Delta
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April 17, 2006
Project SJ45-30L-1.2006

Mr. Jerry Wickham
Environmental Health Services – Environmental Protection
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

**Re: Work Plan for Soil and Groundwater Assessment**
**Shell Service Station**
**4530 Las Positas Road**
**Livermore, California**

Dear Mr. Wickham:

Delta Environmental Consultants, Inc. (Delta), on behalf of Shell Oil Products US (Shell), proposes soil and groundwater confirmation sampling at the above referenced site (Figure 1). Shell anticipates that a request for an issuance of a no further action case closure letter will be submitted along with the results of a soil and groundwater sampling report.

## BACKGROUND

The following sections present a description of the current service station and a brief summary of previous site soil and groundwater investigations.

### SITE DESCRIPTION

The site is located on the northwestern corner of the intersection of Las Positas Road and North First in Livermore, California (Figure 1). The site is the location of a Shell-branded service station. The service station consists of a convenience store, car wash, six fuel dispenser islands, and three underground fuel storage tanks (USTs). A station plan is presented on Figure 2.

## GRASP

In September 2001, IT Corporation (IT) installed four site groundwater monitoring wells (MW-1 through MW-4, Figure 2). No soil samples were submitted for laboratory analysis during well installation activities. The wells were installed with total depths of 22.5 feet below grade (bg). Wells are screened from 7.5 feet to 22.5 feet bg. The wells were installed as part of Shell's GRoundwater ASsessment Program (GRASP). GRASP is a voluntary initiative by Shell to install groundwater monitoring wells at numerous retail service stations nationwide that do not have any active release cases but have been identified to be in close proximity to one or more public water supply wells. Delta has field verified the nearest water supply wells as agricultural well 3S/2E 3H1, located approximately 2,500 feet northeast of the site; and domestic well 3S/2E 3M1, located approximately 1,800 feet northwest of the site. Based on the California State Water Resources Control Board GeoTracker Database, the nearest water municipal supply well is located approximately 7,500 feet southwest of the site, California Water Service Co. Well 17-01-03S/02E-09L01M.

Following submittal of the Third Quarter 2002 GRASP Groundwater Monitoring Report, the Alameda County Health Care Services, in a letter to Shell dated March 7, 2003, placed the site in the Local Oversight Program.

Initial groundwater samples were collected in September 2001. Groundwater monitoring has been performed since July 2002 (13 events). Currently the site is on a semi-annual monitoring program. With the exception of MTBE detections in Wells MW-2 and MW-4, all other analytes tested have been below the laboratory detection limits. All analytes have been below the laboratory detection limits for the past 8 sampling events, (since July 2003). Historical laboratory results and depth to water measurements are included in the table in Attachment A.

## Work Plan – Soil and Groundwater Investigation

In the pursuit of case closure, Delta proposes to advance five (5) soil borings (SB-1 through SB-5) in the locations shown in Figure 2. The purpose of these borings is to detect any remaining petroleum hydrocarbon source areas in soil beneath the site.

### Description of Methods

Prior to conducting any field work at the site, Delta will prepare a site specific Health and Safety Plan (HASP). The Delta field geologist on-site will review the HASP with site subcontractors at the start of each work day.

***Soil Sampling:***

Site Boring SB-1 through SB-5 will be advanced using a direct push drill rig to an approximate total depth of 15 to 20 feet in order to collect soil and groundwater samples. Borings SB-1 and SB-2 located adjacent to the UST pit, will be advanced to an approximate depth of 20 feet below grade (bg) in order to observe soil and groundwater conditions below the site UST's, which are assumed to be at a depth of 15 feet. Borings SB-3, SB-4 and SB-5 are located adjacent to site piping and dispenser locations and will be advanced to an approximate depth of 15 feet or until first encountered groundwater in order to observe soil and groundwater conditions near piping and dispensers. Depth to water beneath the site is approximately 13 feet bg. Prior to drilling, each borehole location will be surveyed by a geophysical locator and marked for underground utilities. Underground Services Alert (USA) will be notified of the proposed borings a

minimum of 48-hours before Delta begins work at the site. Delta will obtain drilling permits from the Zone 7 Water Agency before initiating any borings at the site.

Soil samples will be collected continuously to the total depth of each boring. Soil samples will be collected in acetate liners pushed directly into the ground. Soil will be analyzed in the field with a photo-ionization detector (PID), and readings from the soil will be recorded on the field logs. Discrete soil samples will be retained for laboratory analysis at 5 foot intervals beginning at 5 feet bg. Samples will then be placed on ice for transport to Test America Sequoia Analytical in Morgan Hill, California. Additional soil samples may also be selected from site borings for laboratory analysis based on PID readings, field observations, and lithology. If field observations from any initial boring indicate evidence of petroleum hydrocarbons at a depths below 15 or 20 feet, a second adjacent geoprobe boring will be drilled to a depth of approximately 35 feet for collection of discrete soil and groundwater samples from a deeper zone.

Grab groundwater samples will also be collected from each boring for analysis. Groundwater will be collected using a Teflon bailer and decanted into laboratory provided containers. After completion of sampling, the borehole will be backfilled with a Portland cement/bentonite slurry mixture (5% bentonite).

***Sample Analyses***

All soil and groundwater samples submitted for laboratory testing will be analyzed for total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethyl benzene, total xylenes (BTEX compounds), the five fuel oxygenates tert-butanol (TBA), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE) and tert-amyl methyl ether (TAME); ethylene dibromide (EDB), 1,2 dichloroethane (1,2-DCA) and Ethanol. Analyses for petroleum hydrocarbons, fuel oxygenates, EDC and EDB will be performed by EPA Method 8260B.

## Soil Investigation Report

Delta will prepare a *Soil and Groundwater Investigation Report* presenting data from proposed Borings B-1 through B-5. The report will include a written description of the work performed, boring location map, boring logs, summary table of soil and groundwater analytical data, and certified analytical reports and chain of custody documentation. All work will be performed under the direction of a California Certified Geologist.

## Schedule

Delta is prepared to perform field work within 45 days of approval of this work plan by ACHSA. A report will be submitted within 30 days of completion of the field work. If soil and groundwater results are favorable, Delta on behalf of Shell will request case closure for the current leaking underground fuel tank case associated with the site.

## REMARKS

The recommendations contained in this report represent Delta's professional opinions based upon the currently available information and are arrived at in accordance with currently acceptable professional standards. This report is based upon a specific scope of work requested by the client. The Contract between Delta and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Delta's Client

and anyone else specifically listed on this report. Delta will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Delta makes no express or implied warranty as to the contents of this report.

If you have any questions regarding this site, please contact Lee Dooley of Delta at (408) 826-1880, or Mr. Denis Brown (Shell project manager) at (707) 865-0251.

Sincerely,
**DELTA ENVIRONMENTAL CONSULTANTS, INC.**

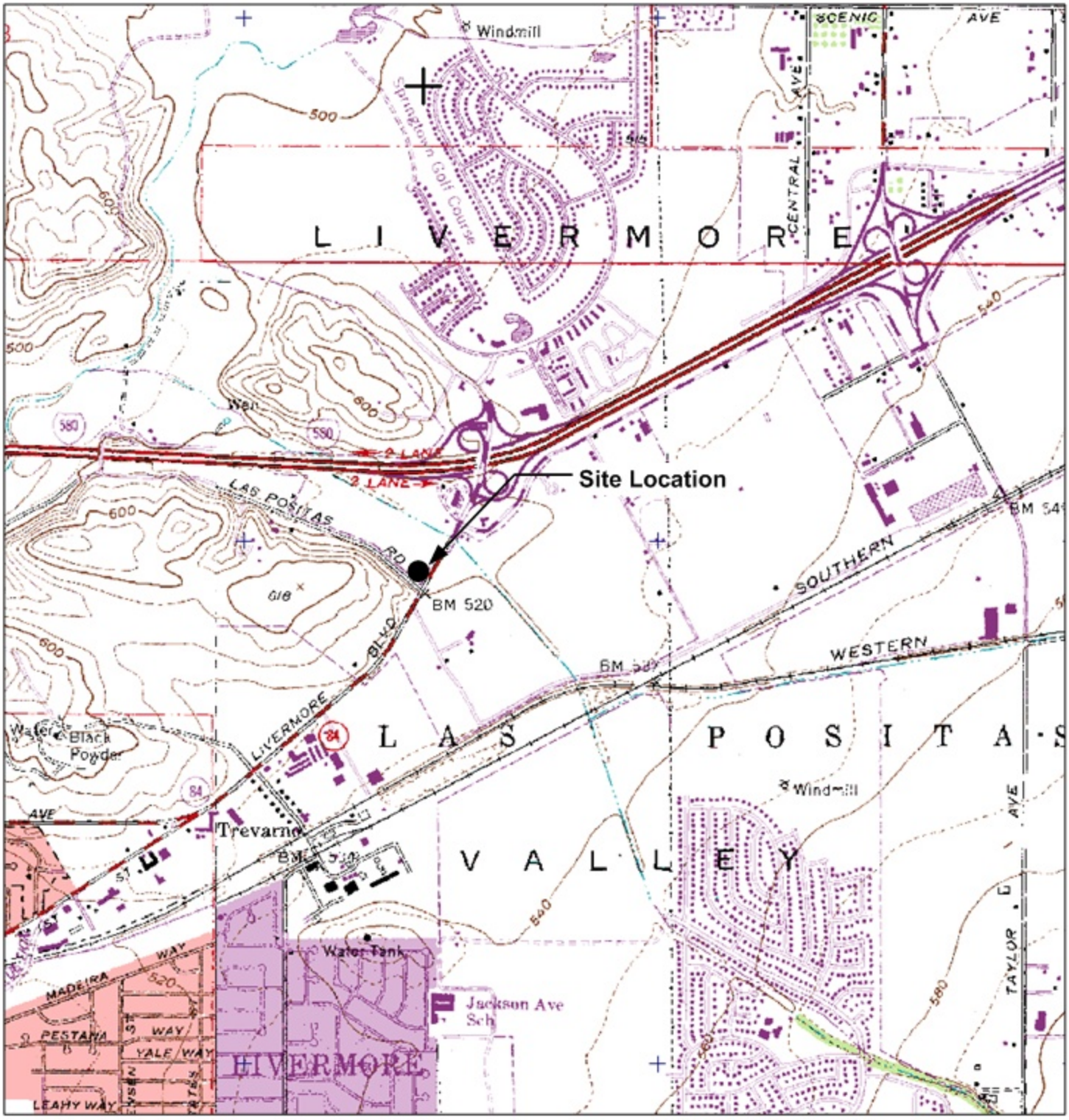
Rebecca Wolff
Project Geologist

R. Lee Dooley
Senior Hydrogeologist
CHG 0183


**Attachments:**

Figure 1 – Site Location Map
Figure 2 – Site Map with Proposed Boring Locations
Attachment A – Well Concentrations Table

cc: Denis Brown, Shell Oil Products US, Monte Rio
Isabel Mejia, Shell Oil Products US, Carson




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

QUADRANGLE LOCATION

North

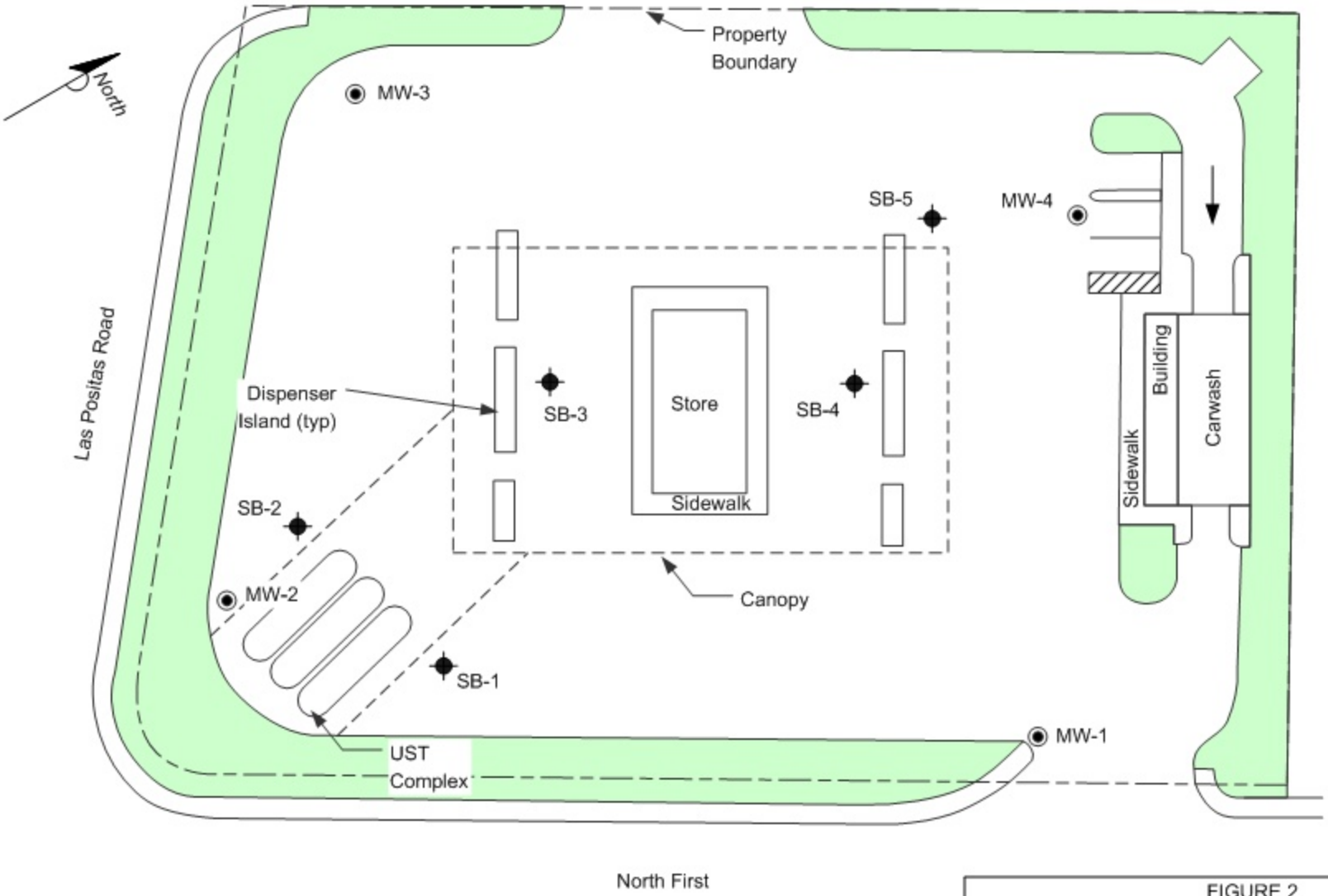
0 1,800 3,600
Scale, Feet

FIGURE 1
SITE LOCATION MAP

SHELL-BRANDED SERVICE STATION
4530 Las Positas Roas
Livermore, California

| | |
|---|---|
| PROJECT NO. SJ45-30L-1.2004 | DRAWN BY VF 9/26/03 |
| FILE NO. SJ45-30L-1.2004 | PREPARED BY VF |
| REVISION NO. | REVIEWED BY |

Delta Environmental Consultants, Inc.




**LEGEND**

MW-2 ◉ **GROUNDWATER MONITORING WELL**

SB-1 ✦ **PROPOSED SOIL BORING LOCATIONS**

0 40 FT

APPROX. SCALE

FIGURE 2

SITE MAP

SHELL-BRANDED SERVICE STATION
4530 Las Positas Road
Livermore, California

| | |
|---|---|
| PROJECT NO. SJ45-30L-1.2006 | DRAWN BY JL 02/27/06 |
| FILE NO. SJ45-30-1.2006 | PREPARED BY AP |
| REVISION NO. 1 | REVIEWED BY |

Delta Environmental Consultants, Inc.

# ATTACHMENT A

Well Concentrations Table

# WELL CONCENTRATIONS
## Shell-branded Service Station
## 4530 Las Positas Road
## Livermore, CA

| Well ID | Date | TPPH (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.) | GW Elevation (MSL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 09/20/2001 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | NA | NA | NA |
| MW-1 | 07/09/2002 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 519.86 | 13.13 | 506.73 |
| MW-1 | 10/25/2002 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 519.86 | 13.17 | 506.69 |
| MW-1 | 01/24/2003 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 519.86 | 12.80 | 507.06 |
| MW-1 | 04/15/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 519.86 | 12.64 | 507.22 |
| MW-1 | 07/17/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 519.86 | 13.25 | 506.61 |
| MW-1 | 10/21/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 519.86 | 13.43 | 506.43 |
| MW-1 | 01/13/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 519.86 | 13.15 | 506.71 |
| MW-1 | 04/07/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | NA | NA | NA | NA | 519.86 | 13.04 | 506.82 |
| MW-1 | 07/14/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | NA | NA | NA | NA | 519.86 | 13.28 | 506.58 |
| MW-1 | 04/13/2005 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | 519.86 | 12.99 | 506.87 |
| MW-1 | 07/21/2005 | <50 a | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 519.86 | 12.75 | 507.11 |
| **MW-1** | **01/31/2006** | **<50.0** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<10.0** | **519.86** | **12.79** | **507.07** |
| MW-2 | 09/20/2001 | NA | <0.50 | <0.50 | <0.50 | <0.50 | 0.6 | <2.0 | <2.0 | <2.0 | <50 | NA | NA | NA |
| MW-2 | 07/09/2002 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 518.50 | 12.41 | 506.09 |
| MW-2 | 10/25/2002 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 518.50 | 12.34 | 506.16 |
| MW-2 | 01/24/2003 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 518.50 | 11.56 | 506.94 |
| MW-2 | 04/15/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.50 | 11.38 | 507.12 |
| MW-2 | 07/17/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.50 | 13.45 | 505.05 |
| MW-2 | 10/21/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.50 | 12.64 | 505.86 |
| MW-2 | 01/13/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.50 | 11.97 | 506.53 |
| MW-2 | 04/07/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | NA | NA | NA | NA | 518.50 | 11.91 | 506.59 |
| MW-2 | 07/14/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | NA | NA | NA | NA | 518.50 | 12.44 | 506.06 |
| MW-2 | 04/13/2005 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | 518.50 | 11.81 | 506.69 |
| MW-2 | 07/21/2005 | <50 a | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.50 | 11.53 | 506.97 |

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## Shell-branded Service Station
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## Livermore, CA

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MW-2** | **01/31/2006** | **<50.0** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<10.0** | **518.50** | **11.54** | **506.96** |
| MW-3 | 09/20/2001 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | NA | NA | NA |
| MW-3 | 07/09/2002 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 518.93 | 11.58 | 507.35 |
| MW-3 | 10/25/2002 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 518.93 | 11.17 | 507.76 |
| MW-3 | 01/24/2003 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 518.93 | 11.18 | 507.75 |
| MW-3 | 04/15/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.93 | 11.25 | 507.68 |
| MW-3 | 07/17/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.93 | 11.39 | 507.54 |
| MW-3 | 10/21/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.93 | 11.54 | 507.39 |
| MW-3 | 01/13/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.93 | 11.27 | 507.66 |
| MW-3 | 04/07/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | NA | NA | NA | NA | 518.93 | 11.34 | 507.59 |
| MW-3 | 07/14/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | NA | NA | NA | NA | 518.93 | 11.43 | 507.50 |
| MW-3 | 04/13/2005 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | 518.93 | 11.48 | 507.45 |
| MW-3 | 07/21/2005 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 518.93 | 11.18 | 507.75 |
| **MW-3** | **01/31/2006** | **<50.0** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<10.0** | **518.93** | **11.38** | **507.55** |
| MW-4 | 11/06/2001 | NA | <0.50 | <0.50 | <0.50 | <0.50 | 16.0 | <2.0 | <2.0 | <2.0 | <50 | NA | NA | NA |
| MW-4 | 07/09/2002 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | 470 | <2.0 | <2.0 | <2.0 | <50 | 519.44 | 13.42 | 506.02 |
| MW-4 | 10/25/2002 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | 22 | <2.0 | <2.0 | <2.0 | <50 | 519.44 | 13.42 | 506.02 |
| MW-4 | 01/24/2003 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 | <2.0 | <2.0 | <50 | 519.44 | 13.07 | 506.37 |
| MW-4 | 04/15/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | 2.0 | <2.0 | <2.0 | <2.0 | <5.0 | 519.44 | 12.93 | 506.51 |
| MW-4 | 07/17/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 519.44 | 13.51 | 505.93 |
| MW-4 | 10/21/2003 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 519.44 | 13.69 | 505.75 |
| MW-4 | 01/13/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 519.44 | 13.48 | 505.96 |
| MW-4 | 04/07/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | NA | NA | NA | NA | 519.44 | 13.36 | 506.08 |
| MW-4 | 07/14/2004 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | NA | NA | NA | NA | 519.44 | 13.47 | 505.97 |

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## Shell-branded Service Station
## 4530 Las Positas Road
## Livermore, CA

| Well ID | Date | TPPH (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.) | GW Elevation (MSL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-4 | 04/13/2005 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <5.0 | 519.44 | 13.18 | 506.26 |
| MW-4 | 07/21/2005 | <50 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <2.0 | <2.0 | <2.0 | <5.0 | 519.44 | 13.10 | 506.34 |
| **MW-4** | **01/31/2006** | **<50.0** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<0.500** | **<10.0** | **519.44** | **13.12** | **506.32** |

Abbreviations:
TPPH = Total petroleum hydrocarbons as gasoline by EPA Method 8260B.
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, 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 = The concentration reported reflects individual or discrete unidentified peaks not matching a typical fuel pattern.
Survey data provided by KHM Environmental Management, Inc.