Atlantic Richfield Company

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September 9, 2013

Re: Conceptual Site Model and Case Closure Request
Former BP Service Station #2162
15135 Hesperian Boulevard
San Leandro, California;
ACEH Case No.RO0000190

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

Submitted by,

Chuck Carmel
Remediation Management Project Manager

Attachment

CONCEPTUAL SITE MODEL AND ADDENDUM TO THE REVISED WORK PLAN

Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

Prepared for

Mr. Chuck Carmel
Operations Project Manager
Atlantic Richfield Company
P.O. Box 1257
San Ramon, California 94583

Prepared by

BROADBENT
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September 09, 2013

Project No. 06-88-620

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September 9, 2013

Project No. 06-88-620

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

Attn.: Mr. Chuck Carmel

Re: Conceptual Site Model and Addendum to the Revised Work Plan, Atlantic Richfield Company Station No. 2162, 15135 Hesperian Boulevard, San Leandro, California;
ACEH Case No.RO0000190

Dear Mr. Carmel:

Broadbent & Associates, Inc. (Broadbent) is pleased to submit this *Conceptual Site Model and Addendum to the Revised Work Plan* for Atlantic Richfield Company Station No. 2162 located at 15135 Hesperian Boulevard in San Leandro, California (Site). This document was prepared to evaluate current Site conditions and define the downgradient extent of hydrocarbons in groundwater and fill any other data gaps identified by the Conceptual Site Model presented herein. After the completion of the Conceptual Site Model, Broadbent is proposing to carry out with the scope of work described in the *Revised Work Plan for Off-Site Groundwater Investigation* (Broadbent, 2013). In addition, Broadbent proposes to collect soil samples from the proposed boring locations, install two soil vapor monitoring wells offsite, and perform additional data evaluations to close Site data gaps.

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

Sincerely,
BROADBENT & ASSOCIATES, INC.

Alejandra Hernandez
Project Geologist

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

Enclosures

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

CONCEPTUAL SITE MODEL AND ADDENDUM TO THE REVISED WORK PLAN
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard, San Leandro, California
ACEH Fuel Leak Case No. RO0000190

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CONCEPTUAL SITE MODEL AND ADDENDUM TO THE REVISED WORK PLAN
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard, San Leandro, California
ACEH Fuel Leak Case No. RO0000190

1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company (ARC)- a BP affiliated company, Broadbent & Associates, Inc. (Broadbent) has prepared this *Conceptual Site Model and Addendum to the Revised Work Plan* for the Atlantic Richfield Company (ARC) Station No. 2162 (Site), located at 15135 Hesperian Boulevard in San Leandro, California (Site). An initial Work Plan document entitled *Work Plan for Off-Site Groundwater Investigation* (2012 Work Plan) was prepared to delineate the downgradient extent of petroleum hydrocarons in groundwater and to assess whether the onsite hydrocarbon impacts extend to offsite receptors (Broadbent, 2012). A document entitled *Revised Work Plan for Off-Site Groundwater Investigation* dated January 3, 2013 (2013 Work Plan) was submitted to the Alameda County Environmental Health (ACEH) as a follow up to the 2012 Work Plan (Broadbent, 2013). This 2013 Work Plan was rejected by the ACEH in an email received on February 21, 2013. The email also indicated the need for a Conceptual Site Model (CSM) with all Work Plan submittals, which had not been previously required. The ACEH email is provided within Appendix A. This document, *Conceptual Site Model and Addendum to the Revised Work Plan* (CSM and Work Plan Addendum) is intended to satisfy all of the remaining ACEH requirements in order to proceed with field activities. Previous environmental activities performed at the Site are summarized in Appendix B.

The purpose of this document is to summarize and present current Site conditions in the form of a CSM and evaluate these conditions and any potential data gaps in order to move the Site towards closure based on the California State Water Resources Control Board's (CSWRCB) *Low Threat Underground Storage Tank Case Closure Policy* (Low Threat UST Closure Policy; CSWRCB, 2012). The CSM is included in Table 1 of this CSM and Work Plan Addendum. The CSM summarizes current Site conditions and identifies any remaining data gaps. Investigation activities in addition to those described in the 2013 Work Plan are proposed herein to close these data gaps. Additional proposed activities include:

- Collect soil samples from the borings proposed in the 2013 Work Plan
- Conduct a preferential pathway study
- Determine the presence and/or purpose of the domestic wells located within 1,100 feet from the Site

These activities are being proposed in addition to the those described in the 2013 Work Plan. These additional activities are described in Section 3.0.

2.0 SITE BACKGROUND

Station No. 2162 is located at 15135 Hesperian Boulevard in San Leandro, California. The Site is an active ARCO brand gasoline station. Current improvements at the Site include four gasoline underground storage tanks (USTs) installed in 1992, two fuel dispenser islands with a total of four double-sided dispensers, and a station building. The majority of the Site surface is paved with asphalt and concrete. The Site is bound by Hesperian Boulevard to the east, Ruth Court to the north, a Kentucky Fried Chicken (KFC) restaurant to the south, and a secured parking lot for an SBC Communications (SBC) building is located on the adjacent property to the west. Across Ruth Court is the SBC building which is a closed former diesel UST site. Historic environmental case data for the SBC site is provided in Appendix C. A Site

Location Map is provided as Drawing 1. A Site Plan depicting current well locations is provided as Drawing 2. Proposed soil boring locations are presented in Drawing 3. A Groundwater Elevation Contour Map depicting the most current groundwater data (December 20, 2012) is provided as Drawing 4. Isoconcentration contour maps for gasoline-range organics (GRO), benzene, and methyl tertiary butyl ether (MTBE) are provided as Drawings 5 through 7, respectively. A summary of previous environmental activities performed at the Site is provided in Appendix B.

The regional geology and hydrogeology are provided in the CSM table (Table 1). Current and historic analytical groundwater monitoring data is presented in Tables 2 and 3. Historic groundwater gradient with direction and magnitude is presented as Table 4. Historical Site data, including historical drawings, soil and groundwater analytical data, are provided in Appendix D. Copies of available soil boring and monitoring well construction logs are provided within Appendix E. Geologic cross-sections for the Site are provided as Drawings 8 through 9. GRO, benzene, and MTBE concentration trend graphs for wells MW-1 and MW-2 are provided in Appendix F.

3.0 REVISED PROPOSED SCOPE OF WORK

This scope of work is being proposed in order to close any potential data gaps to move this Site towards closure based on the Low Threat UST Closure Policy (CSWRCB, 2012). Broadbent proposes to implement the scope of work as described in the 2013 Work Plan. As described in this CSM and Work Plan Addendum, the proposed investigation will consist of drilling and collecting groundwater samples from two offsite borings to further characterize groundwater downgradient of the Site, near the KFC restaurant. The locations of these borings (SB-1 and SB-2) are presented in Drawing 3. Procedures for advancing soil borings are described in the 2013 Work Plan. No changes to those procedures are proposed herein.

In order to close data gaps identified in the attached CSM (Table 1), additional tasks are recommended. These additional tasks include:

- Collect additional soil samples at previously proposed boring locations (further described in Section 3.1 below)
- Perform additional sensitive receptor survey activities (further described in Section 3.2 below)
- Perform a Preferential Pathway Study (further described in Section 3.3 below)

The additions to the scope of work are presented in detail in the following sections.

3.1 PROPOSED SOIL SAMPLES

Select soil samples collected up to 14 feet (ft) below ground surface (bgs), four feet below the lowest groundwater level based on historical data, will be submitted for laboratory analytical testing. Deeper sampling is not warranted because saturated soil samples are more representative of groundwater conditions than soil, and groundwater samples are being additionally collected as described below.

Collected soil sample cores will be sealed with Teflon sheets, capped, and placed in a chilled cooler. Samples will then be submitted to a state-certified analytical laboratory, under standard chain-of-custody protocol. Soil samples will be analyzed for GRO (C6-C12) and diesel-range organics (DRO; C10-C28) by EPA Method 8015M; and for Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), MTBE, Di-Isopropyl Alcohol (DIPE), Ethyl-Tertiary Butyl Ether (ETBE), Tert-Amyl Methyl Ether (TAME),

1,2-Dichloroethane (1,2-DCA), 1,2-Dibromomethane (EDB), Tert-Butyl Alcohol (TBA), Naphthalene, and Ethanol by EPA Method 8260B.

3.2 ADDITIONAL WELL SURVEY ACTIVITES

Mailers will be sent out in an effort to contact the residents of the address where wells are suspected to be located and determine the presence and/or purpose and extent of its use.

3.3 PREFERENTIAL PATHWAY STUDY

Based on preliminary results from this Site investigation, a preferential pathway study will be performed to evaluate the migration, if any, from the Site plume into utility trenches. A public utility records search along with a ground probing radar (GPR) survey will be conducted to determine the exact locations and depths of the utilities located along Hesperian Boulevard and Ruth Court.

3.4 POTENTIAL PHASE II VAPOR INTRUSION ASSESSMENT ACTIVITIES

The CSM attached lists soil vapor as a potential data gap at this Site due to the potential for offsite migration of petroleum compounds. The currently proposed scope of work presented herein and presented in the original Work Plan intend to determine of any petroleum impacts are present near the KFC building, where soil vapor intrusion may be a concern. If data collected during this currently proposed scope of work indicates that soil vapor impacts are a potential concern for the Site and vicinity, a second phase of investigation will be proposed which will include collection of soil vapor samples near the KFC building. If warranted, an additional work plan will be submitted to the ACEH following the completion of this currently proposed scope of work.

4.0 DATA OBJECTIVES

As described above, the proposed soil boring investigation intends to close any potential data gaps to move this Site towards closure based on the Low Threat UST Closure Policy. The data objectives for each specific proposed soil boring are summarized in the following table. The locations of the proposed borings are included in Drawing 3.

Table A – Data Objectives for CPT Boring Locations

Proposed CPT Boring	Location	Data Objective
SB-1	Offsite and downgradient of the area of high concentration of petroleum compounds in groundwater (well MW-6).	Evaluate current soil and groundwater concentrations near source area.
SB-2	Offsite near the KFC building complex south of the Site.	Define the downgradient extent of petroleum in groundwater associated with the Site; assess potential risks to downgradient receptors

5.0 PROPOSED SCHEDULE

The proposed schedule for the work described above shall proceed as follows:

- Offsite Assessment – Soil boring and sampling activities will begin immediately following regulatory approval and are anticipated to be completed within 75 calendar days following approval of this CSM and Work Plan Addendum.

- Sensitive Receptor Survey – Mailers will be sent out to the residents of the wells immediately following the regulatory approval of this CSM and Work Plan Addendum.

- Preferential Pathway Study – Immediately following preliminary results from the proposed investigation activities, a preferential pathway study will be conducted.

- Assessment Report – A summary report of findings and sampling activities is proposed to be submitted within 45 calendar days following completion of the proposed offsite assessment (i.e., within 120 calendar days of work plan approval).

6.0 LIMITATIONS

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

7.0 REFERENCES

Broadbent & Associates, Inc., 5 January 2012. *Work Plan for Off-Site Groundwater Investigation, Atlantic Richfield Company Station # 2162, 15135 Hesperian Boulevard, San Leandro, California.*

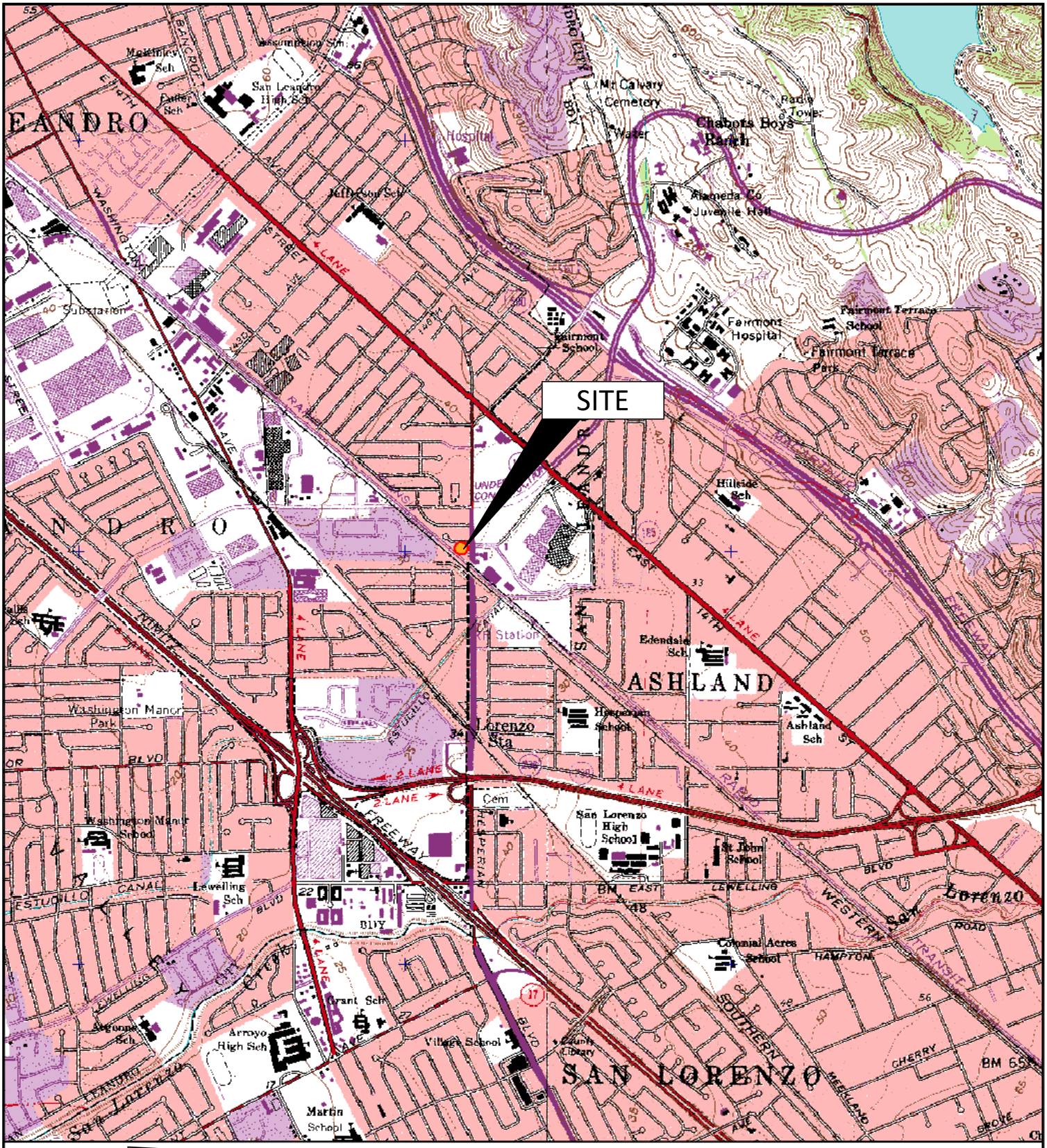
Broadbent & Associates, Inc., 3 January 2013. *Revised Work Plan for Off-Site Groundwater Investigation, Atlantic Richfield Company Station No. 2162, 15135 Hesperian Boulevard, San Leandro, California.*

Hydrologure, Inc., 25 October 2005. *Final Fourth Quarter 2005 Groundwater Monitoring Report & Request for Closure, SBC SNLNCA11 Facility, 15125 Hesperian Blvd, San Leandro, CA.*

ROUX Associates, 28 August 1991. *Preliminary Tank Replacement Assessment, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, CA*

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

URS Corporation, 28 April 2003. *Product Line Removal and Upgrade Soil Sampling Report, ARCO Service Station No. 2162, 15135 Hesperian Boulevard, San Leandro, CA.*

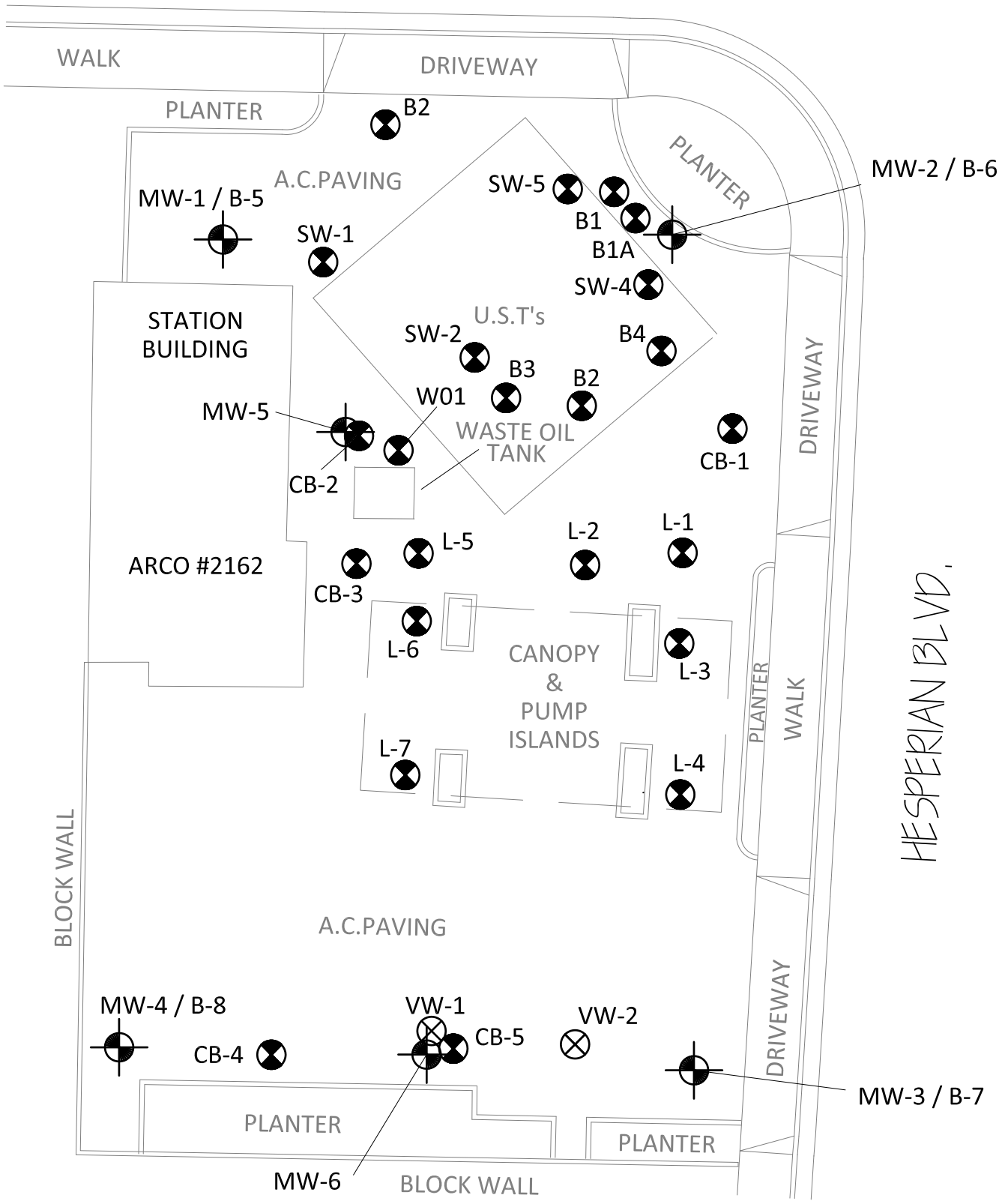


BROADBENT
2000 Kirman Ave.
Reno, Nevada 89502
Project No.: 06-88-620 Date: 7/2/2013

Station #2162
15135 Hesperian Boulevard
San Leandro, California

Site Location Map

Drawing
1



LEGEND

- Groundwater Monitoring Well Location
- Vapor Extraction Well Location
- Soil Boring Location

0 30 60

SCALE (ft)

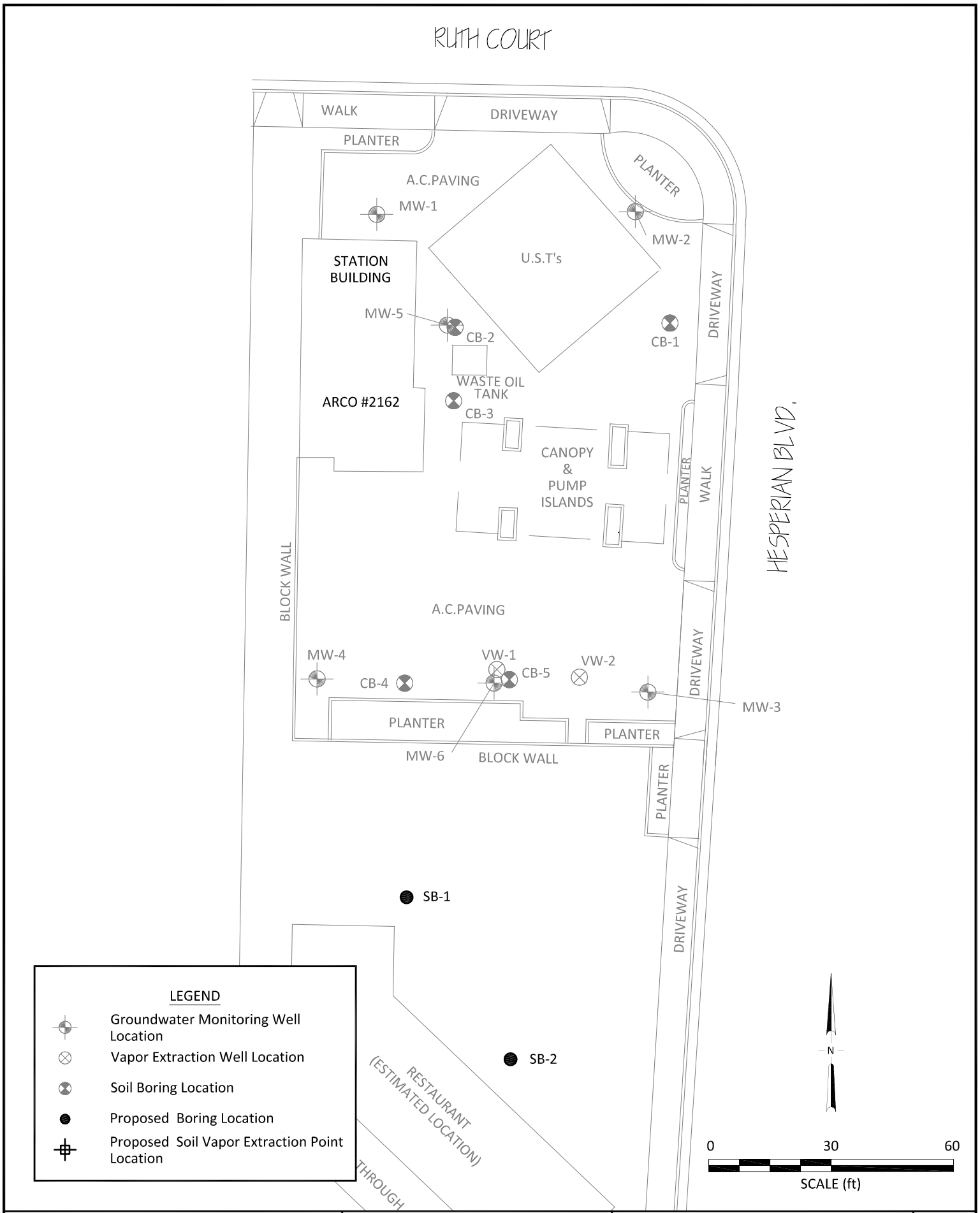
N

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-620 Date: 7/2/2013

Station #2162
15135 Hesperian Boulevard
San Leandro, California

Site Map with Monitoring Well, Historical Boring, and Soil Vapor Well Locations

Drawing
2

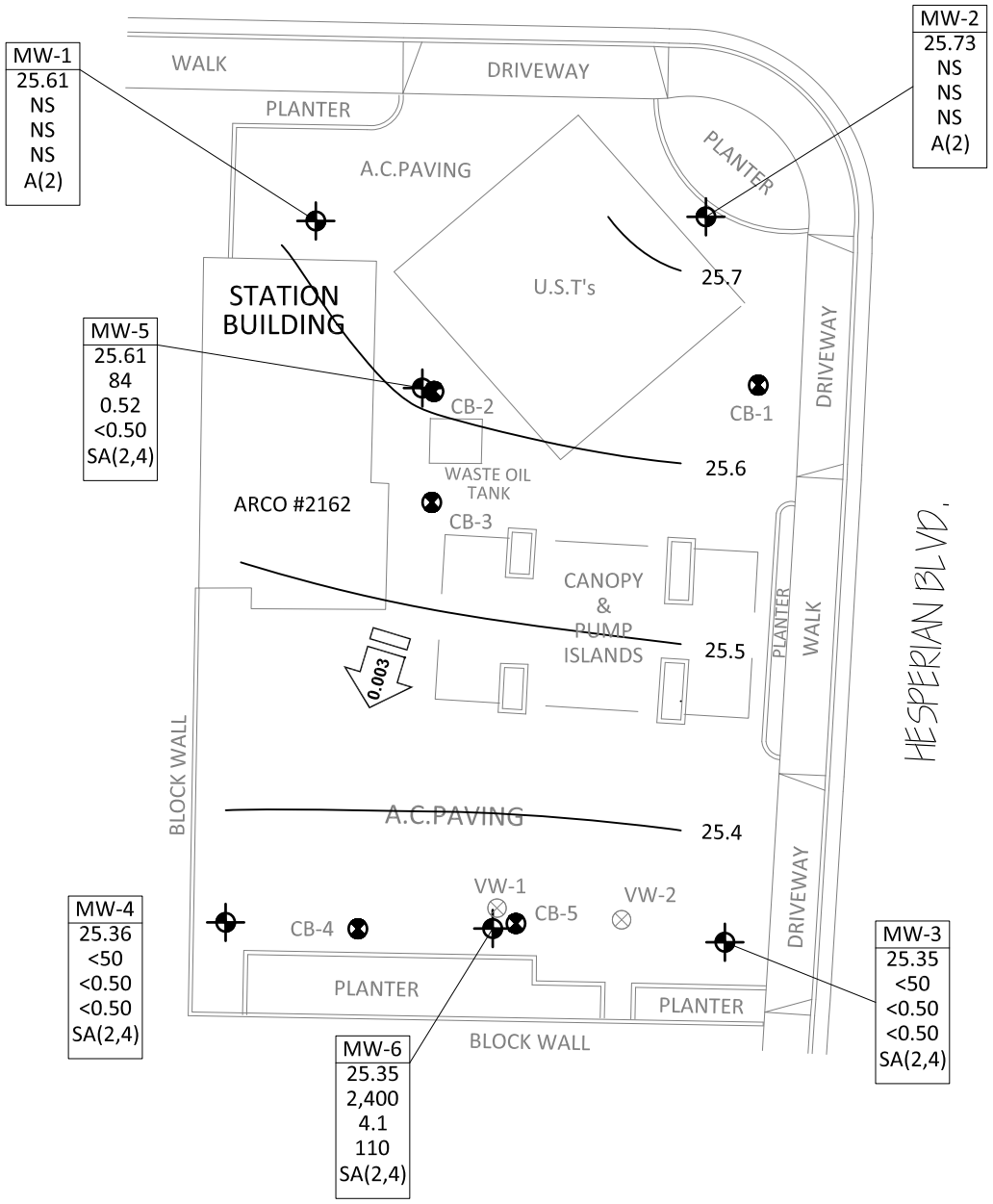


BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-620 Date: 7/2/2013

Station #2162
15135 Hesperian Boulevard
San Leando, California

Site Map with Proposed Soil Boring Locations

Drawing
3



LEGEND

- Groundwater Monitoring Well Location
- Vapor Extraction Well Location
- Soil Boring Location
- 25.1 — Groundwater Elevation Contour (Feet Above Site Datum)
- 0.003 — Approximate Groundwater Flow Direction and Gradient (ft/ft)

- SA — Sampled Semi-Annually
- * — Data Not Used for Contouring
- < — Not Detected at or above Laboratory Reporting Limits

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

N

0 30 60

SCALE (ft)

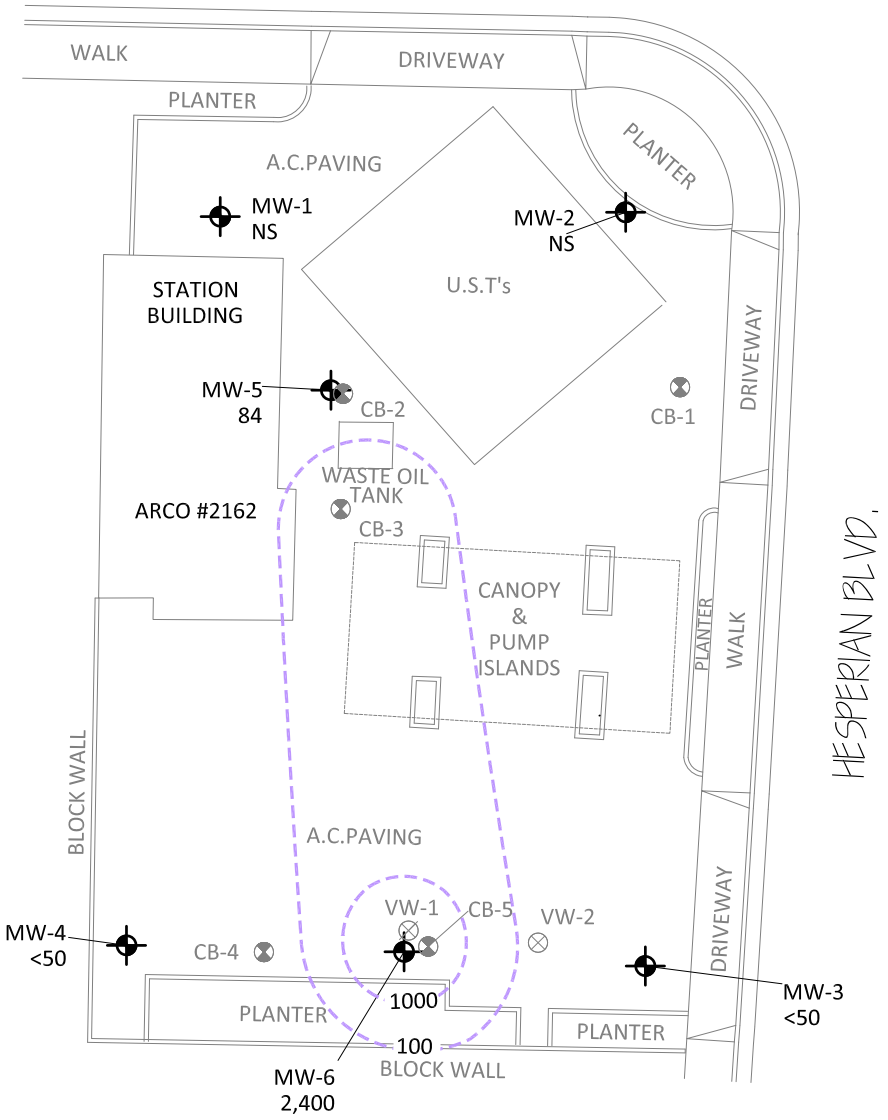
BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-620 Date: 7/3/2013

Station #2162
15135 Hesperian Boulevard
San Leando, California

Groundwater Elevation Contours and Analytical Summary Map
December 20, 2012

Drawing
4

RUTH COURT



LEGEND

- Groundwater Monitoring Well Location with GRO Concentration Contour (µg/L)
- Vapor Extraction Well Location
- Soil Boring Location
- GRO Isoconcentration Contour (µg/L)
- * Results from 4th Quarter, 2012

N

0 30 60

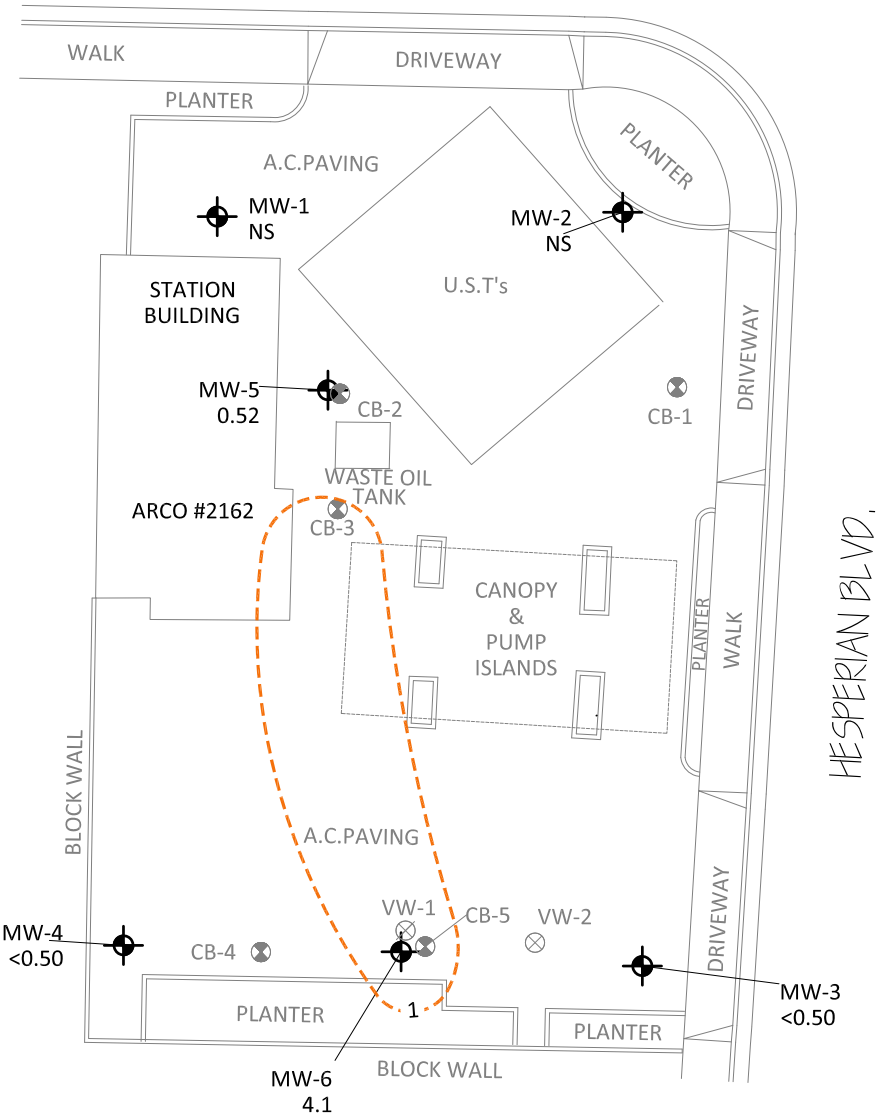
SCALE (ft)

BROADBENT 1370 Ridgewood Dr., Suite 5 Chico, California 95973 Project No.: 06-88-620 Date: 7/3/2013	Station #2162 15135 Hesperian Boulevard San Leando, California	GRO Isoconcentration Map December 20, 2012

Drawing

5

RUTH COURT



LEGEND

- Groundwater Monitoring Well Location with Benzene Concentration (µg/L)
- Vapor Extraction Well Location
- Soil Boring Location
- Benzene Isoconcentration Contour (µg/L)
- * Results from 4th Quarter, 2012

N

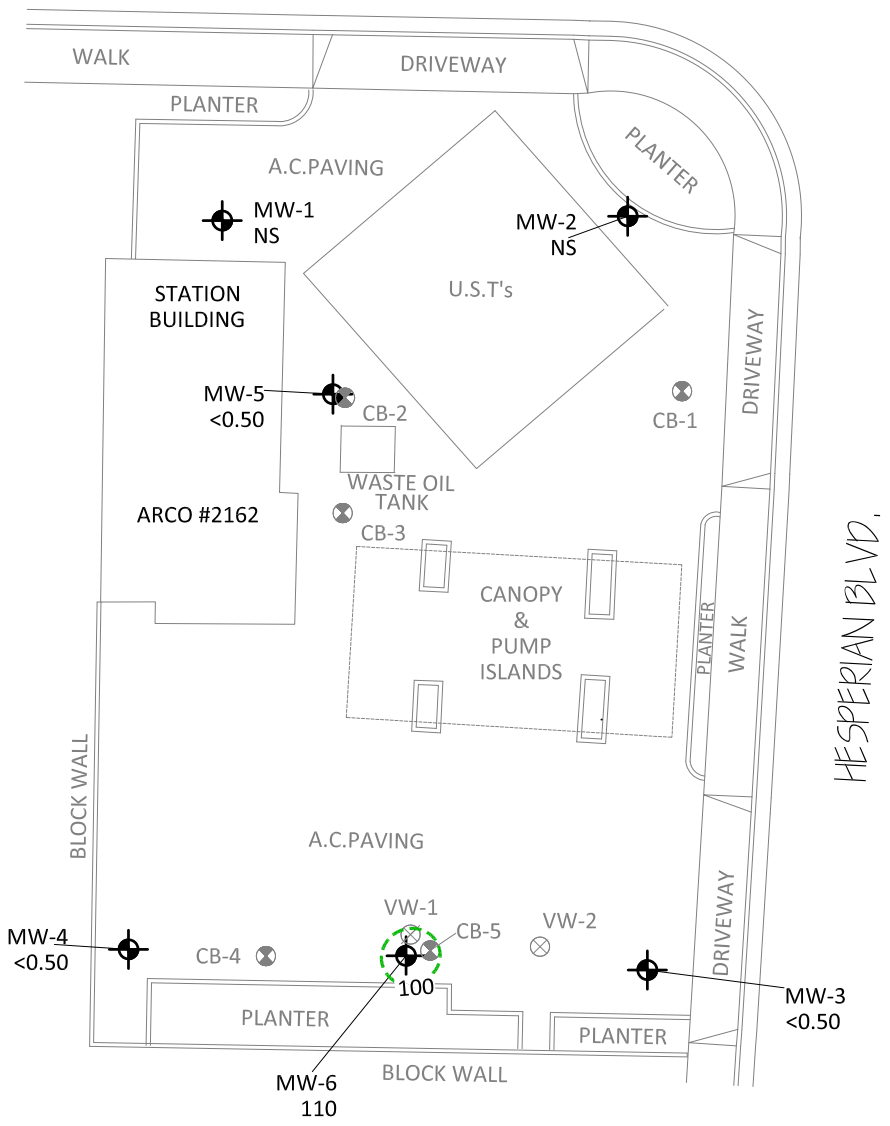
0 30 60

SCALE (ft)

BROADBENT 1370 Ridgewood Dr., Suite 5 Chico, California 95973 Project No.: 06-88-620 Date: 7/3/2013	Station #2162 15135 Hesperian Boulevard San Leando, California	Benzene Isoconcentration Map December 20, 2012

Drawing

6



LEGEND

- Groundwater Monitoring Well Location with MTBE Concentration (µg/L)
- Vapor Extraction Well Location
- Soil Boring Location
- MTBE Isoconcentration Contour (µg/L)
- * Results from 4th Quarter, 2012

N

0 30 60

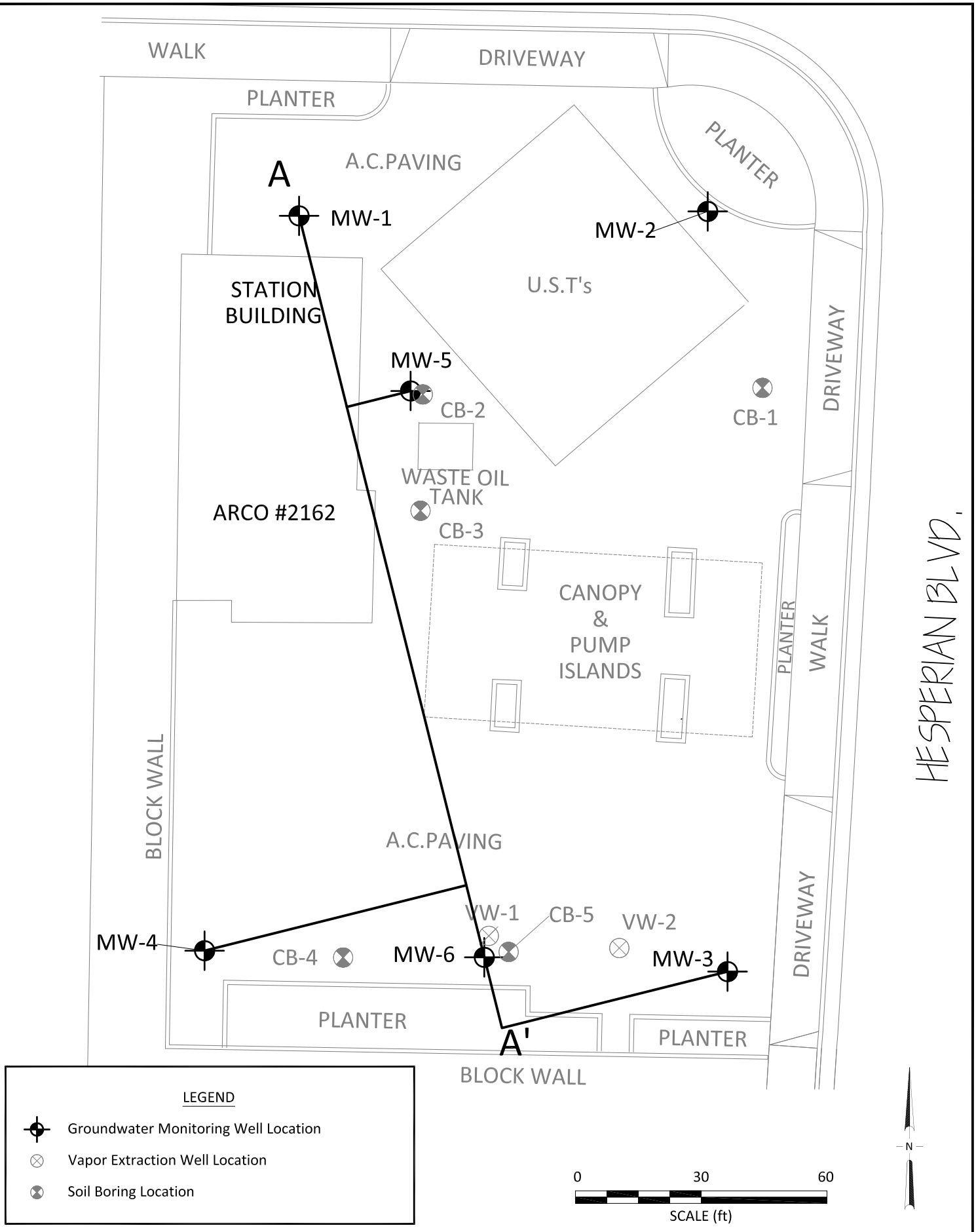
SCALE (ft)

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-620 Date: 7/3/2013

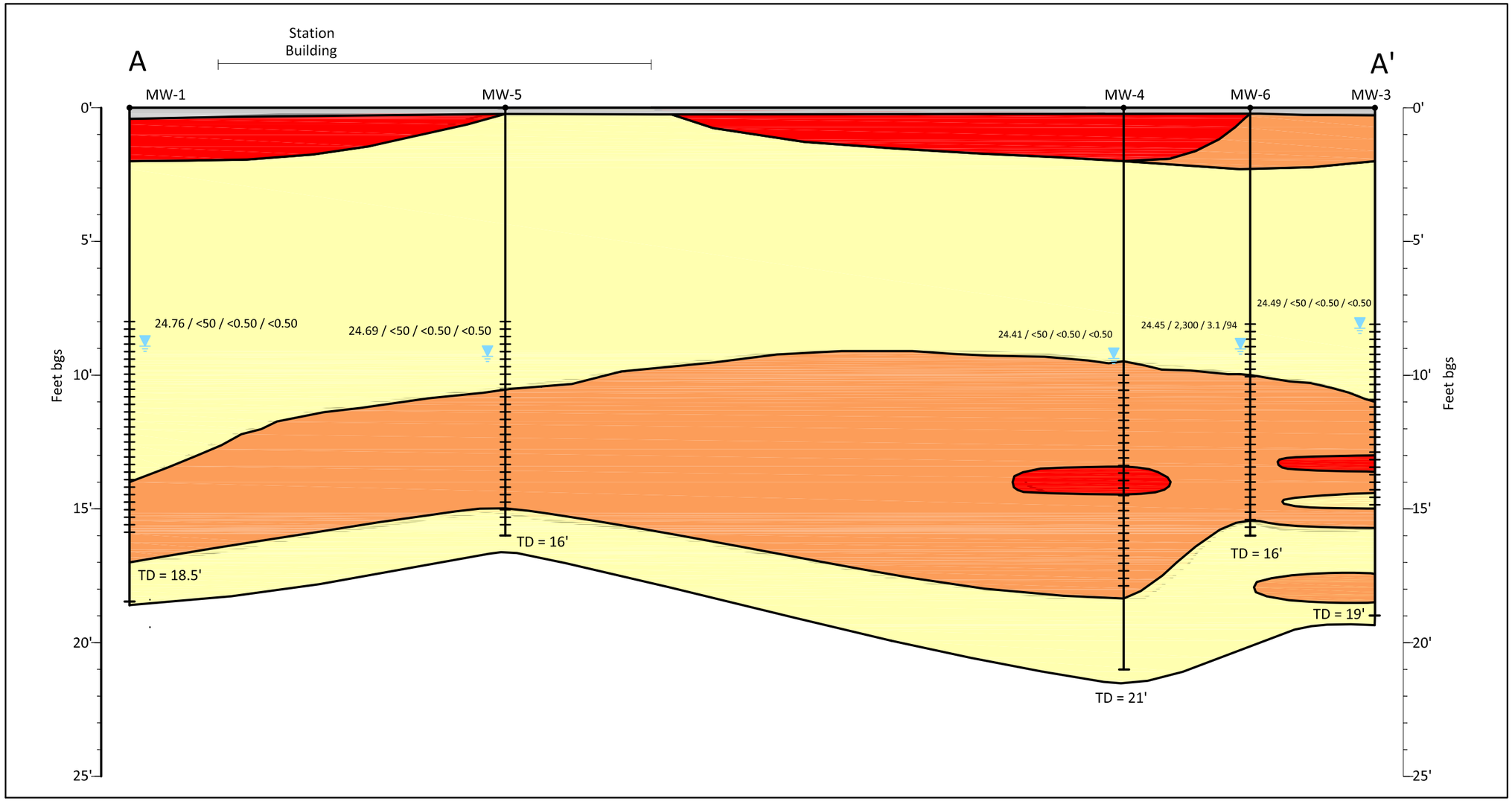
Station #2162
15135 Hesperian Boulevard
San Leando, California

MTBE Isoconcentration Map
December 20, 2012

Drawing
7



BROADBENT 1370 Ridgewood Dr., Suite 5 Chico, California 95973 Project No.: 06-88-620 Date: 7/10/2013	Station #2162 15135 Hesperian Boulevard San Leandro, California	Cross Section Location Map Drawing 8



Asphalt/Backfill/Concrete

Clays & Silt

Silty / Clayey Sands

Gravels

Depth to Groundwater Elevation

<50 / <0.50 / <50 = GRO / Benzene / MTBE concentrations in mg/L - 6 /13 /2013

Boring ID

Extent of Boring

Extent of Well Screen

TD = Total Depth (feet)

0 30 60

HORIZONTAL SCALE (ft)
VERTICAL EXAGGERATION 6:1

N

Drawing 6

Geologic Cross Section A - A'

Station #2162
15135 Hesperian Boulevard
San Leandro, California

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973

Project No.: 06-88-620 Date: 7/10/2013

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	The Site is located within the San Leandro Sub-Area, near the northern boundary of the San Lorenzo Sub-Area, in the East Bay Plain of the San Francisco Basin. These Sub-Areas share the same hydrogeologic characteristics, yet are separated by the junction of the surface trace between the San Leandro and San Lorenzo alluvial fans. These Sub-Areas consist primarily of alluvial fan sediments with the distinction of the Yerba Buena Mud extending west into the San Leandro and San Lorenzo Sub-Areas, unlike the northern Sub-Areas. The Yerba Buena Mud forms a major aquitard between the shallow and deep aquifers throughout much of southwestern area of the East Bay Plain. The San Leandro and San Lorenzo Sub-Areas alluvial fans are finer grained and produce less groundwater than the Niles Cone basin to the south. Throughout most of the Alameda County portion of the East Bay Plain, from Hayward north to Albany, water level contours show that the general direction of groundwater flow is from east to west or from the Hayward Fault to the San Francisco Bay. Groundwater flow direction generally correlates to topography. Flow direction and velocity are also influenced by buried stream channels that typically are oriented in an east-west direction. In the southern end of the study area however, near the San Lorenzo Sub-Area, the direction of flow may not be this simple. According to information presented in *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report,* the small set of water level measurements available seemed to show that the ground water in the upper aquifers may be flowing south, with the deeper aquifers, the Alameda Formation, moving north. The nearest surface water drainage is the Estudillo Canal, located approximately 800 ft southeast of the Site. The Estudillo Canal's overall general flow direction is from east to west; however, specific flow directions of the canal vary to the southwest near the Site, eventually turning to the west-northwest prior to entering the San Francisco Bay via the San Leandro Flood Control Channel.	None	NA
	Site	Sediments encountered during previous Site investigations consists of beds and lenses of varying thicknesses of silts and silty clay near surface to approximately nine ft bgs. A sand and gravel unit underlies these silts and silty clays. According to the cross section presented in Drawings 7 and 8, lithology is consistent with the geologic environment of alluvial deposits, and consistent with the regional geologic environment. A silty clay and clayey silt unit encountered at 13 ft bgs underlies the sand and gravel unit. The groundwater was first encountered in soil at an approximate depth	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology (continued)	Site (continued)	ranging from 9 to 11 ft bgs. Historical depth to groundwater in Site wells have ranged from 6.56 to 11.33 ft bgs. Historical groundwater gradient has generally been to the southwest and south-southwest with average hydraulic gradient ranging from 0.001 to 0.013 ft/ft (Table 4 and Appendix B).		
Surface Water Bodies		The Estudillo Canal, a concrete-lined channel, is located approximately 800 feet to the southeast (cross-gradient) of the Site. The channel connects to the San Francisco Bay, located approximately three miles west-southwest of the Site.	None	NA
Nearby Wells		In 2011, a Sensitive Receptor Survey was carried out to identify the presence of water wells within a half mile radius of the Site. Based on the review, seven wells were found within a half mile radius from the Site: one domestic well and six irrigation wells. Two irrigation wells are located within 1,100 ft northwest from the Site. The domestic well is located approximately 2,350 ft northwest from the Site. An effort will be made to contact the residents of the address where wells are suspected to be located and determine the presence and/or purpose and extent of its use.	Potential	Contact well owners to verify use of water wells
Constituents of Concern	Light-Non Aqueous Phase Liquid (LNAPL)	During a preliminary tank replacement assessment performed on June 5, 1991, LNAPL was observed in soil samples collected from borings B3 and B4 at depths ranging between 7 and 10 ft bgs (ROUX, 1991). During the removal and replacement activities of the USTs, the area where borings B3 and B4 were located was overexcavated; therefore, removing the observed LNAPL. Measurable LNAPL has not been observed in any groundwater monitoring wells at the Site.	None	NA
	Gasoline Range Organics (GRO)	Historically, concentrations of GRO have been detected in all monitoring wells (MW-1 through MW-6). Historical maximum detected concentration of GRO was reported in well MW-2 at 7,800 µg/L in January 14, 1993. The maximum detected GRO concentration within the last four monitoring events was reported in well MW-6 at 5,000 µg/L. Concentrations in well MW-6 have	Yes	Advance soil borings south of the Site

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Constituents of Concern (continued)	GRO (continued)	fluctuated significantly since date of installation (2009). The overall trend in well MW-6 is unclear due to recent installation and lack of consistent data. Concentrations within the last four monitoring events in well MW-2 was 62 µg/L, indicating a strong decreasing GRO trend over time. Based on recent and historical data, the GRO plume has been delineated, except to the south where additional investigation is proposed. A GRO isoconcentration contour map for the most recent groundwater monitoring and sampling event (2Q13) is presented as Drawing 5. GRO concentration trend graphs for wells MW-1 and MW-2 are included in Appendix F. In general, concentrations show a strong decreasing trend for GRO in all Site wells, with the exception of well MW-6. Additional soil borings will be advance south of well MW-6 to further delineate the plume.		
	Benzene	Historically, concentrations of benzene have been detected in monitoring wells MW-1 through MW-4 and MW-6. Benzene concentrations have not been detected in well MW-5, with the exception of one detection slightly above reporting limits (0.52 µg/L) during December 20, 2012. The historical maximum concentration of benzene was reported in well MW-3 at 86 µg/L in April 14, 1993. The maximum detected concentration within the last four monitoring events was reported in well MW-6 at 9.3 µg/L, indicating a strong decreasing benzene trend over time. Based on recent and historical data, the benzene plume has been delineated. A benzene isoconcentration contour map for the most recent groundwater monitoring and sampling event (2Q13) is presented as Drawing 6. Benzene concentration trend graphs for wells MW-1 and MW-2 are included in Appendix F. These graphs and data presented in Table 2 show a strong decreasing trend for benzene in all Site wells, indicating a shrinking plume.	None	NA
	Methyl tert-butyl ether (MTBE)	Historically, concentrations of MTBE have been detected in monitoring wells MW-1 through MW-4 and MW-6. MTBE concentrations have not been detected in well MW-5. The historical maximum concentration of MTBE was reported in well MW-1 at 1,900 µg/L in June 10, 1997. Detected concentrations of MTBE within the last four monitoring events was reported in well	Yes	Advance soil borings south of the Site

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Constituents of Concern (continued)	MTBE (continued)	MW-6 at 180 µg/L; however, concentrations in well MW-6 have fluctuated significantly since date of installation (2009). The overall trend in well MW-6 is unclear due to recent installation and lack of consistent data. Concentrations within the last four monitoring events in well MW-1 were not detected above the laboratory reporting limit, indicating a strong decreasing MTBE trend over time. In all monitoring wells, except monitoring well MW-6, current concentrations of MTBE did not exceed 5 µg/L, indicating that MTBE in groundwater has almost completely degraded. Based on recent and historical data, the MTBE plume has been delineated, except to the south where additional investigation activities are proposed. An MTBE isoconcentration contour map for the most recent groundwater monitoring and sampling event (2Q13) is presented as Drawing 7. MTBE concentration trend graphs for wells MW-1 and MW-2 are included in Appendix F. In general, concentrations show a strong decreasing trend for MTBE in all Site wells, with the exception of well MW-6. Additional soil borings will be advance south of well MW-6 to further delineate the plume.		
Potential Sources	Onsite	The exact release source and volume released at the Site is unknown; however, it is assumed that the source was the former UST and former waste oil tank complex located at the northeastern and northern portion of the Site, respectively, and to a lesser degree, former product pipelines and dispensers located in the center of the Site. These assumptions are supported by historical data including proximity to historical higher dissolved-phase petroleum hydrocarbon concentrations. Additional areas of documented soil contamination occurred beneath product pipelines and dispensers, particularly the central part of the Site. An unknown amount of residual petroleum hydrocarbon contamination is presently bound within the soil matrix in these areas, and dissolved in groundwater beneath and downgradient of the Site. A fluctuating groundwater table has likely caused a contaminant smear zone where the residual hydrocarbon mass remains. However, the trends for the residual petroleum compounds in groundwater indicate that the remaining concentrations in this smear zone have degraded over time and are impacting the groundwater beneath the Site to a far lesser degree than in the past, and will continue to degrade over time (Appendix F). The removal and replacement of the storage and dispensing system was conducted to stop the	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Potential Sources (continued)		potential release. The UST removal and replacement activities were documented in the *Underground Storage Tank Replacement and Sampling, ARCO Facility No. 2162* (ROUX, 1992). The product lines and dispensers removal and replacement activities were documented in the *Product Line Removal and Upgrade Soil Sampling Report, ARCO Station No. 2162* (URS, 2003).		
	Offsite	An SBC Communications Building (SBC) is located just north of the Site at 15125 Hesperian Boulevard in San Leandro, California. Petroleum hydrocarbon as diesel were detected in soil and groundwater samples collected during a Site investigation in 2004. The former diesel UST and associated product piping were removed in 2004. Groundwater monitoring activities were conducted at the SBC site for one year in 2005 (Hydrologue, Inc, 2005). Following the year of groundwater monitoring activities, an underground storage tank closure was granted in May 12, 2006. The SBC site is located upgradient of the Site, just north from the Site, based on the historic and current groundwater gradient direction (to the south-southwest). However, historic groundwater data collected at the SBC site indicate no petroleum hydrocarbons were detected; thus, the SBC site is not likely a potential hydrocarbon source. A summary of historic groundwater data for the SBC site is provided in Appendix C.	None	NA
Nature and Extent of Environmental Impacts	Extent in Soil	Soil contamination appears defined to the north, east, and southeast only at the Site. Based on historical data, the highest concentrations of GRO and benzene were detected at the northern portion of the Site, near the southern end of the former UST complex. Based on the most recent soil investigation, the highest concentration of GRO was detected at the southern end of the Site, in the downgradient direction. The highest concentrations were consistently reported at approximately 3 to 11.5 ft bgs, which is consistent with the capillary fringe zone at the Site. The highest GRO concentration (2,400 mg/kg) was detected just southwest of the former UST tanks; however, in late 1991, the USTs were removed and the soil around the former UST complex overexcavated, including soil from the highest GRO concentration boring. Soil was defined laterally to non-detect for all petroleum compounds to the southeast (B-7/MW-3; Drawing 2), to 1.3 ppm GRO (B-2) to the north, and to 4.5 mg/kg DRO (CB-1) to the east (Appendix D). Further definition to the south and southwest (downgradient) is necessary to further delineate the lateral extent of the petroleum hydrocarbon plume.	Yes	Advance soil borings south and southwest of the Site

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nature and Extent of Environmental Impacts (continued)		Since source areas have been removed and these concentrations were representative of overall concentrations at the time of sampling, it is likely that these concentrations have further attenuated over the last 20 years.		
	Extent in Shallow Groundwater	The groundwater monitoring network at the Site includes source area wells (MW-1, MW-2, and MW-5); and downgradient wells (MW-3, MW-4, and MW-6). Isoconcentration maps for the most recent groundwater monitoring and sampling event (2Q13) for GRO, benzene, and MTBE are included as Drawings 5 through 7, respectively. Based on these drawings, the extent of petroleum compounds is well defined in all directions, and is predominately limited to onsite, with the exception of the southern end of the plume. The southern extent of the Site plume has not been fully delineated. However, based on the observed decreasing trends, the extent of petroleum compounds is small and the plume may be shrinking (Appendix B). Additionally, free product has never been observed at the Site and dissolved petroleum concentrations are decreasing. However, further delineation south of the Site is needed to adequately understand the CSM.	Yes	Advance soil borings south of the Site
	Extent in Deeper Groundwater	The extent of environmental impact in deeper groundwater has not been investigated at the Site. However, based on the lithology observed during environmental investigations performed on Site, the hydrocarbon plume is believed to be within the sand layer where it is encompassed by a layer of silty clay and/or clayey silt below (Drawing 9). Based on Site lithology, vertical characterization is not considered a data gap, even though no deeper groundwater samples have been collected.	None	NA
	Extent in Soil Vapor	The extent of environmental impact in soil vapor has not been investigated at the Site. It is possible that higher petroleum impacts are present near the former source areas. In an effort to determine the potential extent in soil vapor to offsite receptors, soil vapor extraction points will be advanced in the parking lot of the Kentucky Fried Chicken restaurant. This data gap will be addressed at the same time the current proposed scope of work is carried out.	Possible	Advance borings if proposed investigation warrants

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Migration Pathways	Potential Conduits	A potential transmissive conduit study has not been performed on Site. Thus, there is a potential for sewer and/or storm drains to be located along Hesperian Boulevard and Ruth Court. Sewer and storm drains generally tend to be shallow (above 10 ft bgs), and depth to groundwater at the Site is between 6.56 to 11.33 ft bgs; Therefore, migration through the utility trenches is possible. However, current and historic groundwater gradient is predominately to the southwest and south-southwest, denoting that groundwater flow is moving away from Hesperian Boulevard and Ruth Court. Furthermore, the hydrocarbon plumes have significantly decreased over time and will continue to decrease on Site, thus alleviating significant concerns regarding migration of higher levels of contaminants through the utility trenches.	Possible	Perform a preferential pathway study
Potential Receptors	Onsite	No onsite water supply wells or surface water bodies exists. The only potential onsite receptor would be onsite workers exposed to gasoline vapors. However, the exposure from current fueling operations represents a greater risk than any associated with potential groundwater or soil vapor exposure (CSWRCB, 2012).	None	NA
	Offsite	As discussed above, the nearest surface water body is the Estudillo Canal, located approximately 800 ft cross-gradient of the Site. Results of a receptor survey noted above indicate seven irrigation and domestic wells were identified within half mile from the Site. Efforts will be made to contact the residents of the address where wells are suspected to be located and determine the presence and/or purpose and extent of its use. Review of available satellite images (Google Maps or equivalent) was conducted to identify any sensitive land uses such as schools, day care facilities, hospitals, or elder care facilities within 500 ft of the Site. No facilities were identified within 500 ft from the Site.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

Notes:
ARCO = Atlantic Richfield Company
bgs = below ground surface
CSM = Conceptual Site Model
CSWRCB = California State Water Resources Control Board
DRO = Diesel Range Organics
ft = foot
ft/ft = foot per foot
GRO = Gasoline Range Organics
LNAPL = Light-Non Aqueous Phase Liquid
mg/kg = milligrams per kilogram
MTBE = Methyl tert-butyl Ether
NA = Not Applicable
No. = Number
ppm = parts per million
UST = Underground Storage Tank
µg/L = micrograms per liter

All report references are included in Section 7 of the preceding report

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-1															
6/20/2000	--	31.19	8.00	16.00	8.33	22.86	<50	<0.5	0.8	<0.5	<1.0	<10	--	--	
9/29/2000	--		8.00	16.00	9.07	22.12	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/17/2000	--		8.00	16.00	8.69	22.50	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/23/2001	--		8.00	16.00	8.19	23.00	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
6/20/2001	--		8.00	16.00	8.97	22.22	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
9/22/2001	--		8.00	16.00	9.56	21.63	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/28/2001	--		8.00	16.00	8.40	22.79	<50	<0.5	<0.5	<0.5	0.63	<2.5	--	--	
3/14/2002	--		8.00	16.00	8.05	23.14	<50	<0.5	<0.5	<0.5	<0.5	170	--	--	
4/18/2002	--		8.00	16.00	8.27	22.92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	NP		8.00	16.00	8.88	22.31	<50	<0.5	<0.5	<0.5	<0.5	11	1.0	8.2	
10/09/02	NP		8.00	16.00	--	--	--	--	--	--	--	--	--	--	a
03/28/2003	NP		8.00	16.00	--	--	--	--	--	--	--	--	--	--	a, c
4/7/2003	NP		8.00	16.00	8.28	22.91	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	6.9	
7/9/2003	NP		8.00	16.00	8.62	22.57	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	7.2	
10/08/2003	--	31.13	8.00	16.00	9.19	21.94	--	--	--	--	--	--	--	--	d, e
01/13/2004	--		8.00	16.00	8.35	22.78	--	--	--	--	--	--	--	--	
04/05/2004	--	33.70	8.00	16.00	7.29	26.41	--	--	--	--	--	--	--	--	
07/12/2004	NP		8.00	16.00	9.00	24.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	7.0	
10/19/2004	--		8.00	16.00	9.47	24.23	--	--	--	--	--	--	--	--	
01/11/2005	--		8.00	16.00	7.64	26.06	--	--	--	--	--	--	--	--	
04/14/2005	--		8.00	16.00	7.35	26.35	--	--	--	--	--	--	--	--	
08/01/2005	--		8.00	16.00	8.21	25.49	--	--	--	--	--	--	--	--	
7/31/2006	--		8.00	16.00	8.10	25.60	--	--	--	--	--	--	--	--	
6/12/2009	P		8.00	16.00	8.93	24.77	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	7.40	
11/6/2009	--		8.00	16.00	9.18	24.52	--	--	--	--	--	--	--	--	
6/4/2010	P		8.00	16.00	8.13	25.57	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.31	7.2	
11/19/2010	--		8.00	16.00	9.28	24.42	--	--	--	--	--	--	--	--	
5/19/2011	P		8.00	16.00	7.76	25.94	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.36	6.8	
12/1/2011	--		8.00	16.00	8.40	25.30	--	--	--	--	--	--	--	--	
6/21/2012	P		8.00	16.00	8.49	25.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.73	7.39	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-1 Cont.															
12/20/2012	--	33.70	8.00	16.00	8.09	25.61	--	--	--	--	--	--	--	--	
6/13/2013	**P**		**8.00**	**16.00**	**8.94**	**24.76**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**2.08**	**6.76**	
MW-2															
6/20/2000	--	30.38	8.00	16.00	7.38	23.00	--	--	--	--	--	--	--	--	
9/29/2000	--		8.00	16.00	8.08	22.30	266	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/17/2000	--		8.00	16.00	7.80	22.58	175	<0.5	<0.5	0.659	<0.5	<2.5	--	--	
3/23/2001	--		8.00	16.00	7.23	23.15	351	<0.5	<0.5	0.912	<0.5	<2.5	--	--	
6/20/2001	--		8.00	16.00	7.98	22.40	360	<0.5	<0.5	0.74	<0.5	<2.5	--	--	
9/22/2001	--		8.00	16.00	8.55	21.83	190	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/28/2001	--		8.00	16.00	7.53	22.85	130	<0.5	0.93	<0.5	0.51	<2.5	--	--	
3/14/2002	--		8.00	16.00	7.17	23.21	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
4/18/2002	--		8.00	16.00	7.31	23.07	74	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	P		8.00	16.00	7.93	22.45	<50	<0.5	<0.5	<0.5	<0.5	<2.5	1.1	7.6	
10/9/2002	P		8.00	16.00	8.55	21.83	<50	<0.5	<0.5	<0.5	<0.5	<2.5	0.7	7.3	
03/28/2003	P		8.00	16.00	7.30	23.08	<50	<0.50	0.83	<0.50	<0.50	<0.50	1.48	7.7	c
4/7/2003	P		8.00	16.00	7.36	23.02	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	7.0	
7/9/2003	P		8.00	16.00	7.71	22.67	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	7.6	
10/08/2003	--		8.00	16.00	8.25	22.13	--	--	--	--	--	--	--	--	
01/13/2004	--		8.00	16.00	7.55	22.83	--	--	--	--	--	--	--	--	
04/05/2004	--	32.97	8.00	16.00	7.29	25.68	--	--	--	--	--	--	--	--	
07/12/2004	NP		8.00	16.00	8.09	24.88	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	7.2	
10/19/2004	--		8.00	16.00	8.29	24.68	--	--	--	--	--	--	--	--	
01/11/2005	--		8.00	16.00	6.81	26.16	--	--	--	--	--	--	--	--	
04/14/2005	--		8.00	16.00	6.69	26.28	--	--	--	--	--	--	--	--	
08/01/2005	--		8.00	16.00	7.40	25.57	--	--	--	--	--	--	--	--	
7/31/2006	--		8.00	16.00	7.22	25.75	--	--	--	--	--	--	--	--	
6/12/2009	P	32.95	8.00	16.00	8.18	24.77	51	<0.50	<0.50	<0.50	<0.50	<0.50	0.60	7.55	
11/6/2009	--		8.00	16.00	8.32	24.63	--	--	--	--	--	--	--	--	
6/4/2010	P		8.00	16.00	7.24	25.71	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.33	
11/19/2010	--		8.00	16.00	8.38	24.57	--	--	--	--	--	--	--	--	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-2 Cont.															
5/19/2011	P	32.95	8.00	16.00	7.12	25.83	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.24	9.0	
12/1/2011	--		8.00	16.00	7.57	25.38	--	--	--	--	--	--	--	--	
6/21/2012	P		8.00	16.00	7.63	25.32	62	<0.50	<0.50	<0.50	<0.50	<0.50	1.47	7.42	lw
12/20/2012	--		8.00	16.00	7.22	25.73	--	--	--	--	--	--	--	--	
6/13/2013	**P**		**8.00**	**16.00**	**8.10**	**24.85**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.41**	**7.0**	
MW-3															
6/20/2000	--	30.30	8.00	15.00	7.75	22.55	--	--	--	--	--	--	--	--	
9/29/2000	--		8.00	15.00	8.46	21.84	<50	<0.5	<0.5	<0.5	<0.5	128	--	--	
12/17/2000	--		8.00	15.00	8.01	22.29	<50	<0.5	<0.5	<0.5	<0.5	46.7	--	--	
3/23/2001	--		8.00	15.00	7.70	22.60	<50	<0.5	<0.5	<0.5	<0.5	26.8	--	--	
6/20/2001	--		8.00	15.00	8.23	22.07	<50	<0.5	<0.5	<0.5	<0.5	30	--	--	
9/22/2001	--		8.00	15.00	8.89	21.41	<50	<0.5	<0.5	<0.5	<0.5	12	--	--	
12/28/2001	--		8.00	15.00	7.83	22.47	<50	<0.5	<0.5	<0.5	<0.5	6.2	--	--	
3/14/2002	--		8.00	15.00	7.48	22.82	<50	<0.5	<0.5	<0.5	<0.5	47	--	--	
4/18/2002	--		8.00	15.00	7.62	22.68	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	P		8.00	15.00	8.23	22.07	100	<1.0	<1.0	<1.0	<1.0	330	0.9	7.6	b (TPH-g)
10/9/2002	P		8.00	15.00	8.83	21.47	<50	<0.5	<0.5	<0.5	<0.5	61	0.5	7.4	
03/28/2003	P		8.00	15.00	7.85	22.45	52	<0.50	1.2	<0.50	<0.50	45	1.42	7.6	c
4/7/2003	P		8.00	15.00	7.71	22.59	56	<0.50	<0.50	<0.50	<0.50	56	1.1	6.8	
7/9/2003	P		8.00	15.00	8.00	22.30	<500	<5.0	<5.0	<5.0	<5.0	87	1.6	7.4	
10/08/2003	P		8.00	15.00	8.59	21.71	<50	<0.50	<0.50	<0.50	<0.50	25	0.9	--	
01/15/2004	P		8.00	15.00	7.90	22.40	<50	<0.50	<0.50	<0.50	<0.50	9.8	2.9	7.3	
04/05/2004	P	32.89	8.00	15.00	7.61	25.28	<50	<0.50	<0.50	<0.50	<0.50	15	1.5	7.0	
07/12/2004	P		8.00	15.00	8.45	24.44	<50	<0.50	<0.50	<0.50	<0.50	7.3	1.6	6.9	
10/19/2004	P		8.00	15.00	8.95	23.94	<50	<0.50	<0.50	<0.50	<0.50	5.0	0.96	7.1	
01/11/2005	P		8.00	15.00	7.27	25.62	<50	<0.50	<0.50	<0.50	<0.50	2.3	--	7.2	
04/14/2005	P		8.00	15.00	7.10	25.79	<50	<0.50	<0.50	<0.50	1.5	5.6	2.0	7.2	
08/01/2005	P		8.00	15.00	7.71	25.18	<50	<0.50	<0.50	<0.50	<0.50	5.2	1.18	7.0	
7/31/2006	P		8.00	15.00	7.64	25.25	<50	<0.50	<0.50	<0.50	<0.50	4.3	--	6.8	
6/12/2009	P	32.88	8.00	15.00	8.36	24.52	<50	0.75	<0.50	<0.50	<0.50	0.53	0.61	7.45	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-3 Cont.															
11/6/2009	P	32.88	8.00	15.00	8.58	24.30	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	7.17	
6/4/2010	P		8.00	15.00	7.60	25.28	<50	<0.50	<0.50	<0.50	<0.50	1.9	0.69	7.4	
11/19/2010	NP		8.00	15.00	8.63	24.25	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.69	7.0	
5/19/2011	P		8.00	15.00	7.22	25.66	56	<0.50	<0.50	<0.50	<0.50	2.1	0.83	9.2	lw
12/1/2011	P		8.00	15.00	8.00	24.88	<50	<0.50	<0.50	<0.50	<0.50	0.50	3.15	7.8	
6/21/2012	P		8.00	15.00	7.90	24.98	<50	<0.50	<0.50	<0.50	<0.50	1.4	1.24	7.33	
12/20/2012	p		8.00	15.00	7.53	25.35	<50	<0.50	<0.50	<0.50	<1.0	<0.50	3.62	8.17	
6/13/2013	**P**		**8.00**	**15.00**	**8.39**	**24.49**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.22**	**7.07**	
MW-4															
6/20/2000	--	30.39	10.00	18.00	8.87	21.52	--	--	--	--	--	--	--	--	
9/29/2000	--		10.00	18.00	9.61	20.78	<50	1.02	<0.5	<0.5	<0.5	12.2	--	--	
12/17/2000	--		10.00	18.00	9.17	21.22	<50	<0.5	<0.5	<0.5	<0.5	5.81	--	--	
3/23/2001	--		10.00	18.00	8.70	21.69	<50	<0.5	<0.5	<0.5	<0.5	3.04	--	--	
6/20/2001	--		10.00	18.00	9.51	20.88	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
9/22/2001	--		10.00	18.00	10.06	20.33	<50	<0.5	<0.5	<0.5	<0.5	5.2	--	--	
12/28/2001	--		10.00	18.00	8.86	21.53	<50	<0.5	<0.5	<0.5	<0.5	4.3	--	--	
3/14/2002	--		10.00	18.00	8.52	21.87	<50	<0.5	<0.5	<0.5	<0.5	5.1	--	--	
4/18/2002	--		10.00	18.00	8.76	21.63	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	NP		10.00	18.00	9.39	21.00	<50	<0.5	<0.5	<0.5	<0.5	30	1.8	7.8	
10/9/2002	NP		10.00	18.00	10.08	20.31	<50	<0.5	<0.5	<0.5	<0.5	28	1.0	8.0	
03/28/2003	NP		10.00	18.00	8.88	21.51	<50	<0.50	1.3	<0.50	<0.50	4.4	0.98	7.2	c
4/7/2003	NP		10.00	18.00	8.78	21.61	<50	<0.50	<0.50	<0.50	<0.50	14	1.1	7.0	
7/9/2003	NP		10.00	18.00	9.14	21.25	<50	<0.50	<0.50	<0.50	<0.50	1.8	1.6	7.4	
10/08/2003	NP		10.00	18.00	9.77	20.62	<50	<0.50	<0.50	<0.50	<0.50	3.1	2.6	6.4	
01/15/2004	P		10.00	18.00	8.68	21.71	<50	1.4	0.84	<0.50	1.5	6.6	2.9	7.1	
04/05/2004	NP	33.97	10.00	18.00	8.77	25.20	<50	<0.50	<0.50	<0.50	<0.50	1.3	1.2	7.0	
07/12/2004	NP		10.00	18.00	9.46	24.51	<50	<0.50	<0.50	<0.50	<0.50	1.0	2.5	6.6	
10/19/2004	NP		10.00	18.00	9.91	24.06	<50	<0.50	<0.50	<0.50	<0.50	4.4	1.21	7.9	
01/11/2005	P		10.00	18.00	7.80	26.17	59	2.0	<0.50	<0.50	<0.50	11	0.9	7.1	
04/14/2005	NP		10.00	18.00	8.07	25.90	<50	<0.50	<0.50	<0.50	<0.50	0.64	2.8	7.4	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-4 Cont.															
08/01/2005	NP	33.97	10.00	18.00	8.58	25.39	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.48	5.7	
7/31/2006	P		10.00	18.00	8.75	25.22	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.7	
6/12/2009	P		10.00	18.00	9.51	24.46	<50	0.68	<0.50	<0.50	<0.50	<0.50	0.70	7.51	
11/6/2009	P		10.00	18.00	9.74	24.23	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.15	7.15	
6/4/2010	P		10.00	18.00	8.71	25.26	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.70	7.24	
11/19/2010	P		10.00	18.00	9.83	24.14	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.09	7.1	
5/19/2011	P		10.00	18.00	8.24	25.73	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.88	7.5	
12/1/2011	P		10.00	18.00	9.11	24.86	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.09	7.6	
6/21/2012	P		10.00	18.00	9.07	24.90	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.64	7.31	
12/20/2012	P		10.00	18.00	8.61	25.36	<50	<0.50	<0.50	<0.50	<1.0	<0.50	3.90	7.99	
6/13/2013	**P**		**10.00**	**18.00**	**9.56**	**24.41**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.53**	**6.85**	
MW-5															
6/12/2009	NP	33.96	8.00	16.00	9.25	24.71	85	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	7.50	
11/6/2009	P		8.00	16.00	9.49	24.47	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.56	7.1	
6/4/2010	NP		8.00	16.00	8.42	25.54	67	<0.50	<0.50	<0.50	<0.50	<0.50	1.24	7.65	
11/19/2010	NP		8.00	16.00	9.58	24.38	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.72	7.3	
5/19/2011	NP		8.00	16.00	8.02	25.94	52	<0.50	<0.50	<0.50	<0.50	<0.50	2.17	9.1	lw
12/1/2011	P		8.00	16.00	8.87	25.09	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	7.5	
6/21/2012	P		8.00	16.00	8.76	25.20	55	<0.50	<0.50	<0.50	<0.50	<0.50	1.58	7.24	lw
12/20/2012	P		8.00	16.00	8.35	25.61	84	0.52	<0.50	<0.50	<1.0	<0.50	3.74	7.97	
6/13/2013	**P**		**8.00**	**16.00**	**9.27**	**24.69**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.53**	**6.83**	
MW-6															
6/12/2009	NP	33.48	8.00	16.00	9.02	24.46	1,800	4.9	<0.50	2.8	<0.50	59	0.68	7.39	
11/6/2009	P		8.00	16.00	9.21	24.27	880	1.7	<0.50	0.77	<0.50	37	0.43	6.9	
6/4/2010	NP		8.00	16.00	8.22	25.26	6,200	15	1.6	8.2	1.2	190	0.87	7.16	
11/19/2010	NP		8.00	16.00	9.30	24.18	5,600	8.0	1.2	9.9	<1.0	130	0.78	6.8	
5/19/2011	P		8.00	16.00	7.77	25.71	7,100	4.0	<2.0	7.9	<2.0	76	1.40	8.2	
12/1/2011	P		8.00	16.00	8.56	24.92	4,100	9.3	1.3	8.5	<1.0	180	0.53	7.3	lw
6/21/2012	P		8.00	16.00	8.56	24.92	5,000	4.6	<2.5	3.6	<2.5	120	1.38	6.97	lw

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-6 Cont.															
12/20/2012	P	33.48	8.00	16.00	8.13	25.35	2,400	4.1	0.91	5.0	<1.0	110	2.96	7.84	
6/13/2013	**P**		**8.00**	**16.00**	**9.03**	**24.45**	**2300**	**3.1**	**0.93**	**4.9**	**<1.0**	**94**	**1.05**	**6.80**	

Symbols & Abbreviations:
--- = Not analyzed/applicable/measured/available
< = Not detected at or above laboratory reporting limit
DO = Dissolved oxygen
DTW = Depth to water in feet below ground surface
ft bgs = feet below ground surface
GRO = Gasoline Range Organics, range C4-C12
GWE = Groundwater elevation measured in feet
mg/L = Milligrams per liter
MTBE = Methyl tert butyl ether
NP = Well not purged prior to sampling
P = Well purged prior to sampling
TOC = Top of casing measured in feet above mean sea level
TPH-g = Total petroleum hydrocarbons as gasoline
ug/L = Micrograms per liter

Footnotes:
a = Well not accessable - car parked over.
b = Hydrocarbon pattern is present in the requested fuel quantitation range but does not represent the pattern of the requested fuel
c =TPH-g, BTEX and MTBE analyzed by EPA method 8260 beginning on 1st Quarter 2003 sampling event (3/28/03)
d = Guaged with stinger in well
e = Well casing lowered 0.06 feet during well repairs on 9/17/2003
lw = Quantitate against gasoline

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

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

Wells were originally surveyed to NAVD'88 datum by URS Corporation on February 23, 2004

Wells were resurveyed to NAVD'88 datum by Wood Rodgers Surveying on May 11, 2009

Values for DO and pH were obtained through field measurements

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

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

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
6/20/2000	--	--	<10	--	--	--	--	--	
9/29/2000	--	--	<2.5	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
3/23/2001	--	--	<2.5	--	--	--	--	--	
6/20/2001	--	--	<2.5	--	--	--	--	--	
9/22/2001	--	--	<2.5	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
3/14/2002	--	--	170	--	--	--	--	--	
7/19/2002	--	--	11	--	--	--	--	--	
4/7/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-2									
9/29/2000	--	--	<2.5	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
3/23/2001	--	--	<2.5	--	--	--	--	--	
6/20/2001	--	--	<2.5	--	--	--	--	--	
9/22/2001	--	--	<2.5	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
3/14/2002	--	--	<2.5	--	--	--	--	--	
7/19/2002	--	--	<2.5	--	--	--	--	--	
10/9/2002	--	--	<2.5	--	--	--	--	--	
03/28/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4/7/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-2 Cont.									
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-3									
9/29/2000	--	--	128	--	--	--	--	--	
12/17/2000	--	--	46.7	--	--	--	--	--	
3/23/2001	--	--	26.8	--	--	--	--	--	
6/20/2001	--	--	30	--	--	--	--	--	
9/22/2001	--	--	12	--	--	--	--	--	
12/28/2001	--	--	6.2	--	--	--	--	--	
3/14/2002	--	--	47	--	--	--	--	--	
7/19/2002	--	--	330	--	--	--	--	--	
10/9/2002	--	--	61	--	--	--	--	--	
03/28/2003	<100	<20	45	<0.50	<0.50	0.73	<0.50	<0.50	
4/7/2003	<100	<20	56	<0.50	<0.50	0.72	<0.50	<0.50	
7/9/2003	<1,000	<200	87	<5.0	<5.0	<5.0	<5.0	<5.0	
10/08/2003	<100	<20	25	<0.50	<0.50	<0.50	<0.50	<0.50	
01/15/2004	<100	<20	9.8	<0.50	<0.50	<0.50	<0.50	<0.50	a (TBA and EDB)
04/05/2004	<100	<20	15	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	7.3	<0.50	<0.50	<0.50	<0.50	<0.50	
10/19/2004	<100	<20	5.0	<0.50	<0.50	<0.50	<0.50	<0.50	
01/11/2005	<100	<20	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	b
04/14/2005	<100	<20	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	
08/01/2005	<100	<20	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	b
7/31/2006	<300	<20	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	c
6/12/2009	<300	<10	0.53	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
11/19/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-3 Cont.									
5/19/2011	<300	<10	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	
12/1/2011	<300	<10	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	
12/20/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-4									
9/29/2000	--	--	12.2	--	--	--	--	--	
12/17/2000	--	--	5.81	--	--	--	--	--	
3/23/2001	--	--	3.04	--	--	--	--	--	
6/20/2001	--	--	<2.5	--	--	--	--	--	
9/22/2001	--	--	5.2	--	--	--	--	--	
12/28/2001	--	--	4.3	--	--	--	--	--	
3/14/2002	--	--	5.1	--	--	--	--	--	
7/19/2002	--	--	30	--	--	--	--	--	
10/9/2002	--	--	28	--	--	--	--	--	
03/28/2003	<100	<20	4.4	<0.50	<0.50	<0.50	<0.50	<0.50	
4/7/2003	<100	<20	14	<0.50	<0.50	<0.50	<0.50	<0.50	
7/9/2003	<100	<20	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	
10/08/2003	<100	<20	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	
01/15/2004	<100	<20	6.6	<0.50	<0.50	<0.50	<0.50	<0.50	a (TBA and EDB)
04/05/2004	<100	<20	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	1.0	<0.50	<0.50	<0.50	<0.50	<0.50	
10/19/2004	<100	<20	4.4	<0.50	<0.50	<0.50	<0.50	<0.50	
01/11/2005	<100	<20	11	<0.50	<0.50	<0.50	<0.50	<0.50	b
04/14/2005	<100	<20	0.64	<0.50	<0.50	<0.50	<0.50	<0.50	
08/01/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
7/31/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	c
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/19/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-4 Cont.									
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/1/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/20/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-5									
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/19/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/1/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/20/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-6									
6/12/2009	<300	<10	59	<0.50	<0.50	5.2	<0.50	<0.50	
11/6/2009	<300	24	37	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	17	190	<0.50	<0.50	17	<0.50	<0.50	
11/19/2010	<600	<20	130	<1.0	<1.0	<1.0	<1.0	<1.0	
5/19/2011	<1,200	<40	76	<2.0	<2.0	6.1	<2.0	<2.0	
12/1/2011	<600	31	180	<1.0	<1.0	18	<1.0	<1.0	
6/21/2012	<1,500	<50	120	<2.5	<2.5	9.1	<2.5	<2.5	
12/20/2012	<150	12	110	<0.50	<0.50	9.2	<0.50	<0.50	
6/13/2013	**<150**	**13**	**94**	**<0.50**	**<0.50**	**7.5**	**<0.50**	**<0.50**	

Symbols & Abbreviations:
< = Not detected at or above specified laboratory reporting limit
--- = Not analyzed/applicable/measured/available
1,2-DCA = 1,2-Dichloroethane
DIPE = Diisopropyl ether
EDB = 1,2-Dibromoethane
ETBE = Ethyl tert-butyl ether
MTBE = Methyl tert-butyl ether
TAME = Tert-amyl methyl ether
TBA = Tert-butyl alcohol
ug/L = Micrograms per liter

Footnotes:
a = The result was reported with a possible high bias due to the continuing calibration verification falling outside acceptance criteria
b = The calbration verification for ethanol was within method limits but outside contract limits
c = LCS rec. above meth. control limits. Analyte ND. Data not impacted
d = Quantitated against gasoline

Notes:
All fuel oxygenate compounds analyzed using EPA Method 8260B

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

Table 4. Historical Groundwater Gradient - Direction and Magnitude

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
3/23/2001	Southwest	0.011
6/20/2001	Southwest	0.013
9/22/2001	Southwest	0.012
12/28/2001	Southwest	0.010
3/14/2002	Southwest	0.011
4/18/2002	Southwest	0.012
7/19/2002	Southwest	0.012
10/9/2002	Southwest	0.013
3/28/2003	Southwest	0.013
4/7/2003	Southwest	0.011
7/9/2003	Southwest	0.010
10/8/2003	Southwest	0.010
1/15/2004	Southwest	0.008
4/5/2004	South-Southwest	0.004
7/12/2004	South and Southwest	0.003 and 0.005
10/19/2004	Southwest	0.004
1/11/2005	Southwest (a) to Southeast (b)	0.005 to 0.004
4/14/2005	Southeast	0.004
8/1/2005	Southwest	0.002
7/31/2006	South-Southwest	0.003
6/12/2009	South	0.003
11/6/2009	South-Southwest	0.003
6/4/2010	South-Southwest	0.004
11/19/2010	South-Southwest	0.003
5/19/2011	South-Southeast	0.003
12/1/2011	South-Southwest	0.001
6/21/2012	South-Southwest	0.003
12/20/2012	South-Southwest	0.003
6/13/2013	**South-Southwest**	**0.003**

Footnotes:
a = Direction at underground storage tanks
b = Direction at dispensers

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

APPENDIX A

Recent Regulatory Correspondence

BP Station Number	Fuel Leak Case Number	Work Plan Title	Prepared By	Date Received	ACEH Response
Station 402	RO0000307	Revised Workplan for Monitoring Well Installation and Vapor Intrusion Assessment	Tom Venus, BAI	11/8/2012	Teleconference call and email correspondence with Tom Venus on 1/2/2013 to discuss ACEH comments on work plan including proposed locations of groundwater monitoring wells (plume delineation due to variable groundwater flow directions, proposed long screen intervals (purpose of monitoring – gravel aquifer, clay layers, water table fluctuations, etc.), collection of soil samples in the vadose zone only, and attempts to locate monitoring wells MW-1, MW-2, and MW-3.
Station 2107	RO0002526	Work Plan for Groundwater Investigation	Kristine Tidwell, BAI	11/08/2012	Teleconference call on 1/11/2013 to discuss ACEH's concerns with proposed off-site investigation without an updated SCM that discusses vertical gradients observed in nested monitoring wells.
Station 2111	RO0000494	Revised Soil & Groundwater Investigation Work Plan	Kristine Tidwell, BAI	11/08/2012	Teleconference call with Kristine Tidwell on 1/11/2013 and email correspondence on 1/14/2013 to discuss ACEH comments on work plan including soil boring locations, soil and groundwater sample collection and analysis methods, well survey evaluation, evaluation of monitoring well MW-8 and validation of data, confirmation sampling, and vapor intrusion to indoor air in adjacent off-site buildings.
Station 2162	RO0000190	Revised Work Plan for Off-Site Groundwater Investigation	Tom Venus, BAI	1/3/2013	ACEH review complete – work plan not supported by a SCM and data gaps not addressed.
Station 374	RO0000078	Soil Vapor Investigation WP	Kristine Tidwell, BAI	11/21/2012	Teleconference call on 1/28/2013 to discuss ACEH's comments on work plan including adequacy of proposed soil vapor investigation in light of shallow groundwater conditions, migration in utility corridors, and potential vapor intrusion in adjacent buildings.

APPENDIX B

Summary of Previous Site Activities

Previous Environmental Activities at Site

An underground storage tank (UST) leak was reported at the Site in September 1991. Prior to removing or replacing the USTs, five soil borings (B1A and B1 through B4) and two vapor extraction wells (VW1 and VW2) were advanced (Roux, 1991). A total of 10 soil samples were collected and analyzed for total petroleum hydrocarbon as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) from the five soil borings and two vapor extraction wells. Boring B4 at 7.5 feet (ft) below ground surface (bgs) had the highest concentrations of TPHg (2,400 milligrams per kilograms; mg/kg) and BTEX (17 mg/kg, 62 mg/kg, 41 mg/kg, and 260 mg/kg, respectively). In late 1991 through early 1992, the USTs, waste oil tank, product lines, and dispensers were removed and replaced with four, double-walled fiberglass, 10,000 gallon tanks. During removal and replacement activities, approximately 1,000 cubic yards of petroleum hydrocarbon impacted soil and approximately 50,000 gallons of water were removed from the UST excavation (Roux, 1992). A total of five sidewall soil samples were collected from the former UST complex and seven soil samples were collected from beneath the product lines. The sidewall soil sample SW-5 had the highest concentrations of TPHg (1,000 mg/kg) and BTEX (2.3 mg/kg, 9.2 mg/kg, 25 mg/kg, and 220 mg/kg, respectively; Appendix B).

A limited soil vapor performance test was completed on June 6, 1991 to determine if Soil Vapor Extraction (SVE) was feasible at the Site. Results of the test using vapor wells VW-1 and VW-2 in the southern portion of the Site showed that SVE was not an effective remediation technique due to an insufficient radius of influence by the SVE test system.

In September 1992, soil borings B5 through B8 were advanced and converted into monitoring wells MW-1 through MW-4, respectively. Thirteen soil samples were collected from borings B5 through B8 and analyzed for TPHg and BTEX. Maximum concentrations of TPHg and BTEX were at 550 parts per million (ppm), 1.4 ppm, 1.3 ppm, 10 ppm, and 48 ppm, respectively. Periodic groundwater monitoring and sampling began in 1992 at the Site (RESNA, 1993).

In January 2003, the product lines and dispensers were removed and upgraded. Approximately 183 tons of soil were excavated and removed from the Site during upgrade activities. Eight soil samples were collected below the dispensers (S-D1 through S-D8) and four soil samples from beneath the pipelines (S-L1 through S-L4) at a depth ranging from 3 to 3.5 ft bgs. Seven of the 12 samples contained concentrations of TPHg, BTEX, and MTBE at maximum concentration of 200 ppm, 0.072 ppm, 2.1 ppm, 1.4 ppm, 1.5 ppm, and 0.55 ppm, respectively (URS, 2003).

In July 2007, Stratus Environmental, Inc. (Stratus) advanced a total of five soil borings to evaluate the extent of petroleum hydrocarbon impacted soil and groundwater at the Site. Soil and groundwater samples were collected from each boring for laboratory analyses. The analytical results for the collected soil samples indicated concentrations of gasoline range organics (GRO) above laboratory reporting limits in five of the 14 soil samples at concentrations ranging from 0.65 mg/kg (CB3 7.5'-8') to 1,100 mg/kg (CB5 11.5'-12'); Diesel-Range Organics (DRO) were detected above laboratory reporting limits in 11 of the 14 soil samples collected at concentrations ranging from 1.6 mg/kg (CB3 15.5'-16') to 1,300 mg/kg (CB2 11.5'-12'); Total Xylenes were detected above laboratory reporting limits in soil sample CB2 11.5'-12' at a concentration of 0.0071 mg/kg; and MTBE was detected above laboratory reporting limits in soil sample CB3 7.5'-8' at a concentration of 0.0063 mg/kg. No additional analytical results were reported above the laboratory reporting limits in soil samples. Four of the five grab-groundwater samples contained maximum concentrations of GRO at 1,900 micrograms per liter (µg/L), DRO at

2,000 µg/L, benzene at 12 µg/L, ethylbenzene at 110 µg/L, total xylenes at 140 µg/L, MTBE at 70 µg/L, and TAME at 3.9 µg/L (Broadbent, 2007).

Based on the field investigation observations, analytical results obtained, and to further progress towards case closure, Broadbent recommended that a new monitoring well be constructed along the southern boundary of the Site in the approximate location of boring CB-5. In April 2009, Stratus oversaw RSI Drilling, Inc. advance two Geoprobe/hollow-stem auger soil borings (identified as MW-5 and MW-6) at the Site. Boring MW-5 (completed as well MW-5) was located in close proximity of the previous boring CB-2, slightly north of the former waste oil tank and southwest of the USTs. Boring MW-6 (completed as well MW-6) was located in close proximity of previous boring CB-5, directly south of well VW-1 and west of previous boring CB-5 (Broadbent, 2009).

A sensitive receptor survey was performed by Closure Solutions, Inc. in October 2011 (Closure Solutions, Inc., 2011). Based on the review of information performed, a total of seven domestic and irrigation wells were identified within half a mile radius of the Site. In addition, the nearest surface water body is the Estudillo Canal, a concrete-lined channel. The Estudillo Canal is located approximately 800 feet to the southeast (cross-gradient) of the Site and connects to the San Francisco Bay, located approximately three miles west-southwest of the Site.

References

Broadbent & Associates, Inc., 14 September 2007. *Soil & Ground-Water Investigation Report, ARCO Station #2162, 15135 Hesperian Boulevard, San Leandro, CA.*

Broadbent & Associates, Inc., 2 June 2009. *On-Site Soil & Ground-Water Investigation Report, ARCO Station No. 2162, 15135 Hesperian Boulevard, San Leandro, CA.*

Closure Solutions, Inc., 31 October 2011. *Sensitive Receptor Survey, ARCO Station No. 2162, 15135 Hesperian Boulevard, San Leandro, CA.*

Roux Associates, 28 August 1991. *Preliminary Tank Replacement Assessment, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, CA.*

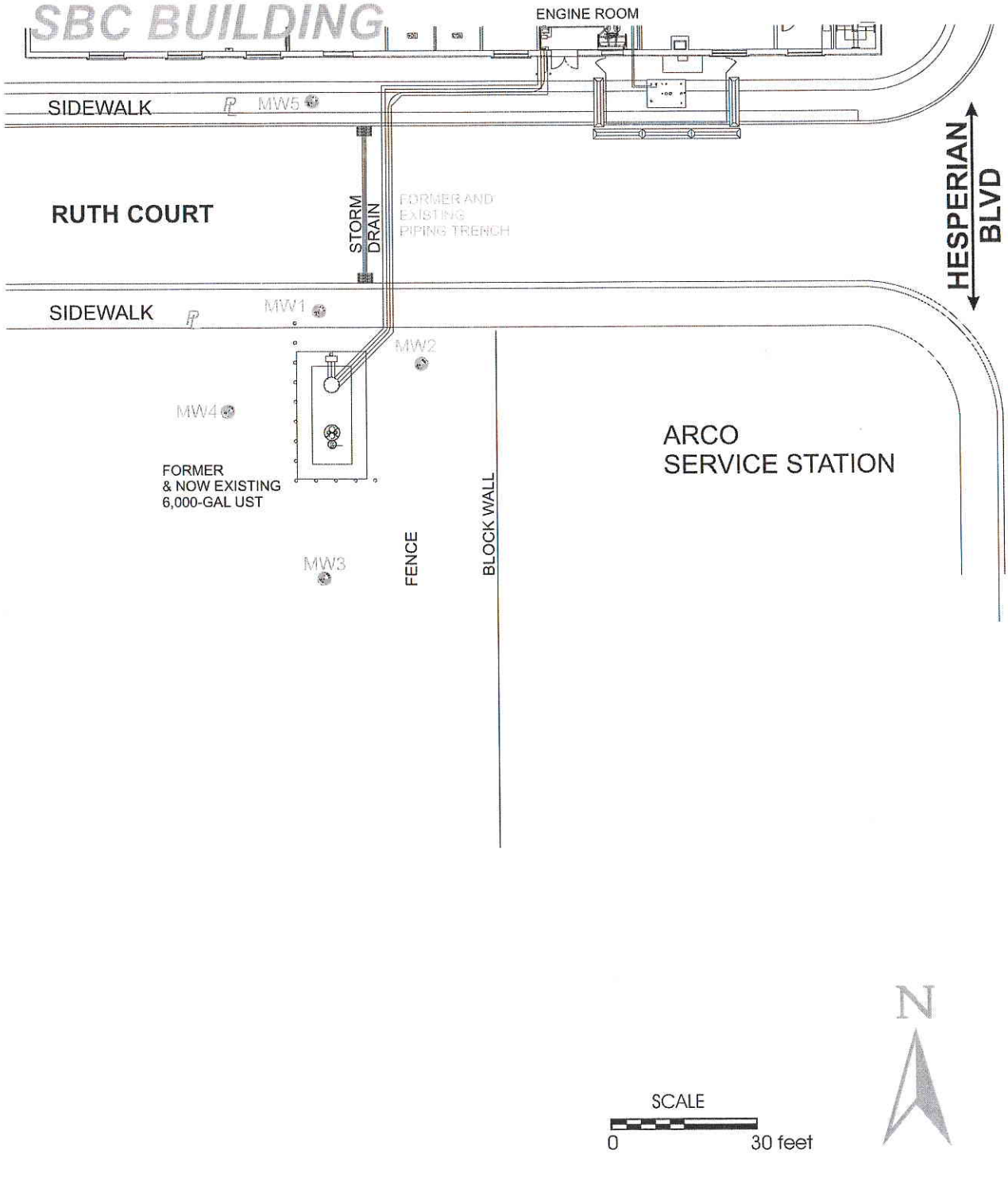
Roux Associates, 7 July 1992. *Underground Storage Tank Replacement and Soil Sampling, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, CA.*

RESNA Industries Inc., 10 March 1993. *Report Subsurface Environmental Investigation, ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, CA.*

URS Corporation, 28 April 2003. *Product Line Removal and Upgrade Soil Sampling Report, ARCO Station No. 2162, 15135 Hesperian Boulevard, San Leandro, CA.*

APPENDIX C

SBC Site Data



MW1 HI 2004 GROUNDWATER MONITORING WELL

LOCATION	15125 HESPERIAN BLVD SAN LEANDRO CA 94578-3607
TITLE	**SITE PLAN**
FIGURE NUMBER	**3**
PROJECT	2888-05

hydrologue, Inc.
Consulting Engineers & Geologists

TABLE 1
Analytical Testing Results for Soil and Groundwater Samples
August 20, 2004

Sample	Benzene	Toluene	Eth. Ben.	Xylenes	TPH-d	MTBE
SOIL	µg/Kg	µg/Kg	µg/Kg	µg/Kg	mg/Kg	µg/Kg
B1d05.0	<5	<5	<5	<5	3	<5
B1d10.0	<5	<5	<5	<5	11	<5
B2d16.0	<5	<5	<5	<5	< 1	<5
B2d20.0	<5	<5	<5	<5	< 1	<5
B3d05.0	<5	<5	<5	<5	< 1	<5
B3d10.0	<5	<5	<5	<5	3.3	<5
B4d05.0	<5	<5	<5	<5	11	<5
B4d10.0	<5	<5	<5	<5	< 1	<5
B5d05.0	<5	<5	<5	<5	8.4	<5
B5d10.0	<5	<5	<5	<5	3.3	<5
B6d05.0	<5	<5	<5	<5	7	<5
B6d10.0	<5	<5	<5	<5	5.5	<5
GROUND WATER	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
B1	<0.5	<0.5	<0.5	<0.5	69	<0.5
B2	<0.5	<0.5	<0.5	<0.5	270	<0.5
B3	<0.5	<0.5	<0.5	<0.5	110	<0.5
B4	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
B5	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
B6	<0.5	<0.5	<0.5	<0.5	< 50	<0.5

Subsequently HI recommended the installation of five groundwater monitoring wells. The HI workplan was approved by the ESD in a letter dated September 15, 2004. Five soil borings (MW1 through MW5) were drilled to a termination depth of 20 feet bgs using hollow stem auger drilling. Soil samples were collected at five feet intervals from boring MW3 and MW4 until the termination depth of each boring. Each soil boring was converted into a groundwater monitoring well (MW1 through MW5). The installed groundwater monitoring wells were then surveyed by a licensed surveyor, developed, and sampled. Soil Sample Results: Minor TPH-d was only detected in two soil samples at a concentration of 1.8 mg/Kg and 1.5 mg/Kg in the sampling interval 5 feet bgs in soil

boring MW3 and MW4, respectively; No BTEX or MTBE were detected in any of the soil samples collected. Groundwater Sample Results: No BTEX, MTBE or TPH-d concentrations were detected.

TABLE 2
Analytical Testing Results for Soil Samples
December 1, 2004

Sample	Benzene	Toluene	Eth. Ben.	Xylenes	TPH-d	MTBE
	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
MW3d05.0	<0.005	<0.005	<0.005	<0.005	1.8	<0.005
MW3d10.0	<0.005	<0.005	<0.005	<0.005	< 1.0	<0.005
MW4d05.0	<0.005	<0.005	<0.005	<0.005	< 1.0	<0.005
MW4d10.0	<0.005	<0.005	<0.005	<0.005	1.5	<0.005

HI concluded the following 1) that the analytical testing results for the samples collected during this and previous investigations demonstrate that vertical and horizontal extent of the hydrocarbon contamination in soil and groundwater is adequately defined and that there is no indication of significant hydrocarbon impact to either soil or groundwater; 2) Any residual hydrocarbon contamination, is limited to the area of the current live and operating UST; 3) No FPLH or hydrocarbon sheen was encountered during the subsurface investigation(s) and groundwater monitoring.

On July 12, 2005, Mr. Karl Busche of the ESD verbally concurred with the request for closure contingent upon the concentrations in groundwater remaining in the same range during the October 2005 sampling event.

4.0 WELL SEARCH

BBL of Solana Beach California was subcontracted to prepare a 1-mile well radius search (See Appendix E). BBL reports that no wells were reported within the 1-mile radius of the Site.

5.0 CLOSURE REQUEST

Based on the information contained herein and in previous Site reports, on behalf of SBC (Former Pacific Bell), HI hereby respectfully requests that site closure be granted by the ESD for the UST removal activities.

15125 Hesperian Blvd
San Leandro, CA 94578-3607

Summary of Groundwater and Soil Data

APPENDIX A

Well No. / Date Sampled	Top of Casing Elevation feet MSL	Water Depth ft/bgs	GW Elevation	Concentrations (ppb) B	T	E	X	TPH-d	MTBE
GROUNDWATER DATA (ug/L)									
MW1									
1/13/05	32.16	5.65	26.51	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
6/7/05	32.16	6.14	26.02	0.65	<0.5	<0.5	<0.5	< 50	<0.5
7/19/05	32.16	6.44	25.72	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
10/12/05	32.16	7.14	25.02	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
MW2									
1/13/05	32.60	6.49	26.11	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
6/7/05	32.60	6.62	25.98	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
7/19/05	32.60	6.89	25.71	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
10/12/05	32.60	7.59	25.01	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
MW3									
1/13/05	32.84	6.41	26.43	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
6/7/05	32.84	6.96	25.88	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
7/19/05	32.84	7.25	25.59	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
10/12/05	32.84	7.93	24.91	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
MW4									
1/13/05	32.24	5.80	26.44	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
6/7/05	32.24	6.30	25.94	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
7/19/05	32.24	6.59	25.65	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
10/12/05	32.24	7.28	24.96	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
MW5									
1/13/05	32.07	5.49	26.58	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
6/7/05	32.07	8.95	23.12	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
7/19/05	32.07	6.25	25.82	<0.5	<0.5	<0.5	<0.5	< 50	<0.5
10/12/05	32.07	6.96	25.11	<0.5	<0.5	<0.5	<0.5	< 50	<0.5

15125 Hesperian Blvd
San Leandro, CA 94578-3607

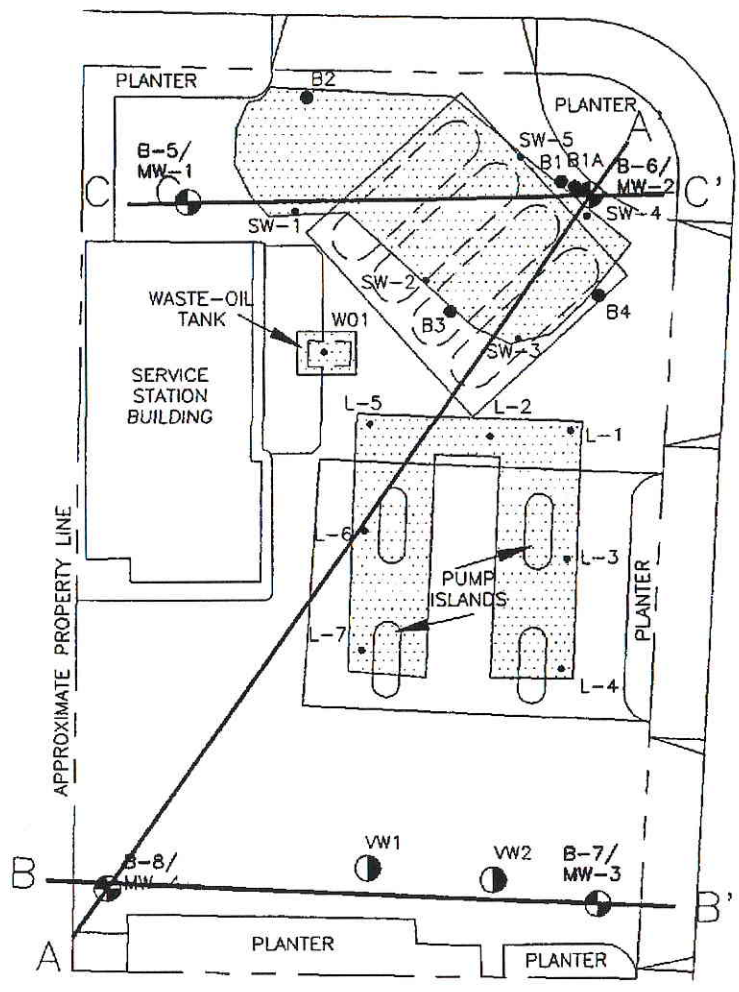
Summary of Groundwater and Soil Data

APPENDIX A

Well No.	Top of Casing	Water	GW	Concentrations (ppb)					
Date Sampled	Elevation feet MSL	Depth ft/bgs	Elevation	B	T	E	X	TPH-d	MTBE
SOIL DATA				µg/Kg	µg/Kg	µg/Kg	µg/Kg	mg/Kg	µg/Kg
8/20/04									
B1d05.0				<5	<5	<5	<5	3	<5
B1d10.0				<5	<5	<5	<5	11	<5
B2d16.0				<5	<5	<5	<5	< 1	<5
B2d20.0				<5	<5	<5	<5	< 1	<5
B3d05.0				<5	<5	<5	<5	< 1	<5
B3d10.0				<5	<5	<5	<5	3.3	<5
B4d05.0				<5	<5	<5	<5	11	<5
B4d10.0				<5	<5	<5	<5	< 1	<5
B5d05.0				<5	<5	<5	<5	8.4	<5
B5d10.0				<5	<5	<5	<5	3.3	<5
B6d05.0				<5	<5	<5	<5	7	<5
B6d10.0				<5	<5	<5	<5	5.5	<5
12/1/04									
MW3d05.0				<5	<5	<5	<5	1.8	<5
MW3d10.0				<5	<5	<5	<5	< 1.0	<5
MW4d05.0				<5	<5	<5	<5	< 1.0	<5
MW4d10.0				<5	<5	<5	<5	1.5	<5

APPENDIX D

Historical Site Data



EXPLANATION

B-8/ MW-4 = Monitoring well RESNA September 1992

VW2 = Vapor extraction well (Roux Associates, Inc., 1991)

B4 = Soil boring (Roux Associates, Inc., 1991)

L-7 = Product line sample

SW-5 = Sidewall soil sample

= Former underground storage tank and product line excavations

= Existing underground storage tank

N

Approximate Scale

30 15 0 30 60

feet

Source: Modified from site plan provided by Roux Associates. and survey data from John Koch, licensed land surveyor (9/16/92)

RESNA
Working to Restore Nature

PROJECT 62019.02

GENERALIZED SITE PLAN
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE
2

TABLE 1
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF SOIL SAMPLES
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California
(Page 1 of 3)

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
June 1991					
Borings					
S-B1-5	<1.0	<0.0050	<0.0050	<0.0050	0.016
S-B1A-7.5	43	0.14	0.93	1.1	7.6
S-B2-5	1.3	<0.0050	<0.0050	<0.0050	<0.018
S-B2-9	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-B3-4	26	0.024	0.029	0.16	1.1
S-B3-7.5	1,400	2.5	4.4	29	190
S-B4-4.5	<1.0	0.025	0.013	0.0085	0.042
S-B4-7.5	2,400	17	62	41	260
S-VW1-6	2.8	0.033	0.0073	0.079	0.055
S-VW1-9	100	0.48	1.4	2.7	4.1
December 1991					
Tank Pit Sidewall					
SW-1 at 9	500	<0.0050	0.40	3.5	8.4
SW-2 at 10	140	0.10	0.38	3.0	7.2
SW-3 at 10	150	0.26	0.11	2.1	2.0
SW-4 at 10	610	0.47	7.1	11	82
SW-5 at 10	1,000	2.3	9.2	25	220
Waste-oil Sidewall					
WO-1 at 10	310	0.78	0.8	2.9	13

Sample Number	TPHd	TOG	VOC's	Cd	Cr	Pb	Ni	Zn
WO-1 at 10	360	270	ND	ND	49	5.2	59	58

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
December 1991					
Soil Stockpile					
CS-1	1,300	0.98	3.7	5.0	110
CS-2	1,000	5.6	39	14	130
CS-3	200	0.36	0.91	1.5	20
CS-4	86	0.077	0.11	0.36	2.8

See notes on page 3 of 3

TABLE 1
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF SOIL SAMPLES
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California
(Page 2 of 3)

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
CS-5	100	0.14	0.27	0.65	4.8
CS-6	140	0.032	0.085	0.47	3.7
CS-7	110	ND	0.082	0.074	1.9
CS-8	270	0.12	0.1	0.22	13
CS-9	54	ND	ND	ND	0.24
CS-10	480	0.44	0.36	3.8	26
January 1992 Soil Stockpile					
CS-11	51	0.11	ND	0.18	0.95
CS-12	6.2	0.016	0.013	0.016	0.16
CS-13	23	0.028	0.066	0.11	0.82
February 1992 Product Lines					
L-1 at 3	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
L-2 at 3.5	4.4	0.082	0.013	0.21	0.30
L-3 at 3	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
L-4 at 3	<1.0	0.0063	0.0076	<0.0050	0.029
L-5 at 3	110	0.65	0.17	1.2	0.14
L-6 at 2.5	16	1.0	0.20	0.96	4.0
L-7 at 4	12	0.28	0.018	0.35	0.78
September 1992 Borings					
MW-1 S-4.5-B5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
MW-1 S-10-B5	100	<0.0050	<0.0050	0.46	0.36
S-5-B6	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
MW-2 S-10-B6	550	0.79	1.3	10	48
S-17-B6	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-5-B7	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
MW-3 S-10-B7	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-16.5-B7	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

See notes on page 3 of 3

TABLE 1
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF SOIL SAMPLES
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California
(Page 3 of 3)

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
S-5-B8	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-9.5-B8	2.0	<0.0050	<0.0050	<0.0050	<0.0050
mw-4 S-11-B8	51	0.18	<0.0050	0.056	0.11
S-11.5-B8	91	1.4	0.11	0.22	0.86
S-18.5-B8	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	pH	I	R	Pb
September 1992 Soil Stockpile SP-0809 A-D	11	<0.0050	<0.0050	0.52	0.12	8.4	>100	None	0.11

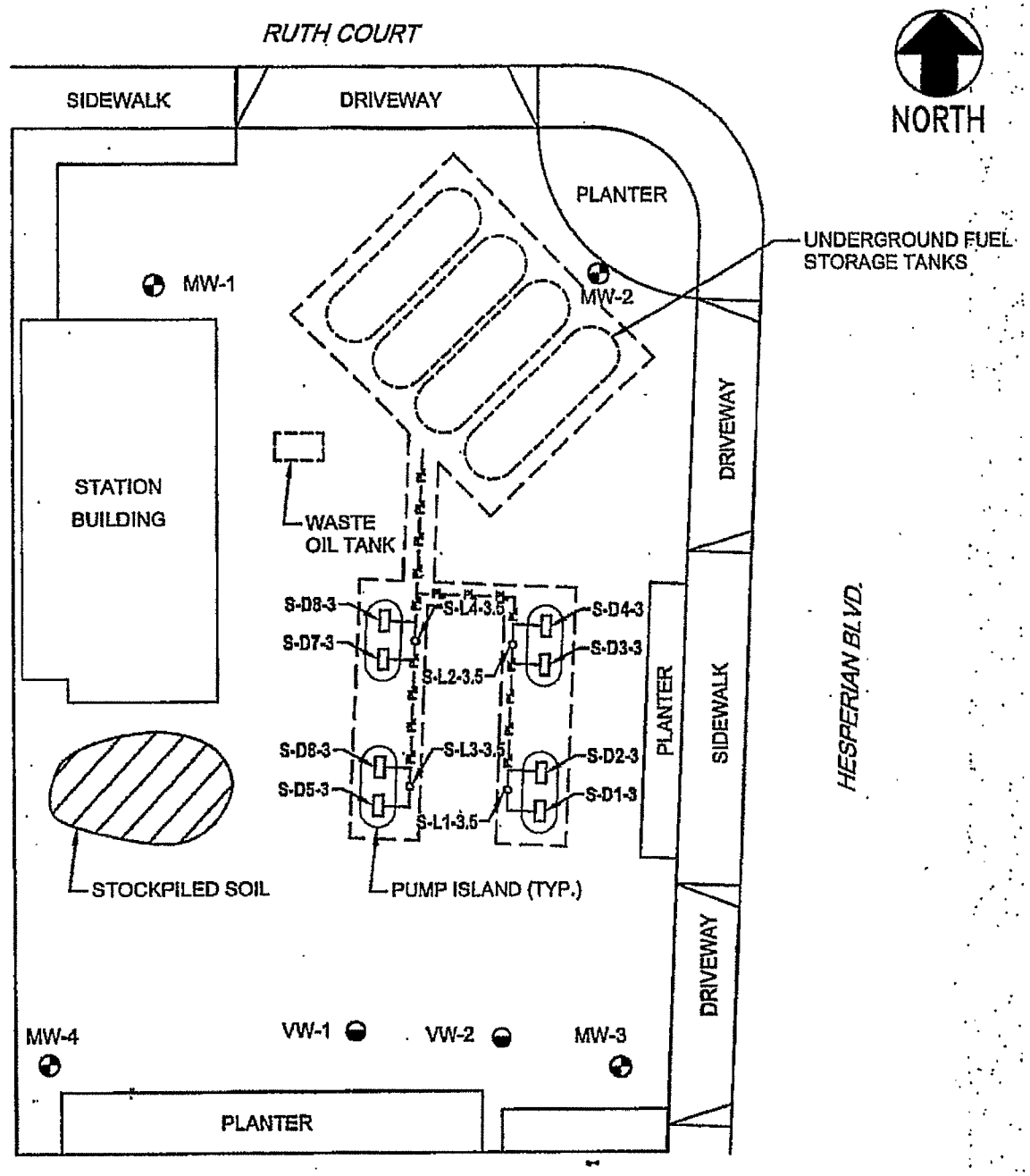
All results in parts per million (ppm).
TPHg = Total petroleum hydrocarbons as gasoline.
I = Ignitability in °C
R = Reactivity to sulfide, cyanide, or water
Pb = lead
<:Below the reporting limits of the analytical method.

Sample designations:

S-B1-5
- Sample depth
- Boring number
- Soil sample

SP-0809 A-D
- Sample
- Date
- Soil pile sample

S-12-B5
- Boring number
- Sample depth in feet
- Soil sample



LEGEND

MW-1	GROUNDWATER MONITORING WELL
VW-1	SOIL VAPOR EXTRACTION WELL
S-L1-3.5	FUEL LINE SAMPLING LOCATION
S-D1-3	FUEL DISPENSER SAMPLING LOCATION.
	EXPOSED PRODUCT LINE PIPING
	APPROXIMATE LIMITS OF EXCAVATION

0 25 50

SCALE IN FEET

URS	Project No. 38486067 Arco Service Station No. 2162 15135 Hesperian Boulevard San Leandro, California	SOIL SAMPLING LOCATION PLAN January 10, 2003	FIGURE 2

Soil Analytical Data
ARCO Service Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

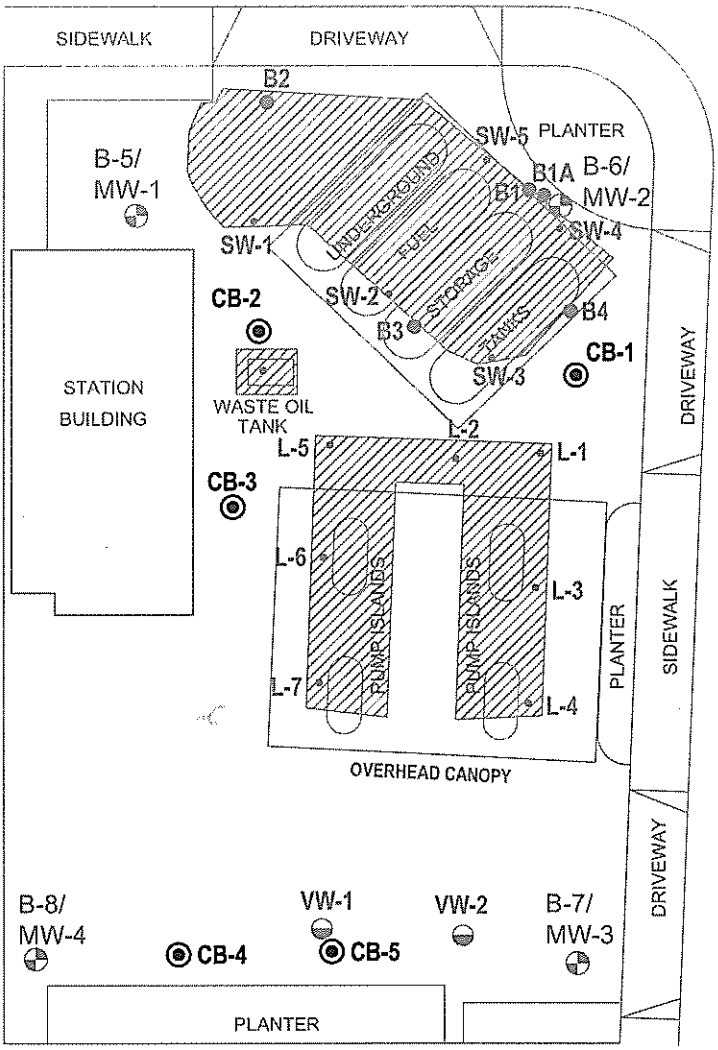
TABLE 1
Product Line/Dispenser Analytical Results

Soil Sample ID	Sample	Date	TPH as gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	MTBE (ppm)
S-D1-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-D2-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-D3-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-D4-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-D5-3	3	1/10/03	**0.75**	ND<0.005	ND<0.005	**0.021**	**0.03**	**0.093**
S-D6-3	3	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.01	**0.021**
S-D7-3	3	1/10/03	**5.7**	ND<0.025	ND<0.025	**0.1**	**0.49**	ND<0.12
S-D8-3	3	1/10/03	**46**	ND<0.025	**0.13**	**0.17**	**0.36**	ND<0.25
S-L1-3.5	3.5	1/10/03	ND<0.5	**0.072**	**0.0095**	**0.029**	**0.032**	**0.14**
S-L2-3.5	3.5	1/10/03	ND<0.5	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.025
S-L3-3.5	3.5	1/10/03	ND<2.5	ND<0.025	ND<0.025	ND<0.025	ND<0.05	**0.55**
S-L4-3.5	3.5	1/10/03	**200**	ND<0.025	**2.1**	**1.4**	**1.5**	ND<0.25

TABLE 2
Soil Stockpile Analytical Results

Soil Sample ID	Sample	Date	TPH as gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	MTBE (ppm)	Total Lead (ppm)
SP (1-4) Composite	--	1/10/03	**0.79**	ND<0.025	ND<0.025	**0.032**	**0.14**	ND<0.12	**19**

TPH = Total purgeable petroleum hydrocarbons using EPA Method 8015B, modified.
BTEX = Benzene, toluene, ethylbenzene, total xylenes using EPA Method 8021B.
MTBE = Methyl Tertiary Butyl Ether.
ppb = Parts per billion.
ppm = Parts per million.
ND< = Less than stated laboratory detection limit.



LEGEND

CB-5 ◉	SOIL/GROUND-WATER BORING (STRATUS 2007)
B-8/ MW-4 ◔	MONITORING WELL RESNA (SEPTEMBER 1992)
VW-2 ◒	SOIL VAPOR EXTRACTION WELL (ROUX ASSOCIATES, INC., 1991)
B4 ◉	SOIL BORING (ROUX ASSOCIATES, INC., 1991)
SW-5 •	SIDEWALL SOIL SAMPLE
L-7 •	PRODUCT LINE SAMPLE
▨	FORMER UNDERGROND STORAGE TANK AND PRODUCT LINE EXCAVATIONS

N

0 30 60

SCALE (ft)

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

BROADBENT & ASSOCIATES, INC. ENGINEERING, WATER RESOURCES & ENVIRONMENTAL 1324 Mangrove Ave. Suite 212, Chico, California Project No.: 06-08-620 Date: 09/13/07	Station #2162 15135 Hesperian Boulevard San Leandro, California	Site Sketch with Boring Locations

Drawing 2

Table 4 Summary of Depth-Discrete Soil Sampling Data
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard, San Leandro, California (ACEH Case No. RO0000190)

Boring I.D.	Date	Laboratory Analytical Results (mg/kg)														%
		GRO	DRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	DIPE	ETBE	TBA	TAME	Ethanol	EDB	1,2 DCA	Total Solids
CB1-7.5'-8'	7/17/2007	<0.13	**4.5**	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.025	<0.0063	<0.13	<0.0063	<0.0063	79
CB1-11.5'-12'	7/17/2007	<0.12	<1.2	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.024	<0.0060	<0.12	<0.0060	<0.0060	83
CB1-15.5'-16'	7/17/2007	<0.13	<1.3	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.026	<0.0064	<0.13	<0.0064	<0.0064	78
CB2 11.5'-12'	7/17/2007	**2.9**	**1,300**	<0.0058	<0.0058	<0.0058	**0.0071**	<0.0058	<0.0058	<0.0058	<0.023	<0.0058	<0.12	<0.0058	<0.0058	87
CB2 15.5'-16'	7/17/2007	<0.13	**2.3**	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.025	<0.0063	<0.13	<0.0063	<0.0063	79
CB3 7.5'-8'	7/17/2007	**0.65**	**2.2**	<0.0061	<0.0061	<0.0061	<0.0061	**0.0063**	<0.0061	<0.0061	<0.024	<0.0061	<0.12	<0.0061	<0.0061	82
CB3 11.5'-12'	7/17/2007	**400**	**12**	<0.061	<0.061	<0.061	<0.061	<0.031	<0.031	<0.031	<6.1	<0.031	<12	<0.031	<0.031	82
CB3 15.5'-16'	7/17/2007	<0.13	**1.6**	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.025	<0.0063	<0.13	<0.0063	<0.0063	79
CB4 7.5'-8'	7/17/2007	<0.12	**5.6**	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.023	<0.0058	<0.12	<0.0058	<0.0058	87
CB4 11.5'-12'	7/17/2007	**3.8**	**2.0**	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.025	<0.0062	<0.12	<0.0062	<0.0062	81
CB4 15.5'-16'	7/17/2007	<0.13	**1.8**	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.026	<0.0064	<0.13	<0.0064	<0.0064	78
CB5 7.5'-8'	7/17/2007	<0.12	**26**	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.023	<0.0059	<0.12	<0.0059	<0.0059	85
CB5 11.5'-12'	7/17/2007	**1,100**	**18**	<0.60	<0.60	<0.60	<0.60	<0.30	<0.30	<0.30	<60	<0.30	<120	<0.30	<0.30	83
CB5 15.5'-16'	7/17/2007	<0.13	<1.3	<0.0065	<0.0065	<0.0065	<0.0065	<0.0065	<0.0065	<0.0065	<0.026	<0.0065	<0.13	<0.0065	<0.0065	77

Bolded values indicate concentrations above laboratory detection limits
GRO = Gasoline Range Organics, C4-C12
DRO = Diesel Range Organics, C10-C36
MTBE = Methyl tert-butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
TBA = Tertiary butyl alcohol
TAME = Tertiary amyl methyl ether
EDB = 1,2-Dibromoethane
1,2 DCA = 1,2 Dichloroethane

Table 5 Summary of Depth-Discrete Ground-Water Sampling Data
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard, San Leandro, California (ACEH Case No. RO0000190)

		Laboratory Analytical Results (µg/l)													
Boring I.D.	Date	GRO	DRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	DIPE	ETBE	TBA	TAME	Ethanol	EDB	1,2 DCA
CB1-W	7/17/2007	<50	<47	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	<0.50	<300	<0.50	<0.50
CB2-W	7/17/2007	**1,900**	**2,000**	**12**	<2.5	**110**	**140**	<2.5	<2.5	<2.5	<100	<2.5	<1,500	<2.5	<2.5
CB3-W	7/17/2007	**490**	**440**	<0.50	<0.50	**0.92**	<0.50	**0.82**	<0.50	<0.50	<20	<0.50	<300	<0.50	<0.50
CB4-W	7/17/2007	<50	**220**	**1.0**	<0.50	<0.50	<0.50	**20**	<0.50	<0.50	<20	<0.50	<300	<0.50	<0.50
CB5-W	7/17/2007	**490**	**360**	**2.1**	<0.50	<0.50	<0.50	**70**	<0.50	<0.50	<20	**3.9**	<300	<0.50	<0.50

Bolded values indicate concentrations above laboratory detection limits
GRO = Gasoline Range Organics, C4-C12
DRO = Diesel Range Organics, C10-C36
MTBE = Methyl tert-butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
TBA = Tertiary butyl alcohol
TAME = Tertiary amyl methyl ether
EDB = 1,2-Dibromoethane
1,2 DCA = 1,2 Dichloroethane

Table 1
Groundwater Elevation Data

ARCO Service Station 2162
15135 Hesperian Boulevard at Ruth Court
San Leandro, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)
MW-1	09/30/92	31.19	10.68	20.51
	10/16/92		10.83	20.36
	01/14/93		7.25	23.94
	02/24/93		7.23	23.96
	03/30/93		7.58	23.61
	04/14/93		7.96	23.23
	05/19/93		8.26	22.93
	06/17/93		8.42	22.77
	07/28/93		8.68	22.51
	08/11/93		9.07	22.12
	09/28/93		9.60	21.59
	10/15/93		9.51	21.68
	11/16/93		— Well Inaccessible —	
	12/16/93		8.70	22.49
	02/15/94		8.51	22.68
	03/18/94		8.46	22.73
	05/05/94		8.66	22.53
	08/05/94		9.50	21.69
	11/21/94		8.83	22.36
	02/24/95		7.90	23.29
	05/31/95		7.86	23.33
	08/23/95		8.74	22.45
MW-2	09/30/92	30.38	9.74	20.64
	10/16/92		9.91	20.47
	01/14/93		6.56	23.82
	02/24/93		6.67	23.71
	03/30/93		6.76	23.62
	04/14/93		7.10	23.28
	05/19/93		7.40	22.98
	06/17/93		7.51	22.87
	07/28/93		7.73	22.65
	08/11/93		8.11	22.27
	09/28/93		8.57	21.81
	10/15/93		8.56	21.82
	11/16/93		8.87	21.51
	12/16/93		7.92	22.46
	02/15/94		7.62	22.76
	03/18/94		7.57	22.81
	05/05/94		7.75	22.63
	08/05/94		8.53	21.85
	11/21/94		7.92	22.46
	02/24/95		6.98	23.40
	05/31/95		6.97	23.41
	08/23/95		7.83	22.55
MW-3	09/30/92	30.30	9.93	20.37
	10/16/92		10.13	20.17
	01/14/93		6.71	23.59
	02/24/93		6.82	23.48
	03/30/93		7.07	23.23
	04/14/93		7.41	22.89
	05/19/93		7.72	22.58
	06/17/93		7.86	22.44
	07/25/93		8.13	22.17
	08/11/93		8.45	21.85
	09/28/93		8.96	21.34

Table 1 (continued)
Groundwater Elevation Data

ARCO Service Station 2162
15135 Hesperian Boulevard at Ruth Court
San Leandro, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)
MW-3	10/15/93		8.85	21.45
(cont.)	11/16/93		9.09	21.21
	12/16/93		8.10	22.20
	02/15/94		7.88	22.42
	03/18/94		7.88	22.42
	05/05/94		8.08	22.22
	08/05/94		8.82	21.48
	11/21/94		8.17	22.13
	02/24/95		7.40	22.90
	05/31/95		7.35	22.95
	08/23/95		8.15	22.15
MW-4	09/30/92	30.39	11.15	19.24
	10/16/92		11.33	19.06
	01/14/93		7.49	22.90
	02/24/93		7.57	22.82
	03/30/93		8.06	22.33
	04/14/93		8.48	21.91
	05/19/93		7.80	22.59
	06/17/93		8.94	21.45
	07/25/93		9.28	21.11
	05/11/93		9.61	20.78
	09/25/93		10.14	20.25
	10/15/93		10.00	20.39
	11/16/93		10.22	20.17
	12/16/93		9.11	21.28
	02/15/94		8.97	21.42
	03/15/94		8.99	21.40
	05/05/94		9.21	21.18
	08/05/94		10.02	20.37
	11/21/94		9.30	21.09
	02/24/95		8.46	21.93
	05/31/95		8.41	21.98
	08/23/95		9.32	21.07

MSL = Mean sea level
TOC = Top of casing

Table 2
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

ARCO Service Station 2162
15135 Hesperian Boulevard at Ruth Court
San Leandro, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-1	09/30/92	1,100	6.2	<0.50	6.9	<0.50
	10/16/92	790	3.0	0.8	5.6	2.9
	01/14/93	660	1.2	<1 a	15	4.6
	04/14/93	310	<1 a	<1 a	<1 a	
	08/11/93	660	0.8	<0.7	9.0	<1 b
	10/15/93	620	0.7	<0.5	5.9	2.2
	02/15/94	650	1.9	<0.5	4.5	4.9 b
	05/05/94	510	<0.5	<0.5	<1	1.6
	08/05/94	310	<0.5	<0.5	1.5	1.2
	11/21/94	330	<0.5	<0.5	1.5	1.1
	02/24/95	120	<0.50	<0.50	<0.50	<0.50
	05/31/95	<50	<0.50	<0.50	<0.50	<0.50
	08/23/95	160	<0.50	<0.50	<0.50	<0.50
MW-2	09/30/92	1,000	9.6	<0.50	45	110
	10/16/92	630	8	<1 a	37	64
	01/14/93	7,800	33	5	340	920
	04/14/93	1,600	7	<5 a	220	520
	08/11/93	1,600	4.3	<1 a	80	120
	10/15/93	1,100	1.7	<1 a	62	70
	02/15/94	490	1.8	1.5	49	37
	05/05/94	360	<0.5	<0.5	27	18
	08/05/94	680	<0.5	<0.5	42	37
	11/21/94	500	<0.5	<0.5	40	25
	02/24/95	650	<0.50	<0.50	52	48
	05/31/95	450	<0.50	<0.50	33	33
	08/23/95	180	<0.50	<0.50	12	9.5
MW-3	09/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/16/92	<50	<0.50	<0.50	<0.50	<0.50
	01/14/93	52	<0.50	<0.50	<0.50	<0.50
	04/14/93	360	86	2.1	5.1	4.0
	08/11/93	69	1.1	<0.5	<0.5	<0.5
	10/15/93	<50	<0.5	<0.5	<0.5	<0.5
	02/15/94	<50	<0.5	<0.5	<0.5	<0.5
	05/05/94	<50	<0.5	<0.5	<0.5	<0.5
	08/05/94	<50	<0.5	<0.5	<0.5	<0.5
	11/21/94	<50	<0.5	<0.5	<0.5	<0.5
	02/24/95	<50	0.93	<0.50	<0.50	<0.50
	05/31/95	120	24	<0.50	<0.50	<0.50
	08/23/95	85	<0.5	<0.5	<0.5	<0.5
MW-4	09/30/92	330	81	<0.50	<0.50	<0.50
	10/16/92	250	44	<0.50	<0.50	0.7
	01/14/93	260	29	0.6	<0.50	1.1
	04/14/93	NS	NS	NS	NS	NS
	08/11/93	150	21	<0.5	<0.5	<0.5
	10/15/93	190	12	<0.5	<0.5	<0.5
	02/15/94	<50	2.0	<0.5	<0.5	<0.5
	05/05/94	160	17	<0.5	<0.5	0.6
	08/05/94	120	10	<0.5	<0.5	<0.5
	11/21/94	120	17	<0.5	<0.5	0.6

Table 2 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

ARCO Service Station 2162
15135 Hesperian Boulevard at Ruth Court
San Leandro, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-4	02/24/95	110	14	<0.50	<0.50	<0.50
(cont.)	05/31/95	97	11	<0.50	<0.50	<0.50
	08/23/95	110	16	<0.50	<0.50	<0.50

ppb = Parts per million
NS = Not sampled, separate-phase hydrocarbon entered well during purging.
a. Raised MRL due to high analyte concentration requiring sample dilution
b. Raised MRL due to matrix interference

Table 3

Groundwater Analytical Data

Total Methyl t-Butyl Ether

ARCO Service Station 2162

15135 Hesperian Boulevard at Ruth Court

San Leandro, California

Well Number	Date Sampled	Methyl t-Butyl Ether (ppb)
MW-1	8/23/95	<2.5
MW-2	8/23/95	<2.5
MW-3	8/23/95	41
MW-4	8/23/95	<2.5

ppb = Parts per billion

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

ARCO Service Station 2162
15135 Hesperian Boulevard, San Leandro, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MTBE 8021B* (ppb)	MTBE 8260 (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-1	02/26/96	31.19	7.14	24.05	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
MW-1	05/23/96	31.19	7.70	23.49	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
MW-1	08/21/96	31.19	8.75	22.44	210	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	
MW-1	11/20/96	31.19	8.62	22.57	91	<0.5	<0.5	<0.5	<0.5	2.6	NA	NA	
MW-1	04/01/97	31.19	8.70	22.49	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NP
MW-1	06/10/97	31.19	8.45	22.74	94	<0.5	<0.5	0.68	0.56	6.4	NA	NA	NP
MW-1	09/17/97	31.19	9.20	21.99	<50	<0.5	<0.5	<0.5	<0.5	10	NA	1.0	NP
MW-1	12/12/97	31.19	8.00	23.19	<200	<2	<2	<2	<2	180	NA	2.0	NP
MW-1	03/25/98	31.19	7.00	24.19	<200	<2	<2	3	<2	180	NA	2.0	
MW-1	05/14/98	31.19	7.46	23.73	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	1.17	P
MW-1	07/31/98	31.19	8.10	23.09	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	2.0	NP
MW-1	10/12/98	31.19	8.60	22.59	<50	<0.5	<0.5	<0.5	<0.5	9	NA	2.5	NP
MW-1	02/11/99	31.19	7.32	23.87	<50	<0.5	<0.5	<0.5	<0.5	25	NA	1.0	P
MW-1	06/23/99	31.19	8.40	22.79	55	<0.5	<0.5	<0.5	<0.5	<3	NA	1.36	NP
MW-1	08/23/99	31.19	8.85	22.34	<50	<0.5	0.6	<0.5	<0.5	5	NA	1.42	NP
MW-1	10/27/99	31.19	8.50	22.69	<50	<0.5	<0.5	<0.5	<1	90	NA	0.83	NP
MW-1	02/09/00	31.19	8.11	23.08	<50	<0.5	<0.5	<0.5	<1	9	NA	0.77	NP
MW-2	02/26/96	30.38	6.41	23.97	770	<0.5	<0.5	45	28	NA	NA	NA	
MW-2	05/23/96	30.38	6.80	23.58	590	0.50	<0.5	35	18	NA	NA	NA	
MW-2	08/21/96	30.38	7.80	22.58	170	<0.5	<0.5	21	6.3	<2.5	NA	NA	
MW-2	11/20/96	30.38	7.73	22.65	88	<0.5	<0.5	7.9	1.1	<2.5	NA	NA	
MW-2	04/01/97	30.38	7.83	22.55	66	<0.5	<0.5	3.6	0.56	33	NA	NA	
MW-2	06/10/97	30.38	7.52	22.86	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NP
MW-2	09/17/97	30.38	8.24	22.14	<50	<0.5	<0.5	<0.5	<0.5	<3.0	NA	0.6	NP
MW-2	12/12/97	30.38	7.10	23.28	<50	<0.5	<0.5	<0.5	<0.5	<3.0	NA	1.2	NP
MW-2	03/25/98	30.38	6.27	24.11	<50	<0.5	<0.5	0.7	0.5	55	NA	1.0	
MW-2	05/14/98	30.38	6.54	23.84	210	<0.5	<0.5	3.3	<0.5	42	NA	1.47	P
MW-2	07/31/98	30.38	7.14	23.24	230	<0.5	<0.5	3.9	<0.5	6	NA	1.0	P

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

ARCO Service Station 2162
15135 Hesperian Boulevard, San Leandro, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MTBE 8021B* (ppb)	MTBE 8260 (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-2	10/12/98	30.38	7.65	22.73	110	<0.5	<0.5	1.5	<0.5	<3	NA	1.0	P
MW-2	02/11/99	30.38	6.55	23.83	660	<0.5	<0.5	6.7	0.7	3	NA	1.0	P
MW-2	06/23/99	30.38	7.48	22.90	270	<0.5	<0.5	2.2	0.8	<3	NA	NM	P
MW-2	08/23/99	30.38	7.89	22.49	200	<0.5	0.9	1.8	<0.5	<3	NA	1.17	P
MW-2	10/27/99	30.38	8.30	22.08	2,100	1.0	2.5	14	3	3	NA	0.75	NP
MW-2	02/09/00	30.38	8.02	22.36	<50	<0.5	<0.5	<0.5	<1	5	NA	0.69	NP
MW-3	02/26/96	30.30	6.72	23.58	120	5.0	<0.5	<0.5	<0.5	NA	NA	NA	
MW-3	05/23/96	30.30	7.18	23.12	140	12	<0.5	<0.5	<0.5	NA	NA	NA	
MW-3	08/21/96	30.30	8.17	22.13	<50	1.1	<0.5	<0.5	<0.5	130	NA	NA	
MW-3	11/20/96	30.30	8.03	22.27	55	<0.5	<0.5	<0.5	<0.5	59	NA	NA	
MW-3	04/01/97	30.30	8.09	22.21	<50	<0.5	<0.5	<0.5	<0.5	180	NA	NA	NP
MW-3	06/10/97	30.30	7.97	22.33	<50	<0.5	<0.5	<0.5	<0.5	1,900	NA	NA	NP
MW-3	09/17/97	30.30	8.54	21.76	<5,000	<50	<50	<50	<50	1,100	860	2.2	NP
MW-3	12/12/97	30.30	7.50	22.80	560	<5.0	<5.0	<5.0	5.0	370	NA	1.4	NP
MW-3	03/25/98	30.30	6.60	23.70	<500	<5	<5	<5	<5	470	NA	1.0	
MW-3	05/14/98	30.30	7.13	23.17	750	<5	<5	<5	<5	630	NA	1.97	P
MW-3	07/31/98	30.30	7.58	22.72	<500	<5	<5	<5	<5	590	NA	1.0	P
MW-3	10/12/98	30.30	8.00	22.30	<500	<5	<5	<5	<5	600	NA	2.0	P
MW-3	02/11/99	30.30	6.90	23.40	<500	<5	<5	<5	<5	280	NA	1.0	P
MW-3	06/23/99	30.30	7.82	22.48	220	<0.5	3.2	<0.5	<0.5	740	NA	1.98	P
MW-3	08/23/99	30.30	8.28	22.02	<50	<0.5	1.1	<0.5	<0.5	230	NA	1.20	P
MW-3	10/27/99	30.30	9.27	21.03	<50	<0.5	<0.5	<0.5	<1	<3	NA	0.81	NP
MW-3	02/09/00	30.30	7.45	22.85	<50	<0.5	<0.5	<0.5	<1	80	NA	0.81	P
MW-4	02/26/96	30.39	7.59	22.80	110	9.9	<0.5	<0.5	<0.5	NA	NA	NA	
MW-4	05/23/96	30.39	8.22	22.17	69	8.0	<0.5	<0.5	<0.5	NA	NA	NA	
MW-4	08/21/96	30.39	9.28	21.11	<50	6.8	<0.5	<0.5	<0.5	<2.5	NA	NA	
MW-4	11/20/96	30.39	9.12	21.27	95	10	0.59	<0.5	0.52	3.8	NA	NA	

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

ARCO Service Station 2162
15135 Hesperian Boulevard, San Leandro, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MTBE 8021B* (ppb)	MTBE 8260 (ppb)	Dissolved Oxygen (ppm)	Purged/ Not Purged (P/NP)
MW-4	04/01/97	30.39	8.45	21.94	73	5.7	<0.5	<0.5	<0.5	<2.5	NA	NA	
MW-4	06/10/97	30.39	9.00	21.39	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NP
MW-4	09/17/97	30.39	9.76	20.63	<50	3.2	<0.5	<0.5	<0.5	8.0	NA	0.2	NP
MW-4	12/12/97	30.39	8.45	21.94	<50	2.9	<0.5	<0.5	<0.5	14	NA	1.0	NP
MW-4	03/25/98	30.39	7.52	22.87	58	2.8	<0.5	<0.5	<0.5	<3	NA	3.0	
MW-4	05/14/98	30.39	8.03	22.36	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	3.24	NP
MW-4	07/31/98	30.39	8.67	21.72	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	2.0	NP
MW-4	10/12/98	30.39	9.15	21.24	<50	<0.5	<0.5	<0.5	<0.5	4	NA	1.5	NP
MW-4	02/11/99	30.39	7.80	22.59	61	2.5	<0.5	<0.5	<0.5	6	NA	1.0	P
MW-4	06/23/99	30.39	9.00	21.39	<50	<0.5	<0.5	<0.5	<0.5	<3	NA	1.42	NP
MW-4	08/23/99	30.39	9.31	21.08	<50	<0.5	<0.5	<0.5	<0.5	6	NA	1.53	NP
MW-4	10/27/99	30.39	9.80	20.59	<50	<0.5	<0.5	<0.5	<1	6	NA	0.98	NP
MW-4	02/09/00	30.39	8.63	21.76	<50	<0.5	<0.5	<0.5	<1	7	NA	0.74	NP

TPPH = Total purgeable petroleum hydrocarbons by modified EPA method 8015
BTEX = Benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 10/27/99).
MTBE = Methyl tert -Butyl Ether
* = EPA method 8020 prior to 10/27/99
MSL = Mean sea level
TOC = Top of casing
ppb = Parts per billion
ppm = Parts per million
NA = Not analyzed
NM = Not measured
< = Denotes concentration not present above laboratory detection limited stated to the right

Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station 2162
15135 Hesperian Boulevard, San Leandro, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
02/26/96	Southwest	0.009
05/23/96	South-Southwest	0.010
08/21/96	South-Southwest	0.01
11/20/96	South-Southwest	0.011
04/01/97	South-Southwest	0.004
06/10/97	South-Southwest	0.010
09/17/97	South-Southwest	0.01
12/12/97	Southwest	0.01
03/25/98	South-Southwest	0.008
05/14/98	Southwest	0.01
07/31/98	Southwest	0.01
10/12/98	Southwest	0.01
02/11/99	Southwest	0.008
06/23/99	Southwest	0.02
08/23/99	Southwest	0.013
10/27/99	South-Southwest	0.02
02/09/00	**Southwest**	**0.01**

APPENDIX E

Soil Boring and Well Construction Logs

ROUX

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B1	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling		Drill Bit Diameter: 6 inches	Total Depth: 11.5 ft
Driller: S. Stone		Backfill Material: Bentonite Grout	from 0 ft to 11.5 ft
Drilling Method: Hollow Stem Auger		Sampler: CA Modified Split-spoon	
Drilling Equipment: Mobile B-53		Depth to Water at Time of Drilling: 9.5 ft	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock Pea gravel					
	CLAY, Silty, black-brown.	OL				
	CLAY, Silty, brown.	CL				
5	CLAY, Silty, green-grey, little medium(-) sand, slight hydrocarbon odor	OL		6-9-12		No Recovery For OVM
		SM ▽				
10	SAND, medium Silty, green-brown, some fine gravel, wet, strong hydrocarbon odor.			2-3-4	3.3	
15						

ROUX

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B1A	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling		Drill Bit Diameter: 6 inches	Total Depth: 9.0 ft
Driller: S. Stone		Backfill Material: Bentonite Grout	from 0 ft to 9.0 ft ft
Drilling Method: Hollow Stem Auger		Sampler: CA Modified Split-spoon	
Drilling Equipment: Mobile B-53		Depth to Water at Time of Drilling:	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock					
	Pea gravel					
	CLAY, Silty, black-brown.	OL				
	CLAY, Silty, brown.	CL				
5	CLAY, Silty, green-grey, little medium(-) sand, slight hydrocarbon odor.	OL				
	SILT, clayey, dark brown, light brown mottling, moderate to strong hydorcarbon odor.	MH		6-9-12		OVM Malfunction
10						
15						

ROUX

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B2	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling		Drill Bit Diameter: 6 inches	Total Depth: 9.5 ft
Driller: S. Stone		Backfill Material: Bentonite Grout	from 0 ft to 9.5 ft ft
Drilling Method: Hollow Stem Auger		Sampler: CA Modified Split-spoon	
Drilling Equipment: Mobile B-53		Depth to Water at Time of Drilling: 9.0 ft	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock Pea gravel					
	CLAY, Silty, black.	OL				
5	SILT, Sandy, brown-green with orange mottling, damp, few rootlets, mild hydrocarbon odor.	ML		4-7-10	76.7	
		SP		5-4-10	10.5	
	SAND, medium to fine(+), green, and fine(-) gravel, moist, mild hydrocarbon odor.					
10						
15						

ROUX

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B3	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling		Drill Bit Diameter: 6 inches	Total Depth: 10.5 ft
Driller: S. Stone		Backfill Material: Bentonite Grout	from 0 ft to 10.5 ft ft
Drilling Method: Hollow Stem Auger		Sampler: CA Modified Split-spoon	
Drilling Equipment: Mobile B-53		Depth to Water at Time of Drilling: 10.0 ft	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock					
	GRAVEL, Sandy, with lens of white medium sand.					
	SILT, Clayey, black, organic odor? SILT, brown-orange , trace lenses of fine gravel. SILT, Clayey, black, with piece of glass.	OL				
5	SILT, greenish-black to dark brown, trace shell fragments, trace medium sand, very slight odor.			4-7-12	10.5	
		CL				
	CLAY, silty, green-brown, 1-2 inch lense of green sand at top of sampler, moist, trace of separate phase petroleum hydrocarbon.			3-6-8	207.5	
	SAND, medium(+), green, little silt, wet.	SW		4-6-10		No Recovery For OVM
10						
15						

ROUX

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA		Log of Soil Boring No. B4	
Logged By: Jon Florez	Checked By: L.E.	Date Started: 6/5/91	Date Completed: 6/5/91
Drilling Co: Gregg Drilling		Drill Bit Diameter: 6 inches	Total Depth: 15.0 ft
Driller: S. Stone		Backfill Material: Bentonite Grout	from 0 ft to 15.0 ft ft
Drilling Method: Hollow Stem Auger		Sampler: CA Modified Split-spoon	
Drilling Equipment: Mobile B-53		Depth to Water at Time of Drilling: 9.5 ft	

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock SAND, medium, yellow. SILT, Clayey, black.					
	SILT, Sandy, brown-green, and gravel.					
	SILT, black, trace fine gravel.					
	SILT, green with brown mottling, trace fine sand, trace rootlets, slight hydrocarbon odor.	OL		4-6-8	10.5	
5						
	SILT, green-grey, moist, strong hydrocarbon odor, trace dark brown to black separate phase petroleum hydrocarbon.			4-8-8	992	
	1/2-inch thick lens of medium to fine, green-grey gravel					
	SAND, fine, green-grey, wet.	SM		4-3-8		
	GRAVEL, medium to fine, green-grey, and fine sand, wet, trace brown separate phase petroleum hydrocarbon.	GP				
10	GRAVEL, medium, green-grey, wet, trace brown separate phase petroleum hydrocarbon.					
	SAND, fine, wet, separate phase petroleum hydrocarbon noted.	SM		7-17-5		
	GRAVEL, fine, green, wet, separate phase petroleum hydrocarbon noted.	GP				
	SAND, medium, brown, and fine gravel, wet, separate phase petroleum hydrocarbon noted.	SP				
	GRAVEL, medium to fine, green-grey, and fine sand, wet, slight hydrocarbon odor.	GM		2-3-5		
	SILT, brown-orange with dark brown mottling, moist, no odor noted.	ML				
	SILT, brown, trace medium flecks of black organic matter, damp.			3-4-6		
15						

ROUX

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA	Log of Well No. VW1
Date Started: 6/5/91 Completed: 6/5/91	Measuring Point Elevation: 30 ft Total Depth: 10.5 ft
Logged By: Jonathan Florez Checked By: L.E.	Water Level During Drilling: 10.0 ft Stabilized: ft
Drilling Co: Gregg Drilling Driller: S. Stone	Casing: 2" sched. 40 PVC Drill Bit Diameter: 6 inches
Drilling Method: Hollow Stem Auger	Perforation: 0.020 Slotted PVC from 8.7 ft to 3.7 ft
Drilling Equipment: Mobile B-53	Pack: #3 Monterey Sand from 9.0 ft to 3.3 ft
Sampler: CA Modified Split-spoon	Seal: Bentonite Chips from 3.3 ft to 2.3 ft
	Cement/Bentonite Grout from 2.3 ft to 0 ft

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & baserock						
	SAND, medium to fine, brown, and medium to fine(+) gravel.						
	SILT, Clayey, black, trace fine sand.	OL					
	SILT, Clayey, black, trace 2mm. brown needles.				5-13-16		OVM Malfunction
5	SILT, Sandy, green, moist, rootlet fragments.						
					6-8-7		OVM Malfunction
	SAND, coarse to fine(+), green, little fine gravel, moist.	SW					
	SAND, Silty(+) to clayey, green, moist.	SM					
					3-6-8		OVM Malfunction
10							1.5-foot thick bentonite seal below vapor extraction well
15							

ROUX

Project: ARCO FACILITY NUMBER 2162 15135 Hesperian Blvd, San Leandro, CA	Log of Well No. VW2
Date Started: 6/5/91 Completed: 6/5/91	Measuring Point Elevation: 30 ft Total Depth: 9.8 ft
Logged By: Jonathan Florez Checked By: L.E.	Water Level During Drilling: 9.8 ft Stabilized: ft
Drilling Co: Gregg Drilling Driller: S. Stone	Casing: 2" sched. 40 PVC Drill Bit Diameter: 6 inches
Drilling Method: Hollow Stem Auger	Perforation: 0.020 Slotted PVC from 9 ft to 4 ft
Drilling Equipment: Mobile B-53	Pack: #3 Monterey Sand from 9.3 ft to 3.7 ft
Sampler: Cuttings	Seal: Bentonite Chips from 3.7 ft to 2.7 ft
	Cement/Bentonite Grout from 2.7 ft to 0 ft

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sample	Blow Counts	OVM (ppm)	REMARKS
	Asphalt & basecrock						
	SAND, medium to fine, brown, and fine gravel.						
	SILT, Clayey, black.	OL					
5							
	SILT, Clayey, green.						
							0.5-foot thick bentonite seal below vapor extraction well
10							
15							

Depth of boring: 18–1/2 feet Diameter of boring: 12 inches Date drilled: 09/08/92

Well depth: 16 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 8 to 16 feet Filter pack: #3 Sand Slot size: 0.020–inch

Drilling Company: Exploration GeoServices Driller: John and Dennis

Method Used: Hollow–Stem Auger Field Geologist: Lou Leet

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Asphalt–covered surface.	
0				GW	Asphalt (4 inches).	
					Sandy gravel, fine to coarse gravel, fine– to coarse–grained sand, brown, damp, medium dense; shell fragments: baserock.	
2				ML	Clayey silt with sand, fine– to medium–grained sand, black, damp, medium plasticity, very stiff.	
4	S–4.5	7 10 18				
6						
8	S–8.5	3 4 5	12	ML	Sandy silt with clay, fine– to medium–grained sand, gray–brown, very moist, low to medium plasticity, stiff; product odor.	
10	S–10		126		Water at 10–1/2 feet.	
		2	3		Lost sample.	
12		4 6 3 4 4				
14		2 3 5 2 3 5		SM	Silty sand with gravel, fine– to medium–grained sand, fine to coarse gravel, brown, moist, medium dense.	
16			0			
		4 6 11		CL	Silty clay, dark brown, damp, medium plasticity, very stiff.	
18					Total depth = 18–1/2 feet.	
20						

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LOG OF BORING B–5/MW–1
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE 4

Depth of boring: 18-1/2 feet Diameter of boring: 12 inches Date drilled: 09/08/92

Well depth: 16 feet Material type: Sch 40 PVC Casing diameter: 4 inches

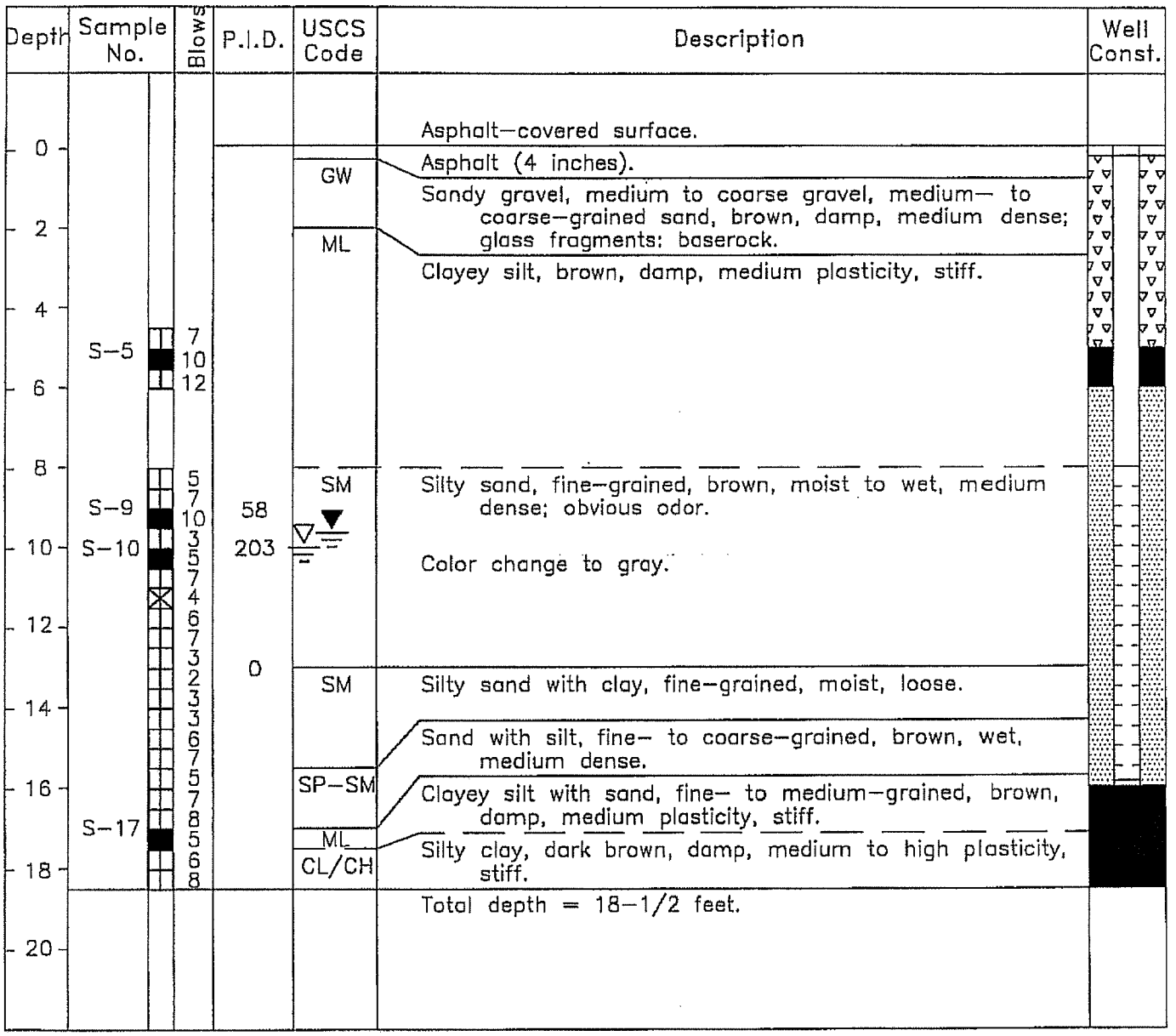
Screen interval: 8 to 16 feet Filter pack: #3 Sand Slot size: 0.020-inch

Drilling Company: Exploration GeoServices Driller: John and Dennis

Method Used: Hollow-Stem Auger Field Geologist: Lou Leet

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA



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LOG OF BORING B-6/MW-2
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE 5

Depth of boring: 19 feet Diameter of boring: 12 inches Date drilled: 09/08/92

Well depth: 15 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 8 to 15 feet Filter pack: #3 Sand Slot size: 0.020-inch

Drilling Company: Exploration GeoServices Driller: John and Dennis

Method Used: Hollow-Stem Auger Field Geologist: Lou Leet

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Asphalt-covered surface.	
0				SM	Asphalt (4 inches).	
					Silty sand, fine- to medium-grained, brown, damp, medium dense.	
2				ML	Clayey silt, black, moist, medium plasticity, very stiff.	
4	S-5	5 7 11	0		Color change to brown at 5-1/2 feet.	
6	S-7.5	5 5 10	0			
8		5 6 6			Silty sand with clay, fine- to medium-grained, brown, very moist, medium dense.	
10	S-10	5 6 7	0	SM	Silty sand, fine- to medium-grained, brown, wet, medium dense.	
		10 6 6		SM	Sandy gravel, fine to medium gravel, fine- to coarse-grained sand, brown, wet, medium dense.	
12		5 4 4	0	GW	Silty sand, fine- to medium-grained, brown, wet, medium dense.	
		3 3 5		SM	Sandy silt with clay, fine-grained, brown, wet, low plasticity, stiff.	
14		3 4 6	0	ML	Silty sand, fine-grained, brown, very moist, loose.	
		7 10 12	0	SM	Clayey silt with sand, fine-grained, brown, damp to moist medium stiff.	
16	S-16.5		0	ML	Silty sand, fine- to medium-grained, brown, damp, medium dense.	
			0	SM	Clayey silt with sand, fine-grained, dark brown, damp, low plasticity, very stiff.	
18				ML	Total depth = 19 feet.	
20						

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LOG OF BORING B-7/MW-3
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE 6

Depth of boring: 21 feet Diameter of boring: 12 inches Date drilled: 09/08/92

Well depth: 18 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 10 to 18 feet Filter pack: #3 Sand Slot size: 0.020-inch

Drilling Company: Exploration GeoServices Driller: John and Dennis

Method Used: Hollow-Stem Auger Field Geologist: Lou Leet

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Asphalt-covered surface.	
0				GW	Asphalt (4 inches).	
					Sandy gravel, fine to coarse gravel, medium- to coarse-grained sand, brown, damp, medium dense; glass fragments: baserock.	
2				ML	Clayey silt, brown, damp, low to medium plasticity, very stiff.	
4	S-5	7 15 17	0		Color change to black.	
6						
8			23	SM	Silty sand with clay, fine- to medium-grained sand, brown, moist to very moist, medium dense; rootlet void.	
10	S-9.5	3 7 8				
	S-11	3 4				
12	S-11.5	7 3 3			Odor.	
		3 3 3		GP-GM	Sandy gravel with silt, fine to coarse gravel, fine- to coarse-grained sand, dark brown, wet, loose.	
14		3 2 3		SM	Silty sand, fine-grained, brown, very moist.	
16		10 3 7 8	0	SM	With clay. Silty sand, fine- to coarse-grained, very moist, medium dense.	
18	S-18.5			ML	Clayey silt, dark gray-brown, damp, medium plasticity, very stiff.	
20					Total depth = 21 feet.	

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PROJECT 62019.02

LOG OF BORING B-8/MW-4
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE 7

SOIL BORING LOG **Boring No. CB-1** **Sheet: 1 of 1**

Client	ARCO Station 2162	Date	July 17, 2007
Address	15135 Hesperian Boulevard	Drilling Co.	RSI rig type: Direct Push
	San Leandro, CA	Driller	Jose Velasco
Project No.	E2162-01	Method	Direct Push Hole Diameter: 2 inches
Logged By:	Collin Fischer	Sampler:	Continuous Casing
Well Pack	sand: N/A	Well Construction	Casing Material: N/A Screen Interval: N/A
	bent.: N/A		Casing Diameter: N/A. Screen Slot Size: N/A
	grout: N/A	Depth to GW:	▽ first encountered = 10 feet ▼ static = N/A

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
						1	Air Knife Fill		
						2			
						3			
						4			
						5		Silty Clay, CL, (5Y 2.5/1), black, dry, non plastic, hard, 85% clay 15% silt.	
						6	CL		
						7		Silty Sand with Clay, SM, (2.5Y 4/3), olive brown, moist, fine grained	
S	CB-1	N/A	0954	80%		8	SM	medium dense, 70 % sand 20% silt 10% clay.	
	7.5'-8'					9	CL	Silty Clay, CL, (2.5Y 4/3), olive brown, moist, medium plasticity, hard 80% clay 20% silt	
						10	▽	Silty Sand trace Clay, SM, (5Y 3/2), dark olive grey, wet	
						11	SM	medium-fine grained, soft, 70% sand 30% silt trace clay	
S	CB-1	N/A	0956	100%		12		Silty Sand with Gravel, SM, (2.5Y 4/3), olive brown, wet	
	11.5'-12'					13		medium-fine grained sand, medium grained gravel, dense 60% sand 30 % silt 10% gravel.	
						14	CL	Silty Clay, (2.5Y 4/3), olive brown, wet, low plasticity, soft, 80% clay 20% silt.	
						15			
S	CB-1	N/A	0958	100%		16			
	15.5'-16'					17			
						18			
						19			
						20			

Comments: Continuously sampled starting at 5 feet bgs.

STRATUS ENVIRONMENTAL, INC.

SOIL BORING LOG **Boring No. CB-2** **Sheet: 1 of 1**

Client	ARCO Station 2162	Date	July 17, 2007
Address	15135 Hesperian Boulevard	Drilling Co.	RSI rig type: Direct Push
	San Leandro, CA	Driller	Jose Velasco
Project No.	E2162-01	Method	Direct Push Hole Diameter: 2 inches
Logged By:	Collin Fischer	Sampler:	Continuous Casing
Well Pack	sand: N/A	Well Construction	Casing Material: N/A Screen Interval: N/A
	bent.: N/A		Casing Diameter: N/A. Screen Slot Size: N/A
	grout: N/A	Depth to GW:	▽ first encountered = 10 feet ▼ static = N/A

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
						1	Air Knife Fill		
						2			
						3			
						4			
						5		No Recovery	
						6			
						7			
S	CB-2	N/A	N/A	0%		8		Silty Sand with Clay, SM, (5Y 2.5/2), black, moist, coarse grained, dense	
	7.5'-8'					9	SM	80% sand 15% silt 5% clay.	
						10		Clay with Silt, CL, (5Y 3/1), very dark grey, moist, medium plasticity, firm	
						11	CL	hydrocarbon staining, hydrocarbon odor, 95% clay 5% silt.	
S	CB-2	N/A	0836	80%		12		Silty Sand with Clay, SM, (5Y 4/1), dark grey, wet, medium-fine grained medium dense, hydrocarbon odor, 60% sand 35% silt 5% clay.	
	11.5'-12'					13	SM		
						14		Silty Sand with Gravel trace Clay, SM, (5Y 3/2), dark olive grey, wet coarse grained, loose, hydrocarbon odor	
						15		60% sand 30% silt 10% gravel trace clay.	
S	CB-2	N/A	0839	80%		16	ML	Clayey Silt, ML, (2.5Y 4/2), dark grayish brown, wet, non plastic, soft 60% silt 40% clay.	
	15.5'-16'					17			
						18			
						19			
						20			

Comments: Continuously sampled starting at 5 feet bgs.

STRATUS ENVIRONMENTAL, INC.

SOIL BORING LOG **Boring No. CB-3** **Sheet: 1 of 1**

Client	ARCO Station 2162	Date	July 17, 2007
Address	15135 Hesperian Boulevard	Drilling Co.	RSI rig type: Direct Push
	San Leandro, CA	Driller	Jose Velasco
Project No.	E2162-01	Method	Direct Push Hole Diameter: 2 inches
Logged By:	Collin Fischer	Sampler:	Continuous Casing
Well Pack	sand: N/A	Well Construction	Casing Material: N/A Screen Interval: N/A
	bent.: N/A		Casing Diameter: N/A. Screen Slot Size: N/A
	grout: N/A	Depth to GW:	▽ first encountered = 11 feet ▼ static = N/A

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
						1	Air Knife Fill		
						2			
						3			
						4			
						5			
						6			
						7	ML	Clayey Silt with Sand, ML, (5Y 3/2), dark olive grey, dry, low plasticity stiff, 70% silt 20% clay 10% sand.	
S	CB-3 7.5'-8'	N/A	0730	50%		8			
						9			
						10		Clay trace Silt, CL, (5Y 4/1), dark grey, moist, medium plasticity, stiff hydrocarbon staining, hydrocarbon odor, 97% clay 3% silt.	
						11	CL		
S	CB-3 11.5'-12'	N/A	0736	100%		12		Silty sand trace Clay, SM, (5Y 3/2), dark olive grey, wet, medium-fine grained medium dense, hydrocarbon odor, hydrocarbon staining 80% sand 17% silt 3% clay	
						13			
						14	SM		
						15		Silty Sand with Clay, SM, (5Y 4/4), dark yellowish brown, moist medium-fine grained, medium dense, 70% sand 20% silt 10% clay.	
S	CB-3 15.5'-16'	N/A	0738	100%		16			
						17			
						18			
						19			
						20			

Comments: Continuously sampled starting at 5 feet bgs.

STRATUS ENVIRONMENTAL, INC.

SOIL BORING LOG **Boring No. CB-4** **Sheet: 1 of 1**

Client	ARCO Station 2162	Date	July 17, 2007
Address	15135 Hesperian Boulevard	Drilling Co.	RSI rig type: Direct Push
	San Leandro, CA	Driller	Jose Velasco
Project No.	E2162-01	Method	Direct Push Hole Diameter: 2 inches
Logged By:	Collin Fischer	Sampler:	Continuous Casing
Well Pack	sand: N/A	Well Construction	Casing Material: N/A Screen Interval: N/A
	bent.: N/A		Casing Diameter: N/A. Screen Slot Size: N/A
	grout: N/A	Depth to GW:	▽ first encountered = 11 feet ▼ static = N/A

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
						1	Air Knife Fill		
						2			
						3			
						4			
						5			
						6			
						7		Silty Clay, CL, (10YR 3/4), dark yellowish brown, dry, low plasticity stiff, 65% caly 35% silt	
S	CB-4	N/A	1122	70%		8			
	7.5'-8'					9	CL		
						10			
						11	▽	Clay with Silt, CL, (10YR 3/3), dark brown, dry, high plasticity, stiff 90% clay 10% silt	
S	CB-4	N/A	1124	75%		12		Silty Sand with clay, SM, (2.5Y 3/2), very dark grayish brown, wet	
	11.5'-12'					13	SM	fine grained, medium dense, hydrocarbon staining, hydrocarbon odor 60% sand 30% silt 10% clay.	
						14		Sand with Silt, Gravel and Clay, SM, (5Y 3/2), dark olive grey, wet	
						15		medium grained, loose, hydrocarbon staining, hydrocarbon odor 70% sand 10% silt 7.5% gravel 7.5% clay	
S	CB-4	N/A	1127	90%		16		Clay, CL, (2.5Y 4/4), olive brown, moist, high plasticity, hard	
	15.5'-16'					17	CL	hydrocarbon staining, slight hydrocarbon odor, 100% clay	
						18			
						19			
						20			

Comments: Continuously sampled starting at 5 feet bgs.

STRATUS ENVIRONMENTAL, INC.

SOIL BORING LOG **Boring No. CB-4** **Sheet: 1 of 1**

Client	ARCO Station 2162	Date	July 17, 2007
Address	15135 Hesperian Boulevard	Drilling Co.	RSI rig type: Direct Push
	San Leandro, CA	Driller	Jose Velasco
Project No.	E2162-01	Method	Direct Push Hole Diameter: 2 inches
Logged By:	Collin Fischer	Sampler:	Continuous Casing
Well Pack	sand: N/A	Well Construction	Casing Material: N/A Screen Interval: N/A
	bent.: N/A		Casing Diameter: N/A. Screen Slot Size: N/A
	grout: N/A	Depth to GW:	▽ first encountered = 11 feet ▼ static = N/A

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
						1	Air Knife Fill		
						2			
						3			
						4			
						5			
						6			
						7		Silty Clay, CL, (10YR 3/6), dark yellowish brown, dry, low plasticity hard, 65% caly 35% silt	
S	CB-5	N/A	1207	100%		8			
	7.5'-8'					9	CL	Clay with Silt, CL, (2.5Y 4/2), dark grayish brown, dry, low plasticity, firm 90% clay 10% silt	
						10			
						11	▽	Clay with Silt, CL, (2.5Y 3/3), dark olive brown, dry, low plasticity, firm hydrocarbon staining, hydrocarbon odor, 90% clay 10% silt	
S	CB-5	N/A	1209	100%		12		Silty Sand trace gravel, SM, (2.5Y 2.5/1), black, wet, medium grained, loose	
	11.5'-12'					13		hydrocarbon staining, hydrocarbon odor, 70% sand 30% silt	
						14	SM	Silty Sand, SM, (2.5Y 2.5/1), black, wet, medium grained, loose	
						15		hydrocarbon staining, hydrocarbon odor, 70% sand 30% silt	
S	CB-5	N/A	1212	100%		16		Clay, CL, (10YR 3/4), dark yellowish brown, moist, high plasticity, firm	
	15.5'-16'					17	CL	100 % clay	
						18			
						19			
						20			

Comments: Continuously sampled starting at 5 feet bgs.

STRATUS ENVIRONMENTAL, INC.

SOIL BORING LOG **Boring No. MW-5** **Sheet: 1 of 1**

Client	Arco 2162	Date	April 24, 2009
Address	15135 Hesperian Boulevard	Drilling Co.	RSI Drilling rig type: Geoprobe 6600
	San Leandro, CA	Driller	Fernando
Project No.	E2162	Method	Hollow Stem Auger Hole Diameter: 10 inches
Logged By:	Collin Fischer	Sampler:	1 1/4" geoprobe tubing
Well Pack	sand: 6 ft. to 16 ft	Well Construction	Casing Material: Schedule 40 PVC Screen Interval: 8 ft. to 16 ft.
	bent.: 3 ft. to 6 ft.		Casing Diameter: 4 in. Screen Slot Size: 0.010-in.
	grout: 0 ft. to 3 ft.	Depth to GW:	▽ first encountered 10.5' bgs static ▼

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
						1		Cleared to 6.5' bgs. with air knife	
						2			
						3			
						4			
						5	CL		
						6			
						7			
			0530	100		8		Sandy clay, CL, (6.5'-8.5' bgs), dark grayish brown, moist, medium plasticity 70% clay, 30% fine to medium grained sand	
						9			
						10		Silty clay, CL, (8.5'-10.5' bgs), dark grayish brown, moist, medium plasticity 80% clay, 20% silt	
			0540	100		11	▽	Silty sand with clay, SM, (10.5'-12' bgs), dark grayish brown, wet	
						12	SM	60% medium grained sand, 25% silt, 10% clay, 5% fine gravel Silty sand with clay, SM, (12'-13.5' bgs), dark yellowish brown, wet 60% medium grained sand, 25% silt, 10% clay, 5% fine gravel	
			0555	100		13		Silty sand with clay, SM, (12'-13.5' bgs), dark yellowish brown, wet 60% medium grained sand, 30% silt, 20% clay	
						14			
						15			
						16	ML	Clayey silt, ML, (15'-16' bgs), dark yellowish brown, moist, medium plasticity 60% silt, 40% clay	
						17			
						18			
						19			
						20			

Recovery

Sample

Comments: Boring sampled to 16' bgs with geoprobe, then drilled to 16' bgs with 10" hollow stem augers.

STRATUS ENVIRONMENTAL, INC.

SOIL BORING LOG **Boring No. MW-6** **Sheet: 1 of 1**

Client	Arco 2162	Date	April 24, 2009
Address	15135 Hesperian Boulevard	Drilling Co.	RSI Drilling rig type: Geoprobe 6600
	San Leandro, CA	Driller	Fernando
Project No.	E2162	Method	Hollow Stem Auger Hole Diameter: 10 inches
Logged By:	Collin Fischer	Sampler:	1 1/4" geoprobe tubing
Well Pack	sand: 6 ft. to 16 ft	Well Construction	Casing Material: Schedule 40 PVC Screen Interval: 8 ft. to 16 ft.
	bent.: 3 ft. to 6 ft.		Casing Diameter: 4 in. Screen Slot Size: 0.010-in.
	grout: 0 ft. to 3 ft.	Depth to GW:	▽ first encountered 10' bgs static ▼

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Details	Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
						1		Cleared to 6.5' bgs. with air knife	
						2			
						3			
						4			
						5	CL		
						6			
						7			
			0730	100		8		Sandy clay, CL, (6.5'-8.5' bgs), dark yellowish brown, moist medium plasticity, 70% clay, 30% fine to medium grained sand	
						9			
						10 ▽		Silty clay, CL, (8.5'-10' bgs), dark grayish brown, moist, medium plasticity 100% clay	
			0740	100		11			
						12	SM	Silty sand with gravel, SM, (10'-13.5' bgs), dark grayish brown, wet 60% medium to coarse grained sand, 30% silt, 10% fine gravel	
						13			
			0755	100		14			
						15		Silty sand with clay, SM, (13.5'-15.5' bgs), dark yellowish brown, wet 50% fine to medium grained sand, 30% silt, 20% clay	
						16	CL	Clay, CL, (15.5'-16' bgs), dark yellowish brown, moist, medium plasticity 100% clay	
						17			
						18			
						19			
						20			

Recovery

Sample

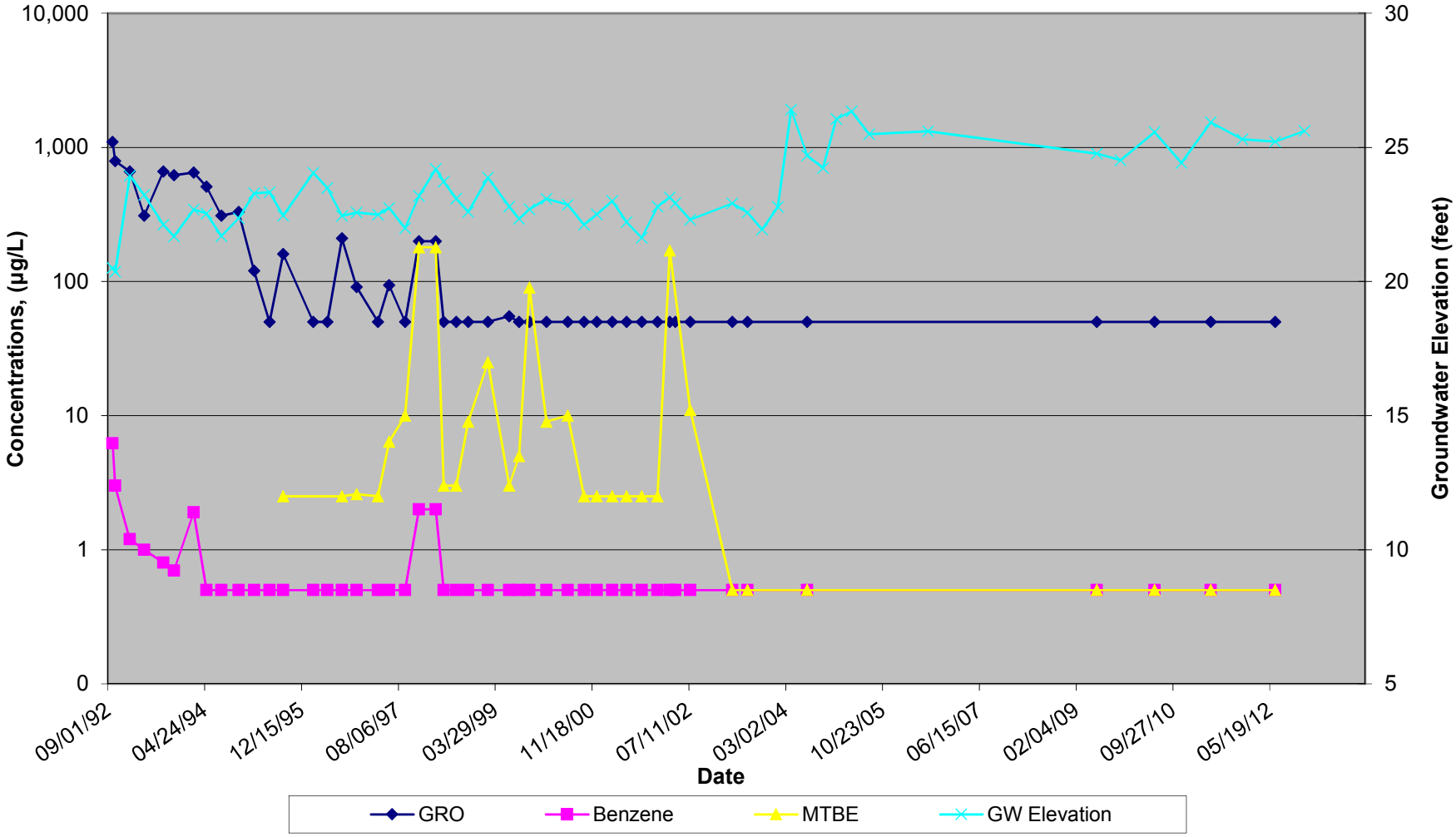
Comments: Boring sampled to 16' bgs with geoprobe, then drilled to 16' bgs with 10" hollow stem augers.

STRATUS ENVIRONMENTAL, INC.

APPENDIX F

GRO, Benzene, and MTBE Concentration Trend Graphs

MW-1 Concentrations and Groundwater Elevation vs Time
Arco Station No. 2162
15135 Hesperian Blvd., San Leandro, CA



MW-2 Concentrations and Groundwater Elevation vs Time
Arco Station No. 2162
15135 Hesperian Blvd., San Leandro, CA