ExxonMobil
Refining and Supply Company
Downstream - Safety, Health & Environment
Environmental Remediation

2300 Clayton Road, Suite 1250
P.O. Box 4032
Concord, CA 94524-4032
(925) 246-8768 Telephone
(925) 246-8798 Facsimile
darin.l.rouse@exxon.com

Darin L. Rouse
Senior Engineer
Environmental Remediation

ExxonMobil
Refining & Supply

January 18, 2001

Mr. Scott Seery
Alameda County Health Care Services Agency
Environmental Health Services Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RE: Former Exxon RAS #7-3567/3192 Santa Rita Road, Pleasanton, California.

Dear Mr. Seery:

Attached for your review and comment is a document entitled ***Work Plan for Soil and Groundwater Investigation,*** dated January 16, 2001, for the above referenced site. The Work Plan was prepared by Environmental Resolutions, Inc. (ERI) of Novato, California, and proposes groundwater monitoring well installation activities at the subject site.

If you have any questions or comments, please contact me at (925) 246-8768.

Sincerely,

Darin L. Rouse
Senior Engineer

Attachment: ERI's Work Plan for Soil and Groundwater Investigation, dated January 17, 2001.

cc: w/ attachment
Mr. Stephen Hill, California Regional Water Quality Control Board-San Francisco Bay Region
Mr. Winson B. Low, Environmental and Safety Affairs Department

w/o attachment
Mr. James F. Chappell, Environmental Resolutions, Inc.

ENVIRONMENTAL RESOLUTIONS, INC.

January 16, 2001
ERI 243103.W02

Mr. Darin L. Rouse
ExxonMobil Refining and Supply
P.O. Box 4032
Concord, California 94524-4032

Subject: Work Plan for Soil and Groundwater Investigation at Former Exxon Service Station 7-3567, 3192 Santa Rita Road, Pleasanton, California.

Mr. Rouse:

At the request of ExxonMobil Refining and Supply (formerly known as Exxon Company, U.S.A.) (ExxonMobil), Environmental Resolutions, Inc. (ERI) performs environmental assessment activities at the subject site. ERI has prepared this Work Plan in response to a letter from the Alameda County Health Care Services Agency (the County) dated December 7, 2000 (Attachment A). The County requested that ExxonMobil provide a Work Plan to further evaluate the subsurface conditions and extent of the petroleum hydrocarbon release at the subject site.

BACKGROUND

The site is located on the southeastern corner of Santa Rita Road and Las Positas Boulevard as shown on the Site Vicinity Map (Plate 1). The locations of underground storage tanks (USTs), dispenser islands, and other selected site features, are shown on the Generalized Site Plan (Plate 2).

The site has seven groundwater monitoring wells (MW1 through MW7) and two tankpit wells (TPW) as shown on Plate 2. Based on groundwater monitoring data, historical depth to water (DTW) measurements have ranged from approximately 14 to 50 feet below ground surface (bgs). Historical and recent monitoring data are summarized in Table 1. The range of DTW values suggest that the monitoring wells are screened in different water-bearing zones. Well construction logs for the groundwater monitoring wells are included in Attachment B. A well information table is included as Table 2.

There are five municipal water supply wells within approximately 3,000 feet of the site. Two former United States Army water supply wells are located approximately 1,500 feet south of the site. These wells have been inactive but are due to be used in the future. Two water supply wells labeled Mocho 1 and Mocho 2 are approximately 1,500 and 2,000 feet southeast of the site and are used during peak demand times. The primary pumping well (Stoneridge) is approximately 3,000 feet east of the site. A map showing the locations of the water supply wells is included in Attachment C.

SITE CONDITIONS

Two water-bearing zones (a shallow clay and deeper gravelly sediments) are known to exist based on their sediment composition and historical DTW values. Monitoring wells MW1, MW2, and MW5 are screened exclusively in an upper clay, which has a historical DTW range of approximately 14 to 30 feet bgs and a corresponding groundwater elevation range from approximately 312 to 326 feet above mean sea level (msl).

Monitoring well MW7 appears to be screened in a clayey sand sediment located above the deeper gravel, which has a historical DTW range of approximately 24 to 25 feet bgs and a corresponding groundwater elevation of approximately 317 to 318 feet msl. Based on groundwater elevation data, this sand may be hydraulically connected to the upper clay.

Monitoring wells MW3, MW4, and MW6 are screened across a deeper gravelly sand sediment, which has a historical DTW range from approximately 32 to 50 feet bgs and a corresponding groundwater elevation range of approximately 292 to 310 feet above msl.

SCOPE OF WORK

ERI proposes to install one additional groundwater monitoring well (MW8) in the deeper gravel with similar construction to MW6 to further evaluate site stratigraphy at the southern end of the site and to delineate the vertical and horizontal extent of the MTBE plume within the deeper gravelly sand in this direction. The well will be advanced to the targeted depth of the gravelly sand layer located approximately 50 feet bgs in the area of concern. The location of the proposed well is shown on Plate 2. Field work will be performed in accordance with ERI's Field Protocol (Attachment D). The scope of the Soil and Groundwater investigation includes the following work:

Task 1: Pre-Drilling Activities

- Obtain a drilling permit from the Alameda County Flood Control and Water Conservation District (Zone 7).
- Contact Underground Service Alert (USA) to coordinate utility locating activities.

Task 2: Soil and Groundwater Investigation

- Obtain the services of a licensed well driller, and observe drilling of one on-site soil boring utilizing a hollow-stem auger drilling rig and the construction of groundwater monitoring well MW8 in the boring. ERI expects groundwater to be encountered between 32 and 50 feet bgs in the lower gravel. Well MW8 will be drilled to approximately 60 feet bgs, and screened exclusively across the deeper gravelly sediment. The boring will be drilled to a maximum of 70 feet and backfilled with grout if the deeper gravel is not located. The screen interval in MW8 will be selected in the field. Soil samples will be collected continuously, to the total depth of the boring, to allow detailed evaluation of the hydrostratigraphy.
- Develop the newly installed well by overpurging and surging, and collect groundwater samples from the well.

- Submit selected soil and groundwater samples to Southern Petroleum Laboratories, Inc. (SPL) for laboratory analysis of total purgeable petroleum hydrocarbons as gasoline (TPPHg) using modified EPA Method 8015, total extractable petroleum hydrocarbons as diesel (TEPHd) using modified EPA Method 8015, benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020. Selected groundwater samples will also be analyzed for methyl tertiary butyl ether (MTBE), using EPA Method 8260.

- Drill cuttings will be stored on site and covered with plastic sheeting pending characterization and disposal. ERI will collect one composite soil sample from the soil stockpile for laboratory analysis. Upon receipt of analytical results for the stockpiled soil, ERI will apprise ExxonMobil of disposal options, and coordinate the disposal of the soil at an appropriate disposal facility selected by ExxonMobil.

- Contract with a licensed land surveyor to survey the location (relative to a known survey grid) and casing elevation (relative to mean sea level) of the newly installed well.

- Interpret field and laboratory data to evaluate soil and groundwater conditions.

Task 3: Report Preparation

- ERI will prepare a report for the investigation. The report will detail field activities, sample collection, field observations, results of the field investigations, and analytical results for soil and groundwater samples. If additional assessment work is warranted, the proposed work will be described in the report.

SCHEDULE OF OPERATIONS

Upon regulatory approval of this Work Plan, ERI is prepared to implement the work in accordance with the following schedule:

- Within 15 calendar days of receiving written approval of this Work Plan, the permit included in Task 1 will be submitted to the appropriate agency.

- Within 30 calendar days of receiving the required permit, Task 2 will be completed.

- Within 45 calendar days of receiving laboratory analysis results, the report described in Task 3 will be submitted to the County.

ERI recommends signed copies of this Work Plan be forwarded to the following:

Mr. Scott Seery
Alameda County Health Care Services Agency
Environmental Health Services Division
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Mr. Stephen Hill
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Please call Mr. James F. Chappell, ERI's project manager for this site, at (415) 382-4323 with any questions regarding this project.

Sincerely,
Environmental Resolutions, Inc.

Thomas D. Culig
Staff Geologist

REGISTERED GEOLOGIST
JOHN BAILEY BOBBITT
exp 4/30/02
No. 4313
STATE OF CALIFORNIA

John B. Bobbitt
R.G. 4313

Attachments:
Table 1: Cumulative Groundwater Monitoring and Sampling Data
Table 2: Well Information

Plate 1: Site Vicinity Map
Plate 2: Generalized Site Plan

Attachment A: Alameda County Health Services Agency Letter, Dated December 7, 2000
Attachment B: Well Construction Logs
Attachment C: Water Supply Well Map
Attachment D: Field Protocol

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-3567
3192 Santa Rita Road
Pleasanton, California

Well ID# (TOC)	Sampling Date	SUBJ	DTW	Elev.	TEPHd	TPPHg	MTBE	B	T	E	X	VOCs
		<	feet	>	<			ug/L				>
MW1	11/17/98	NLPH	21.90	318.96	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---
(340.86)	03/15/99	NLPH	21.15	319.71	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---
	06/25/99	NLPH	20.34	320.52	a	<50	<2.0	<0.5	<0.5	<0.5	<0.5	---
	09/24/99	NLPH	20.42	320.44	<50	<50	24.6	<0.5	<0.5	<0.5	<0.5	---
	12/22/99	NLPH	21.11	319.75	<61	<50	<2	<0.5	<0.5	<0.5	<0.5	---
	03/07/00	NLPH	14.12	326.74	57	<50	220	<0.5	<0.5	<0.5	<0.5	---
	06/06/00	NLPH	17.79	323.07	<50	<50	5.4	<0.5	<0.5	<0.5	<0.5	---
	07/31/00	NLPH	19.02	321.84	<50	<50	51/38*	<0.5	<0.5	<0.5	<0.5	ND**
	10/10/00	**NLPH**	**18.56**	**322.30**	**<50**	**<50**	**63**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**---**
MW2	11/17/98	NLPH	20.42	320.19	91	<50	17/23*	1.5	<0.5	0.98	2.6	---
(340.61)	03/15/99	NLPH	28.35	312.26	90	<50	12/12.5*	0.73	1.1	2.4	2.2	---
	06/25/99	NLPH	25.20	315.41	a	<50	<2.0	<0.5	<0.5	<0.5	<0.5	---
	09/24/99	NLPH	23.93	316.68	<50	<50	3.06	<0.5	<0.5	<0.5	<0.5	---
	12/22/99	NLPH	23.39	317.22	<56	<50	<2	<0.5	<0.5	<0.5	<0.5	---
	03/07/00	NLPH	17.08	323.53	52	<50	<2	<0.5	0.80	<0.5	<0.5	---
	06/06/00	NLPH	21.01	319.60	<50	<50	<2	<0.5	<0.5	<0.5	<0.5	---
	07/31/00	NLPH	22.08	318.53	<50	<50	6.8/<5*	<0.5	<0.5	<0.5	<0.5	ND**
	10/10/00	**NLPH**	**22.35**	**318.26**	**<50**	**<50**	**<2**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**---**
MW3	11/17/98	NLPH	36.58	306.37	120	<50	180/220*	<0.5	<0.5	<0.5	<0.5	---
(342.95)	03/15/99	NLPH	40.01	302.94	180	<50	290/314*	<0.5	<0.5	<0.5	<0.5	---
	06/25/99	NLPH	46.83	296.12	a	<50	107/113*	<0.5	<0.5	<0.5	<0.5	---
	9/24/99[b]	NLPH	47.71	295.24	---	---	---	---	---	---	---	---
	12/22/99	NLPH	43.82	299.13	140	<50	65	<0.5	<0.5	<0.5	<0.5	---
	03/07/00	NLPH	32.75	310.20	<50	<50	82	<0.5	0.88	<0.5	<0.5	---
	06/06/00	NLPH	36.05	306.90	<50	<50	140	<0.5	<0.5	0.82	<0.5	---
	07/31/00	NLPH	36.77	306.18	<50	<50	230/160*	<0.5	<0.5	<0.5	<0.5	ND**
	10/10/00	**NLPH**	**35.82**	**307.13**	**<50**	**<50**	**200**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**---**
MW4	11/17/98	NLPH	50.20	292.76	72	<50	4.1/3.5*	<0.5	<0.5	<0.5	<0.5	---
(342.96)	03/15/99	NLPH	47.93	295.03	91	<50	280/260*	<0.5	<0.5	<0.5	<0.5	---
	6/25/99[b]	NLPH	48.15	294.81	---	---	---	---	---	---	---	---
	9/24/99[b]	NLPH	49.29	293.67	---	---	---	---	---	---	---	---
	12/22/99	NLPH	49.33	293.63	b	---	---	---	---	---	---	---
	03/07/00	NLPH	49.05	293.91	190	<50	710	<0.5	0.84	<0.5	<0.5	---
	06/06/00	NLPH	49.02	293.94	110	<50	460	<0.5	<0.5	<0.5	<0.5	---
	07/31/00	NLPH	49.13	293.83	<50	<50	480/490*	<0.5	<0.5	<0.5	<0.5	ND**
	10/10/00	**NLPH**	**40.08**	**302.88**	**c**	**c**	**c**	**c**	**c**	**c**	**c**	**c**

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-3567
3192 Santa Rita Road
Pleasanton, California
(Page 2 of 2)

Well ID# (TOC)	Sampling Date	SUBJ	DTW	Elev.	TEPHd	TPPHg	MTBE	B	T	E	X	VOCs
		<	feet	>	<			ug/L				>
MW5	07/31/00	---	b	---	---	---	---	---	---	---	---	---
(342.87)	**10/10/00**	**NLPH**	**29.12**	**313.75**	**150**	**<50**	**4.2**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**---**
MW6	07/31/00	NLPH	39.72	301.33	<50	<50	<2/<5	<0.5	<0.5	<0.5	<0.5	ND**
(341.05)	**10/10/00**	**NLPH**	**40.12**	**300.93**	**<50**	c	c	c	c	c	c	c
MW7	07/31/00	NLPH	24.22	317.51	150	<50	13/8*	<0.5	<0.5	<0.5	<0.5	ND**
(341.73)	**10/10/00**	**NLPH**	**24.09**	**317.64**	**1,500**	c	c	c	c	c	c	c

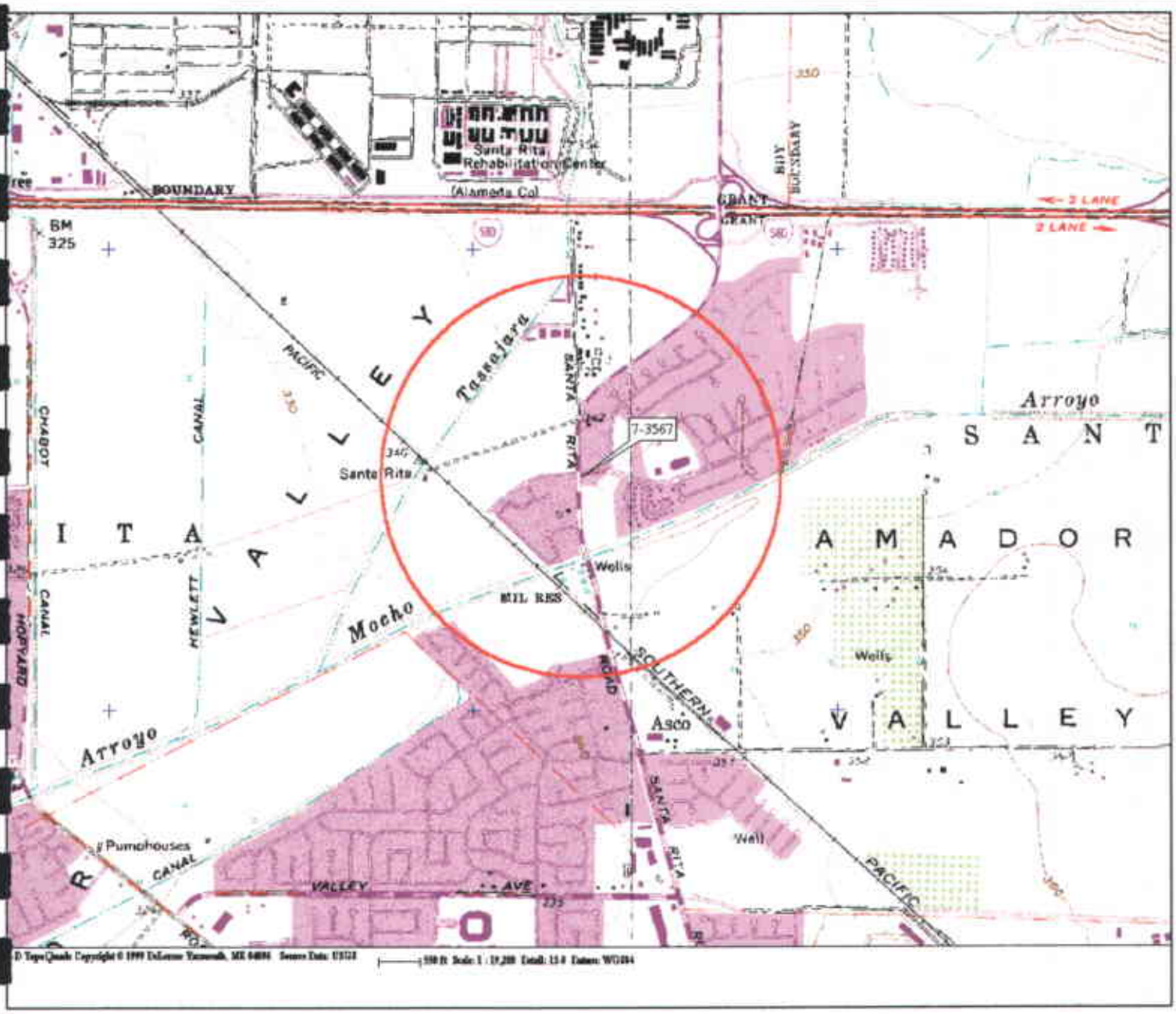
Notes:

TOC	=	Elevation of top of well casing, in feet above mean sea level.
SUBJ	=	Results of subjective evaluation, liquid-phase hydrocarbon thickness (HT) in feet.
DTW	=	Depth to water.
Elev.	=	Elevation of groundwater in feet above mean sea level.
NLPH	=	No liquid-phase hydrocarbons present in well.
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using modified EPA Method 8015.
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using modified EPA Method 5030/8015 (modified).
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8021B.
MTBE	=	Methyl tertiary butyl ether analyzed using EPA Method 8021B.
VOC's	=	Volatile organic compounds analyzed using EPA Method 8260B.
ug/L	=	Micrograms per liter.
*	=	MTBE confirmed using EPA Method 8260.
a	=	No result because of sample loss during laboratory fire.
b	=	Well contained an insufficient amount of water to collect a sample.
c	=	Samples were damaged during transportation to laboratory.
<	=	Not detected at or above the stated laboratory method detection limit.
ND**	=	Not detected at or above the stated laboratory method detection limit for the following constituents: 1,2-Dibromoethane, 1,2-Dichloroethane, 2-Nitropropane, Diisopropyl ether, tertiary butyl alcohol, tertiary amyl methyl ether, tertiary butyl ethyl ether.
---	=	Not Analyzed/Not Applicable.

TABLE 2
WELL INFORMATION
Former Exxon Service Station 7-3567
3192 Santa Rita Road
Pleasanton, California

Well	Installation Date	Top of Casing Elevation	Screened Interval	First-Encountered Groundwater	DTW Range	Average DTW	Elevation Range	Average Elevation
		<		Feet				>
MW1	11/12/98	340.86	20-35	25.0	14-22	19.38	318-326	321.48
MW2	11/12/98	340.61	20-35	26.5	17-28	22.65	312-323	317.96
MW3	11/11/98	342.95	35-50	41.5	32-48	39.60	295-310	303.35
MW4	11/11/98	342.96	35-50	50.0	40-50	48.02	292-302	294.94
MW5	07/18/00	342.87	20-30	—	29-30	29.12	313-314	313.75
MW6	07/19/00	341.05	43-53	32.0	39-40	39.92	301.13	301.13
MW7	07/18/00	341.73	39-49	38.0	24-25	24.15	317-318	317.57

Notes:
--- = Not Applicable
Values are based on data recorded from November 17, 1998, through July 31, 2000.



FN 2431Topo

EXPLANATION

1/2–mile radius circle

N

APPROXIMATE SCALE

0 .5 1 mile

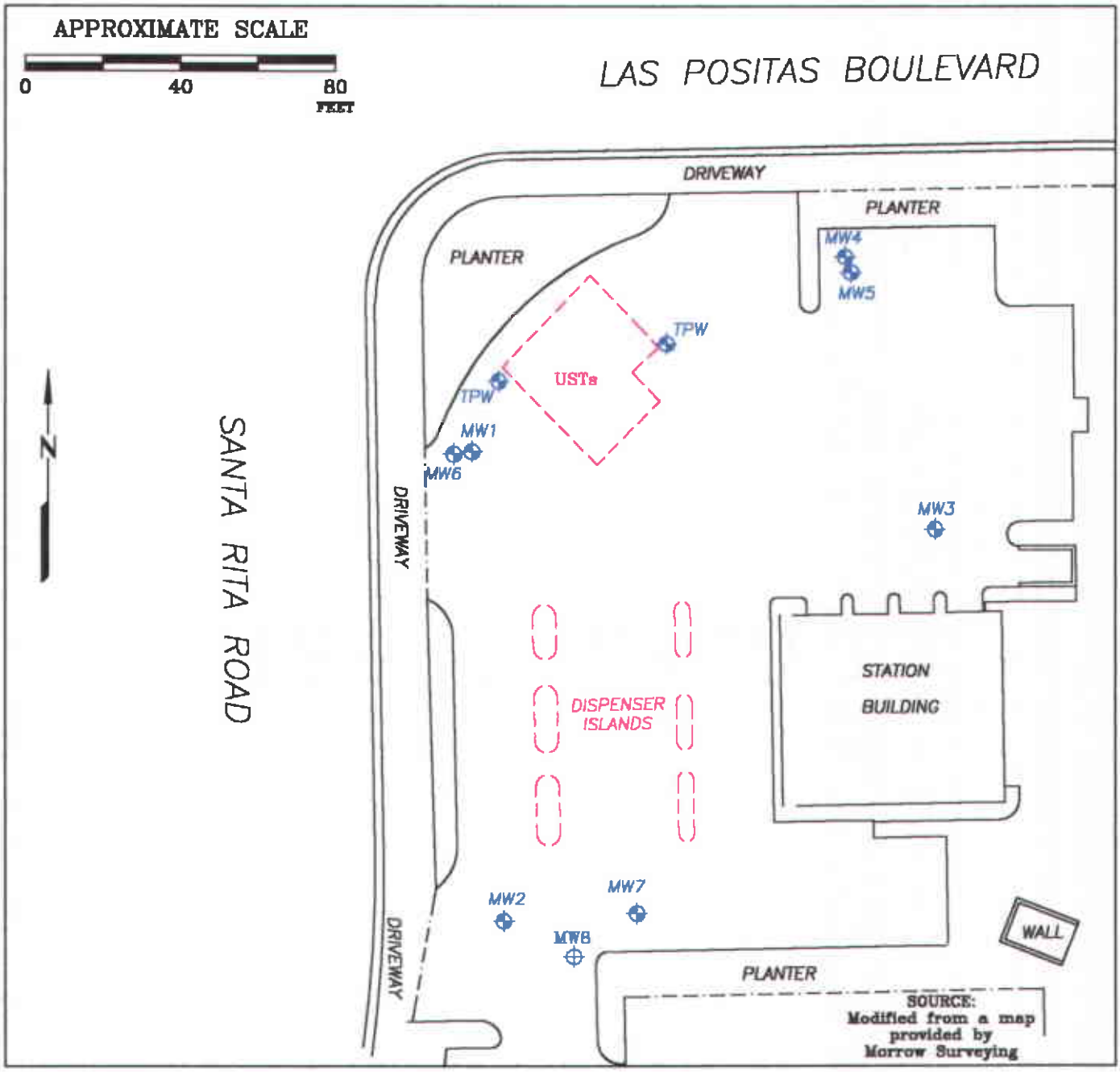
SOURCE:
Modified from a map
provided by
DeLorme 3–D TopoQuads

ENVIRONMENTAL RESOLUTIONS, INC.

SITE VICINITY MAP

FORMER EXXON SERVICE STATION 7–3567
3192 Santa Rita Road
Pleasanton, California

PROJECT NO.
2431
PLATE
1



FN 24310003

EXPLANATION

MW4 — Groundwater Monitoring Well

TPW — Tank Pit Well

MW8 — Proposed Groundwater Monitoring Well

ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

FORMER EXXON SERVICE STATION 7-3567
3192 Santa Rita Road
Pleasanton, California

PROJECT NO. 2431

PLATE 2

ATTACHMENT A

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY LETTER, DATED DECEMBER 7, 2000

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

243103X

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

December 7, 2000

STID 1932

Mr. Darin Rouse
ExxonMobil Refining and Supply
P.O. Box 4032
Concord, CA 94524-4032

RE: Exxon Service Station #7-3567, 3192 Santa Rita Road, Pleasanton

Dear Mr. Rouse:

This office has reviewed the October 9, 2000 Environmental Resolutions, Inc. (ERI) report entitled, *"Soil and Groundwater Investigation and Quarterly Groundwater Monitoring for Third Quarter 2000"*, documenting work that was recently completed at the subject site. This report documents the July 2000 installation of monitoring wells MW- 5, -6, and -7, and presents the results of the sampling and monitoring of both the new and existing monitoring wells at this site.

Well MW-5 was constructed at the north end of the site and screened to monitor a shallow, fine-grained interval at a depth anticipated to be consistent with the screened intervals of wells MW-1 and –2. Well MW-5 reportedly did not produce a sufficient quantity of water to sample during the July event. Wells MW-6 and -7 were intended to penetrate into and monitor a deeper gravelly sand zone identified during the previous investigation. Prior to the recent investigation, only wells MW-3 and -4 appeared to be screened in this deeper zone.

A review of well logs and cross-sections provided in the recent ERI report reveals that MW-7 was not completed in the targeted gravelly sand layer, as it does not appear to penetrate into that zone. MW-7 terminates in a silt layer that may overlie the gravelly sand, and is screened across a water-bearing lens of clayey sand/sandy clay that, based on reported stabilized water elevations, may be hydraulically connected to the shallower zone monitored by neighboring well MW-2.

After consultation with Matt Katen of the Zone 7 Water Agency, we have concluded that further work is necessary to provide a complete evaluation of site stratigraphy at the southern end of the site, and a determination of potential groundwater impacts that may be present there. The primary purpose of this work, therefore, is to identify the presence of the gravelly sand layer (or stratigraphic equivalent) and to sample groundwater from that zone.

Please submit a workplan for the installation of a single, continuously-cored sampling point in a location adjacent to well MW-7. The scope of this task may be satisfied with either a Geoprobe® -type, push-tool investigation with a grab groundwater sample, or the installation of a permanent well. Should ExxonMobil choose the push-tool option, a permanent well may be required should impacts be discovered.

The requested workplan is due within 45 days.

Please call me at (510) 567-6783 should you have any questions.

Sincerely,

Scott O. Seery, CHMM
Hazardous Materials Specialist

cc: Tom Peacock, ACDEH
Steve Cusenza, Pleasanton Public Works Department
Chuck Headlee, RWQCB
Matt Katen, Zone 7
Danielle Stefani, Livermore-Pleasanton Fire Department
Jim Chappell, Environmental Resolutions, Inc.
73 Digital Drive, Ste. 100, Novato, CA 94949-5791

ATTACHMENT B

WELL CONSTRUCTION LOGS

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2431 Boring: ~~B5~~/MW1 Plate: APPENDIX

Site: Exxon Station 7-3567 Date: 11/12/98

Drill Contractor: Woodward

Sample Method: Split Spoon Geologist: STEVE M. ZIGAN

Drill Rig: B-57 Bore Hole Diameter: 8" Signature: Steve M Zigan

Location: Western corner of underground tank field Registration: R.G. 4333

Logged by: Dave Arndal

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" concrete	
					CL	Clay with some silt, black, slightly damp, medium plasticity	
5							
10	17	0					
15	22	0				trace of organic material	
20	27	0					
25	29	0				trace fine gravel, grayish-brown, wet, poor plasticity	
						damp, medium plasticity, no gravel	
30	22	0				trace fine gravel, dark gray, poor plasticity	
35	44	0					
40						Total Depth = 36 1/2 feet Groundwater encountered at 25 feet	

Casing Diameter: 2", Slot Size: 0.020", Sand Size: #3, Grout Portland Type 1/II

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2431 Boring: B4/MW2 Plate: APPENDIX
Site: Exxon Station 7-3567 Date: 11/12/98
Drill Contractor: Woodward
Sample Method: Split Spoon Geologist: STEVE M. ZIGAN
Drill Rig: B-57 Bore Hole Diameter: 8" Signature:
Location: Southwestern corner of dispenser island canopy Registration: R.G. 4333
Logged by: Dave Arndal

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						FILL	
5	7	0					
					CL	Clay with trace silt, very dark gray, moist, medium plasticity, areas of mottled oxidation with organics, poor plasticity	
10	16	0					
15	23	0					
20	23	0				caliche nodules	
25		0					
		▼				damp, medium plasticity	
30		0					
35	46	0				grayish-brown	
						light olive-brown	
40						Total Depth = 41 1/2 feet Groundwater encountered at 26 1/2 feet	

Casing Diameter: 2" , Slot Size: 0.020" , Sand Size: #3 , Grout: Portland Type I/II

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2431 Boring: B1/MW3 Plate: 1 OF 2
Site: Exxon Station 7-3567 Date: 11/11/98
Drill Contractor: Woodward
Sample Method: Split Spoon Geologist: STEVE M. ZIGAN
Drill Rig: B-57 Bore Hole Diameter: 8" Signature: Steve M. Zigan
Location: North of eastern half of station building Registration: R.G. 4333
Logged by: Dave Arndal

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" concrete	
					CL	Clay with some silt, dark olive-brown, slightly damp, low plasticity	
5	34	0					
10	15	0				olive-gray, high plasticity	
15	31	0				very dark grayish brown, medium plasticity	
20	28	0				slightly mottled, very dark grayish-brown and light gray, low plasticity	
25	29	0				trace small organics (roots)	
30	51	0				no organics	
35	36	0				olive-brown, caliche nodules up to 1/4", trace organics	
40							

(Continued downward on next page.)

Casing Diameter: 2", Slot Size: 0.020", Sand Size: #3, Grout: Portland Type I/II

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2431 Boring: B1/MW3 Plate: 2 OF 2
Site: Exxon Station 7-3567 Date: 11/11/98
Drill Contractor: Woodward
Sample Method: Split Spoon Geologist: STEVE M. ZIGAN
Drill Rig: B-57 Bore Hole Diameter: 8" Signature:
Location: North of eastern half of station building Registration: R.G. 4333
Logged by: Dave Arndal

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION (Continued downward from previous page.)	WELL DESIGN
40		0 ▼			CL	Clay with some silt, olive-brown, caliche nodules up to 1/4", trace organics	
					SC	Clayey sand, fine-grained, dark yellowish-brown, wet	
45	76	0					
					GP	Sandy gravel, gravel up to 3/4", fine-grained sand, dark yellowish-brown, wet	
50	76/8"						
						Total Depth = 51 1/2 feet Groundwater encountered at 41 1/2 feet	
55							
60							
65							
70							
75							
80							

Casing Diameter: 2", Slot Size: 0.020", Sand Size: #3, Grout: Portland Type I/II

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2431 Boring: B2/MW4 Plate: 1 OF 2
Site: Exxon Station 7-3567 Date: 11/11/98
Drill Contractor: Woodward
Sample Method: Split Spoon Geologist: STEVE M. ZIGAN
Drill Rig: B-57 Bore Hole Diameter: 8" Signature:
Location: Central northern property line Registration: R.G. 4338
Logged by: Jen Schulte

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	USCS	GEOLOGIC DESCRIPTION
				6" concrete
			CL	Clay with some silt, very dark gray, damp, medium plasticity
5	23	0		
			SC	Clayey sand, dark gray, damp, low plasticity
10	14	0		
15	8	0	CL	Clay with some silt, dark gray, moist, medium plasticity
20	24	0		caliche nodules, trace organics/woody fiber
25	16	0		gray with mottled oxidation
			SC	Clayey sand, gray, damp, low plasticity
			CL	Clay with trace silt, very dark gray, moist, medium plasticity
30	31	0		
35	25	0		dark grayish-brown, trace organics and mottled oxidation
				light olive-brown, caliche areas
40	42			(Continued downward on next page.)

WELL DESIGN

Casing Diameter: 2", Slot Size: 0.020", Sand Size: #3, Grout: Portland Type I/II

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2431 Boring: B2/MW4 Plate: 2 OF 2
Site: Exxon Station 7-3567 Date: 11/11/98
Drill Contractor: Woodward
Sample Method: Split Spoon Geologist: STEVE M. ZIGAN
Drill Rig: B-57 Bore Hole Diameter: 8" Signature:
Location: Central northern property line Registration: R.G. 4333
Logged by: Jen Schulte

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION (Continued downward from previous page.)	WELL DESIGN
40	42	0			CL	Clay with trace silt, light olive-brown, moist, medium plasticity	
					SC	Clayey sand, fine-grained, light olive-brown, moist	
45	28	0				with grayish-brown areas	
					SW	Gravelly sand, gravel up to 1", fine-grained, light olive-brown, wet	
50	74/10"	▼ 0					
						Total Depth = 51 1/2 feet Groundwater encountered at 50 feet	
55							
60							
65							
70							
75							
80							

Casing Diameter: 2", Slot Size: 0.020", Sand Size: #3, Grout: Portland Type I/II

Project No.: 2431 Boring: MW5 Plate: APPENDIX

Site: Former Exxon Service Station 7-3567 Date: 7/18/00

Drill Contractor: Woodward Drilling

Sample Method: Continuous Geologist: JOHN B. BOBBIT

Drill Rig: B57 Bore Hole Diameter: 8" Signature:

Location: 4 Feet South of MW4 Registration: R.G. 4313

85 Feet North of Station Building Logged by: Tom Culig

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" concrete	
						Clay, gray, wet, high plasticity	
5					CL		
						iron oxidation	
10						Silty sand, gray, damp	
					SM		
						wet	
						Silty clay, gray, medium plasticity, dry	
15							
						calcium carbonate nodules	
					CL		
20							
25					SC	Clayey sand with silt, light gray, high plasticity, damp, low density	
						Sandy clay, gray, low plasticity, high density	
					CL		
30							
						Total depth at 31 feet. No groundwater encountered.	
35							

Casing Diameter: 2" Slot Size: 0.020", Sand Size: #3, Grout: Portland Type I/II

2431MW05

Project No.: 2431 Boring: MW6 Plate: 1 OF 2

Site: Former Exxon Service Station 7-3567 Date: 7/19/00

Drill Contractor: Woodward Drilling

Sample Method: Continuous Geologist: JOHN B. BOBBITT

Drill Rig: B57 Bore Hole Diameter: 8" Signature:

Location: 4 Feet West of MW1 Registration: R.G. 4313

25 Feet East of Santa Rita Road Logged by: Tom Culig

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" concrete	
						Clayey sand, brown, wet	
5					SC		
					CL	Sandy clay, brown, moist, high plasticity	
10					SC	Clayey sand, brown, wet	
						Sandy clay	
						silty clay, dark gray, high plasticity	
15					CL		
						small nodules of calcium carbonate, medium plasticity, very dense	
20							
						Clayey silt, light gray, moist, high plasticity	
					ML		
25						Clay with trace of silt, dark gray, little mottled iron oxidation, moderate plasticity, high density	
						trace of small gravel	
30						no gravel, up to 1/4" nodules of calcium carbonate	
					CL		
						encountered water at 9:40am	
35						clay with trace amounts of silt, medium plasticity, very dense, no sign lithologic changes upon encountering water	
						clay, lighter gray color, iron oxidation, trace organics, calcium nodules up to 1/4"	
						silty clay, gray/light brown, large calcium nodules organics	
40						(Continued downward on next page)	

Casing Diameter: 2" Slot Size: 0.020", Sand Size: #3, Grout: Portland Type I/II

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2431 Boring: MW6 Plate: 2 OF 2
Site: Former Exxon Service Station 7-3567 Date: 7/19/00
Drill Contractor: Woodward Drilling
Sample Method: Continuous Geologist: JOHN B. BOBBITT
Drill Rig: B57 Bore Hole Diameter: 8" Signature: JBBobbitt
Location: 4 Feet West of MW1 Registration: R.G. 4313
25 Feet East of Santa Rita Road Logged by: Tom Culig

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						(Continued downward from previous page)	
					ML	clayey silt with very fine-grained sand, gray/ brown organics	
45					SM	Silty sand, brown, high plasticity	
					SP	Sand with trace pebbles, wet, very loose with some pebbles to 1/2" increasing pebble content, angular to sub-angular	
50					SM	Silty sand with 1/4" gravel	
					GW	Sandy gravel with 1/4"-2" pebbles	
55						Total depth at 54 feet. Groundwater encountered at 32 feet.	

Casing Diameter: 2" Slot Size: 0.020", Sand Size: #3, Grout Portland Type I/II

2431MW6A

Environmental Resolutions, Inc.

Project No.: 2431 Boring: MW7 Plate: 1 OF 2

Site: Former Exxon Service Station 7-3567 Date: 7/18/00

Drill Contractor: Woodward Drilling

Sample Method: Continuous

Geologist: JOHN B. BOBBITT

Drill Rig: B57

Bore Hole Diameter: 8"

Signature:

Location: 35 Feet East of MW2

18 Feet South of Dispenser Islands

Registration: R.G. 4313

Logged by: Tom Culig

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
0						6" concrete	
						Clay, brown, high plasticity	
5					CL		
						silty clay	
10						Silty sand, black/brown, wet	
					SM		
						brown color, high plasticity	
						Silty clay, dark brown, high plasticity	
15							
						clay with little silt, dark gray/black, moderate plasticity, massive layer, no bedding, very dense	
20							
						gray color, higher plasticity	
25					CL	clay with trace of silt and sand, gray/brown, wet, less dense as overlying bed	
						clay with very small traces of silt and iron oxide	
30							
35						small white nodules of calcium carbonate	
						larger nodules	
						clay with traces of silt, light brown	
	▼				SC	Clayey sandy, wet, very low density	
40							

(Continued downward on next page)

Casing Diameter: 2", Slot Size: 0.020", Sand Size: #3, Grout: Portland Type I/II

Project No.: 2431 Boring: MW7 Plate: 2 OF 2

Site: Former Exxon Service Station 7-3567 Date: 7/18/00

Drill Contractor: Woodward Drilling

Sample Method: Continuous Geologist: JOHN B. BOBBITT

Drill Rig: B57 Bore Hole Diameter: 8" Signature: JB Bobbitt

Location: 35 Feet East of MW2 Registration: R.G. 4313

18 Feet South of Dispenser Islands Logged by: Tom Culig

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION (Continued downward from previous page)	WELL DESIGN
					SC	higher density clayey sand, dark brown, wet, very loose	
45					CL	Clay with traces of sand, light brown	
					SC	Clayey sand, dark brown, wet, very loose	
					CL	Sandy clay, light brown, very dense, moderate plasticity	
					ML	Clayey silt with traces of sand, bands of iron oxide, high plasticity	
60						Total depth at 50 feet. Groundwater encountered at 38 feet.	

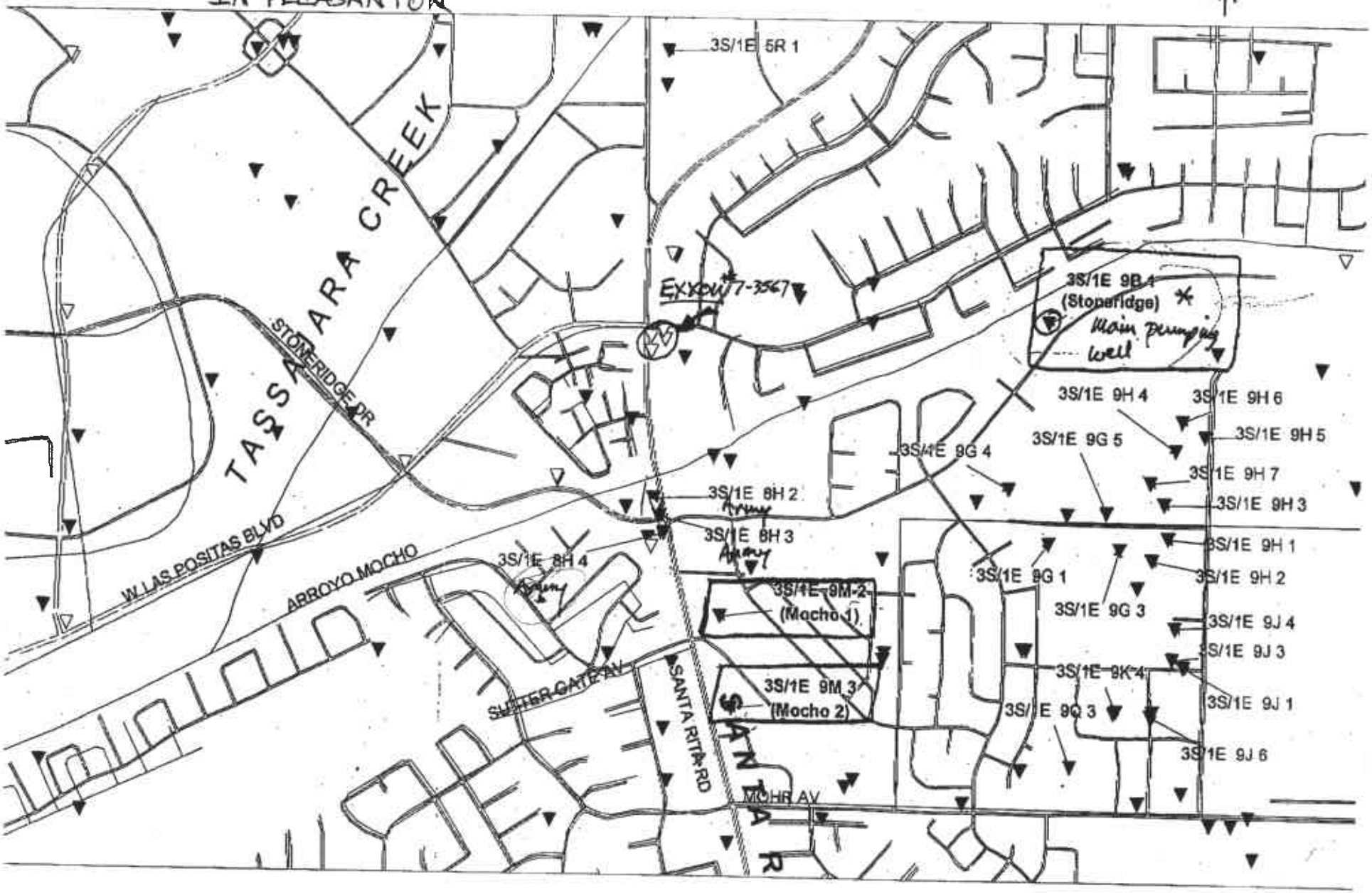
Casing Diameter: 2" Slot Size: 0.020", Sand Size: #3, Grout: Portland Type I/II

ATTACHMENT C

WATER SUPPLY WELL MAP

WATER SUPPLY WELLS NEAR STONERIDGE DR. & SANTA RITA RD. IN PLEASANTON

1" ≈ 1000'



Army wells (inactive now, but DSRSD to reactivate)
120-130' upper perf

Mocho = used during peak demand

* Stoneridge = primary pumping well

ATTACHMENT D

FIELD PROTOCOL

FIELD PROTOCOL

Site Safety Plan

Field work will be performed by ERI personnel in accordance with a Site Safety Plan developed for the site. This plan describes the basic safety requirements for the subsurface investigation and the drilling of soil borings at the work site. The Site Safety Plan is applicable to personnel and subcontractors of ERI. Personnel at the site are informed of the contents of the Site Safety Plan before work begins. A copy of the Site Safety Plan is kept at the work site and is available for reference by appropriate parties during the work. The ERI geologist will act as the Site Safety Officer.

Drilling of Soil Borings

Prior to the drilling of the soil boring, ERI will acquire necessary permits from the appropriate agency(ies). ERI will also contact Underground Service Alert (USA) and a private underground utility locator (per ExxonMobil protocol) before drilling to help locate public utility lines at the site. ERI will clear the proposed location to a depth of approximately 4 or 8 feet (depending on the location), before drilling to reduce the risk of damaging underground structures.

The soil boring will be drilled with a B57 (or similar) drill rig with hollow-stem auger. Auger flights and sampling equipment will be steam-cleaned before use to minimize the possibility of crosshole contamination. The rinsate will be containerized and stored on site. ERI will coordinate with ExxonMobil for appropriate disposal of the rinsate.

Drilling will be performed under the observation of a field geologist, and the earth materials in the boring will be identified using visual and manual methods, and classified as drilling progresses using the Unified Soil Classification System. Soil boring MW8 will be drilled to a maximum of 70 feet bgs.

During drilling, soil samples will be continuously collected. Samples will be collected with a California-modified, split-spoon sampler equipped with laboratory-cleaned brass sleeves. Samples will be collected by advancing the auger to a point just above the sampling depth and driving the sampler into the soil. The sampler will be driven 18 inches with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows required to drive the sampler each successive 6-inch interval will be counted and recorded to give an indication of soil consistency.

Soil samples will be monitored with a photoionization detector (PID), which measures hydrocarbon concentrations in the ambient air or headspace above the soil sample. Field instruments such as the PID are useful for indicating relative levels of hydrocarbon vapors, but do not detect concentrations of hydrocarbons with the same precision as laboratory analyses. Soil samples selected for possible chemical analysis will be sealed promptly with Teflon® tape and plastic caps. The samples will be labeled and placed in iced storage for transport to the laboratory. Chain of Custody Records will be initiated by the geologist in the field, updated throughout handling of the samples, and sent with the samples to the laboratory. Copies of these records will be in the final report. Cuttings generated during drilling will be placed on plastic sheeting and covered and left at the site. ERI will coordinate with ExxonMobil for the soil to be removed to an appropriate disposal facility.

Well Construction

The monitoring wells will be constructed in the borings using thread-jointed, 2-inch inner diameter, Schedule 40 polyvinyl chloride (PVC) casing. No chemical cements, glues, or solvents will be used in well construction. The screened portion of the wells will consist of factory-perforated casing with 0.020-inch wide slots. Unperforated casing will be installed from the top of each screen to the ground surface. The annular space in the wells will be packed with number 3 Monterey sand to approximately one foot above the slotted interval and a surged and refilled bentonite plug will be added above the sand pack to prevent cement from entering the well pack. The remaining annulus will be backfilled to grade with a slurry of cement and bentonite powder.

The wells will be protected with a locking cap and a traffic-rated, cast-steel utility box equipped with a steel skirt. The box has a watertight seal to protect against surface-water infiltration.

Well Development and Sampling

ERI will wait a minimum of 24 hours before development of the well to allow the grout to set. The wells will be developed with a surge block and pump. Well development will continue until the discharge water is clear of silt and sand. Clay-size sediments derived from the screened portion of the formation cannot be eliminated by well development. After the well has been allowed to stabilize, the wells will be checked for separate phase hydrocarbons using an interface probe. The thickness of any free phase hydrocarbons detected in the well will be recorded. If free phase hydrocarbons are encountered in a well, the well will not be purged, and the water will not be sampled for chemical analysis.

If no free phase hydrocarbons are detected after development, the groundwater monitoring wells will be purged of stagnant water and a sample will be collected for laboratory analysis. The wells will be purged of approximately 3 to 5 well volumes of water with a submersible pump, or until pH, conductivity, and temperature of the purged water have stabilized. Water purged from the wells will be transported by ERI for disposal at Romic, Inc., of East Palo Alto, California.

The well will be allowed to recover to at least 80 percent of static conditions, and a sample of the formation water will be collected with a disposable Teflon® bailer. The water will be transferred slowly from the bailer to laboratory-cleaned, 1 liter amber bottles and 40-milliliter glass vials for analyses by the laboratory. The glass vials will contain hydrochloric acid as a preservative. The sampler will check to see if headspace is present. If headspace is present, the sampler will collect more samples until none is present. Chain of Custody Record will be initiated in the field by the sampler, updated throughout handling of the samples, and sent along with the samples to the laboratory. A copy of the Chain of Custody Record will be included in our final report