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Alameda County  
Environmental Health

December 14, 2006

Mr. Donald Hwang  
Alameda County Health Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502



**RE: Work Plan - Monitoring Well Abandonment and Replacement  
76 Station No. 5760  
376 Lewelling Boulevard  
San Lorenzo, California**

Dear Mr. Hwang:

On behalf of Conoco Phillips Company (COP), Delta Consultants (Delta), has prepared this work plan proposing the removal and replacement of two monitoring wells at the site located at 376 Lewelling Boulevard, San Lorenzo, California (Figure 1).

Groundwater monitoring wells U-1 and U-3 are currently used for groundwater monitoring and were previously used for remediation at the site. Analytical data from quarterly groundwater samples collected from these two monitoring wells shows they are consistently impacted by petroleum hydrocarbon contamination. It is suspected that this hydrocarbon impact may be originating from fuel spills at the surface. Therefore, Delta is proposing the removal and replacement of the two monitoring wells. The monitoring well locations are shown on Figure 2.

### **SITE DESCRIPTION**

The site is located at the southeast corner of the intersection of Lewelling Boulevard and Usher Street in San Lorenzo California. The site is currently an active service station with two dispenser islands, one underground waste-oil tank, two underground gasoline storage tanks (USTs), and a station building with two mechanic's bays.

## **PREVIOUS ASSESSMENT**

The underground storage tanks (USTs) were removed and replaced in November 1987. At that time monitoring well U-1 was installed in response to the contamination observed during the UST replacement. Information on the installation of well U-1 is documented in a report *Well Installation* prepared by Woodward-Clyde Consultants dated March 25, 1988. Three additional monitoring wells (U-2, U-3, and U-4) were installed in August 1990 by GeoStrategies Inc. (GSI). The installation of these monitoring wells is documented in a report *Monitoring Well Installation Report* prepared by GSI dated November 16, 1990.

In March 1992 GSI installed four off-site monitoring wells (U-5 through U-8) to further delineate the groundwater hydrocarbon plume. The installation of these monitoring wells is documented in a report *Well Installation Report* prepared by GSI dated June 15, 1992.

An additional off-site monitoring well, U-9, was installed by GSI in May 1993. The installation of this monitoring well is documented in a report *Well Installation Report* prepared by GSI dated August 9, 1993.

In September 1993, twelve borings were advanced as part of a property divestment program. Due to hydrocarbon impacted soils being encountered, three of the borings were converted to vapor extraction wells.

In March 1994, the delineation of hydrocarbon-impacted soils was completed with the advancement of two additional soil borings.

Between August 8 and 13, 1994, a soil vapor extraction (SVE) feasibility test was conducted by Pacific Environmental Group (PEG). The results of the test showed SVE to be an applicable technology for removal of petroleum hydrocarbons from soil and groundwater beneath the site.

In September 1995 a combination SVE and groundwater treatment (GWT) system was constructed at the site. Start-up activities for the GWT system began on October 3, 1995. SVE system start-up and continuous GWT operation began in mid-October 1995. The system continued to operate until February 1997 when it was shut down due to diminishing incremental benefit.

## **SENSITIVE RECEPTORS**

A sensitive receptor survey was completed in August 2006. No wells were identified within 1,000 feet of the site.

## **PROPOSED ACTIVITIES**

### **Permitting, Utility Notification and Borehole Clearance**

Before commencing field operations Delta will prepare a Health and Safety Plan in accordance with state and federal requirements for use during on-site assessment activities. In addition, drilling permits for the abandonment of the monitoring wells U-1

and U-3 and for the installation of the proposed monitoring wells will be obtained from the Alameda County Health Agency (ACHA). Prior to drilling, Underground Service Alert (USA) and a private utility locator will be notified as required to clear the proposed drilling locations for underground utilities.

### **Monitoring Well Abandonment and Installation**

The existing monitoring wells will be abandoned by over-drilling using a truck mounted drill-rig equipped with 11-inch hollow stem augers. The over-drilling will advance to depths of 31 and 26 feet below the ground surface (bgs) in monitoring well borings U-1 and U-3, respectively. These depths are 1-foot beneath the depths to which these monitoring wells were originally constructed. Because the new wells are to be constructed in the same borings as the original wells, no soil samples will be collected.

The borings will be converted to groundwater monitoring wells by installing a 2-inch diameter schedule 40 PVC well casing with a screen interval from 10 to 25 feet bgs in both the monitoring well U-1R boring and the monitoring well U-3R boring. Prior to monitoring well construction, boring U-1R will be back-filled from the total depth of 31 feet bgs with bentonite chips to a depth of 25 feet bgs. The perforation size in the screen interval will be 0.010-inch. A sand pack of RMC Lonestar Sand #2/12 or equivalent will be installed into the annular space and extend approximately one foot above the top of the screen interval.

A one-foot thick bentonite seal will be placed on top of the sand pack. The monitoring wells will be surged prior to the placement of the bentonite seal to promote settling of the sand pack. The remainder of the annular space will be filled with neat cement and the monitoring wells will be fitted with a locking cap and encased in a traffic-rated protective vault placed at existing ground level.

### **Well Development, Monitoring, and Sampling**

The monitoring wells will be developed a minimum 72 hours after completion. A minimum 10 well volumes will be removed from each monitoring well during the development process.

The newly installed monitoring wells, U-1R and U-3R, will be sampled a minimum 48 hours after the wells have been developed as part of the first monitoring and sampling event following installation and development. Groundwater samples collected from the monitoring wells will be analyzed for TPPH, BTEX, MTBE, and ethanol by EPA Method 8260B.

### **Wellhead Survey**

Following the completion of the new monitoring wells, a California licensed surveyor will survey the northing and easting of the monitoring wells using Datum NGVD29 or NAD 88. The monitoring well elevations will be surveyed relative to mean sea level, with a precision of +/- 0.01 foot. A global positioning system (GPS) will also be used to survey the latitude and longitude of the well to be uploaded into California's Geo Tracker database system. The survey of the well location will be to sub-meter precision.

## Disposal of Drill Cuttings and Wastewater

Drill cuttings and wastewater generated during well abandonment, installation, and development activities will be placed into properly labeled 55-gallon Department of Transportation (DOT) approved steel drums and stored on the service station property. Samples of the drill cuttings and generated wastewater will be collected, properly labeled and placed on ice pending submittal to a California-certified laboratory where they will be analyzed for TPH, BTEX, and MTBE by EPA Method 8260B and total lead by EPA Method 6010B. An appropriate chain-of-custody will accompany the samples during transportation to the laboratory. Pending laboratory analytical results, the drummed drill cuttings and wastewater will be profiled, transported, and disposed of at a COP approved facility.

## Reporting

Following completion of the field work and receipt of analytical results, a monitoring well abandonment and installation report will be prepared and submitted within 60 days. The report will present the details of the boring activities, including copies of boring permits, and details of any disposal activities and copies of disposal documents. All required electronic submittals will be uploaded to the State Geotracker database.

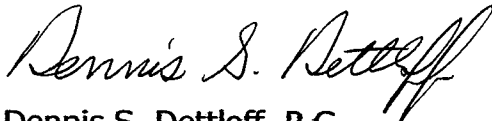
## REMARKS/SIGNATURES

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 will be 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 project, please contact me at (916) 503-1261 or Ms. Shelby Lathrop of ConocoPhillips at 916-558-7609.

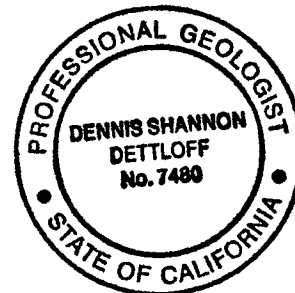
Sincerely,

**DELTA ENVIRONMENTAL CONSULTANTS, INC.**



Dennis S. Dettloff, P.G.  
Project Manger

California Registered Professional Geologist No. 7480

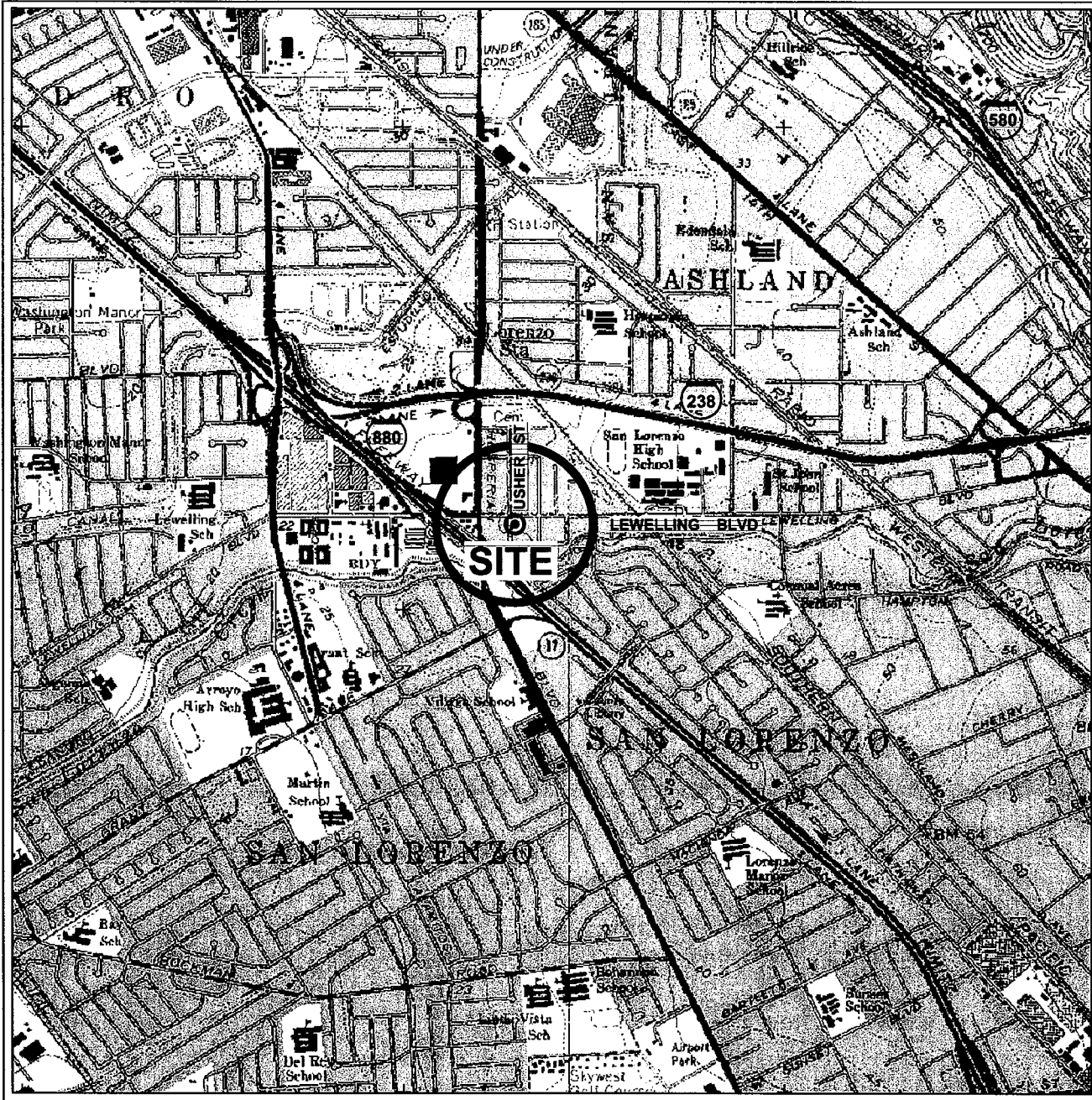


**Attachments:**

**Figure 1 - Site Location Map**

**Figure 2 - Site Plan**

cc: Ms. Shelby Lathrop, ConocoPhillips (electronic copy only)



GENERAL NOTES:  
 BASE MAP FROM 3-D TOPO QUADS  
 SAN LEANDRO AND HAYWARD, CA. QUADRANGLE  
 1967

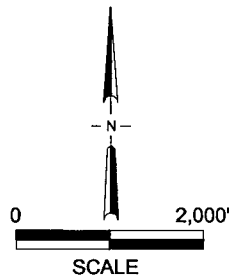


FIGURE 1

SITE LOCATION MAP  
 76 SERVICE STATION NO. 5760  
 376 LEWELLING BOULEVARD  
 SAN LORENZO, CA.

PROJECT NO. C105760	DRAWN BY K. MARTIN
FILE NO. 1202-SLM	PREPARED BY D. DETTLOFF
DATE 12 DEC 06	REV. 0
	REVIEWED BY



