



*Solving environment-related business problems worldwide*

[www.deltaenv.com](http://www.deltaenv.com)

175 Bernal Road • Suite 200  
San Jose, California 95119 USA

800.477.7411  
Fax 408.225.8506

April 17, 2006  
Project No. SJ31-8LI-1

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

**Re: Work Plan for Monitoring Well Destructions  
Former Shell Service Station  
318 South Livermore Avenue  
Livermore, California**

Dear Mr. Wickham:

Delta Environmental Consultants, Inc. (Delta), on behalf of Shell Oil Products US (Shell), has prepared this work plan outlining proposed monitoring well destruction procedures for the above referenced site. This work plan is being submitted at the request of Mr. Wickham of Alameda County Environmental Health (ACEH) as per telephone conversation between Delta and Mr. Wickham on April 4, 2006.

## **BACKGROUND**

In September 2001, IT Corporation installed four site groundwater monitoring wells (MW-5 through MW-8) as part of Shell's voluntary Groundwater Assessment Program (GRASP). Fourteen quarterly groundwater sampling events have now been performed to date. On September 15, 2005, Delta supervised the installation of one additional on-site monitoring well (MW-9) in the direction of the primary shallow groundwater gradient. Three quarterly groundwater sampling events have now been performed to date.

The site's fuel system was removed in December 2003, and the subject property was divested by Shell in 2004. The current property owner, the City of Livermore, has requested that site Wells MW-7 through MW-9 be destroyed in order to accommodate impending site redevelopment.

A member of:



## **WORK PLAN**

Delta, on behalf of Shell, proposes to destroy all five site monitoring wells (MW-5 through MW-9). Although access to Wells MW-5 and MW-6 is not likely to be jeopardized by site redevelopment, Delta recommends the destruction of both wells in addition to the City's request. Wells MW-5 and MW-6 are either upgradient or cross-gradient and have been non-detect for petroleum hydrocarbons and fuel oxygenates for the last seven consecutive sampling events. A site map showing the location of the on-site monitoring wells is included as Figure 1. The five monitoring wells are a maximum of 55.5 feet deep. A table of well construction details is included as Table 1. Groundwater beneath the site is anticipated to be approximately 23 feet below grade (bg) based on previous quarterly monitoring reports.

Well destruction activities will take place on April 19 and 20, 2006. Well destruction permits will be obtained by Delta from the Zone 7 Water Agency (Zone 7). A Delta field geologist will oversee the well destructions, which will be completed by Test America, Inc. (C57- 819548). Well boxes will be removed and well casings will be completely over-drilled, per Zone 7 requirements. The remaining openings will be backfilled with Type I/II Portland cement grout to approximately 1 foot bg. Grout will be tremmied into the well casings from the bottom, thereby pushing out any groundwater within the augers atop the rising grout column. Surfaces will then be finished off flush to grade with gravel and/or sand.

A report documenting all well destruction field activities, including copies of the well destruction permits from Zone 7 and completed Department of Water Resources Well Completion Reports, will be submitted to the ACEH.

## **REMARKS**

The information 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 Debbie Arnold (Delta) at (408) 826-1873, or Denis Brown (Shell) at (707) 865-0251.

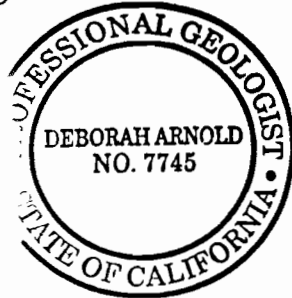
Sincerely,

**DELTA ENVIRONMENTAL CONSULTANTS, INC.**

*Heather Buchinger*  
for Andrew Persio  
Staff Geologist

*D. Arnold*

Debbie Arnold  
Project Manager  
RG 7745



Attachments: Table 1 – Well Construction Details  
Figure 1 – Site Map

cc: Denis Brown, Shell Oil Products US, Monte Rio  
Betty Graham, RWQCB, Oakland  
Chris Davidson, Redevelopment Agency, City of Livermore, Livermore

**TABLE 1**  
**Well Construction Details**  
 318 Livermore Avenue  
 Livermore, California

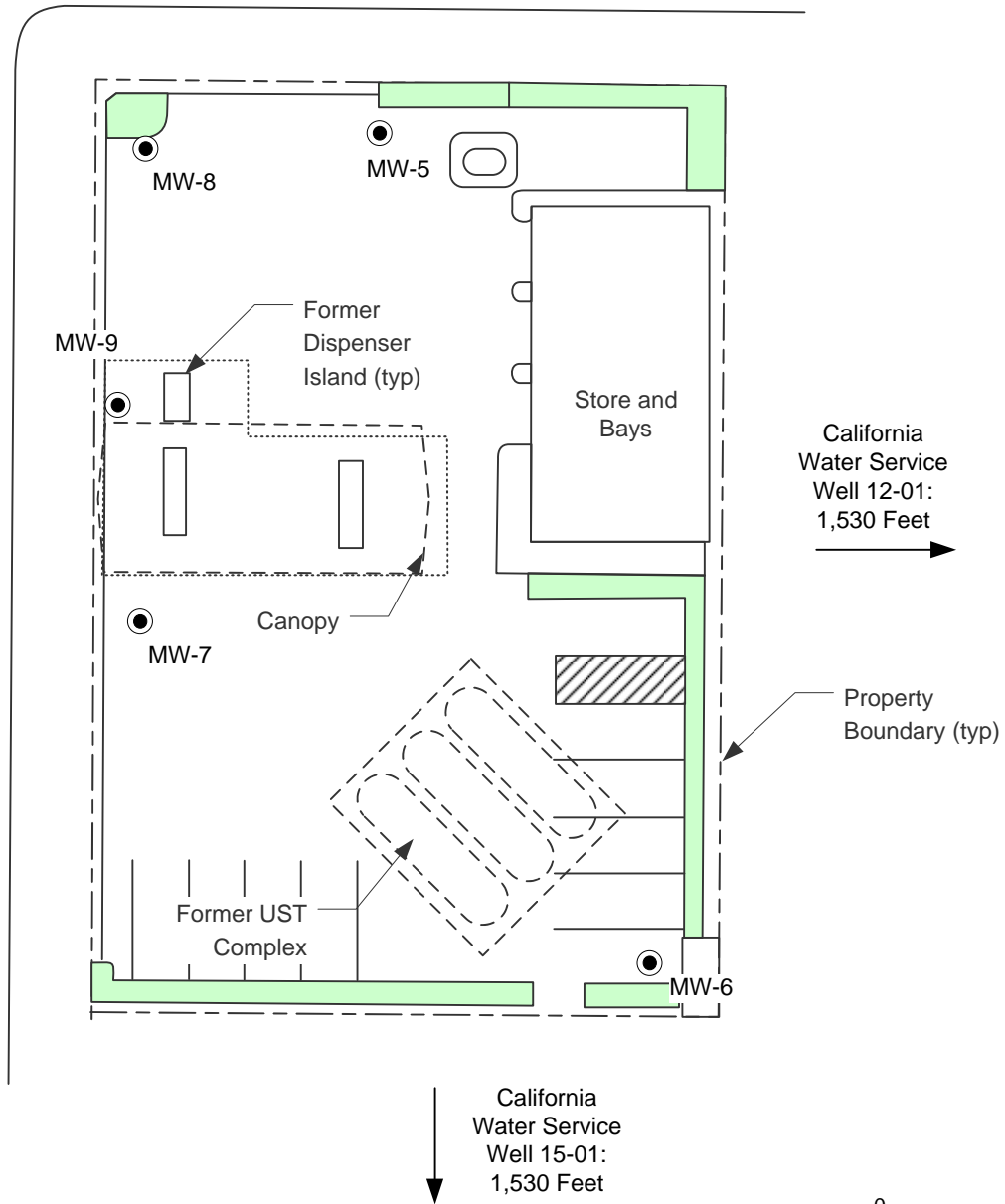
Well ID	Date Installed (Date)	Casing Diameter (inches)	Total Depth of Boring (feet bg)	Total Depth of Well (feet bg)	Screened Interval (feet bg)	Top of Casing Elevation (feet-msl)	Sand Interval (feet bg)	Bentonite Inteval (feet bg)	Seal Interval (feet bg)
MW-5	9/14/2001	2	56.5	55.5	40.5 - 55.5	495.47	38.5 - 55.5	36.5 - 38.5	0 - 36.5
MW-6	9/17/2001	2	53.5	53.5	38.5 - 53.5	497.57	36.5 - 53.5	34.5 - 36.5	0 - 34.5
MW-7	9/17/2001	2	53.5	51.5	36.5 - 51.5	495.58	34.5 - 51.5	32.5 - 34.5	0 - 32.5
MW-8	9/18/2001	2	51.5	51.5	36.5 - 51.5	494.90	34.5 - 51.5	32.5 - 34.5	0 - 32.5
MW-9	9/15/2005	4	32	32	28 - 32	494.77	27 - 32	25 - 27	0 - 25

Notes:  
 bg = below ground  
 msl = mean sea level



Third Street

South Livermore Avenue



APPROX. SCALE

**LEGEND**

MW-6 ● **GROUNDWATER MONITORING WELL**

**FIGURE 1**

**SITE MAP**

**FORMER SHELL-BRANDED SERVICE STATION**  
318 South Livermore Avenue  
Livermore, California

PROJECT NO. SJ31-8LI-1.2006	DRAWN BY JL 04/17/06
FILE NO. SJ31-8LI-1.2006	PREPARED BY DA
REVISION NO. 1	REVIEWED BY

