RO2892

WORK PLAN FOR ADDITIONAL INVESTIGATION ACTIVITIES CHEVRON SUNOL PIPELINE SITE 2793 CALAVERAS ROAD, SUNOL, CALIFORNIA

INTRODUCTION

The purpose of this Work Plan is to describe the additional investigation and monitoring activities proposed by URS Corporation (URS), on behalf of Chevron Pipeline Company (Chevron) for the Chevron Sunol Pipeline Site (Site), as requested by the Alameda County Environmental Health (ACEH) staff in Mr. Jerry Wickham's December 30, 2005 letter to Chevron. These additional activities will act as a supplement to the previous investigation as reported in URS' Subsurface Investigation Report dated December 15, 2005 for soil, groundwater, and free product information as requested by the ACEH. The activities discussed below are intended to fulfill the ACEH's request to fully characterize soil, groundwater, and free product conditions at the Site.

The additional investigation and monitoring activities discussed herein describe:

- Soil and groundwater sampling and well installation at three locations at the foot of the slope below the pipeline release along Calaveras Road and at one location within the Valley Crest Tree Company facility north of MW-1 and MW-3.
- Interim free product recovery from MW-1.
- Quarterly Groundwater Monitoring Program for site monitoring wells.

BACKGROUND

On Sunday August 14, 2005 at 16:30 hours Chevron noted a pressure drop in their eight-inch diameter gasoline pipeline that traverses the Sunol Area of the San Francisco Bay Area. On investigation by Chevron personnel, it was discovered that the lessee of a property the pipeline traverses had hired a contractor to grade a dirt road on the property. The grading operation ruptured the pipeline resulting in a gasoline spill. The property is owned by the San Francisco Public Utilities Commission (PUC) as part of the nearby Calaveras Reservoir. Immediately across the downgradient Calaveras Road is a commercial plant nursery that also leases property from the PUC. There were no injuries reported in relation to the spill.

In response to Alameda County's request to locate groundwater to the west of the release location, URS conducted a four phase subsurface investigation. The purpose of the investigation was to evaluate the lateral and vertical extent of gasoline-impacted soil and groundwater at the Site (Figure 1). A total of 19 Geoprobe® borings, nine hand-augered borings, two hollow-stem auger borings, and four air-rotary auger borings were advanced to collect soil and groundwater samples. Field activities were conducted from August 25 to November 10, 2005.

URS conducted the first phase of work (10 borings) along side Calaveras Road in the Alameda County Public Works Agency Right of Way (ROW). Typically, the direct-push sampling equipment encountered refusal at approximately 20 feet below ground surface (bgs). No groundwater was encountered during this sampling effort. Our drilling subcontractor told our staff that the area between the roadway pavement and the fence to the west is too narrow to allow use of different drilling equipment capable of reaching the groundwater table. Another complicating factor in this area is a buried cable that runs along the pavement edge.

The second phase of the investigation was conducted on PUC property on the east side of Calaveras Road on the hillside where the release occurred. This phase of the investigation included advancing 18 direct push borings. During this investigation high PID readings and strong gasoline odors were detected in soils collected from borings located closest to the spill location. Reduced PID readings and gasoline odors were detected in soils collected farther away from the spill.

In the nursery, on the west side of Calaveras Road, URS advanced two borings with an auger rig in an attempt to locate groundwater. Although groundwater was not reached, this drilling effort was successful in evaluating site geology to the depths of 38 and 50.5 feet where refusal was encountered for the two borings. The drilling team encountered a gravel layer where gasoline odors were observed. The top of the gravel layer varied in depth from 15-25 feet below ground surface and the bottom varied from 29-39 feet below ground surface. The drilling team also encountered a potentially confining clay layer on top of the bedrock at approximately 43 feet below grade level.

Due to the difficulty with refusal and cobble caving that was encountered with the auger rig, an air-rotary casing hammer (ARCH) drill rig was utilized to drill an exploratory boring to 108 feet in depth and install three monitoring wells to approximately 40 feet at the nursery. The 108 foot boring (AR-2) was successful in identifying a 75 foot thick claystone/siltstone confining layer beneath the unconsolidated gravel layer. One monitoring well, MW-1, had a thin sheen of gasoline free product on the surface of the groundwater as recorded on January 11, 2006.

As part of site remediation activities, URS also installed four Soil Vapor Extraction (SVE) Wells on the dirt road where the spill occurred (Figure 1). URS installed and ran a mobile SVE system experimentally for the week of November 7, 2005. Based on the success of the system, URS has continued to operate the system. The design strategy, operation, monitoring, sampling activities, and evaluation for continued operation of the SVE System will be discussed in an Interim Remediation Report.

SCOPE OF WORK

Installation of Additional Monitoring Wells

To address ACEH concerns regarding data gaps in the deeper soils, groundwater, and free product distribution at the Site, URS proposes the installation of three additional

monitoring wells along Calaveras Road, directly downgradient from the pipeline release location, and one additional monitoring well north of MW-1 and MW-3 on the west side of Calaveras Road (Figure1).

Rationale For Additional Boring/Well Locations

Based on the relatively shallow refusal depths encountered along the roadway, the free product observed in MW-1, and rig access limitations along the roadway, the three additional wells are proposed for installation near the former CP-SB-7, CP-SB-8, and CP-SB-9 locations on the east side of Calaveras Rd. As shown on Figure 1 the proposed borings are located directly between the release point and MW-1, where measurable free phase product has been observed. These three locations will provide a better understanding of the vertical and lateral extent of the product plume and will allow URS to assess the necessity for additional remediation activity.

The location of the proposed additional well on the west side of Calaveras Road was chosen to further evaluate the northern extent of the contaminant plume observed at MW-1. The additional well will also serve as an additional data point in evaluating the groundwater flow direction at the Site.

Drilling and Soil Sampling Procedures

URS recommends advancing all four borings 5-10 feet into the bedrock. Bedrock depths at the four locations are estimated to be 40-50 feet below ground surface based on geologic data collected from the previous subsurface investigation. Based on HSA drilling difficulties during the previous investigation, URS utilized an ARCH rig to install wells MW-1 through MW-3. Although the ARCH rig was effective in advancing through the cobbles and bedrock, the rig was only capable of collecting soil samples at 10-foot intervals. In an attempt to obtain a more complete lithologic log, URS is reviewing the possibility of utilizing a Sonic rig to advance these three borings. If we are able to use the Sonic Rig, soils will be continuously logged using the Unified Classification System (ASTM D2487) and a portion of each sample interval will be collected for headspace analysis for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). Any indications of visual or olfactory impacts will also be noted on the boring log.

To improve on the analytical sample recoveries obtained using the brass liners within the split spoon sampler during the previous investigation, URS will collect soil samples for laboratory analysis using EnCore™ soil sampling kits in accordance with USEPA Method 5035. The Encore™ method of sample collection requires less soil recovery from the split spoon sampler than a brass sleeve and will reduce headspace issues in analytical samples. Soil samples will be collected for laboratory analysis from each of the boring locations at intervals exhibiting visual impacts and high PID readings. Samples submitted for laboratory analysis will be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B and total petroleum hydrocarbons quantified as gasoline (TPH-g) by USEPA Method 8015M. Samples will

be kept on ice in a cooler and will be submitted using proper chain-of-custody procedures to Lancaster Analytical Laboratory, a State of California certified laboratory. The samples will be analyzed on a standard turn around time.

Well Installation, Development, and Groundwater Sampling Procedures

All four wells will be completed with 4-inch schedule 40 PVC riser pipe with 15-20 foot 0.020-inch slotted screens, screened across the water table. The well installed within the nursery will be completed with a flush-mounted vehicle-rated, well vault. If the other three wells must be installed in the right-of-way along Calaveras Road due to logistics, they will also be completed with vehicle-rated, well vaults. However, if access conditions allow, and the wells can be installed off of the right-of-way and on the hillside, each well will be completed with a locking stove-pipe well box and protective bollards.

Grab groundwater samples will be collected via a bailer from each of the proposed well locations either through the drill casing or down the completed well as soon as adequate groundwater has entered the borehole. Groundwater samples will be analyzed for BTEX by USEPA 8260B, TPH-g by USEPA Method 8015M and ethanol and methanol by USEPA Method 8260A. Groundwater samples will be collected in 40 milliliter volatile organic analysis containers (VOAs) preserved with hydrochloric acid and placed on ice in a cooler and will be submitted using proper chain-of-custody procedures to Lancaster Analytical Laboratory. The samples will be analyzed on a standard turn around time.

After all four of the wells have been installed and sufficient water columns exist, they will be developed. Well development will include surging and purging the wells until a minimum of three well volumes (casing and filter pack volume) are removed. During purging the temperature, pH, conductivity, and turbidity of the water will be monitored. The well will be considered developed when either the well has been purged dry or three consecutive readings meet the following stabilization parameters: pH +/- 0.2 pH units, conductivity +/- 3% of reading, turbidity +/- 1.0 NTU (if measured). Based on the findings of this supplemental investigation the wells will be evaluated for additional remediation efforts and/or be integrated into the Quarterly Groundwater Monitoring Program discussed in further detail below.

Pre-Drilling Activities

Prior to drilling, URS will have Underground Service Alert perform a utility clearance. In addition, URS will retain Cruz Brothers Locators Inc., of Scotts Valley, California, to clear each boring location for the presence of underground utilities. URS has obtained an encroachment permit from the Alameda County Department of Public Works Agency to work in the right-of-way for the three well locations proposed along Calaveras Road. For safety reasons, URS will also have traffic-control measures in place. All four boring locations will be advanced with a hand auger to five feet bgs as a safety measure before the drilling rig is used.

Decontamination and Investigative Derived Waste

Sampling equipment to be reused will be washed using an Alconox/water solution and rinsed between each sampling event. All investigative derived waste generated during the investigation activities will be drummed and stored onsite pending waste characterization analyses and disposal at either a Chevron approved facility or for on-site re-use, if appropriate.

Surveying

The well locations and elevations will be located in accordance with SWRCB Geotracker requirements with a Global Positioning System (GPS) unit for future mapping and groundwater flow analysis. The GPS results will be included in a table in the investigation report.

Interim Free Product Recovery

As an interim measure to recover free-phase product, a URS geologist has been monitoring the fluid levels in the MW-1 through MW-3 (Figure 1) on almost a weekly basis since the beginning of November 2005. Based on the fluid measurements, if free product is observed in the well, a bailer is used to remove free product and oily water from the well. Since November 2005, the only well to contain measurable free product was MW-1. MW-1 displayed the greatest product thickness of 0.17 feet on November 10, 2005. Since then, approximately 1.5 gallons of product and oily water have been removed during each site visit. The product thickness in MW-1 has continued to drop. As of last site visit on January 11, 2006, none of the wells contained a measurable amount of product. No product or odors were present at MW-2 and MW-3. Strong odors were present at MW-1, but only a thin product sheen was present on the groundwater. For the time being, the wells will continue to be monitored on a weekly basis and will be bailed only if measurable free product exists.

Quarterly Groundwater Monitoring Program

As discussed above, the four additional wells may be used for either groundwater monitoring and/or remediation efforts depending on investigation findings. Wells entered into the Quarterly Groundwater Monitoring Program will be sampled four times a year, along with MW-1 through MW-3 using the techniques detailed below.

Fluid Level Measurement and Groundwater Sampling Procedures

On a quarterly basis, the levels in each groundwater monitoring well will be measured prior to sampling using an electronic oil/water interface probe. If measurable free-product is encountered (>0.01 foot) the well will not be sampled. Continued monitoring and product removal with a bailer will be performed on a well containing free-phase product until measurable product is no longer observed within the well. Alternative

remediation methods for wells containing substantial amounts of free-product will be discussed in further detail in the Interim Remediation Report URS is currently preparing.

Wells that do not contain measurable free product will be sampled following fluid level measurement using low-flow sampling methods. Based on recharge rates at MW-1 through MW-3 during development, site conditions suggest that monitoring wells will be capable of being pumped up to a rate of 1.0 L/min without continuous water level draw down within the well (subject to seasonal water table fluctuation).

Low-flow sampling will be conducted using disposable LDPE tubing and a stainless steel electronic submersible continuous discharge pump purging approximately 0.1 to 0.5 L/min. The pump intake will be slowly lowered into position in either the center of the well screen if the water level is higher than the top of the screen or the center of the water column if the water level is lower than the top of the screen. During purging, the water level will be monitored to ensure that the draw down in the well does not exceed 0.33 feet. Additional parameters such as temperature, pH, conductivity, oxygen reduction potential (ORP), dissolved oxygen (DO) and turbidity of the water will be monitored using an in-line flow through cell and multi-parameter device. The multi-parameter device will be calibrated daily before each sampling event. During purging, parameter readings will generally be recorded every 3-5 minutes until parameters have stabilized. Parameters will be considered to be stable when three consecutive readings are within the following guidelines: pH +/- 0.2 pH units, conductivity +/- 3% of reading, ORP +/- 20mV, DO +/- 0.2 mg/L, turbidity +/- 1.0 NTU (if measured).

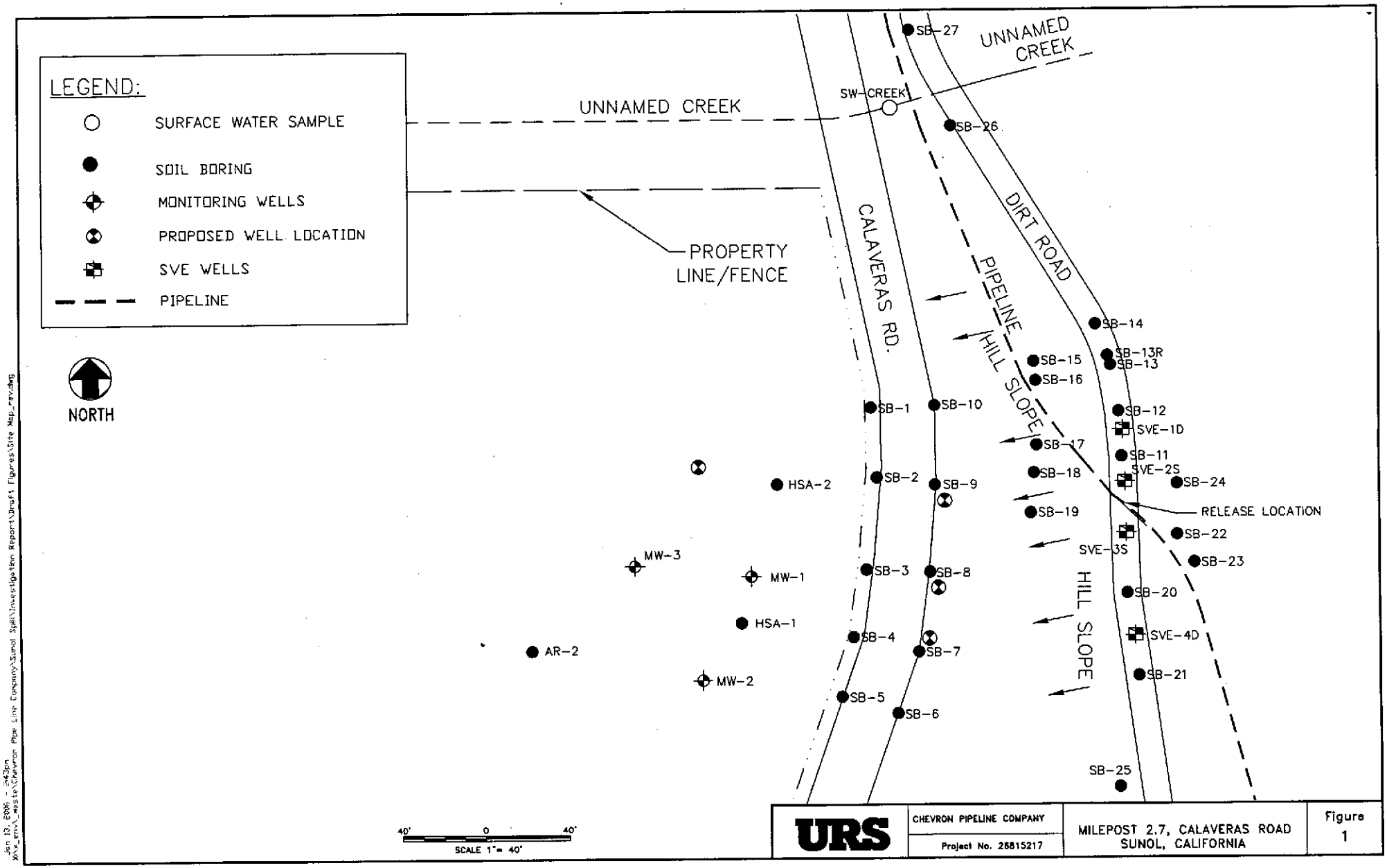
Following parameter stabilization, the flow through cell will be detached from the pump and tubing assembly and the groundwater will be sampled directly from the pump tubing. Groundwater samples will be collected in 40 milliliter VOAs preserved with hydrochloric acid and placed on ice in a cooler and will be submitted using proper chain-of-custody procedures to Lancaster Analytical Laboratory. The samples will be analyzed on a standard turn around time. Groundwater samples will be analyzed for BTEX by USEPA 8260B, TPH-g by USEPA Method 8015M, and ethanol and methanol by USEPA Method 8260A. After the groundwater sample has been collected and the pump has been turned off, a final stabilized groundwater level measurement will be recorded before removing the tubing and pump assembly and sealing the well.

Decontamination and Investigative Derived Waste

Sampling equipment to be reused will be washed using an Alconox/water solution and rinsed between each sampling event. All investigative derived waste generated during the investigation activities will be drummed and stored onsite pending waste characterization analyses and disposal at either a Chevron approved facility or for on-site re-use, if appropriate.

Reporting

The fluid level measurements, sampling logs, and groundwater analytical results will be presented on a quarterly basis in a Quarterly Monitoring Report. As requested by the ACEH, the report for the first quarter of 2006 will be submitted by April 15, 2006.


LEGEND:
SURFACE WATER SAMPLE
SOIL BORING
MONITORING WELLS
PROPOSED WELL LOCATION
SVE WELLS
PIPELINE
NORTH
UNNAMED CREEK
SW-CREEK1
UNNAMED CREEK
PROPERTY LINE/FENCE
CALAVERAS RD.
PIPELINE HILL SLOPE
DIRT ROAD
HILL SLOPE
SB-27
SB-26
SB-14
SB-13R
SB-13
SB-15
SB-16
SB-1
SB-10
SB-12
SVE-1D
SB-17
SB-11
SVE-2S
SB-18
SB-24
SB-2
SB-9
HSA-2
SB-19
RELEASE LOCATION
SB-22
SVE-3S
SB-23
MW-3
MW-1
SB-3
SB-8
SB-20
HSA-1
SB-4
SVE-4D
SB-7
AR-2
SB-21
MW-2
SB-5
SB-6
SB-25
40' 0 40'
SCALE 1"= 40'
URS
CHEVRON PIPELINE COMPANY
Project No. 26815217
MILEPOST 2.7, CALAVERAS ROAD
SUNOL, CALIFORNIA
Figure
1