

20-2524



March 25, 2002

Livermore-Pleasanton Fire Department
4550 East Avenue
Livermore, CA 94550

MAR 27 2002

RE: EQUILON ENTERPRISES LLC / Equiva Services LLC dba SHELL OIL PRODUCTS US

Dear Sir or Madam:

The Shell purchase of Texaco's interest in Equilon Enterprises LLC and Equiva Services LLC has been approved by government authorities and was completed in early February.

Please be advised that effective March 1, 2002, Equilon Enterprises LLC and Equiva Services LLC will begin doing business as (DBA) "Shell Oil Products US." Since Equilon Enterprises LLC will remain the owner and/or the responsible Party of remediation activities at **809 East Stanley Blvd, Livermore, California**, no changes are needed or requested for permits.

If you have any questions please contact Ms. Karen Petryna at 559.645.9306.

Yours truly,

T.L. RIPP FOR

Karen Petryna
Sr. Environmental Engineer



IT Corporation

1921 Ringwood Avenue
San Jose, CA 95131-1721
Tel. 408.453.7300
Fax. 408.437.9526

A Member of The IT Group

March 25, 2002

Ms. Julie Wyman
Livermore-Pleasanton Fire Department
4550 East Avenue
Livermore, CA 94550

Shell Oil Products US GRASP Site Report
809 East Stanley Blvd, Livermore, California

Dear Ms. Wyman:

Enclosed, please find the site report for the site investigation conducted at 809 East Stanley Blvd, Livermore, California, on September 21, 24, 25, 2001, in association with the Groundwater Assessment Program (GRASP) initiated by Shell Oil Products US (Shell). The purpose of the investigation was to obtain the site data necessary to develop a site conceptual model, including the depth to groundwater, direction of groundwater flow, potential release sources, and the distance to and direction of the nearest water supply well.

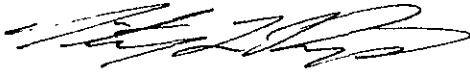
Groundwater was encountered at approximately 37-38 feet below ground surface at the site. The direction of groundwater flow based on the groundwater contour map generated from site data is to the northeast. Four monitoring wells (MW-1 through MW-4) were installed during the investigation, as indicated on the attached boring logs/well completion diagrams.

Groundwater grab samples were collected and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), and for fuel oxygenates (including methyl-tertiary-butyl ether [MTBE], ethyl tert-butyl ether [ETBE], diisopropyl ether [DIPE], tert butyl alcohol [TBA], tertiary amyl methyl ether [TAME]) by U.S. EPA Method 8260B. As indicated on the attached certified analytical reports, MTBE was detected in the groundwater sample from well MW-3. Soil samples were also collected for analysis from selected intervals. MTBE was not detected in any of the soil samples.

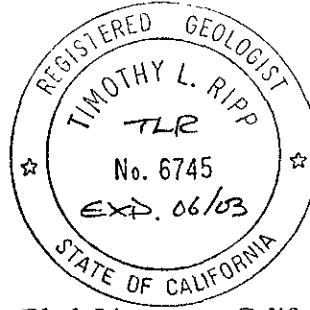
Based on information provided in the "Geotracker" database maintained by the California State Water Resources Control Board, the nearest active water supply well is located 1689 feet northeast of the site (California Water Service Co. Well 03-01 - 03S/02E-08P02 M), as shown on the attached map and printouts from the database.

Please call if you have any questions or comments concerning the enclosed report.

Sincerely,
IT Corporation



Timothy L. Ripp, R.G. 6745
Project Geologist



Enclosure – Site Report – 809 East Stanley Blvd, Livermore, California

Distribution

Ms. Isabel Mejia
Shell Oil Products US
2255 N. Ontario Street
Burbank, California 91504

Chuck Headlee
Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Mr. Scott Seery
Alameda County
Environmental Health Services
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

IT Corporation Project Files – Job No. 830053.00000013

Shell Oil Products US GRASP Site Report

LOCATION INFORMATION

SHELL PROJECT MANAGER: Karen Petryna
 INCIDENT NUMBER: 97306796
 SITE ADDRESS: 809 E. Stanley Blvd.
 CITY / ST / ZIP: Livermore, CA 94550

CONSULTANT INFORMATION

CONSULTANT COMPANY: IT Corporation
 CONSULTANT ADDRESS: 1921 Ringwood Avenue
 CITY / ST / ZIP: San Jose, CA 95131
 CONSULTANT PROJECT NUMBER: 830053.0000013
 TELEPHONE 408-350-5690 FAX 408-437-9526 E-MAIL: rbussard@theitgroup.com
 GEOLOGIST (Print): Regina Bussard (RMB)

SITE ASSESSMENT INFORMATION

Contractor/Pre-mob Check List

Discussed anticipated field conditions
 Performed utility clearance
 Discussed safety issues, protocols

Discussed typical/specal conditions
 Checked applicable regulations
 Prepared basemap

Drilling Contractor: Watermark Drilling for The Water Development Corporation

Geology/Groundwater/Hydrocarbon Information

Number of: Soil borings: ___ Wells: 4 Cores: ___ Stratigraphy: L Predominant geology: mixed layers (sands and clays)
 Hydrocarbons indicated in soil. No Yes Description: green-gray mottling, very faint odor (35' bgs); likely old contamination
 Groundwater depth: 37-38 ft. Groundwater flow direction: NE Is NAPL present? No Yes
 Comments: The groundwater depth specified above was the depth measured during well construction. Groundwater samples were collected during this period. Well screens were not submerged. Groundwater depth on December 6, 2001 was 24-25 feet bgs. Well screens were submerged ___

SITE REVIEW INFORMATION

GSRE/FSI Original Post Site Review Post Assessment
 GSRE Score: none
 Date: _____
 FSI Score _____ Engineer: _____

GRASP Eligibility Eligible Not eligible, Explain below:

Water Supply Well Information

Distance (ft): 413 ft./1,689 ft. Direction: NE
 Data Source/Method: Equiva DataBase/GeoTracker (PTOOL)
 Description: California Water Service Co Well 03-01 (03S/02E-08P02 M) residential

Preliminary Site Conceptual Model Established

Basis (check all that apply and describe each used)

Site Data tank closure rpt., subsurface investigation rpt.
 Nearby Site Data Beacon (3600 ft. east)
 Regional Data Zone 7 GW Level Contour Map (Fall 1996)

Is current and/or available data enough to initiate Tier II? Explain below Yes No

Fulfilled all aspects of the preliminary site conceptual model with data collected.

Anticipated geology. SM/SW(0'-10'); CL/GC/SC(10'-30'); CL(30'-35')
 Anticipated groundwater depth and gradient: 20'-30' bgs; SW-NW
 Comment: _____

Well Completion Information

Well ID:	MW-1	MW-2	MW-3	MW-4				
Well location (latitude)	37.67750860	37.67797377	37.67781854	37.67767371				
Well location (longitude)	-121.787043	-121.786815	-121.787264	-121.787004				
Total depth	47.5 ft.	47.5 ft.	47.5 ft.	47.5 ft.				
Depth to top of screen	32.5 ft.	32.5 ft.	32.5 ft.	32.5 ft.				
Depth to bottom of screen	47.5 ft.	47.5 ft.	47.5 ft.	47.5 ft.				
Survey Ref. (TOC/ GS)	TOC	TOC	TOC	TOC				
Survey Ref. Elevation	455.49 FT.	454.84 ft.	454.87 ft.	456.24 ft.				

Groundwater Analytical Information (ug/l)

Well / Bonng ID	MW-1	MW-2	MW-3	MW-4				
Date	11/25/01	11/25/01	11/25/01	11/25/01				
Method	EPA 8260B	EPA 8260B	EPA 8260B	EPA 8260B				
Benzene	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50				
Toluene	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50				
Ethylbenzene	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50				
Xylene	ND < 0.50	ND < 0.50	ND < 0.50	ND < 0.50				
MTBE	ND < 0.50	ND < 0.50	3.6	ND < 0.50				
TAME	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0				
DIPE	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0				
ETBE	ND < 2.0	ND < 2.0	ND < 2.0	ND < 2.0				
TBA	ND < 50	ND < 50	ND < 50	ND < 50				
Other:								

Comments

See attached GeoTracker sheets for more water supply well information.

Base map attached?
 Field notes attached?
 Electronic file submitted?

809 E. Stanley Report, 3/21/02

Certification/Disclaimer

List of Tables

- 1 Summary of Survey and Depth-to-Water Data

List of Figures

- 1 Site Location Map
- 2 Site Map
- 3 Groundwater Contour Elevation Map

List of Attachments

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- Attachment B - Excerpts from Adjacent Facility File Reviews
- Attachment C - Boring Logs/Well Completion Diagrams
- Attachment D - Well Development Information
- Attachment E - Analytical Data for Groundwater Samples
- Attachment F - Analytical Data for Soil Samples
- Attachment G - Well Survey Data
- Attachment H - Permits

CERTIFICATION/DISCLAIMER

CERTIFICATION/DISCLAIMER

This report is intended for the sole and exclusive use of Equiva Services LLC and not for the benefit of others and should not be used or relied upon by others. The findings set forth in this report are limited to those specifically expressed in the report. No other representations or warranties are given by IT Corporation (IT) and no additional conclusions should be reached or representations relied upon other than those expressly stated in the report and as limited by the IT Terms and Conditions.

The statement, opinions, and conclusions presented in this report are based solely on the services performed by IT and its subcontractors, as described in this report, and the scope of work established for the report by the Equiva Services LLC budgetary and time constraints and the terms and conditions of IT's agreement with Equiva Services LLC. In performing these services and preparing this report, IT relied upon work and information provided by others, including public agencies, whose information is not guaranteed by IT.

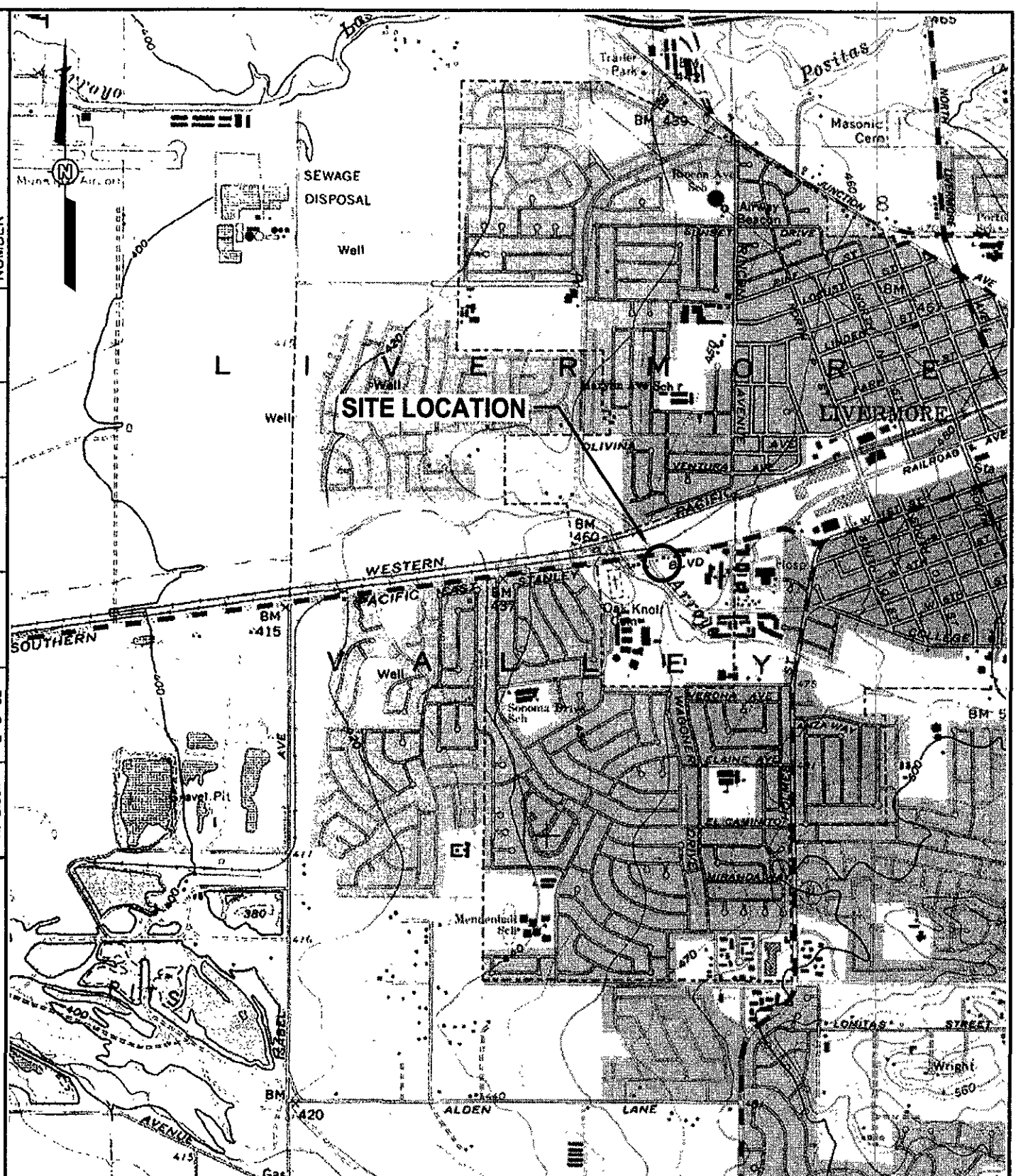
TABLE

SUMMARY OF SURVEY AND DEPTH-TO-WATER DATA
Shell-Branded Service Station
809 East Stanley Blvd
Livermore, California

WELL DESIGNATION	GAUGING DATE	LATITUDE	LONGITUDE	ELEVATION TOC (FT.)	DEPTH TO WATER (FT.)	GW ELEVATION (FT.)
MW-1	12/06/2001	37.67750860	-121.7870433	455.49	24.35	431.14
MW-2	12/06/2001	37.67797377	-121.7868151	454.84	24.00	430.84
MW-3	12/06/2001	37.67781854	-121.7872641	454.87	24.00	430.87
MW-4	12/06/2001	37.67767371	-121.7870039	456.24	25.43	430.81

FIGURES

PROJECT NUMBER 830053
 APPROVED BY
 CHECKED BY
 DRAWN BY K. Block 2-5-02



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SHELL OIL PRODUCTS US

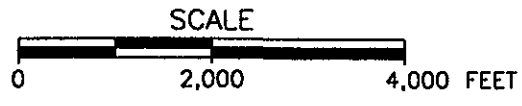
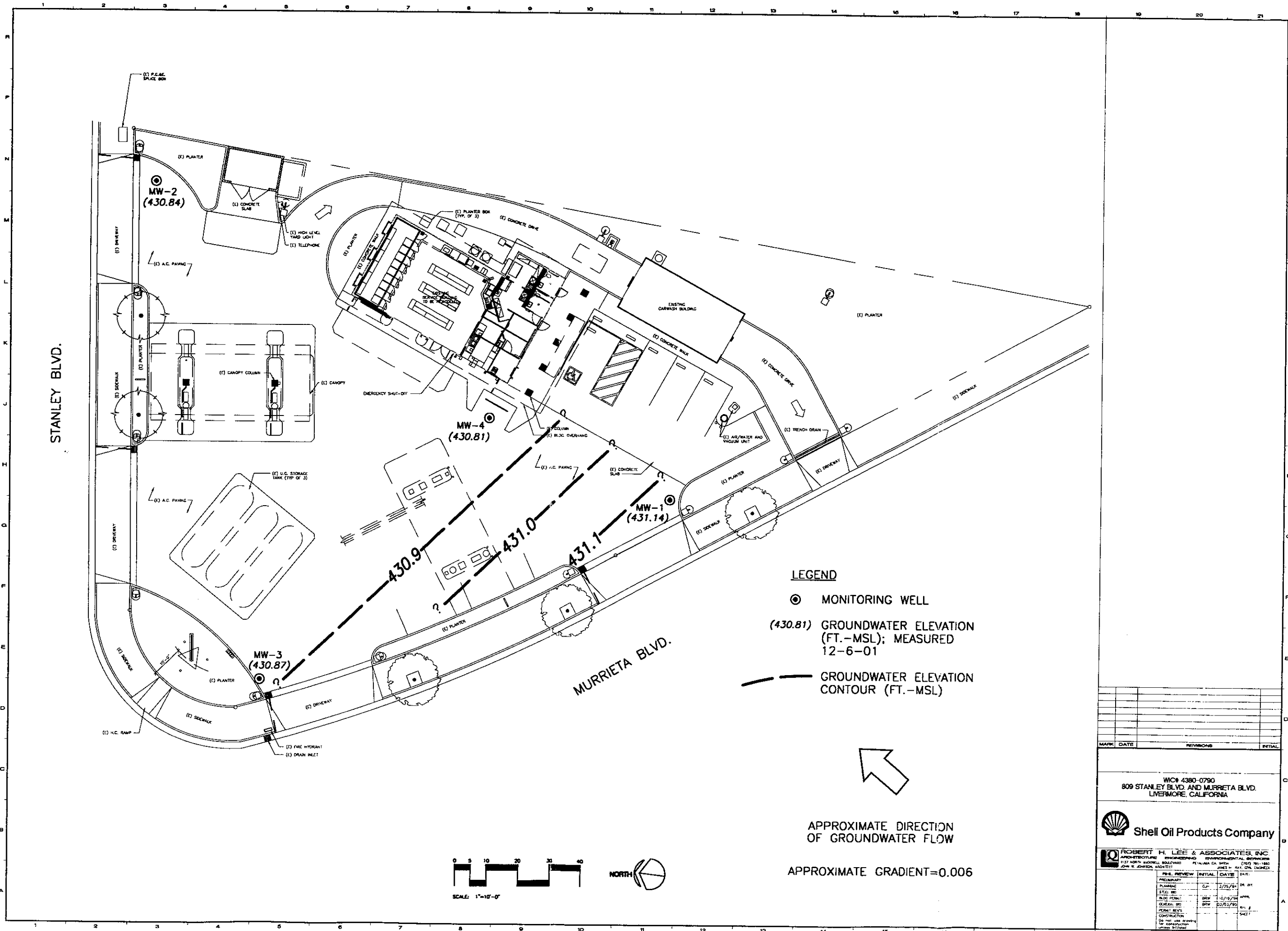


FIGURE 1
 SITE LOCATION MAP

809 EAST STANLEY BLVD.
 LIVERMORE, CALIFORNIA



LEGEND

- ⊙ MONITORING WELL
- (430.81) GROUNDWATER ELEVATION (FT.-MSL); MEASURED 12-6-01
- GROUNDWATER ELEVATION CONTOUR (FT.-MSL)



APPROXIMATE DIRECTION OF GROUNDWATER FLOW

APPROXIMATE GRADIENT=0.006



MARK	DATE	REVISIONS	INITIAL

WCH 4380-0790
809 STANLEY BLVD. AND MURRIETA BLVD.
LIVERMORE, CALIFORNIA



PREPARED BY	DATE	DR. BY
PLANNING	CP	3/28/94
DESIGN	BRW	10/19/94
GENERAL	BRW	02/03/95
CONSTRUCTION		

ATTACHMENT A
RECEPTOR SURVEY FINDINGS

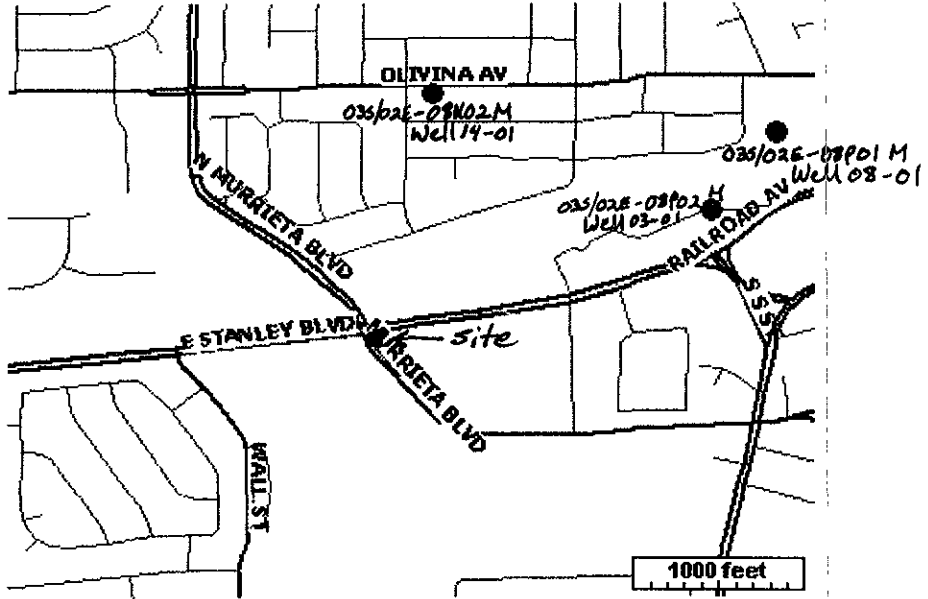
 

ZoomIn 2X ZoomOut 2X Pan Identify Public Wells

Layers LUFT Sites UST Sites Public Wells Highways Major Roads Minor Roads USGS Quads Surface Water Watersheds GW Basins Vulnerability

Show Open sites within Any of public wells.

Click on the map to perform the selected action.



Map Size: 1X



Street:

City: Zip:

[GeoTracker Home](#) | [Contact Site Administrator](#) | [Road Maps by ETAK](#)

Well and LUFT site positions are approximate. Locational accuracy will improve as state agencies and responsible parties obtain and report new information.

Regulatory History

SHELL (LIVERMORE)
809 STANLEY BLVD E
LIVERMORE , CA 94550
(Show this Site on Map)

Regional Board - Case #: 01-1382
SAN FRANCISCO BAY RWQCB (REGION 2) - (CTH)
Local Agency (lead agency) - Case #: 01-1382
ALAMEDA DEPT OF ENVIR. HEALTH - (UNK)

<u>Water System Name</u>	<u>Water System ID</u>	<u>Well Name</u>	<u>Common Well Name</u>	<u>Dist To</u>
CALIFORNIA WATER SERVICE	0110003	<u>03S/02E-08P02 M</u>	WELL 03-01	1689 Feet
CALIFORNIA WATER SERVICE	0110003	<u>03S/02E-08N02</u>	WELL 14-01	1694 Feet
CALIFORNIA WATER SERVICE	0110003	<u>03S/02E-08P01 M</u>	WELL 08-01	2318 Feet

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

Well Report	
CALIFORNIA WATER SERVICE CO (LIVERMORE)	
WELL 03-01	
State Well Number: 03S/02E-08P02 M	
(Show This Well on Map)	
Well Details Geographic Information DHS Water Quality Data PWS Detailed Information	
<u>Local Name</u>	
WELL 03-01 (03S/02E-08P02 M)	
<u>Source Origin</u>	<u>Status</u>
Groundwater	Unknown
<u>Treatment Method</u>	<u>Treatment Phase</u>
No Treatment/Non Applicable	Water
18 LUFT Site(s) Estimated to be Within 1/2 Mile Proximity of this Well	
<ul style="list-style-type: none"> • List These LUFT Sites 	

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

Geographic Information**CALIFORNIA WATER SERVICE CO (LIVERMORE)****WELL 03-01**

State Well Number: 03S/02E-08P02 M

[\(Show This Well on Map\)](#)[Well Details](#) | [Geographic Information](#) | [DHS Water Quality Data](#) | [PWS Detailed Information](#)**Nearest Physical Address:**

Unknown

Elevation of well:

Unknown

Geographic Information**Latitude:**

37.680290074

Longitude:

-121.7806048

Projection:

Geographic Projection

Datum:

North American Datum 1983

Estimated error in Location:

96 feet

Method:

PTOOL

Source of Data:

ETAK Geocoding Class 1 Block Match - Street Segment Exact Address Match

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

Public Water System Information**CALIFORNIA WATER SERVICE CO (LIVERMORE)****WELL 03-01**

State Well Number: 03S/02E-08P02 M

(Show This Well on Map)

[Well Details](#) | [Geographic Information](#) | [DHS Water Quality Data](#) | [PWS Detailed Information](#)**Public Water System**

CALIFORNIA WATER SERVICE CO

Water System Address:

195 S N ST

LIVERMORE, CA 94550-4350

PWS Class:

Community Water System (CWS)

Ownership/Regulation**Ownership:**

Private - Investor Owned, Mutual Water Company, Cooperative, Association.

Regulating Entity:

State

Service Area:

Residential Area

Date Entered System:

3/24/1992

System Status:

Active

Deactivation Date:**Last Revised:**

4/8/1998

Connection Information**Number of Service Connections:**

15792

Population Served:

53540

- [List all wells for this Public Water System](#)

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

Well Report	
CALIFORNIA WATER SERVICE CO (LIVERMORE)	
WELL 14-01	
State Well Number: 03S/02E-08N02 M - (Associated GAMA Information) (Show This Well on Map)	
Well Details Geographic Information DHS Water Quality Data PWS Detailed Information	
<u>Local Name</u> WELL 14-01 (03S/02E-08N02 M)	
<u>Source Origin</u> Groundwater	<u>Status</u> Unknown
<u>Treatment Method</u> No Treatment/Non Applicable	<u>Treatment Phase</u> Water
7 LUFT Site(s) Estimated to be Within 1/2 Mile Proximity of this Well	
<ul style="list-style-type: none"> • List These LUFT Sites 	

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

Geographic Information	
CALIFORNIA WATER SERVICE CO (LIVERMORE) WELL 14-01 State Well Number: 03S/02E-08N02 M - (Associated GAMA Information) (Show This Well on Map)	
Well Details Geographic Information DHS Water Quality Data PWS Detailed Information	
<u>Nearest Physical Address:</u> Unknown	<u>Elevation of well:</u> Unknown
<u>Geographic Information</u>	
<u>Latitude:</u> 37.682644911	<u>Longitude:</u> -121.78612
<u>Projection:</u> Geographic Projection	<u>Datum:</u> North American Datum 1983
<u>Estimated error in Location:</u> 96 feet	<u>Method:</u> PTOOL
<u>Source of Data:</u> ETAK Geocoding Class 1 Block Match - Street Segment Exact Address Match	

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

Public Water System Information

CALIFORNIA WATER SERVICE CO (LIVERMORE)

WELL 14-01

State Well Number: 03S/02E-08N02 M - (Associated GAMA Information)

(Show This Well on Map)

[Well Details](#) | [Geographic Information](#) | [DHS Water Quality Data](#) | [PWS Detailed Information](#)

Public Water System

CALIFORNIA WATER SERVICE CO

Water System Address:

195 S N ST
LIVERMORE, CA 94550-4350

PWS Class:

Community Water System (CWS)

Ownership/Regulation

Ownership:

Private - Investor Owned, Mutual Water Company, Cooperative, Association.

Regulating Entity:

State

Service Area:

Residential Area

Date Entered System:

3/24/1992

System Status:

Active

Deactivation Date:

Last Revised:

4//8//1998

Connection Information

Number of Service Connections:

15792

Population Served:

53540

- [List all wells for this Public Water System](#)

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

Well Report	
CALIFORNIA WATER SERVICE CO (LIVERMORE) WELL 08-01 State Well Number: 03S/02E-08P01 M - (Associated GAMA Information) (Show This Well on Map)	
Well Details Geographic Information DHS Water Quality Data PWS Detailed Information	
Local Name WELL 08-01 (03S/02E-08P01 M)	
Source Origin Groundwater	Status Unknown
Treatment Method No Treatment/Non Applicable	Treatment Phase Water
20 LUFT Site(s) Estimated to be Within 1/2 Mile Proximity of this Well	
• List These LUFT Sites	

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

Geographic Information	
CALIFORNIA WATER SERVICE CO (LIVERMORE)	
WELL 08-01	
State Well Number: 03S/02E-08P01 M - (Associated GAMA Information) (Show This Well on Map)	
Well Details Geographic Information DHS Water Quality Data PWS Detailed Information	
Nearest Physical Address: Unknown	Elevation of well: Unknown
Geographic Information	
Latitude: 37.681849848	Longitude: -121.7792948
Projection: Geographic Projection	Datum: North American Datum 1983
Estimated error in Location: 96 feet	Method: PTOOL
Source of Data: ETAK Geocoding Class 1 Block Match - Street Segment Exact Address Match	

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

Public Water System Information**CALIFORNIA WATER SERVICE CO (LIVERMORE)****WELL 08-01**

State Well Number: 03S/02E-08P01 M - (Associated GAMA Information)

(Show This Well on Map)

[Well Details](#) | [Geographic Information](#) | [DHS Water Quality Data](#) | [PWS Detailed Information](#)**Public Water System**

CALIFORNIA WATER SERVICE CO

Water System Address:195 S N ST
LIVERMORE, CA 94550-4350**PWS Class:**

Community Water System (CWS)

Ownership/Regulation**Ownership:**

Private - Investor Owned, Mutual Water Company, Cooperative, Association.

Regulating Entity:

State

Service Area:

Residential Area

Date Entered System:

3/24/1992

System Status:

Active

Deactivation Date:**Last Revised:**

4/8/1998

Connection Information**Number of Service Connections:**

15792

Population Served:

53540

- [List all wells for this Public Water System](#)

[Geotracker Home](#) | [Site/Facility Finder](#) | [Case Finder](#) | [MTBE/Case Reports](#)

ATTACHMENT C
BORING LOGS/WELL COMPLETION DIAGRAMS

UNDERGROUND STORAGE TANKS

STANLEY BLVD.

PRODUCT DISPENSER ISLANDS

MURRIETA BLVD.

● MW-1



WELL NO. MW-1
PAGE 1 OF 3

PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD: HSA
 SAMPLING METHOD: CAL MOD
 CASING TYPE: SCH 40 PVC
 SLOT SIZE: 0.02"
 GRAVEL PACK: NO.3

CLIENT: EQUIVA
 DATE DRILLED: 9-21-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER: 8"
 HOLE DEPTH: 47.5'
 WELL DIAMETER: 2"
 WELL DEPTH: 47.5'
 CASING STICKUP: NA

LOCATION MAP

WELL COMPLETION	PRODUCT ODOR	MOISTURE CONTENT	PENETRATION (BLOWS/ 6')	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
	No	Dmp	0.0	2			SW	Asphalt GRAVELLY SAND: dark brown; 5-10% fines; 10% coarse gravel; 25-30% fine gravel; 25-30% medium to fine sand; 20-25% coarse sand; trace to 5% cobbles
	No	Mst	0.0	9			SW/SC	As above; fines increase with depth; loose to medium dense
	No	Mst	0.0	10				
	No	Mst	0.0	10				
	No	Mst	0.0	25				
	No	Mst	0.0	15				
	No	Mst	0.0	9				
	No	Mst/Wet	0.0	5				
				5				
				4				
				3				
	No	Dmp	0.0	10			SP	SAND: yellow-brown; 5-10% fines; 60% coarse sand; 25% fine gravel; 15% fine to medium sand; very loose
	No	Dmp	0.0	2				
	No	Dmp/Mst	0.0	3			CL	SILTY CLAY: medium brown; low plasticity; trace to 10% fine to medium sand; soft to firm
	No	Dmp/Mst	0.0	3				
	No	Dmp/Mst	0.0	5				
	No	Dmp/Mst	0.0	5				
	No	Dmp/Mst	0.0	3				
	No	Dmp/Mst	0.0	6				
	No	Dmp/Mst	0.0	8				
	No	Dmp/Mst	0.0	10				
	No	Dmp/Mst	0.0	3				
	No	Dmp/Mst	0.0	4				
	No	Dmp/Mst	0.0	7				
	No	Dmp/Mst	0.0	3				
	No	Dmp/Mst	0.0	4				
	No	Dmp/Mst	0.0	6				
	No	Dmp/Mst	0.0	2				
	No	Dmp/Mst	0.0	4				
	No	Dmp/Mst	0.0	7			CL	GRAVELLY SANDY CLAY: medium brown; low plasticity; 20% fine gravel; trace to 5% coarse gravel; 15% coarse sand; 5-10% fine to medium sand; firm to stiff
	No	Dmp/Mst	0.0	9				
	No	Dmp/Mst	0.0	7				
	No	Dmp/Mst	0.0	12				
	No	Dmp/Mst	0.0	14			CL	SANDY SILTY CLAY: medium brown to gray-brown; low plasticity; 15-20% fine sand; trace to 10% coarse sand to fine gravel; firm to stiff
	No	Mst	0.0	5				
	No	Mst	0.0	8				



PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD:
 SAMPLING METHOD:
 CASING TYPE:
 SLOT SIZE:
 GRAVEL PACK:

CLIENT: EQUIVA
 DATE DRILLED: 9-21-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER:
 HOLE DEPTH:
 WELL DIAMETER:
 WELL DEPTH:
 CASING STICKUP:

LOCATION MAP

See page 1

WELL COMPLETION	PRODUCT ODOR	MOISTURE CONTENT		PENETRATION (BLOWS/6")	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
Neat Cement Grout Bentonite Sand	No	Mst		8				CL	SILTY CLAY: medium to gray-brown; low plasticity; 15-20% fine sand; trace to 10% coarse sand to fine gravel; firm to stiff
	No	Mst		5					
	No	Mst	0.0	7					
	No	Mst		8					
	No	Mst	0.0	10	24				
	No	Mst	0.0	5					
	No	Mst		5					
	No	Mst	0.0	9	26				
	No	Mst	0.0	5					
	No	Mst		7					
	No	Mst	0.0	9					
	No	Mst		5					
	No	Mst	0.0	7	28				
	No	Mst		12					
	No	Mst	0.0	14					
	No	Mst		3	30				
	No	Mst	0.0	5					
	No	Mst		5					
	No	Mst	0.0	7					
	No	Mst		7	32				
	No	Mst	0.0	7					
	No	Mst	0.0	10					
	No	Mst		3					
	No	Mst	0.0	5	34				
	No	Mst	0.0	8					
	No	Mst		10					
	No	Mst	0.0	3	36				
	No	Mst	0.0	5					
No	Mst		9						
No	Mst	0.0	4	38					
No	Sat	0.0	17						
No	Sat	0.0	17						
No	Sat	0.0	18						
No	Mst		20	40					
No	Sat	0.0	15						
No	Sat		17						
No	Wet	0.0	21						
No	Sat		12	42					
No	Sat	0.0	15						
No	Wet		17						
No	Sat	0.0	12						
No	Wet		14	44					
		0.0	17						



PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD:
 SAMPLING METHOD:
 CASING TYPE:
 SLOT SIZE:
 GRAVEL PACK:

CLIENT: EQUIVA
 DATE DRILLED: 9-21-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER:
 HOLE DEPTH:
 WELL DIAMETER:
 WELL DEPTH:
 CASING STICKUP:

LOCATION MAP

See page 1

WELL COMPLETION		PRODUCT ODOR	MOISTURE CONTENT		PENETRATION (BLOWS/6")	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
Sand		No	Sat	0.0	17				SC	CLAYEY GRAVELLY SAND: medium yellow-brown; 25-40% fines; 20-25% fine gravel; 15-20% coarse sand; 25-30% medium to fine sand; trace to 10% coarse gravel; loose to medium dense
		No	Sat		24					
		No	Sat		7					
		No	Sat	0.0	12	46			SP	SAND (46.5'): dark brown; 5% fines; 75% fine to medium sand; 20% coarse sand; loose
		No	Sat		21					
		No	Sat		8				SW	SAND: grey-brown; 5% fines; 10% fine gravel; 40% coarse sand; 25% medium sand; 20% fine sand; loose
		No	Sat		10					
						48				BOTTOM OF HOLE=47.5'

UNDERGROUND STORAGE TANKS

STANLEY BLVD.

MW-2

MURRIETA BLVD.

PRODUCT DISPENSER ISLANDS



WELL NO. MW-2
PAGE 1 OF 3

PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD: HSA
 SAMPLING METHOD: CAL MOD
 CASING TYPE: SCH 40 PVC
 SLOT SIZE: 0.02"
 GRAVEL PACK: NO.3

CLIENT: EQUIVA
 DATE DRILLED: 9-24-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER: 8"
 HOLE DEPTH: 47.5'
 WELL DIAMETER: 2"
 WELL DEPTH: 47.5'
 CASING STICKUP: NA

LOCATION MAP

WELL COMPLETION	PRODUCT ODOR	MOISTURE CONTENT	PENETRATION (BLOWS/6")	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
	No	Dmp	0.0	0			CL	Asphalt GRAVELLY SANDY CLAY: medium brown; low plasticity; 15% coarse sand; 10-15% fine gravel; trace to 10% coarse gravel
				2				
				4			SC	GRAVELLY CLAYEY SAND: dark brown; 15-20% fines; 5-10% coarse gravel; 25% fine gravel; 20% medium to fine sand; 30% coarse sand; very loose
	No	Dry		4				
	No	Dmp		4				
	No	Dmp		5				
				6				
				8				
				10			CL	CLAY: dark brown; low plasticity; 5-10% coarse sand; 10% medium sand; firm
	No	Dmp	0.0	7				
	No	Dmp	0.0	5				
	No	Dmp	0.0	4				
				12			CL	SILTY SANDY CLAY: yellowish-brown; low plasticity; 10-15% medium sand; trace to 10% coarse sand; 15 to 20% fine sand; firm
				14				
	No	Dmp	0.0	6			SC	CLAYEY SAND: dark to medium brown; 25% fines; trace to 10% fine gravel; trace coarse gravel; 35% coarse sand; 25-30% medium sand; 5-10% fine sand; loose to medium dense
	No	Dmp	0.0	7				
	No	Dmp	0.0	15				
				18				
				20				
	No	Dmp/Mst	0.0	11				
	No	Dmp/Mst	0.0	16				
	No	Dmp/Mst	0.0	22				
				22				



PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD:
 SAMPLING METHOD:
 CASING TYPE:
 SLOT SIZE:
 GRAVEL PACK:

CLIENT: EQUIVA
 DATE DRILLED: 9-24-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER:
 HOLE DEPTH:
 WELL DIAMETER:
 WELL DEPTH:
 CASING STICKUP:

LOCATION MAP

See page 1

WELL COMPLETION	PRODUCT ODOR	MOISTURE CONTENT	PENETRATION (BLOWS/6')	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
	No	Mst/Wet	20	24			SC	CLAYEY SAND: dark to medium brown; 25% fines; trace to 10% fine gravel; trace coarse gravel; 35% coarse sand; 25-30% medium sand; 5-10% fine sand; loose to medium dense
	No	Mst/Wet	22					
	No	Mst	23				CL	
				26				
				28				
	No	Mst	3	30				As above
	No	Mst	4					
	No	Mst	5					
				32				
				34				
	No	Mst	3					As above with thin (<1/2") interbedded sand lenses
	No	Mst	3					
	No	Mst	5					
				36				
				38				
	No	Wet	3	40				As above with thin (<1/2") interbedded sand lenses
	No	Wet	4					
	No	Wet	6					
				42				
				44				
	No	Sat	3					CL SANDY CLAY: medium brown to orangish brown; low plasticity; 15-20% medium sand; 10-15% coarse sand; trace to 10% fine gravel; firm
	No	Sat	7					



PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD:
 SAMPLING METHOD:
 CASING TYPE:
 SLOT SIZE:
 GRAVEL PACK:

CLIENT: EQUIVA
 DATE DRILLED: 9-24-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER:
 HOLE DEPTH:
 WELL DIAMETER:
 WELL DEPTH:
 CASING STICKUP:

LOCATION MAP

See page 1

WELL COMPLETION		PRODUCT ODOR	MOISTURE CONTENT	PENETRATION (BLOWS/ 6')	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
Sand		No	Sat	7					CL	CLAY: medium brown to orangish brown; low plasticity; 15-20% medium sand; 10-15% coarse sand; trace to 10% fine gravel; firm
		No	Sat	10	46					
					48					BOTTOM OF HOLE=47.5'

UNDERGROUND STORAGE TANKS

STANLEY BLVD.

MW-3

PRODUCT DISPENSER ISLANDS

MURRIETA BLVD.



WELL NO. MW-3
PAGE 1 OF 3

PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD: HSA
 SAMPLING METHOD: CAL MOD
 CASING TYPE: SCH 40 PVC
 SLOT SIZE: 0.02"
 GRAVEL PACK: NO.3

CLIENT: EQUIVA
 DATE DRILLED: 9-24-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER: 8"
 HOLE DEPTH: 47.5'
 WELL DIAMETER: 2"
 WELL DEPTH: 47.5'
 CASING STICKUP: NA

LOCATION MAP

WELL COMPLETION	PRODUCT ODOR	MOISTURE CONTENT	PENETRATION (BLOWS/6')	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
	No	Dmp/Mst	0.0				SC	Asphalt
	No	Dmp/Mst	0.0	2			SC	CLAYEY GRAVELLY SAND: dark brown; 35-40% fines; 30% fine to medium sand; 10-15% coarse sand; 15% fine gravel; trace to 10% coarse gravel
	No	Dmp	0.0	4			SW/SC	GRAVELLY CLAYEY SAND: dark brown to gray brown; 10-15% fines; 25% coarse sand; 30% medium to fine sand; 20% fine gravel; 5-10% coarse gravel; loose to medium dense
	No	Dmp	0.0	6				
	No	Dmp	0.0	12				
	No	Dmp	0.0	14				
	No	Dmp	0.0	7			CL	CLAY: dark brown; low plasticity; 10% medium sand; trace to 10% coarse sand; firm
	No	Dmp	0.0	8			CL	SILTY SANDY CLAY: yellowish-brown; low plasticity; 10-15% medium sand; trace to 10% coarse sand; 15 to 20% fine sand; firm
	No	Dmp	0.0	10				
	No	Dmp	0.0	4				
	No	Dmp	0.0	6				
	No	Dmp	0.0	6				
	No	Dmp	0.0	14				
	No	Mst	0.0	5			SC	CLAYEY SAND: medium brown; 25-30% fines; 30% coarse sand; 25-30% fines; 30% coarse sand; 25-30% medium to fine sand; 5-10% fine gravel; trace to 10% coarse gravel; loose to medium dense
	No	Mst	0.0	11				
	No	Mst	0.0	14				
				18				
				20				
				22				



PROJECT NO: 830053
LOGGED BY: RMB
DRILLER: WDC
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: EQUIVA
DATE DRILLED: 9-24-01
LOCATION: 809 EAST STANLEY BOULEVARD
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:

LOCATION MAP

See page 1

WELL COMPLETION	PRODUCT ODOR	MOISTURE CONTENT	PENETRATION (BLOWS/6")	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
Neat Cement Grout	No	Mst/Wet	0.0	5			SC	CLAYEY SAND: medium brown; 25-30% fines; 30% coarse sand; 25-30% medium to fine sand; 5-10% fine gravel; trace to 10% coarse gravel; loose to medium dense
	No	Mst/Wet	0.0	11				
	No	Mst/Wet	0.0	12				
					26			
					28			
					30			
					32			
					34			
					36			
					38			
					40			
					42			
Bentonite	No	Mst	0.0	4			CL	SILTY SANDY CLAY: gray-brown; low plasticity; 15-20% fine sand; trace to 10% coarse sand; trace to 5% fine to coarse gravel; firm
	No	Mst	0.0	4				
	No	Mst	0.0	5				
					34			
					35			
					36			
Sand	No	Dmp	0.0	4			CL	SILTY CLAY: orangish-yellowish brown; low plasticity; trace to 10% medium to coarse sand; trace to 15% fine sand; greenish gray mottling; firm
	No	Dmp	0.0	5				
	No	Mst	0.0	5				
					34			
					35			
					36			
					38			
				40				
				42				
				44				
				44		SP	SAND: gray-brown; 5% fines; trace to 5% fine gravel; 30-35% medium sand; 25% fine sand; 35-40% coarse sand; well sorted; very loose	
				44		SC	CLAYEY GRAVELLY SAND (~44.3'): orange-brown; 30% fines; 5% coarse gravel; 10% fine gravel; 35-40% medium to fine sand; 15-20% coarse sand; loose	



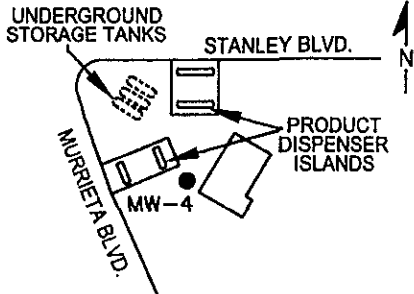
PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD:
 SAMPLING METHOD:
 CASING TYPE:
 SLOT SIZE:
 GRAVEL PACK:

CLIENT: EQUIVA
 DATE DRILLED: 9-24-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER:
 HOLE DEPTH:
 WELL DIAMETER:
 WELL DEPTH:
 CASING STICKUP:

LOCATION MAP

See page 1

WELL COMPLETION		PRODUCT ODOR	MOISTURE CONTENT		PENETRATION (BLOWS/6')	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
Sand		No	Sat	0.0	6	44			SC	CLAYEY GRAVELLY SAND: orange-brown; 30% fines; 5% coarse gravel; 10% fine gravel; 35-40% medium to fine sand; 15-20% coarse sand; loose
		No	Sat	0.0	13	46				
						48				BOTTOM OF HOLE=47.5'



WELL NO. MW-4
PAGE 1 OF 3

PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD: HSA
 SAMPLING METHOD: CAL MOD
 CASING TYPE: SCH 40 PVC
 SLOT SIZE: 0.02"
 GRAVEL PACK: NO.3

CLIENT: EQUIVA
 DATE DRILLED: 9-25-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER: 8"
 HOLE DEPTH: 47.5'
 WELL DIAMETER: 2"
 WELL DEPTH: 47.5'
 CASING STICKUP: NA

LOCATION MAP

WELL COMPLETION	PRODUCT ODOR	MOISTURE CONTENT		PENETRATION (BLOWS/6')	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
	No	Dry	0.0		0				Asphalt
					2			SC	CLAYEY GRAVELLY SAND: dark brown; 35-40% fines; 35% fine to medium sand; 10% coarse sand; 10-15% fine gravel; trace to 10% coarse gravel
					4			SW/SC	GRAVELLY SAND: dark brown; 5-10% fines; 30-35% medium to fine sand; 25% coarse sand; 25-30% fine gravel; 5% coarse gravel; trace cobbles; loose
	No	Dmp	0.0	7					
	No	Dmp	0.0	12	6				
	No	Dmp	0.0	13					
					8				
	No	Dmp	0.0	7					
	No	Dmp	0.0	5					
	No	Dmp	0.0	3	10			CL	CLAY: dark brown; low plasticity; 10% medium sand; trace to 10% coarse sand; firm
					12				
					14			CL	SILTY SANDY CLAY: medium brown to yellowish brown; low plasticity; 15-20% fine sand; 10-15% medium sand; trace to 10% coarse sand; firm
	No	Dmp	0.0	3					
	No	Dmp	0.0	4					
	No	Dmp	0.0	7					
					16				
					18			SC	CLAYEY SAND: dark to medium brown; 25-30% fines; 30-35% fine to medium sand; 25-30% coarse sand; 5-10% fine gravel; trace to 5% coarse gravel; loose to medium dense
	No	Dmp/Mst	0.0	12					
	No	Dmp/Mst	0.0	21					
	No	Dmp/Mst	0.0	26	20				
					22				



PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD:
 SAMPLING METHOD:
 CASING TYPE:
 SLOT SIZE:
 GRAVEL PACK:

CLIENT: EQUIVA
 DATE DRILLED: 9-25-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER:
 HOLE DEPTH:
 WELL DIAMETER:
 WELL DEPTH:
 CASING STICKUP:

LOCATION MAP

See page 1

WELL COMPLETION	PRODUCT ODOR	MOISTURE CONTENT		PENETRATION (BLOWS/6")	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
Neat Cement Grout	No	Mst	0.0	10	24			SC	CLAYEY SAND: dark to medium brown; 25-30% fines; 30-35% fine to medium sand; 25-30% coarse sand; 5-10% fine gravel; trace to 5% coarse gravel; loose to medium dense
	No	Mst	0.0	16					
	No	Mst	0.0	18					
					26				
					28				
					30				
					32				
					34				
					36				
					38				
					40				
					42				
					44				
	Bentonite	No	Mst	0.0	3	30			
No		Mst	0.0	3					
No		Mst	0.0	4					
Sand	V.Slt	Dmp	0.0	3	34			CL	As above: green-gray mottling; possibly old contamination
	V.Slt	Dmp/Mst	0.0	7					
	No	Mst	0.0	7					
					36				
					38				
					40				
				42			SC	CLAYEY GRAVELLY SAND: orange-brown; 30% fines; 5% coarse gravel; 10% fine gravel; 30-35% medium to fine sand; 20-25% coarse sand; loose to medium dense	
				44					
	No	Mst	0.0	3					As above
	No	Mst/Wet	0.0	4					
	No	Wet	0.0	5					
					40				
					42				
					44				



PROJECT NO: 830053
 LOGGED BY: RMB
 DRILLER: WDC
 DRILLING METHOD:
 SAMPLING METHOD:
 CASING TYPE:
 SLOT SIZE:
 GRAVEL PACK:

CLIENT: EQUIVA
 DATE DRILLED: 9-25-01
 LOCATION: 809 EAST STANLEY BOULEVARD
 HOLE DIAMETER:
 HOLE DEPTH:
 WELL DIAMETER:
 WELL DEPTH:
 CASING STICKUP:

LOCATION MAP See page 1

WELL COMPLETION		PRODUCT ODOR	MOISTURE CONTENT		PENETRATION (BLOWS/6")	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
Sand		No	Sat	0.0	14					SC	CLAYEY GRAVELLY SAND: orange-brown; 30% fines; 5% coarse gravel; 10% fine gravel; 30-35% medium to fine sand; 20-25% coarse sand; loose to medium dense
		No	Sat	0.0	19						
						46					
						48					BOTTOM OF HOLE=47.5'

ATTACHMENT D
WELL DEVELOPMENT INFORMATION



WELL DEVELOPMENT DATA SHEET

Project#: 830053

Well #: MW-4

Development Method Used: 2"

Site Address: 809

DTW (feet): 2435 (TOC) 2470 (TOB)

SURGE Block

E. STANLEY

DTL (feet): (TOC) (TOB)

DATE: 12-6-01

LIVERMORE

Purge Vol (10 Casings): 3587 (gal)

Time		Depth		Gallons		Measurements				Comments: (odor, clarity, grain size, etc.) activity
begin	end	to water	to bottom	pumped	total	pH	cond	temp	turbity	
14:13	14:23	2435	45.45	7	7.17	7.03	629	2008		Bow Heavy silt/blk No odor
14:34	2490			↓	↓	6.52	721	639	2000	Bow Heavy silt/blk No odor
14:46	2450			↓	↓	6.54	722	637	2000	Bow Heavy silt/blk No odor
14:57	2465			↓	↓	6.55	723	639	2000	Bow Heavy silt/blk No odor
15:13	2435	47.50		35	35	6.58	725	638	2000	Bow Heavy silt/light No odor

Completed by:  date: 12-6-01



WELL DEVELOPMENT DATA SHEET

Project#: 830053
 Site Address: 809
E. STANLEY
LIVERMORE

Well #: MW-3
 DTW (feet): 2400 (TOC) 2440 (TOB)
 DTL (feet): (TOC) (TOB)
 Purge Vol (10 Casings): 3323 (gal)

Development Method Used: 2"
SURGE Block
 DATE: 12/01

Time		Depth		Gallons		Measurements				Comments: (odor, clarity, grain size, etc.) activity
begin	end	to water	to bottom	pumped	total	pH	cond	temp	turbidity	
12:10	12:21	2400	43.55	65	669	6.10	845	65.7	2200	Brd Heavy silt Heavy Wood
	12:30	2520				5.90	812	65.5	2200	Brd Heavy silt Heavy Wood
	12:41	2435				5.89	810	65.3	2200	Brd Heavy silt Heavy Wood
	12:50	2460				5.88	809	64.9	2200	Brd Heavy silt Heavy Wood
	13:01	2490	↓ 4740	32.5	32.5	5.88	808	64.9	2200	Brd Heavy silt Heavy Wood

Completed by: [Signature] date: 12-001

ATTACHMENT E
ANALYTICAL DATA FOR GROUNDWATER SAMPLES



Report Number : 22580

Date : 10/10/2001

Mike Hurd
IT Corporation
1921 Ringwood Ave
San Jose, CA 95131

Subject : 4 Water Samples
Project Name : 809 E. Stanley Blvd. Livermore, CA
Project Number : 830053-00000013
P.O. Number : 97306796

Dear Mr. Hurd,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Joel Kiff". The signature is written in a cursive style with a large, looped initial "J".

Joel Kiff



Report Number : 22580

Date : 10/10/2001

Project Name : 809 E. Stanley Blvd. Livermore, CA

Project Number : 830053-00000013

Sample : MW-1

Matrix : Water

Lab Number : 22580-01

Sample Date :9/25/2001

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-Butanol	< 50	50	ug/L	EPA 8260B	10/8/2001
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	10/8/2001
4-Bromofluorobenzene (Surr)	97.0		% Recovery	EPA 8260B	10/8/2001

Approved By:  Joel Kiff



Report Number : 22580

Date : 10/10/2001

Project Name : 809 E. Stanley Blvd. Livermore, CA

Project Number : 830053-00000013

Sample : MW-2

Matrix : Water

Lab Number : 22580-02

Sample Date :9/25/2001

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-Butanol	< 50	50	ug/L	EPA 8260B	10/8/2001
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	10/8/2001
4-Bromofluorobenzene (Surr)	105		% Recovery	EPA 8260B	10/8/2001

Approved By:  Joel Kiff



Report Number : 225801

Date : 10/10/2001

Project Name : 809 E. Stanley Blvd. Livermore, CA

Project Number : 830053-00000013

Sample : MW-3

Matrix : Water

Lab Number : 22580-03

Sample Date :9/25/2001

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Methyl-t-butyl ether (MTBE)	3.6	0.50	ug/L	EPA 8260B	10/8/2001
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-Butanol	< 50	50	ug/L	EPA 8260B	10/8/2001
Toluene - d8 (Surr)	97.9		% Recovery	EPA 8260B	10/8/2001
4-Bromofluorobenzene (Surr)	98.3		% Recovery	EPA 8260B	10/8/2001

Approved By:  Joel Kiff



Report Number : 22580

Date : 10/10/2001

Project Name : 809 E. Stanley Blvd. Livermore, CA

Project Number : 830053-00000013

Sample : MW-4

Matrix : Water

Lab Number : 22580-04

Sample Date :9/25/2001

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-Butanol	< 50	50	ug/L	EPA 8260B	10/8/2001
Toluene - d8 (Surr)	99.9		% Recovery	EPA 8260B	10/8/2001
4-Bromofluorobenzene (Surr)	105		% Recovery	EPA 8260B	10/8/2001

Approved By:  Joel Kiff

Report Number : 22580

Date : 10/10/2001

Project Name : **809 E. Stanley Blvd.**

Project Number : **830053-00000013**

22580 Quality Control Data - Method Blank

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Toluene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	10/8/2001
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	10/8/2001
Tert-Butanol	< 50	50	ug/L	EPA 8260B	10/8/2001
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	10/8/2001
4-Bromofluorobenzene (Surr)	97.6		% Recovery	EPA 8260B	10/8/2001

Approved By:  Joel Kiff

Report Number : 22580

Date : 10/10/2001

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **809 E. Stanley Blvd.**

Project Number : **830053-00000013**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Spike Recovery Data														
Benzene	22580-01	<0.50	19.2	18.9	20.4	20.7	ug/L	EPA 8260B	10/9/2001	106	110	3.71	70-130	25
Toluene	22580-01	<0.50	19.2	18.9	20.3	20.6	ug/L	EPA 8260B	10/9/2001	105	109	3.22	70-130	25
Tert-Butanol	22580-01	<5.0	96.2	94.4	92.0	97.0	ug/L	EPA 8260B	10/9/2001	95.6	103	7.18	70-130	25
Methyl-t-Butyl Ether	22580-01	<0.50	19.2	18.9	19.2	19.6	ug/L	EPA 8260B	10/9/2001	199.7	104	4.15	70-130	25

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  _____
Joel Kiff

Report Number : 22580

Date : 10/10/2001

QC Report : Laboratory Control Sample (LCS)

Project Name : **809 E. Stanley Blvd.**

Project Number : **830053-00000013**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	20.0	ug/L	EPA 8260B	10/9/2001	110	70-130
Toluene	20.0	ug/L	EPA 8260B	10/9/2001	110	70-130
Tert-Butanol	100	ug/L	EPA 8260B	10/9/2001	108	70-130
Methyl-t-Butyl Ether	20.0	ug/L	EPA 8260B	10/9/2001	102	70-130

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  _____
Joel Kiff

720 Olive Drive, Suite D
Davis, CA 95616

(530) 297-4800 (530) 297-4803 fax

Equiva Project Manager to be Invoiced:

SCIENCE & ENGINEERING
 TECHNICAL SERVICES
 CRMT HOUSTON

22580
Karen Petryna

INCIDENT NUMBER (S&E ONLY)

97306796

SAP or CRMT NUMBER (ITS/CRMT)

DATE: 9-25-01

PAGE: 1 of 1

CONSULTANT COMPANY
IT Corporation
ADDRESS
1921 Ringwood Avenue
CITY
San Jose, CA 95131
TELEPHONE
408-453-7300
FAX
408-437-9526
E-MAIL
kbussard@theitgroup.com

SITE ADDRESS (Street and City):
809 E. Stanley Blvd. Livermore, CA
PROJECT CONTACT (Report to):
Mike Hurd / Regina Bussard
CONSULTANT PROJECT NO.:
830053-0000013
SAMPLER NAME(S) (Print):
Regina Bussard (RMB)

TURNAROUND TIME (BUSINESS DAYS):
 10 DAYS 5 DAYS 72 HOURS 48 HOURS 24 HOURS LESS THAN 24 HOURS

LA - RWQCB REPORT FORMAT UST AGENCY:

GC/MS MTBE CONFIRMATION HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: _____ TEMPERATURE ON RECEIPT C° _____

REQUESTED ANALYSIS

FIELD NOTES:

Container/Preservative
or PID Readings
or Laboratory Notes

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.	TPH - Purgeable (8260B)	BTEX (8260B)	MTBE (9ppb RL)	MTBE (0.5ppb RL)	5 Oxy's (8260B)	1,2-DCA / EDB (8260B)	Vol Halocarbons (8260B)	Ethanol / Methanol (8260B)	TPH - Diesel (8015)	Metals (Specify)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (70-16)	Vapor VOCs Full List (70-16)	Vapor TPH (ASTM 2416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (4B-)				
		DATE	TIME																						
	MW-1	9/25/01	17:00	W	3		✓			✓														01	
	MW-2		18:40				✓			✓															02
	MW-3		17:30				✓			✓															03
	MW-4		19:00				✓			✓															04

Reinquished by: (Signature) <i>Regina Bussard</i>	Received by: (Signature) <i>Storage</i>	Date 9-25-01	Time 21:45
Reinquished by: (Signature)	Received by: (Signature)	Date	Time
Reinquished by: (Signature)	Received by: (Signature) <i>David Brewer KIFF</i>	Date 092701	Time 1135

ATTACHMENT F
ANALYTICAL DATA FOR SOIL SAMPLES



Report Number : 22578

Date : 10/10/2001

Mike Hurd
IT Corporation
1921 Ringwood Ave
San Jose, CA 95131

Subject : 1 Soil Sample
Project Name : 809 E. Stanley Blvd. Livermore, CA
Project Number : 830053-00000013
P.O. Number : 97306796

Dear Mr. Hurd,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Joel Kiff". The signature is written in a cursive style with a large initial "J".

Joel Kiff



Report Number : 22578

Date : 10/10/2001

Project Name : 809 E. Stanley Blvd. Livermore, CA

Project Number : 830053-00000013

Sample : MW-4 (35.5'-36')

Matrix : Soil

Lab Number : 22578-01

Sample Date :9/25/2001

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	10/8/2001
Toluene	< 0.0050	0.0050	mg/Kg	EPA 8260B	10/8/2001
Ethylbenzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	10/8/2001
Total Xylenes	< 0.0050	0.0050	mg/Kg	EPA 8260B	10/8/2001
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	mg/Kg	EPA 8260B	10/8/2001
Diisopropyl ether (DIPE)	< 0.50	0.50	mg/Kg	EPA 8260B	10/8/2001
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	mg/Kg	EPA 8260B	10/8/2001
Tert-amyl methyl ether (TAME)	< 0.50	0.50	mg/Kg	EPA 8260B	10/8/2001
Tert-Butanol	< 0.50	0.50	mg/Kg	EPA 8260B	10/8/2001
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	10/8/2001
Toluene - d8 (Surr)	99.0		% Recovery	EPA 8260B	10/8/2001
4-Bromofluorobenzene (Surr)	98.9		% Recovery	EPA 8260B	10/8/2001

Approved By:  Joel Kiff

Report Number : 22578

Date : 10/10/2001

Project Name : **809 E. Stanley Blvd.**

Project Number : **830053-00000013**

22578 Quality Control Data - Method Blank

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	10/2/2001
Toluene	< 0.0050	0.0050	mg/Kg	EPA 8260B	10/2/2001
Ethylbenzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	10/2/2001
Total Xylenes	< 0.0050	0.0050	mg/Kg	EPA 8260B	10/2/2001
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	mg/Kg	EPA 8260B	10/2/2001
Diisopropyl ether (DIPE)	< 0.50	0.50	mg/Kg	EPA 8260B	10/2/2001
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	mg/Kg	EPA 8260B	10/2/2001
Tert-amyl methyl ether (TAME)	< 0.50	0.50	mg/Kg	EPA 8260B	10/2/2001
Tert-Butanol	< 0.50	0.50	mg/Kg	EPA 8260B	10/2/2001
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	10/2/2001
Toluene - d8 (Surr)	97.7		% Recovery	EPA 8260B	10/2/2001
4-Bromofluorobenzene (Surr)	94.1		% Recovery	EPA 8260B	10/2/2001

Approved By:  Joel Kiff

Report Number : 22578

Date : 10/10/2001

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : 809 E. Stanley Blvd.

Project Number : 830053-00000013

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Spike Recovery Data														
Benzene	22428-03	<0.0050	0.0391	0.0393	0.0376	0.0392	mg/Kg	EPA 8260B	10/2/2001	196.3	99.8	3.62	70-130	25
Toluene	22428-03	<0.0050	0.0391	0.0393	0.0372	0.0387	mg/Kg	EPA 8260B	10/2/2001	195.4	98.4	3.17	70-130	25
Tert-Butanol	22428-03	<0.0050	0.195	0.196	0.183	0.199	mg/Kg	EPA 8260B	10/2/2001	193.7	101	7.86	70-130	25
Methyl-t-Butyl Ether	22428-03	<0.0050	0.0391	0.0393	0.0379	0.0393	mg/Kg	EPA 8260B	10/2/2001	197.1	100	2.97	70-130	25

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  Joel Kiff

Report Number : 22578

Date : 10/10/2001

QC Report : Laboratory Control Sample (LCS)

Project Name : **809 E. Stanley Blvd.**

Project Number : **830053-00000013**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	0.0398	mg/Kg	EPA 8260B	10/2/2001	96.0	70-130
Toluene	0.0398	mg/Kg	EPA 8260B	10/2/2001	93.8	70-130
Tert-Butanol	0.199	mg/Kg	EPA 8260B	10/2/2001	90.4	70-130
Methyl-t-Butyl Ether	0.0398	mg/Kg	EPA 8260B	10/2/2001	96.4	70-130

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  Joel Kiff

**ATTACHMENT G
WELL SURVEY DATA**



Mid Coast Engineers

Civil Engineers and Land Surveyors

70 Penny Lane, Suite A - Watsonville, CA 95076
phone: (831) 724-2580
fax: (831) 724-8025
e-mail: lv@mce1.com

Richard A. Wadsworth
Civil Engineer

Stanley O. Nielsen
Land Surveyor

Lee D. Vaage
Land Surveyor

Jeff S. Nielsen
Land Surveyor

March 11, 2002

Regina Bussard
IT Corporation
1921 Ringwood Avenue
San Jose, CA 95131

Re: **Shell, 809 East Stanley Boulevard and Murrieta Boulevard, Livermore, California;**
SAP 135442, MCE Job No. 02069

Dear Ms. Bussard,

As you requested, on January 17, we surveyed four new monitoring wells located at the referenced site. Our findings are listed on the attached sheets, expressed in State Plane Coordinates and Latitude/Longitude.

A notch was cut in the north rim of the PVC casing (TOC) and a cross chiseled in the north rim of the box (TOB).

Measurements were obtained from conventional survey techniques in combination with GPS techniques (Code CGPS), using control points AA3815 (HPGN D CA 04 FK) and AA3816 (HPGN D CA 04 FL) as published by NGS/NOAA, and listed on their web site. Latitude and Longitude as shown were determined from the California Coordinate System, Zone 3, NAD 83 Datum. The accuracy range of the reported information is +/- 5mm. GPS equipment is the Trimble 5700 system (Code T57).

The benchmark is City of Livermore No. 2K-753, a monument pin on Stanley Boulevard at Murrieta Boulevard. Elevation = 454.485 feet, NGVD 29.

Please let me know if you have questions or need additional information.

Yours truly,


Lee D. Vaage



SHELL
809 Stanley Boulevard and Murrieta Boulevard
Livermore, California

IT GRASP SAP 135442

Project : 02069

User name MCE Date & Time 10:26:14 AM 3/11/02
Coordinate System US State Plane 1983 Zone California Zone 3 0403
Project Datum NAD 1983 (Conus)
Vertical Datum NGVD 29
Coordinate Units US survey feet
Distance Units US survey feet

Point listing

Name	Northing	Easting	Elevation	Description
3	2071833.46	6189144.78	454.87	MW3toc
4	2071833.63	6189144.85	455.31	MW3tob
5	2071888.18	6189275.48	454.84	MW2toc
6	2071888.56	6189275.59	455.25	MW2tob
7	2071779.69	6189219.36	456.24	MW4toc
8	2071779.99	6189219.38	456.62	MW4tob
9	2071719.73	6189207.14	455.49	MW1toc
10	2071720.04	6189207.23	455.85	MW1tob
21	2071926.11	6189106.66	454.49	BM

SHELL
809 Stanley Boulevard and Murrieta Boulevard
Livermore, California

IT GRASP SAP 135442

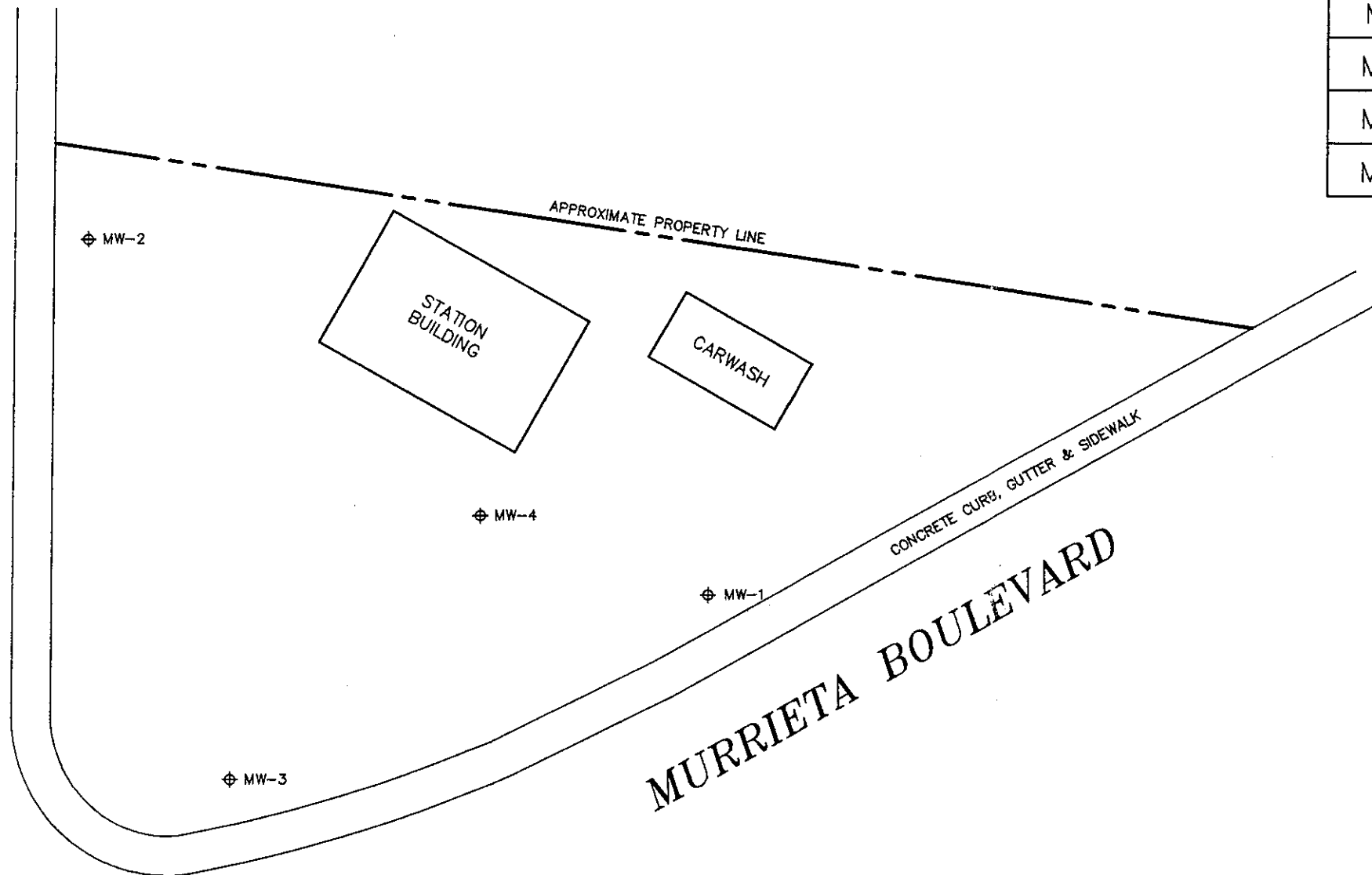
Project : 02069

User name MCE Date & Time 10:26:14 AM 3/11/02
Coordinate System US State Plane 1983 Zone California Zone 3 0403
Project Datum NAD 1983 (Conus)
Vertical Datum NGVD 29
Coordinate Units US survey feet
Distance Units US survey feet

Point listing

Name	Latitude	Longitude	Elevation	Description
3	37.677818543°N	121.787264120°W	454.87	MW3toc
4	37.677819016°N	121.787263883°W	455.31	MW3tob
5	37.677973771°N	121.786815148°W	454.84	MW2toc
6	37.677974797°N	121.786814792°W	455.25	MW2tob
7	37.677673714°N	121.787003900°W	456.24	MW4toc
8	37.677674530°N	121.787003819°W	456.62	MW4tob
9	37.677508603°N	121.787043266°W	455.49	MW1toc
10	37.677509449°N	121.787042960°W	455.85	MW1tob
21	37.678071551°N	121.787400235°W	454.49	BM

STANLEY BOULEVARD



MONITORING WELL	NORTHING AT NORTH RIM PVC (TOC)	EASTING AT NORTH RIM PVC (TOC)	ELEVATION AT NORTH RIM PVC (TOC)	ELEVATION AT NORTH RIM BOX (TOB)
MW-1	2071719.73	6189207.14	455.49	455.85
MW-2	2071888.18	6189275.48	454.84	455.25
MW-3	2071833.46	6189144.78	454.87	455.31
MW-4	2071779.69	6189219.36	456.24	456.62



NOTES:

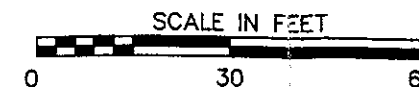
- COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.
- BENCHMARK IS CITY OF LIVERMORE 2K-753, A MONUMENT PIN ON STANLEY BOULEVARD AND MURRIETA BOULEVARD. ELEVATION = 454.485, NGVD '29.
- SURVEYED AT THE REQUEST OF THE IT GROUP IN JANUARY 2002, SAP 135442.

MONITORING WELL LOCATION MAP FOR SHELL STATION

809 East Stanley Boulevard and Murrieta Boulevard
Livermore, California



MID COAST ENGINEERS
CIVIL ENGINEERS AND LAND SURVEYORS
70 PENNY LANE SUITE A WATSONVILLE, CA 95076
(831) 724-2580



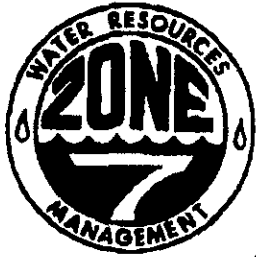
SCALE: 1"=30'

JOB NO. 02069

DATE: MAR. 11, 2002

SHEET: 1 OF 1

ATTACHMENT H
PERMITS



ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588-5127

VOICE (925) 484-2800 X235
FAX (925) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 809 E. Stanley Blvd.
at Murrieta Blvd.
Livermore, CA 94550-4008

PERMIT NUMBER 21160
WELL NUMBER 3S/2E 17D4 to 17D7
APN 99 0256 008 00

California Coordinates Source _____ ft. Accuracy _____ ft.
CCN _____ ft. CCE _____ ft.
APN 99-256-8

PERMIT CONDITIONS.

Circled Permit Requirements Apply

CLIENT
Name Equiva Services LLC
Address P.O. Box 7869 Phone 925-706-1559
City Burbank, CA Zip 91510-7869

- A. GENERAL**
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
 2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
 3. Permit is void if project not begun within 90 days of approval date.

APPLICANT
Name ET Corporation
Rayna Bissard Fax 408-437-9526
Address 1931 Ringwood Ave. Phone 408-453-7300
City San Jose, CA Zip 95131

- B. WATER SUPPLY WELLS**
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
 2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.
 3. An access port at least 0.5 inches in diameter is required on the wellhead for water level measurements.
 4. A sample port is required on the discharge pipe near the wellhead.

TYPE OF PROJECT

Well Construction	<input type="checkbox"/>	Geotechnical Investigation	<input type="checkbox"/>
Cathodic Protection	<input type="checkbox"/>	General	<input type="checkbox"/>
Water Supply	<input type="checkbox"/>	Contamination	<input checked="" type="checkbox"/>
Monitoring	<input checked="" type="checkbox"/>	Well Destruction	<input type="checkbox"/>

- C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS**
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
 2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.
- D. GEOTECHNICAL.** Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.
- E. CATHODIC.** Fill hole above anode zone with concrete placed by tremie.
- F. WELL DESTRUCTION.** See attached.
- G. SPECIAL CONDITIONS**

PROPOSED WATER SUPPLY WELL USE

New Domestic	<input type="checkbox"/>	Replacement Domestic	<input type="checkbox"/>
Municipal	<input type="checkbox"/>	Irrigation	<input type="checkbox"/>
Industrial	<input type="checkbox"/>	Other	<input type="checkbox"/>

DRILLING METHOD:

Mud Rotary	<input type="checkbox"/>	Air Rotary	<input type="checkbox"/>	Auger	<input checked="" type="checkbox"/>
Cable	<input type="checkbox"/>	Other	<input type="checkbox"/>		

DRILLER'S LICENSE NO. 283326

WELL PROJECTS

Drill Hole Diameter	<u>8</u> in.	Maximum	
Casing Diameter	<u>2</u> in.	Depth	<u>45-55</u> ft.
Surface Seal Depth	<u>0.5-1</u> ft.	Number	<u>4 (MW-1 - MW-4)</u>

GEOTECHNICAL PROJECTS

Number of Borings	<u>4</u>	Maximum	
Hole Diameter	<u>8</u> in.	Depth	<u>35-55</u> ft.

ESTIMATED STARTING DATE 9-10-01 ESTIMATED COMPLETION DATE _____

Approved Wyman Hong Date 8/28/01
Wyman Hong

8/6/99

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-88.

APPLICANT'S SIGNATURE Rayna Bissard Date 8/23/01

ATTACHMENT B
EXCERPTS FROM ADJACENT FACILITY FILE REVIEWS



WEISS ASSOCIATES

2938 McClure Street, Oakland, CA 94609

Consulting in Geology & Geohydrology

415-465-1100

October 6, 1989

Wendy Howell
Shell Oil Company
P.O. Box 4848
Anaheim, CA 92803

Re: Shell Service Station
WIC #204-438-008
809 East Stanley Boulevard
Livermore, California
WA Job #81-431-02

Dear Ms. Howell:

This letter is submitted to satisfy the tank closure requirements of the California Regional Water Quality Control Board - San Francisco Bay Region (WQCB), and California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 7, for the November 1986 removal of a former waste oil tank at the Shell service station at 809 East Stanley Boulevard in Livermore, California.

Summarized below are previous and current data, including the site background, a site history summary, discussion of site and regional hydrogeologic conditions, descriptions of current tank closure requirements, and recommendations for achieving closure of the former waste oil tank excavation.

BACKGROUND

The subject station is located about 500 ft north of Arroyo Mocho, a perennial stream, on the southeastern corner of the intersection of East Stanley Boulevard and Murrieta Boulevard in Livermore, California. The operating station currently retails gasoline from three 10,000 gallon fiberglass storage tanks located in the southern portion of the site adjacent to Murrieta Boulevard. Waste oil is stored in a 550 gallon fiberglass tank immediately east of the station building. A site map showing the location of the former waste oil tank is presented as Attachment A.

SITE HISTORY SUMMARY

Shell Oil Company records indicate that two 8,000 gallon and one 10,000 gallon steel gasoline tanks and a steel 550 gallon waste oil tank were removed from the site in November

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1986 by Petroleum Engineering, of Santa Rosa, California. The removed waste oil tank and two of the gasoline tanks were apparently installed in 1968 when the station opened. The third gasoline tank was apparently installed in 1970. The steel waste oil tank was replaced with a 550 gallon fiberglass tank. This report is submitted to document the closure of the waste oil tank.

Following the tank removal, Kaprealian Engineering Inc. of Martinez, California (KEI), observed and documented the tank condition and collected one soil sample from beneath the former tank location, and samples of the soil stockpiles excavated from the tank pit. The native soil sample from beneath the waste oil tank was submitted to Sequoia Analytical Laboratory of Redwood City, California (Sequoia). Sequoia analyzed the soil sample for:

- Total Hydrocarbons (THC) by EPA Method 8015, gas chromatography/flame ionization detection (GC/FID),
- Aromatic hydrocarbons, including, benzene, toluene, ethylbenzene and xylenes (BETX) by EPA Method 8020, gas chromatography with photoionization detection (GC/PID), and
- Halogenated hydrocarbons by EPA Methods 8010, gas chromatography/"Hall" detection (GC/Hall).

The stockpile soil samples were analyzed for total and organic lead by EPA method 7420, Furnace Atomic Adsorption, and for flashpoint to characterize the stockpile for disposal. The Sequoia analytic results are presented in Table 1. The Sequoia analytic reports are included in the KEI report (Attachment B).

According to Kaprealian Engineering tank removal records, no ground water was encountered in the excavation and the steel tank was rusted and pitted but had no obvious holes when it was removed.

A subsurface investigation was conducted at the site in September 1986 by EMCON Associates of San Jose, California, to characterize subsurface conditions prior to the tank removals. Four soil borings were drilled at the site, including one adjacent to the waste oil tank. Results of the EMCON investigation were presented to Shell on September 8, 1986. A copy of the EMCON report is presented as Attachment C. The boring logs for the EMCON investigation indicate that the site is underlain by silty sand fill to depths between about 5 and

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10 ft. Interbedded clay, clayey gravel and clayey sand underlies the fill to between 19 and 35.5 ft below ground surface. Ground water was encountered in the borings at depths between 19.5 and 25.5 ft. Soil samples collected from the boring adjacent to the waste oil tank between depths of 7.0 and 19.5 ft were analyzed for Total Petroleum Hydrocarbons (TPH) as oil. The analytic results for the samples were below the method detection limits, and no hydrocarbon odor was noted in the boring samples or drill cuttings.

SITE HYDROGEOLOGIC CONDITIONS

To estimate the stratigraphy, ground water flow direction and the approximate ground water depth in the site vicinity WA:

- Observed neighboring sites and reviewed local and state agency files to determine whether any water wells were nearby, and
- Researched local and regional hydrogeologic data.

Results of this work indicate:

- Other than the four soil borings drilled on the Shell service station property, no water wells or soil borings are on the adjacent properties.
- An Alameda County Flood Control and Water Conservation District (Zone 7) August 1989 listing of recorded wells in the Livermore ground water basin indicates that 28 wells are within a one-half mile radius of the site.
- Based on a Zone 7 Fall 1988 ground water contour map,¹ in the vicinity of the subject Shell station, unconfined ground water in the upper ground water-bearing zone flows northwestward and, in the fall of 1988, occurred at a depth of about 30 ft below ground surface. The Zone 7 map shows two distinct ground water-bearing zones beneath the site. In the fall of 1988, the potentiometric surface of

¹ Memorandum from D. Malonkowski to J. Killingstad, March 24, 1989, Fall 1988 Ground Water Level Contour Map, Alameda County Flood Control and Water Conservation District (Zone 7), 3 pp and 2 figures.

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According to a June 2, 1988 (revised May 1989), Northern California WQCB guidance document,⁵ if less than 100 ppm hydrocarbons are detected in the native soil, no hydrocarbons are detected at or below the seasonal high ground water level, low permeability soil underlies the tank, and no hydrocarbons are in ground water beneath the tank, the tank excavation can generally be closed with no further investigation.

SITE STATUS WITH RESPECT TO CLOSURE REQUIREMENTS

The results of the previous work at the site and WA's hydrogeologic research indicate:

- No fuel hydrocarbons or other volatile organic compounds were detected in the soil samples collected immediately below the removed tank.
- The tank was in apparently good condition at the time of its removal, and no evidence of tank leakage was noted in the tank excavation following the tank removal.
- According to the 1988 Zone 7 study cited above, the ground water depth in this part of the Livermore Valley was about 30 to 35 ft below ground surface in the fall of 1988. Assuming a historic ground water level of about 20 ft below ground surface, there is no indication that hydrocarbons are in soil below the historic high ground water elevation.
- The EMCON boring logs indicate that soils beneath the site consist of clay, clayey sand and clayey gravel.

RECOMMENDATIONS

Based on these site characteristics and the tank condition, there is no evidence that the former waste oil tank excavation presents a potential threat to ground water. In addition, the excavation meets tank closure requirements in effect at the time of the tank removal.

⁵ North Coast, San Francisco Bay and Central Valley Regional Water Quality Control Boards, June 2, 1988, Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, 18 pp.

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Therefore, we recommend that Shell Oil apply for closure of the former waste oil tank excavation by submitting this report to the following agencies:

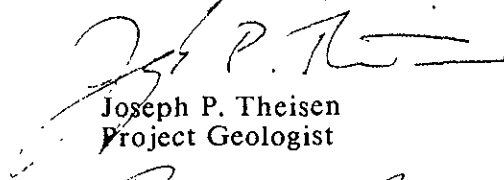
Alameda County Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621
Attn: Mr. Edgar Howell

California Regional Water Quality Control Board - San Francisco Bay Region
1111 Jackson Street
Oakland, California 94607
Attn: Mr. Lester Feldman

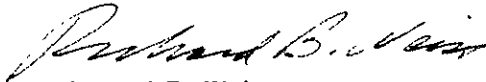
Alameda County Flood Control and Water Conservation District (Zone 7)
5997 Parkside Drive
Pleasanton, California 94566
Attn: Mr. Craig Mayfield

We are pleased to provide hydrogeologic consulting services to Shell Oil and trust this submittal meets your needs. Please call if you have any questions or comments.

Sincerely,
Weiss Associates,



Joseph P. Theisen
Project Geologist



Richard B. Weiss
Principal Hydrogeologist

RBW/JPT:ag

F:\ALL\SHELL\431L1OC9.WP

Enclosures: Attachment A - Site Map
Attachment B - Kaprealian Engineering Report
Attachment C - EMCON Report



EMCON
ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

RECEIVED

SEP 9 1986

GETTLER-RYAN INC.
GENERAL CONTRACTORS

September 8, 1986
Project 800-70.01

Gettler Ryan Inc.
1992 National Avenue
Hayward, California 94545
Attn: Mr. Jeffrey M. Ryan

Re: Shell Service Station
East Stanley Blvd. and
Murrieta Blvd., Livermore,
California

Gentlemen:

This letter presents the results of a soil investigation conducted by EMCON Associates at the Shell service station located at East Stanley Boulevard and Murrieta Boulevard in Livermore, California. The purpose of this investigation was to examine soil conditions adjacent to and within the subsurface gasoline storage tank complex and waste oil tank located at the site. It is EMCON's understanding that this information will be used to document gasoline concentrations for soil disposal if the underground storage tanks are replaced at the site.

FIELD INVESTIGATION PROCEDURES

Four exploratory borings (S-A through S-D) were drilled at the locations shown on Figure 1. Boring S-A was placed adjacent to the subsurface waste oil tank, Borings S-B, S-C, and S-D were placed within or adjacent to the subsurface gasoline storage tank complex. The borings were drilled using continuous-flight hollow-stem auger drilling equipment and were logged by an EMCON geologist. Soil samples for logging were obtained from auger-return materials and by advancing a California split-spoon sampler into undisturbed soil beyond the tip of the auger. Soil samples for chemical analysis were placed in glass containers, packed on ice, and delivered directly to a certified analytical laboratory. Available laboratory results accompany this report.

Upon completion, the borings were backfilled with bentonite and soil cuttings to a depth of 1 foot, and concrete to the ground surface. Boring abandonment details accompany the attached Exploratory Boring Logs.

SITE CONDITIONS

Boring S-A encountered silty sand fill to a depth of 5 feet, underlain by sand, clay, and clayey sand to the total depth explored of 19 feet. Borings S-B, S-C, and S-D encountered sand fill to depths of 9 to 11-1/2 feet, underlain by clay, clayey gravel, and clayey sand to the total depths explored. Ground water was encountered at a depth of approximately 20 to 25 feet.

No product odor was noted in Boring S-A to the total depth explored of 19 feet. In addition, no product odor was noted in samples collected from Borings S-B, S-C, and S-D to a depth to 25 feet. Product odor was noted in soils from these borings at or near the water table, in the approximate depth interval of 27 to 35-1/2 feet. Product odor was described as strong in Boring S-B, moderate in S-C, and faint in S-D.

LABORATORY INVESTIGATIONS AND RESULTS

All soil samples collected from Borings S-B, S-C, and S-D between the depths of 4 and 20 feet (in or just below the tank backfill material), were analyzed for the presence of gasoline and BTX (benzene, toluene, and xylene) compounds as specified by Gettler Ryan. Additionally, soil samples from Boring S-A were analyzed for waste oil. The samples analyzed for gasoline and BTX compounds showed no detection at the lowest detection limits for the compounds being tested. The analysis for waste oil has not been completed at this time, results will be forwarded to Gettler-Ryan by September 12, 1986. Certified analytical results for the gasoline and BTX compounds accompany this letter.

If you have any questions regarding the contents of this letter, please do not hesitate to call.

Very Truly Yours,

EMCON Associates

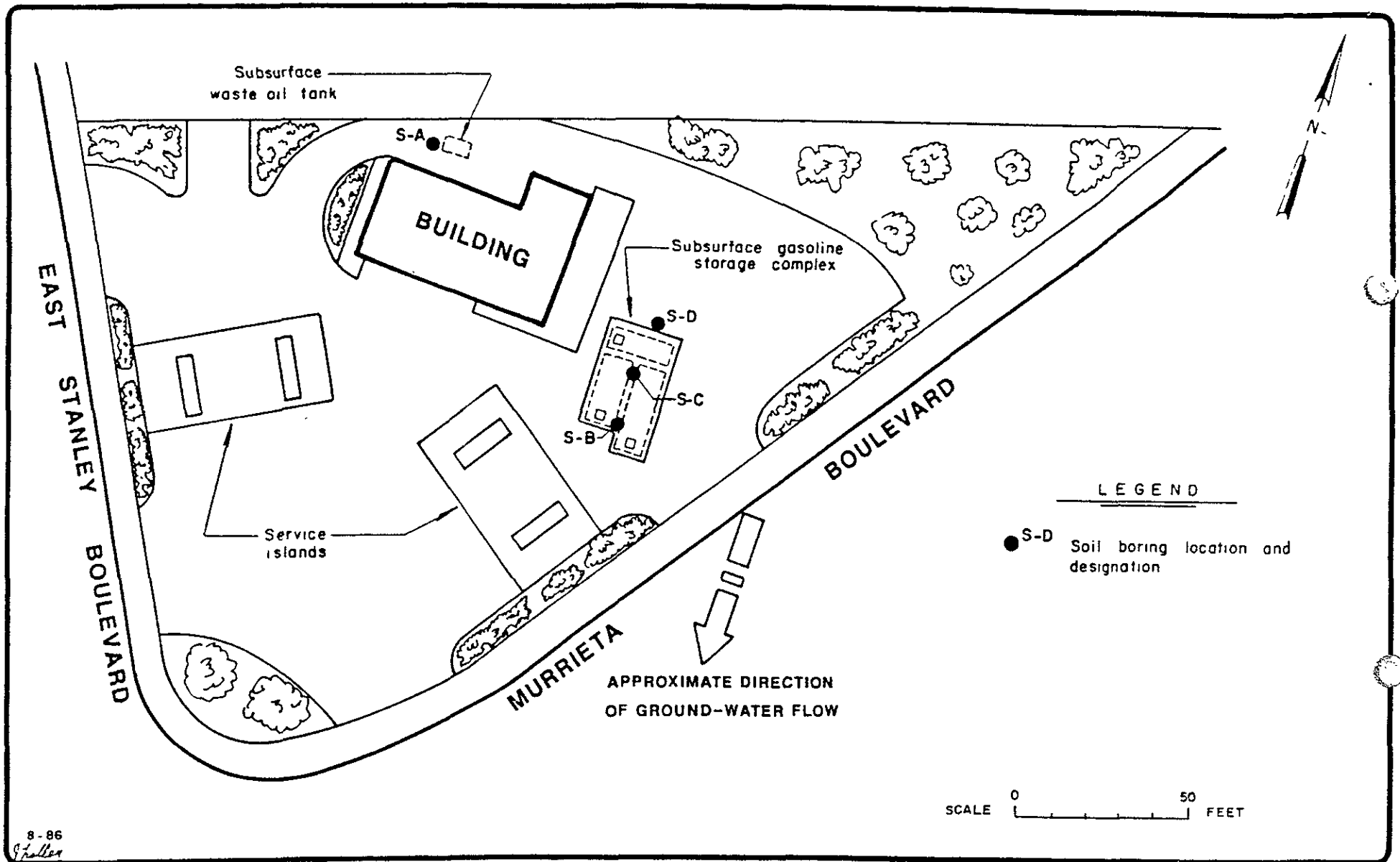


Christine R. Wilson
Staff Geologist



Susan M. Willhite
Senior Project Geologist
CEG 1272

CRW/SMW:eb1



EMCON
Associates

GETTLER-RYAN, INC.
SUBSURFACE HYDROGEOLOGIC INVESTIGATION
SHELL STATION, EAST STANLEY BLVD. AND MURRIETA BLVD.
LIVERMORE, CALIFORNIA

SITE PLAN

FIGURE

1

PROJECT NO.
800-70 01

LOG OF EXPLORATORY BORING

PROJECT NUMBER 800-70.01

BORING NO. S-C

PROJECT NAME Gettler-Ryan, Shell, E. Stanley & Murrieta,

PAGE 1 OF 1

BY EBL DATE 8/11/86

Livermore

SURFACE ELEV. 455'±

TORVANE (TSF)	POCKET PENETRO- METER (TSF)	PENETRA- TION (Blows/ Fl.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
				5	1	SW	CONCRETE, SAND, and GRAVEL-FILL.
				10	2		SAND-FILL: dark brown (10YR, 3/3): 10-20% fines; fine to medium sand; 10-15% coarse sand; loose; dry; no product odor.
	4.0	28		15	3	CH	@ 8-1/2": grayish brown (2.5Y, 5/2); moist; no product odor.
				20	4	CL	CLAY; brown (10YR, 4/3); 10-20% fine sand; very stiff to hard; moist; no product odor.
	0.5	10		25	5	GC	CLAY; brown (10YR, 4/2); 10-20% fine sand; 5% fine to coarse gravel; moist; soft; no product odor.
			▽	30	6	CL	CLAYEY GRAVEL; dark brown (10YR, 4/3); 40-50% fines; fine to coarse gravel; 10-15% fine sand; 10-20% medium to coarse sand; loose; wet; no product odor.
	2.5	18		35		CL	CLAYEY SAND; dark gray (5Y, 4/1); 20-30% fines; fine sand; 10-15% medium to coarse sand; loose; wet; moderate product odor.
				40			CLAY; brown (10YR, 4/3); 10-20% fine sand; very stiff; damp to wet; moderate product odor.
							BOTTOM OF BORING AT 31-1/2 FEET.

REMARKS

Drilled by 8-inch continuous-flight, hollow-stem auger; samples collected with 2-inch California modified split-spoon sampler. Boring backfilled with Bentonite to 30-1/2 feet; cuttings to 1 foot; concrete to surface.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 800-70.01

BORING NO. S-D

PROJECT NAME Gettler-Ryan, Shell, E. Stanley & Murrieta,

PAGE 1 OF 1

BY EBL

DATE 8/11/86

Livermore

SURFACE ELEV. 455'±

TORVANE (TSF)	POCKET PENETRO- METER (TSF)	PENETRA- TION (Blows/ Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
				5	1	SW	ASPHALT, SAND, and GRAVEL-FILL.
	3.0	15		10	2	CH	SAND-FILL; brown (10YR, 3/3); 5-10% fines; medium to coarse sand; 20-25% fine to coarse gravel; loose; moist; no product odor.
	4.0	32		15	3		CLAY; dark brown (10YR, 3/3); 10-15% fine sand; 5-10% medium to coarse sand; very stiff; moist; no product odor. @12 to 13-1/2': 10-20% fine sand; hard; occasional root fragments.
			60	20	4	SC/ SW	CLAYEY SAND, SAND-INTERBEDDED; dark brown (10YR, 3/3); CLAYEY SAND: 40-45% fines; fine sand; stiff; moist; SAND: 10-20% fines; 40-60% fine to coarse sand; 20-30% fine to coarse gravel; very dense; wet; no product odor.
	2.5	55		25	5	SC	
				30	6	CL	CLAYEY SAND; brown (10YR, 4/2); 30-40% fine sand; 5-10% coarse sand; 10-15% fine to medium gravel; very dense; moist; no product odor.
	1.5	20		30	6		CLAY; brown (10YR, 4/2); 10-20% fine sand; 5-10% coarse sand; stiff; moist; faint product odor.
				35			BOTTOM OF BORING AT 31-1/2 FEET.
				40			

REMARKS

Drilled by 8-inch continuous-flight, hollow-stem auger; samples collected with 2-inch California modified split-spoon sampler. Boring backfilled with Bentonite to 27-1/2 feet; concrete to 20 feet; cuttings to 1 foot; concrete to surface

LOG OF EXPLORATORY BORING

PROJECT NUMBER 800-70.01

BORING NO. S-A

PROJECT NAME Gettler-Ryan, Shell, E. Stanley & Murrieta

PAGE 1 OF 1

BY EBL DATE 8/11/86

Livermore

SURFACE ELEV. 455' ±

TORVANE (TSF)	POCKET PENETRO- METER (TSF)	PENETRA- TION (Blows/ Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
				0		ASPHALT, SAND, and GRAVEL-FILL.	
				5		SM	SILTY SAND-FILL.
		43		10	1	SW	SAND; dark grayish brown (10YR, 3/2); 5-10% fines; fine to coarse sand; 5-10% fine to coarse gravel; dense; dry; no product odor.
		60 for 1 foot		15	2	CL	CLAY; dark grayish brown (10YR, 4/3); 20-30% fine sand; 20-30% medium to coarse sand; 5-10% fine gravel; firm; moist; no product odor.
		50 for 6"		20	3	SC	CLAYEY SAND; light olive brown (2.5Y, 5/4); 10-20% fines; 30-40% fine sand; 15-30% medium to coarse sand; medium dense; dry; no product odor.
				25			BOTTOM OF BORING AT 19 FEET.
				30			
				35			
				40			

REMARKS

Drilled by 5-inch continuous-flight, solid-stem auger; samples collected with 2-inch California modified split-spoon sampler. Boring backfilled with cuttings to 1 foot; concrete to surface.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 800-70.01

BORING NO. S-B

PROJECT NAME Gettler-Ryan, Shell, E. Stanley & Murrieta,

PAGE 1 OF 1

BY EBL DATE 8/11/86

Livermore

SURFACE ELEV. 455'±

TORVANE (TSF)	POCKET PENETRO- METER (TSF)	PENETRA- TION (Blows/ Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO- GRAPHIC COLUMN	DESCRIPTION
				0		CONCRETE, SAND, and GRAVEL-FILL.	
		6		5	1	SM	SILTY SAND-FILL; dark grayish brown (10YR, 4/2); 10-20% fines; 15-25% medium to coarse sand; loose; dry; no product odor.
	4.0	11		10	2	SW	SAND-FILL; dark brown (10YR, 3/3); 10-15% fines; fine to medium sand; 5-10% coarse sand; loose; moist; no product odor.
	4.5	38		15	3	CH	@8-1/2': 10-20% fine to coarse gravel. CLAY; dark brown (10YR, 3/3); 10-20% fine sand; very stiff; moist; no product odor. @ 12': occasional root fragments; no product odor.
		65	▽	20	4	GC	CLAYEY GRAVEL; dark brown (10YR, 3/3); 40-50% fines; 50-60% coarse sand to coarse gravel; very dense; damp to wet; no product odor. @ 24-1/2': brown (10YR, 4/3); 40-50% fines; 10-20% fine to medium sand; 40-50% coarse sand to coarse gravel.
		75 for 1 foot		25	5		
		28		30	6	SC	CLAYEY SAND; dark grayish brown (2.5Y, 4/2); 20-30% fines; 40-50% fine sand; 10-20% medium to coarse sand; trace gravel; medium dense; damp to wet; strong product odor; root holes.
	1.0	22		35	7	CL	CLAY; light olive brown (2.5Y, 5/6); 15-25% fine sand; firm to stiff; damp to wet; strong product odor; root holes and root fragments.
				40			BOTTOM OF BORING AT 35-1/2 FEET.

REMARKS

Drilled by 8-inch continuous-flight, hollow-stem auger; samples collected with 2-inch California modified split-spoon sampler. Boring backfilled with Bentonite to 33 feet, cuttings to 1 foot; concrete to surface.

Beacon Station, 1619 West First Street, Livermore

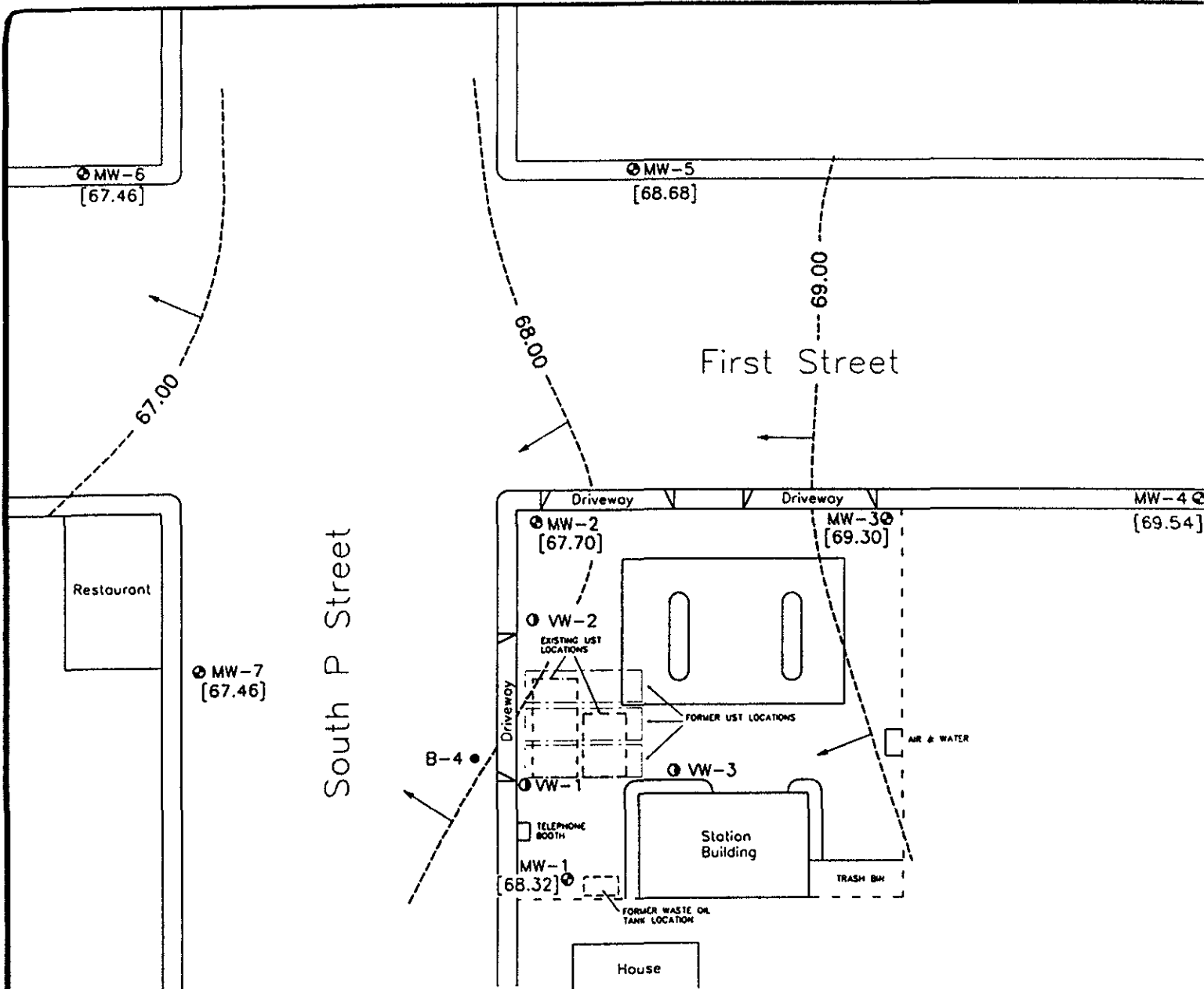
Brief Site History

The site is currently an active service station. In November 1992 three USTs were removed and replaced with new double-walled USTs. The southwest corner of the fuel tank excavation was obviously contaminated. This corner was overexcavated to 27' bgs, removing ~1,200 cy of soil. A confirmatory soil sample contained 490 ppm TPHg, 1.4 ppm benzene and 13 ppm naphthalene.

Three onsite and four offsite groundwater monitoring wells were installed. Initial groundwater samples from well MW-2 contained up to 170,000ppb TPHg and 20,000ppb benzene. In 1994 a 24 hour aquifer pump test was performed. At a pumping rate of ~1.0 gpm, a capture zone of ~20' downgradient can be achieved. A four hour soil vapor extraction test was also conducted. The theoretical zone of influence ranged from 10' to 16'.

Hydropunch borings were advanced to further delineate the downgradient extent of contaminant plume. And in Sep and Oct 1995 7 dual-completion wells (capable of soil vapor and groundwater extraction) were installed at the Beacon Station, and 20 dual-completion wells were installed in the parking lot of Livermore Arcade Shopping Center. The remediation system began operation in June 1996 and ceased in January 1997. By this time groundwater elevation rose to above the screen interval of the vapor well and interfered with vapor extraction.

Benzene levels in well MW-6 have decreased from 21,000ppb in March 1994 to 3,900ppb in June 1997. MtBE have not been detected in groundwater.



EXPLANATION

- SB-4 ● Soil Boring Location and Number
- VW-3 ● Vadose Well Location and Number
- MW-5 ● Monitoring Well Location and Number
- [68.68] Ground Water Elevation in Feet
- 69.00 — Line of Equal Elevation of Ground Water Measured in Feet
- ↖ Inferred Direction of Ground Water Flow



SOURCE: FIGURE MODIFIED FROM DRAWING PROVIDED BY ACTON*MICKELSON*ENVIRONMENTAL, INC.

GROUND WATER CONTOUR MAP, SEPTEMBER 15, 1998	FIGURE 2
BEACON STATION #604 1619 WEST FIRST STREET LIVERMORE, CALIFORNIA	PROJECT NUMBER: U013.01 DRAWN BY: D.A.v.D.
EL DORADO ENVIRONMENTAL, INC.	CHECKED BY: DvD

**TABLE 1
GROUND WATER ELEVATION DATA**

**Beacon Station #604
1619 West First Street, Livermore, California**

Monitoring Well	Top of Riser (feet)	Depth to Top/Bottom of Screened Interval (feet)	Monitoring Date	Depth to Water (feet)	Ground Water Elevation (feet)	Physical Observation
MW-1	100.00	34/54	06/01/93	37.50	62.50	No Product
			06/22/93	38.46	61.54	No Product
			10/06/93	42.22	57.78	No Product
			01/13/94	34.52	65.48	No Product
			03/30/94	31.93	68.07	No Product
			04/25/94	33.49	66.51	No Product
			08/12/94	41.03	58.97	No Product
			12/14/94	38.63	61.37	No Product
			02/10/95	30.80	69.20	No Product
			06/15/95	25.46	74.54	No Product
			09/26/95	31.05	68.95	No Product
			12/15/95	28.11	71.89	No Product
			03/21/96	17.67	82.33	No Product
			06/13/96	22.86	77.14	No Product
			09/16/96	30.04	69.96	No Product
			12/02/96	26.74	73.26	No Product
			03/07/97	20.84	79.16	No Product
			06/12/97	28.71	71.29	No Product
			09/29/97	33.91	66.09	No Product
			12/01/97	34.88	65.12	No Product
03/19/98	19.83	80.17	No Product			
05/29/98	21.57	78.43	No Product			
09/15/98	31.68	68.32	No Product			

See notes at end of table

**TABLE 1
GROUND WATER ELEVATION DATA**

Beacon Station #604
1619 West First Street, Livermore, California

Monitoring Well	Top of Riser (feet)	Depth to Top/Bottom of Screened Interval (feet)	Monitoring Date	Depth to Water (feet)	Ground Water Elevation (feet)	Physical Observation
MW-2	98.68	34/54	06/01/93	38.02	60.66	No Product
			06/22/93	39.07	59.61	No Product
			10/06/93	43.72	54.96	No Product
			01/13/94	35.85	62.83	No Product
			03/30/94	32.82	65.86	No Product
			04/25/94	34.76	63.92	No Product
			08/12/94	44.33	54.35	No Product
			12/14/94	40.00	58.68	No Product
			02/10/95	32.16	66.52	No Product
			06/15/95	25.93	72.75	No Product
			09/26/95	32.42	66.26	No Product
			12/15/95	29.41	69.27	No Product
			03/21/96	17.47	81.21	No Product
			06/13/96	23.69	74.99	No Product
			09/16/96	31.24	67.44	No Product
			12/02/96	26.90	71.78	No Product
			03/07/97	21.33	77.35	No Product
			06/12/97	29.94	68.74	No Product
			09/29/97	34.22	64.46	No Product
			12/01/97	35.94	64.06	No Product
03/19/98	20.34	79.66	No Product			
05/29/98	22.63	77.37	No Product			
09/15/98	32.30	67.70	No Product			

See notes at end of table

**TABLE 1
GROUND WATER ELEVATION DATA**

**Beacon Station #604
1619 West First Street, Livermore, California**

Monitoring Well	Top of Riser (feet)	Depth to Top/Bottom of Screened Interval (feet)	Monitoring Date	Depth to Water (feet)	Ground Water Elevation (feet)	Physical Observation
MW-3	97.08	33/53	06/01/93	36.18	60.90	No Product
			06/22/93	37.11	59.97	No Product
			10/06/93	41.15	55.93	No Product
			01/13/94	33.95	63.13	No Product
			03/30/94	30.97	66.11	No Product
			04/25/94	32.46	64.62	No Product
			08/12/94	41.72	55.36	No Product
			12/14/94	37.62	59.46	No Product
			02/10/95	29.96	67.12	No Product
			06/15/95	23.66	73.42	No Product
			09/26/95	29.62	67.46	No Product
			12/15/95	27.10	69.98	No Product
			03/21/96	15.85	81.23	No Product
			06/13/96	21.31	75.77	No Product
			09/16/96	28.62	68.46	No Product
			12/02/96	25.55	71.53	No Product
			03/07/97	19.77	77.31	No Product
			06/12/97	27.67	69.41	No Product
			09/29/97	29.60	67.48	No Product
			12/01/97	33.37	66.63	No Product
03/19/98	18.76	81.24	No Product			
05/29/98	20.64	79.36	No Product			
09/15/98	30.70	69.30	No Product			
MW-4	99.35	27/47	03/30/94	31.56	67.79	No Product
			04/25/94	32.73	66.62	No Product
			08/12/94	41.61	57.74	No Product
			12/14/94	38.11	61.24	No Product
			02/10/95	30.50	68.85	No Product
			06/15/95	23.63	75.72	No Product
			09/26/95	29.70	69.65	No Product
			12/15/95	27.56	71.79	No Product
			03/21/96	15.63	83.72	No Product
			06/13/96	21.07	78.28	No Product
			09/16/96	28.99	68.09	No Product
			12/02/96	26.04	71.04	No Product
			03/07/97	19.69	77.39	No Product
			06/12/97	28.04	69.04	No Product
			09/29/97	29.91	67.17	No Product
			12/01/97	33.88	66.12	No Product
			03/19/98	18.67	81.33	No Product
05/29/98	20.16	79.84	No Product			
09/15/98	30.46	69.54	No Product			

See notes at end of table

**TABLE 1
GROUND WATER ELEVATION DATA**

**Beacon Station #604
1619 West First Street, Livermore, California**

Monitoring Well	Top of Riser (feet)	Depth to Top/Bottom of Screened Interval (feet)	Monitoring Date	Depth to Water (feet)	Ground Water Elevation (feet)	Physical Observation
MW-5	98.37	27/47	03/30/94	32.07	66.30	No Product
			04/25/94	33.65	64.72	No Product
			08/12/94	42.73	55.64	No Product
			12/14/94	38.89	59.48	No Product
			02/10/95	31.44	66.93	No Product
			06/15/95	24.99	73.38	No Product
			09/26/95	30.20	68.17	No Product
			12/15/95	28.56	69.81	No Product
			03/21/96	16.82	81.55	No Product
			06/13/96	22.61	75.76	No Product
			09/16/96	29.78	68.59	No Product
			12/02/96	26.51	71.86	No Product
			03/07/97	21.91	76.46	No Product
			09/29/97	31.74	66.63	No Product
			12/01/97	34.05	65.95	No Product
			03/19/98	20.93	79.07	No Product
05/29/98	21.30	78.70	No Product			
09/15/98	31.32	68.68	No Product			

See notes at end of table

**TABLE 1
GROUND WATER ELEVATION DATA**

**Beacon Station #604
1619 West First Street, Livermore, California**

Monitoring Well	Top of Riser (feet)	Depth to Top/Bottom of Screened Interval (feet)	Monitoring Date	Depth to Water (feet)	Ground Water Elevation (feet)	Physical Observation
MW-6	97.62	28/48	03/30/94	33.38	64.24	No Product
			04/25/94	35.49	62.13	No Product
			08/12/94	45.14	52.48	No Product
			12/14/94	40.99	56.63	No Product
			02/10/95	33.34	64.28	No Product
			06/15/95	26.88	70.74	No Product
			09/26/95	33.55	64.07	No Product
			12/15/95	30.32	67.30	No Product
			03/21/96	18.89	78.73	No Product
			06/13/96	24.62	73.00	No Product
			09/16/96	32.64	65.73	No Product
			12/02/96	27.42	70.95	No Product
			03/07/97	22.13	76.24	No Product
			06/12/97	31.02	67.35	No Product
			09/29/97	35.77	62.60	No Product
			12/01/97	37.14	62.86	No Product
			03/19/98	21.10	78.90	No Product
05/29/98	23.26	76.74	No Product			
09/15/98	33.50	66.50	No Product			
MW-7	98.03	27/47	03/30/94	31.98	66.05	No Product
			04/25/94	33.56	64.47	No Product
			08/12/94	43.35	54.68	No Product
			12/14/94	39.34	58.69	No Product
			02/10/95	32.11	65.92	No Product
			06/15/95	25.51	72.52	No Product
			09/26/95	31.43	66.60	No Product
			12/15/95	28.97	69.06	No Product
			03/21/96	17.36	80.67	No Product
			06/13/96	23.47	74.56	No Product
			09/16/96	31.35	66.68	No Product
			12/02/96	27.11	70.92	No Product
			03/07/97	21.33	76.70	No Product
			06/12/97	29.90	68.13	No Product
			09/29/97	34.37	63.66	No Product
			12/01/97	36.46	63.54	No Product
			03/19/98	20.33	79.67	No Product
05/29/98	22.30	77.70	No Product			
09/15/98	32.54	67.46	No Product			

Note: Monitoring well casing elevations were surveyed relative to an arbitrary bench mark at the top of the casing of monitoring well MW-1 with an assumed elevation of 100.00 feet.

1.0 SITE DESCRIPTION

Beacon Gas Station No. 604 is located at 1619 West First Street in Livermore, California. The station is bordered on the north by First Street and on the west by P Street. The Beacon Gas Station is in the western portion of downtown Livermore with commercial businesses to the north, east, and west of the site. Residential housing consisting of single-family dwellings, duplexes, and apartments are to the south. The gas station is owned and operated by Ultramar Incorporated.

Livermore is approximately 25 miles east of San Francisco Bay on Interstate Highway 580. A site map of the area is provided as Figure 1. A topological map is given in Figure 2.

1.1 Geology and Soil

The site is located in Township 3 South, Range 1 East, Section 17 of Mt. Diablo Baseline Meridian. Topography maps show the surface elevation at the site to be approximately 475 feet above mean sea level (amsl).

The site is underlain by Tertiary aged Livermore Gravels up to 600 feet deep, according to the geologic cross-sections of the Livermore Valley in the Department of Water Resources (DWR) Bulletin 118.2 (1974). Approximately 100 feet of quaternary alluvial fan deposits overlay the Livermore Gravels in the area. The Livermore Gravels consist of massive beds of rounded gravel cemented by a sandy clay and sandy silt matrix.

The alluvial fan deposits consist of semi-consolidated deposits of clay, silt, sand, and gravel. Soil borings and well drilling operations at the Beacon Gas Station and the

shopping center to the northwest of the site by BDM International, Inc. (formerly Geoscience Consultants, Ltd., or GCL) confirms these general soil characteristics down to approximately 70 feet. A soil lithologic map of a well drilled at the site is provided as Figure 3.

1.2 Hydrogeology

The site is located in the Mocha Sub-basin, a division of the Livermore Valley Groundwater Basin. Groundwater ranges from unconfined in near-surface zones to confined in deeper zones. Maps by Alameda County Flood Control and Water Conservation District (1989) shows the elevation of the shallow groundwater at approximately 45 feet below ground surface (bgs). During the drought in the late 1980s and early 1990s and the rains in 1993/1994, water levels at the site show significant fluctuations in the shallow groundwater zone. During the drought, the groundwater was approximately 70 feet bgs, and during the heavy rainy period of 1993/1994, the water was about 25 feet below grade. This upper groundwater is not used locally as a drinking water source.

Drinking water for the City of Livermore is supplied by the California Water Service. Six California Water Service water wells are located near the site, within a 1-mile radius. Well No. 3-01 and 8-01 are closest to the site, located approximately 0.25 mile away. All wells are tested for volatile organic compounds (VOCs) at least once a year. According to the California Water Service, none of these two wells near the site show contamination. These wells are completed in the deeper aquifer and are used during the summer peak demands. A



2.1.3 Current and Future Land Use

The Beacon Station No. 604 site is located at 1619 West First Street in Livermore, California. The property is used as a retail convenient store with fuel pumps. The nearest residential dwelling is located adjacent to the site, approximately 50 feet to the south and the nearest down-gradient residential dwelling is located approximately 1,800 feet to the northwest. The nearest commercial building is the Beacon Station No. 604 store located on the southeast edge of the soil and groundwater impact area. The nearest down-gradient commercial building (Frosty Freeze Restaurant) is located approximately 120 feet to the west, northwest. The City of Livermore has zoned the area along First Street and to the north as commercial development. Recent building trends indicate that commercial development will increase and residential use will decrease in the vicinity. There are no additional leaking petroleum storage tank sites located within a 1,000-foot radius of the Beacon Station site.

2.1.4 Current and Future Water Use

The shallow groundwater is not generally used for water supply or irrigation. The City of Livermore supplies water for residential and commercial use. In addition, a "contamination zone" has been established by the Zone 7 Water Agency due to an unrelated chemical release that has occurred northwest of the Beacon Station site. The designation of a contamination zone prevents all future water well completions in the shallow aquifer up to one-half mile down-gradient from the site release area. The nearest down-gradient water well that is believed to be completed such that a possibility may exist for communication with the impacted zone is located approximately 2,700 feet to the northwest. The nearest down-gradient deep water well is located approximately 1,600 feet from the Beacon Station site.

2.2 Potentially Exposed Populations

2.2.1 Residential Receptors

The current residential receptors that were considered with respect to the performance of the risk assessment include the users of the shallow residential water well located 2,700 feet down-gradient from the source area and the inhabitants of a residential dwelling located 1,800 feet down-gradient from the source area.

In addition to the current receptors, a scenario for a worst-case future residential receptor was considered at the nearest down-gradient location (2,500 feet) where a shallow residential water well can be installed, relative to the "contamination zone" designated area. It should be noted, however, that the likelihood of an individual installing a water well for domestic use of the shallow (impacted) aquifer is very low because it is considered undesirable, compared to the deeper groundwater zone, and the area is served by a public water utility.

2.2.2 Commercial Worker Receptors

Presently, the commercial worker receptors considered in this risk assessment include the on-site Beacon Station No. 604 employees and the employees of the Frosty Freeze Restaurant located 120 feet off-site.

In addition, the risk assessment has considered the possibility that the surface property could be sold or leased and a future commercial facility could be constructed above the impact area. Within this scenario a potential exposure pathway would be present via the inhalation of enclosed-spaced VOCs from the

Waste Handling

Decontamination wash and steam cleaning water was placed into D.O.T. approved watertight 55-gallon drum and stored on the Beacon station property at 1619 First Street, Livermore, California. Drill cuttings generated at each borehole were placed in the bed of a pick-up truck, removed from LASC property, and stockpiled on a plastic liner on the Beacon station property.

Borehole Closure

Following soil and groundwater sample collection, all boring locations were backfilled with a neat cement grout containing approximately 5% bentonite. The backfill was then capped with a black cement. All sites were washed down with a steam cleaner following completion of the investigation.

SITE GEOLOGY

In general, the site geology underlying the investigation area consists of: sandy silty gravel from ground level to approximately 20 feet below ground level (bgl); silty clay from 20 feet bgl to 34 feet bgl; and sandy silty gravel from 34 feet bgl to the total depth of the borehole. Groundwater was encountered at approximately 43 feet bgl at each borehole location.

RESULTS OF INVESTIGATION

Soil Samples

Soil samples were collected from each borehole at approximately 15', 25', 35', and 40' below ground level for field screening with a photoionization detector (PID). The soil was removed from one 6-inch brass tube and placed in a zip-lock plastic bag and allowed to equilibrate prior to field screening. PID results of the field screening of samples collected from HP-1, HP-2, and HP-3 are provided below.

Results of Soil PID Field Screening

Sample Interval	HP-1	HP-2	HP-3	Soil Type
14.0' - 15.5'	0 ppm	0 ppm	0 ppm	Silty sandy gravel
24.0' - 25.5'	0 ppm	0 ppm	0 ppm	Silty clay
34.0' - 35.5'	2 ppm	0 ppm	0 ppm	Silty clay w/gravel
40.0' - 41.5'	NA	20 ppm	0 ppm	Silty sandy gravel

NA = No PID screening due to minimal sample recovery