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

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

August 3, 2007

Denis Brown
Shell Oil Products US
20945 S. Wilmington Ave.
Carson, CA 90810-1039

Terell Bass
Terell & Kimberly Bass Trs
2184 Deer Oak Way
Danville, CA 94506

Subject: Fuel Leak Case No. RO0002566 and Geotracker Global ID T0600194367, Shell, 1155 Portola Avenue, Livermore, CA 94550 – Case Closure

Dear Mr. Brown and Mr. Bass:

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with Section 25296.10 of the Health and Safety Code. We are also transmitting to you the enclosed case closure summary. These documents confirm the completion of the investigation and cleanup of the reported release at the subject site. The subject fuel leak case is closed.

SITE INVESTIGATION AND CLEANUP SUMMARY

Please be advised that the following conditions exist at the site:

- MTBE remains in groundwater at concentrations up to 34 ppb.

If you have any questions, please call Jerry Wickham at (510) 567-6791. Thank you.

Sincerely,

Donna L. Drogos, P.E.
LOP and Toxics Program Manager

Enclosures:
1. Remedial Action Completion Certificate
2. Case Closure Summary

cc:

Ms. Cherie McCaulou (w/enc)
SF- Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Mr. Toru Okamoto (w/enc)
State Water Resources Control Board
UST Cleanup Fund
P.O. Box 944212
Sacramento, CA 94244-2120

Ms. Danielle Stefani (w/enc)
Livermore-Pleasanton Fire Department
3560 Nevada Street
Pleasanton, CA 94566

Ms. Colleen Winey, QIC 80201 (w/enc)
Zone 7 Water Agency
100 North Canyons Parkway
Livermore, CA 94551

City of Livermore Planning Department (w/enc)
1052 South Livermore Avenue
Livermore, CA 94550

Mr. Lee Dooley (w/enc)
Delta Environmental Consultants, Inc.
175 Bernal Road, Suite 200
San Jose, CA 95119

Jerry Wickham (w/orig enc), D. Drogos (w/enc), File (w/enc)

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REMEDIAL ACTION COMPLETION CERTIFICATION

August 3, 2007

Denis Brown
Shell Oil Products US
20945 S. Wilmington Ave.
Carson, CA 90810-1039

Terell Bass
Terell & Kimberly Bass Trs
2184 Deer Oak Way
Danville, CA 94506

Subject: Fuel Leak Case No. RO0002566 and Geotracker Global ID T0600194367, Shell, 1155 Portola Avenue, Livermore, CA 94550 – Case Closure

Dear Mr. Brown and Mr. Bass:

This letter confirms the completion of a site investigation and remedial action for the underground storage tanks formerly located at the above-described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tank(s) are greatly appreciated.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, this agency finds that the site investigation and corrective action carried out at your underground storage tank(s) site is in compliance with the requirements of subdivisions (a) and (b) of Section 25296.10 of the Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.3 of the Health and Safety Code and that no further action related to the petroleum release(s) at the site is required.

This notice is issued pursuant to subdivision (h) of Section 25296.10 of the Health and Safety Code. Please contact our office if you have any questions regarding this matter.

Sincerely,

Director
Alameda County Environmental Health

CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK - LOCAL OVERSIGHT PROGRAM

I. AGENCY INFORMATION

Date: March 22, 2007

Agency Name: Alameda County Environmental Health	Address: 1131 Harbor Bay Parkway
City/State/Zip: Alameda, CA 94502-6577	Phone: (510) 567-6791
Responsible Staff Person: Jerry Wickham	Title: Hazardous Materials Specialist

II. CASE INFORMATION

Site Facility Name: Shell #13-5441		
Site Facility Address: 1155 Portola Avenue, Livermore, CA 94551		
RB Case No.: ---	Local Case No.: ---	LOP Case No.: RO0002566
URF Filing Date: 01/20/2006	Geotracker ID: T0600194367	APN: 99-130-4-11

Responsible Parties	Addresses	Phone Numbers
Denis Brown, Shell Oil Products US	20945 S. Wilmington Avenue, Carson, CA 90810	
Terrell and Kimberly Bass	2184 Deer Oak Way, Danville, CA 94506-2017	

Tank I.D. No	Size in Gallons	Contents	Closed In Place/Removed?	Date
1	12,000	Gasoline	Removed	01/19/2006
2	12,000	Gasoline	Removed	01/19/2006
3	12,000	Gasoline	Removed	01/19/2006
Piping			Removed	01/19/2006

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Unknown. No holes, cracks, or other signs of failure were observed in two of the tanks during removal. One of the three tanks had a small puncture that apparently occurred during tank removal.		
Site characterization complete? Yes	Date Approved By Oversight Agency: ----	
Monitoring wells installed? Yes	Number: 4	Proper screened interval? Yes. However, water levels have risen since wells were installed in October 2002 and now are above screen.
Highest GW Depth Below Ground Surface: 31	Lowest Depth: 44.2	Flow Direction: Variable flow direction based on water levels in monitoring wells; regional flow is to the west
Most Sensitive Current Use: Drinking water source.		

Summary of Production Wells in Vicinity: The nearest water supply well is California Water Service Well 10-01, which is located approximately 2,195 feet south southeast from the site. Based on the distance from the site and cross gradient location, the municipal supply well does not appear to be a receptor for the site.	
Are drinking water wells affected? No	Aquifer Name: Northern boundary of Mocho II Subbasin of Livermore-Amador Groundwater Basin
Is surface water affected? No	Nearest SW Name: Las Positas Creek is approximately 950 feet northeast of site.
Off-Site Beneficial Use Impacts (Addresses/Locations): None	
Reports on file? Yes	Where are reports filed? Alameda County Environmental Health and Livermore Pleasanton Fire Department

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	3 – 12,000 gallons	Transported to Republic Waste in Livermore, CA for disposal	01/19/2006
Piping	Not reported	Transported to Republic Waste in Livermore, CA for disposal	01/19/2006
Free Product	None	---	---
Soil	2 cubic yards	Transported to Forward Landfill in Manteca, CA for disposal	02/13/2006
Groundwater	None	---	---

MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS BEFORE AND AFTER CLEANUP
(Please see Attachments 1 through 7 for additional information on contaminant locations and concentrations)

Contaminant	Soil (ppm)		Water (ppb)	
	Before	After	Before	After
TPH (Gas)	220	<1	76(1)	<50(1)
TPH (Diesel)	NA	NA	61	<50
Oil and Grease	NA	NA	NA	NA
Benzene	<0.005	<0.002	0.82	<0.5
Toluene	<0.005	<0.002	3.8	<0.5
Ethylbenzene	<0.005	<0.002	2.2	<0.5
Xylenes	<0.005	<0.002	7.0	<0.5
Lead	30.5(2)	30.5(2)	NA	NA
MTBE	<0.005(3)	<0.005(3)	400(4)	34.2(4)
Other (8240/8270)	NA(5)	NA(5)	NA(5)	NA(5)

(1) TPHg = 67 ppb in groundwater from well MW-3 during sampling event on 08/25/2003. TPHg not detected in any wells during 2004 through 2006.
(2) Lead = 30.5 ppm in soil; no other metals analyzed.
(3) MTBE, TBA, DIPE, ETBE, TAME, EDB, and EDC <0.005 ppm; ethanol < 0.1 ppm in soil.
(4) MTBE = 400 ppb in groundwater from well MW-2 during sampling event on 08/25/2003; MTBE = 34.2 ppb in groundwater from well MW-2 during last sampling event on 09/21/2006. TBA = 12 ppb in groundwater from well MW-3 during sampling event on 06/13/2005; TBA <0.5 ppb in all wells during last sampling event on 09/21/2006. DIPE, ETBE, and TAME <0.5 ppb; EDB and EDC not analyzed in groundwater.
(5) No VOC, SVOC, or other analyses.

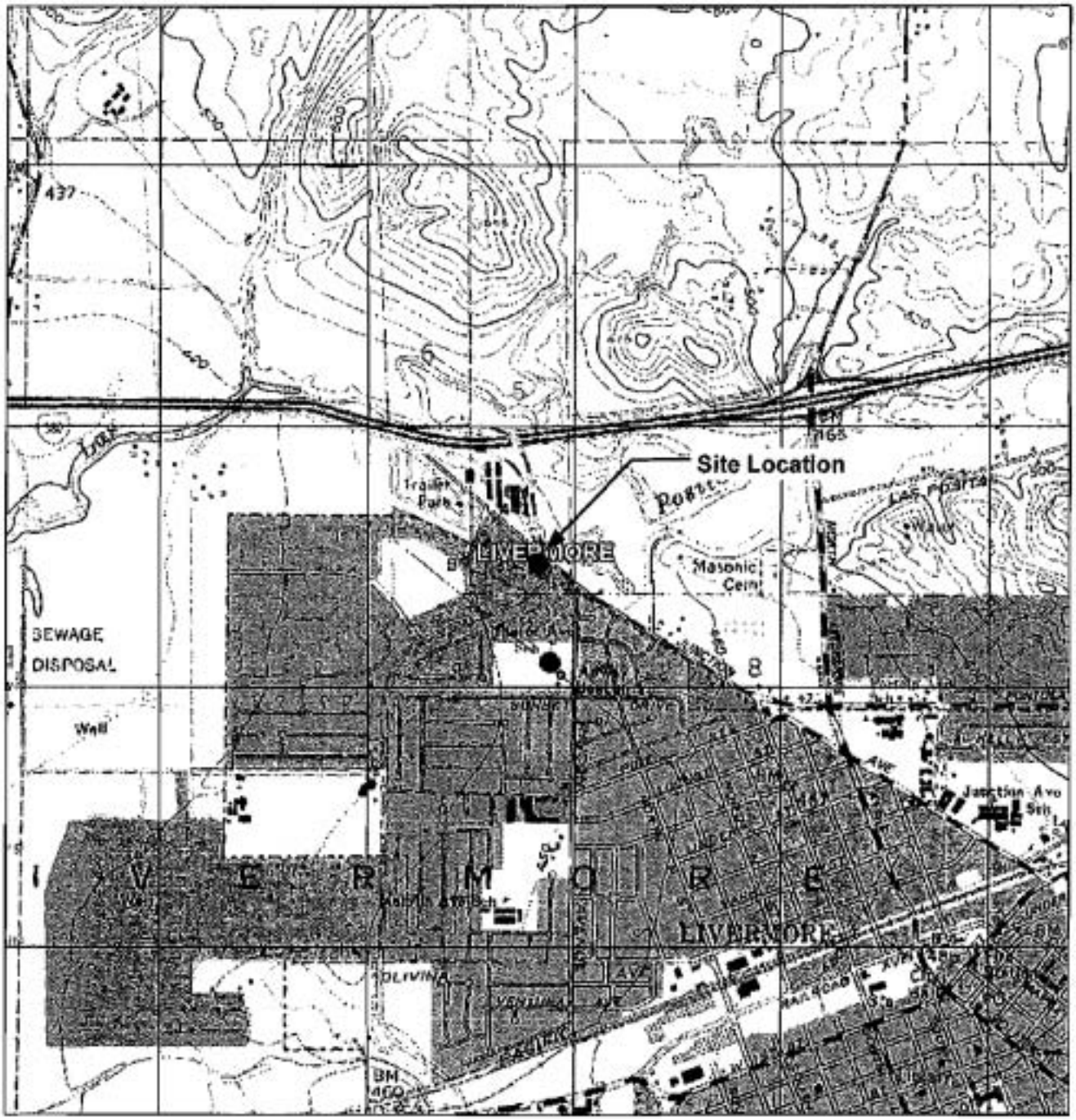
Site History and Description of Corrective Actions:

The site is a former service station located at the corner of Portola Avenue and Murietta Boulevard in Livermore, CA. Adjacent land use is mixed commercial and residential. In October 2002, four monitoring wells were installed at the site as part of Shell's Groundwater Assessment program (GRASP). GRASP is a voluntary program initiated by Shell to install monitoring wells at service stations that do not have active leaking fuel cases but are located in proximity to public water supply wells. The nearest municipal water supply well is California Water Supply Well 10-01, which is located approximately 2,195 feet south southeast of the site. During the initial sampling of the four monitoring wells in 2002, MTBE was detected in groundwater from three of the four wells at concentrations ranging from 8.7 to 190 ppb. No other analytes were detected in the monitoring wells. During the most recent groundwater sampling event in September 2006, MTBE was detected in one of the four wells at a concentration of 34.2 ppb. No other analytes have been detected in groundwater since 2005.

The former underground storage tanks (USTs), dispensers, product piping, and vent lines were removed in January 2006. A total of 30 soil samples were collected during the fuel system removal. Benzene, toluene, ethylbenzene, xylenes, fuel oxygenates, and lead scavengers were not detected in any of the 30 soil samples collected during the fuel system removal. Total petroleum hydrocarbons as gasoline were detected in one soil sample (S-10 at 2.5 feet bgs) collected beneath one of the dispensers. Based on field observations and an elevated photoionization detector reading, two cubic yards of soil beneath the dispenser was excavated and disposed off-site. TPH as gasoline was not detected in the confirmation soil sample (S-10 at 5 feet bgs) collected after excavation.

Previous Leaking Underground Storage Tank Case:

Petroleum oil and grease was detected in soil samples from one soil boring adjacent to a waste oil tank in 1986. When the waste oil tank was removed in 1989, contaminated soil was observed in the sidewalls and bottom of the excavation. Several holes up to one-half inch in diameter were observed in the waste oil tank. Three soil borings were advanced in the area of the former waste oil tank in December 1992. Based upon the apparent local extent of soil contamination beneath the waster oil tank, the leaking UST case was closed in correspondence from the California Regional Water Quality Control Board dated May 17, 1993.



GENERAL NOTES:
Base Map from: DeLorme Yarmouth, ME 04096
Source Data: USGS

North

QUADRANGLE LOCATION

0 1,800 3,600
Scale, Feet

FIGURE 1
SITE LOCATION MAP

FORMER SHELL-BRANDED SERVICE STATION
1155 Portola Avenue
Livermore, California

PROJECT NO. SJ11-55P-1.2005	DRAWN BY VF 10/22/05
FILE NO. SJ11-55P-1.2005	PREPARED BY VF
REVISION NO.	REVIEWED BY

Delta Environmental Consultants, Inc.

ATTACHMENT 1

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? ---		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? ---		
Does corrective action protect public health for current land use? Alameda County Environmental Health staff does not make specific determinations concerning public health risk. However, based upon the information available in our files to date, it does not appear that the release would present a risk to human health based upon current land use and conditions.		
Site Management Requirements: None		
Should corrective action be reviewed if land use changes? No		
Was a deed restriction or deed notification filed? No		Date Recorded: --
Monitoring Wells Decommissioned: No	Number Decommissioned: 0	Number Retained: 4
List Enforcement Actions Taken: None		
List Enforcement Actions Rescinded: --		

V. ADDITIONAL COMMENTS, DATA, ETC.

Considerations and/or Variances:

Ethylene dibromide and 1,2-dichloroethane were not analyzed in groundwater.

Water levels have risen since the monitoring wells were installed in October 2002. Water levels are currently several feet above the top of the screened intervals for the wells. Although water levels have risen, the monitoring wells are still monitoring the upper portion of the aquifer and the water quality data are considered representative.

Conclusion:

Alameda County Environmental Health staff believe that the levels of residual contamination do not pose a significant threat to water resources, public health and safety, and the environment based upon the information available in our files to date. No further investigation or cleanup is necessary. ACEH staff recommend case closure for this site.

VI. LOCAL AGENCY REPRESENTATIVE DATA

Prepared by: Jerry Wickham	Title: Hazardous Materials Specialist
Signature: Jerry Wickham	Date: 03/22/07
Approved by: Donna L. Drogos, P.E.	Title: Supervising Hazardous Materials Specialist
Signature: Donna L. Drogos	Date: 03/22/07

This closure approval is based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions.

VII. REGIONAL BOARD NOTIFICATION

Regional Board Staff Name: Cherie McCaulou	Title: Engineering Geologist
RB Response: Concur, based solely upon information contained in this case closure summary.	Date Submitted to RB:
Signature: Cherie McCaulou	Date: 3/30/07

VIII. MONITORING WELL DECOMMISSIONING

Date Requested by ACEH: 04/03/07	Date of Well Decommissioning Report: 07/23/07	
All Monitoring Wells Decommissioned: (Yes) No	Number Decommissioned: 4	Number Retained: 0
Reason Wells Retained: NA		
Additional requirements for submittal of groundwater data from retained wells: None		
ACEH Concurrence - Signature: Jerry Wickham		Date: 08/03/07

Attachments:

1. Site Location Map (1 page)
2. Groundwater Elevation Contour Map – September 21, 2006 (1 page)
3. Soil Sample Location Map (1 page)
4. Summary of Soil Analytical Data (2 pages)
5. Summary of Groundwater Analytical Data (4 pages)
6. Boring Logs (12 pages)

This document and the related CASE CLOSURE LETTER & REMEDIAL ACTION COMPLETION CERTIFICATE shall be retained by the lead agency as part of the official site file.

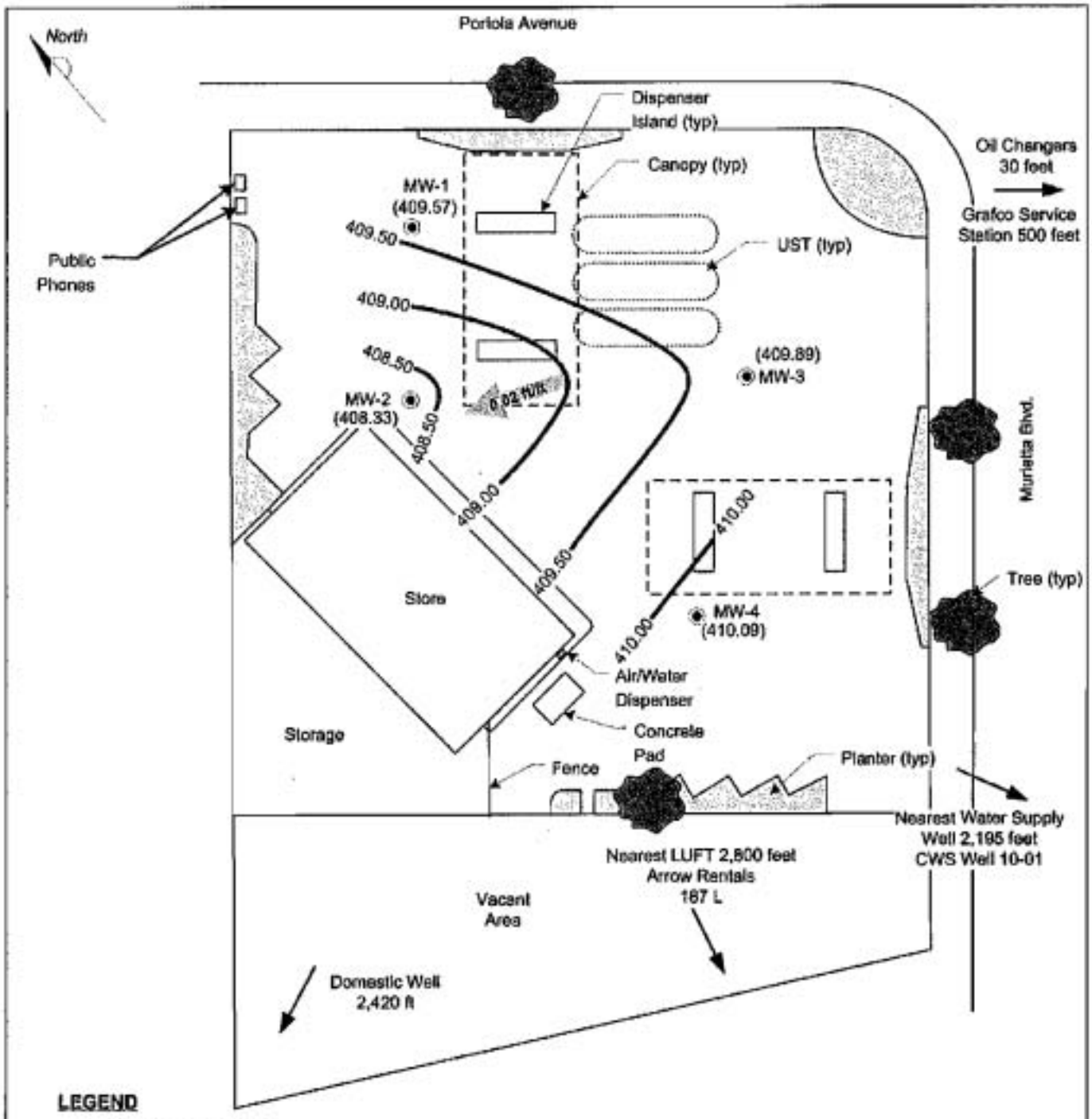


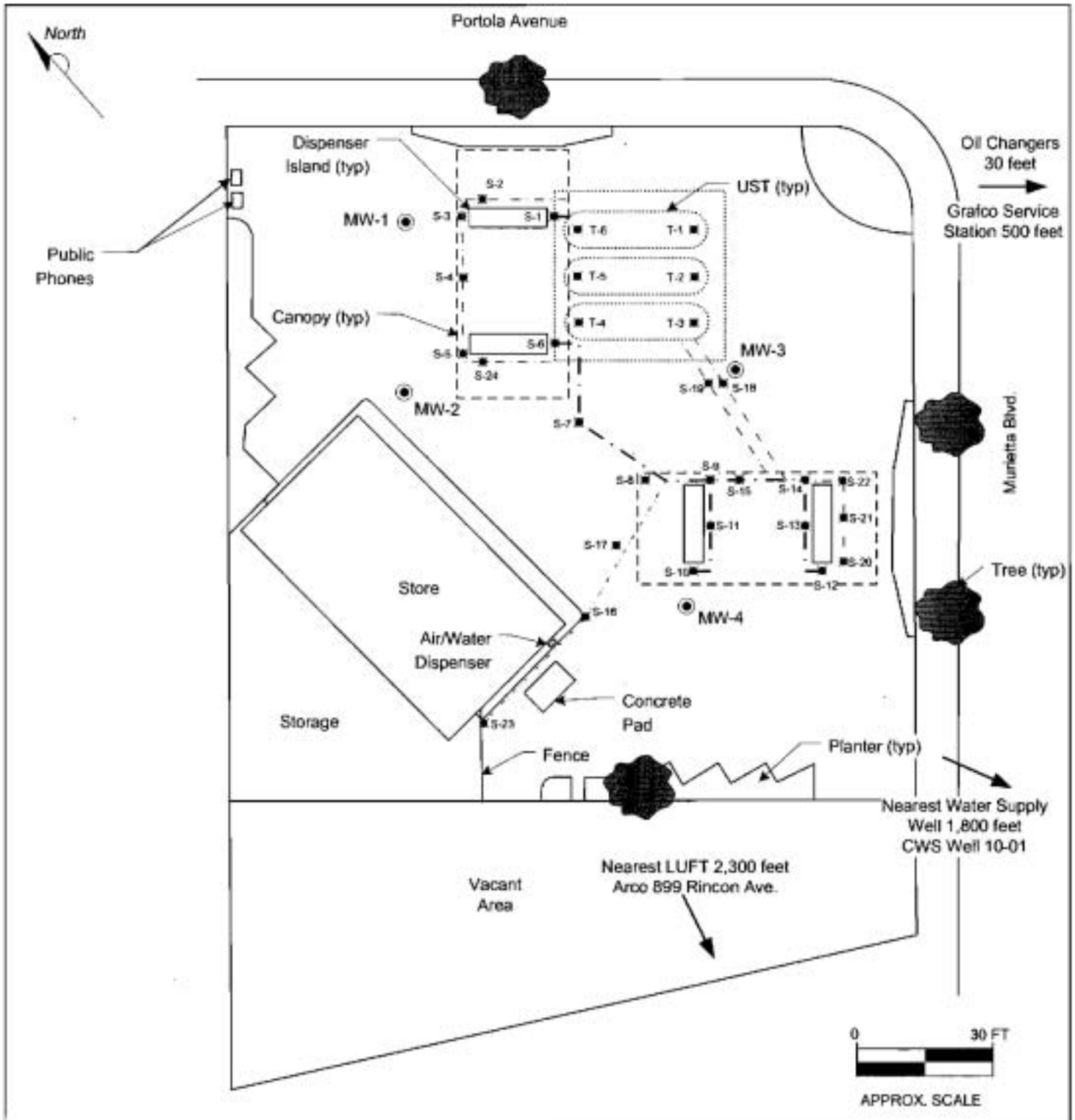
FIGURE 2
GROUNDWATER ELEVATION CONTOUR MAP,
SEPTEMBER 21, 2006

FORMER SHELL-BRANDED SERVICE STATION
1155 Portola Avenue
Livermore, California

PROJECT NO. SJ11-55P-1.2006	DRAWN BY BH 10/23/06
FILE NO. SJ11-55P-1.2006	PREPARED BY HB
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

ATTACHMENT 2



LEGEND

- **PRODUCT PIPING**
- **FORMER VENT LINE**
- **FORMER PRODUCT PIPING**
- S-1 **SOIL SAMPLE**
- MW-4 **GROUNDWATER MONITORING WELL**

FIGURE 2

SOIL SAMPLE LOCATION MAP

SHELL-BRANDED SERVICE STATION
1155 Portola Avenue
Livermore, California

PROJECT NO. SJ11-55P-1.2005	DRAWN BY JL 02/01/06
FILE NO. SJ11-55P-1.2005	PREPARED BY JL
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

ATTACHMENT 3

Table 1
Summary of Soil Analytical Data
Shell-branded Service Station
1155 Portola Avenue
Livermore, California

Sample Designation	Date Sampled	Depth (feet)	TPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)	Ethanol (mg/kg)	Total Lead (mg/kg)
Fuel UST Pit Samples													
T-1@19'	1/19/06	19	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	6.12
T-2@16'	1/19/06	16	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	5.56
T-3@16'	1/19/06	16	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	2.97
T-4@17.5'	1/19/06	17.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	3.45
T-5@17'	1/19/06	17	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	4
T-6@16'	1/19/06	16	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	6.81
Existing Dispenser Samples													
S-1@2.5'	1/19/06	2.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	11.6
S-6@2'	1/19/06	2	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	8.3
S-10@2.5'	1/19/06	2.5	220	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.25	25.5
S-10@5'	1/20/06	5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	5.8
S-12@3'	1/19/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	6.84
Existing Product Piping Samples													
S-7@4'	1/19/06	4	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	6.7
S-8@3'	1/19/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	4.17
S-9@3'	1/19/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	6.24
S-14@3'	1/19/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	7.49
S-15@3'	1/19/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	5.61
Former Dispenser Samples													
S-2@3'	1/19/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	30.5
S-11@2.5'	1/19/06	2.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	9.68
S-13@2.5'	1/19/06	2.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	25.5
S-24@2'	1/20/06	2	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	13
Former Product Piping Samples													
S-3@3'	1/19/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	11.8
S-4@2'	1/19/06	2	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	57
S-5@2'	1/19/06	2	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	13.8
S-18@3.5'	1/20/06	3.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	17
S-19@3.5'	1/20/06	3.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	6.4
S-20@3'	1/20/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	5.9
S-21@2.5'	1/20/06	2.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	6.8
S-22@2.5'	1/20/06	2.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	16

ATTACHMENT 4

Table 1
Summary of Soil Analytical Data
Shell-branded Service Station
1155 Portola Avenue
Livermore, California

Sample Designation	Date Sampled	Depth (feet)	TPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylene (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)	Ethanol (mg/kg)	Total Lead (mg/kg)
Vent Line Samples													
S-16@3'	1/20/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**6.1**
S-17@3'	1/20/06	3	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**7.8**
S-23@2.5'	1/20/06	2.5	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**11**
Pea Gravel Samples													
Pea A	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**6.5**
Pea B	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**3.5**
Pea C	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**7.8**
Pea D	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**3.1**
Pea E	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**1**
Pea F	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**2.9**
Pea G	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**3.4**
Pea H	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**4.5**
Pea I	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**1.5**
Pea J	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**1.6**
Pea K	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**7**
Pea L	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**3.3**
Pea M	1/20/06		<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.1	**6.2**

Notes:
mg/kg = milligrams per kilogram
TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
MTBE = Methyl tert-butyl ether
TBA = Tert butyl alcohol
1,2-DCA = 1,2-dichloroethane
EDB = Ethylene dibromide
= over-excavated sample

WELL CONCENTRATIONS
Shell-branded Service Station
1155 Portola Avenue
Livermore, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	Screened Interval (ft.)	GW Elevation (MSL)
MW-1	12/05/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	41.12	40-59	NA
MW-1	12/20/2002	<50	<50	<0.50	<0.50	<0.50	<0.50	78	<2.0	<2.0	<2.0	<50	NA	38.40	40-59	NA
MW-1	03/28/2003	<50	<50	<0.50	<0.50	<0.50	<1.0	7.0	<2.0	<2.0	<2.0	<5.0	443.81	36.25	40-59	407.56
MW-1	06/26/2003	<50	<50	<0.50	<0.50	<0.50	<1.0	1.4	<2.0	<2.0	<2.0	<5.0	443.81	39.53	40-59	404.28
MW-1	08/25/2003	64	NA	<0.50	<0.50	<0.50	<1.0	53	<2.0	<2.0	<2.0	<5.0	443.81	42.52	40-59	401.29
MW-1	12/09/2003	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	443.81	36.84	40-59	406.97
MW-1	03/08/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	3.9	<2.0	<2.0	<2.0	<5.0	443.81	31.75	40-59	412.06
MW-1	06/07/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	0.91	<2.0	<2.0	<2.0	<5.0	443.81	38.24	40-59	405.57
MW-1	09/01/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	4.7	NA	NA	NA	NA	443.81	44.66	40-59	399.15
MW-1	12/23/2004	<50 c	NA	<0.50	2.3	1.4	3.6	<0.50	NA	NA	NA	NA	443.81	39.14	40-59	404.67
MW-1	02/28/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	0.54	NA	NA	NA	NA	443.81	32.95	40-59	410.86
MW-1	06/13/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	6.8	443.81	35.00	40-59	408.81
MW-1	09/19/2005	<50	NA	<0.50	<0.50	<0.50	1.2	<0.50	NA	NA	NA	<5.0	443.81	39.29	40-59	404.52
MW-1	12/07/2005	<50	NA	<0.50	<0.50	<0.50	0.56	<0.50	NA	NA	NA	<5.0	443.81	37.56	40-59	406.25
MW-1	03/03/2006	<50.0	NA	<0.500	<0.500	<0.500	<0.500	<0.500	NA	NA	NA	<10.0	443.81	34.00	40-59	409.81
MW-1	**09/21/2006**	**<50.0**	**NA**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<10.0**	**443.81**	**34.24**	**40-59**	**409.57**

MW-2	12/05/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	41.57	40-60	NA
MW-2	12/20/2002	<50	<50	<0.50	<0.50	<0.50	<0.50	190	<2.0	<2.0	<2.0	<50	NA	40.00	40-60	NA
MW-2	03/28/2003	<50	<50	<0.50	<0.50	<0.50	<1.0	46	<2.0	<2.0	<2.0	<5.0	444.61	37.40	40-60	407.21
MW-2	06/26/2003	<500	<50	<5.0	<5.0	<5.0	<10	330	<20	<20	<20	<50	444.61	40.51	40-60	404.10
MW-2	08/25/2003	<500	NA	<5.0	<5.0	<5.0	<10	400	<20	<20	<20	<50	444.61	43.38	40-60	401.23
MW-2	12/09/2003	<50	NA	<0.50	<0.50	<0.50	<1.0	27	<2.0	<2.0	<2.0	<5.0	444.61	37.92	40-60	406.69
MW-2	03/08/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	444.61	33.40	40-60	411.21
MW-2	06/07/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	85	<2.0	<2.0	<2.0	<5.0	444.61	39.18	40-60	405.43
MW-2	09/01/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	140	NA	NA	NA	NA	444.61	45.03	40-60	399.58

ATTACHMENT 5

WELL CONCENTRATIONS
Shell-branded Service Station
1155 Portola Avenue
Livermore, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	Screened Interval (ft.)	GW Elevation (MSL)
MW-2	12/23/2004	<50	NA	<0.50	1.7	0.75	2.6	32	NA	NA	NA	NA	444.61	39.97	40-60	404.64
MW-2	02/28/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	0.74	NA	NA	NA	NA	444.61	34.20	40-60	410.41
MW-2	06/13/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	6.0	444.61	36.00	40-60	408.61
MW-2	09/19/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	8.6	NA	NA	NA	<5.0	444.61	40.08	40-60	404.53
MW-2	12/07/2005	<50	NA	<0.50	<0.50	<0.50	<0.50	6.0	NA	NA	NA	<5.0	444.61	38.68	40-60	405.93
MW-2	03/03/2006	<50.0	NA	<0.500	<0.500	<0.500	<0.500	<0.500	NA	NA	NA	<10.0	444.61	35.18	40-60	409.43
MW-2	**09/21/2006**	**<50.0**	**NA**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**34.2**	**<0.500**	**<0.500**	**<0.500**	**<10.0**	**444.61**	**36.28**	**40-60**	**408.33**
MW-3	12/05/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	40.49	40-55	NA
MW-3	12/20/2002	<50	<50	<0.50	<0.50	<0.50	<0.50	8.7	<2.0	<2.0	<2.0	<50	NA	36.00	40-55	NA
MW-3	03/28/2003	<50	56	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	443.84	36.47	40-55	407.37
MW-3	06/26/2003	<50	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	443.84	38.70	40-55	405.14
MW-3	09/25/2003	76 a	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	443.84	41.12	40-55	402.72
MW-3	12/09/2003	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	443.84	37.27	40-55	406.57
MW-3	03/08/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	120	<2.0	<2.0	<2.0	<5.0	443.84	32.49	40-55	411.35
MW-3	06/07/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	74	<2.0	<2.0	<2.0	<5.0	443.84	37.75	40-55	406.09
MW-3	09/01/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	NA	NA	NA	NA	443.84	43.29	40-55	400.55
MW-3	12/23/2004	<50 c	NA	<0.50	2.3	1.5	4.3	<0.50	NA	NA	NA	NA	443.84	38.64	40-55	405.20
MW-3	02/28/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	NA	NA	NA	NA	443.84	33.70	40-55	410.14
MW-3	06/13/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	12	443.84	35.03	40-55	408.81
MW-3	09/19/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	NA	NA	NA	<5.0	443.84	39.08	40-55	404.76
MW-3	12/07/2005	<50	NA	<0.50	<0.50	<0.50	0.54	<0.50	NA	NA	NA	<5.0	443.84	37.67	40-55	406.17
MW-3	03/03/2006	<50.0	NA	<0.500	<0.500	<0.500	<0.500	<0.500	NA	NA	NA	<10.0	443.84	34.74	40-55	409.10
MW-3	**09/21/2006**	**<50.0**	**NA**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<10.0**	**443.84**	**33.95**	**40-55**	**409.89**
MW-4	12/05/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	41.45	41-61	NA

WELL CONCENTRATIONS
Shell-branded Service Station
1155 Portola Avenue
Livermore, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	Screened Interval (ft.)	GW Elevation (MSL)
MW-4	12/20/2002	<50	61	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<2.0	<50	NA	40.61	41-61	NA
MW-4	03/26/2003	<50	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	444.18	37.16	41-61	407.02
MW-4	06/26/2003	<50	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	444.18	40.05	41-61	404.13
MW-4	08/25/2003	67 a	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	444.18	43.04	41-61	401.14
MW-4	12/09/2003	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	444.18	37.62	41-61	406.56
MW-4	03/08/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	444.18	32.80	41-61	411.38
MW-4	06/07/2004	58 b	NA	0.82	1.2	<0.50	1.1	<0.50	<2.0	<2.0	<2.0	<5.0	444.18	38.94	41-61	405.24
MW-4	09/01/2004	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	NA	NA	NA	NA	444.18	44.18	41-61	400.00
MW-4	12/23/2004	<50 c	NA	0.55	3.8	2.2	7.0	<0.50	NA	NA	NA	NA	444.18	39.83	41-61	404.35
MW-4	02/28/2005	<50 c	NA	<0.50	<0.50	<0.50	<1.0	<0.50	NA	NA	NA	NA	444.18	34.01	41-61	410.17
MW-4	06/13/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	<2.0	<2.0	<2.0	<5.0	444.18	35.70	41-61	408.48
MW-4	09/19/2005	<50	NA	<0.50	<0.50	<0.50	<1.0	<0.50	NA	NA	NA	<5.0	444.18	39.70	41-61	404.48
MW-4	12/07/2005	<50	NA	<0.50	<0.50	<0.50	<0.50	<0.50	NA	NA	NA	<5.0	444.18	38.25	41-61	405.93
MW-4	03/03/2006	<50.0	NA	<0.500	<0.500	<0.500	<0.500	<0.500	NA	NA	NA	<10.0	444.18	34.84	41-61	409.34
MW-4	**09/21/2006**	**<50.0**	**NA**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<10.0**	**444.18**	**34.09**	**41-61**	**410.09**

WELL CONCENTRATIONS
Shell-branded Service Station
1155 Portola Avenue
Livermore, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	TOC (MSL)	Depth to Water (ft.)	Screened Interval (ft.)	GW Elevation (MSL)

Abbreviations:
TPPH = Total petroleum hydrocarbons as gasoline by EPA Method 8260B.
TEPH = Total petroleum hydrocarbons as diesel by modified EPA Method 8015.
BTEX = Benzene, toluene, ethylbenzene, xylenes by EPA Method 8260B.
MTBE = Methyl tertiary butyl ether
DIPE = Di-isopropyl ether, analyzed by EPA Method 8260B
ETBE = Ethyl tertiary butyl ether, analyzed by EPA Method 8260B
TAME = Tertiary amyl methyl ether, analyzed by EPA Method 8260B
TBA = Tertiary butyl alcohol or Tertiary butanol, analyzed by EPA Method 8260B
TOC = Top of Casing Elevation
GW = Groundwater
ug/L = Parts per billion
MSL = Mean sea level
ft. = Feet
<n = Below detection limit
NA = Not applicable

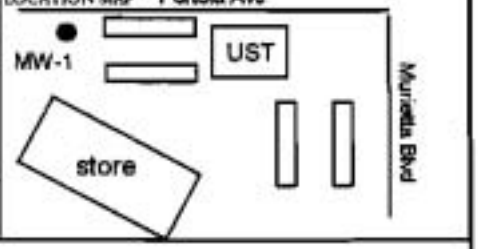
Notes:
a = Hydrocarbon does not match pattern of laboratory's standard.
b = Sample contains discrete peak in addition to gasoline.
c = The concentration reported reflects individual or discrete unidentified peaks not matching a typical fuel pattern.
Site surveyed November 25, 2002 by Mid Coast Engineers.

KHM
ENVIRONMENTAL MANAGEMENT INCORPORATED

PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/22/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	59'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	59'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-1
PAGE 1 OF 3

LOCATION MAP Portola Ave



Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
									AF	Asphalt 5"
			damp			1			GC	**Clayey GRAVEL**; brown with lighter brown, black and gray mottling, 70% subrounded gravels, 25% medium plasticity fines, 5% fine sand
			damp			2				
						3				
			damp			4			GC	**Clayey GRAVEL with Sand**; dark brown, 50% subangular gravels up to 2",, 25% sand, 25% medium plasticity fines, well graded
			damp			5			GW	**Well Graded GRAVEL with Sand**; brown, 80% subrounded gravels, 15% sand, 5% medium plasticity fines
						6				
			damp			7			GC	**Clayey GRAVEL with Sand**; brown, 65% subangular gravels, 20% sand, 15% medium plasticity fines
						8				
						9				
					18	10			GW-GC	**Well Graded GRAVEL with Clay and Sand**; brown, 60% subangular-subrounded gravel, 30% fine to coarse sand, 10% fines
			damp	2.7	19	11				
					21					
						12				
						13				
						14				
					36	15			SC	**Clayey SAND with Gravel**; medium brown, 45% fine to coarse sand, 40-45% fine gravel, 10-15% fines
			damp/ moist	1.5	29	16				
					19					
						17				
						18				
						19				
						20				
					6					
			damp/ moist	2.3	12	21			CL	**Sandy Lean CLAY**; medium brown with light brown mottling, 65% low to medium plasticity fines, 35% fine sand
					23					
						22				

Air Knifed

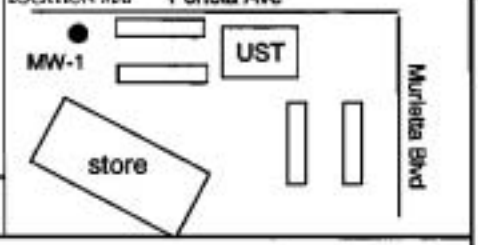
ATTACHMENT 8

KHM
ENVIRONMENTAL MANAGEMENT INCORPORATED

PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/22/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	59'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	59'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-1

LOCATION MAP



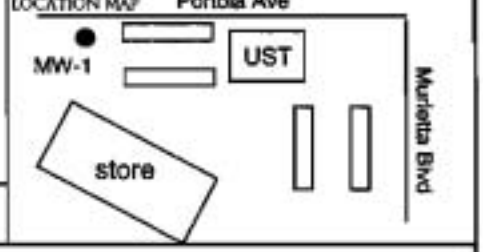
Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Cement Grout					23			CL	continued
					24				plasticity fines, 5% fine sand
				16	25			SW	**Well Graded SAND with Gravel**; brown, 55% very well
		damp	3.2	23	26				graded fine to coarse sand, 40% gravel, 5% fines
				50	27				
					28				
					29				
		very moist	5.5	34	30			GC	**Clayey GRAVEL with Sand**; brown, 50% fractured gravel,
				50/6	31				35% fine to coarse sand, 15% medium plasticity fines,
									occasional highly weathered (FeO) fractured gravel
					32				
					33				
					34				
					35				
					36				
					37				
Bentonite					38				
					39				
Sand		moist/ damp	6.8		40			GW-GC	**Well Graded GRAVEL with Clay and Sand**; brown,
					41				65% fine and coarse subrounded gravel, 25% fine to
									coarse sand, 10% medium plasticity fines
					42				
					43				
					44				

KHM
ENVIRONMENTAL MANAGEMENT INCORPORATED

PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/22/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	59'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	59'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-1
PAGE 3 OF 3

LOCATION MAP



Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Sand					45			AF	
		very moist/ wet	3.5	22 50/6				GW-GC	cont. (grades finer) plasticity fines, 5% fine sand
					46				
	▽	damp			47			CL	**Lean CLAY with Sand**; medium brown, 65% medium plasticity fines, 25% fine sand, 10% gravel
					48				
					49				
				25	50			SP	**Poorly Graded SAND with Gravel**; dark brown, 60%
		wet	1.3	50/6	51				coarse sand, 40% fine gravel, <5% fines
					52				(increase in fines)
		wet							
		v. moist		30	53			GC	**Clayey GRAVEL with Sand**; medium brown, 50% fine to
		wet		50/6	54				coarse gravel, 40% fine to coarse sand, 10% medium plasticity fines
				36	55				
		v. moist/ wet		50/6					
		wet	1.1	36 50/6	56				
					57				
					58				
		damp-moist			59			CL	**Sandy Lean CLAY**; brown, 55% medium plasticity fines, 45% fine sand
					60				**BOTTOM OF BORING @ 59 ft**
					61				
					62				
					63				
					64				
					65				
					66				

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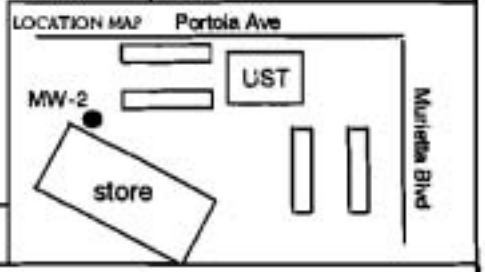
PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/21/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	60'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	60'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-2
PAGE 1 OF 3

LOCATION MAP



Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
									AF	Asphalt 5"
			damp		Air Knifed	1			CL	**Gravelly Lean CLAY**; brown, 60% medium plasticity fines, 30% gravels, 10% sand, well graded
			damp			2			CL	**Lean CLAY with Sand**; brown, 80% medium plasticity fines, 20% fine sand, poorly graded
			damp			3			GM	**Silty GRAVEL**; brown, 50% subrounded gravels, 30% medium plasticity fines, 10% fine sand
			damp			4			GC	**Clayey GRAVEL**; brown, 75% subrounded gravels up to 2", 15% medium plasticity fines, 10% sand
						5				
						6				
			damp			7			GW-GC	**Well Graded GRAVEL with Clay and Sand**; brown, 60% fine gravels, 30% sand, 10% medium plasticity fines
			damp-moist			8				
						9				
			damp-moist		10	10				
			moist	7.4	10	11			CL	**Lean CLAY with Sand**; 75% medium plasticity fines, 25% fine sand
			damp		11	12				
						13				
						14				
					10	15			SP-SC	**Poorly Graded SAND with Clay and Gravel**; brown, 60% coarse sand, 30% fine gravel, 10% medium plasticity fines, occasional FeO coating on gravel
			damp-moist	1.3	11	16				
					20	17				
						18				
						19				
					12	20			CL	**Lean CLAY with Sand**; reddish brown to brown, 80% medium plasticity fines, 15% fine sand, <5% fine gravel, hard
			damp	3.7	15	21				
					24	22				

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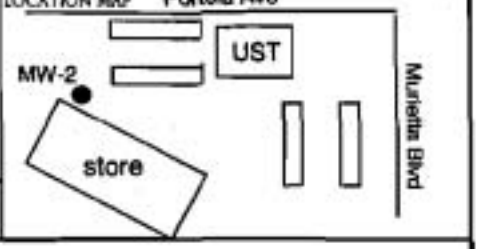
PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/21/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	60'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	60'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-2

LOCATION MAP



Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Cement Grout					23			CL	continued
					24				
		very moist	4.2	40 32 36	25			GC	**Clayey GRAVEL with Sand**; brown, 45% fine gravel, 35% fine to coarse sand, 20% medium plasticity fines
					26				
					27				
					28				
					29				
		very moist	2.6		30				
					31				
					32				
					33				
					34				
		very moist			35				
					36				
Bentonite					37				
					38				
					39				
Sand		very moist	3.7		40			SP-SC	**Poorly Graded SAND with Clay and Gravel**; brown, 60% coarse sand, 30% fine gravel, 10% medium plasticity fines, free water on coarse sand and gravel
					41				
					42				
					43				
					44				

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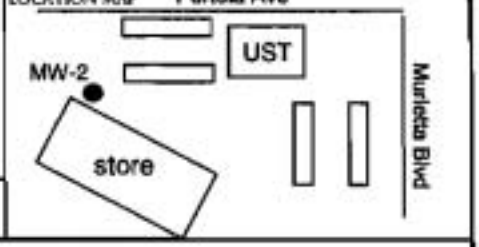
PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/21/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	60'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	60'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-2

LOCATION MAP



Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Sand		very moist	4.4	30 50/6	45–46	■	■	GP	**Poorly Graded GRAVEL with Sand**; medium brown, 55% subrounded gravel, 40% coarse sand, 5% fines, free water on sand and gravel
					47–49				
		very moist to wet		40 50/6	50–53	■	■		(increase in free water on sand and gravel surfaces)
		wet			54	■	■		
		wet			55–56	■	■		
		wet			57–58	■	■		
					59–60				
					61–66				**BOTTOM OF BORING @ 60 ft**

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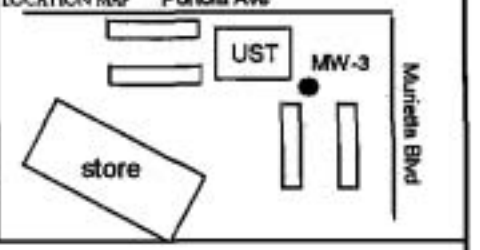
PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/21/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	55'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	55'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-3
PAGE 1 OF 3

LOCATION MAP



Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
			dry-		Air Knifed				AF	Asphalt 5"
			damp			1			GC	**Clayey GRAVEL with Sand**; brown with dark grey mottling, 60% subrounded gravels, 25% sand, 15% fines
			dry-			2			GW	**Well Graded GRAVEL with Sand**; brown, 80% subrounded gravels up to 2", 15% sand, 5% medium plasticity fines
			damp			3				
			dry-			4				
			damp			5				
			dry-		9				GW-GM	**Well Graded GRAVEL with Silt and Sand**; dark brown, 70% subrounded gravel, 20% fine to coarse sand, 10% fines
			damp		23	6				
			dry		41	7				
						8				
						9				
					26	10				
			damp	4.9	26	11				
					14	12				
						13				
						14				
					27	15			GC	**Clayey GRAVEL with Sand**; brown, 70% gravel, 15% fine to coarse sand, 15% medium plasticity fines, occasional FeO stains
			damp	1.6	50/6	16				
						17				
						18				
						19				
			dry	4.3	50/6	20			GP	**Poorly Graded GRAVEL**; light grey to brown, 95% gravel
						21				
						22				

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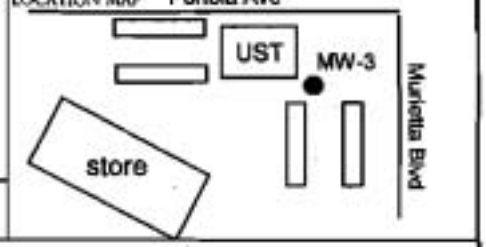
PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/21/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	55'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	55'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-3
PAGE 2 OF 3

LOCATION MAP



Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Cement-Bent.					23		GP	continued
					24			
		damp-moist	1.6	11 15 23	25		GC	**Clayey GRAVEL with Sand**; medium brown, 45% subrounded gravel, 35% medium plasticity fines, 20% fine to coarse sand
					26			
					27			
					28			
					29			
		very moist	4.3	50/6	30			
					31			
					32			(increase in coarse subrounded sand, abundant fractured gravel, free water on sand and gravel surfaces)
					33			
					34			
		very moist	5.0	43 16 27	35			(occasional highly FeO weathered gravel, free water on coarse sand and gravel)
					36			
					37			
Bentonite		damp		9 9 50	38		CL	**Lean CLAY with Sand**; light grey with FeO mottling, 85% medium plasticity fines, 15% fine sand
					39			
			2.3		40		GP-GC	**Poorly Graded GRAVEL with Clay and Sand**; medium brown, 55% gravel, 35% coarse sand, 10% medium plasticity fines, occasional FeO weathered and fractured gravel
Sand		very moist		20 50/6	41			
					42			
					43			
	▽	wet		5 10	44			

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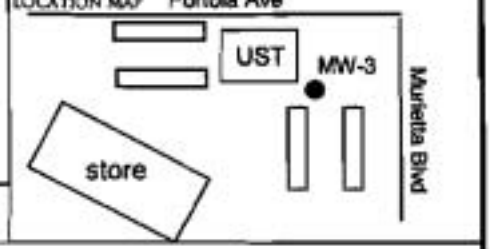
PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/21/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	55'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	55'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-3
PAGE 3 OF 3

LOCATION MAP



Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
					8	45		GP-GC	cont.
			wet	2.2	40				
					50	46			
			wet			47			
						48			
			moist			49		GC	**Clayey GRAVEL with Sand**; 40% gravel, 40% fine to coarse sand, 20% medium plasticity fines
					50/6	50			
			wet					GW-GC	**Well Graded GRAVEL with Clay and Sand**; 45% gravel, 45% fine to coarse sand, 10% medium plasticity fines
						51			
						52			
			wet			53			
						54			
Sand						55			**BOTTOM OF BORING @ 55 ft**
						56			
						57			
						58			
						59			
						60			
						61			
						62			
						63			
						64			
						65			
						66			

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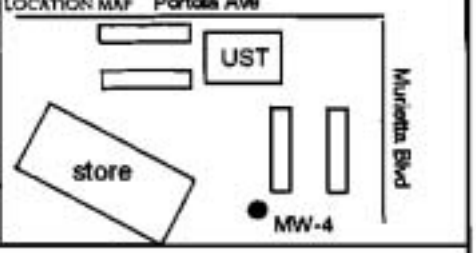
PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/23/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	61'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	61'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-4
PAGE 1 OF 3

LOCATION MAP Portola Ave



Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
			dry-		Air Knifed				AF	Asphalt 5"
			damp			1			GW	**Well Graded GRAVEL with Sand**; brown, 85% subangular gravels, 15% coarse sand
			damp			2			SC	**Clayey SAND with Gravel**; brown, 65% sand, 20% subrounded gravels, 15% medium plasticity fines
						3				
			damp			4			GW-GC	**Well Graded GRAVEL with Clay**; brown, 80% subrounded gravels, 10% sand, 10% medium plasticity fines
			damp			5			GW	**Well graded GRAVEL with Sand**; brown, 85% subrounded gravels, 15% sand
						6				
			damp			7				(grades finer, 5% medium plasticity fines)
						8				
						9				
						10			SM	**Silty SAND**; light brown with dark brown mottling, 45% low plasticity fines, 55% fine sand, abundant rootholes
			damp-dry	4.7		11				
						12				
						13				
						14				
					12	15				(occasional coarse sand)
			damp	7.1	15	16				
					19					
						17				
						18				
						19				
					20	20			GC	**Clayey GRAVEL with Sand**; brown, 55% subangular gravel, 25% fine to coarse sand, 20% medium plasticity fines
			damp-moist		23	21				
					29					
						22				

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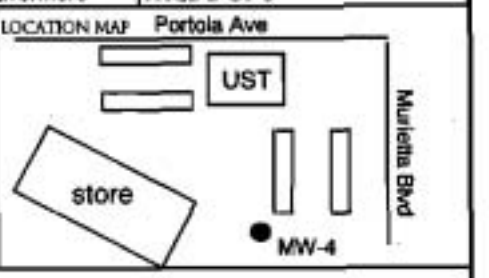
PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/23/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	61'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	61'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-4
PAGE 2 OF 3

LOCATION MAP



Well Completion: Backfill / Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Cement grout					23		GC	cont.
					24			
		damp-moist	4.3	50/6	25			(FeO staining in gravel)
					26			
					27			
					28			
					29			
		very moist	3.6	24 50	30		GW-GC	**Well Graded GRAVEL with Clay and Sand**; 60% subangular gravel, 30% fine to coarse sand, 10% medium plasticity fines, occasional FeO staining in gravel
					31			
					32			
					33			
					34			
					35			
					36			
					37			
					38			
Bentonite					39			
		dry		50/6	40		GP	**Poorly Graded GRAVEL**; light grey, 95% subangular gravel at least 2", < 5% sand, <5% fines
Sand					41			
					42			
					43			
					44			

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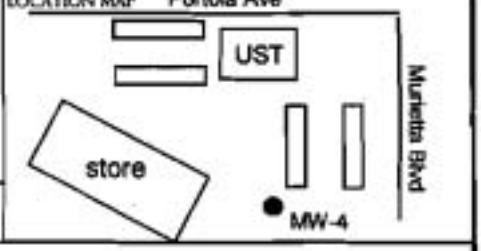
PROJECT NO:	C81-1155 Portola	CLIENT:	Shell OPUS
LOGGED BY:	J. Yantis	LOCATION:	1155 Portola Rd., Livermore
DRILLER:	Gregg Drilling	DATE DRILLED:	10/23/02
DRILLING METHOD:	HSA	HOLE DIAMETER:	8"
SAMPLING METHOD:	SS	HOLE DEPTH:	61'
CASING TYPE:	PVC	WELL DIAMETER:	2"
SLOT SIZE:	0.020"	WELL DEPTH:	61'
GRAVEL PACK:	2/12	CASING STICKUP:	0
ELEVATION		NORTHING	EASTING

BORING/WELL NO: MW-4

LOCATION MAP



Well Completion: Backfill / Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Sand	▽				45		GP	cont.
					46			
					47			
					48			
					49			
		very moist to wet	1.4	31 50/6	50		GW-GC	**Well Graded GRAVEL with Clay and Sand**; brown with faint MnO staining, 70% subrounded gravel, 20% fine to coarse sand, 10% medium plasticity fines
					51			
					52			
					53			
					54			
		wet	2.5		55		GW	**Well Graded GRAVEL with Sand**; brown, 60% fine to coarse subangular gravel, 35% fine to coarse sand, 5% fines
					56			
					57			
					58			
		very moist			59		SM	**Silty SAND**; dark brown, 55% fine sand with dark brown bedding planes, 45% non-plastic to low plasticity fines,
		wet			60		SW	**Well Graded SAND**; dark brown, 95% fine to coarse sand, <5% fines, rare gravel
					61			**BOTTOM OF BORING @ 61 ft**
					62			
					63			
					64			
					65			
					66			