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**Jennifer C. Sedlachek**  
Project Manager

**ExxonMobil**

August 1, 2012

Ms. Barbara Jakub, P.G.  
Alameda County Health Care Services Agency  
Department of Environmental Health  
1131 Harbor Bay Parkway, Room 250  
Alameda, California 94502-6577

**RECEIVED**

**11:44 am, Aug 14, 2012**

Alameda County  
Environmental Health

**RE: Former Exxon RAS #79374/990 San Pablo Avenue, Albany, California.**

Dear Ms. Jakub:

Attached for your review and comment is a copy of the letter report entitled *Work Plan for Groundwater Monitoring, Air Sparge and Soil Vapor Extraction Well Installations*, dated August 1, 2012, for the above-referenced site. The report was prepared by Cardno ERI of Petaluma, California, and details proposed activities for the subject site.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

If you have any questions or comments, please contact me at 510.547.8196.

Sincerely,



Jennifer C. Sedlachek  
Project Manager

Attachment: Cardno ERI's *Work Plan for Groundwater Monitoring, Air Sparge and Soil Vapor Extraction Well Installations*, dated August 1, 2012

cc: w/ attachment  
Ms. Muriel T. Blank, Trustee, The Blank Family Trusts  
Reverend Deborah Blank, Trustee, The Blank Family Trusts  
Ms. Marcia Blank Kelly, The Blank Family Trusts

w/o attachment  
Ms. Rebekah A. Westrup, Cardno ERI



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August 1, 2012  
Cardno ERI 2735C.W03

Ms. Jennifer C. Sedlachek  
ExxonMobil Environmental Services  
4096 Piedmont Avenue #194  
Oakland, California 94611

**SUBJECT      Work Plan for Groundwater Monitoring, Air Sparge and Soil Vapor Extraction Well Installations**

Former Exxon Service Station 79374  
990 San Pablo Avenue  
Albany, California

Alameda County Department of Environmental Health RO No. 2974

Ms. Sedlachek:

At the request of ExxonMobil Environmental Services (EMES), on behalf of Exxon Mobil Corporation, Cardno ERI prepared this work plan for groundwater monitoring, AS, and SVE well installations at the subject site (Plate 1). The purpose of the monitoring well installations is to monitor groundwater south and west of the site. The AS and SVE wells will be incorporated into the proposed remediation system (Cardno ERI, 2012b).

**SITE DESCRIPTION**

Former Exxon Service Station 79374 is located at 990 San Pablo Avenue, on the northwestern corner of the intersection of Buchanan Street and San Pablo Avenue, Albany, California (Plate 1). The site is currently occupied by a retail outlet for Benjamin Moore paints and painting products and associated paved asphalt

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driveway and parking area. The surrounding areas consist of residential and commercial properties (Plate 2). A Shell Service Station and an Atlantic Richfield Company Service Station (Arco) are located approximately 350 feet and 500 feet, respectively, south-southeast of the site.

In 1945, a service station owned by Signal Oil Company occupied the site (EDR, 2009a). Humble Oil company acquired the site in approximately 1967 from Standard Oil Company of California (Chevron) rebranding the site as an Enco station (EDR, 2009a). The station was rebranded as an Exxon service station in 1975. The service station was demolished in 1983; during demolition activities, one used-oil UST and four gasoline USTs were removed and the tank cavity was backfilled with sand to 90% compaction (City of Albany, 1983).

Cardno ERI reviewed eight historical aerial photographs of the site and vicinity dated between September 6, 1949, and June 21, 1983 (EDR, 2009b). Based on these photographs, the dispenser islands were most likely located beneath the station canopy on the north side of the site and the former USTs were most likely located on the south side of the site, east of the station's service bays. The location of the former used-oil UST is not apparent. The approximate location of the former USTs are shown on Plate 2.

## **GEOLOGY AND HYDROGEOLOGY**

The site lies at an approximate elevation of 40 feet above msl, and the local topography slopes toward the southwest. The site is located along the eastern margin of the San Francisco Bay within the East Bay Plain (Hickenbottom and Muir, 1988). The surficial deposits in the site vicinity are mapped as Holocene alluvial fan and fluvial deposits (Graymer, 2000). The site is located approximately 1,630 feet north-northwest of Cordornices Creek. The active northwest trending Hayward fault is located approximately 1½ mile northeast of the site.

The East Bay Plain is regionally divided into two major groundwater basins: the San Pablo and the San Francisco Basin. These basins are tectonic depressions that are filled primarily with a sequence of coalescing alluvial fans. The San Francisco Basin is further divided into seven sub-areas. The site is located in the Berkeley Sub-Area, which is filled primarily by alluvial deposits that range from 10 to 300 feet thick with poorly defined aquitards (CRWQCB, 1999). Under natural conditions, the direction of groundwater flow in the East Bay Plain is east to west.

Soil borings indicate that the soil beneath the site consists predominantly of silt and clay with an apparently continuous coarse-grained unit 2 to 8 feet thick encountered between approximately 8 and 20 feet bgs (EC&A, 2008; Cardno ERI, 2011a, 2012a). Fill material was encountered in the boring for well SVE3 (located in the former UST pit) to approximately 7 feet bgs. CPT soundings indicate the presence of predominantly silt and

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clay between approximately 20 and 60 feet bgs, the maximum depth explored. Minor coarse-grained layers up to 3 feet thick are interbedded with the silts and clays. During the groundwater monitoring events conducted to date, the DTW has ranged from approximately 5 to 10 feet bgs with a variable groundwater flow direction. The distribution of dissolved-phase hydrocarbons suggests that the dominant groundwater flow direction is towards the west (Cardno ERI, 2011b).

## **PREVIOUS WORK**

Cumulative groundwater monitoring and sampling data are presented in Tables 1A and 1B. Well construction details are presented in Table 2. Cumulative results of soil samples collected at the site are presented in Tables 3A and 3B.

### **Fueling System Activities**

In 1983, one used-oil UST and four gasoline USTs were removed and the tank cavity was backfilled with sand to 90% compaction (City of Albany, 1983).

### **Site Assessment Activities**

Six exploratory borings (B1 through B6) were advanced on site in 2008 (EC&A, 2008). Maximum concentrations of TPHg, TPHd, and benzene were reported in the soil samples collected from 10.5 feet bgs from borings B1 and B2 located near the former USTs. Grab groundwater results indicated maximum dissolved-phase TPHg, TPHd, and benzene concentrations in the samples collected from soil borings B1 and B2 located near the former USTs. The laboratory reported an immiscible sheen present in the groundwater samples collected from borings B1 and B2.

Monitoring wells MW1 through MW6 and borings CPT1/HP1 and CPT2/HP2 were installed at the site in 2010 (Cardno ERI, 2011a). Maximum concentrations of TPHg and TPHd in soil were reported in the samples collected at 10.5 feet bgs from wells MW3 and MW5 (west of the former USTs). Dissolved-phase hydrocarbons were adequately delineated vertically at the site with petroleum hydrocarbon concentrations below or near the laboratory reporting limits in the water samples collected below 27.5 feet bgs (Cardno ERI, 2011a). In January 2012, Cardno ERI installed SVE wells SVE1 through SVE3, AS well AS1, and monitoring well MW3A (Cardno ERI, 2012a).

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### **Remediation Activities**

According to City of Albany permit 82-0708, the USTs were removed and backfilled in 1983. It is unknown if overexcavation was performed during the UST removal.

Between January 31 and February 1, 2012, Cardno ERI conducted feasibility testing at the subject site. The feasibility tests consisted of three 4-hour events: a DPE only test, a combined air sparge and DPE test, and an air sparge only test. The estimated total hydrocarbon removal during the tests was approximately 93 pounds of TPHg and 0.09 pound of benzene (Cardno ERI, 2012b).

### **Groundwater Monitoring Activities**

Groundwater monitoring was initiated at the site in 2010 with the installation of wells MW1 through MW6. Results of groundwater monitoring have indicated maximum dissolved-phase TPHg and benzene concentrations in groundwater samples of 23,000 µg/L (MW5, 10/13/11) and 650 µg/L (MW3, 07/18/11), respectively. Groundwater is currently sampled on a semi-annual basis. Maximum dissolved-phase TPHg and benzene are primarily in the western portion of the site.

### **PROPOSED WORK**

The proposed work consists of installing two groundwater monitoring wells (MW7 and MW8), two AS wells (AS2 and AS3), and one SVE well (SVE4). In addition Cardno ERI proposes a groundwater extraction event using well SVE3 to determine groundwater extraction and recharge rates from the former UST for future system design. Proposed well locations are shown on Plate 2.

The procedures for drilling, sampling, and decontamination are described in the field protocol presented in Appendix A. The fieldwork will be conducted under advisement of a professional geologist and in accordance with applicable regulatory guidelines.

### **Pre-Drilling Activities**

Prior to the onset of drilling, well installation and soil boring permits will be obtained from the County and encroachment permits will be obtained from the City of Albany. Cardno ERI personnel will visit the site to check for obstructions and to mark the proposed locations. Underground Service Alert will be notified at least

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48 hours prior to the start of field activities. Prior to drilling, the locations will be excavated with air, water, and hand tools to a depth of 4 to 8 feet bgs in accordance with EMES subsurface clearance protocol.

### **Well Installations and Sampling Activities**

Proposed wells will be drilled using hollow-stem auger equipment. The drilling locations will be sampled at 5-foot intervals and continuously across anticipated screened intervals to total depth for geological logging purposes. Select soil samples will be submitted for laboratory analysis.

The soil borings for MW7, MW8, and SVE4 will be advanced to approximately 15 feet bgs. Groundwater monitoring wells MW7 and MW8 will be constructed using 2-inch diameter, Schedule 40 PVC casing and screened from approximately 5 to 15 feet bgs. Well SVE4 will be constructed using 4-inch schedule 40 PVC wells with 10 feet of 0.020 inch slotted screen from approximately 5 to 15 feet bgs.

Wells AS2 and AS3 will be completed as a 1-inch schedule 80 PVC well with 3 feet of stainless steel #60 mesh screened from approximately 10.5 to 13.5 bgs. The AS wells will be constructed to place the screened interval above the damp to dry clayey and silty sand previously encountered beneath the site (Cardno ERI, 2011a). Plates 3 and 4 provide typical construction details for SVE and AS wells, respectively.

The wells will be surveyed in accordance with Assembly Bill (AB) 2886.

### **Groundwater Extraction**

Cardno ERI proposes to perform a groundwater extraction event using well SVE3 as the extraction well. Cardno ERI will monitor groundwater levels and use a vacuum truck to extract groundwater from well SVE3 to determine groundwater flow and recharge rates from the UST backfill material for future remediation design.

A minimum of two grab groundwater samples will be collected during the test, one prior to and one immediately following the extraction event.

### **Laboratory Analyses**

Select soil and groundwater samples will be submitted for analysis to an EMES-approved, state-certified analytical laboratory. The samples will be analyzed for TPH<sub>mop</sub>, TPH<sub>d</sub>, and TPH<sub>g</sub> by EPA Method 8015B, and BTEX, fuel oxygenates (MTBE, DIPE, ETBE, TAME, and TBA), and lead scavengers (1,2-DCA and EDB) by EPA Method 8260B.

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### **Waste Management Plan**

The soil and rinsate water generated during drilling activities will be temporarily stored on site in DOT-approved, 55-gallon drums. Soil cuttings will be transported to TPST Soil Recyclers of California's facility in Adelanto, California, for recycling. Water generated during the groundwater extraction event will be pumped directly into a vacuum truck and transported to Instrat, Inc., of Rio Vista, California, for disposal. Disposal documentation will be included in the report.

### **Site Safety Plan**

Fieldwork will be performed in accordance with a site-specific safety plan.

### **Report**

After completion of the field activities, the field and laboratory procedures, laboratory results, conclusions, and recommendations will be incorporated into a report and submitted to EMES and the County. The report will be signed by a State of California professional geologist.

### **CONTACT INFORMATION**

The responsible party contact is Ms. Jennifer C. Sedlachek, ExxonMobil Environmental Services, 4096 Piedmont Avenue #194, Oakland, California, 94611. The consultant contact is Ms. Rebekah A. Westrup, Cardno ERI., 601 North McDowell Boulevard, Petaluma, California, 94954. The agency contact is Ms. Barbara Jakub, Alameda County Health Care Services Agency, Environmental Health Services, 1131 Harbor Bay Parkway, Suite 250, Alameda, California, 94502-6577.

### **LIMITATIONS**

For any documents cited that were not generated by Cardno ERI, the data taken from those documents is used "as is" and is assumed to be accurate. Cardno ERI does not guarantee the accuracy of this data and makes no warranties for the referenced work performed nor the inferences or conclusions stated in these documents.

This document was prepared in accordance with generally accepted standards of environmental, geological, and engineering practices in California at the time of investigation. No soil engineering or geotechnical references are implied or should be inferred. The evaluation of the geologic conditions at the site for this

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investigation is made from a limited number of data points. Subsurface conditions may vary away from these data points.

Please contact Ms. Rebekah A. Westrup, Cardno ERI's project manager for this site, at [rebekah.westrup@cardno.com](mailto:rebekah.westrup@cardno.com) or (707) 766-2000 with questions regarding this site.

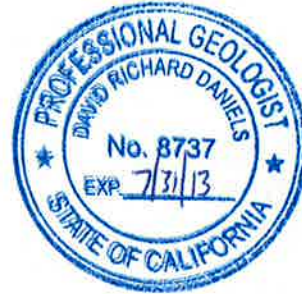
Sincerely,

*Rebekah A. Westrup*  
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 IMAGE

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Cardno ERI 2735C.W03 Former Mobil Service Station 79374, Albany, California

Enclosures:

References

Acronym List

Plate 1 Site Vicinity Map

Plate 2 Generalized Site Plan

Plate 3 Typical SVE Well Detail

Plate 4 Typical AS Well Detail

Table 1A Cumulative Groundwater Monitoring and Sampling Data

Table 1B Additional Cumulative Groundwater Monitoring and Sampling Data

Table 2 Well Construction Details

Table 3A Cumulative Soil Analytical Results

Table 3B Additional Cumulative Soil Analytical Results – HVOCs

Appendix A Field Protocol

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## REFERENCES

California Regional Water Quality Control Board San Francisco Bay Region Groundwater Committee (CRWQCB). June 1999. *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, Alameda and Contra Costa Counties, CA.*

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Graymer, R.W. 2000. Geologic map and map database of the Oakland metropolitan area, Alameda, Contra Costa, and San Francisco Counties, California. USGS, Miscellaneous Field Studies MF-2342.

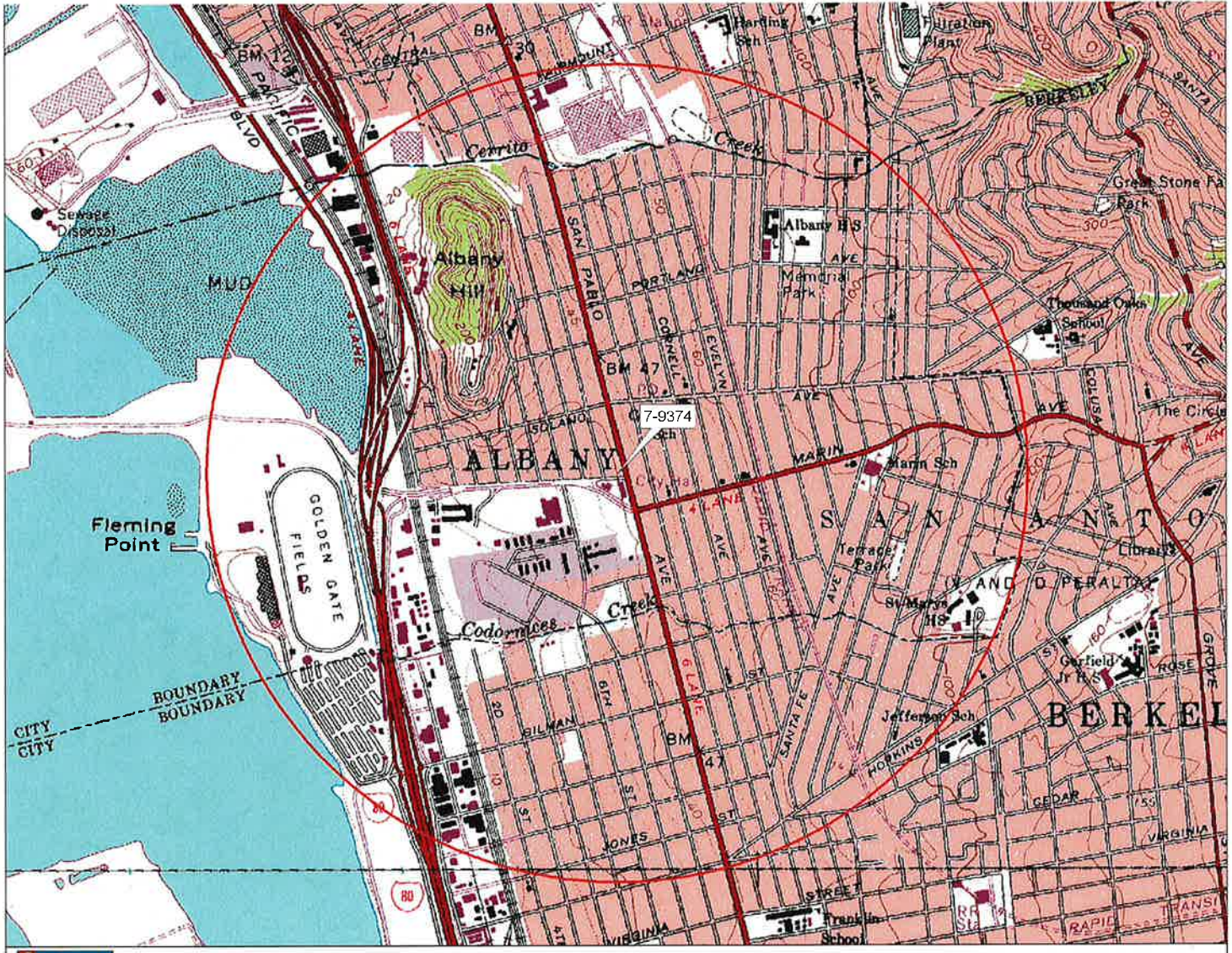
Hickenbottom, Kelvin and Muir, Kenneth S. June 1988. *Geohydrogeology and Groundwater Quality Overview of the East Bay Plain Area, Alameda County, CA.* Alameda County Flood Control and Water Conservation District. 83p.

August 1, 2012

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**ACRONYM LIST**

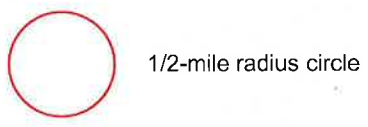
µg/L	Micrograms per liter	NEPA	National Environmental Policy Act
µs	Microsiemens	NGVD	National Geodetic Vertical Datum
1,2-DCA	1,2-dichloroethane	NPDES	National Pollutant Discharge Elimination System
acfm	Actual cubic feet per minute	O&M	Operations and Maintenance
AS	Air sparge	ORP	Oxidation-reduction potential
bgs	Below ground surface	OSHA	Occupational Safety and Health Administration
BTEX	Benzene, toluene, ethylbenzene, and total xylenes	OVA	Organic vapor analyzer
CEQA	California Environmental Quality Act	P&ID	Process & Instrumentation Diagram
cfm	Cubic feet per minute	PAH	Polycyclic aromatic hydrocarbon
COC	Chain of Custody	PCB	Polychlorinated biphenyl
CPT	Cone Penetration (Penetrometer) Test	PCE	Tetrachloroethene or perchloroethylene
DIPE	Di-isopropyl ether	PID	Photo-ionization detector
DO	Dissolved oxygen	PLC	Programmable logic control
DOT	Department of Transportation	POTW	Publicly owned treatment works
SVE	Dual-phase extraction	ppmv	Parts per million by volume
DTW	Depth to water	PQL	Practical quantitation limit
EDB	1,2-dibromoethane	psi	Pounds per square inch
EPA	Environmental Protection Agency	PVC	Polyvinyl chloride
ESL	Environmental screening level	QA/QC	Quality assurance/quality control
ETBE	Ethyl tertiary butyl ether	RBSL	Risk-based screening levels
FID	Flame-ionization detector	RCRA	Resource Conservation and Recovery Act
fpm	Feet per minute	RL	Reporting limit
GAC	Granular activated carbon	scfm	Standard cubic feet per minute
gpd	Gallons per day	SSTL	Site-specific target level
gpm	Gallons per minute	STLC	Soluble threshold limit concentration
GWPTS	Groundwater pump and treat system	SVE	Soil vapor extraction
HVOC	Halogenated volatile organic compound	SVOC	Semivolatile organic compound
J	Estimated value between MDL and PQL (RL)	TAME	Tertiary amyl methyl ether
LEL	Lower explosive limit	TBA	Tertiary butyl alcohol
LPC	Liquid-phase carbon	TCE	Trichloroethene
LRP	Liquid-ring pump	TOC	Top of well casing elevation; datum is msl
LUFT	Leaking underground fuel tank	TOG	Total oil and grease
LUST	Leaking underground storage tank	TPHd	Total petroleum hydrocarbons as diesel
MCL	Maximum contaminant level	TPHg	Total petroleum hydrocarbons as gasoline
MDL	Method detection limit	TPHm	Total petroleum hydrocarbons as motor oil
mg/kg	Milligrams per kilogram	TPHs	Total petroleum hydrocarbons as stoddard solvent
mg/L	Milligrams per liter	TRPH	Total recoverable petroleum hydrocarbons
mg/m <sup>3</sup>	Milligrams per cubic meter	UCL	Upper confidence level
MPE	Multi-phase extraction	USCS	Unified Soil Classification System
MRL	Method reporting limit	USGS	United States Geologic Survey
msl	Mean sea level	UST	Underground storage tank
MTBE	Methyl tertiary butyl ether	VCP	Voluntary Cleanup Program
MTCA	Model Toxics Control Act	VOC	Volatile organic compound
NAI	Natural attenuation indicators	VPC	Vapor-phase carbon
NAPL	Non-aqueous phase liquid		



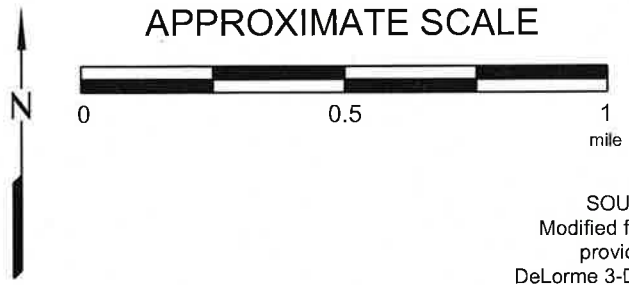
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**EXPLANATION**



**APPROXIMATE SCALE**

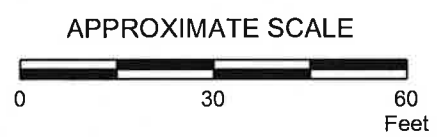
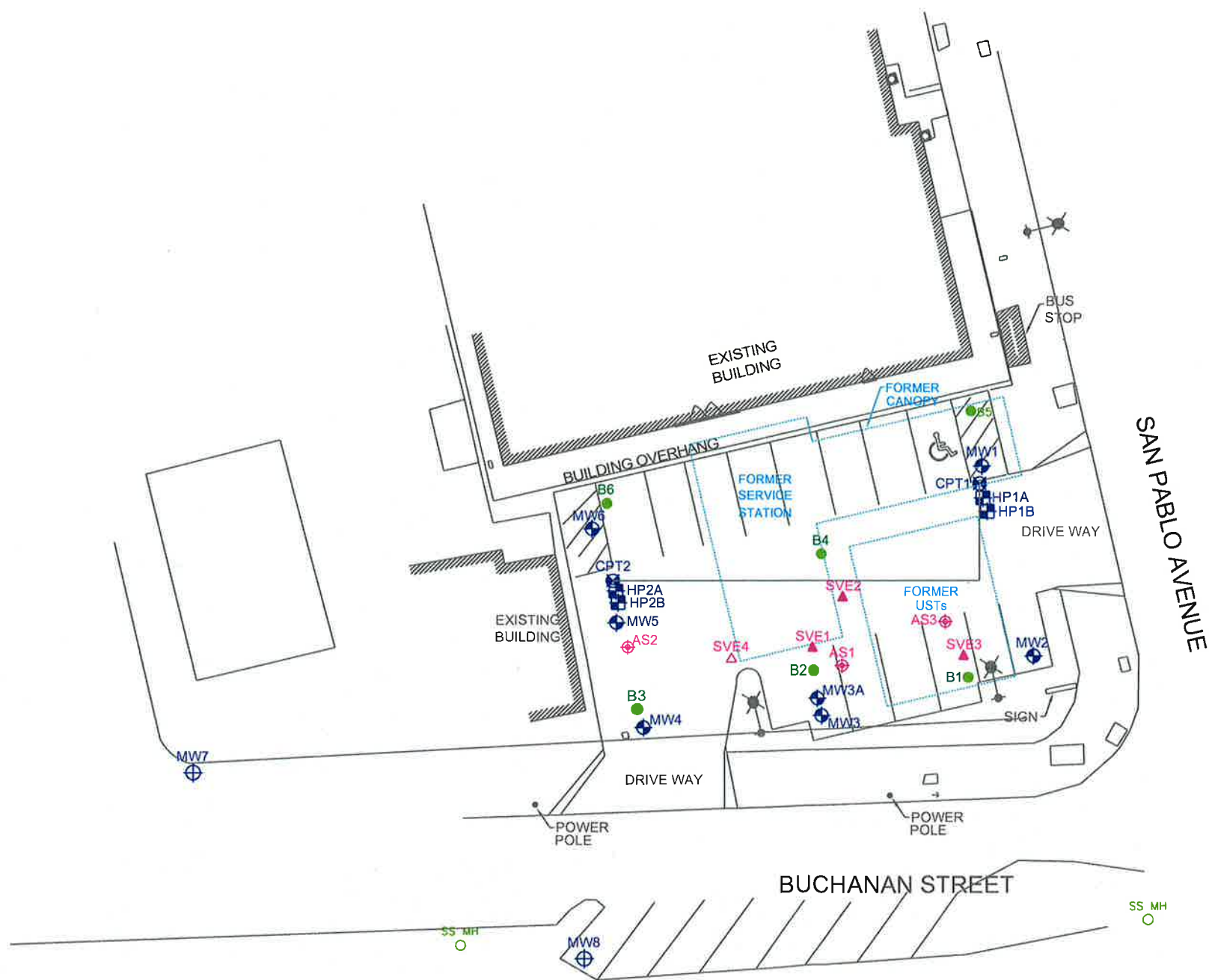


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**SITE VICINITY MAP**  
 FORMER EXXON SERVICE STATION 79374  
 990 San Pablo Avenue  
 Albany, California

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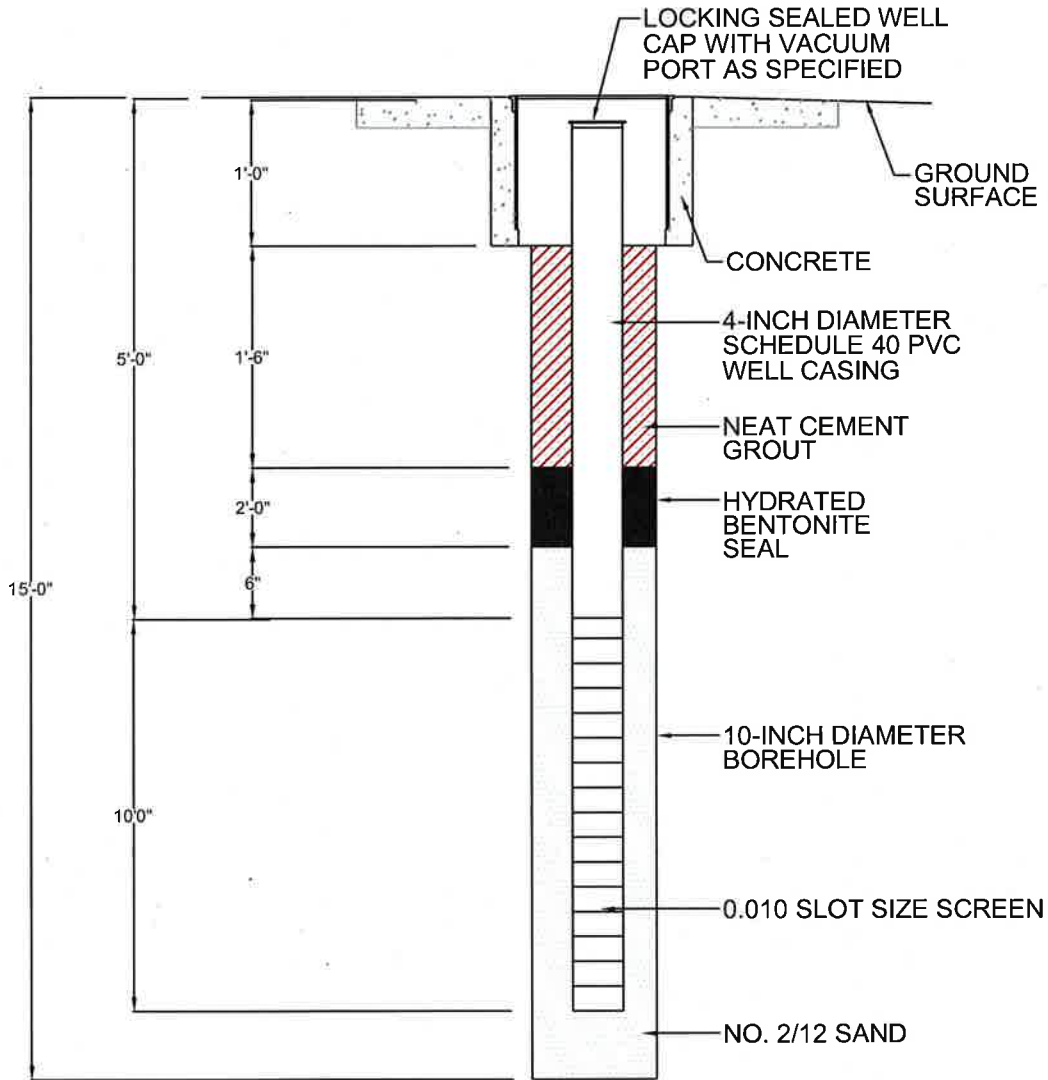


GENERALIZED SITE PLAN  
 FORMER EXXON SERVICE STATION 79374  
 990 San Pablo Avenue  
 Albany, California

EXPLANATION	
MW6	Groundwater Monitoring Well
B6	Soil Boring
HP2B	Hydropunch Boring
CPT2	Cone Penetration Test Boring
MW8	Proposed Groundwater Monitoring Well
AS1	Air Sparge Well
SVE3	Soil Vapor Extraction Well
SVE4	Proposed Soil Vapor Extraction Well
AS3	Proposed Air Sparge Well

PROJECT NO.  
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PLATE  
 2



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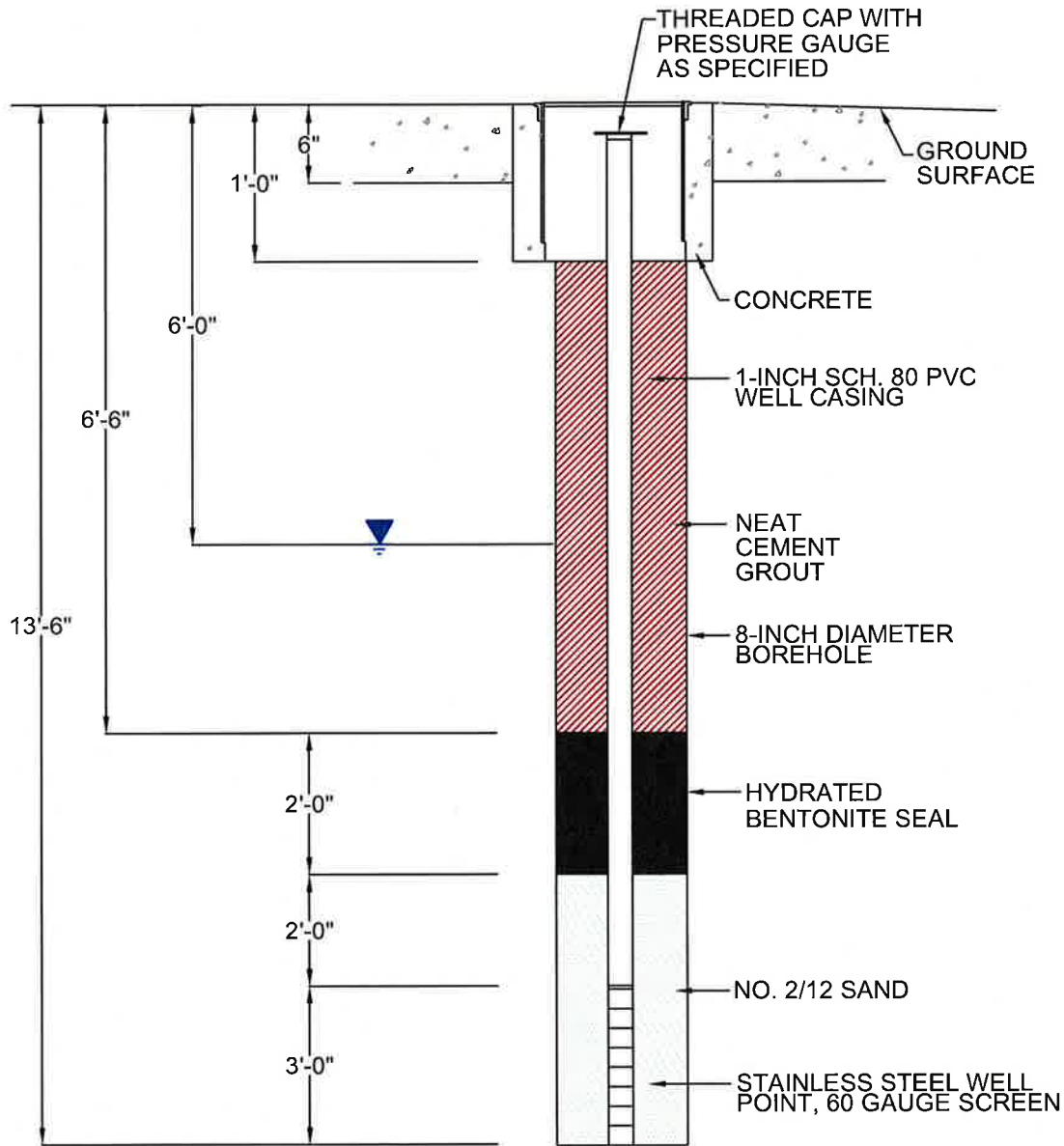


## TYPICAL SVE WELL DETAIL

FORMER EXXON SERVICE STATION 79374  
 990 San Pablo Avenue  
 Albany, California

PROJECT NO.  
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PLATE  
 3



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TYPICAL AS WELL DETAIL  
 FORMER EXXON SERVICE STATION 79574  
 990 San Pablo Avenue  
 Albany, California

PROJECT NO.	2735
PLATE	4



**TABLE 1A**  
**CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA**  
Former Exxon Service Station 79374  
990 San Pablo Avenue  
Albany, California

Well ID	Sampling Date	Depth (feet)	TOC Elev. (feet)	DTW (feet)	GW Elev. (feet)	NAPL (feet)	O&G (µg/L)	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	MTBE (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
<b>Monitoring Well Samples</b>															
MW1	11/04/10	---	Well installed.												
MW1	12/01/10	---	41.45	Well surveyed.											
MW1	12/16/10	---	41.45	9.18	32.27	No	---	<250	71a	54	<0.50	1.4	0.65	0.58	1.6
MW1	01/31/11	---	41.45	8.78	32.67	No	---	<250	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
MW1	04/07/11	---	41.45	8.45	33.00	No	---	<250	65a	160a	<0.50	2.9	0.92	<0.50	1.7
MW1	07/18/11	---	41.45	9.49	31.96	No	---	<250	<50	63a	<0.50	<0.50	<0.50	<0.50	<0.50
MW1	10/13/11	---	41.45	9.86	31.59	No	---	<250	54	<50	<0.50	<0.50	<0.50	<0.50	<0.50
<b>MW1</b>	<b>04/06/12</b>	---	<b>41.45</b>	<b>8.11</b>	<b>33.34</b>	<b>No</b>	---	<b>&lt;250</b>	<b>130</b>	<b>130</b>	<b>&lt;0.50</b>	<b>2.1</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>
MW2	11/04/10	---	Well installed.												
MW2	12/01/10	---	41.25	Well surveyed.											
MW2	12/16/10	---	41.25	8.11	33.14	No	---	<250	110a	<50	<0.50	<0.50	<0.50	<0.50	<0.50
MW2	01/31/11	---	41.25	9.29	31.96	No	---	<250	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50
MW2	04/07/11	---	41.25	8.21	33.04	No	---	<250	<50	<50	0.51	<0.50	<0.50	<0.50	<0.50
MW2	07/18/11	---	41.25	9.52	31.73	No	---	<250	<50	54a	<0.50	<0.50	<0.50	<0.50	<0.50
MW2	10/13/11	---	41.25	9.56	31.69	No	---	<250	98	75a	<0.50	<0.50	<0.50	<0.50	<0.50
<b>MW2</b>	<b>04/06/12</b>	---	<b>41.25</b>	<b>8.68</b>	<b>32.57</b>	<b>No</b>	---	<b>&lt;250</b>	<b>60</b>	<b>68</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>
MW3	11/08/10	---	Well installed.												
MW3	12/01/10	---	40.42	Well surveyed.											
MW3	12/16/10	---	40.42	8.18	32.24	No	---	<250	2,900a	19,000	<12	350	130	940	290
MW3	01/31/11	---	40.42	7.64	32.78	No	---	390	2,800a	17,000a	<12	540	140	700	270
MW3	04/07/11	---	40.42	5.88	34.54	No	---	<250	2,700a	14,000	<10	600	150	780	230
MW3	07/18/11	---	40.42	8.31	32.11	No	---	<250	1,700a	19,000	<10	650	140	660	220
MW3	10/13/11	---	40.42	8.76	31.66	No	---	<250	1,900a	16,000	<10	520	150	900	270
<b>MW3</b>	<b>04/06/12</b>	---	<b>40.42</b>	<b>8.13</b>	<b>32.29</b>	<b>No</b>	---	<b>&lt;250</b>	<b>3,200a</b>	<b>18,000</b>	<b>&lt;20</b>	<b>300</b>	<b>120</b>	<b>1,100</b>	<b>180</b>
MW3A	01/18/12	---	Well installed.												
MW3A	02/06/12	---	40.68	Well surveyed.											
<b>MW3A</b>	<b>04/06/12</b>	---	<b>40.68</b>	<b>6.02</b>	<b>34.66</b>	<b>No</b>	---	<b>&lt;250</b>	<b>170a</b>	<b>1,300</b>	<b>&lt;2.0</b>	<b>41</b>	<b>7.5</b>	<b>140</b>	<b>38</b>
MW4	11/05/10	---	Well installed.												
MW4	12/01/10	---	39.30	Well surveyed.											
MW4	12/16/10	---	39.30	6.10	33.20	No	---	<250	2,000a	9,900	<5.0	440	40	170	380
MW4	01/31/11	---	39.30	6.84	32.46	No	---	260	3,900a	13,000	<10	500	59	320	740
MW4	04/07/11	---	39.30	5.29	34.01	No	---	<250	1,900a	9,600	<10	530	59	250	340
MW4	07/18/11	---	39.30	7.36	31.94	No	---	<250	2,800a	14,000	<10	570	66	320	510
MW4	10/13/11	---	39.30	7.83	31.47	No	---	320	7,200a	14,000	<10	350	43	340	690
<b>MW4</b>	<b>04/06/12</b>	---	<b>39.30</b>	<b>6.21</b>	<b>33.09</b>	<b>No</b>	---	<b>&lt;250</b>	<b>1,800a</b>	<b>9,100a</b>	<b>&lt;10</b>	<b>380</b>	<b>40</b>	<b>220</b>	<b>410</b>



**TABLE 1A**  
**CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA**  
Former Exxon Service Station 79374  
990 San Pablo Avenue  
Albany, California

Well ID	Sampling Date	Depth (feet)	TOC Elev. (feet)	DTW (feet)	GW Elev. (feet)	NAPL (feet)	O&G (µg/L)	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	MTBE (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	
MW5	11/11/10	---	Well installed.													
MW5	12/01/10	---	40.38	Well surveyed.												
MW5	12/16/10	---	40.38	7.69	32.69	No	---	<250	1,100a	6,200	<2.5	150	96	270	980	
MW5	01/31/11	---	40.38	8.00	32.38	No	---	270	4,600a	15,000	<10	520	310	1,100	2,500	
MW5	04/07/11	---	40.38	6.73	33.65	No	---	<250	610a	2,500	<2.5	61	32	180	390	
MW5	07/18/11	---	40.38	7.63	32.75	No	---	<250	2,000a	11,000	<2.5	340	160	990	1,800	
MW5	10/13/11	---	40.38	9.31	31.07	No	---	660	7,600a	23,000	<20	390	160	1,200	3,100	
<b>MW5</b>	<b>04/06/12</b>	---	<b>40.38</b>	<b>6.77</b>	<b>33.61</b>	<b>No</b>	---	<b>&lt;250</b>	<b>880a</b>	<b>6,000a</b>	<b>&lt;5.0</b>	<b>62</b>	<b>17</b>	<b>360</b>	<b>680</b>	
MW6	11/03/10	---	Well installed.													
MW6	12/01/10	---	41.06	Well surveyed.												
MW6	12/16/10	---	41.06	8.55	32.51	No	---	<250	110a	1,700	<0.50	2.8	1.2	61	46	
MW6	01/31/11	---	41.06	8.52	32.54	No	---	<250	800a	2,000a	<1.0	6.0	<1.0	30	24	
MW6	04/07/11	---	41.06	7.78	33.28	No	---	<250	660a	2,000	<0.50	10	1.0	20	19	
MW6	07/18/11	---	41.06	9.27	31.79	No	---	<250	350a	1,000a	<0.50	2.5	<0.50	3.8	3.5	
MW6	10/13/11	---	41.06	10.21	30.85	No	---	<250	370a	890a	<0.50	2.8	<0.50	7.9	5.5	
<b>MW6</b>	<b>04/06/12</b>	---	<b>41.06</b>	<b>7.19</b>	<b>33.87</b>	<b>No</b>	---	<b>&lt;250</b>	<b>440a</b>	<b>1,400a</b>	<b>&lt;0.50</b>	<b>2.4</b>	<b>&lt;0.50</b>	<b>13</b>	<b>15</b>	
<b>Grab Groundwater Samples</b>																
B-1W	01/06/08	---	---	---	---	---	26r,s	<5,000	99,000o,n,r	76,000m,p,r	<50	<50	93	3,100	9,600	
B-2W	01/06/08	---	---	---	---	---	---	310s	23,000o,r,s	77,000 l,r,s	<50	1,500	300	2,000	6,800	
B-3W	01/06/08	---	---	---	---	---	---	<250s	2,000o,s	6,200 l,s	<10	170	32	740	250	
B-4W	01/06/08	---	---	---	---	---	---	<250s	3,100o,s	7,700 l,s	<10	360	<10	240	20	
B-5W	01/06/08	---	---	---	---	---	---	<250s	120o,s	120q,s	<0.5	<0.5	<0.5	<0.5	<0.5	
B-6W	01/06/08	---	---	---	---	---	---	<250s	830o,s	1,700 l,s	<2.5	5.2	<2.5	100	8.6	
DR-W	01/06/08	---	---	---	---	---	---	<250	96o	730m,p	<0.5	<0.5	<0.5	6.9	14	
W-27.5-HP1A	10/28/10	27.5	---	---	---	---	---	260	330a	63a	<0.50	<0.50	<0.50	<0.50	<0.50	
W-36-HP1A	10/28/10	36	---	---	---	---	---	<250	220a	<50	<0.50	<0.50	<0.50	<0.50	<0.50	
W-46.5-HP1A	10/28/10	46.5	---	---	---	---	---	<420	<83	<50	<0.50	<0.50	<0.50	<0.50	<0.50	
W-59-HP1B	10/27/10	59	---	---	---	---	---	<250	130	<50	<0.50	<0.50	<0.50	<0.50	<0.50	
W-27.5-HP2A	10/29/10	27.5	---	---	---	---	---	<250	100a	340	<0.50	1.7	2.1	20	46	
W-52-HP2A	10/29/10	52	---	---	---	---	---	<250	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	
W-60.5-HP2B	10/27/10	60.5	---	---	---	---	---	<250	62	<50	<0.50	<0.50	<0.50	<0.50	<0.50	

**TABLE 1A**  
**CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA**  
 Former Exxon Service Station 79374  
 990 San Pablo Avenue  
 Albany, California

Well ID	Sampling Date	Depth (feet)	TOC Elev. (feet)	DTW (feet)	GW Elev. (feet)	NAPL (feet)	O&G (µg/L)	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	MTBE (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
W-10-SVE1-1	01/31/12	10	---	---	---	---	---	990a	1,900a	2,000	<2.0	87	2.1	13	23
W-10-SVE1-2	01/31/12	10	---	---	---	---	---	890a	1,500a	1,400	<1.0	46	2.0	24	23

**TABLE 1A**  
**CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA**  
Former Exxon Service Station 79374  
990 San Pablo Avenue  
Albany, California

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Notes:

TOC	=	Top of well casing elevation; datum is mean sea level.
DTW	=	Depth to water.
GW Elev.	=	Groundwater elevation; datum is mean sea level. If liquid-phase hydrocarbons present, elevation adjusted using TOC - [DTW - (PT x 0.76)].
NAPL	=	Non-aqueous phase liquid.
O&G	=	Oil and grease with silica gel clean-up analyzed using Standard Method 5520B/F.
TPHmo	=	Total petroleum hydrocarbons as motor oil analyzed using EPA Method 8015 (modified).
TPHd	=	Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015 (modified).
TPHg	=	Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015 (modified).
MTBE	=	Methyl tertiary butyl ether analyzed using EPA Method 8260B.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8260B.
EDB	=	1,2-dibromoethane analyzed using EPA Method 8260B.
1,2-DCA	=	1,2-dichloroethane analyzed using EPA Method 8260B.
TAME	=	Tertiary amyl methyl ether analyzed using EPA Method 8260B.
TBA	=	Tertiary butyl alcohol analyzed using EPA Method 8260B.
ETBE	=	Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
DIPE	=	Di-isopropyl ether analyzed using EPA Method 8260B.
Add'l VOCs	=	Additional volatile organic carbons analyzed using EPA Method 8260B.
Add'l SVOCs	=	Additional semi-volatile organic carbons analyzed using EPA Method 8270C.
µg/L	=	Micrograms per liter.
ND	=	Not detected at or above laboratory reporting limits.
---	=	Not measured/Not sampled/Not analyzed.
<	=	Less than the stated laboratory reporting limit.
a	=	Sample chromatographic pattern does not match that of the specified standard.
b	=	n-butylbenzene.
c	=	sec-butylbenzene.
d	=	Isopropylbenzene.
e	=	n-propylbenzene.
f	=	1,2,4-trimethylbenzene.
g	=	1,3,5-trimethylbenzene.
h	=	Naphthalene.
i	=	1-butanone.
j	=	1,2-dibromo-3-chloropropane.
k	=	2-methylnaphthalene.
l	=	Unmodified or weakly modified gasoline is significant.
m	=	Heavier gasoline range compounds are significant.
n	=	Diesel range compounds are significant; no recognizable pattern.
o	=	Gasoline range compounds are significant.
p	=	No recognizable pattern.
q	=	Strongly aged gasoline or diesel compounds are significant.
r	=	Lighter than water immiscible sheen/product is present.
s	=	Liquid sample that contains greater than approximately 1 volume % sediment.

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**TABLE 1B**  
**ADDITIONAL CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA**  
Former Exxon Service Station 79374  
990 San Pablo Avenue  
Albany, California

Well ID	Sampling Date	Depth (feet)	EDB (µg/L)	1,2-DCA (µg/L)	TAME (µg/L)	TBA (µg/L)	ETBE (µg/L)	DIPE (µg/L)	Add'l VOCs (µg/L)	Add'l SVOCs (µg/L)
<b>Monitoring Well Samples</b>										
MW1	12/16/10	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW1	01/31/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW1	04/07/11	---	<0.50	<0.50	<0.50	10	<0.50	<0.50	---	---
MW1	07/18/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW1	10/13/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
<b>MW1</b>	<b>04/06/12</b>	---	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;5.0</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	---	---
MW2	12/16/10	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW2	01/31/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW2	04/07/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW2	07/18/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW2	10/13/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
<b>MW2</b>	<b>04/06/12</b>	---	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;5.0</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	---	---
MW3	12/16/10	---	<12	<12	<12	<120	<12	<12	---	---
MW3	01/31/11	---	<12	<12	<12	<120	<12	<12	---	---
MW3	04/07/11	---	<10	<10	<10	<100	<10	<10	---	---
MW3	07/18/11	---	<10	<10	<10	<100	<10	<10	---	---
MW3	10/13/11	---	<10	<10	<10	<100	<10	<10	---	---
<b>MW3</b>	<b>04/06/12</b>	---	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;200</b>	<b>&lt;20</b>	<b>&lt;20</b>	---	---
<b>MW3A</b>	<b>04/06/12</b>	---	<b>&lt;2.0</b>	<b>&lt;2.0</b>	<b>&lt;2.0</b>	<b>&lt;20</b>	<b>&lt;2.0</b>	<b>&lt;2.0</b>	---	---
MW4	12/16/10	---	<5.0	<5.0	<5.0	<50	<5.0	<5.0	---	---
MW4	01/31/11	---	<10	<10	<10	<100	<10	<10	---	---
MW4	04/07/11	---	<10	<10	<10	<100	<10	<10	---	---
MW4	07/18/11	---	<10	<10	<10	<100	<10	<10	---	---
MW4	10/13/11	---	<10	<10	<10	<100	<10	<10	---	---
<b>MW4</b>	<b>04/06/12</b>	---	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;100</b>	<b>&lt;10</b>	<b>&lt;10</b>	---	---
MW5	12/16/10	---	<2.5	<2.5	<2.5	<25	<2.5	<2.5	---	---
MW5	01/31/11	---	<10	<10	<10	<100	<10	<10	---	---
MW5	04/07/11	---	<2.5	<2.5	<2.5	<25	<2.5	<2.5	---	---
MW5	07/18/11	---	<2.5	<2.5	<2.5	<25	<2.5	<2.5	---	---
MW5	10/13/11	---	<20	<20	<20	<200	<20	<20	---	---
<b>MW5</b>	<b>04/06/12</b>	---	<b>&lt;0.50</b>	<b>&lt;5.0</b>	<b>&lt;5.0</b>	<b>&lt;50</b>	<b>&lt;5.0</b>	<b>&lt;5.0</b>	---	---
MW6	12/16/10	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW6	01/31/11	---	<1.0	<1.0	<1.0	<10	<1.0	<1.0	---	---
MW6	04/07/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW6	07/18/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
MW6	10/13/11	---	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
<b>MW6</b>	<b>04/06/12</b>	---	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;5.0</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	---	---

**TABLE 1B**  
**ADDITIONAL CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA**  
Former Exxon Service Station 79374  
990 San Pablo Avenue  
Albany, California

Well ID	Sampling Date	Depth (feet)	EDB (µg/L)	1,2-DCA (µg/L)	TAME (µg/L)	TBA (µg/L)	ETBE (µg/L)	DIPE (µg/L)	Add'l VOCs (µg/L)	Add'l SVOCs (µg/L)
<b>Grab Groundwater Samples</b>										
B-1W	01/06/08	---	<50	<50	<50	<200	<50	<50	210b, 68c, 370d, 1,100e, 3,800f, 1,300g, 1,500h	4,000h, 3,900k
B-2W	01/06/08	---	<50	<50	<50	<200	<50	<50	110b, 140e, 440f, 2,400g, 730h, 610i, 32j	---
B-3W	01/06/08	---	<10	<10	<10	<40	<10	<10	25b, 11c, 74d, 190e, 290f, 49g, 55i	---
B-4W	01/06/08	---	<10	<10	<10	<40	<10	<10	46b, 19c, 48d, 160e, 16f, 100h	---
B-5W	01/06/08	---	ND	<0.5	<0.5	<2.0	<0.5	<0.5	2.6b, 0.83e, 4.8f, 1.2g, 6.5h	---
B-6W	01/06/08	---	<2.5	<2.5	<2.5	<10	<2.5	<2.5	14b, 5.6c, 17d, 60e, 32f, 5.8g, 38h, 10i	---
DR-W	01/06/08	---	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	6.9b, 2.4c, 2.5d, 11e, 17f, 5.5g, 7.0h	---
W-27.5-HP1A	10/28/10	27.5	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
W-36-HP1A	10/28/10	36	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
W-46.5-HP1A	10/28/10	46.5	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
W-59-HP1B	10/27/10	59	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
W-27.5-HP2A	10/29/10	27.5	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
W-52-HP2A	10/29/10	52	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
W-60.5-HP2B	10/27/10	60.5	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	---	---
W-10-SVE1-1	01/31/12	10	<2.0	<2.0	<2.0	62	<2.0	<2.0	---	---
W-10-SVE1-2	01/31/12	10	<1.0	<1.0	<1.0	57	<1.0	<1.0	---	---

**TABLE 1B**  
**ADDITIONAL CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA**  
Former Exxon Service Station 79374  
990 San Pablo Avenue  
Albany, California

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Notes:

TOC	=	Top of well casing elevation; datum is mean sea level.
DTW	=	Depth to water.
GW Elev.	=	Groundwater elevation; datum is mean sea level. If liquid-phase hydrocarbons present, elevation adjusted using TOC - [DTW - (PT x 0.76)].
NAPL	=	Non-aqueous phase liquid.
O&G	=	Oil and grease with silica gel clean-up analyzed using Standard Method 5520B/F.
TPHmo	=	Total petroleum hydrocarbons as motor oil analyzed using EPA Method 8015 (modified).
TPHd	=	Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015 (modified).
TPHg	=	Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015 (modified).
MTBE	=	Methyl tertiary butyl ether analyzed using EPA Method 8260B.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8260B.
EDB	=	1,2-dibromoethane analyzed using EPA Method 8260B.
1,2-DCA	=	1,2-dichloroethane analyzed using EPA Method 8260B.
TAME	=	Tertiary amyl methyl ether analyzed using EPA Method 8260B.
TBA	=	Tertiary butyl alcohol analyzed using EPA Method 8260B.
ETBE	=	Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
DIPE	=	Di-isopropyl ether analyzed using EPA Method 8260B.
Add'l VOCs	=	Additional volatile organic carbons analyzed using EPA Method 8260B.
Add'l SVOCs	=	Additional semi-volatile organic carbons analyzed using EPA Method 8270C.
µg/L	=	Micrograms per liter.
ND	=	Not detected at or above laboratory reporting limits.
---	=	Not measured/Not sampled/Not analyzed.
<	=	Less than the stated laboratory reporting limit.
a	=	Sample chromatographic pattern does not match that of the specified standard.
b	=	n-butylbenzene.
c	=	sec-butylbenzene.
d	=	Isopropylbenzene.
e	=	n-propylbenzene.
f	=	1,2,4-trimethylbenzene.
g	=	1,3,5-trimethylbenzene.
h	=	Naphthalene.
i	=	1-butanone.
j	=	1,2-dibromo-3-chloropropane.
k	=	2-methylnaphthalene.
l	=	Unmodified or weakly modified gasoline is significant.
m	=	Heavier gasoline range compounds are significant.
n	=	Diesel range compounds are significant; no recognizable pattern.
o	=	Gasoline range compounds are significant.
p	=	No recognizable pattern.
q	=	Strongly aged gasoline or diesel compounds are significant.
r	=	Lighter than water immiscible sheen/product is present.
s	=	Liquid sample that contains greater than approximately 1 volume % sediment.

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**TABLE 2**  
**WELL CONSTRUCTION DETAILS**  
Former Exxon Service Station 79374  
990 San Pablo Avenue  
Albany, California

Well ID	Well Installation Date	TOC Elevation (feet)	Borehole Diameter (inches)	Total Depth of Boring (feet bgs)	Well Depth (feet bgs)	Casing Diameter (inches)	Well Casing Material	Screened Interval (feet bgs)	Slot Size (inches)	Filter Pack Interval (feet bgs)	Filter Pack Material
MW1	11/04/10	41.45	8	17	17	2	Schedule 40 PVC	12-17	0.020	10-17	#3 Sand
MW2	11/04/10	41.25	8	17	17	4	Schedule 40 PVC	12-17	0.020	10-17	#3 Sand
MW3	11/08/10	40.42	8	17	17	4	Schedule 40 PVC	11-16	0.020	9-16	#3 Sand
MW3A	01/18/12	40.68	10	15.5	15.5	4	Schedule 40 PVC	5-15	0.020	4.5-15.5	#2/12 Sand
MW4	11/05/10	39.30	8	17	13	2	Schedule 40 PVC	8-13	0.020	6-13	#3 Sand
MW5	11/05/10	40.38	8	17	14	2	Schedule 40 PVC	9-14	0.020	7-14	#3 Sand
MW6	11/03/10	41.06	10	20	20	2	Schedule 40 PVC	15-20	0.020	13-20	#3 Sand
AS1	01/18/12	---	8	15.5	15.5	1	Schedule 80 PVC	10.25-13.5	#60 mesh	10.5-15.5	#2/12 Sand
SVE1	01/17/12	40.58	10	15.5	15.5	4	Schedule 40 PVC	5-15	0.020	4.5-15.5	#2/12 Sand
SVE2	01/17/12	40.94	10	15	15	4	Schedule 40 PVC	5-15	0.020	4.5-15	#2/12 Sand
SVE3	01/17/12	40.93	10	15	15	4	Schedule 40 PVC	5-15	0.020	4.5-15.5	#2/12 Sand

Notes:

- TOC = Top of well casing elevation; datum is mean sea level.
- PVC = Polyvinyl chloride.
- feet bgs = Feet below ground surface.

**TABLE 3A**  
**CUMULATIVE SOIL ANALYTICAL RESULTS**  
Former Exxon Service Station 79374  
990 San Pablo Boulevard  
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Sample ID	Sampling Date	Depth (feet bgs)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHg (mg/kg)	MTBE (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	Total Lead (mg/kg)
<b>Soil Boring Samples</b>																	
B-1	01/06/08	6.0	<5.0	3.7c	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---
B-1	01/06/08	10.5	<100	1,400b,c	7,200b,f	<5.0	2	51	110	400	---	---	---	---	---	---	---
B-2	01/06/08	5.5	<5.0	<1.0	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---
B-2	01/06/08	10.5	<100	1,400d	4,500b,f	<5.0	13	35	100	380	---	---	---	---	---	---	---
B-3	01/06/08	5.5	<5.0	<1.0	<1.0	<0.50	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---
B-3	01/06/08	10.5	<5.0	53d	130e,f	<0.50	0.37	0.29	2.6	0.44	---	---	---	---	---	---	---
B-4	01/06/08	5.5	<5.0	62d	140e,f	<0.50	<0.005	1.0	0.066	0.094	---	---	---	---	---	---	---
B-4	01/06/08	10.5	<5.0	15d	140e,f	<0.50	0.25	1.5	1.3	0.11	---	---	---	---	---	---	---
B-5	01/06/08	5.5	<5.0	<1.0	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---
B-5	01/06/08	11.5	<5.0	5.4c,d	32e,f	<0.25	0.038	0.24	0.051	0.035	---	---	---	---	---	---	---
B-6	01/06/08	5.5	<5.0	<1.0	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---
B-6	01/06/08	10.5	<5.0	6.0c,d	32e,f	<0.05	0.009	0.41	<0.005	0.039	---	---	---	---	---	---	---
<b>Monitoring Well Samples</b>																	
S-5-MW1	10/20/10	5.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-10-MW1	11/04/10	10.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-14.5-MW1	11/04/10	14.5	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-10-MW2	11/04/10	10.0	<25	<5.0	3.1a	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-15-MW2	11/04/10	15.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-5-MW3	10/20/10	5.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-10.5-MW3	11/08/10	10.5	<25	11a	220	<0.50	<0.50	<0.50	2.0	1.1	<0.50	<0.50	<5.0	<1.0	<1.0	<1.0	---
S-15.5-MW3	11/08/10	15.5	<25	<5.0	2.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-8-MW3A	01/18/12	8.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-14.5-MW3A	01/18/12	14.5	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	0.015	0.0052	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-5-MW4	10/20/10	5.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-10-MW4	11/05/10	10.0	<25	<5.0	44a	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<1.0	<1.0	---
S-15-MW4	11/05/10	15.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-16.5-MW4	11/05/10	16.5	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-5-MW5	10/20/10	5.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-10.5-MW5	11/05/10	10.5	29	93a	450a	<0.050	<0.050	1.5	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<1.0	<1.0	---
S-16.5-MW5	11/05/10	16.5	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-5-MW6	10/20/10	5.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-10-MW6	11/02/10	10.0	<25	8.2a	8.7a	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---



**TABLE 3A**  
**CUMULATIVE SOIL ANALYTICAL RESULTS**  
Former Exxon Service Station 79374  
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Sample ID	Sampling Date	Depth (feet bgs)	TPHmo (mg/kg)	TPHd (mg/kg)	TPHg (mg/kg)	MTBE (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	Total Lead (mg/kg)
S-14.5-MW6	11/02/10	14.5	<25	<5.0	1.8a	<0.0050	<0.0050	<0.0050	<0.0093	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-20-MW6	11/02/10	20.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-5-CPT1	10/20/10	5.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-5-CPT2	10/20/10	5.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
S-10-AS1	01/18/12	10.0	<25	800a	2,900	<2.5	<2.5	<2.5	47	<2.5	<2.5	<2.5	<25	<5.0	<5.0	<5.0	---
S-8.5-SVE1	01/17/12	8.5	<25	87a	480a	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<1.0	<1.0	---
S-11.5-SVE1	01/17/12	11.5	<25	<5.0	18	<0.0050	<0.50	0.010	0.084	0.11	<0.0050	<0.0050	<0.50	<0.010	<0.010	<0.010	---
S-10-SVE2	01/17/12	10.0	53a	37a	390a	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<1.0	<1.0	<1.0	---
S-14-SVE2	01/17/12	14.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.50	<0.010	<0.010	<0.010	---
S-12.5-SVE3	01/17/12	12.5	57a	760a	1,900a	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50	<0.50	<5.0	<1.0	<1.0	<1.0	---
S-15-SVE3	01/17/12	15.0	<25	<5.0	<0.50	<0.0050	<0.0050	<0.0050	0.015	0.033	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	---
<b>Drum Samples</b>																	
DR-1	01/06/08	---	<5.0	2.5c,d	4.9e,f	<0.050	<0.005	0.027	0.035	0.035	---	---	---	---	---	---	9.7
<b>Soil Stockpile Samples</b>																	
COMP(S-Profile-1-4)	11/08/10	---	<25	7.1a	14a	<0.0050	<0.0050	<0.0050	0.069	0.049	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	6.93
S-SP1 (1-4)	01/18/12	---	190a	39a	230	<0.0050	0.20	0.66	4.3	14	<0.0050	<0.0050	<0.050	<0.010	<0.010	<0.010	37.6

**TABLE 3A**  
**CUMULATIVE SOIL ANALYTICAL RESULTS**  
Former Exxon Service Station 79374  
990 San Pablo Boulevard  
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Notes:	=	
S-15-MW4	=	Soil - depth - monitoring well 4.
TPHmo	=	Total petroleum hydrocarbons as motor oil analyzed using EPA Method 8015B.
TPHd	=	Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015B.
TPHg	=	Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015B.
MTBE	=	Methyl tertiary butyl ether analyzed using EPA Method 8260B; analyzed isong EPA Method 8020 in 2008.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8260B.
EDB	=	1,2-Dibromoethane analyzed using EPA Method 8260B.
1,2-DCA	=	1,2-Dicholorethane analyzed using EPA Method 8260B.
TBA	=	Tertiary butyl alcohol analyzed using EPA Method 8260B.
DIPE	=	Di-isopropyl ether analyzed using EPA Method 8260B.
ETBE	=	Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
TAME	=	Tertiary amyl methyl ether analyzed using EPA Method 8260B.
Total Lead	=	Total lead analyzed using EPA Method 6010B.
1,2,4-trimethylbenzene	=	1,2,4-Trimethylbenzene analyzed using EPA Method 8260B.
1,3,5-trimethylnemzene	=	1,3,5-Trimethylnemzene analyzed using EPA Method 8260B.
Isopropyltoluene	=	Isopropyltoluene analyzed using EPA Method 8260B.
Naphthalene	=	Naphthalene analyzed using EPA Method 8260B.
n-Butylbenzene	=	n-Butylbenzene analyzed using EPA Method 8260B.
p-Isopropyltoluene	=	p-Isopropyltoluene analyzed using EPA Method 8260B.
sec-Butylbenzene	=	sec-Butylbenzene analyzed using EPA Method 8260B.
t-Butylbenzene	=	t-Butylbenzene analyzed using EPA Method 8260B.
Add'l HVOCs	=	Additional Halogenated Volatile Organic Compounds analyzed using EPA Method 8260B.
feet bgs	=	Feet below ground surface.
ND	=	Not detected.
---	=	Not analyzed/Not applicable
<	=	Less than the laboratory reporting limit.
a	=	The sample chromatographic pattern does not match that of the specified standard.
b	=	Heavier gasoline range compounds are significant.
c	=	Diesel range compounds are significant; no recognizable pattern.
d	=	Gasoline range compounds are significant.
e	=	Strongly aged gasoline or diesel range compounds are significant.
f	=	No recognizable pattern.

**TABLE 3B**  
**ADDITIONAL CUMULATIVE SOIL ANALYTICAL RESULTS - HVOCs**  
Former Exxon Service Station 79374  
990 San Pablo Boulevard  
Albany, California  
(Page 1 of 2)

Sample ID	Sampling Date	Depth (feet bgs)	1,2,4-trimethyl-benzene (mg/kg)	1,3,5-trimethyl-benzene (mg/kg)	Isopropyl-benzene (mg/kg)	Naph-thalene (mg/kg)	n-Butyl-benzene (mg/kg)	p-Isopropyl-toluene (mg/kg)	sec-Butyl-benzene (mg/kg)	t-Butyl-benzene (mg/kg)	Add'l HVOCs (mg/kg)
<b>Soil Boring Samples</b>											
Not analyzed for these analytes.											
<b>Monitoring Well Samples</b>											
Not analyzed for these analytes.											
<b>Drum Samples</b>											
Not analyzed for these analytes.											
<b>Soil Stockpile Samples</b>											
COMP(S-Profile-1-4)	11/08/10	---	0.0053	0.062	0.061	0.098	0.14	0.012	0.053	0.018	ND
S-SP1 (1-4)	01/18/12	---	8.3	2.2	0.12	<5.0	0.20	0.018	0.051	<0.0050	2.5g

Notes:

- S-15-MW4 = Soil - depth - monitoring well 4.
- TPHmo = Total petroleum hydrocarbons as motor oil analyzed using EPA Method 8015B.
- TPHd = Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015B.
- TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015B.
- MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8260B; analyzed isong EPA Method 8020 in 2008.
- BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8260B.
- EDB = 1,2-Dibromoethane analyzed using EPA Method 8260B.
- 1,2-DCA = 1,2-Dicholorethane analyzed using EPA Method 8260B.
- TBA = Tertiary butyl alcohol analyzed using EPA Method 8260B.
- DIPE = Di-isopropyl ether analyzed using EPA Method 8260B.
- ETBE = Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
- TAME = Tertiary amyl methyl ether analyzed using EPA Method 8260B.
- Total Lead = Total lead analyzed using EPA Method 6010B.
- 1,2,4-trimethylbenzene = 1,2,4-Trimethylbenzene analyzed using EPA Method 8260B.
- 1,3,5-trimethylnemzene = 1,3,5-Trimethylnemzene analyzed using EPA Method 8260B.
- Isopropyltoluene = Isopropyltoluene analyzed using EPA Method 8260B.

**TABLE 3B**  
**ADDITIONAL CUMULATIVE SOIL ANALYTICAL RESULTS - HVOCs**  
Former Exxon Service Station 79374  
990 San Pablo Boulevard  
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Notes (Cont.):	
Naphthalene	= Naphthalene analyzed using EPA Method 8260B.
n-Butylbenzene	= n-Butylbenzene analyzed using EPA Method 8260B.
p-Isopropyltoluene	= p-Isopropyltoluene analyzed using EPA Method 8260B.
sec-Butylbenzene	= sec-Butylbenzene analyzed using EPA Method 8260B.
t-Butylbenzene	= t-Butylbenzene analyzed using EPA Method 8260B.
Add'l HVOCs	= Additional halogenated volatile organic compounds analyzed using EPA Method 8260B.
feet bgs	= Feet below ground surface.
ND	= Not detected.
---	= Not analyzed/Not applicable
<	= Less than the laboratory reporting limit.
a	= The sample chromatographic pattern does not match that of the specified standard.
b	= Heavier gasoline range compounds are significant.
c	= Diesel range compounds are significant; no recognizable pattern.
d	= Gasoline range compounds are significant.
e	= Strongly aged gasoline or diesel range compounds are significant.
f	= No recognizable pattern.
g	= n-Propylbenzene

**APPENDIX A**  
**FIELD PROTOCOL**

## **Cardno ERI Soil Boring and Well Installation Field Protocol**

### **Preliminary Activities**

Prior to the onset of field activities at the site, Cardno ERI obtains the appropriate permit(s) from the governing agency(s). Advance notification is made as required by the agency(s) prior to the start of work. Cardno ERI marks the borehole locations and contacts the local one call utility locating service at least 48 hours prior to the start of work to mark buried utilities. Borehole locations may also be checked for buried utilities by a private geophysical surveyor. Prior to drilling, the borehole location is cleared in accordance with the client's procedures. Fieldwork is conducted under the advisement of a registered professional geologist and in accordance with an updated site-specific safety plan prepared for the project, which is available at the job site during field activities.

### **Drilling and Soil Sampling Procedures**

Cardno ERI contracts a licensed driller to advance the boring and collect soil samples. The specific drilling method (e.g., hollow-stem auger, direct push method, or sonic drilling), sampling method [e.g., core barrel or California-modified split spoon sampler (CMSSS)] and sampling depths are documented on the boring log and may be specified in a work plan. Soil samples are typically collected at the capillary fringe and at 5-foot intervals to the total depth of the boring. To determine the depth of the capillary fringe prior to drilling, the static groundwater level is measured with a water level indicator in the closest monitoring well to the boring location, if available.

The borehole is advanced to just above the desired sampling depth. For CMSSSs, the sampler is placed inside the auger and driven to a depth of 18 inches past the bit of the auger. The sampler is driven into the soil with a standard 140-pound hammer repeatedly dropped from a height of 30 inches onto the sampler. The number of blows required to drive the sampler each 6-inch increment is recorded on the boring log. For core samplers (e.g., direct push), the core is driven 18 inches using the rig apparatus.

Soil samples are preserved in the metal or plastic sleeve used with the CMSSS or core sampler, in glass jars or other manner required by the local regulatory agency. Sleeves are removed from the sample barrel, and the lowermost sample sleeve is immediately sealed with Teflon™ tape, capped, labeled, placed in a cooler chilled to 4° Celsius and transported to a state-certified laboratory. The samples are transferred under chain-of-custody (COC) protocol.

### **Field Screening Procedures**

Cardno ERI places the soil from the middle of the sampling interval into a plastic re-sealable bag. The bag is placed away from direct sunlight for a period of time which allows volatilization of chemical constituents, after which the tip of a photo-ionization detector (PID) or similar device is inserted through the plastic bag to measure organic vapor concentrations in the headspace. The PID measurement is recorded on the boring log. At a minimum, the PID or other device is calibrated on a daily basis in accordance with manufacturer's specifications using a hexane or isobutylene standard. The calibration gas and concentration are recorded on a calibration log. Instruments such as the PID are useful for evaluating relative concentrations of volatilized hydrocarbons, but they do not measure the concentration of petroleum hydrocarbons in the soil matrix with the same precision as laboratory analysis. Cardno ERI trained personnel describe the soil in the bag according to the Unified Soil Classification System and record the description on the boring log, which is included in the final report.

### **Air Monitoring Procedures**

Cardno ERI performs a field evaluation for volatile hydrocarbon concentrations in the breathing zone using a calibrated photo-ionization detector or lower explosive level meter.

### **Groundwater Sampling**

A groundwater sample, if desired, is collected from the boring by using Hydropunch™ sampling technology or installing a well in the borehole. In the case of using Hydropunch™ technology, after collecting the capillary fringe soil sample, the boring is advanced to the top of the soil/groundwater interface and a sampling probe is pushed to approximately 2 feet below the top of the static water level. The probe is opened by partially withdrawing it and thereby exposing the screen. A new or decontaminated bailer is used to collect a water sample from the probe. The water sample is then emptied into laboratory-supplied containers constructed of the correct material and with the correct volume and preservative to comply with the proposed laboratory test. The container is slowly filled with the retrieved water sample until no headspace remains and then promptly sealed with a Teflon-lined cap, checked for the presence of bubbles, labeled, entered onto a COC record and placed in chilled storage at 4° Celsius. Laboratory-supplied trip blanks accompany the water samples as a quality assurance/quality control procedure. Equipment blanks may be collected as required. The samples are kept in chilled storage and transported under COC protocol to a client-approved, state-certified laboratory for analysis.

### **Backfilling of Soil Boring**

If a well is not installed, the boring is backfilled from total depth to approximately 5 feet below ground surface (bgs) with either neat cement or bentonite grout using a tremie pipe and either the boring is backfilled from 5 feet bgs to approximately 1 foot bgs with hydrated bentonite chips or backfill is continued to just below grade with neat cement grout. The borehole is completed to surface grade with material that best matches existing surface conditions and meets local agency requirements. Site-specific backfilling details are shown on the respective boring log.

### **Well Construction**

A well (if constructed) is completed using materials documented on the boring log or specified in a work plan. The well is constructed with slotted casing across the desired groundwater sampling depth(s) and completed with blank casing to within 6 inches of surface grade. No further construction is conducted on temporary wells. For permanent wells, the annular space of the well is backfilled with Monterey sand from the total depth to approximately 2 feet above the top of the screened casing. A hydrated granular bentonite seal is placed on top of the sand filter pack. Grout may be placed on top of the bentonite seal to the desired depth using a tremie pipe. The well may be completed to surface grade with a 1-foot thick concrete pad. A traffic-rated well vault and locking cap for the well casing may be installed to protect against surface-water infiltration and unauthorized entry. Site-specific well construction details including type of well, well depth, casing diameter, slot size, length of screen interval and sand size are documented on the boring log or specified in the work plan.

### **Well Development and Sampling**

If a permanent groundwater monitoring well is installed, the grout is allowed to cure a minimum of 48 hours before development. Cardno ERI personnel or a contracted driller use a submersible pump or surge block to develop the newly installed well. Prior to development, the pump is decontaminated by allowing it to run and re-circulate while immersed in a non-phosphate solution followed by successive immersions in potable water and de-ionized water baths. The well is developed until sufficient well casing volumes are removed so that turbidity is within allowable limits and pH, conductivity and temperature levels stabilize in the purge water. The volume of groundwater extracted is recorded on a log.

Following development, groundwater within the well is allowed to recharge until at least 80% of the drawdown is recovered. A new or decontaminated bailer is slowly lowered past the air/water interface in the well, and a water sample is collected and checked for the presence of non-aqueous phase liquid, sheen or emulsions. The water sample is then emptied into laboratory-supplied containers as discussed above.

**Surveying**

If required, wells are surveyed by a licensed land surveyor relative to an established benchmark of known elevation above mean sea level to an accuracy of +/- 0.01 foot. The casing is notched or marked on one side to identify a consistent surveying and measuring point.

**Decontamination Procedures**

Cardno ERI or the contracted driller decontaminates soil and water sampling equipment between each sampling event with a non-phosphate solution, followed by a minimum of two tap water rinses. De-ionized water may be used for the final rinse. Downhole drilling equipment is steam-cleaned prior to drilling the borehole and at completion of the borehole.

**Waste Treatment and Soil Disposal**

Soil cuttings generated from the drilling or sampling are stored on site in labeled, Department of Transportation-approved, 55-gallon drums or other appropriate storage container. The soil is removed from the site and transported under manifest to a client- and regulatory-approved facility for recycling or disposal. Decontamination fluids and purge water from well development and sampling activities, if conducted, are stored on site in labeled, regulatory-approved storage containers. Fluids are subsequently transported under manifest to a client- and regulatory-approved facility for disposal or treated with a permitted mobile or fixed-base carbon treatment system.