

December 16, 2005

Re: **Site Conceptual Model – Work Plan
Shell-branded Service Station
1801 Santa Rita Road
Pleasanton, California**

Dear Mr. Jerry Wickham:

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Sincerely,
Shell Oil Products US



Denis L. Brown
Project Manager

December 16, 2005
Project SJ18-01S-1

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

Re: **Site Conceptual Model/Work Plan**
Shell Service Station
1801 Santa Rita Road
Pleasanton, California

Dear Mr. Wickham,

Delta Environmental Consultants, Inc. (Delta), on behalf of Shell Oil Products US (Shell), has prepared the attached electronic submittal of the requested *Site Conceptual Model/Work Plan* for the above-referenced site.

REMARKS

The recommendations and conclusions 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.

Sincerely,

Delta Environmental Consultants, Inc.

Debbie Arnold
Project Geologist
PG 7745

ATTACHMENTS:

CD – Site Conceptual Model/ Work Plan, December 16, 2005

cc: Denis Brown, Shell Oil Products US, Carson
Isabel Mejia, Shell Oil Products US, Carson (hard copy)

Shell Oil Products US
Site Conceptual Model (December 2005)
Shell-branded Service Station
1801 Santa Rita Road, Pleasanton, California

Explanation of abbreviations at bottom of table.

	DESCRIPTION	Data Tables	Graphics	Reference	Data Gaps	Work Necessary to fill data gap	Comments
Regional Setting	<p>Geology/Stratigraphy The site is located within the north-western portion of Livermore Valley. A geologic map and geologic cross section covering the site area are included in California DWR Bulletin 118-2. The site is located on what is mapped as Younger Fluvial Deposits (Qyfo). Qyfo deposits are described as unconsolidated, mainly fine grained sand, silt, and silty clay deposits. Qyfo deposits grade northeast of the site into younger alluvial fan deposits (Qyf), described as unconsolidated deposits of fine sand and silt, that interfinger with Qyfo deposits at the valley margins.</p>		<p>Surficial geology map Geologic Cross Section</p> <p>Site Location Map</p>	<p>DWR Bulletin 118-2 (June 1974)</p> <p>USGS Topographic Quadrangle</p>			
	<p>Hydrogeology The site is located near the western edge of the Amador Subbasin of the Livermore Valley Groundwater Basin. Groundwater in the Amador Subbasin is both confined and unconfined. Each water bearing zone's potentiometric surface shares a similar elevation. In the section of the Amador Subbasin where the site is located, depth to groundwater generally ranges between 20 to 50 feet bg, and has a potentiometric surface which slopes to the southwest.</p> <p>Surface water in the Amador Subbasin drains in a westward direction towards the Bernal Subbasin by the Arroyo Valle and Arroyo Mocho (the two principal streams of Livermore Valley).</p>		<p>Zone 7 groundwater contour map Subbasin Map</p>	<p>Zone 7 (August 2004)</p> <p>DWR Bulletin 118-2 (June 1974)</p>			
	<p>Nearby Release Sites No current open LUFT sites were identified within ½ mile of the site. Closest open LUFT site appears to be a Mobil Service Station located at 1024 Main Street in Pleasanton, approximately ¾ mile south of the subject site.</p>			<p>SWRCB Geotracker website</p>			
Site Setting	<p>Site Geology Based on the borings for the four site wells, the site is underlain by clays and silts to a depth of approximately 50 feet bg. Coarse grained sands are initially encountered between approximately 50 and 55 feet bg in site borings. Coarse grained materials continue to approximately 95 feet bg, at which point fine grained silts and clays are encountered again.</p>		<p>Boring Logs for Wells MW-1 through MW-4</p>	<p>"Site Assessment Report" KHM (February 2003)</p>			
	<p>Groundwater Conditions <i>On-site Well Installations</i> On October 10 through 15, 2002, KHM (now Delta) supervised the drilling and installation of four groundwater monitoring wells (MW-1, MW-2, MW-3, and MW-4) as part of Shell's Groundwater Assessment Program (GRASP). GRASP is a voluntary initiative by Shell to install groundwater monitoring</p>	<p>MW Construction Details</p>	<p>Boring Logs for Wells MW-1 through MW-4</p>	<p>"Site Assessment Report" KHM (February 2003)</p>			

	DESCRIPTION	Data Tables	Graphics	Reference	Data Gaps	Work Necessary to fill data gap	Comments
	<p>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 sensitive receptors. The well locations are shown on the site map.</p> <p>Wells MW-1 through MW-4 vary in total depth from 92.5 to 97.5 feet bg. Site wells were constructed with 15 feet of screen beginning at approximately 80 feet bg to total depth. Well construction details are provided on the attached table.</p> <p><i>Fourth Quarter 2005 Groundwater Monitoring</i> Depth to groundwater in the four monitoring wells currently ranges from 55.05 to 56.51 feet below top of casing (Blaine Tech Field Sheets). A groundwater elevation contour map based on data from the October 20, 2005 (most recent monitoring event) indicates a consistent flow direction towards the west at a horizontal gradient of less than 0.01 feet/feet. The groundwater elevation contour map for fourth quarter 2005 is included. A rose diagram of historic groundwater flow directions is also included on the map. Historically, the groundwater flow direction has varied between southeast and southwest.</p>		<p>Groundwater Elevation Contour Map - October 20, 2005</p>	<p>"Semi-annual Groundwater Monitoring Report- Fourth Quarter 2005" Delta (October 2005)</p>	<p>The cause for the 30-foot depth to water decrease in site wells is unknown.</p>	<p>Research possible causes for the increase in depth to water (inactive well, recharge zone, etc.?).</p>	<p>Contact Zone 7 Water Agency</p>
	<p>Source Area <i>On-Site Well Installation Analytical Results</i> A total of nine soil samples were retained for laboratory analysis during well installation activities based on elevated PID readings (> 10 ppmV). TPH-G and BTEX compounds were detected in a total of seven samples from Wells MW-1 and MW-4 (located to the west and south of the UST complex, and adjacent to site fuel dispensers). TPH-G was detected at a maximum concentration of 420 mg/kg in a soil sample from Well MW-1 at a depth of 28.5' bg. Benzene was detected at a maximum concentration of 2 mg/kg in a soil sample from Well MW-4 at a depth of 34.5' bg. No petroleum hydrocarbons were detected below a depth of 45 feet bg.</p> <p>On January 3, 2002, a URR was submitted to the Livermore-Pleasanton Fire Department based on soil analytical results. A copy of the URR is included in the Site Assessment Report dated February 14, 2003.</p> <p><i>Product Piping and Dispenser Upgrades</i> In November 2002, KHM performed soil sampling and analyses associated with product piping and dispenser upgrades. Eleven confirmation soil samples were collected beneath the product piping and dispensers for laboratory analysis. All analytes tested were below the laboratory reporting limits.</p> <p><i>Hoist Removal and Replacement</i> In April 2005, Delta collected one soil sample beneath the hydraulic hoist. TPH-D, Oil and Grease, and the five LUFT metals were detected in the soil sample (max. concentration = 18,000 mg/kg TPH-D). The hydraulic hoist was subsequently replaced. On May 5, 2005, a URR was submitted to the</p>	<p>Summary of Soil Boring Analytical Data</p> <p>Summary of Soil Analytical Data</p>		<p>"Site Assessment Report" KHM (February 2003)</p> <p>"Soil Sampling Report" KHM (December 2002)</p> <p>"Soil Sampling Report" Delta (September 2005)</p>	<p>Lateral extent of soil impacts not defined. No soil samples submitted for lab analysis for shallow soils above 25 feet bg in the borings for Wells MW-1 and MW-4. No soil samples submitted for lab analysis from the borings for Wells MW-2 and MW-3.</p> <p>Lateral and vertical extent of soil impact not defined.</p>	<p>Advance five borings in the area of the UST complex and dispensers (see Site Map and Description of Field Methods). Two borings (MW-1A and MW-4A) will be converted into monitoring wells. All borings will be advanced to a total depth of approximately 60 feet bg. Unsaturated soil samples will be retained for laboratory analysis. If groundwater is encountered, a grab groundwater sample will be collected for analysis.</p> <p>Advance one soil boring (B-1) down-gradient of former hoist location (see Site Map and Description of Field Methods). The boring will be advanced to a total depth of approximately 60 feet bg. Unsaturated soil</p>	<p>Vertical extent of soil impacts in Wells MW-1 and MW-4 appear to be defined to a depth of 50' bg.</p> <p>Not practical to drill inside service bays/building.</p>

	DESCRIPTION	Data Tables	Graphics	Reference	Data Gaps	Work Necessary to fill data gap	Comments
	<p>Livermore-Pleasanton Fire Department based on soil analytical results. A copy of the URR is included in the Soil Sampling Report dated September 30, 2005.</p> <p>Based on the soil analytical data to date, the primary source of petroleum hydrocarbons in soil appears to be between the UST complex, and the southwestern fuel dispenser islands.</p>					<p>samples will be retained for laboratory analysis. If groundwater is encountered, a grab groundwater sample will be collected for analysis.</p>	
	<p>Dissolved plume Low-level concentrations of TPH-D (69 ug/l) and xylenes (0.71 ug/l) were initially detected in groundwater in December 2002 after GRASP well installation activities.</p> <p><i>Current Lateral Extent- Fourth Quarter 2005 Groundwater Sampling</i> MTBE was detected for the first time during the most recent sampling event conducted on October 20, 2005. MTBE was detected in Wells MW-1 and MW-2 at concentrations of 0.87 ug/l and 0.54 ug/l, respectively. Well MW-1 also contained benzene at a concentration of 0.86 ug/l and xylenes at a concentration of 1.2 ug/l. TPH-D was detected in Wells MW-1 through MW-3 this quarter. TPH-D detections in site wells did not match the laboratory standard. Following silica gel cleanup, TPH-D was only detected in Well MW-1 at a concentration of 190 ug/l. All other analytes tested were below the laboratory report limits (see Historic Groundwater Analytical Data).</p>	<p>Historic Groundwater Analytical Data</p>	<p>TPH-G, Benzene, and MTBE in Groundwater Concentration Map - October 20, 2005</p>	<p>Blaine Tech Services (November 2005)</p>	<p>Wells are now screened within a lower portion of the first water bearing zone (between 80 and 95 ft bg) and do not monitor the top of the saturated zone.</p> <p>Groundwater quality downgradient of the UST complex and western fuel dispenser islands not defined.</p>	<p>Install two shallow wells adjacent to Wells MW-1 and MW-4 to a maximum depth of 60 feet bg (see Site Map and Description of Field Methods).</p> <p>Install Well MW-5 (see Site Map and Description of Field Methods).</p>	<p>Well screened intervals are drowned by approximately 25 feet of water due to an increase in groundwater elevation of approximately 30 ft from 2002 to 2005.</p>
	<p>Evaluation of potential impacts to water supply wells Two drinking water supply wells were field verified by Delta within a ½-mile radius of the site. Well 3S/1E 16L 7M (City of Pleasanton Well 6) is located approximately 1,600 feet south of the site. Well 3S/1E 16L 5 (City of Pleasanton Well 5) is located approximately 1,848 feet southeast of the site. According to information supplied by Zone 7, the depth to the top of the first well screen in Well 6 is 165 feet bg and the depth to the top of the fist well screen in Well 5 is 149 feet bg.</p> <p>Additionally, two private wells located approximately 2,312 feet west of the site (Well No. 3S/1E 17B4) and 2,323 feet northwest of the site (Well No. 3S/1E 9N4), respectively, were field verified by Delta.</p> <p>Migration of petroleum hydrocarbons and fuel oxygenates through fine-grained deposits underlying the site to a depth of 50 feet (water table) is anticipated to be slow. Site wells are screened below 50-feet and do not appear to provide a downward conduit for contamination. Initial data indicates that the vertical migration of MTBE has been limited. The potential for shallow groundwater containing MTBE and TBA to impact a nearby water supply well appears to be low.</p>		<p>Zone 7 Well Location Map Zone 7 Well Location Map Legend</p>	<p>Zone 7</p>			

Abbreviations

KHM = KHM Environmental Management, Inc. (now Delta)

DWR = California Department of Water Resources

Zone 7 = Zone 7 Water Agency

LUFT = Leaking Underground Fuel Tank

TPH-G = total petroleum hydrocarbons as gas

TPH-D = total petroleum hydrocarbons as diesel

BTEX = benzene, toluene, ethylbenzene, and xylenes

MTBE = methyl tert-butyl ether

TBA = tert-butanol

bg = below grade

mg/kg = milligram per kilogram

ug/l = micrograms per liter