Atlantic Richfield Company

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March 28, 2014

Re: Soil and Groundwater Investigation Report, Updated Conceptual Site Model and Request for Closure
Atlantic Richfield Company Station #2162
15135 Hesperian Boulevard, San Leandro, California
ACEH Case #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

SOIL AND GROUNDWATER INVESTIGATION REPORT, UPDATED CONCEPTUAL SITE MODEL AND REQUEST FOR CLOSURE

Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard
San Leandro, California
ACEH Case No. RO0000190

Prepared for

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

Prepared by

BROADBENT

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March 28, 2014

Project No. 06-88-620

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March 28, 2014

Project No. 06-88-620

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

Attn.: Mr. Chuck Carmel

Re: Soil and Groundwater Investigation Report, Updated Conceptual Site Model, and Request for Closure
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 *Soil and Groundwater Investigation Report, Updated Conceptual Site Model and Request for Closure* (Report) for Atlantic Richfield Company Station No. 2162 located at 15135 Hesperian Boulevard, San Leandro, California (Site). This Report documents recent field work intended to close data gaps identified in the September 9, 2013 *Conceptual Site Model and Addendum to the Revised Work Plan* including further delineation of the downgradient extent of petroleum hydrocarbons in groundwater and to assess whether the onsite hydrocarbon impacts extend to offsite receptors.

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

Sincerely,
BROADBENT & ASSOCIATES, INC.

James Ramm for

Lu Damerell, P.G.
Project Geologist

PROFESSIONAL GEOLOGIST
KRISTENE TIDWELL
No. 969
CERTIFIED HYDRO GEOLOGIST
STATE OF CALIFORNIA
Exp 11/30/13

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

Enclosures

cc: Mr. Keith Nowell, Alameda County Environmental Health (Submitted via ACEH ftp site)
Electronic copy uploaded to GeoTracker

SOIL AND GROUNDWATER INVESTIGATION, UPDATED CONCEPTUAL SITE MODEL AND REQUEST FOR CLOSURE
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard, San Leandro, California
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SOIL AND GROUNDWATER INVESTIGATION, UPDATED CONCEPTUAL SITE MODEL AND REQUEST FOR CLOSURE
Atlantic Richfield Company Station No. 2162
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DRAWINGS

TABLES

APPENDICES

SOIL AND GROUNDWATER INVESTIGATION, UPDATED CONCEPTUAL SITE MODEL AND REQUEST FOR CLOSURE
Atlantic Richfield Company Station No. 2162
15135 Hesperian Boulevard, San Leandro, California
ACEH Case No. RO0000190

1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company – a BP affiliated company (ARC), Broadbent & Associates, Inc. (Broadbent) has prepared this *Soil and Groundwater Investigation* for the ARC Station No. 2162, located at 15135 Hesperian Boulevard, San Leandro, California (Site). This Report has been prepared in conformance with the following documents (collectively hereinafter referred to as, "Work Plan Documents"):

- *Work Plan for Off-Site Groundwater Investigation* (Broadbent, 2012)
- *Revised Work Plan for Off-Site Groundwater Investigation* (Broadbent, 2013a)
- *Conceptual Site Model and Addendum to the Revised Work Plan* (Broadbent, 2013b)

The comprehensive scope of work outlined in these Work Plan Documents was approved by ACEH during a meeting with Broadbent held on October 3, 2013.

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. A more thorough description of Site background is provided in Appendix A. 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 KFC restaurant to the south, and a parking lot for a SBC Communications (SBC) building is located on the adjacent property to the west. Across Ruth Court to the north is a SBC building, which is the site of a former diesel UST case now closed. A Site Location Map is provided as Drawing 1. A Site map depicting the location of the recent December 2013 soil borings, and current monitoring wells is provided as Drawing 2.

The regional geology and hydrogeology are provided in the CSM table (Table 1). Current and historic analytical groundwater monitoring data is presented in Drawing 3 and Tables 2 through 5. Historic groundwater gradient with direction and magnitude is presented as Table 6. Historical Site data, including historical drawings, soil and groundwater analytical data are provided in Appendix B. Copies of available soil boring and monitoring well construction logs are provided within Appendix C. GRO, benzene and MTBE concentration trend graphs for wells MW-1 and MW-2, are provided in Appendix D. SBC site data is included in Appendix E.

3.0 FIELD INVESTIGATION

The purpose of the field investigation described below was to close data gaps identified in the *Addendum to the Work Plan* (Broadbent, 2013b), to further delineate the downgradient extent of

petroleum hydrocarons in groundwater, and to assess whether the onsite hydrocarbon impacts extend to offsite receptors. The scope of work included:

- Advancing three offsite soil borings (two proposed in the Work Plan Documents, and one proposed and approved in an ACEH personal communication)
- Collecting soil and groundwater samples from new borings
- Conducting a preferential pathway study
- Requesting well records from the Alameda County Public Works Agency (ACPWA)

The offsite soil borings were advanced to characterize groundwater downgradient of the Site, near the the KFC restaurant.

3.1 Soil Boring Advancement

Details of the soil boring activities are presented below.

3.1.2 Prefield Activities

Prior to conducting field activities, Broadbent notified the manager of the KFC restaurant located at 15179 Hesperian Boulevard of the locations of the three proposed soil borings (SB-1, SB-2 and SB-3). Permission to work on the KFC property was granted using a written access agreement.

A drilling permit from the Alameda County Public Works Agency (ACPWA) was secured prior to performing the field investigation (Appendix F). Borings were marked and areas were outlined with white paint, and an Underground Service Alert (USA) ticket was secured to notify member utility companies of the planned field activities. Additionally, all boring locations were cleared for underground utilities by NORCAL Geophysical Consultants, Inc. (NORCAL) on December 18, 2013. NORCAL's survey report is included in Appendix G. On January 14, 2013, Norcal conducted additional utility locating activities to produce the data used solely to create a utility map.

Upon completion of access, notifications and utility clearance activities, Gregg Drilling & Testing (Gregg) mobilized to the Site on December 23, 2013. Soil borings SB-1, SB-2 and SB-3 were cleared to 6.5 feet below ground surface (bgs) using air knife technology.

3.1.3 Soil Boring Activities

On December 23, 2013, a Broadbent field geologist observed Gregg advance three soil borings in the paved areas of the KFC (Drawing 2). Soil borings SB-1, SB-2 and SB-3 were advanced to approximately 14 feet bgs where groundwater was encountered. Each boring was continuously logged beginning at a depth of 6.5 feet (below borehole clearance depth) to the total depth of the boring. Included on the logs is data from soil that was screened using a photoionization detector. The boring logs are provided in Appendix H.

Broadbent evaluated historic encountered groundwater to identify fluctuations relative to historical measurements. Based on data interpretation, a smear zone was assumed to be present at SB-1, SB-2

and SB-3 between approximately 10 and 14 feet bgs. Accordingly, each soil sample was collected four feet below the highest historic groundwater level (10 feet bgs), at 14 feet bgs.

Collection of one grab-groundwater sample from each boring was performed using a disposable bailer in the open-hole. Upon completion of sampling, the soil borings were tremied with a cement/bentonite grout mix from the bottom of the borehole to the surface.

3.1.4 Soil Collection and Analysis

Soil samples were collected for laboratory analysis using acetate sample tubes capped with Teflon tape and plastic caps, placed on ice and submitted under chain-of-custody protocol to TestAmerica Environmental Laboratories, Inc. (TestAmerica) of Irvine, California, a State-certified environmental laboratory. Soil samples were analyzed for DRO (C10-C28), GRO (C6-C12) by EPA Method 8015B; benzene, toluene, ethylbenzene, and xylenes (BTEX); methyl-tert butyl ether (MTBE); tert-butyl alcohol (TBA); t-amyl methyl ether (TAME), ethyl-tert butyl ether (ETBE), di-isopropyl ether (DIPE); ethylene dibromide (EDB); 1,2 dichoroethane (1,2-DCA), Ethanol by EPA Method 8260 and Naphthalene. Soil analytical results are included in Table 2. Laboratory analytical reports are presented in Appendix I.

3.1.5 Groundwater Collection and Analysis

Groundwater samples were collected in 40 mL volatile organic analysis vials preserved with hydrochloric acid, placed on ice, and submitted under chain-of-custody protocol to TestAmerica for analysis of GRO; BTEX, MTBE, TBA, TAME, ETBE, DIPE, EDB, 1,2-DCA, Ethanol and Naphthalene. DRO analysis in groundwater samples was specified in the Work Plan Documents (Broadbent, 2012), however Broadbent was prevented from recovering an adequate sample as proper sample bottles were unavailable at sampling time. Grab-groundwater analytical results are presented in Table 3. Laboratory analytical reports are presented in Appendix I.

3.1.6 Excess Soil and Water Produced

Excess soil and water produced during investigation activities were temporarily stored onsite in 55-gallon, DOT-approved drums, pending characterization. These drums were removed and transported to a California-regulated facility.

3.2 Sensitive Receptor Survey

Results of a Sensitive Receptor Survey (SRS) performed by Closure Solutions (Closure Solutions, 2011) (which included a Department of Water Resources records request) identified two potential private-use irrigation wells located downgradient of the Site, approximately 2,250 feet and 2,350 feet to the west-southwest (Appendix J).

Broadbent supplemented Closure Solutions' SRS by requesting a well records search with ACPWA for the locations and/or uses of wells in the vicinity of the Site. Results of the search identified that the two closest wells to the Site are located approximately 809 feet and 442 feet downgradient, which are shown as well location 15 and 16, respectively, on Drawing J-1 of Appendix J. Drawing J-1 presents a plot of the ACPWA wells search results within a radius of approximately 2000 feet.

3.3 Preferential Pathway Study

Norcal conducted utility location surveys of the KFC and the Site on December 18, 2013 and January 14, 2014, respectively (Appendix G). The surveys identified underground utility lines and features that may be conduits for transmission of known contaminants at the Site. Utilities located by Norcal in the sidewalk right-of-way, however, do not appear to overlap with the lateral extent of the Site plumes (Drawing 4). It is, therefore, unlikely that Site contamination is migrating offsite. Furthermore, no utility lines were identified to be continuous across the property boundary between the Site and KFC. Based on the utility type, the depths of KFC utility trenches appear to be shallow and/or flow offsite. Moreover, utility lines shown on Plate 1 (Appendix G) show no connection to the KFC building, thus vapor intrusion is not a concern at the building.

Additionally, Broadbent performed an online public records search of utility maps in an attempt to obtain additional utility line locations and depths, however, no Site-specific maps were available at the time of the search.

4.0 INVESTIGATION RESULTS

4.1 Lithology

Logs for each soil boring (SB-1, SB-2 and SB-3) are included in Appendix H. Lithology noted in these logs is generally consistent with lithological data from previous investigations of the Site, predominantly clays and sands. A cross-section location map is included as Drawing 5. Cross-section A-A' is depicted on Drawing 6.

Clays and silts comprise the majority of the upper 14 ft of soils extending across the Site and KFC parcel. A silty and clayey sand layer occurs at variable depths between 10 ft to 18 ft bgs in which Site wells are typically screened. Soils encountered at depths below 14 ft and 18 ft bgs in Site and KFC were logged as Clays.

4.2 Soil Analytical Results

One soil sample was collected in each of the KFC boring locations (SB-1, SB-2 and SB-3) at a depth of approximately 14 feet bgs, within the assumed smear zone between approximately 10 and 14 feet bgs (see Section 3.1.3). Each soil sample was collected four feet below the lowest groundwater level (approximately 10 feet bgs) based on historical data. No petroleum compounds were detected above laboratory reporting limits in soil samples collected in the soil borings. Offsite migration of petroleum hydrocarbons appears not to have impacted soils at the downgradient KFC property.

4.3 Analytical Results from Grab-Groundwater Samples

Groundwater samples were collected from each soil boring advanced during the current investigation. No petroleum compounds were detected above laboratory reporting limits in the groundwater samples, with the exception of MTBE at concentrations of 15 µg/L and 6.0 µg/L in boring SB-1 and boring SB-2, respectively. TAME was detected at a concentration 0.92 µg/L in SB-1. Boring SB-3 contained no analytes above their respective laboratory reporting limits. Detection of MTBE in borings SB-1 and SB-2 indicates that the MTBE plume at MW-6 extends onto the KFC parcel. However, when the current concentration of MTBE in MW-6 of 88 µg/L is compared to the low concentrations in SB-1 (15 µg/L) and SB-2 (6.0 µg/L), it appears MTBE migration is limited to a short distance in the downgradient direction

and thus biodegradation of MTBE is likely occurring. The MTBE concentration of 6.0 µg/L in boring SB-2 defines the end of the plume due to the concentration being so close to the ESL for MTBE of 5.0 µg/L.

5.0 CONCLUSIONS

Broadbent carried out recent investigation activities in conformance with the Work Plan Documents designed to close remaining data gaps and move the Site towards closure based on the California State Water Resources Control Board's (CSWRCB) *Low Threat Underground Storage Tank Case Closure Policy* (CSWRCB, 2012). Based on the findings of this investigation remaining data gaps have been closed and the following conclusions were formed:

- Results of SRS activities identified that the two closest private wells downgradient of the Site are at distances of 442 feet and 809 feet.
- Findings of the preferential pathway study indicate utilities mapped within the property boundaries of the Site do not extend downgradient beyond the southern property boundary adjoining the KFC parcel. Results also determined that depths of KFC utility trenches located by Norcal appear to be shallow (likely above the water table at this location) and/or flow offsite. Moreover, located utility lines appear not to connect to the KFC building within the corridor between the building and Site plumes.
- No petroleum compounds were detected above laboratory reporting limits in soil samples collected in the soil borings, indicating that current KFC soils have not been impacted by Site plume.
- The current concentration of 88 µg/L MTBE in groundwater at MW-6 compared to 15 µg/L MTBE in SB-1 and 6.0 µg/L MTBE in SB-2 indicates that the Site MTBE plume extends onto the KFC parcel, but is continuing to naturally attenuate a short downgradient distance from the Site and does not extend beneath the KFC building.
- Due to the lack of volatile petroleum hydrocarbon compounds detected above laboratory limits in soil and groundwater samples collected during this investigation, soil vapor intrusion at the KFC building is not a concern. Therefore, soil vapor sampling at the Site and KFC is not warranted.

6.0 JUSTIFICATION FOR SITE CLOSURE

The Site was evaluated for Closure based on a comparison of the data presented in the CSM (Table 1) against the Low Threat UST Closure Policy. As noted above, the CSM that was initially submitted with the September 9, 2013 CSM (Broadbent, 2013b) and has been updated to reflect data collected during this current Site investigation.

Closure Criteria in the Low Threat UST Closure Policy are organized into the following categories:

- General Criteria
- Media-Specific Criteria-Groundwater
- Media-Specific Criteria – Petroleum Vapor Intrusion to Indoor Air
- Media-Specific Criteria – Direct Contact and Outdoor Air Exposure

• Additional Criteria

The following sections present the details of the evaluation.

6.1 General Criteria

The general criteria related to the Site use, presence of free product, sources and completeness of the Site understanding. As evidenced in the data presented in the CSM, a sufficiently good understanding of Site conditions, on- and offsite receptors and Site history has been established. These general criteria and a discussion of how the Site is consistent with these criteria are presented below.

The unauthorized release is located within the service area of a public water system
The Site is located within the East Bay Municipal Utilities District Service Area.

The unauthorized release consists solely of petroleum
Based on review of historical data, the release at the Site occurred in the areas of the former UST and waste oil tanks; and former product lines and dispensers. An upgradient SBC UST, which leaked diesel into soil and groundwater has been eliminated as a possible source of contamination at the Site, due to historic monitoring data showing concentrations of petroleum hydrocarbons below laboratory detection limits (Appendix E). Additionally, analytical data collected to date have shown no indication of any other contaminant releases from the Site other than petroleum (Appendix B; Tables 4 and 5). The Site has been a retail service station, and there is no evidence that any other activities have occurred at the Site, which may have caused non-petroleum releases.

The unauthorized release has been stopped
The USTs and pipelines where the releases occurred have been removed and/or replaced, and the waste oil tank has been removed; thereby, removing the primary sources of releases (Table 1). No measurable free product has ever been observed in Site groundwater monitoring wells. Therefore, LNAPL has been removed to the extent possible.

A conceptual site model that assesses the nature, extent, and mobility of the release has been Developed
A CSM has been prepared and updated with recent data for this Site and is presented as Table 1.

Secondary source has been removed to the extent practical
Secondary source soil around the former UST complex, former product pipelines and former waste oil tank has been overexcavated during a previous investigation (Appendix B). Therefore, the secondary source has been removed to the extent practical.

Site soil and groundwater have been tested for MTBE and results reported in accordance with Health and Safety Code 25296.15.
Soil and groundwater samples collected have been analyzed for GRO, benzene and MTBE. Based on recent and historical data, the MTBE plume has been fully delineated. The maximum concentration of MTBE was contained in a sample collected in June 1997 from MW-1 at a concentration of 1,900 µg/L (Appendix B). MTBE concentration trend graphs for wells MW-1 and MW-2 show a strong decreasing trend for MTBE (Appendix D). Furthermore, when the current concentration of MTBE in MW-6 of 88 µg/L (Table 4) is compared to the low concentrations in the recent offsite borings SB-1 (15 µg/L) and SB-2 (6.0 µg/L) (Table 3), it appears MTBE migration is limited to a short distance in the downgradient

direction and thus biodegradation of MTBE is occurring. General isoconcentration maps based on the current data are included in Drawings 7 through 9. An MTBE isoconcentration contour map for the most recent groundwater monitoring and sampling event (4Q13) is presented as Drawing 9.

Nuisance as defined by the Water Code section 13050 does not exist at this site
A nuisance as defined by the water code section 13050 does not exist at this Site.

6.2 Media-Specific Criteria – Groundwater

The Low Threat UST Closure Policy lists four scenarios for groundwater plumes. Recent groundwater monitoring (4Q13) and soil boring investigation results (December 2013) indicates that the petroleum hydrocarbon concentrations only exceed cleanup levels in three sampling locations, well MW-6 and borings SB-1 and SB-2. Isoconcentration maps based on the current data are included in Drawings 7 through 9. These drawings show a plume length of less than 100 feet. No measurable free product has ever been observed in Site groundwater monitoring wells. Furthermore, the nearest water supply well and surface water are over 250 feet away, as presented in the CSM (Table 1). The combination of these factors indicates that Criteria 1 of the Low Threat UST Closure Policy are met, and a very low to no threat to possible drinking or surface water from the petroleum plume at the Site.

6.3 Media-Specific Criteria – Petroleum Vapor Intrusion to Indoor Air

The Site is an active service station, therefore the Low Threat UST Closure Policy considers that petroleum vapors from onsite fueling activities are a far greater risk than those associated with exposure to vapors from historic petroleum releases; therefore, this Site meets these criteria for closure according to the Low Threat UST Closure Policy. Additionally, due to the lack of volatile petroleum hydrocarbon compounds detected above laboratory limits in soil and groundwater samples collected during the current investigation, soil vapor intrusion at the KFC building is not a concern. Therefore, soil vapor sampling at the Site and KFC is not warranted.

6.4 Media-Specific Criteria – Direct Contact and Outdoor Air Exposure

Soil analytical results from historical Site investigations are included in Appendix B. For the direct contact and outdoor air exposure, only current soil data was considered. Soil samples from 0 to 10 feet bgs were collected during activities in 1991 and 1992, but remedial activities (1991 UST removal and overexcavation and 2003 product line removal and soil excavation; Appendix A) were performed after those samples were collected. In 2007, soil borings CB-1 through CB-5 were advanced near areas where soil impacts had previously been noted. Specifically, these borings were near USTs (borings CB-1 and CB-2), the dispensers (CB-3) and near the property line/current well MW-6 (CB-4 and CB-5). Soil samples were collected at 7.5 feet bgs in each boring and no benzene or ethylbenzene were reported in any sample. No samples were collected above 7.5 feet bgs. However, the highest concentration of benzene and ehtylbenzene detected during field activities conducted in 1992 was from SB-4 at 4.5 feet at a concentration of 0.025 mg/kg and SB-3 at 4 feet bgs at a concentration of 0.16 mg/kg, respectively. The maximum allowable concentration for benzene and ethylbenze for a commercial/industrial scenario are well above these concentrations for benzene and ethylbenzene.

In 1991 during waste oil tank removal activities, a soil sample was collected at 10 feet bgs and analyzed for a full suite of volatile organic compounds (VOCs). No VOCs were detected, including naphthalene.

Based on the above analysis of historic soil concentrations from 0 to 10 feet bgs, the Site meets the LTCP criteria for direct contact and outdoor air exposure.

6.5 Recommendation for Case Closure

As presented above and in the attached CSM (Table 1), this Site appears to meet all applicable criteria for case closure under the Low Threat Closure Policy. Over 20 years of groundwater monitoring history has shown petroleum compounds at the Site have been effectively remediated by previous overexcavation activities and natural attenuation. Since no significant offsite impacts are present, vapor intrusion risks are not present to offsite building occupants. The closest surface water and potential offsite drinking water well is 422 feet from the Site. Further, the following activities have been performed to support recommendation of case closure: characterization both on- and offsite conditions, evaluation of receptors, description of Site history and technical analysis. On this basis, we hereby recommend that a determination of No Further Action be made for this Site. Upon concurrence of this recommendation from the ACEH, closure activities including well decommissioning should be implemented.

7.0 REFERENCES

Alameda County Environmental Health, Regulatory meeting held in ACEH offices in Alameda, California. October 3, 2013.

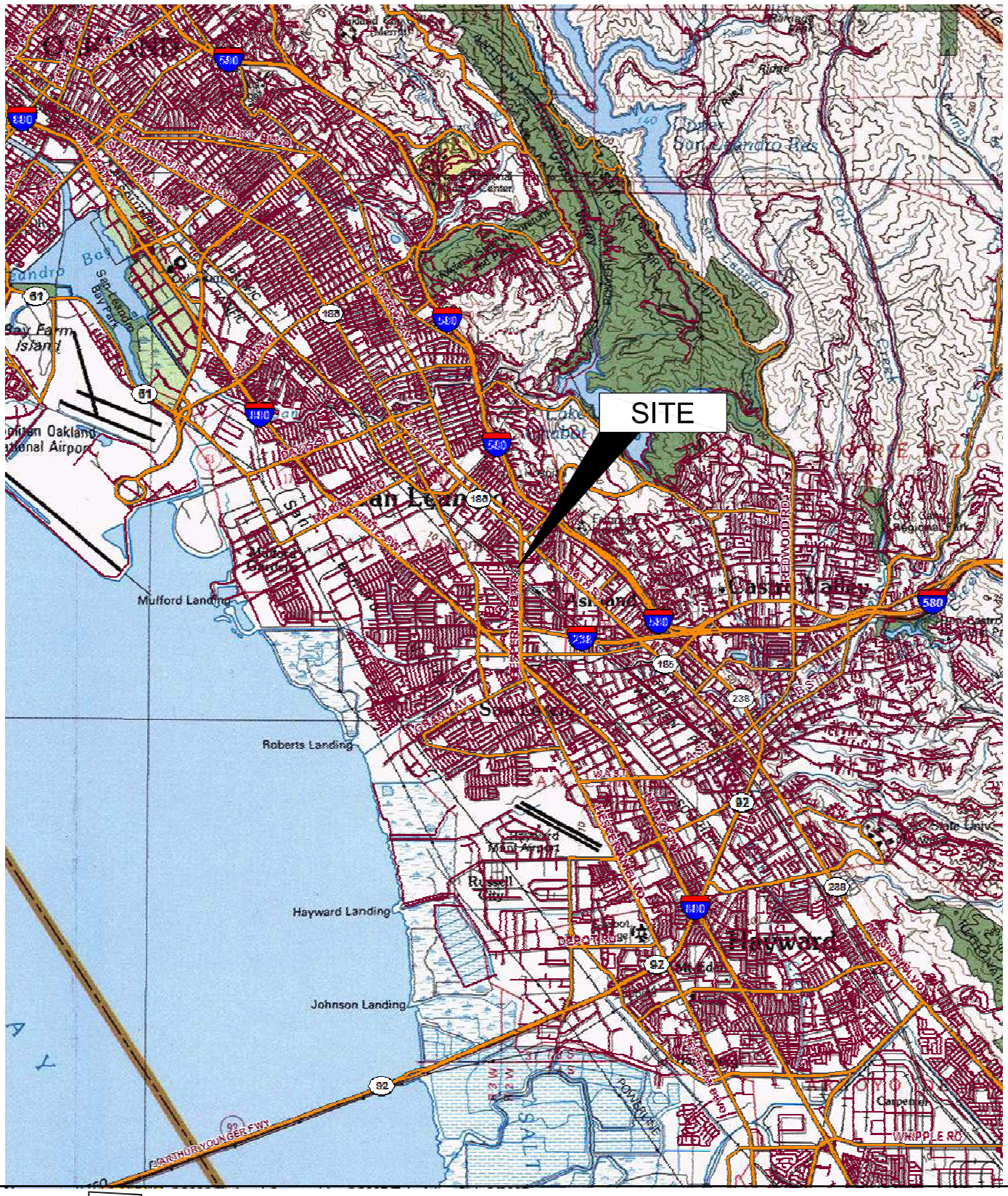
Broadbent & Associates, Inc., (Broadbent, 2012). *Work Plan for Off-Site Groundwater Investigation, Atlantic Richfield Company Station # 2162, 15135 Hesperian Boulevard, San Leandro, California.* January 5.

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

Broadbent & Associates, Inc. (Broadbent, 2013b). *Conceptual Site Model and Addendum to the Revised Work Plan, Atlantic Richfield Company Station No. 2162, 15135 Hesperian Boulevard, San Leandro, California.* September 9.

California State Water Resources Control Board (SWRCB, 2012). *Low-Threat Underground Storage Tank Closure Policy.* August 17.

Closure Solutions, Inc. (Closure Solutions, 2011). *Sensitive Receptor Survey, Atlantic Richfield Company Station #2162, 15135 Hesperian Boulevard, San Leandro, California; ACEH Case #RO0000190.* October 31.



N

0 2000 4000

APPROXIMATE SCALE (ft)

IMAGE SOURCE: TOPO! Outdoor Recreation Mapping Software

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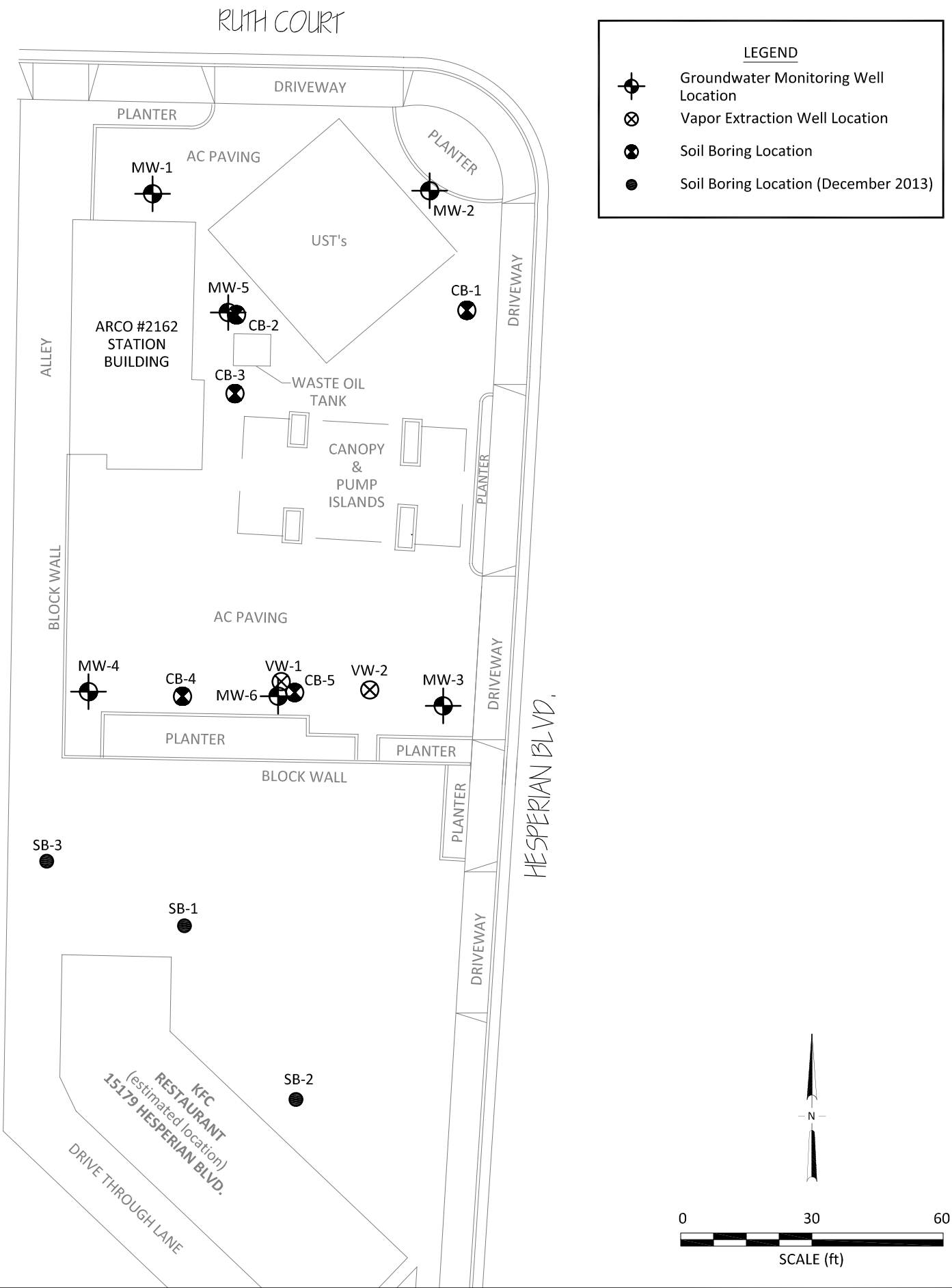
Project No.: 06-88-620 Date: 02/10/2014

Station #2162
15135 Hesperian Boulevard
San Leandro, California

Site Location Map

Drawing
1



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Station No. 2162
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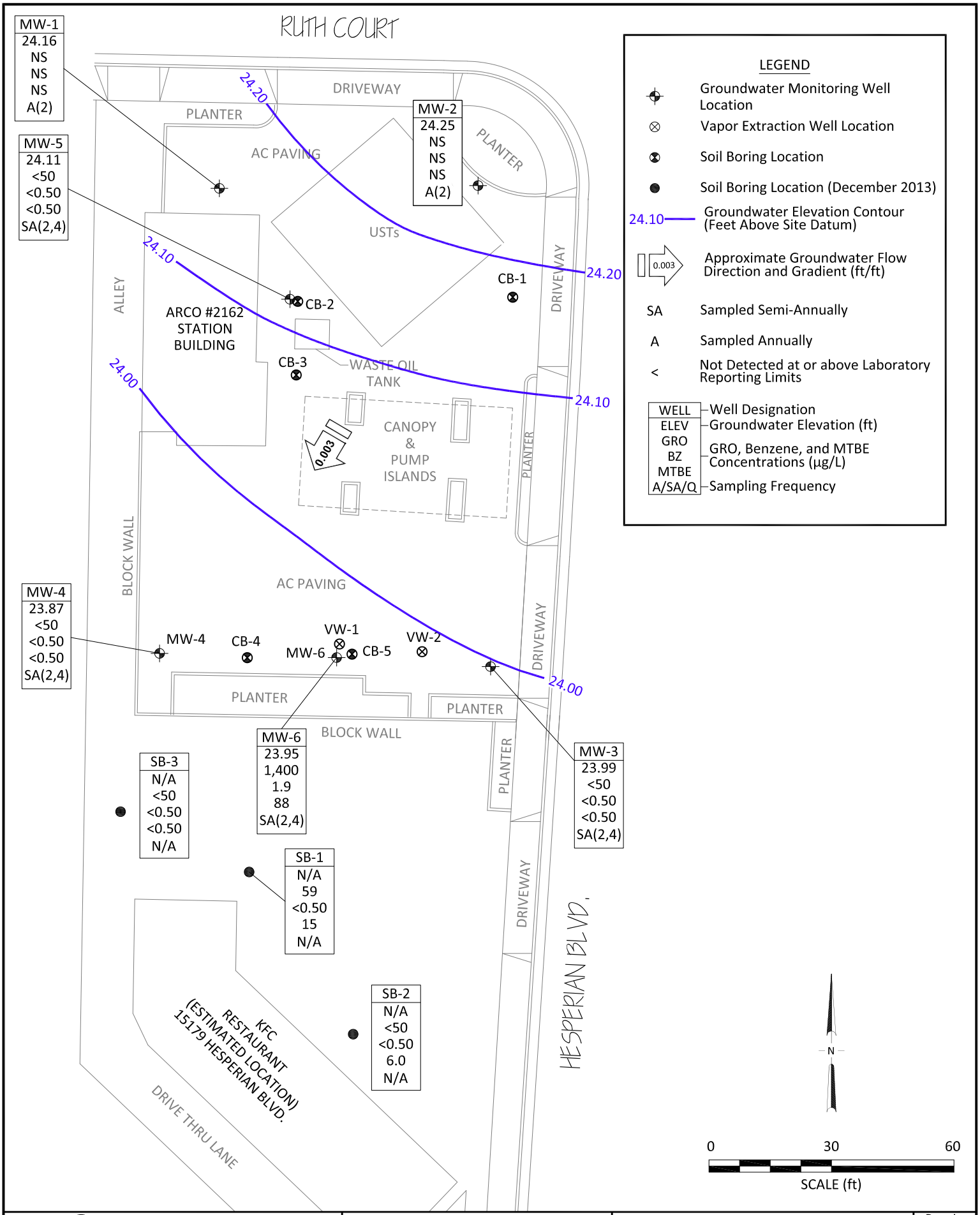
Site Map with Soil Boring Locations

Drawing
2



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Station No. 2162
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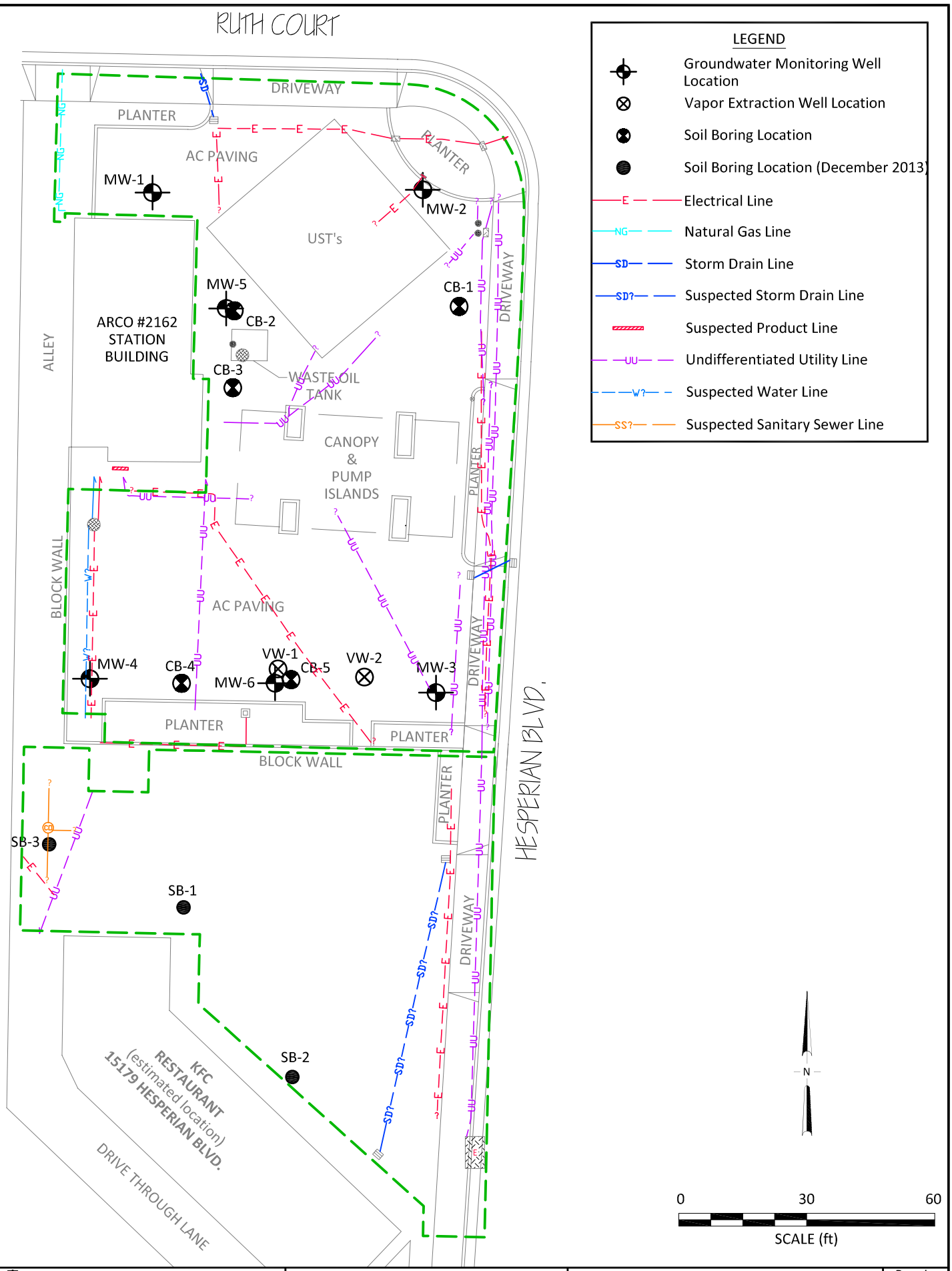
Groundwater Elevation and Analytical Summary Map
December 2, 2013 (Monitoring Wells)
December 23, 2013 (Soil Borings)

Drawing
3



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Station No. 2162
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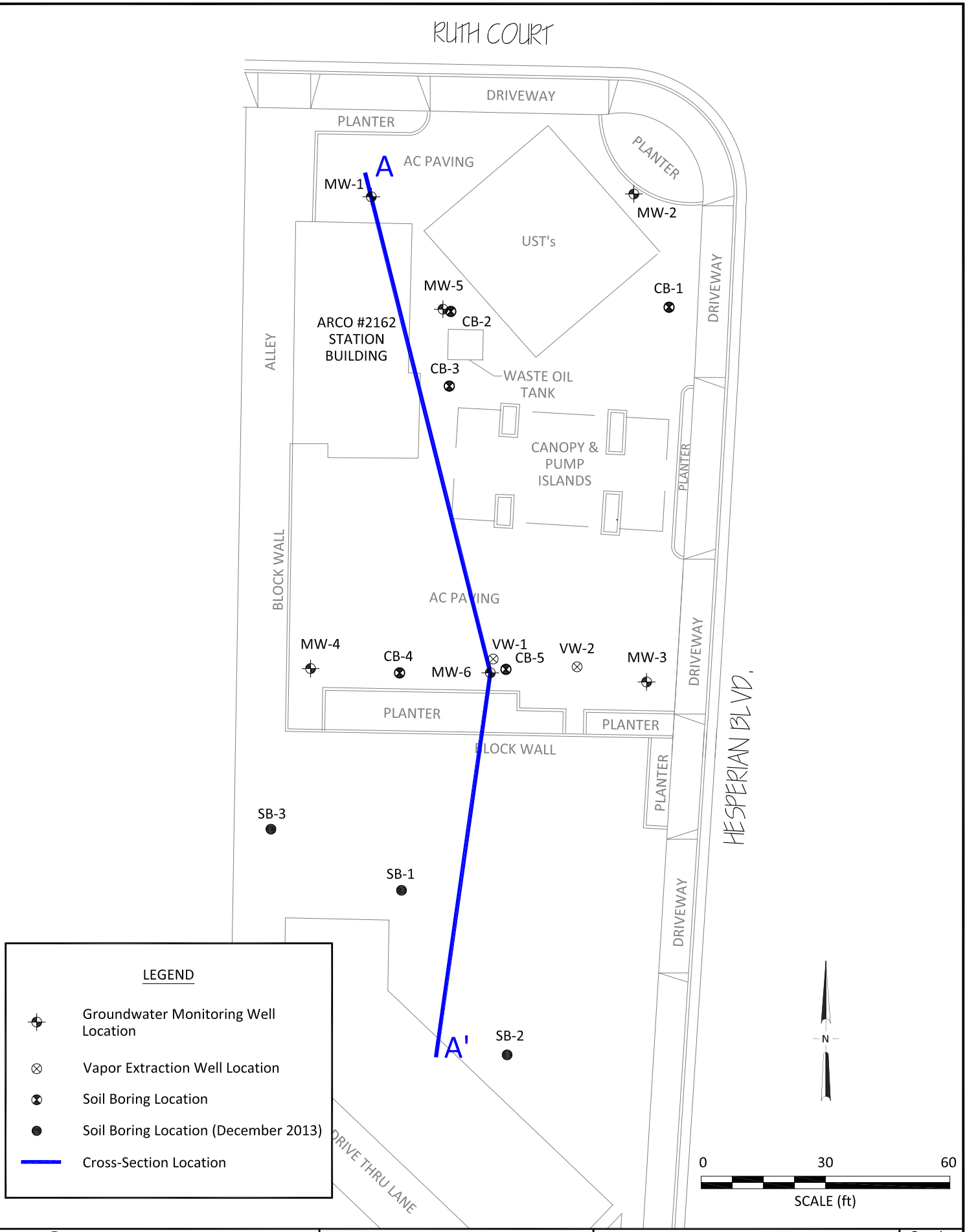
Site Map with Underground Utilities

Drawing
4



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Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

Cross-Section Location Map

Drawing
5

A

ARCO No. 2162
Station Bldg.

KFC Bldg.

A'

MW-1 MW-5 MW-4 MW-6 SB-1 SB-2

Feet bgs

0' 5' 10' 15' 20' 25'

Air Knife to 6.5'

MW-1	MW-5	MW-4	MW-6	SB-1	SB-2
NS	<50 <0.50 <0.50	<50 <0.5 <0.50	1400 1.9 88	59 ND<0.50 15	ND<50 ND<0.50 6
TD = 18.5'	TD = 16.0'	TD = 21'	TD = 16'	TD = 16'	TD = 16'

Asphalt/Backfill/Concrete

Clays & Silt

Silty / Clayey Sands

Gravels

400
1.9
88
GRO, Benzene, and MTBE (µg/L)
December 23, 2013(Soil Boring)
December 2, 2013 (Monitoring Wells)

NS Not Sampled

Boring ID

Extent of Boring

Extent of Well Screen

TD = Total Depth (feet)

0 20 40
HORIZONTAL SCALE (ft)
VERTICAL EXAGGERATION 5:1

Drawing 6

Geologic Cross-Section A - A'

Station No.2162
15135 Hesperian Boulevard
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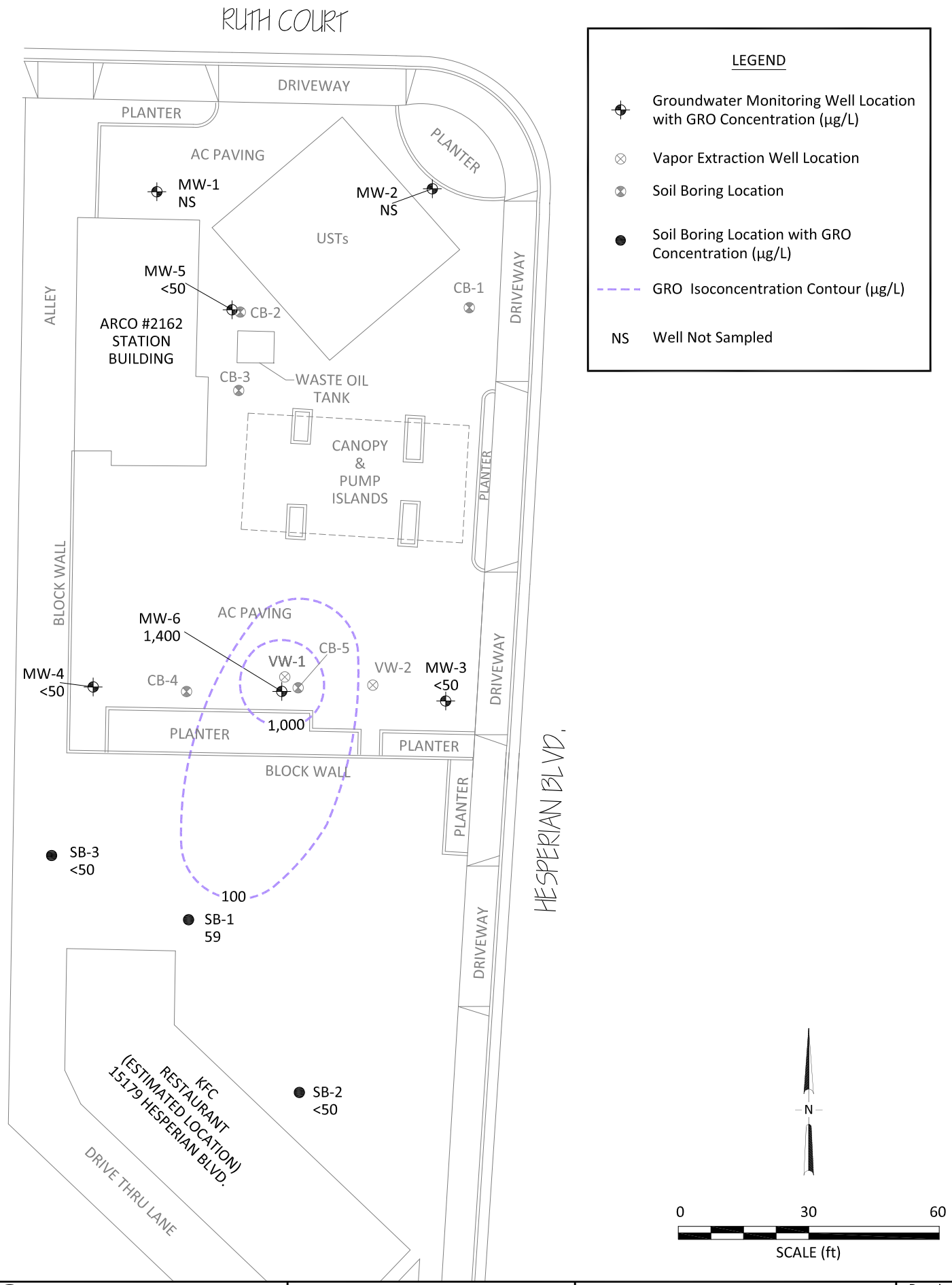

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Station No. 2162
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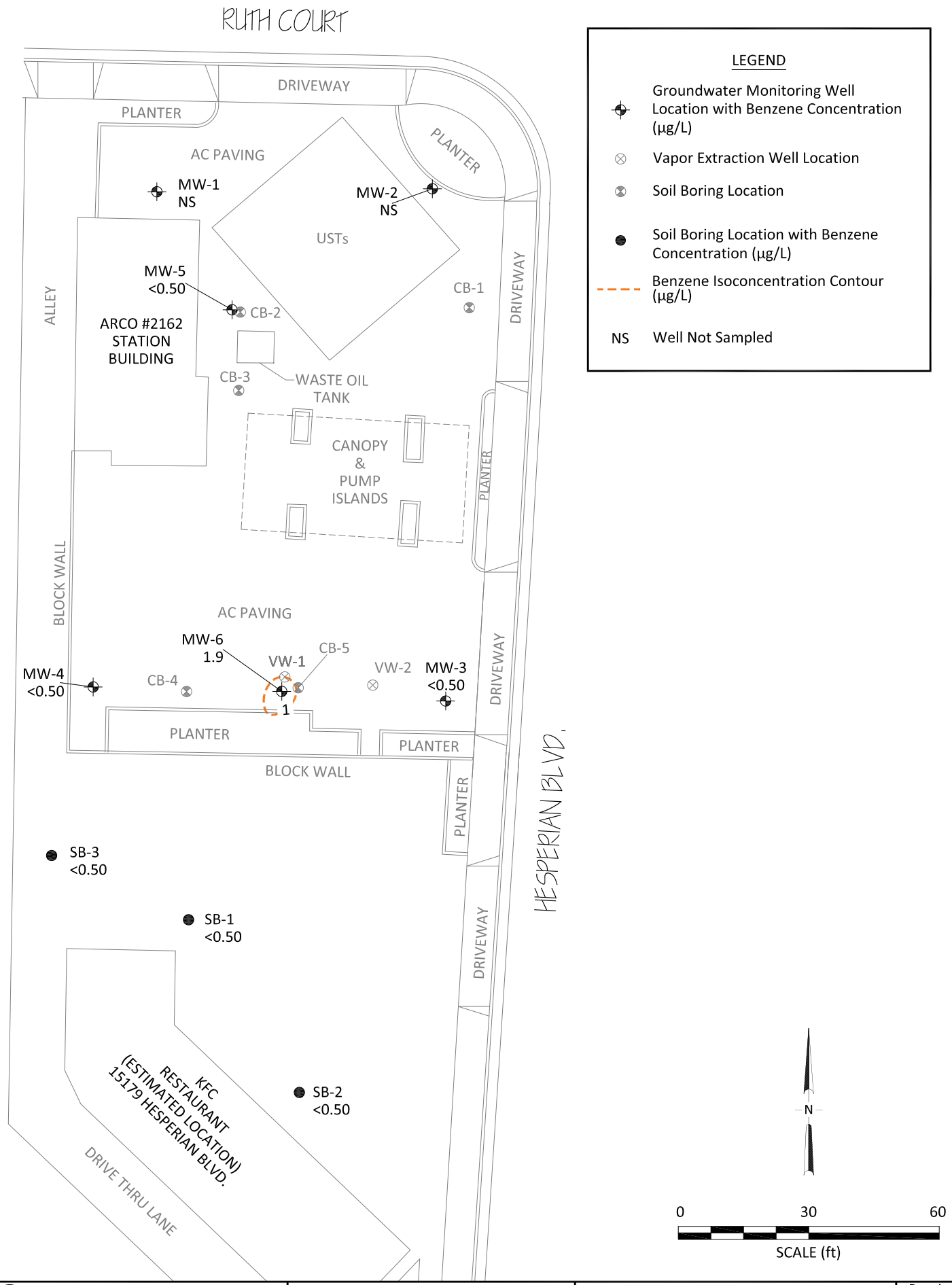
San Leandro, California

GRO Isoconcentration Map
December 2, 2013 (Monitoring Wells)
December 23, 2013 (Soil Borings)

Drawing
7

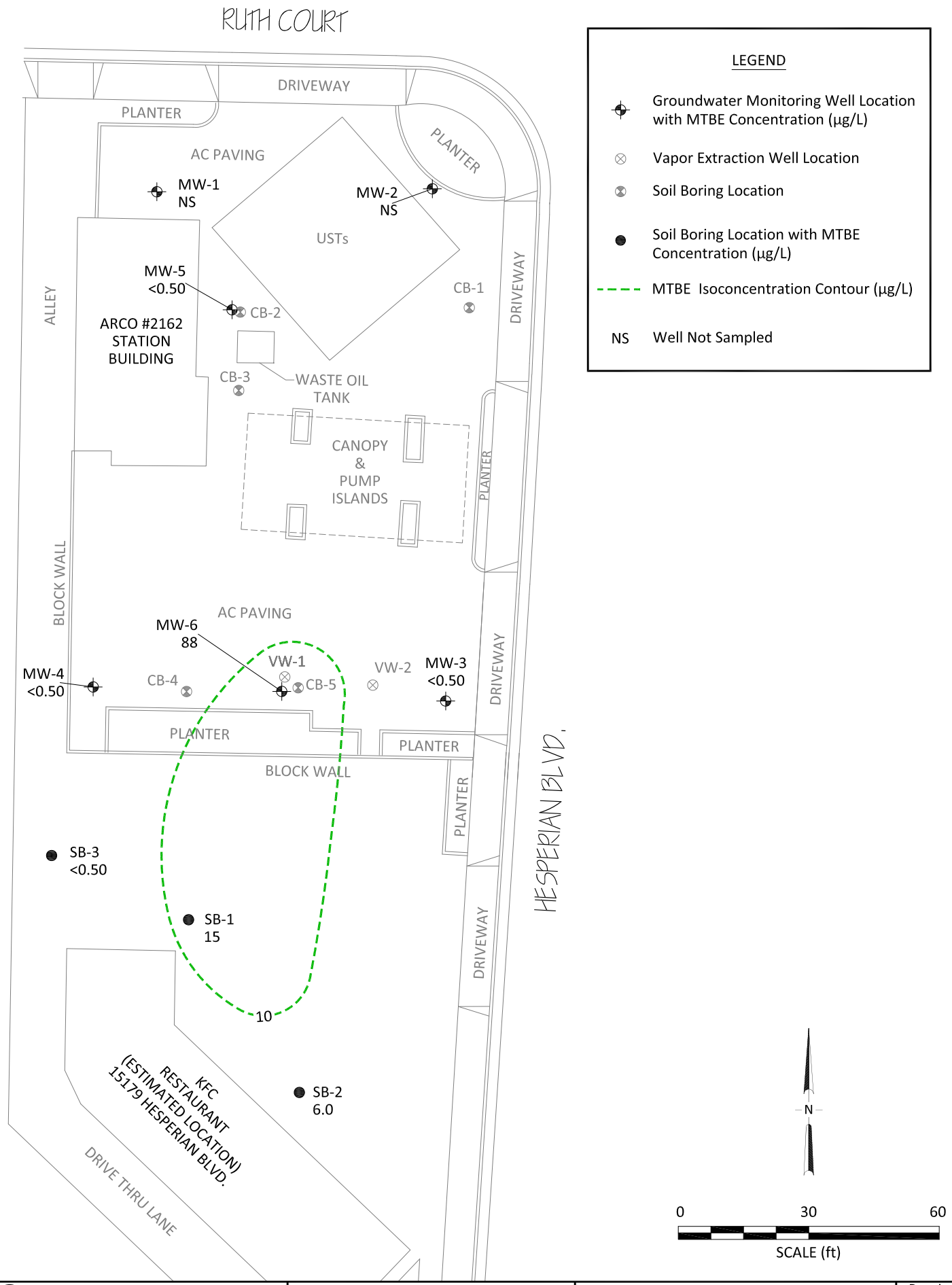


BROADBENT
875 Cotting Lane, Suite G
Vacaville, California 95688
Project No.: 06-88-620 Date: 3/21/2014

Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

Benzene Isoconcentration Map
December 2, 2013 (Monitoring Wells)
December 23, 2013 (Soil Borings)

Drawing
8



BROADBENT
875 Cotting Lane, Suite G
Vacaville, California 95688
Project No.: 06-88-620 Date: 3/21/2014

Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

MTBE Isoconcentration Map
December 2, 2013 (Monitoring Wells)
December 23, 2013 (Soil Borings)

Drawing
9

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 Drawing 5, 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 has 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 6).		
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		Results of a Sensitive Receptor Survey (SRS) performed by Closure Solutions (Closure Solutions, 2011) (which included a Department of Water Resources records request) identified two potential private-use irrigation wells located downgradient of the Site, approximately 2,250 feet and 2,350 feet to the west-southwest (Appendix J). Broadbent supplemented Closure Solutions' SRS by requesting a well records search with ACPWA for the locations and/or uses of wells in the vicinity of the Site. Results of the search identified that the two closest wells to the Site are located approximately 442 feet and 809 feet downgradient. Drawing J-1 of Appendix J shows a plot of the ACPWA wells search results within a radius of approximately 2000 feet.	None	NA
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	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	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
Constituents of Concern (continued)	GRO (continued)	monitoring events was reported in well MW-6 at 5,000 µg/L. Concentrations in well MW-6 have fluctuated significantly since date of installation (2009), however within the last four monitoring events concentrations have shown a strong decreasing trend to a concentration of 1,400 µg/L as of 4Q13, indicating a decreasing trend. Based on recent and historical data, the GRO plume has been delineated. A GRO isoconcentration contour map for the most recent groundwater monitoring and sampling event (4Q13) is presented as Drawing 3. GRO concentration trend graphs for wells MW-1 and MW-2 are included in Part Five. In general, concentrations show a strong decreasing trend for GRO in all Site wells. No concentrations of GRO above laboratory detection limits were reported in samples SB-1, SB-2 and SB-3 collected during the current investigation.		
	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 (4Q13) is presented as Drawing 6. Benzene concentration trend graphs for wells MW-1 and MW-2 are included in Appendix D. 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 MW-6 at 120 µg/L; however, concentrations in well MW-6 have fluctuated significantly since date	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
Constituents of Concern (continued)	MTBE (continued)	of installation (2009). 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. An MTBE isoconcentration contour map for the most recent groundwater monitoring and sampling event (4Q13) is presented as Drawing 8. MTBE concentration trend graphs for wells MW-1 and MW-2 are included in Appendix D, Part Five. In general, concentrations show a strong decreasing trend for MTBE in all Site wells. Among the samples collected during the current offsite investigation, laboratory results showed MTBE at concentrations of 15 µg/L and 6.0 µg/L in only SB-1 and SB-2, respectively.		
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 D). The removal and replacement of the storage and dispensing system was conducted to stop the 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	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)	Onsite	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 (continued)	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, as of May 2006 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 E.	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 historic data and the recent offsite investigation, the highest concentration of GRO was detected at the southern end of the Site, in the downgradient direction, however no petroleum hydrocarbons were detected in soil samples collected in the KFC borings. The highest historic 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 B).	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
Nature and Extent of Environmental Impacts (continued)	Extent in Soil (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 (4Q13) for GRO, benzene, and MTBE are included as Drawings 6 through 8, respectively. These drawings illustrate that the extent of petroleum compounds is well defined in all directions. Based on the observed decreasing trends, the extent of petroleum compounds is small and the plume is shrinking (Appendix D). Additionally, free product has never been observed at the Site and dissolved petroleum concentrations are decreasing.	None	NA
	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 previous environmental investigations at the Site, the hydrocarbon plume is believed to be within the sand interval between by silty clay and/or clayey silt layers (Drawing 8). 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. As volatile petroleum hydrocarbon compounds were not detected above laboratory limits in soil and groundwater samples collected during the current offsite investigation, soil vapor intrusion at the KFC building is not a concern.	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
Migration Pathways	Potential Conduits	Recent geophysical surveys identified underground utility lines and features that may be conduits for transmission of known contaminants at the Site. Utilities located in the sidewalk right-of-way at the Site, however, do not appear to overlap with the lateral extent of the Site plumes. It is therefore unlikely that Site contamination is migrating offsite. Furthermore, no utility lines were identified to be continuous across the property boundary between the Site and KFC. Based on the utility type, depths of KFC utility trenches appear to be shallow and/or flow offsite. Moreover, utility lines shown on Plate 1 (Appendix G) show no connection to the KFC building, thus vapor intrusion is not a concern at the building.	None	NA
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 SRS activities identified that the two closest private wells downgradient of the Site are at distances of 442 feet and 809 feet. 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
Soil Analytical Results
December 2013 Soil Boring Investigation
ARCO Station No. 2162
15135 Hesperian Boulevard, San Leandro, California

Boring Identification	Soil Sample Depth (feet bgs)	Date Collected	GRO (mg/kg)	DRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)	Ethanol (mg/kg)	Naphthalene (mg/kg)
SB-1	14	12/23/2013	ND<0.38	ND<5.0	ND<0.0020	ND<0.0020	ND<0.0020	ND<0.0040	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.099	ND<0.0050	ND<0.0020	ND<0.0020	ND<0.30	ND<0.0050
SB-2	14	12/23/2013	ND<0.38	ND<5.0	ND<0.0020	ND<0.0020	ND<0.0020	ND<0.0040	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.099	ND<0.0050	ND<0.0020	ND<0.0020	ND<0.30	ND<0.0050
SB-3	14	12/23/2013	ND<0.38	ND<5.0	ND<0.0020	ND<0.0020	ND<0.0020	ND<0.0040	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.10	ND<0.0050	ND<0.0020	ND<0.0020	ND<0.30	ND<0.0050

Notes:

feet bgs = feet below ground surface
mg/kg = milligrams per kilogram
GRO = gasoline range organics (C6-C12)
DRO = diesel range organics (C10-C28)
MTBE = methyl tert-butyl ether
ETBE = ethyl tert-butyl ether
TAME = tert-amyl methyl ether
TBA = tert butyl alcohol
DIPE = di isopropyl ether
1,2-DCA = 1,2-dichloroethane
EDB = 1,2-dibromoethane
ND<X.XX = not detected above reporting limit of X.XX

Table 3
Grab-Groundwater Analytical Results
December 2013 Soil Boring Investigation
ARCO Station No. 2162
15135 Hesperian Boulevard, San Leandro, California

Boring Identification	Grab-Groundwater Sample Depth (feet bgs)	Date Collected	GRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TBA (µg/L)	DIPE (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Ethanol (µg/L)	Naphthalene (µg/L)
SB-1	10	12/23/2013	59	ND<0.50	ND<0.50	ND<0.50	ND<1.0	15	ND<0.50	0.92	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<150	ND<1.0
SB-2	10	12/21/2013	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	6.0	ND<0.50	ND<0.50	ND<10	ND<0.50	ND<0.50	ND<0.50	ND<150	ND<1.0
SB-3	10	12/23/2013	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<0.50	ND<0.50	ND<0.50	ND<10	ND<0.50	ND<0.50	ND<0.50	ND<150	ND<1.0
ESLs			**100**	**1.0**	**40**	**30**	**20**	**5**	NA	NA	NA	NA	0.5	0.5	5000	17

Notes:

feet bgs = feet below ground surface
µg/L = micrograms per liter
GRO = gasoline range organics (C6-C12)
MTBE = methyl tert-butyl ether
ETBE = ethyl tert-butyl ether
TAME = tert-amyl methyl ether
TBA = tert butyl alcohol
DIPE = di isopropyl ether
1,2-DCA = 1,2-dichloroethane
EDB = 1,2-dibromoethane

ND<X.XX = not detected above reporting limit of X.XX µg/L
ESLs = Environmental Screening Levels as presented in *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater - Interim Final December 2013* assuming a commercial/industrial exposure scenrio where groundwater is a potential drinking water resource

Table 4

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	--	--	--	--	--	--	--	--	

Table 4

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.															
6/21/2012	P	33.70	8.00	16.00	8.49	25.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.73	7.39	
12/20/2012	--		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	
12/2/2013	**--**		**8.00**	**16.00**	**9.54**	**24.16**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
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	

Table 4

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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.															
11/6/2009	--	32.95	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	--	--	--	--	--	--	--	--	
5/19/2011	P		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	
12/2/2013	**--**		**8.00**	**16.00**	**8.70**	**24.25**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
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	

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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.															
01/11/2005	P	32.89	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	
11/6/2009	P		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	
12/2/2013	**P**		**8.00**	**15.00**	**8.89**	**23.99**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.32**	**6.81**	
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	

Table 4

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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.															
10/08/2003	NP	30.39	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	
08/01/2005	NP		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	
12/2/2013	**P**		**10.00**	**18.00**	**10.10**	**23.87**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**2.07**	**6.74**	
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	

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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-5 Cont.															
12/2/2013	**P**	**33.96**	**8.00**	**16.00**	**9.85**	**24.11**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.86**	**6.71**	
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
12/20/2012	P		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	2,300	3.1	0.93	4.9	<1.0	94	1.05	6.80	
12/2/2013	**P**		**8.00**	**16.00**	**9.53**	**23.95**	**1,400**	**1.9**	**0.50**	**2.3**	**<1.0**	**88**	**1.46**	**6.55**	

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 5

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	

Table 5

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.									
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-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	

Table 5

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.									
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	
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	
12/2/2013	**<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

Table 5

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.									
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	
12/2/2013	**<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	
12/2/2013	**<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	

Table 5

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-6 Cont.									
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	
12/2/2013	**<150**	**11**	**88**	**<0.50**	**<0.50**	**6.2**	**<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 6

Summary of 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
12/2/2013	**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

Site History

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.*

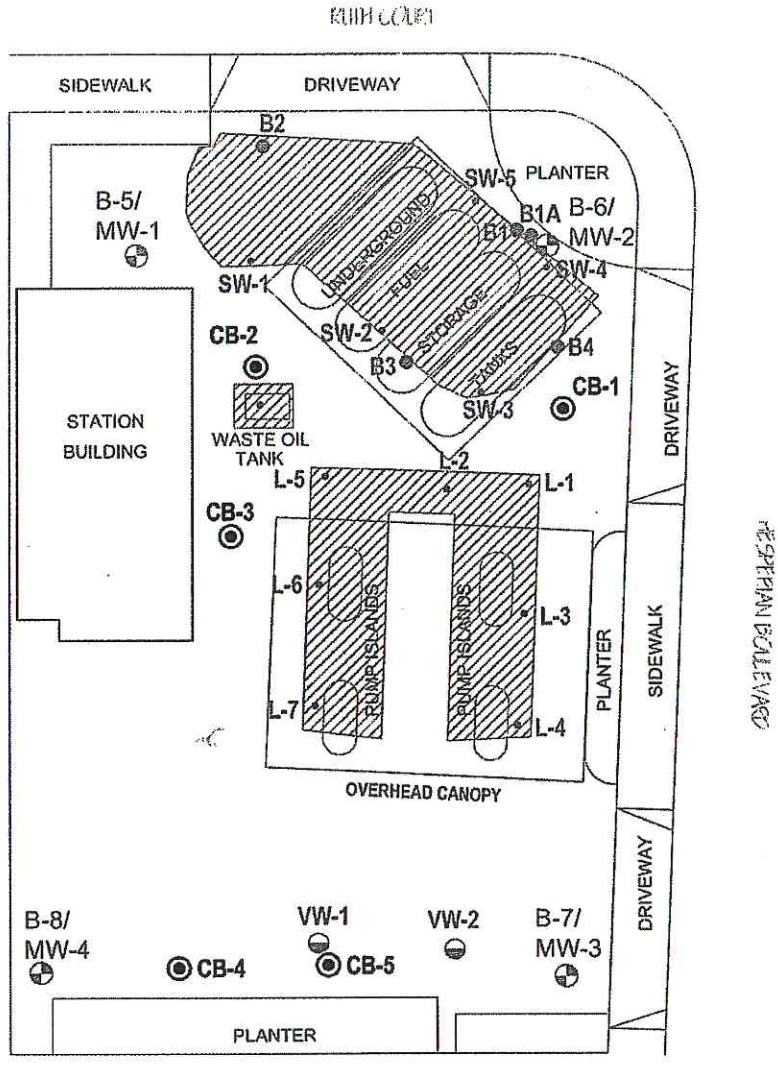
Roux Associates, 7 July 1992. *Underground Storage Tank Replacement and Soil Sampling, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, CA.*

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 B

Historical site Data



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.
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Project No.: 06-08-620 Date: 09/13/07

Station #2162
15135 Hesperian Boulevard
San Leandro, California

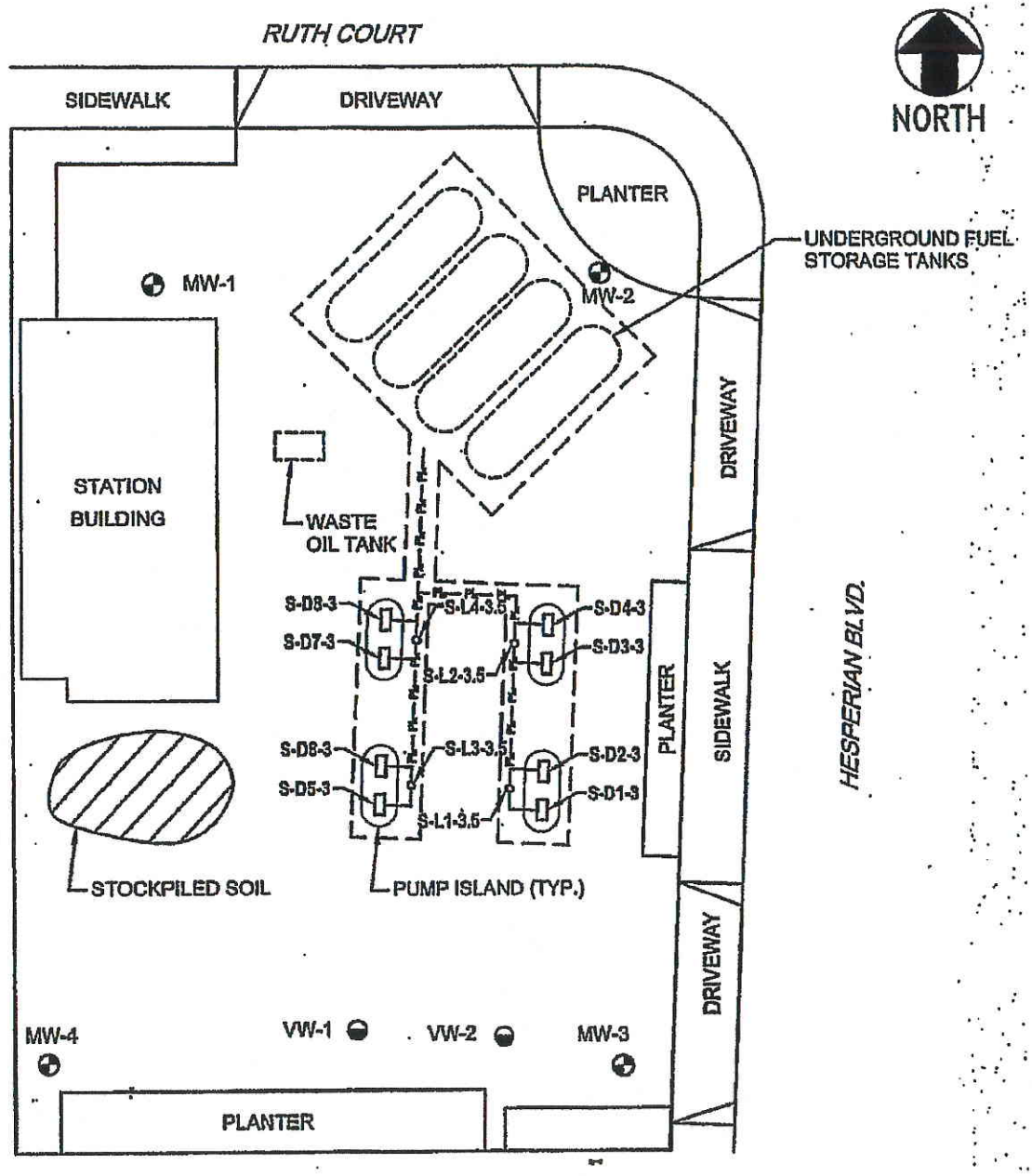
Site Sketch with Boring Locations

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



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)	TOG (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.

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	0.062	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
	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	350	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

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

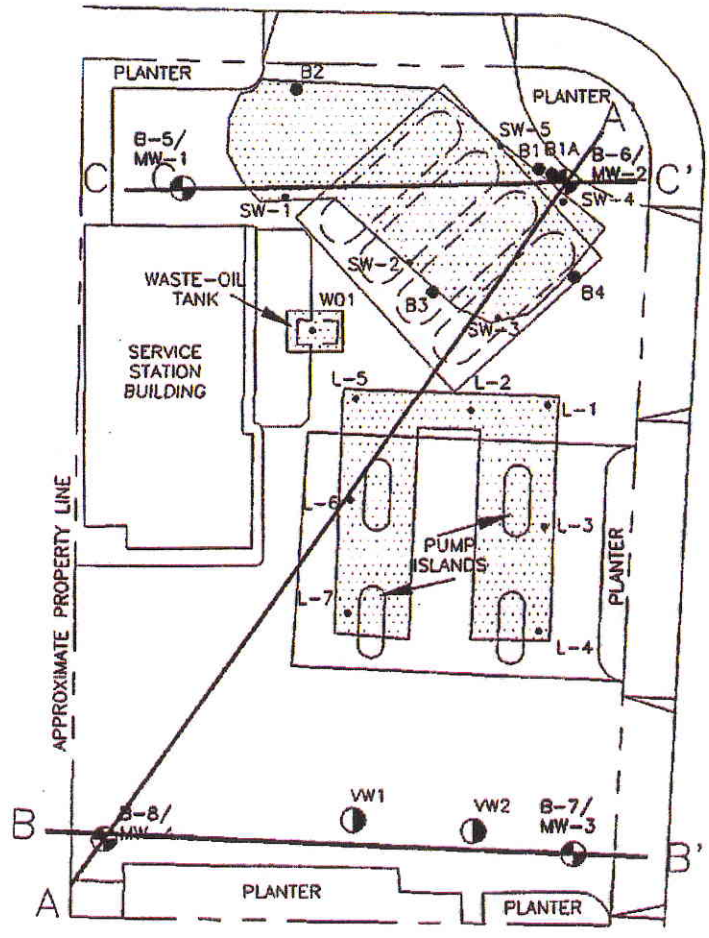
Sample Number	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
June 1991					
Borings					
S-B1-5	<1.0	<0.0050	<0.0050	<0.0050	0.016
S-B1A-7.5	43	0.14	0.93	1.1	7.6
S-B2-5	1.3	<0.0050	<0.0050	<0.0050	<0.018
S-B2-9	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-B3-4	26	0.024	0.029	0.16	1.1
S-B3-7.5	1,400	2.5	4.4	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	VOCs	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

RUTH COURT



HESPERIAN BOULEVARD

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 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)

Boring I.D.	Date	Laboratory Analytical Results (µg/l)													
		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 C

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.					
	SILT, greenish-black to dark brown, trace shell fragments, trace medium sand, very slight odor.	OL		4-7-12	10.5	
5	CLAY, silty, green-brown, 1-2 inch lense of green sand at top of sampler, moist, trace of separate phase petroleum hydrocarbon.	CL		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 & basecrock						
	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 & baserock						
	SAND, medium to fine, brown, and fine gravel.						
	SILT, Clayey, black.	OL					
5							
	SILT, Clayey, green.						
10							0.5-foot thick bentonite seal below vapor extraction well
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.
0					Asphalt–covered surface.	
0				GW	Asphalt (4 inches).	
2					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				
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.	
12		2 4 6 3 4 4	3		Lost sample.	
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		4 6 11	0	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

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Asphalt–covered surface.	
0				GW	Asphalt (4 inches).	
					Sandy gravel, medium to coarse gravel, medium– to coarse–grained sand, brown, damp, medium dense; glass fragments: baserock.	
2				ML	Clayey silt, brown, damp, medium plasticity, stiff.	
4	S–5	7 10 12				
6						
8	S–9	5 7 10	58	SM	Silty sand, fine–grained, brown, moist to wet, medium dense; obvious odor.	
10	S–10	3 5 5 7 4 6 7 3 2 3 3 6 7	203		Color change to gray.	
12			0	SM	Silty sand with clay, fine–grained, moist, loose.	
14					Sand with silt, fine– to coarse–grained, brown, wet, medium dense.	
16	S–17	5 7 8 5 6 8		SP–SM	Clayey silt with sand, fine– to medium–grained, brown, damp, medium plasticity, stiff.	
18				ML CL/CH	Silty clay, dark brown, damp, medium to high plasticity, stiff.	
					Total depth = 18–1/2 feet.	
20						

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PROJECT 62019.02

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

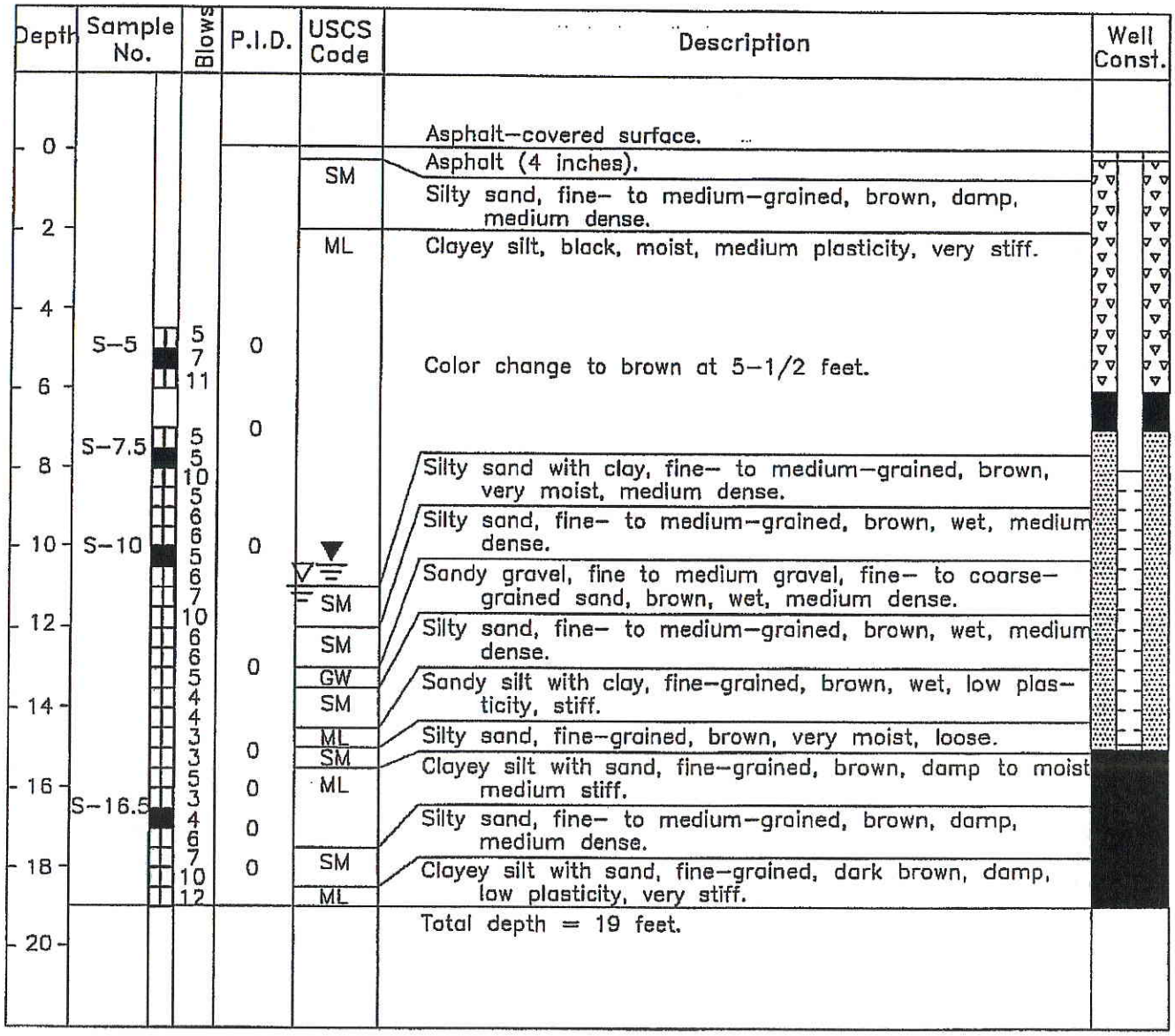
Screen interval: 8 to 15 feet Filter pack: #3 Sand Slot size: 0.020-inch

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



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PROJECT 62019.02

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			
	S-9.5	3 7 8		SM	Silty sand with clay, fine- to medium-grained sand, brown, moist to very moist, medium dense; rootlet void.	
10	S-11	3		▽ ▼		
	S-11.5	4 7			Odor.	
12		3 3				
		3 3		GP-GM	Sandy gravel with silt, fine to coarse gravel, fine- to coarse-grained sand, dark brown, wet, loose.	
14		3 3		SM	Silty sand, fine-grained, brown, very moist.	
		2 3			With clay.	
16		10		SM	Silty sand, fine- to coarse-grained, very moist, medium dense.	
		3 7	0			
18	S-18.5	8		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	
	11.5'-12'					13	SM	medium dense, hydrocarbon odor, 60% sand 35% silt 5% clay.	
						14		Silty Sand with Gravel trace Clay, SM, (5Y 3/2), dark olive grey, wet	
						15		coarse grained, loose, hydrocarbon odor	
S	CB-2	N/A	0839	80%		16	ML	60% sand 30% silt 10% gravel trace clay. Clayey Silt, ML, (2.5Y 4/2), dark grayish brown, wet, non plastic, soft	
	15.5'-16'					17		60% silt 40% clay.	
						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			
						11	CL ▽	Clay trace Silt, CL, (5Y 4/1), dark grey, moist, medium plasticity, stiff hydrocarbon staining, hydrocarbon odor, 97% clay 3% silt.	
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	
						13		80% sand 17% silt 3% clay	
						14			
						15	SM	Silty Sand with Clay, SM, (5Y 4/4), dark yellowish brown, moist	
S	CB-3 15.5'-16'	N/A	0738	100%		16		medium-fine grained, medium dense, 70% sand 20% silt 10% clay.	
						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 7.5'-8'	N/A	1122	70%		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 11.5'-12'	N/A	1124	75%		12		Silty Sand with clay, SM, (2.5Y 3/2), very dark grayish brown, wet fine grained, medium dense, hydrocarbon staining, hydrocarbon odor 60% sand 30% silt 10% clay.	
						13	SM		
						14		Sand with Silt, Gravel and Clay, SM, (5Y 3/2), dark olive grey, wet medium grained, loose, hydrocarbon staining, hydrocarbon odor 70% sand 10% silt 7.5% gravel 7.5% clay	
						15			
S	CB-4 15.5'-16'	N/A	1127	90%		16	CL	Clay, CL, (2.5Y 4/4), olive brown, moist, high plasticity, hard hydrocarbon staining, slight hydrocarbon odor, 100% clay	
						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 3/6), 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	SM	hydrocarbon staining, hydrocarbon odor, 70% sand 30% silt	
						14		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	
						13		60% medium grained sand, 25% silt, 10% clay, 5% fine gravel	
			0555	100		14		Silty sand with clay, SM, (12'-13.5' bgs), dark yellowish brown, wet 60% medium grained sand, 30% silt, 20% clay	
						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

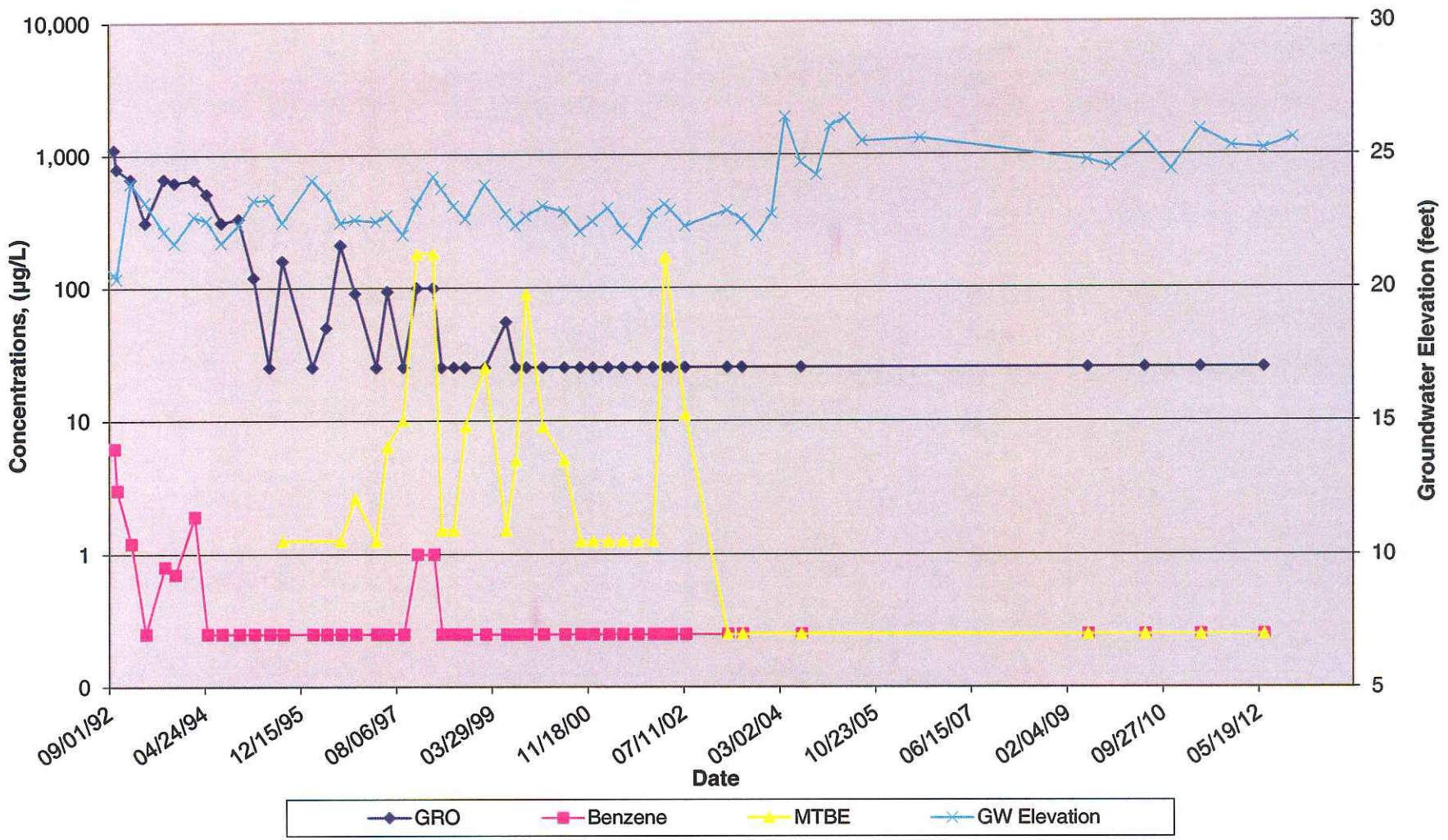
Comments: Boring sampled to 16' bgs with geoprobe, then drilled to 16' bgs with 10" hollow stem augers.

STRATUS ENVIRONMENTAL, INC.

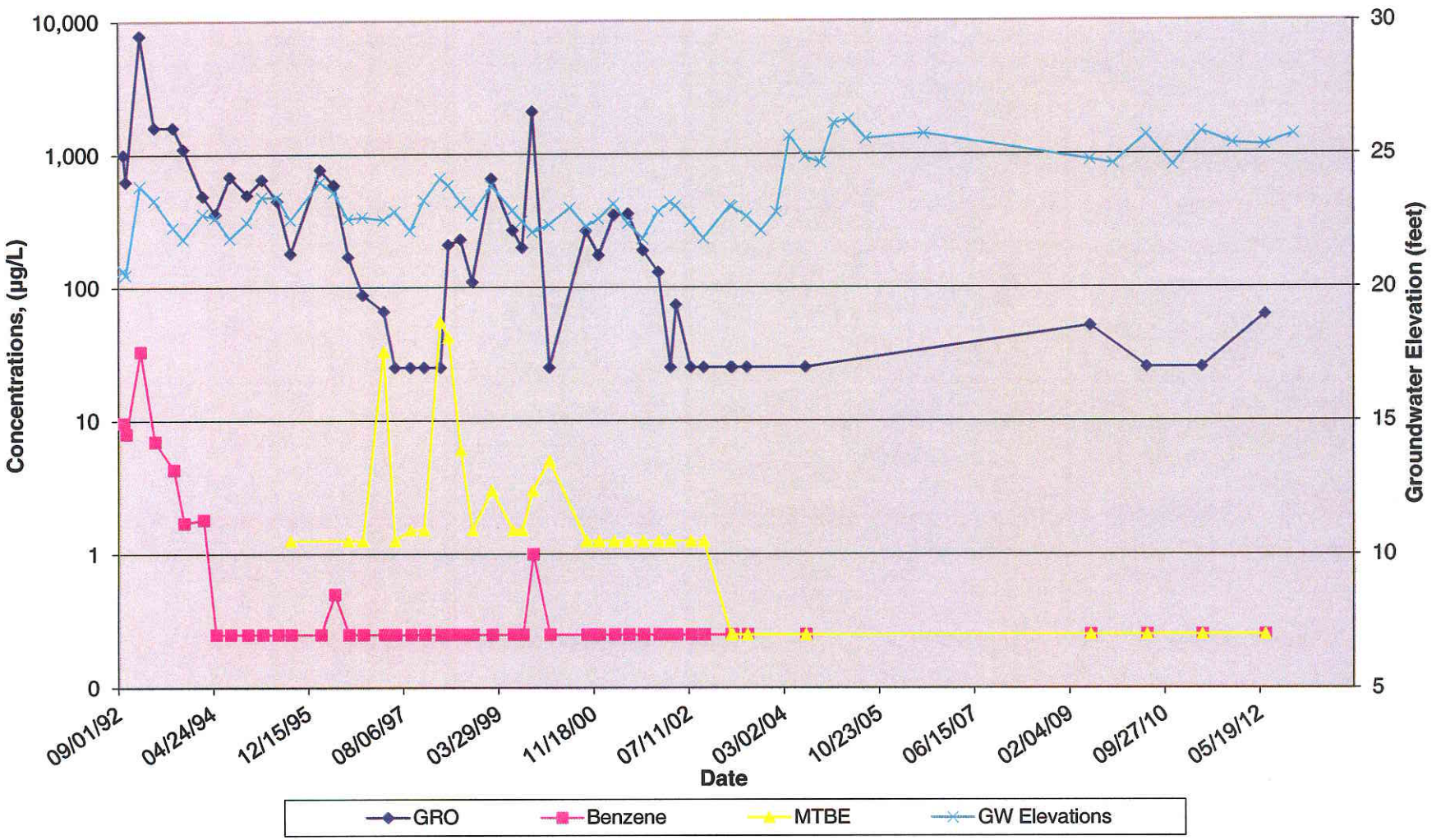
APPENDIX D

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

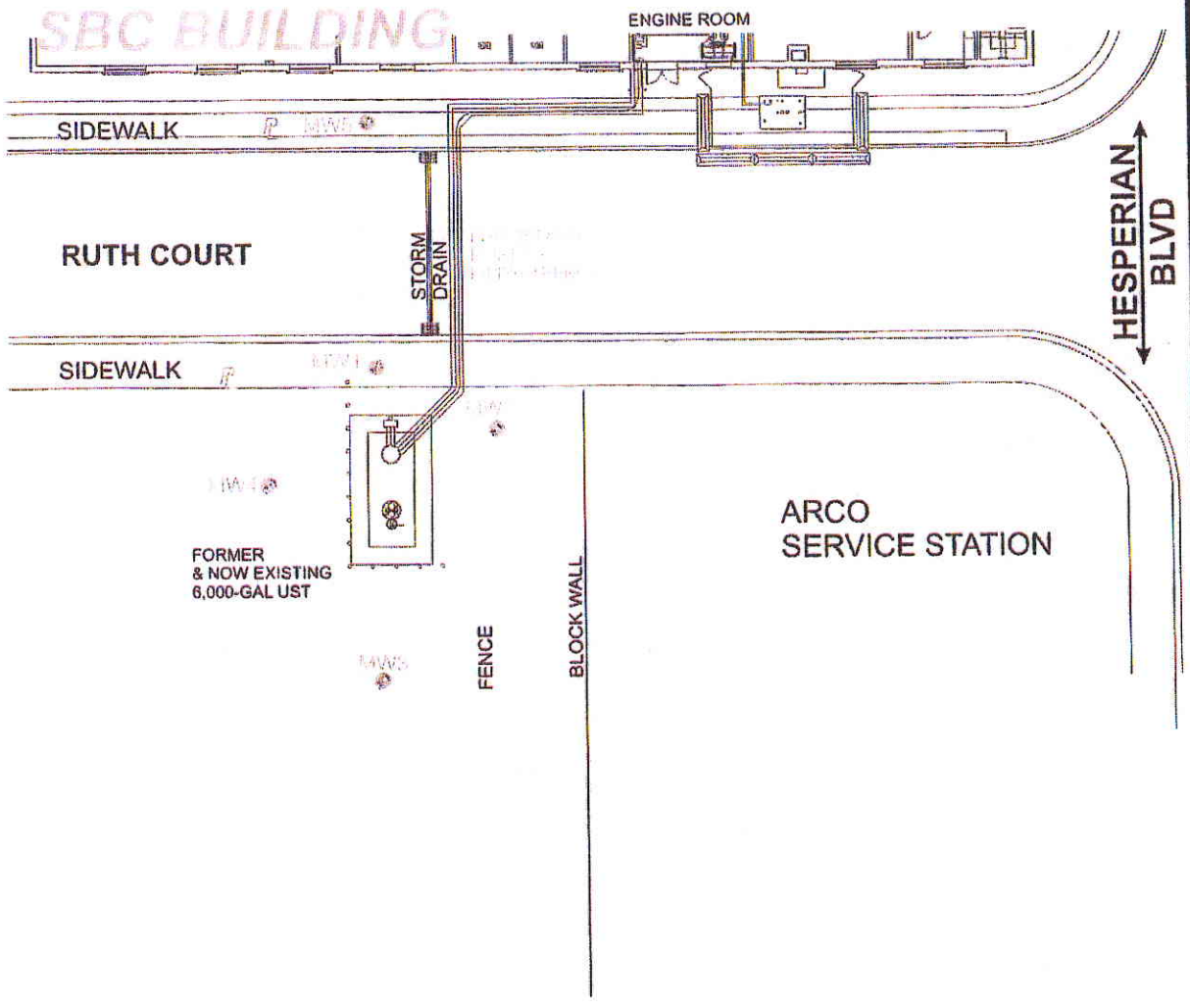


MW-2 Concentrations and Groundwater Elevation vs Time
Arco Station No. 2162
15135 Hesperian Blvd., San Leandro, CA



APPENDIX E

SBC Site Data



N

SCALE

0 30 feet

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 F

Drilling Permits

Alameda County Public Works Agency - Water Resources Well Permit

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 12/03/2013 By jamesy

Permit Numbers: W2013-0965
Permits Valid from 12/23/2013 to 12/23/2013

Application Id:	1384807597582	**City of Project Site:** San Leandro
Site Location:	15135 Hesperian Blvd.	
Project Start Date:	12/23/2013	**Completion Date:** 12/23/2013
Assigned Inspector:	Contact Sam Brathwaite at (925) 570-7609 or sbrathwaite@groundzonees.com	
Applicant:	Broadbent & Assoc., inc. - Lu Damerell 875 Cotting Lane, Suite G, Vacaville, CA 95688	**Phone:** 707-455-7290
Property Owner:	Charles Carmel P.O. Box 1257, San Ramon, CA 94583	**Phone:** --
Client:	Charles Carmel P.O. Box 1257, San Ramon, CA 94583	**Phone:** --
Contact:	Lu Damerell	**Phone:** 707-455-7920 **Cell:** 510-364-2079

Total Due: $265.00
Receipt Number: WR2013-0453 **Total Amount Paid:** $265.00
Payer Name : Luis Damerell Paid By: MC **PAID IN FULL**

Works Requesting Permits:

Borehole(s) for Investigation-Environmental/Monitorinig Study - 4 Boreholes
Driller: Gregg Drilling - Lic #: 485165 - Method: DP

Work Total: $265.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2013-0965	12/03/2013	03/23/2014	4	1.50 in.	20.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

5. NOTE:
Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal

penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.

6. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

7. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

8. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

APPENDIX G

Utility Clearance Report

NORCAL GEOPHYSICAL CONSULTANTS, INC.

January 28, 2014

Luis Damerell
Broadbent & Associates, Inc.
875 Cotting Lane, Suite G
Vacaville, CA 95688

Subject: Utility Location Survey
BP-ARCO Service Station No. 2162
15135 Hesperian Blvd
San Leandro, California

NORCAL Job No: 13-1034.19

Dear Mr. Damerell:

This report presents the findings of a utility locating survey performed by NORCAL Geophysical Consultants, Inc. at BP-ARCO Station No. 2162 for Broadbent & Associates, Inc. (BAI) The field survey was conducted in two phases: Phase 1 was conducted on December 18, 2013 by NORCAL California Professional Geophysicist David Bissiri (PGp 1009) and Field Technician Chris Bissiri; Phase 2 was conducted on January 14, 2014 by David Bissiri and Field Technician Travis Black. Logistical support and site safety information were provided by Mr. Lu Damerell of BAI.

1.0 SITE DESCRIPTIONS and SCOPE OF WORK

The BP-ARCO site is located on the southwest corner of the intersection of Hesperian Boulevard and Ruth Court in San Leandro, California. The station comprises a pump island and canopy located in the central portion and a mini-mart and cashier office building in the western portion. The UST tank-pad is located in the northeast portion of the station. Hesperian Boulevard is located to the east and Ruth Court is located to the north of the site. The parking lot of a KFC fast-food restaurant is located south of the station. An alley is located to the west, behind the station.

The scope of work, as outlined by BAI, consisted of delineating detectable underground utility alignments in two areas: 1) the accessible outside portions of the gasoline station and adjoining sidewalks and alley, designated for the purposes of this report as the "Service Station Survey Area"; 2) the accessible portions of the parking lot and adjoining sidewalk of the restaurant, designated as the "KFC Survey Area".

The utility location survey was performed as part of an ongoing remediation plan currently managed by Broadbent & Associates. The information will be used to aid in determining possible preferential pathways of ground water flow leading off-site.

2.0 FIELD INVESTIGATIONS

2.1 EQUIPMENT

We investigated the designated survey areas using the electromagnetic line locating/metal detection (EMLL) and ground penetrating radar (GPR) methods. The EMLL method was used in the electromagnetic conduction, ambient and metal detection (MD) modes. The conduction mode was used to locate metal utilities that are accessible from the surface in at least one location. This is typically done by applying a signal current to a line by directly connecting the transmitter to the exposed utility through a vault or a hose bib and using a receiver to trace the respective lines. The ambient procedure was used to locate utilities that exhibit currents already flowing on the line (aka "passive signals"). The most common passive signals are generated by live electric and telephone lines, water lines acting as electrical grounds, and metal pipes re-radiating radio signals.

The MD mode is used to locate metal utilities that are not accessible at the surface, and isolated buried objects such as USTs, utility vaults, and other metallic features or debris. This is done by holding the transmitter-receiver unit above the ground and continuously scanning over the surface. Metallic utilities and isolated objects will produce a response indicating when the unit is directly over the metal object.

The GPR method was used to confirm the location of the utilities detected with the EMLL, and to locate possible non-metallic utilities. Since GPR depth of detection is based on site specific soil conditions, not all subsurface features are detectable. Descriptions of the MD, EMLL, and GPR methods are provided in Appendix A.

2.2 SITE SURVEY

The designated survey areas typically consisted of a 20- by 20-foot square centered on the proposed boring(s). We then investigated the sub-surface for detectable underground utilities and other potential near-surface drilling obstructions. A brief description of our field procedures is presented below:

- Site Reconnaissance: We visually inspected the immediate area to locate visible utility vaults, valves, clean-outs, meters, hose bibs, etc.

- EMLL Direct Connect and Induction Survey: We traced accessible utilities using the EMLL direct connect and induction methods, as described above.

- EMLL Ambient Survey: We used the EMLL ambient procedure to investigate the survey areas for non-accessible utilities emitting a passive signal, as described above.

- EMLL Metal Detection (MD) Survey: We scanned the survey areas with the MD to investigate for metal utilities that were not accessible at the surface. Since the specific type of utility (i.e. water, gas, etc.) cannot be determined by this method, they are referred to as undifferentiated utilities. We also used the MD method to investigate the survey areas for possible buried metal objects.

- GPR Survey: We obtained GPR data throughout the survey areas. We examined the GPR records for reflection patterns characteristic of underground utilities and other potential subsurface objects, as well as changes in fill material that may be associated with utility corridors or USTs.

- Field Survey Map: Upon completion of the survey at each of the proposed drilling locations, we drafted a scaled site diagram showing the area of the geophysical survey, structures or above ground cultural features that are in close proximity to the drilling locations, and the locations of detected subsurface objects and utility alignments.

3.0 LIMITATIONS

All of the geophysical methods used for this investigation have limitations that may not allow for the detection of certain subsurface features due to subsurface conditions or the proximity of above ground objects. The specific limitations for each method are described in Appendix A.

4.0 RESULTS

The results of the geophysical investigation shown on the Site Maps presented on Plate1 (Service Station Survey Area) and Plate 2 (KFC Survey Area). These maps depict the locations of pertinent above-ground site features in the vicinity of the designated survey areas and the locations of interpreted subsurface features. The subsurface features detected at each area are discussed below:

Service Station Survey Area

- A suspected natural gas service lateral located in the northwest corner of the survey area. This line extends southward from Ruth Court along the eastern edge of the alley to the corner of the station building, where it appears to terminate at a service "blank". The portion of the line that continues into the building appears to be out of service, but it is probable that the portion in the alley is still pressurized.

- Two storm drain laterals that extend across the sidewalks. One extends northward from a catch basin located to the west of the driveway along Ruth Court, while the other extends eastward from a catch basin located at the southern end of the planter separating the two driveways that face Hesperian Boulevard.

- An "L"-shaped electric line that extends northward from a point near the northeast corner of the station building toward the sidewalk along Ruth Court, then eastward across the driveway. It appears to extend through the planter located in the northeast corner of the site and then continue beyond the eastern limit of the survey area.

- Four suspected north-south trending lines in, or adjacent to, the sidewalk along Hesperian Boulevard. One is suspected to be an electric line, while the rest are undifferentiated lines. All four lines appear to extend southward from the corner planter for a distance ranging from approximately 40 feet (across the northern driveway) to 125 feet (the southern survey limit).

- Ten assorted lines that do not appear to extend beyond the station property. These lines comprise various electric, water, product, and undifferentiated utilities. The lines are of various lengths and orientations and extend between the building, canopy, planters, and UST zone.

- An approximately 15- by 10-foot zone of suspected disturbed soil located in the southwest corner of the survey area. This disturbed zone was detected with the GPR and is suggestive of a possible backfilled pit.

Note that we assume additional utilities and piping associated with the USTs extend between the UST Zone and the pump islands under the canopy. However, we were able to delineate only a limited portion of them.

KFC Survey Area

- Three suspected utilities in the northwest portion of the survey area, in the vicinity of a trash enclosure located along a low wall that separates the KFC property from the station property: the first is a suspected electric line extending from a sign along the western survey limit toward the KFC building; the second is an undifferentiated utility extending southward from the trash enclosure to the alley west of the KFC building; And the third is a probable sanitary sewer line that may form a "T" at a clean-out located approximately 5 feet east of the western survey limit. The alignment(s) of the sewer line are conjectural, as we did not detect the line. However, given the location of the clean-out relative to the building and alley, the outfall likely either goes northward up the alley toward Ruth Court, or eastward across the parking lot toward Hesperian Boulevard.

- Three north-south trending lines in the driveway area along Hesperian Boulevard: the first is a storm drain line that extends between two catch basins on either side of the driveway; the second is an electric line extending from a sign located north of the driveway to a planter located south of the driveway; the third is an undifferentiated utility extending northward from an electric vault located in the sidewalk, south of the driveway. This line could be an electric line, but as we did not access the vault, this could not be confirmed.

5.0 STANDARD CARE AND WARRANTY

The scope of NORCAL's services for this project consisted of using geophysical methods to explore the area of investigation for underground utilities. The accuracy of our findings is subject to specific site conditions and limitations inherent to the techniques used. We performed our services in a manner consistent with the level of skill ordinarily exercised by members of the profession currently employing similar methods. No warranty, with respect to the performance of services or products delivered under this agreement, expressed or implied, is made by NORCAL.

We appreciate having the opportunity to provide our geophysical services to BAI. If you have any questions, or require additional geophysical services, please do not hesitate to call.

Respectfully,

NORCAL Geophysical Consultants, Inc.

David Bissiri
Professional Geophysicist, PGp 1009

DJB/KGB/tt

Enclosure: Plates: 1 - 2
Appendix A: GEOPHYSICAL METHODOLOGY

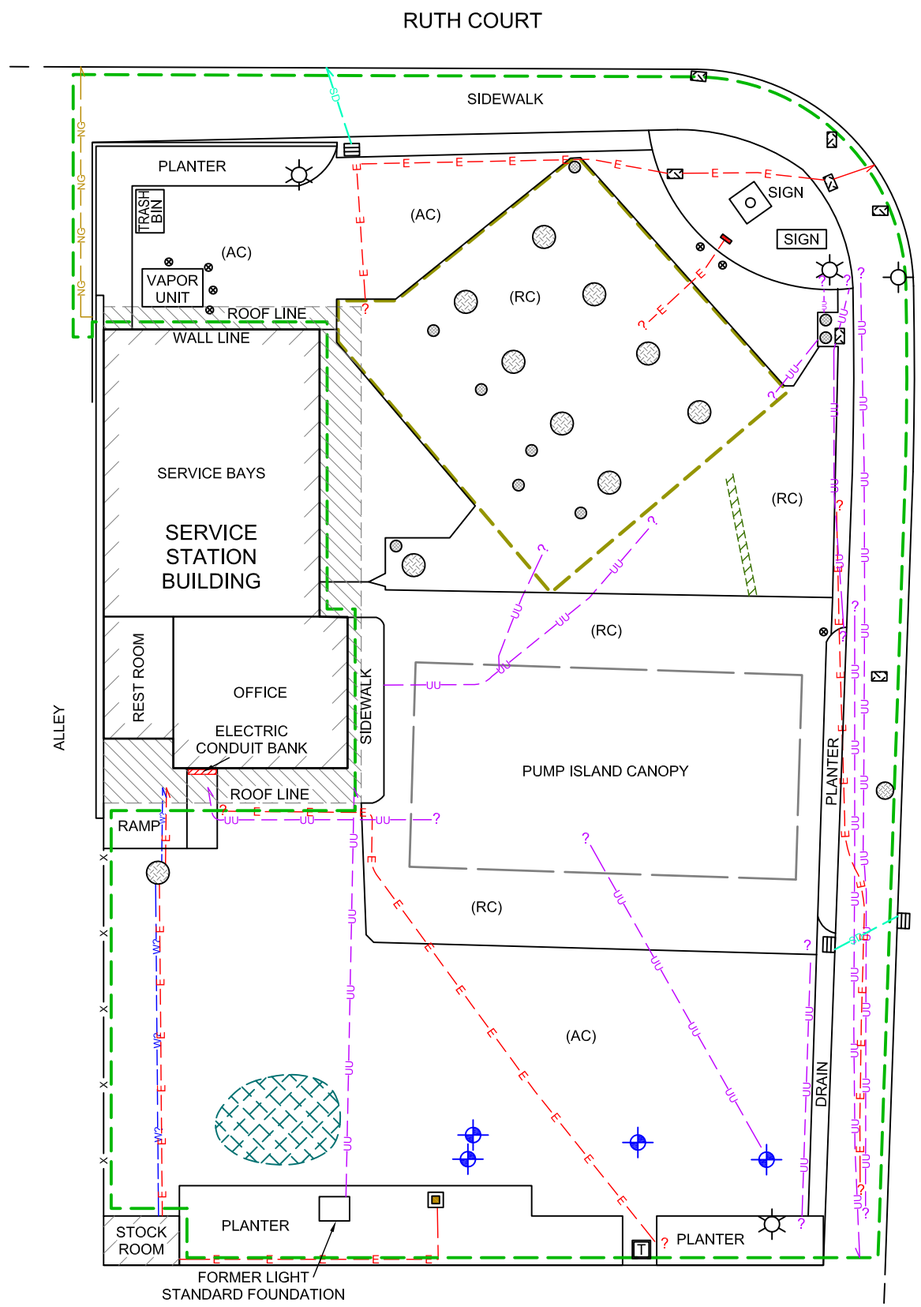
LIMITATIONS:

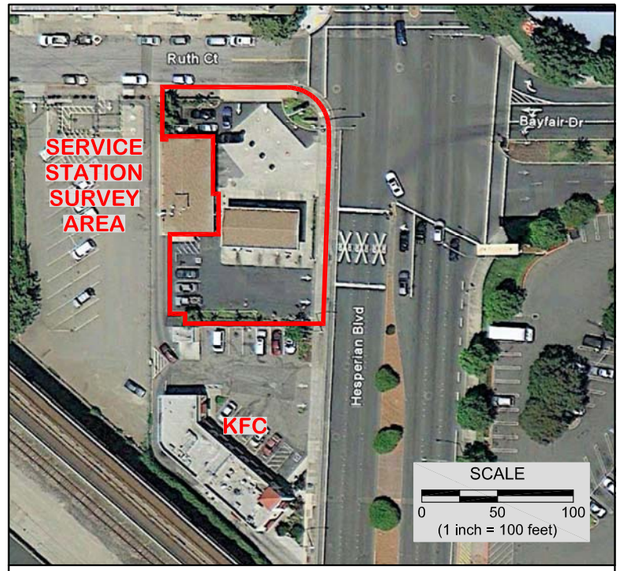
The detected utilities, as shown, may not represent all of the existing underground utilities as there are limitations unique to each geophysical method. These limitations may include: 1) subsurface targets too small or at depths beyond the detection limits of specific instruments, 2) subsurface targets not having a significant contrast in physical properties with the surrounding soils and 3) other cultural features above or below ground that cause instrumental interference and do not allow the detection of certain subsurface targets.

Some utilities may not be detectable using standard line location techniques, such as certain abandoned utilities, utilities not exposed at the ground surface, or those made of non-electrically conductive materials such as PVC, fiberglass, vitrified clay, metal pipes with insulating joints, communication lines, and non-energized electrical lines. In addition, utilities with tracer wires may be unavailable to private utility locating companies due to security reasons.

LEGEND

	LIMITS OF GEOPHYSICAL SURVEY
E	ELECTRIC LINE
NG	NATURAL GAS LINE
SD	STORM DRAIN LINE
	SUSPECTED PRODUCT LINE
UU	UNDIFFERENTIATED UTILITY LINE
W	WATER LINE
W?	SUSPECTED WATER LINE
	UTILITY LINE CONTINUATION (LINE IS SUSPECTED TO CONTINUE BEYOND DETECTED LOCATION)
?	UTILITY LINE NOT DETECTED BEYOND LOCATION (LINE MAY TERMINATE OR CONTINUE)
x	FENCE
	GPR ANOMALY - DISTURBED ZONE
	UST ZONE (UTILITIES NOT DETECTED)
	AIR/WATER DISPENSER
	BOLLARD
	EMERGENCY SHUT OFF SWITCH
	LIGHT STANDARD
	METAL PLATE
	MONITORING WELL
T	PAY TELEPHONE
	STORM DRAIN CATCH BASIN
	TRAFFIC SIGNAL
	UTILITY VAULT/PULL BOX
(AC)	ASPHALT
(RC)	REINFORCED CONCRETE





VICINITY MAP

NOTE: WE ASSUME PIPING AND ASSOCIATED UTILITY LINES EXTEND BETWEEN THE PUMPS AND THE EXISTING USTs; HOWEVER, WE WERE ABLE TO DELINEATE ONLY A LIMITED PORTION OF THEM. PLEASE REFER TO THE ASSOCIATED WRITTEN REPORT FOR DETAILS.

NORCAL

GEOPHYSICAL SURVEY MAP
BP-ARCO STATION 2162-SERVICE STATION AREA
15135 HESPERIAN BOULEVARD

LOCATION: SAN LEANDRO, CALIFORNIA

CLIENT: BROADBENT & ASSOCIATES

JOB #: 13-1034.19

NORCAL GEOPHYSICAL CONSULTANTS INC.

DATE: JAN. 2014

DRAWN BY: G.RANDALL

APPROVED BY: DJB

PLATE 1

LIMITATIONS:

The detected utilities, as shown, may not represent all of the existing underground utilities as there are limitations unique to each geophysical method. These limitations may include: 1) subsurface targets too small or at depths beyond the detection limits of specific instruments, 2) subsurface targets not having a significant contrast in physical properties with the surrounding soils and 3) other cultural features above or below ground that cause instrumental interference and do not allow the detection of certain subsurface targets.

Some utilities may not be detectable using standard line location techniques, such as certain abandoned utilities, utilities not exposed at the ground surface, or those made of non-electrically conductive materials such as PVC, fiberglass, vitrified clay, metal pipes with insulating joints, communication lines, and non-energized electrical lines. In addition, utilities with tracer wires may be unavailable to private utility locating companies due to security reasons.

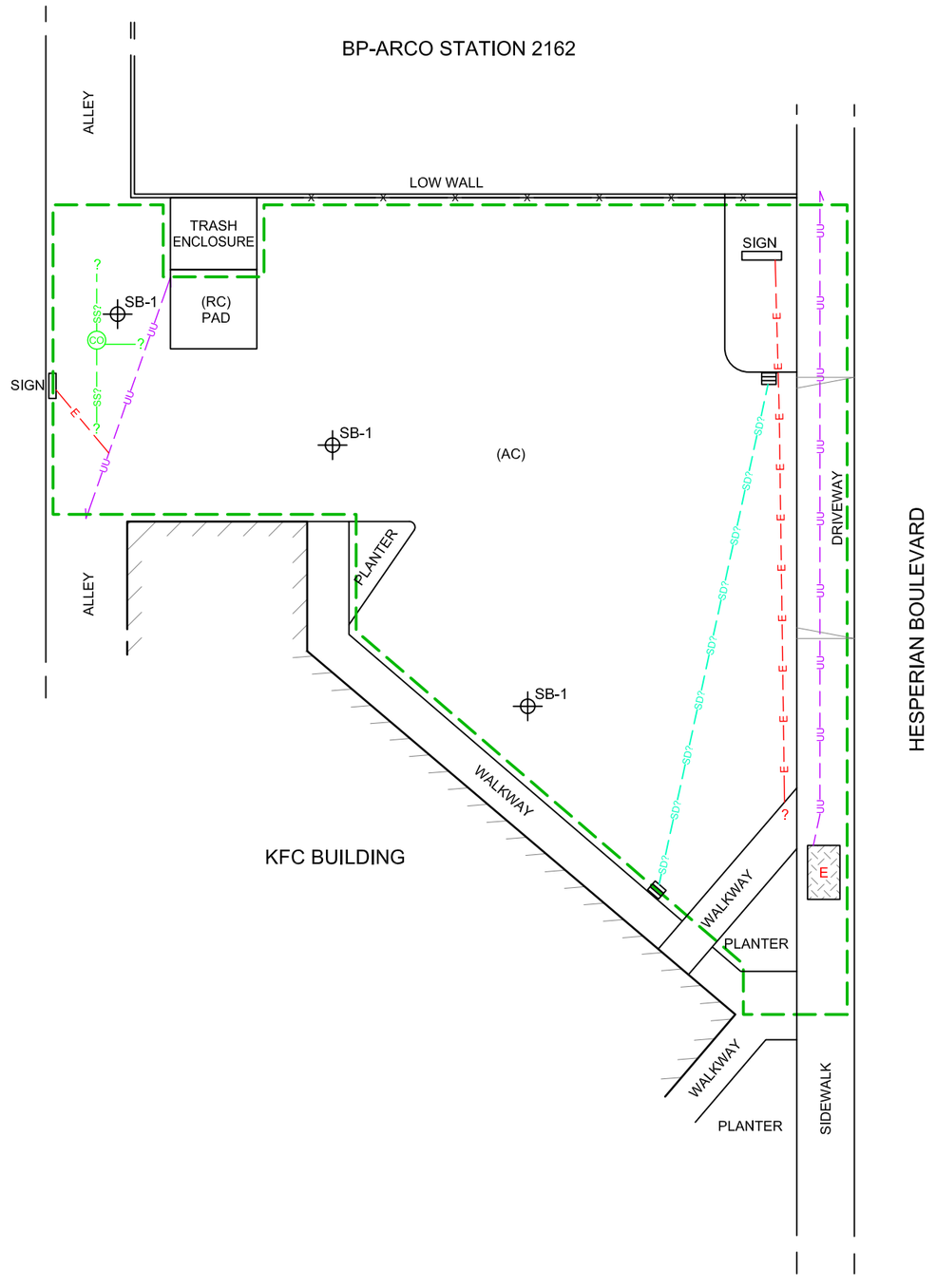
SCALE

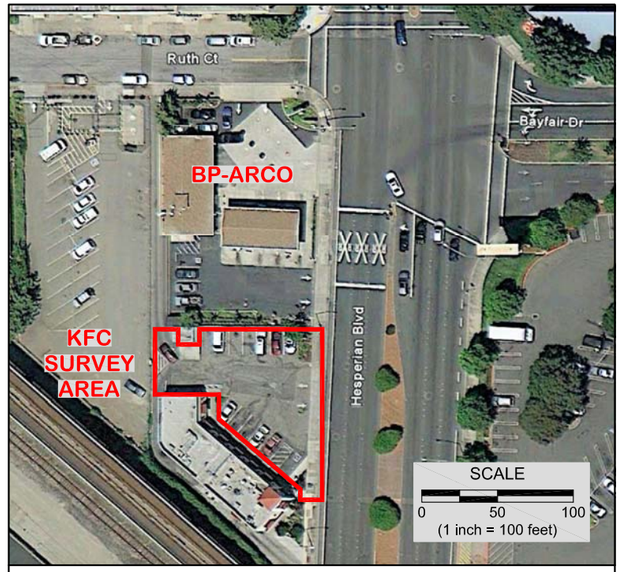
0 10 20 40

(1 inch = 20 feet)

LEGEND

— — —	LIMITS OF GEOPHYSICAL SURVEY
—E—	ELECTRIC LINE
—SS?—	SUSPECTED SANITARY SEWER LINE (NOT DETECTED)
—SD?—	SUSPECTED STORM DRAIN LINE
—UU—	UNDIFFERENTIATED UTILITY LINE
→	UTILITY LINE CONTINUATION (LINE IS SUSPECTED TO CONTINUE BEYOND DETECTED LOCATION)
—?	UTILITY LINE NOT DETECTED BEYOND LOCATION (LINE MAY TERMINATE OR CONTINUE)
—x—	FENCE
⊕	PROPOSED BORING LOCATION
E	ELECTRIC VAULT
CO	SANITARY SEWER CLEANOUT
▤	STORM DRAIN CATCH BASIN
(AC)	ASPHALT





VICINITY MAP

GEOPHYSICAL SURVEY MAP
BP-ARCO STATION 2162 - KFC AREA
15135 HESPERIAN BOULEVARD

LOCATION: SAN LEANDRO, CALIFORNIA

CLIENT: BROADBENT & ASSOCIATES

JOB #: 13-1034.19

NORCAL GEOPHYSICAL CONSULTANTS INC.

DATE: JAN. 2014

DRAWN BY: G.RANDALL

APPROVED BY: DJB

PLATE 2

Appendix A

GEOPHYSICAL METHODOLOGY

Appendix A

ELECTROMAGNETIC LINE LOCATION/METAL DETECTION (EMLL/MD)

METHODOLOGY

Electromagnetic line location techniques (EMLL) are used to locate the magnetic field resulting from an electric current flowing on a line. These magnetic fields can arise from currents already on the line (passive) or currents applied to a line with a transmitter (active). The most common passive signals are generated by live electric lines and re-radiated radio signals. Active signals can be introduced by connecting the transmitter to the line at accessible locations or by induction.

The detection of underground utilities is affected by the composition and construction of the line in question. Utilities detectable with standard line location techniques include any continuously connected metal pipes, cables/wires or utilities with tracer wires. Unless the utilities carry a passive current, they must be exposed at the surface or in accessible utility vaults. These generally include water, electric, natural gas, telephone, and other conduits related to facility operations. Utilities that are not detectable using standard electromagnetic line location techniques include those made of non-electrically conductive materials such as PVC, fiberglass, vitrified clay, and pipes with insulated connections.

Buried objects can also be detected, without direct contact, by using the metal detection technique (MD). This is used to detect buried near surface metal objects such as rebar, manhole covers, USTs, and various metallic debris. The MD transmitter-receiver unit is held above the ground and continuously scanned over the surface. The unit utilizes two orthogonal coils that are separated by a specified distance. One of the coils transmits an electromagnetic signal (primary magnetic field) which in turn produces a secondary magnetic field about the subsurface metal object. Since the receiver coil is orthogonal to the transmitter coil, it is unaffected by the primary field. Therefore, the secondary magnetic fields produced by buried metal object will generate an audible response from the unit. The peak of this response indicates when the unit is directly over the metal object.

The instrumentation we used for the EMLL and MD survey consists of a Radio Detection RD-400 and a Fisher TW-6 inductive pipe and cable locator.

DATA ANALYSIS

The EMLL/MD instrumentation indicates the presence of buried metal by emitting an audible tone; there are no recorded data to analyze. Therefore, the locations of buried objects detected with these methods are marked on the ground surface during the survey.

LIMITATION

The detection of underground utilities is dependent upon the composition and construction of the line of interest, as well as depth. Utilities detectable with standard line location techniques include any continuously connected metal pipes, cables/wires or utilities with tracer wires. Unless carrying a passive current these utilities must be exposed at the surface or accessible in utility vaults. These generally include water, electric, natural gas, telephone, and other conduits related to facility operations. Utilities that may not be detectable using standard electromagnetic line location techniques include certain abandoned utilities, utilities not exposed at the ground surface, or those made of non-electrically conductive materials such as PVC, fiberglass, vitrified clay, and metal pipes with insulating joints. Pipes generally deeper than about five to seven feet may not be detected.

GROUND PENETRATING RADAR (GPR)

METHODOLOGY

Ground penetrating radar is a method that provides a continuous, high resolution cross-section depicting variations in the electrical properties of the shallow subsurface. The method is particularly sensitive to variations in electrical conductivity and electrical permittivity (the ability of a material to hold a charge when an electrical field is applied).

The GPR system operates by radiating electromagnetic pulses into the ground from a transducer (antenna) as it is moved along a traverse. Since most earth materials are transparent to electromagnetic energy, the signal spreads downward into the subsurface. However, when the signal encounters a variation in electrical permittivity, a portion of the electromagnetic energy is reflected back to the surface. When the signal encounters a metal object, all of the incident energy is reflected. The reflected signals are received by the same transducer and are printed in cross-section form on a graphical recorder. Changes in subsurface reflection character on the GPR records can provide information regarding the location of USTs, sumps, buried debris, underground utilities, and variations in the shallow stratigraphy.

The GPR system used was a Geophysical Survey Systems, Inc. SIR-3000 Subsurface Interface Radar Systems equipped with a 400 megahertz (MHz) transducer, respectively. This transducer is used to provide high resolution at shallow depths.

DATA ANALYSIS

GPR records are examined to identify reflection patterns characteristic of USTs, utilities, septic tanks, and other buried debris. Typically, USTs are manifested by broad localized hyperbolic (upside-down "U" shape) reflection patterns that vary in intensity. The intensity of a reflection pattern is usually dependent upon the condition of the respective UST, its burial depth, and the type of fill over the UST. Utilities and other buried debris are typically manifested by narrow localized hyperbolic reflections that also vary in intensity.

LIMITATIONS

The ability to detect subsurface targets is dependent on site specific conditions. These conditions include depth of burial, the size or diameter of the target, the condition of the specific target in question, the type of backfill material associated with the target, and the surface conditions over the target. Under ideal conditions, the GPR can generally detect objects buried to approximately six feet. However, as the clay content in the subsurface increases, the GPR depth of detection decreases. Therefore, it is possible that on-site soil conditions and target features may limit the depth of detection to the upper one to two feet below ground surface.

APPENDIX H

Soil Boring Logs

BROADBENT LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

PROJECT NAME: BP 2162 | SITE ADDRESS: 15179 Hesperian Blvd, San Leandro, CA (KFC)

PROJECT NUMBER: 06-88-620 | LEGAL DESC: | APN:

LOGGED BY: Alex Martinez | FACILITY ID OR WAIVER: | NOI NUMBER:

DATE: 12/23/2013 | START: 0900 | DRILLING COMPANY: Gregg Drilling | DRILLER: Armando Torres

WELLID: SB-1 | STOP: 0925 | DRILLING METHOD: Direct Push | SAMPLE METHOD: Macrocore

DEPTH (FEET)	SOIL BORING	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
1–6	Conc.; GROUT						Air Knife to 6.5'		
7				Slightly Damp	Brown	Very Stiff	Clay; low plasticity, few angular gravels (95% clay , 0% silt, 0% sand, <5% gravel)	CL	None
8			54 ppm	Damp	Light Brown	Soft	Some fine sand (85, 5, 10, 0)		None
9									
10	▽	SB-1	55 ppm		Brown	Stiff	Some mottling (95, <5, 0, 0)		None
11									
12				Wet	Olive Brown	Loose	Clayey fine sand; (35, <5, 60, 0)	SC	None
13									
14		SB-1 @14ft		Damp	Brown		Clay; high plasticity (95, <5, 0 , 0)	CH	None
15–25									

TOTAL BORING DEPTH: 16 ft | PAGE NO: 1 OF 1

▽ ESTIMATED FIRST ENCOUNTERED GROUNDWATER DEPTH: 10 ft

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

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BROADBENT LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

PROJECT NAME: BP 2162 | SITE ADDRESS: 15179 Hesperian Blvd, San Leandro, CA (KFC)

PROJECT NUMBER: 06-88-620 | LEGAL DESC: | APN:

LOGGED BY: Alex Martinez | FACILITY ID OR WAIVER: | NOI NUMBER:

DATE: 12/23/2013 | START: 0800 | DRILLING COMPANY: Gregg Drilling | DRILLER: Armando Torres

WELLID: SB-2 | STOP: 0845 | DRILLING METHOD: Direct Push | SAMPLE METHOD: Macrocore

DEPTH (FEET)	SOIL BORING	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
1–6	Conc. / GROUT						Air Knife to 6.5'		
7				Slightly Damp	Brown	Soft	Silt; very little sand, medium plasticity, some clay (10% clay, 85% silt, <5% sand, 0% gravel)	ML	None
8					Light Brown		Some fine grained sand (0,90,5,5)		None
9				Dry	Drk Brown	Stiff	Clay; angular grains, some fine gravel (90, 0 , 0 10)	CL	None
10	▽	SB-2		Very Moist	Olive Brown	Soft	Clay; high plasticity (95, 5, 0, 0) Clay becomes stiff @ 10.5'	CH	
11			1.2 ppm	Wet			Silt; little to no plasticity, with sand (0. 85, 15, 0)	ML	None
12			112 ppm		Brown	Very Loose	Sand; fine sand, some fine gravel (0, 5, 90, 5)	SC	None
13–14		SB-2 @14ft							
15				Very Moist		Soft	Clay; high plasticity (95, <5, 0, 0) 3" fine grained sand lens @ bottom	CH	None
16–25									

TOTAL BORING DEPTH: 16 ft | PAGE NO: 1 OF 1 | ▽ ESTIMATED FIRST ENCOUNTERED GROUNDWATER DEPTH: 10 ft

BROADBENT LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

PROJECT NAME: BP 2162 | SITE ADDRESS: 15179 Hesperian Blvd, San Leandro, CA (KFC)

PROJECT NUMBER: 06-88-620 | LEGAL DESC: | APN:

LOGGED BY: Alex Martinez | FACILITY ID OR WAIVER: | NOI NUMBER:

DATE: 12/23/2013 | START: 0935 | DRILLING COMPANY: Gregg Drilling | DRILLER: Armando Torres

WELLID: SB-3 | STOP: 1000 | DRILLING METHOD: Direct Push | SAMPLE METHOD: Macrocore

DEPTH (FEET)	SOIL BORING	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
1–6	Conc. / GROUT						Air Knife to 6.5'		
7				Dry / Damp	Drk Brown / Lt. Brown	Stiff	Clay; no plasticity, fine gravels; (85% clay, 10% silt, 0% sand, <5% gravel) low plasticity (90, 10, 0 , 0)	CL	None
8			45 ppm	Moist	Brown	Loose	Clayey sand; fine sands, low plasticity (45, 5, 50, 0)	SC	None
9					Lt. Brown	Soft	Clay; medium plasticity (95, 5, 0, 0)	CL	None
10	▽	SB-3							
11				Wet	Brown		Clay with fine gravel, no plasticity, no matrix (80, 0, 0, 20)		
							Sandy gravel; fine sand/gravel, angular grains (15, 5, 25, 55)	GM	None
12					Lt Brown		Clay; medium plasticity (90, 10, 0, 0)	CL	
13						Very Loose	Sandy gravel; fine gravel, medium sand, subangular/subrounded grains, some clay; (10, 0, 25, 65)	GM	None
14		SB-3 @14ft	69 ppm						
15						Soft	Clay; medium plasticity (90, 10, 0, 0)	CL	None
16–25									

TOTAL BORING DEPTH: 16 ft | PAGE NO: 1 OF 1 | ▽ ESTIMATED FIRST ENCOUNTERED GROUNDWATER DEPTH: 10 ft

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

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APPENDIX I

Laboratory Analytical Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

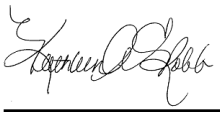
ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-66062-1
Client Project/Site: ARCO 2162, San Leandro

For:
Broadbent & Associates, Inc.
875 Cotting Lane
Suite G
Vacaville, California 95688

Attn: Kristene Tidwell



Authorized for release by:
1/9/2014 10:29:37 AM

Kathleen Robb, Project Manager II
(949)261-1022
kathleen.robb@testamericainc.com

Table of Contents

Sample Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-66062-1	SB-1	Water	12/23/13 09:20	12/24/13 11:00
440-66062-2	SB-2	Water	12/23/13 08:30	12/24/13 11:00
440-66062-3	SB-3	Water	12/23/13 09:55	12/24/13 11:00
440-66062-4	SB-1 @ 14'	Solid	12/23/13 09:15	12/24/13 11:00
440-66062-5	SB-2 @ 14'	Solid	12/23/13 08:25	12/24/13 11:00
440-66062-6	SB-3 @ 14'	Solid	12/23/13 09:50	12/24/13 11:00

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Job ID: 440-66062-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-66062-1

Comments
No additional comments.

Receipt
The samples were received on 12/24/2013 11:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.2º C.

Method(s) 5030B, 8015B, 8260B: The following sample(s) was received with headspace in the sample vial: SB-3 (440-66062-3). 3 vials were affected.

The original custody seal on one of the vials was removed.

The following sample(s) was collected in improper containers: SB-1 (440-66062-1), SB-2 (440-66062-2), SB-3 (440-66062-3). The client requests 8015 DRO however no appropriate containers for the analysis was received. Containers received were VOA vials.

GC/MS VOA
Method(s) 8260B: The following sample(s) submitted for volatiles analysis was received with insufficient preservation (pH >2):pH is 5 SB-1 (440-66062-1).

No other analytical or quality issues were noted.

GC VOA
Method(s) 8015B: The following sample(s) was received with headspace in the sample vial: SB-3 (440-66062-3).

Method(s) 8015B: The following sample(s) submitted for volatiles analysis was received with insufficient preservation (pH >2): SB-1 (440-66062-1). pH=4

No other analytical or quality issues were noted.

GC Semi VOA
No analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

Client Sample ID: SB-1
Date Collected: 12/23/13 09:20
Date Received: 12/24/13 11:00

Lab Sample ID: 440-66062-1
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			01/02/14 17:08	1
1,2-Dichloroethane	ND		0.50		ug/L			01/02/14 17:08	1
Benzene	ND		0.50		ug/L			01/02/14 17:08	1
Ethanol	ND		150		ug/L			01/02/14 17:08	1
Ethylbenzene	ND		0.50		ug/L			01/02/14 17:08	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			01/02/14 17:08	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			01/02/14 17:08	1
m,p-Xylene	ND		1.0		ug/L			01/02/14 17:08	1
Methyl-t-Butyl Ether (MTBE)	**15**		0.50		ug/L			01/02/14 17:08	1
o-Xylene	ND		0.50		ug/L			01/02/14 17:08	1
Tert-amyl-methyl ether (TAME)	**0.92**		0.50		ug/L			01/02/14 17:08	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			01/02/14 17:08	1
Toluene	ND		0.50		ug/L			01/02/14 17:08	1
Xylenes, Total	ND		1.0		ug/L			01/02/14 17:08	1
Naphthalene	ND		1.0		ug/L			01/02/14 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*118*		*80 - 120*		*01/02/14 17:08*	*1*
Dibromofluoromethane (Surr)	*118*		*76 - 132*		*01/02/14 17:08*	*1*
Toluene-d8 (Surr)	*116*		*80 - 128*		*01/02/14 17:08*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	**59**		50		ug/L			12/31/13 23:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*65 - 140*		*12/31/13 23:27*	*1*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Client Sample ID: SB-2
Date Collected: 12/23/13 08:30
Date Received: 12/24/13 11:00

Lab Sample ID: 440-66062-2
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			01/02/14 17:35	1
1,2-Dichloroethane	ND		0.50		ug/L			01/02/14 17:35	1
Benzene	ND		0.50		ug/L			01/02/14 17:35	1
Ethanol	ND		150		ug/L			01/02/14 17:35	1
Ethylbenzene	ND		0.50		ug/L			01/02/14 17:35	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			01/02/14 17:35	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			01/02/14 17:35	1
m,p-Xylene	ND		1.0		ug/L			01/02/14 17:35	1
Methyl-t-Butyl Ether (MTBE)	**6.0**		0.50		ug/L			01/02/14 17:35	1
o-Xylene	ND		0.50		ug/L			01/02/14 17:35	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			01/02/14 17:35	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			01/02/14 17:35	1
Toluene	ND		0.50		ug/L			01/02/14 17:35	1
Xylenes, Total	ND		1.0		ug/L			01/02/14 17:35	1
Naphthalene	ND		1.0		ug/L			01/02/14 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*114*		*80 - 120*		*01/02/14 17:35*	*1*
Dibromofluoromethane (Surr)	*108*		*76 - 132*		*01/02/14 17:35*	*1*
Toluene-d8 (Surr)	*115*		*80 - 128*		*01/02/14 17:35*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50		ug/L			12/31/13 23:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*65 - 140*		*12/31/13 23:54*	*1*

Client Sample ID: SB-3
Date Collected: 12/23/13 09:55
Date Received: 12/24/13 11:00

Lab Sample ID: 440-66062-3
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			01/02/14 18:02	1
1,2-Dichloroethane	ND		0.50		ug/L			01/02/14 18:02	1
Benzene	ND		0.50		ug/L			01/02/14 18:02	1
Ethanol	ND		150		ug/L			01/02/14 18:02	1
Ethylbenzene	ND		0.50		ug/L			01/02/14 18:02	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			01/02/14 18:02	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			01/02/14 18:02	1
m,p-Xylene	ND		1.0		ug/L			01/02/14 18:02	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			01/02/14 18:02	1
o-Xylene	ND		0.50		ug/L			01/02/14 18:02	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			01/02/14 18:02	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			01/02/14 18:02	1
Toluene	ND		0.50		ug/L			01/02/14 18:02	1
Xylenes, Total	ND		1.0		ug/L			01/02/14 18:02	1
Naphthalene	ND		1.0		ug/L			01/02/14 18:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*115*		*80 - 120*		*01/02/14 18:02*	*1*
Dibromofluoromethane (Surr)	*110*		*76 - 132*		*01/02/14 18:02*	*1*
Toluene-d8 (Surr)	*116*		*80 - 128*		*01/02/14 18:02*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50		ug/L			01/01/14 00:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*65 - 140*		*01/01/14 00:22*	*1*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Client Sample ID: SB-1 @ 14'
Date Collected: 12/23/13 09:15
Date Received: 12/24/13 11:00

Lab Sample ID: 440-66062-4
Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg			12/30/13 12:23	1
Isopropyl Ether (DIPE)	ND		0.0050		mg/Kg			12/30/13 12:23	1
Ethanol	ND		0.30		mg/Kg			12/30/13 12:23	1
Ethyl-t-butyl ether (ETBE)	ND		0.0050		mg/Kg			12/30/13 12:23	1
Ethylbenzene	ND		0.0020		mg/Kg			12/30/13 12:23	1
m,p-Xylene	ND		0.0040		mg/Kg			12/30/13 12:23	1
Methyl-t-Butyl Ether (MTBE)	ND		0.0050		mg/Kg			12/30/13 12:23	1
o-Xylene	ND		0.0020		mg/Kg			12/30/13 12:23	1
Tert-amyl-methyl ether (TAME)	ND		0.0050		mg/Kg			12/30/13 12:23	1
tert-Butyl alcohol (TBA)	ND		0.099		mg/Kg			12/30/13 12:23	1
Toluene	ND		0.0020		mg/Kg			12/30/13 12:23	1
1,2-Dibromoethane (EDB)	ND		0.0020		mg/Kg			12/30/13 12:23	1
Xylenes, Total	ND		0.0040		mg/Kg			12/30/13 12:23	1
1,2-Dichloroethane	ND		0.0020		mg/Kg			12/30/13 12:23	1
Naphthalene	ND		0.0050		mg/Kg			12/30/13 12:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*113*		*79 - 123*		*12/30/13 12:23*	*1*
4-Bromofluorobenzene (Surr)	*105*		*79 - 120*		*12/30/13 12:23*	*1*
Dibromofluoromethane (Surr)	*101*		*60 - 120*		*12/30/13 12:23*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		0.38		mg/Kg			01/03/14 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*65 - 140*		*01/03/14 22:05*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
DRO (C10-C28)	ND		5.0		mg/Kg		12/31/13 13:44	12/31/13 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane	*73*		*40 - 140*	*12/31/13 13:44*	*12/31/13 19:06*	*1*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Client Sample ID: SB-2 @ 14'
Date Collected: 12/23/13 08:25
Date Received: 12/24/13 11:00

Lab Sample ID: 440-66062-5
Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg			12/30/13 10:53	1
Isopropyl Ether (DIPE)	ND		0.0050		mg/Kg			12/30/13 10:53	1
Ethanol	ND		0.30		mg/Kg			12/30/13 10:53	1
Ethyl-t-butyl ether (ETBE)	ND		0.0050		mg/Kg			12/30/13 10:53	1
Ethylbenzene	ND		0.0020		mg/Kg			12/30/13 10:53	1
m,p-Xylene	ND		0.0040		mg/Kg			12/30/13 10:53	1
Methyl-t-Butyl Ether (MTBE)	ND		0.0050		mg/Kg			12/30/13 10:53	1
o-Xylene	ND		0.0020		mg/Kg			12/30/13 10:53	1
Tert-amyl-methyl ether (TAME)	ND		0.0050		mg/Kg			12/30/13 10:53	1
tert-Butyl alcohol (TBA)	ND		0.099		mg/Kg			12/30/13 10:53	1
Toluene	ND		0.0020		mg/Kg			12/30/13 10:53	1
1,2-Dibromoethane (EDB)	ND		0.0020		mg/Kg			12/30/13 10:53	1
Xylenes, Total	ND		0.0040		mg/Kg			12/30/13 10:53	1
1,2-Dichloroethane	ND		0.0020		mg/Kg			12/30/13 10:53	1
Naphthalene	ND		0.0050		mg/Kg			12/30/13 10:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*113*		*79 - 123*		*12/30/13 10:53*	*1*
4-Bromofluorobenzene (Surr)	*104*		*79 - 120*		*12/30/13 10:53*	*1*
Dibromofluoromethane (Surr)	*92*		*60 - 120*		*12/30/13 10:53*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		0.38		mg/Kg			01/06/14 12:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*65 - 140*		*01/06/14 12:31*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
DRO (C10-C28)	ND		5.0		mg/Kg		12/31/13 13:44	12/31/13 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane	*65*		*40 - 140*	*12/31/13 13:44*	*12/31/13 19:27*	*1*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Client Sample ID: SB-3 @ 14'
Date Collected: 12/23/13 09:50
Date Received: 12/24/13 11:00

Lab Sample ID: 440-66062-6
Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg			12/30/13 12:53	1
Isopropyl Ether (DIPE)	ND		0.0050		mg/Kg			12/30/13 12:53	1
Ethanol	ND		0.30		mg/Kg			12/30/13 12:53	1
Ethyl-t-butyl ether (ETBE)	ND		0.0050		mg/Kg			12/30/13 12:53	1
Ethylbenzene	ND		0.0020		mg/Kg			12/30/13 12:53	1
m,p-Xylene	ND		0.0040		mg/Kg			12/30/13 12:53	1
Methyl-t-Butyl Ether (MTBE)	ND		0.0050		mg/Kg			12/30/13 12:53	1
o-Xylene	ND		0.0020		mg/Kg			12/30/13 12:53	1
Tert-amyl-methyl ether (TAME)	ND		0.0050		mg/Kg			12/30/13 12:53	1
tert-Butyl alcohol (TBA)	ND		0.10		mg/Kg			12/30/13 12:53	1
Toluene	ND		0.0020		mg/Kg			12/30/13 12:53	1
1,2-Dibromoethane (EDB)	ND		0.0020		mg/Kg			12/30/13 12:53	1
Xylenes, Total	ND		0.0040		mg/Kg			12/30/13 12:53	1
1,2-Dichloroethane	ND		0.0020		mg/Kg			12/30/13 12:53	1
Naphthalene	ND		0.0050		mg/Kg			12/30/13 12:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*113*		*79 - 123*		*12/30/13 12:53*	*1*
4-Bromofluorobenzene (Surr)	*104*		*79 - 120*		*12/30/13 12:53*	*1*
Dibromofluoromethane (Surr)	*95*		*60 - 120*		*12/30/13 12:53*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		0.38		mg/Kg			01/06/14 12:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*65 - 140*		*01/06/14 12:57*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
DRO (C10-C28)	ND		5.0		mg/Kg		12/31/13 13:44	12/31/13 19:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane	*78*		*40 - 140*	*12/31/13 13:44*	*12/31/13 19:48*	*1*

Method Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
8260B/5030B	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
8015B	Gasoline Range Organics - (GC)	SW846	TAL IRV
8015B/5030B	Gasoline Range Organics (GC)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL IRV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Client Sample ID: SB-1

Lab Sample ID: 440-66062-1

Date Collected: 12/23/13 09:20

Matrix: Water

Date Received: 12/24/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	153720	01/02/14 17:08	AA	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	153679	12/31/13 23:27	TL	TAL IRV

Client Sample ID: SB-2

Lab Sample ID: 440-66062-2

Date Collected: 12/23/13 08:30

Matrix: Water

Date Received: 12/24/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	153720	01/02/14 17:35	AA	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	153679	12/31/13 23:54	TL	TAL IRV

Client Sample ID: SB-3

Lab Sample ID: 440-66062-3

Date Collected: 12/23/13 09:55

Matrix: Water

Date Received: 12/24/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	153720	01/02/14 18:02	AA	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	153679	01/01/14 00:22	TL	TAL IRV

Client Sample ID: SB-1 @ 14'

Lab Sample ID: 440-66062-4

Date Collected: 12/23/13 09:15

Matrix: Solid

Date Received: 12/24/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5.04 g	10 mL	153275	12/30/13 12:23	MP	TAL IRV
Total/NA	Analysis	8015B		1	5.2 g	10 mL	154083	01/03/14 22:05	PH	TAL IRV
Total/NA	Prep	CA LUFT			30.03 g	1 mL	153630	12/31/13 13:44	SJ	TAL IRV
Total/NA	Analysis	8015B		1	30.03 g	1 mL	153586	12/31/13 19:06	KW	TAL IRV

Client Sample ID: SB-2 @ 14'

Lab Sample ID: 440-66062-5

Date Collected: 12/23/13 08:25

Matrix: Solid

Date Received: 12/24/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5.05 g	10 mL	153275	12/30/13 10:53	MP	TAL IRV
Total/NA	Analysis	8015B		1	5.25 g	10 mL	154254	01/06/14 12:31	TL	TAL IRV
Total/NA	Prep	CA LUFT			30.08 g	1 mL	153630	12/31/13 13:44	SJ	TAL IRV
Total/NA	Analysis	8015B		1	30.08 g	1 mL	153586	12/31/13 19:27	KW	TAL IRV

Lab Chronicle

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Client Sample ID: SB-3 @ 14'
Date Collected: 12/23/13 09:50
Date Received: 12/24/13 11:00

Lab Sample ID: 440-66062-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5.01 g	10 mL	153275	12/30/13 12:53	MP	TAL IRV
Total/NA	Analysis	8015B		1	5.23 g	10 mL	154254	01/06/14 12:57	TL	TAL IRV
Total/NA	Prep	CA LUFT			30.07 g	1 mL	153630	12/31/13 13:44	SJ	TAL IRV
Total/NA	Analysis	8015B		1	30.07 g	1 mL	153586	12/31/13 19:48	KW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-153275/4
Matrix: Solid
Analysis Batch: 153275

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0020		mg/Kg			12/30/13 08:56	1
Isopropyl Ether (DIPE)	ND		0.0050		mg/Kg			12/30/13 08:56	1
Ethanol	ND		0.30		mg/Kg			12/30/13 08:56	1
Ethyl-t-butyl ether (ETBE)	ND		0.0050		mg/Kg			12/30/13 08:56	1
Ethylbenzene	ND		0.0020		mg/Kg			12/30/13 08:56	1
m,p-Xylene	ND		0.0040		mg/Kg			12/30/13 08:56	1
Methyl-t-Butyl Ether (MTBE)	ND		0.0050		mg/Kg			12/30/13 08:56	1
o-Xylene	ND		0.0020		mg/Kg			12/30/13 08:56	1
Tert-amyl-methyl ether (TAME)	ND		0.0050		mg/Kg			12/30/13 08:56	1
tert-Butyl alcohol (TBA)	ND		0.10		mg/Kg			12/30/13 08:56	1
Toluene	ND		0.0020		mg/Kg			12/30/13 08:56	1
1,2-Dibromoethane (EDB)	ND		0.0020		mg/Kg			12/30/13 08:56	1
Xylenes, Total	ND		0.0040		mg/Kg			12/30/13 08:56	1
1,2-Dichloroethane	ND		0.0020		mg/Kg			12/30/13 08:56	1
Naphthalene	ND		0.0050		mg/Kg			12/30/13 08:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*112*		*79 - 123*		*12/30/13 08:56*	*1*
4-Bromofluorobenzene (Surr)	*105*		*79 - 120*		*12/30/13 08:56*	*1*
Dibromofluoromethane (Surr)	*100*		*60 - 120*		*12/30/13 08:56*	*1*

Lab Sample ID: LCS 440-153275/5
Matrix: Solid
Analysis Batch: 153275

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			0.0500	0.0523		mg/Kg		105	65 - 120		
Isopropyl Ether (DIPE)			0.0500	0.0611		mg/Kg		122	60 - 140		
Ethanol			0.500	0.503		mg/Kg		101	35 - 160		
Ethyl-t-butyl ether (ETBE)			0.0500	0.0615		mg/Kg		123	60 - 140		
Ethylbenzene			0.0500	0.0548		mg/Kg		110	70 - 125		
m,p-Xylene			0.100	0.109		mg/Kg		109	70 - 125		
Methyl-t-Butyl Ether (MTBE)			0.0500	0.0636		mg/Kg		127	60 - 140		
o-Xylene			0.0500	0.0577		mg/Kg		115	70 - 125		
Tert-amyl-methyl ether (TAME)			0.0500	0.0638		mg/Kg		128	60 - 145		
tert-Butyl alcohol (TBA)			0.250	0.249		mg/Kg		99	70 - 135		
Toluene			0.0500	0.0564		mg/Kg		113	70 - 125		
1,2-Dibromoethane (EDB)			0.0500	0.0575		mg/Kg		115	70 - 130		
1,2-Dichloroethane			0.0500	0.0549		mg/Kg		110	60 - 140		
Naphthalene			0.0500	0.0559		mg/Kg		112	55 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*114*		*79 - 123*
4-Bromofluorobenzene (Surr)	*107*		*79 - 120*
Dibromofluoromethane (Surr)	*105*		*60 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-153275/6
Matrix: Solid
Analysis Batch: 153275

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	*112*		*79 - 123*
4-Bromofluorobenzene (Surr)	*110*		*79 - 120*
Dibromofluoromethane (Surr)	*102*		*60 - 120*

Lab Sample ID: 440-66062-5 MS
Matrix: Solid
Analysis Batch: 153275

Client Sample ID: SB-2 @ 14'
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	ND		0.0499	0.0574		mg/Kg		115	65 - 130
Isopropyl Ether (DIPE)	ND		0.0499	0.0679		mg/Kg		136	60 - 150
Ethanol	ND		0.499	0.608		mg/Kg		122	30 - 165
Ethyl-t-butyl ether (ETBE)	ND		0.0499	0.0672		mg/Kg		135	60 - 145
Ethylbenzene	ND		0.0499	0.0608		mg/Kg		122	70 - 135
m,p-Xylene	ND		0.0998	0.121		mg/Kg		122	70 - 130
Methyl-t-Butyl Ether (MTBE)	ND		0.0499	0.0672		mg/Kg		135	55 - 155
o-Xylene	ND		0.0499	0.0642		mg/Kg		129	65 - 130
Tert-amyl-methyl ether (TAME)	ND		0.0499	0.0693		mg/Kg		139	60 - 150
tert-Butyl alcohol (TBA)	ND		0.250	0.315		mg/Kg		126	65 - 145
Toluene	ND		0.0499	0.0624		mg/Kg		125	70 - 130
1,2-Dibromoethane (EDB)	ND		0.0499	0.0613		mg/Kg		123	65 - 140
1,2-Dichloroethane	ND		0.0499	0.0588		mg/Kg		118	60 - 150
Naphthalene	ND		0.0499	0.0576		mg/Kg		115	40 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	*114*		*79 - 123*
4-Bromofluorobenzene (Surr)	*106*		*79 - 120*
Dibromofluoromethane (Surr)	*103*		*60 - 120*

Lab Sample ID: 440-66062-5 MSD
Matrix: Solid
Analysis Batch: 153275

Client Sample ID: SB-2 @ 14'
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	ND		0.0498	0.0550		mg/Kg		110	65 - 130	4	20
Isopropyl Ether (DIPE)	ND		0.0498	0.0643		mg/Kg		129	60 - 150	6	25
Ethanol	ND		0.498	0.592		mg/Kg		119	30 - 165	3	40
Ethyl-t-butyl ether (ETBE)	ND		0.0498	0.0639		mg/Kg		128	60 - 145	5	30
Ethylbenzene	ND		0.0498	0.0584		mg/Kg		117	70 - 135	4	25
m,p-Xylene	ND		0.0996	0.116		mg/Kg		117	70 - 130	4	25
Methyl-t-Butyl Ether (MTBE)	ND		0.0498	0.0642		mg/Kg		129	55 - 155	5	35
o-Xylene	ND		0.0498	0.0617		mg/Kg		124	65 - 130	4	25
Tert-amyl-methyl ether (TAME)	ND		0.0498	0.0665		mg/Kg		134	60 - 150	4	25
tert-Butyl alcohol (TBA)	ND		0.249	0.310		mg/Kg		124	65 - 145	2	30
Toluene	ND		0.0498	0.0597		mg/Kg		120	70 - 130	5	20
1,2-Dibromoethane (EDB)	ND		0.0498	0.0583		mg/Kg		117	65 - 140	5	25
1,2-Dichloroethane	ND		0.0498	0.0561		mg/Kg		113	60 - 150	5	25

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-66062-5 MSD
Matrix: Solid
Analysis Batch: 153275

Client Sample ID: SB-2 @ 14'
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	ND		0.0498	0.0544		mg/Kg		109	40 - 150	6	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*114*		*79 - 123*
4-Bromofluorobenzene (Surr)	*106*		*79 - 120*
Dibromofluoromethane (Surr)	*100*		*60 - 120*

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-153720/4
Matrix: Water
Analysis Batch: 153720

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			01/02/14 08:29	1
1,2-Dichloroethane	ND		0.50		ug/L			01/02/14 08:29	1
Benzene	ND		0.50		ug/L			01/02/14 08:29	1
Ethanol	ND		150		ug/L			01/02/14 08:29	1
Ethylbenzene	ND		0.50		ug/L			01/02/14 08:29	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			01/02/14 08:29	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			01/02/14 08:29	1
m,p-Xylene	ND		1.0		ug/L			01/02/14 08:29	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			01/02/14 08:29	1
o-Xylene	ND		0.50		ug/L			01/02/14 08:29	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			01/02/14 08:29	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			01/02/14 08:29	1
Toluene	ND		0.50		ug/L			01/02/14 08:29	1
Xylenes, Total	ND		1.0		ug/L			01/02/14 08:29	1
Naphthalene	ND		1.0		ug/L			01/02/14 08:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*80 - 120*		*01/02/14 08:29*	*1*
Dibromofluoromethane (Surr)	*100*		*76 - 132*		*01/02/14 08:29*	*1*
Toluene-d8 (Surr)	*112*		*80 - 128*		*01/02/14 08:29*	*1*

Lab Sample ID: LCS 440-153720/23
Matrix: Water
Analysis Batch: 153720

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	25.0	26.5		ug/L		106	70 - 130
1,2-Dichloroethane	25.0	25.0		ug/L		100	57 - 138
Benzene	25.0	24.3		ug/L		97	68 - 130
Ethanol	250	254		ug/L		102	50 - 149
Ethylbenzene	25.0	24.5		ug/L		98	70 - 130
Ethyl-t-butyl ether (ETBE)	25.0	25.2		ug/L		101	60 - 136
Isopropyl Ether (DIPE)	25.0	24.4		ug/L		98	58 - 139

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-153720/23
Matrix: Water
Analysis Batch: 153720

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
m,p-Xylene	50.0	51.8		ug/L		104	70 - 130
Methyl-t-Butyl Ether (MTBE)	25.0	25.5		ug/L		102	63 - 131
o-Xylene	25.0	26.2		ug/L		105	70 - 130
Tert-amyl-methyl ether (TAME)	25.0	28.0		ug/L		112	57 - 139
tert-Butyl alcohol (TBA)	125	128		ug/L		102	70 - 130
Toluene	25.0	25.4		ug/L		102	70 - 130
Naphthalene	25.0	22.1		ug/L		88	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*76 - 132*
Toluene-d8 (Surr)	*112*		*80 - 128*

Lab Sample ID: 440-65700-F-3 MS
Matrix: Water
Analysis Batch: 153720

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	ND		250	285		ug/L		114	70 - 131
1,2-Dichloroethane	ND		250	263		ug/L		105	56 - 146
Benzene	210		250	455		ug/L		98	66 - 130
Ethanol	ND		2500	2330		ug/L		93	54 - 150
Ethylbenzene	370		250	577	EY	ug/L		84	70 - 130
Ethyl-t-butyl ether (ETBE)	ND		250	275		ug/L		110	70 - 130
Isopropyl Ether (DIPE)	19		250	274		ug/L		102	64 - 138
m,p-Xylene	300		500	816		ug/L		103	70 - 133
Methyl-t-Butyl Ether (MTBE)	ND		250	282		ug/L		113	70 - 130
o-Xylene	26		250	293		ug/L		107	70 - 133
Tert-amyl-methyl ether (TAME)	ND		250	307		ug/L		123	68 - 133
tert-Butyl alcohol (TBA)	130		1250	1330		ug/L		96	70 - 130
Toluene	51		250	307		ug/L		103	70 - 130
Naphthalene	510		250	722		ug/L		85	60 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*117*		*80 - 120*
Dibromofluoromethane (Surr)	*106*		*76 - 132*
Toluene-d8 (Surr)	*117*		*80 - 128*

Lab Sample ID: 440-65700-F-3 MSD
Matrix: Water
Analysis Batch: 153720

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)	ND		250	284		ug/L		114	70 - 131	1	25
1,2-Dichloroethane	ND		250	266		ug/L		106	56 - 146	1	20
Benzene	210		250	441		ug/L		92	66 - 130	3	20
Ethanol	ND		2500	2520		ug/L		101	54 - 150	8	30
Ethylbenzene	370		250	559	EY	ug/L		77	70 - 130	3	20

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-65700-F-3 MSD
Matrix: Water
Analysis Batch: 153720

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethyl-t-butyl ether (ETBE)	ND		250	283		ug/L		113	70 - 130	3	25
Isopropyl Ether (DIPE)	19		250	287		ug/L		107	64 - 138	5	25
m,p-Xylene	300		500	809		ug/L		102	70 - 133	1	25
Methyl-t-Butyl Ether (MTBE)	ND		250	284		ug/L		114	70 - 130	1	25
o-Xylene	26		250	292		ug/L		106	70 - 133	0	20
Tert-amyl-methyl ether (TAME)	ND		250	305		ug/L		122	68 - 133	1	30
tert-Butyl alcohol (TBA)	130		1250	1410		ug/L		102	70 - 130	6	25
Toluene	51		250	304		ug/L		101	70 - 130	1	20
Naphthalene	510		250	710		ug/L		80	60 - 140	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*76 - 132*
Toluene-d8 (Surr)	*113*		*80 - 128*

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 440-154083/4
Matrix: Solid
Analysis Batch: 154083

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		0.40		mg/Kg			01/03/14 19:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*65 - 140*		*01/03/14 19:57*	*1*

Lab Sample ID: LCS 440-154083/2
Matrix: Solid
Analysis Batch: 154083

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)			1.60	1.51		mg/Kg		94	70 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*65 - 140*

Lab Sample ID: LCSD 440-154083/3
Matrix: Solid
Analysis Batch: 154083

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)			1.60	1.44		mg/Kg		90	70 - 135	5	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*65 - 140*

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Lab Sample ID: 440-66386-A-1 MS
Matrix: Solid
Analysis Batch: 154083

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)	ND		1.50	1.08		mg/Kg		72	60 - 140		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*78*		*65 - 140*

Lab Sample ID: 440-66386-A-1 MSD
Matrix: Solid
Analysis Batch: 154083

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	ND		1.55	1.07		mg/Kg		69	60 - 140	1	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*74*		*65 - 140*

Lab Sample ID: MB 440-154254/4
Matrix: Solid
Analysis Batch: 154254

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		0.40		mg/Kg			01/06/14 12:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*65 - 140*		*01/06/14 12:05*	*1*

Lab Sample ID: LCS 440-154254/2
Matrix: Solid
Analysis Batch: 154254

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)			1.60	1.58		mg/Kg		99	70 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*65 - 140*

Lab Sample ID: LCSD 440-154254/3
Matrix: Solid
Analysis Batch: 154254

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)			1.60	1.54		mg/Kg		96	70 - 135	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*65 - 140*

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Lab Sample ID: 440-66062-6 MS — **Client Sample ID: SB-3 @ 14'**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 154254

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	ND		1.55	1.43		mg/Kg		92	60 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*65 - 140*

Lab Sample ID: 440-66062-6 MSD — **Client Sample ID: SB-3 @ 14'**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 154254

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	ND		1.54	1.35		mg/Kg		88	60 - 140	5	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*65 - 140*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Lab Sample ID: MB 440-153679/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 153679

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50	ug/L			12/31/13 20:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*65 - 140*		*12/31/13 20:43*	*1*

Lab Sample ID: LCS 440-153679/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 153679

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)			800	695		ug/L		87	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*65 - 140*

Lab Sample ID: 440-66272-A-21 MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 153679

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	87		800	743		ug/L		82	65 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*65 - 140*

Method: 8015B/5030B - Gasoline Range Organics (GC) (Continued)

Lab Sample ID: 440-66272-A-21 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 153679

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	87		800	784		ug/L		87	65 - 140	5	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*65 - 140*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-153630/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 153586 — **Prep Batch: 153630**

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
DRO (C10-C28)	ND		5.0		mg/Kg		12/31/13 13:44	12/31/13 16:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane	*61*		*40 - 140*	*12/31/13 13:44*	*12/31/13 16:59*	*1*

Lab Sample ID: LCS 440-153630/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 153586 — **Prep Batch: 153630**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
DRO (C10-C28)			33.3	16.3		mg/Kg		49	45 - 115		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
n-Octacosane	*58*		*40 - 140*

Lab Sample ID: 440-66347-G-2-A MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 153586 — **Prep Batch: 153630**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
DRO (C10-C28)	ND		33.3	17.1		mg/Kg		51	40 - 120		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
n-Octacosane	*67*		*40 - 140*

Lab Sample ID: 440-66347-G-2-B MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 153586 — **Prep Batch: 153630**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
DRO (C10-C28)	ND		33.3	19.4		mg/Kg		58	40 - 120	12	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
n-Octacosane	*76*		*40 - 140*

GC/MS VOA

Analysis Batch: 153275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-66062-4	SB-1 @ 14'	Total/NA	Solid	8260B	
440-66062-5	SB-2 @ 14'	Total/NA	Solid	8260B	
440-66062-5 MS	SB-2 @ 14'	Total/NA	Solid	8260B	
440-66062-5 MSD	SB-2 @ 14'	Total/NA	Solid	8260B	
440-66062-6	SB-3 @ 14'	Total/NA	Solid	8260B	
LCS 440-153275/5	Lab Control Sample	Total/NA	Solid	8260B	
LCS 440-153275/6	Lab Control Sample	Total/NA	Solid	8260B	
MB 440-153275/4	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 153720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-65700-F-3 MS	Matrix Spike	Total/NA	Water	8260B/5030B	
440-65700-F-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B/5030B	
440-66062-1	SB-1	Total/NA	Water	8260B/5030B	
440-66062-2	SB-2	Total/NA	Water	8260B/5030B	
440-66062-3	SB-3	Total/NA	Water	8260B/5030B	
LCS 440-153720/23	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-153720/4	Method Blank	Total/NA	Water	8260B/5030B	

GC VOA

Analysis Batch: 153679

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-66062-1	SB-1	Total/NA	Water	8015B/5030B	
440-66062-2	SB-2	Total/NA	Water	8015B/5030B	
440-66062-3	SB-3	Total/NA	Water	8015B/5030B	
440-66272-A-21 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-66272-A-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
LCS 440-153679/2	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-153679/3	Method Blank	Total/NA	Water	8015B/5030B	

Analysis Batch: 154083

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-66062-4	SB-1 @ 14'	Total/NA	Solid	8015B	
440-66386-A-1 MS	Matrix Spike	Total/NA	Solid	8015B	
440-66386-A-1 MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B	
LCS 440-154083/2	Lab Control Sample	Total/NA	Solid	8015B	
LCSD 440-154083/3	Lab Control Sample Dup	Total/NA	Solid	8015B	
MB 440-154083/4	Method Blank	Total/NA	Solid	8015B	

Analysis Batch: 154254

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-66062-5	SB-2 @ 14'	Total/NA	Solid	8015B	
440-66062-6	SB-3 @ 14'	Total/NA	Solid	8015B	
440-66062-6 MS	SB-3 @ 14'	Total/NA	Solid	8015B	
440-66062-6 MSD	SB-3 @ 14'	Total/NA	Solid	8015B	
LCS 440-154254/2	Lab Control Sample	Total/NA	Solid	8015B	
LCSD 440-154254/3	Lab Control Sample Dup	Total/NA	Solid	8015B	
MB 440-154254/4	Method Blank	Total/NA	Solid	8015B	

QC Association Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

GC Semi VOA

Analysis Batch: 153586

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-66062-4	SB-1 @ 14'	Total/NA	Solid	8015B	153630
440-66062-5	SB-2 @ 14'	Total/NA	Solid	8015B	153630
440-66062-6	SB-3 @ 14'	Total/NA	Solid	8015B	153630
440-66347-G-2-A MS	Matrix Spike	Total/NA	Solid	8015B	153630
440-66347-G-2-B MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B	153630
LCS 440-153630/2-A	Lab Control Sample	Total/NA	Solid	8015B	153630
MB 440-153630/1-A	Method Blank	Total/NA	Solid	8015B	153630

Prep Batch: 153630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-66062-4	SB-1 @ 14'	Total/NA	Solid	CA LUFT	
440-66062-5	SB-2 @ 14'	Total/NA	Solid	CA LUFT	
440-66062-6	SB-3 @ 14'	Total/NA	Solid	CA LUFT	
440-66347-G-2-A MS	Matrix Spike	Total/NA	Solid	CA LUFT	
440-66347-G-2-B MSD	Matrix Spike Duplicate	Total/NA	Solid	CA LUFT	
LCS 440-153630/2-A	Lab Control Sample	Total/NA	Solid	CA LUFT	
MB 440-153630/1-A	Method Blank	Total/NA	Solid	CA LUFT	

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
EY	Result exceeds normal dynamic range; reported as a min. est.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-66062-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-14
Arizona	State Program	9	AZ0671	10-13-14
California	LA Cty Sanitation Districts	9	10256	01-31-15
California	NELAP	9	1108CA	01-31-14
California	State Program	9	2706	06-30-14
Guam	State Program	9	Cert. No. 12.002r	01-23-14 *
Hawaii	State Program	9	N/A	01-31-14
Nevada	State Program	9	CA015312007A	07-31-14
New Mexico	State Program	6	N/A	01-31-14
Northern Mariana Islands	State Program	9	MP0002	01-31-14
Oregon	NELAP	10	4005	09-12-14
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-15

* Expired certification is currently pending renewal and is considered valid.

440-66062 Chain of Custody

ratory Management Program LaMP Chain of Custody Record

Page ____ of ____

BP Site Node Path: BP 2162 | Req Due Date (mm/dd/yy): | Rush TAT: Yes ____ No ____

BP Facility No: 2162 | Lab Work Order Number:

Lab Name: Test America	Facility Address: 15135 Hesperian Blvd	Consultant/Contractor: Broadbent and Associates
Lab Address: 17461 Derian Ave, Suite 100, Irvine, CA - 92614	City, State, ZIP Code: San Leandro, California	Consultant/Contractor Project No: 06-88-620
Lab PM: Kathleen Robb	Lead Regulatory Agency: Alameda County Environmental Health	Address: 875 Cotting Lane , Suite G, Vacaville,California
Lab Phone: 94-261-1022	California Global ID No.: T0600100084	Consultant/Contractor PM: Kristene Tidwell
Lab Shipping Accnt: 1103-6633-7	Enfos Proposal No/WR No: 00604-0002 / WR245682	Phone: 707-455-7290 / 707-455-7295 (f) Email: ktidwell@broadbentinc.com
Lab Bottle Order No:	Accounting Mode: Provision X OOC-BU ___ OOC-RM ___	Email EDD To: ktidwell@broadbentinc.com and to lab enfosdoc@bp.com
Other Info:	Stage: Activity:	Invoice To: BP x Contractor ___

BP Project Manager (PM): Chuck Carmel

BP PM Phone: 925-275-3803

BP PM Email: charles.carmel@bp.com

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	No. Containers / Preservative: Total Number of Container:	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses: GRO	DRO	BTEX / DIPE	ETBE / TAME	1,2-DCA / EDB	TBA / Ethanol	Naphthalene			Report Type & QC Level / Comments
	SB-1	12/23/2013	0920		x		n	6				x		x	x	x	x	x	x	x			
	SB-2	12/23/2013	0830		x		n	6				x											
	SB-3	12/23/2013	0955		x		n	6				x											
	SB-1 @ 14'	12/23/2013	0915	x			n	1	x														
	SB-2 @ 14'	12/23/2013	0825	x			n	1	x														
	SB-3 @ 14'	12/23/2013	0950	x			n	1	x														
	TB-2162-12232013	12/23/2013	--		x		n	2															ON HOLD

Report Type & QC Level: Standard x / Full Data Package ____

Comments: Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Sampler's Name: James Ramos	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Broadbent & Associates	/Broadbent	12/23/13	1700			
Shipment Method: Fed Ex Ship Date: 12/23/13						
Shipment Tracking No:				12-24-13		11:00

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 2.6 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

T.N. 5025 2344 1905

IR-63 1.2°C

Login Sample Receipt Checklist

Client: Broadbent & Associates, Inc.

Job Number: 440-66062-1

Login Number: 66062

List Source: TestAmerica Irvine

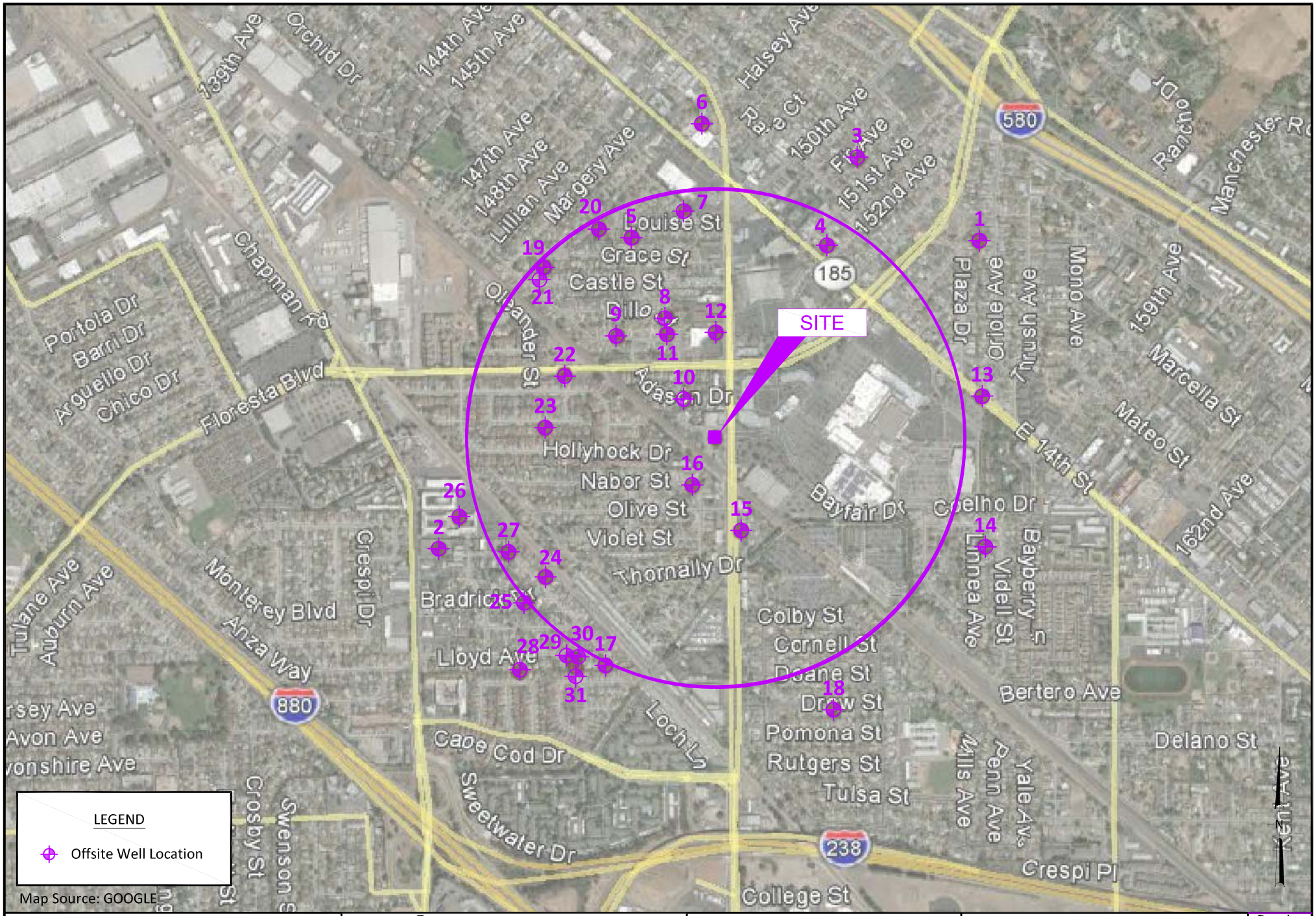
List Number: 1

Creator: Kim, Guerry

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	Present
Sample custody seals, if present, are intact.	False	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	False	Headspace larger than 1/4" in one or more vials, one vial with accpt. headspace
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX J

Well Search Results



BROADBENT
875 Cotting Lane, Suite G
Vacaville, California 95688
Project No.: 06-88-620 Date: 02/21/2014

ARCO Station No. 2162
15135 Hesperian Blvd.
San Leandro

ACPWA Well Survey Results

Drawing
2

Atlantic Richfield Company
Shannon Couch
Remediation Management Project Manager

PO Box 1257
San Ramon, CA
94583
Phone: (925) 275-3804
Fax: (925) 275-3815
E-Mail: shannon.couch@bp.com

October 31, 2011

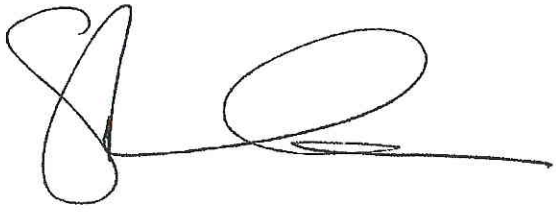
Mr. Paresh Khatri
Alameda County Health Care Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

Re: SENSITIVE RECEPTOR SURVEY
ARCO Station No. 2162
15135 Hesperian Boulevard
San Leandro, California 94578
ACEH Case No. RO0000190

Dear Mr. Khatri:

I declare, that to the best of my knowledge at the present time, that the information contained in the attached document is true and correct.

Regards,



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

Enclosure: Sensitive Receptor Survey

CLOSURE SOLUTIONS, INC.

October 31, 2011

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

RE: SENSITIVE RECEPTOR SURVEY
ARCO Station No. 2162
15135 Hesperian Boulevard
San Leandro, California 94578
ACEH Case No. RO0000190

Dear Mr. Khatri:

On behalf of Atlantic Richfield Company (ARCO), Closure Solutions, Inc. (Closure Solutions) has prepared this *Sensitive Receptor Survey* (Survey) for the ARCO Service Station No. 2162, located at 15135 Hesperian Boulevard, San Leandro, California (Site). Closure Solutions performed the Survey to identify the presence of water wells within a 0.5-mile radius of the Site. The Site setting, information on groundwater depth, groundwater flow direction, survey methods, and survey results are presented below. Additional information, including sensitive land uses is not included in this report.

1.0 SITE SETTING

The Site is located on the southwest corner of the intersection between Hesperian Boulevard and Ruth Court in San Leandro, California. The Site is currently an active ARCO service station and is located in a mixed commercial and residential area. Current Site facilities include a service station building, four dispenser islands covered by a canopy, and four 10,000 gallon underground storage tanks.

2.0 GROUNDWATER DEPTH AND FLOW DIRECTION

Groundwater monitoring and sampling has been conducted at the Site since 1992. Based on information contained in historical Site reports, depth to groundwater beneath the Site is approximately 8 feet below ground surface. Groundwater flow direction is predominately to the southwest.

3.0 WELL SURVEY METHODS

To obtain information on the type and location of wells within a 0.5-mile radius of the Site, Closure Solutions requested a signed authorization form from the Alameda County Health Care Agency to access confidential well information. The signed authorization was then provided to the Department of Water Resources (DWR) for access to all available well completion reports for wells installed in the vicinity of the Site. The DWR furnished 216 well completion reports for wells installed in the Site vicinity. These wells were located in Section 31 in Township 02S, Range 02W, Section 1 in Township 03S, Range 03W, and Section 6 in Township 03S, Range 02W, Mount Diablo Meridian.

To assemble the survey information, Closure Solutions grouped the reports into the following categories:

- Reports that referenced well locations by current street addresses that could be verified using online resources (Google Earth or equivalent);
- Reports that referenced well locations by distance from a current street, intersection, or other known location such as a creek or park;
- Reports that referenced well locations by distance from a corner of a map Section;
- Reports that referenced well locations by outdated street addresses, route numbers, or street names/intersections that were changed/no longer existed;
- Reports that were illegible; and
- Reports for wells that had been destroyed.

Well locations referenced by current street addresses or by distances from a known location or street intersection were verified on a map to obtain distance from the Site. If the well location was within 0.5 mile of the Site, the well location was plotted on the survey map. Wells located outside the 0.5 mile radius were not plotted.

For wells that were referenced by distance from a corner of a Section, Closure Solutions accessed Montana State University's Graphical Locater website and the Earthpoint website to obtain maps of the referenced Section within the Township and Range. Once this information was obtained and verified, wells identified within 0.5 miles of the Site were plotted on the well survey map.

In cases where well completion reports contained street names or route numbers that no longer existed, either available Township, Range, and Section information was used to plot locations, or additional research was conducted to obtain information on historical street and route names. In a few cases, well locations could not be verified using the referenced locations or addresses provided, or the report was illegible. These wells were not included on the well survey map.

4.0 WELL SURVEY RESULTS

Based on Closure Solutions' review of information provided by the DWR, seven wells were identified within a 0.5-mile radius of the Site, as described below:

- One well was identified as an irrigation well, was installed in 1956, and is located approximately 2,250 feet west-southwest (down-gradient) of the Site;
- One well was identified as an irrigation well, was installed in 1977, and is located approximately 2,350 feet west-southwest (down-gradient) of the Site;
- One well was identified as an irrigation well, was installed in 1977, and is located approximately 1,050 feet northwest (cross-gradient) of the Site;
- One well was identified as an irrigation well, was installed in 1977, and is located approximately 1,100 feet northwest (cross-gradient) of the Site;
- One well was identified as an irrigation well, was installed in 1977, and is located approximately 2,250 feet northwest (cross-gradient) of the Site;
- One well was identified as a domestic well, was installed in 1977, and is located approximately 2,350 feet northwest (cross-gradient) of the Site;
- One well was identified as an irrigation well, was installed in 1977, and is located approximately 2,500 feet north-northeast (up-gradient) of the Site;

The approximate locations of the wells identified above within a 0.5-mile radius of the Site are presented on Figure 1. Please note that for the purposes of this well survey, cathodic protection wells and wells associated with environmental cases are not included in the results.

Well information including map ID, approximate distance and direction from the Site, well type, installation date, and screen interval is summarized in Table 1. Due to privacy concerns, the DWR well completion reports or specific information regarding the wells, including exact well location, are not included in any copy of this document.

5.0 SURFACE WATER

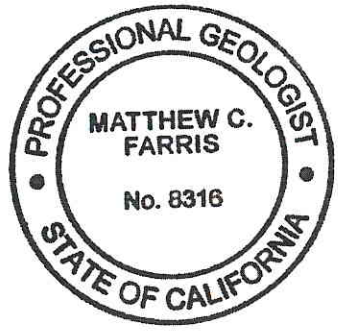
The nearest surface water body is the Estudillo Canal, a concrete-lined drainage channel, which is located approximately 800 feet to the southeast (cross-gradient) of the Site. This channel ultimately connects to the San Francisco Bay, which is located approximately three miles west-southwest (down-gradient) of the Site.

If you have any questions or comments regarding this report, please contact Charlotte Evans at (925) 566-8567, or by e-mail at cevans@closuresolutions.com.

Sincerely,
Closure Solutions, Inc.

Charlotte Evans
Project Geologist

Matthew Farris, P.G.
Project Geologist



Attachments:

Figure 1	Approximate Well Locations Within a 0.5-Mile Radius of the Site
Table 1	Wells Located Within a 0.5-Mile Radius of the Site

cc: Ms. Shannon Couch, Atlantic Richfield Company

Figure 1 - Approximate Well Locations ARCO #2162 - 15135 Hesperian Blvd., CA

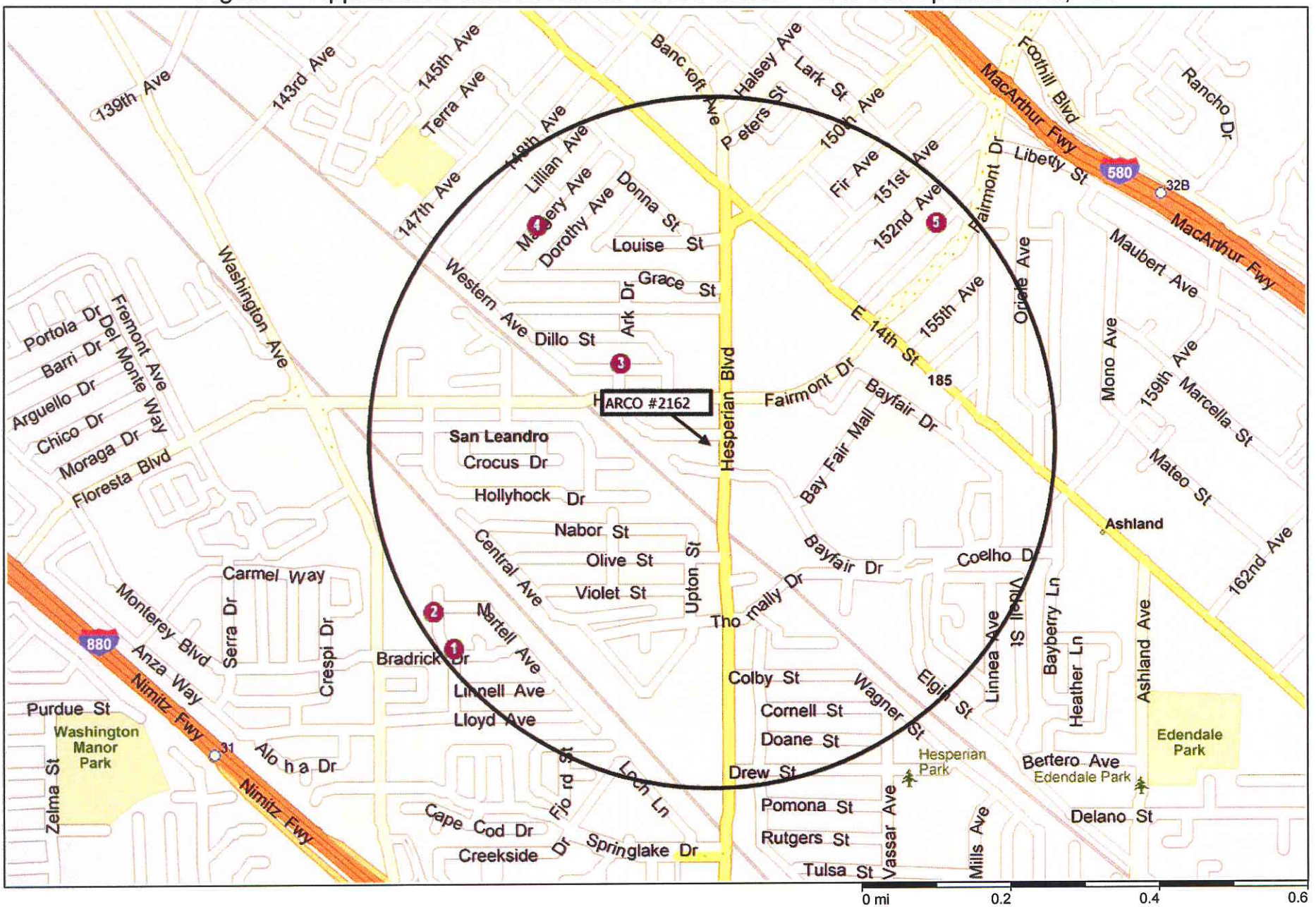


Table 1 - Wells Located Within 0.5-Mile Radius
ARCO Service Station No. 2162
15135 Hesperian Boulevard
San Leandro, California

Map ID No.	Approximate Distance from Site	Well Type	Installation Date	Screen Interval
1	2,250 ft. WSW	irr	Aug-56	15-30 ft.
2	2,350 ft. WSW	irr	Nov-77	20-60 ft.
3	1,050 ft. NW	irr	Mar-77	20-40 ft.
3	1,100 ft. NW	irr	Mar-77	17-37 ft.
4	2,250 ft. NW	irr	May-77	20-48 ft.
4	2,350 ft. NW	dom	May-77	25-45 ft.
5	2,500 ft. NNE	irr	Aug-77	10-30 ft.

Abbreviations:

ft = feet
N = North
S = South
E = East
W = West
dom = domestic well
irr = irrigation well
mun = municipal well
pub = public well
unk = unknown

APPENDIX K

Groundwater Monitoring and Sampling Field Methods

QUALITY ASSURANCE/QUALITY CONTROL
FIELD METHODS

Field methods discussed herein were implemented to provide for accuracy and reliability of field activities, data collection, sample collection, and handling. Discussion of these methods is provided below.

1.0 Equipment Calibration

Equipment calibration was performed per equipment manufacturer specifications before use.

2.0 Depth to Groundwater and Light Non-Aqueous Phase Liquid Measurement

Depth to groundwater was measured in wells identified for gauging in the scope of work using a decontaminated water level indicator. The depth to water measurement was taken from a cut notch or permanent mark at the top of the well casing to which the well head elevation was originally surveyed.

Once depth to water was measured, an oil/water interface meter or a new disposable bailer was utilized to evaluate the presence and, if present, to measure the "apparent" thickness of light non-aqueous phase liquid (LNAPL) in the well. If LNAPL was present in the well, groundwater purging and sampling were not performed, unless sampling procedures in the scope of work specified collection of samples in the presence of LNAPL. Otherwise, time allowing, LNAPL was bailed from the well using either a new disposable bailer, or the disposal bailer previously used for initial LNAPL assessment. Bailing of LNAPL continued until the thickness of LNAPL (or volume) stabilized in each bailer pulled from the well, or LNAPL was no longer present. After LNAPL thickness either stabilized or was eliminated, periodic depth to water and depth to LNAPL measurements were collected as product came back into the well to evaluate product recovery rate and to aid in further assessment of LNAPL in the subsurface. LNAPL thickness measurements were recorded as "apparent." If a bailer was used for LNAPL thickness measurement, the field sampler noted the bailer entry diameter and chamber diameter to enable correction of thickness measurements. Recovered LNAPL was stored on-site in a labeled steel drum(s) or other appropriate container(s) prior to disposal.

3.0 Well Purging and Groundwater Sample Collection

Well purging and groundwater sampling were performed in wells specified in the scope of work after measuring depth to groundwater and evaluating the presence of LNAPL. Purging and sampling were performed using one of the methods detailed below. The method used was noted in the field records. Purge water was stored on-site in labeled steel drum(s) or other appropriate container(s) prior to disposal or on-site treatment (in cases where treatment using an on-site system is authorized).

3.1 Purging a Predetermined Well Volume

Purging a predetermined well volume is performed per ASTM International (ASTM) D4448-01. This purging method has the objective of removing a predetermined volume of stagnant water from the well prior to sampling. The volume of stagnant water is defined as either the volume of water contained within the well casing, or the volume within the well casing and sand/gravel in the annulus if natural flow through these is deemed insufficient to keep them flushed out.

This purging method involves removal of a minimum of three stagnant water volumes from the well using a decontaminated pump with new disposable plastic discharge or suction tubing, dedicated well tubing, or using a new disposable or decontaminated reusable bailer. If a new disposable bailer was used for assessment of LNAPL, that bailer may be used for purging. The withdrawal rate used is one that minimizes drawdown while satisfying time constraints.

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity[1]. Parameters are considered stable when two (2) consecutive readings recorded three (3) minutes apart fall within ranges provided below in Table 1. In the event that the parameters have not stabilized and five (5) well casing volumes have been removed, purging activities will cease and be considered complete. Once the well is purged, a groundwater sample(s) is collected from the well using a new disposable bailer. If a new disposable bailer was used for purging, that bailer may be used to collect the sample(s). A sample is not collected if the well is inadvertently purged dry.

Table 1. Criteria for Defining Stabilization of Water-Quality Indicator Parameters

Parameter	Stabilization Criterion
Temperature	± 0.2ºC (± 0.36ºF)
pH	± 0.1 standard units
Conductivity	± 3%
Dissolved oxygen	± 10%
Oxidation reduction potential	± 10 mV
Turbidity[1]	± 10% or 1.0 NTU (whichever is greater)

3.2 Low-Flow Purging and Sampling

“Low-Flow”, “Minimal Drawdown”, or "Low-Stress” purging is performed per ASTM D6771-02. It is a method of groundwater removal from within a well’s screened interval that is intended to

[1] As stated in ASTM D6771-02, turbidity is not a chemical parameter and not indicative of when formation-quality water is being purged; however, turbidity may be helpful in evaluating stress on the formation during purging. Turbidity measurements are taken at the same time that stabilization parameter measurements are made, or, at a minimum, once when purging is initiated and again just prior to sample collection, after stabilization parameters have stabilized. To avoid artifacts in sample analysis, turbidity should be as low as possible when samples are collected. If turbidity values are persistently high, the withdrawal rate is lowered until turbidity decreases. If high turbidity persists even after lowering the withdrawal rate, the purging is stopped for a period of time until turbidity settles, and the purging process is then restarted. If this fails to solve the problem, the purging/sampling process for the well is ceased, and well maintenance or redevelopment is considered.

minimize drawdown and mixing of the water column in the well casing. This is accomplished by pumping the well using a decontaminated pump with new disposable plastic discharge or suction tubing or dedicated well tubing at a low flow rate while evaluating the groundwater elevation during pumping.

The low flow pumping rate is well specific and is generally established at a volume that is less than or equal to the natural recovery rate of the well. A pump with adjustable flow rate control is positioned with the intake at or near the mid-point of the submerged well screen. The pumping rate used during low-flow purging is low enough to minimize mobilization of particulate matter and drawdown (stress) of the water column. Low-flow purging rates will vary based on the individual well characteristics; however, the purge rate should not exceed 1.0 Liter per minute (L/min) or 0.25 gallon per minute (gal/min). Low-flow purging should begin at a rate of approximately 0.1 L/min (0.03 gal/min)[2], or the lowest rate possible, and be adjusted based on an evaluation of drawdown. Water level measurements should be recorded at approximate one (1) to two (2) minute intervals until the low-flow rate has been established, and drawdown is minimized. As a general rule, drawdown should not exceed 25% of the distance between the top of the water column and the pump in-take.

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity[1]. The frequency between measurements will be at an interval of one (1) to three (3) minutes; however, if a flow cell is used, the frequency will be determined based on the time required to evacuate one cell volume. Stabilization is defined as three (3) consecutive readings recorded several minutes apart falling within ranges provided in Table 1. Samples will be collected by filling appropriate containers from the pump discharge tubing at a rate not to exceed the established pumping rate.

3.3 Minimal Purge, Discrete Depth, and Passive Sampling

Per ASTM D4448-01, sampling techniques that do not rely on purging, or require only minimal purging, may be used if a particular zone within a screened interval is to be sampled or if a well is not capable of yielding sufficient groundwater for purging. To properly use these sampling techniques, a water sample is collected within the screened interval with little or no mixing of the water column within the casing. These techniques include minimal purge sampling which uses a dedicated sampling pump capable of pumping rates of less than 0.1 L/min (0.03 gal/min)[2], discrete depth sampling using a bailer that allows groundwater entry at a controlled depth (e.g. differential pressure bailer), or passive (diffusion) sampling. These techniques are based on certain studies referenced in ASTM D4448-01 that indicate that under certain conditions, natural groundwater flow is laminar and horizontal with little or no mixing within the well screen.

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[2] According to ASTM D4448-01, studies have indicated that at flow rates of 0.1 L/min, low-density polyethylene (LDPE) and plasticized polypropylene tubing materials are prone to sorption. Therefore, TFE-fluorocarbon or other appropriate tubing material is used, particularly when tubing lengths of 50 feet or longer are used.

4.0 Decontamination

Reusable groundwater sampling equipment were cleaned using a solution of Alconox or other acceptable detergent, rinsed with tap water, and finally rinsed with distilled water prior to use in each well. Decontamination water was stored on-site in labeled steel drum(s) or other appropriate container(s) prior to disposal.

5.0 Sample Containers, Labeling, and Storage

Samples were collected in laboratory prepared containers with appropriate preservative (if preservative was required). Samples were properly labeled (site name, sample I.D., sampler initials, date, and time of collection) and stored chilled (refrigerator or ice chest with ice) until delivery to a certified laboratory, under chain of custody procedures.

6.0 Chain of Custody Record and Procedure

The field sampler was personally responsible for care and custody of the samples collected until they were properly transferred to another party. To document custody and transfer of samples, a Chain of Custody Record was prepared. The Chain of Custody Record provided identification of the samples corresponding to sample labels and specified analyses to be performed by the laboratory. The original Chain of Custody Record accompanied the shipment, and a copy of the record was stored in the project file. When the samples were transferred, the individuals relinquishing and receiving them signed, dated, and noted the time of transfer on the record.

7.0 Field Records

Daily Report and data forms were completed by staff personnel to provide daily record of significant events, observations, and measurements. Field records were signed, dated, and stored in the project file.