	8	164.9	0.8
25 foot depth					
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	39			0.0	0.0
			Total TPH		**259.6**

Benzene Mass Estimation
ARCO 1054

Density 120

Thickness ft	Concentration mg/kg	A axis ft	B Axis ft	Volume ft3	Mass lbs
5 foot depth					
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9	4	4	62.8	0.0
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9	4	4	62.8	0.0
5	1300			0.0	0.0
5	390			0.0	0.0
5	39	4	4	62.8	0.3
5	3.9	34	8	1004.8	0.5
10 foot depth					
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9			0.0	0.0
15 foot depth					
5	13000			0.0	0.0
5	3900			0.0	0.0
5	39			0.0	0.0
5	3.9			0.0	0.0
20 foot depth					
5	13000			0.0	0.0
5	3900			0.0	0.0
5	39			0.0	0.0
5	3.9			0.0	0.0
			Total Benzene		**0.8**

MTBE Mass Estimation
ARCO 1054

Density 120

Thickness ft	Concentration mg/kg	A axis ft	B Axis ft	Volume ft3	Mass lbs
5 foot depth					
5	13000			0.0	0.0
5	3900			0.0	0.0
5	39			0.0	0.0
5	3.9			0.0	0.0
5	13000			0.0	0.0
5	3900			0.0	0.0
5	39			0.0	0.0
5	3.9			0.0	0.0
5	13000			0.0	0.0
5	3900			0.0	0.0
5	39	4	4	62.8	0.3
5	3.9	34	8	1004.8	0.5
10 foot depth					
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9	39	16	2449.2	1.1
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9			0.0	0.0
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	39			0.0	0.0
15 foot depth					
5	13000			0.0	0.0
5	3900			0.0	0.0
5	39	6	4	94.2	0.4
5	3.9	8	7	125.6	0.1
5	13000			0.0	0.0
5	3900			0.0	0.0
5	39	4	4	62.8	0.3
5	3.9	6	6	78.5	0.0
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9			0.0	0.0

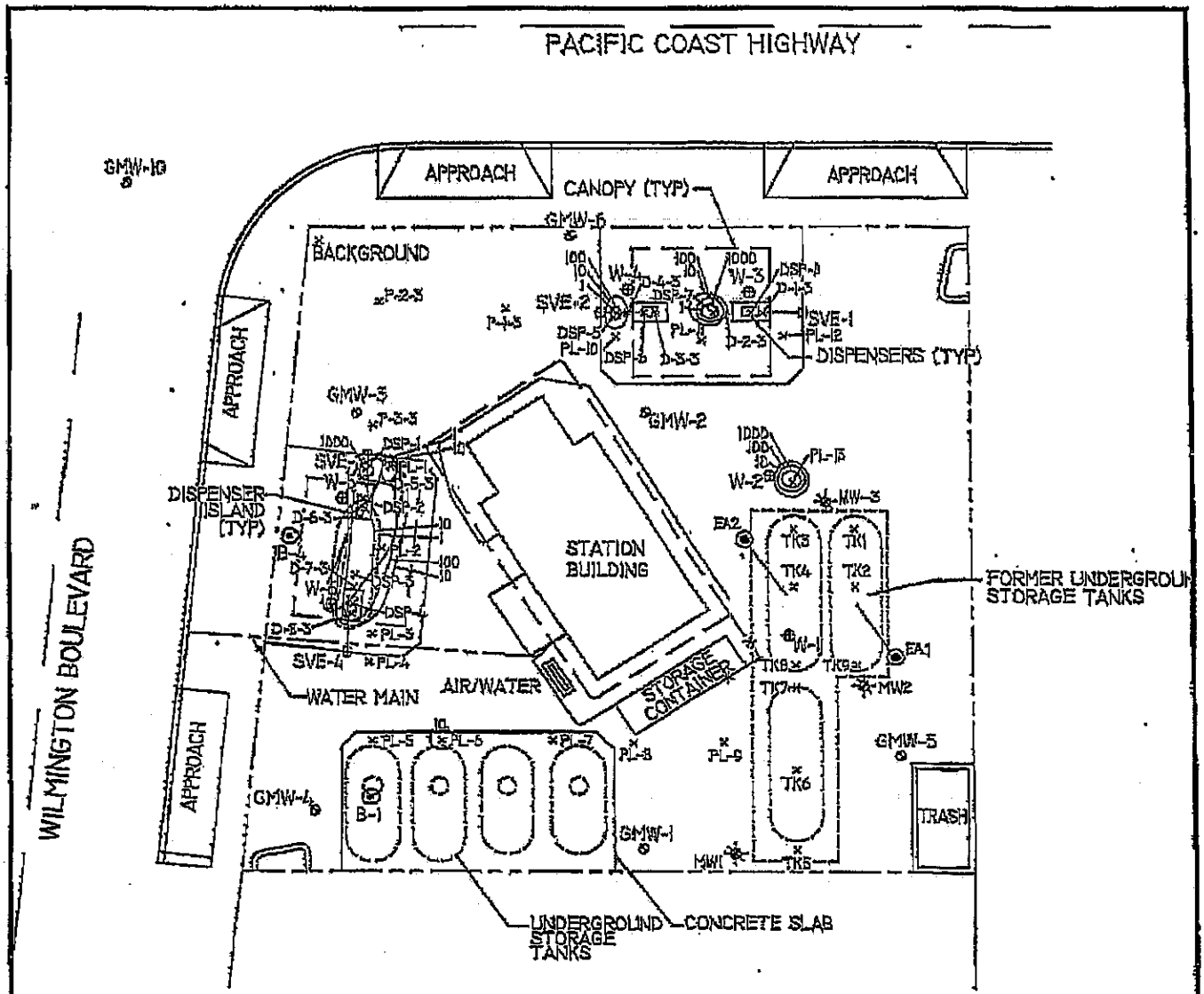
60 foot depth

5	13000			0.0	0.0
5	3900			0.0	0.0
5	39			0.0	0.0
5	3.9	6	6	141.3	0.1
5	13000			0.0	0.0
5	3900			0.0	0.0
5	39			0.0	0.0
5	3.9			0.0	0.0
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9			0.0	0.0

65 foot depth

5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9	10	8	314.0	0.1
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9			0.0	0.0
5	13000			0.0	0.0
5	3900			0.0	0.0
5	390			0.0	0.0
5	3.9			0.0	0.0

Total MTBE **3.0**



LEGEND

— — —	SITE BOUNDARY
MW-1	DESTROYED VADOSE WELL
EA1	ANGLE SOIL BORING
B-4	SOIL BORING
W-1	SOIL VAPOR EXTRACTION WELL
SVE-1	ANGLE SOIL VAPOR EXTRACTION WELL
PL-11	SOIL SAMPLE LOCATION
GMW-1	GROUNDWATER MONITORING WELL
10	TPHg CONCENTRATION CONTOUR
1	BENZENE CONCENTRATION CONTOUR
1	MTBE CONCENTRATION CONTOUR

N

0 30 60

APPROXIMATE SCALE IN FEET

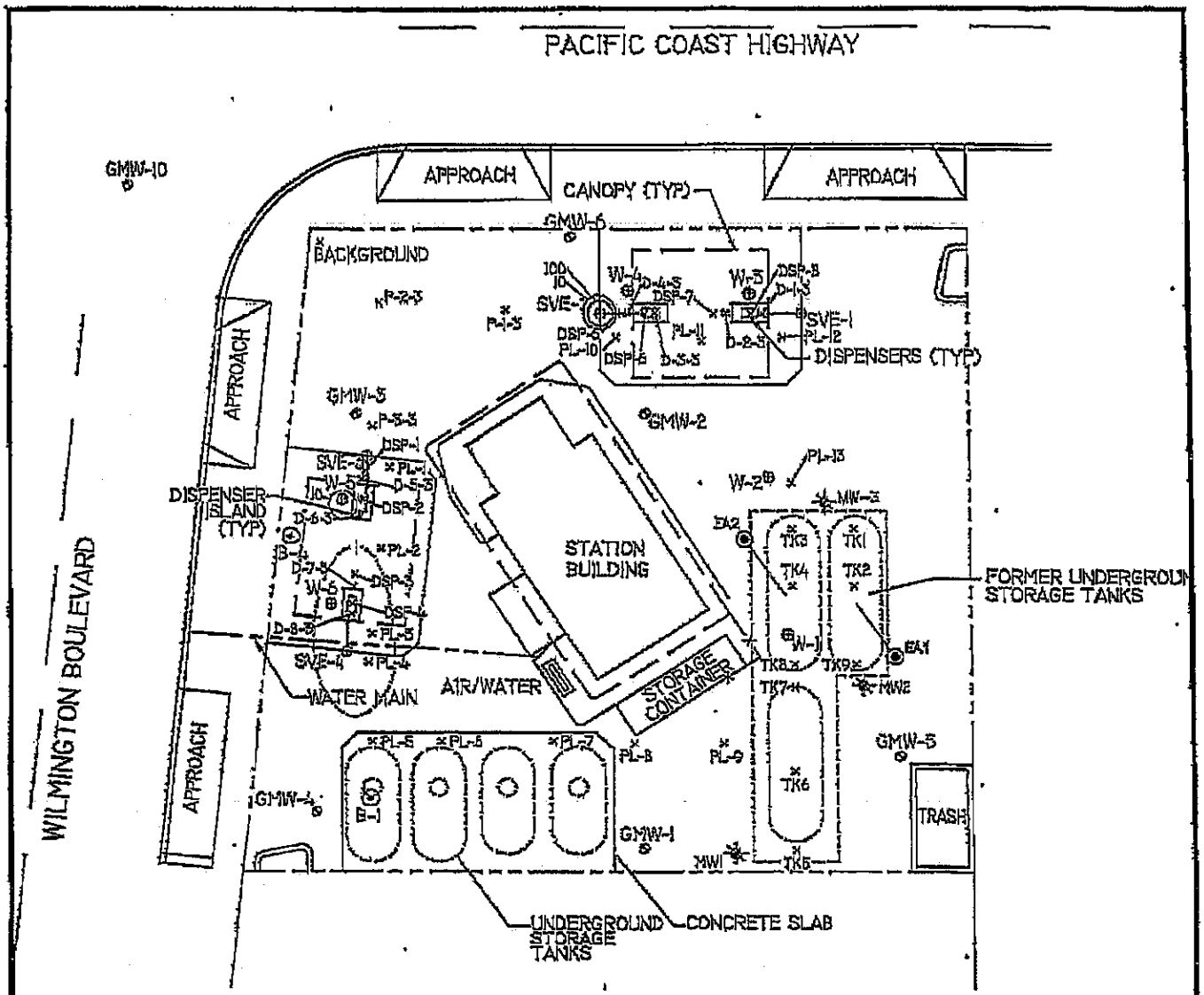
SECOR INTERNATIONAL INCORPORATED
5882 BOLSA AVENUE, SUITE 200
HUNTINGTON BEACH, CALIFORNIA 92649
PHONE: (714) 379-3565 FAX: (714) 379-3575

HYDROCARBON CONCENTRATION IN SOIL AT 5 fbg

ARCO FACILITY 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

FIGURE:

DWG PATH: 14\F:\ACTIVE\ARCO\1054\Drafting\AnalyticalData\A1054BASE(02).dwg | DATE: MAY 2002 | APPR: KG | JOB#: 14BP.0105402.0330 | DWN BY: CR.



LEGEND

— - - —	SITE BOUNDARY
MW-1	DESTROYED VADOSE WELL
EA1	ANGLE SOIL BORING
B-4	SOIL BORING
W-1	SOIL VAPOR EXTRACTION WELL
SVE-1	ANGLE SOIL VAPOR EXTRACTION WELL
PL-11 ×	SOIL SAMPLE LOCATION
GMW-1	GROUNDWATER MONITORING WELL
10	TPHg CONCENTRATION CONTOUR
1	MTBE CONCENTRATION CONTOUR

N

0 30 60

APPROXIMATE SCALE IN FEET

SECOR INTERNATIONAL INCORPORATED
5882 BOLSA AVENUE, SUITE 200
HUNTINGTON BEACH, CALIFORNIA 92649
PHONE: (714) 379-3366 FAX: (714) 379-3375

HYDROCARBON CONCENTRATION IN SOIL AT 10fbg

ARCO FACILITY 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

FIGURE

DWG PATH:	DATE:	APPR:	JOB:	DWN BY:
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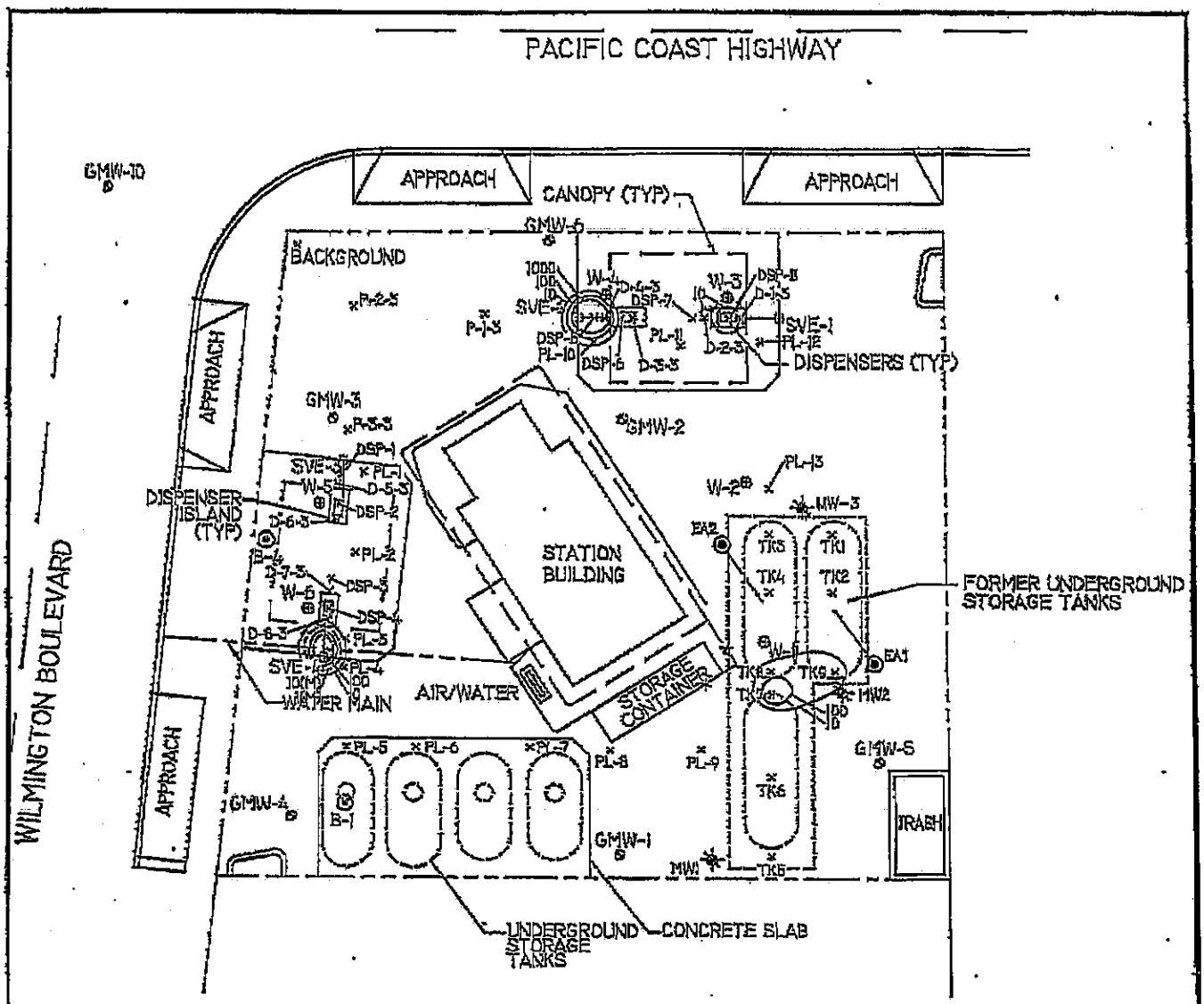


LEGEND

— - - —	SITE BOUNDARY
MW-1	DESTROYED VADOSE WELL
EA1	ANGLE SOIL BORING
B-4	SOIL BORING
W-1	SOIL VAPOR EXTRACTION WELL
SVE-1	ANGLE SOIL VAPOR EXTRACTION WELL
PL-11	SOIL SAMPLE LOCATION
GMW-1	GROUNDWATER MONITORING WELL

10 TPHg CONCENTRATION CONTOUR

1 MTBE CONCENTRATION CONTOUR

NO BENZENE > 1 mg/kg

N

0 30 60

APPROXIMATE SCALE IN FEET

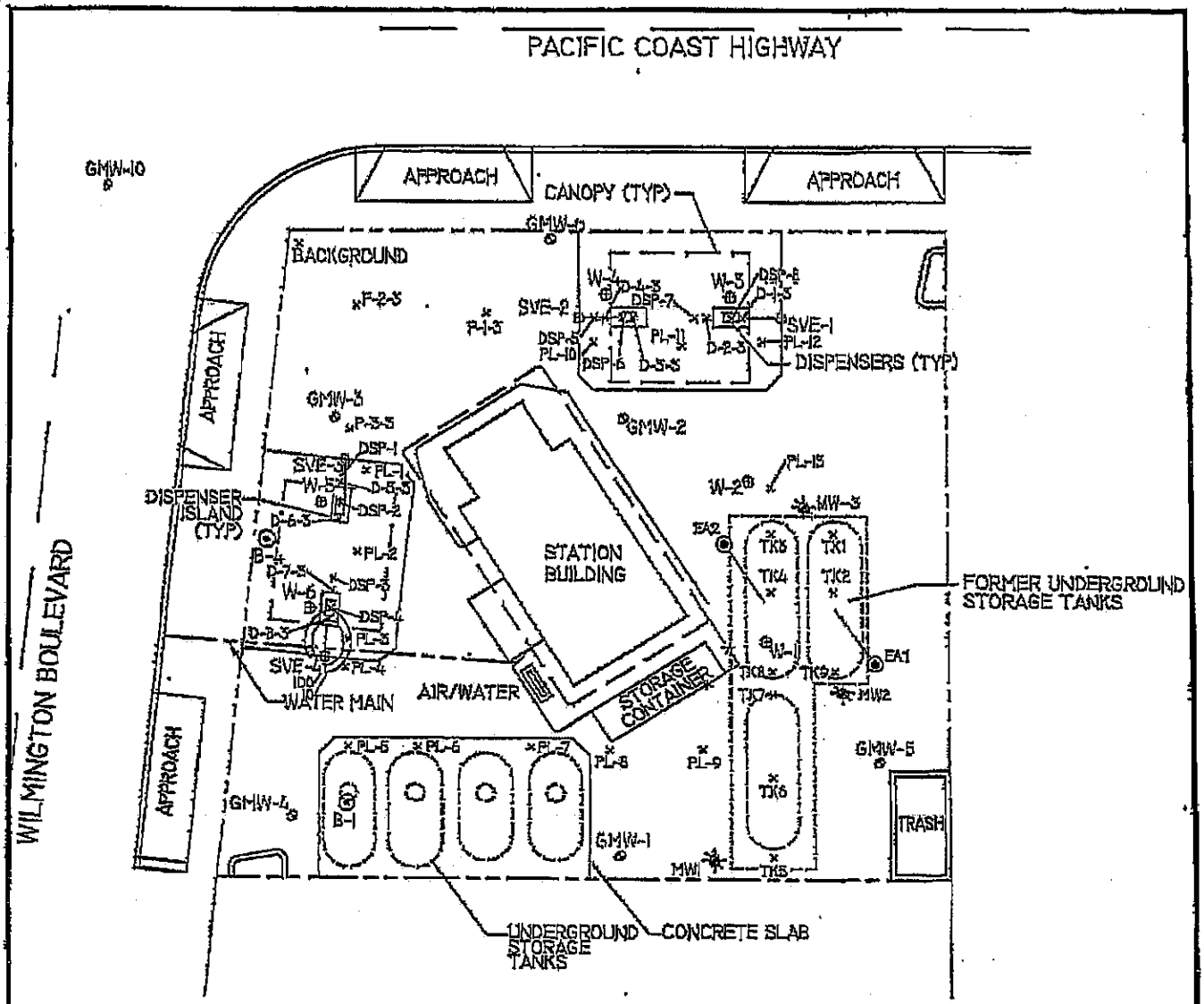
SECOR INTERNATIONAL INCORPORATED
5882 BOLSA AVENUE, SUITE 200
HUNTINGTON BEACH, CALIFORNIA 92649
PHONE: (714) 379-3366 FAX: (714) 379-3375

HYDROCARBON CONCENTRATION IN SOIL AT 15 fbg

ARCO FACILITY 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

FIGURE:

DWG NAME: 14\F:\ACTIVE\ARCO\1054\Drafting\AnalyticalData\A1054BASE(02).dwg	DATE: MAY 2002	APPR: KC	JOB#: 148P.0105402.0330	DWN BY: CR



LEGEND

— - - —	SITE BOUNDARY
MW-1	DESTROYED VADOSE WELL
EA1	ANGLE SOIL BORING
B-4	SOIL BORING
W-1	SOIL VAPOR EXTRACTION WELL
SVE-1	ANGLE SOIL VAPOR EXTRACTION WELL
PL-11	SOIL SAMPLE LOCATION
GMW-1	GROUNDWATER MONITORING WELL
10	TPHg CONCENTRATION CONTOUR

0 30 60

APPROXIMATE SCALE IN FEET

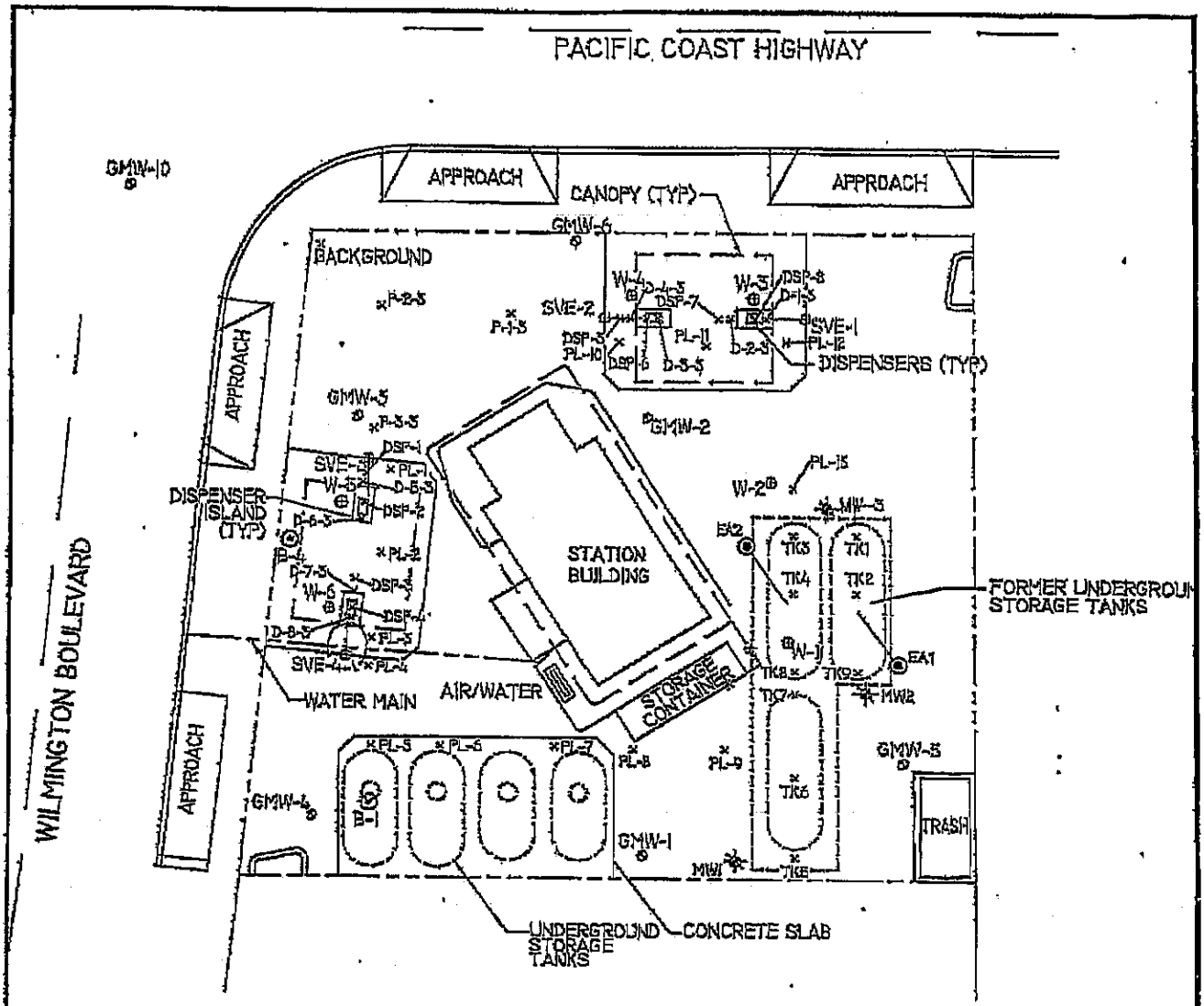
SECOR INTERNATIONAL INCORPORATED
5882 BOLSA AVENUE, SUITE 200
HUNTINGTON BEACH, CALIFORNIA 92649
PHONE: (714) 379-3566 FAX: (714) 379-3375

HYDROCARBON CONCENTRATION IN SOIL AT 20'bg

ARCO FACILITY 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

FIGURE

FILE PATH: 14\F:\ACTIVE\ARCO\1054\Drafting\AnalyticalData\A1054BASE(02).dwg	DATE: MAY 2002	APPR: KC	JOB#: 14BP.0105402.0330	DWN BY: CR



LEGEND

— - - —	SITE BOUNDARY
MW-1	DESTROYED VADOSE WELL
EA1	ANGLE SOIL BORING
B-4	SOIL BORING
W-1	SOIL VAPOR EXTRACTION WELL
SVE-1	ANGLE SOIL VAPOR EXTRACTION WELL
PL-11 ×	SOIL SAMPLE LOCATION
GMW-1	GROUNDWATER MONITORING WELL

TPHg CONCENTRATION CONTOUR

SECOR INTERNATIONAL INCORPORATED
5882 BOLSA AVENUE, SUITE 200
HUNTINGTON BEACH, CALIFORNIA 92649
PHONE: (714) 379-3356 FAX: (714) 379-3375

HYDROCARBON CONCENTRATION IN SOIL AT 25fbg

ARCO FACILITY 1054
980 WEST PACIFIC COAST HIGHWAY
WILMINGTON, CALIFORNIA

FIGURE:

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