W O R K P L A N

2011 INVESTIGATION WORKPLAN

SLIC CASE #RO0002892
CHEVRON PIPELINE COMPANY
SUNOL SPILL
2793 CALAVERAS RD.
SUNOL, CA

Prepared for
Alameda County Health Agency
1131 Harbor Bay Parkway
Alameda, CA 94502

December 2011

URS Corporation
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December 1, 2011

Mr. Jerry Wickham
Department of Environmental Health
Alameda County Health Agency
1131 Harbor Bay Parkway
Alameda, California 94502

Dear Mr. Wickham:

I declare, under penalty of perjury, that the information and/or recommendations contained in URS' report titled "**SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA – Investigation Workplan**" are true and correct to the best of my knowledge at the present time.

Submitted by:

Stephen Gwin
Chevron Pipe Line Company

URS

December 1, 2011

Mr. Jerry Wickham
Alameda County Health Agency
1131 Harbor Bay Parkway
Alameda, CA 94502

Uploaded to Alameda County Website

Re: Chevron Pipeline Company, Sunol, California Site, Investigation Workplan

Dear Mr. Wickham:

URS Corporation (URS) is pleased to submit, on behalf of Chevron Pipeline Company (CPL), a workplan for additional investigation at the Sunol, CA site for your review and comment. This additional investigation is proposed to fill data gaps identified in our recent Conceptual Site Model for the Sunol site.

CPL has appointed a new project manager for the site, Mr. Stephen Gwin, who is located in Houston, Texas. Also, Mr. Joe Morgan is resuming his role as the URS project manager for the site, on CPL's behalf.

We are happy to meet with you to discuss the workplan content or the overall project. If you have any questions or wish to discuss the workplan, please call the undersigned at 510-874-3201.

Sincerely,

URS CORPORATION

Joe Morgan III
Senior Project Manager

Robert Horwath
Senior Geologist

Enclosure

cc: Mr. Stephen Gwin, CPL, Houston
Ms. Rachel Naccarati, URS, Oakland

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Chevron Pipe Line Company
Identified Data Gaps Workplan
For a Pipeline Spill of Gasoline near Milepost 2.7
On Calaveras Road in Sunol, California

URS Corporation (URS) is pleased to present our data gaps workplan for Chevron Pipeline Company (CPL)'s Sunol California (Site). This workplan is based on our Conceptual Site Model (CSM) results and our January 27, 2011 meeting with Alameda County Environmental Health Department (ACEHD). The scope of work includes performing a pumping test on one of the eight existing monitoring wells and a soil and groundwater investigation along Calaveras Road to close data gaps identified in the CSM. The site location is shown on the attached Figure 1, Site Location Map.

Background

On Sunday August 14, 2005, at 16:30 hours, CPL noted a pressure drop in their eight-inch diameter gasoline pipeline that traverses the Sunol Area of the San Francisco Bay Area. Upon investigation by CPL 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 (SFPUC) and managed as part of the nearby Calaveras Reservoir. Immediately across Calaveras Road and hydraulically downgradient from the release is Valley Crest Nursery, a commercial plant nursery that also leases property from the SFPUC. There were no spill related injuries reported.

URS prepared a CSM for the Site and submitted to ACEHD on October 28, 2010. The CSM identified several data gaps that URS recommended be filled prior to continued Soil Vapor Extraction remediation activities as requested by ACEHD. This workplan outlines the data gap tasks to be filled along with additional tasks URS has identified that, once completed, will facilitate the development of Site remediation goals as part of the Site closure process.

ACEHD provides regulatory oversight for the Site under delegated authority from the San Francisco Bay Regional Water Quality Control Board (RWQCB). ACEHDs regulatory focus for the Site remediation has been on the spill area soil as a potential source for groundwater contamination.

Conceptual Site Model Identified Data Gaps

URS' CSM identified the following data gap needs for the Site.

- Updated biological survey of the Site.

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- Updated soil and groundwater investigation data down-gradient from the original spill location.
- Updated shallow groundwater data on either side of the existing monitoring well MW-8 on the east side of Calaveras road, and parallel to the Calaveras earthquake fault line. URS senior geologists have hypothesized that the fault acts as a partial dam to groundwater moving across Calaveras Road, and the purpose of the proposed scope of work (SOW) is to evaluate lateral movement of groundwater to the north and south of MW-8 along the face of the fault.
- In a meeting to discuss the CSM, the ACEHD project manager suggested using drinking water standards as the Sunol site clean-up criteria. This is a very conservative clean-up standard. URS and CPL question if this is the appropriate clean-up standard because the site wells are frequently pumped or bailed dry, during URS quarterly groundwater sampling events. The California Water Code and the RWQCB's Basin Plan require that drinking water wells must be able to produce a minimum sustained yield of 200 gallons of water per day. To further explore this regulatory issue, URS proposes to conduct pump tests on one of the Site wells.

SCOPE OF WORK

This workplan addresses the following fieldwork preparation and site activities.

- Job Site Safety Plan (JSSP) update.
- Biological survey.
- Pumping test.
- Soil investigation and groundwater well installation along Calaveras Road.
- Soil and Groundwater Management Plan.
- Draft/Final reporting.
- Associated investigation derived waste water and soil disposal.
- Associated GeoTracker reporting requirements.

Task 1–Health and Safety/Job Site Safety Plan Update

Before field activities begin, the existing JSSP and Job Safety Analyses (JSAs) will be reviewed and updated for the upcoming task work. A site-specific health and safety orientation will be conducted for all on-site personnel. The JSSP will include the following topics:

- Stop Work Authority.
- Hazard Identification Tool.
- Site health and safety personnel names and alternates responsible for site health and safety.
- Site hazards, as identified in the JSSP and JSAs, for example biological, chemicals of concern, traffic, slip, trip, and fall, and tool (cutting) hazards.
- Journey Management Plan (JMP) including road hazards along Calaveras Road.

- Personal protective equipment (PPE).
- Fire Prevention.
- Heat stress symptoms and control measures that will be employed.
- Applicable CPL Health, Safety, and Environment (HES) Guidelines and URS Safety Management Standards (SMSs).
- Safe work practices, including those discussed in the JSSP, JSAs, CPLs HES Guidelines, and URS SMSs.
- Personnel and equipment decontamination procedures.
- Air monitoring.
- Emergency procedures.
- Traffic Control and Traffic Safety.
- Other applicable topics.

At the end of the briefing, attendees will be informally quizzed to assess their understanding of the health and safety requirements.

In addition to the initial site-specific health and safety briefing, daily health and safety meetings will be conducted to address health and safety concerns. These meetings will be documented using the On-Site Health and Safety Tailgate Meeting Record Form included in the JSSP. The JSAs will also be reviewed daily during in the Safety Tailgate Meeting. CPL work permitting requirements will be conducted on-site the first day of field activities by CPL representatives. URS' data gap investigation and our drilling subcontractor's staff will have 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training, with the required 8-hour annual refresher training.

URS does not anticipate that potentially hazardous levels of volatile organic compound (VOC) contamination will be detected in the field; however, a photo-ionizing detector (PID) will be on-site during the field exploration to test the air around the boreholes and samples for possible volatile contamination.

A Traffic Control Plan for Calaveras Road will be provided by the traffic control sub-contractor. The plan will be implemented during the soil borings and monitoring well construction, development, and sampling along Calaveras Road.

The groundwater pump test will be conducted on Valley Crest Nursery property and therefore, portable toilets will be available for the field staff during this test. URS will rotate the field staff during the 24-hour long pump test.

Task 2– Biological Survey

A data gap identified by the CSM was to update the initial biological survey conducted in December of 2005 after the initial pipeline spill. Though no significant change to the Site has

occurred since the initial survey, URS recommended another survey be conducted in order to confirm no new ecological receptors (i.e. burrowing animals) are present at the Site. Two URS personnel will be on Site during the biological survey, due to the secluded nature of the Site.

Task 3– Groundwater Pumping Test

URS will conduct a groundwater pumping test in accordance with State Water Resources Control Board (SWRCB) Resolution 88-63 to establish if a well at the Site can sustain a yield of 200 gallons per day. Completing this task will allow evaluation of the Site's groundwater beneficial use as outlined by the RWQCB and associated Basin Plan (December 2010). If the pump test data shows that groundwater cannot be pumped at a sustained yield of 200 gallons per day, URS will request that the site's groundwater be reclassified under Resolution 88-63. Whether groundwater at the Site can or cannot be pumped at a sustained yield of 200 gallons per day will support the establishment of an appropriate remediation goal for the Site.

The pumping test will be conducted on either existing monitoring well MW-1 or MW-9, the two most historically productive of the Site groundwater monitoring wells. These wells are located in the Valley Crest Nursery, across Calaveras Road from the spill site. MW-1 is a four inch diameter well, but occasionally dewaters during groundwater sampling. MW-9 is a two inch diameter well that has not dewatered during historically groundwater sampling activities. A recording pressure transducer will be used to monitor groundwater elevation in the pumped well during the groundwater test. The groundwater elevation in additional nearby wells will be monitored manually on an hourly for the first six hours of the test, and a field determination will be made for how frequently the surrounding wells' groundwater elevation will be monitored thereafter. The pumping test will be conducted under the direction of a State of California professional geologist.

The pumping test will be conducted in three 8-hour stages, with the first stage consisting of set-up of equipment and initial data collection (i.e. monitoring well gauging). The pump test will be started during the first stage and continued into the second and third stages as required until the 24-hour test is completed or groundwater is no longer being removed. The pumping test will be conducted as a low flow test as this method will provide the best data for further groundwater yield calculations after the pumping test is complete. The low-flow pumping will be conducted at a rate of 0.14 gallons/minute, equivalent to 50 gallons/pre 6-hour interval, or 200 gallons/24-hour interval. The flow will be monitored with a calibrated manometer for the duration of the test. A detailed log will be maintained during the flow test to document the test details. Those details will be reported in the Data Gaps Investigation report.

The first six hours (1/4 day) of the pumping test are crucial, if less than 50 gallons of groundwater are generated, no further testing will be required as the test will have demonstrated that the aquifer will not be able to produce 200 gallons a day. The pumping test will continue if at least 50 gallons of groundwater is generated within the first six hours. This workplan includes for a full 24-hour pumping test. Two URS personnel to be on Site during the pumping test, due

to the secluded nature of the Site. Collected groundwater and equipment decontamination water will be stored on-site in drums. The collected water will be sampled, analyzed, and characterized for off-site disposal by a URS sub-contractor approved by CPL.

Task 4–Soil Investigation along Calaveras Road

Another data gap identified by the CSM was the lack of recent analytical results for soil at the Site. The GORE™ module passive soil gas surveys conducted in 2007 and 2009 provided a snap shot of the hillside soil source and provided evidence that groundwater impacts were likely derived from surface water infiltrating the hillside soil source. Updating the soil impact data below the hillside source, at the base of the hillside, will allow an updated evaluation of the hillside soil gasoline spill migration in the soil since the initial release. URS believes the hydrocarbon movement of the hillside soil source to be very slow. This data gaps investigation will improve our understanding of the migration pathways and potential impacts to the north and south along the base of the hillside, in the vicinity of the Calaveras fault.

Prior to the proposed soil investigation, an encroachment permit from County of Alameda Public Works Agency will be obtained to work in the shoulder along Calaveras Road. Soil boring and monitoring well installation permits will also be obtained from Zone 7 Alameda County Flood Control and Water Conservation District prior to investigation activities.

URS will notify Underground Service Alert 48 hours before initiating field activities. Additionally, a private utility locator will be retained to clear all proposed boring locations for the presence of underground utilities. Traffic control will be required while working in Calaveras Road.

URS will coordinate our schedule with our sub-contractors and laboratory to have necessary equipment, bottles, ice chests, etc. ready for the field effort.

The soil investigation includes advancing five soil borings at the base of the hillside along the east side of Calaveras Road to bedrock (approximately 25 feet below ground surface). Two of the borings will be converted to groundwater monitoring wells. The borings will be located as follows:

- One soil boring will be located near MW-8.
- Two soil borings will be located at 50 feet from MW-8, one boring to the south and one boring to the north.
- If contamination is present one or both of the initial soil borings 50 feet from MW-8, a new boring(s) will be advanced an additional 50 feet from the contaminated boring locations in the same direction from MW-8, for a total distance 100 feet from MW-8.

- If contamination is not present one or both of the initial soil borings 50 feet from MW-8, a new boring(s) will be advanced between MW-8 and the initial boring(s) 50 feet from MW-8, for a total distance 25 feet from MW-8.

The boring locations are shown on the attached Figure 2. They are further described in the Groundwater Monitoring Well Installation Section, Task 5 of this workplan.

Each soil boring location will be cleared to a depth of 5 feet below ground surface (ft bgs) using a hand auger or air knife to ensure subsurface utilities are not present. Soil borings will be advanced using a limited access combination hollow stem auger/direct-push technology (HSA/DPT) drill rig to bedrock (approximately 25 ft bgs). The auger rig will be used for and the soil borings. Soil borings will be continuously logged per Unified Soil Classification System (USCS) by a URS field geologist. Soil samples will be collected from 5 ft. bgs to 25 ft. bgs (or bedrock). Additional soil samples will be taken at intervals with strong gasoline odors or high PID levels. Soil samples will not be collected below the water table. URS estimates that approximately 25 soil samples will be collected and submitted for analysis. This estimate does not include blanks and duplicates. The work is anticipated to take 2-3 days.

Sample Collection Methods

In each of the borings, samples will be collected by advancing a 2-inch-diameter sampler equipped with clean acrylic tube liners provided by the sampling subcontractor. Sampling equipment will be cleaned after each use. Drive sampling equipment will be pressure-washed after each use.

At the end of each sampling day, the day's boring locations that are not to be converted into monitoring wells will be backfilled to the surface elevation with a mixture of cement and bentonite grout.

Soil samples will be collected in clean bottles provided by the analytical laboratory. Sample bottles will be labeled with project specific unique labels, placed on ice, and shipped to the analytical laboratory under URS chain of custody. Samples will be analyzed for total petroleum hydrocarbons as gasoline (TPH-g) by EPA Method 8015M and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020. One trip blank and one equipment blank will be submitted for analysis for each day's work. A duplicate sample will be submitted at a rate of one in ten samples submitted. See Table 1 Attached for more details of the analytical program.

Excess soil will be stored in drums on-site. The drummed soil will be sampled, analyzed, and characterized for off-site disposal by a CPL approved vendor at a CPL approved landfill.

Two URS personnel will be on-Site during the investigation, due to the secluded nature of the Site.

Task 5 – Groundwater Monitoring Well Installation

The CSM identified a groundwater data gap upgradient of the Calaveras fault line. URS' geologist have stated that the smear zone on the fault face is a low permeability layer, retarding the flow of groundwater and groundwater contaminants below Calaveras Road and beyond into the nursery property. Groundwater flow at the site is generally northerly.

URS will use two of the soil boring locations to install new groundwater monitoring wells to monitor shallow groundwater upgradient of the fault line. The purpose of these wells is to establish a clean groundwater boundary to the north and south of MW-8.

The soil boring and well locations described below are left flexible to allow for different field conditions. The potential iterations of the boring and well locations are described in the following paragraphs.

The first two soil borings will be advanced fifty feet from MW-8, one to the north and the other to the south. The soil from both borings will be logged and monitored for gasoline odors and with a PID.

If either or both of the initial borings located 50 feet from MW-8 has gasoline detections, a well(s) will not be installed at the contaminated location(s). Another boring will be advanced at a location 50 feet further away from MW-8 in the same direction as the initial contaminated boring. If one or both of the 100 foot borings are contaminated a well will not be installed at the contaminated location.

If either or both of the initial soil borings are not contaminated, as determined by odor and PID measurements, a well will be installed at the uncontaminated location(s). If either or both of the secondary borings installed at 100 feet away from MW-8 are uncontaminated as determined by odor and PID measurements, a well will be installed at the uncontaminated location(s).

If either or both of the initial borings located 50 feet away from MW-8 are uncontaminated as determined by odor and PID measurements, a boring will be advanced at the midpoint between MW-8 and the new well.

Based on the results of the soil borings two wells will be installed. One will north of MW-8 and the other south of MW-8. The groundwater monitoring well construction will be similar to MW-8 which is screened in the 14.5 to 24.5 feet bgs interval, based on historical groundwater elevations at the site. The well screens will be installed with a sand pack and the borehole sealed around the well casing with a bentonite clay/cement seal. The well's annulus will be sealed with two feet of concrete. The wells will be completed with locking tops and traffic rated well boxes, to protect the wells from traffic damage from cars veering off Calaveras Road. The well casing's

tops will be surveyed for groundwater elevation measurements by a licensed California Surveyor. The monitoring wells will be developed by the well installation sub-contractor.

After development, the wells will be sampled using low-flow sampling methodology. Samples will be collected after groundwater parameters stabilize, as demonstrated by use of in in-flow multi-meter. Groundwater samples will be collected in clean bottles provided by the analytical laboratory. Sample bottles will be labeled with project specific unique labels, placed on ice, and shipped to the analytical laboratory under URS chain of custody. The groundwater will be analyzed for total petroleum hydrocarbons as TPH-g and BTEX. Follow-on quarterly monitoring for these new wells is not included in this workplan.

Water generated during the wells' development and decontamination water will be stored in drums, sampled, analyzed, and characterized for off-site disposal by a CPL approved sub-contractor at a CPL approved disposal facility.

Task 6 – Draft/Final Reporting

The field work tasks described herein will be summarized in a draft report. The analytical data will be tabulated and reviewed by a URS staff person trained in data Quality Assurance/Quality Control (QA/QC). The tabulated data will include QA/QC qualifiers for the intended data use. URS will prepare a draft report detailing the field activities, the tabulated analytical results, a comparison to regulatory criteria, and our conclusions and recommendations. The draft report and associated attachments will be reviewed by senior URS representatives, whose comments will be addressed. The draft report will then be provided to CPL for review and one round of comments. CPL's comments will be incorporated into the report and the final report will be submitted to ACDEH. Analytical data sheets will provided electronically in the final report only.

Task 7 – Soil and Groundwater Management Plan

After the soil investigation borings and groundwater monitoring well installation is complete and the respective samples analyzed and data evaluated, and the final data gaps investigation report issued, a Sunol Site Soil and Groundwater Management Plan (SGWMP) will be developed. This Plan is for sites that have remaining environmental impacts but pose no current risk to human or ecological receptors. The SGWMP will outline CPLs future responsibilities, if additional Site impacts are encountered during future Site activities. The CSM established that current potential Site receptors will not be disturbed by on-going Site activities and that for the foreseeable future; the Site's use will remain unchanged.

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Task 8 - Geotracker Reporting

URS will upload the final report and data and the Soil and Groundwater Management Plan to the RWQCB's GeoTracker System.

SCHEDULE

The workplan activities will be implemented within two weeks of approval of this workplan by ACEHD based on our subcontractors' availability. The draft report will be issued within two weeks or receipt of the last analytical data. The final report will be issued within two weeks of receipt of CPL's comments on the draft report.

Table 1
CPL Identified Data Gaps Workplan

Soil borings Samples by Depth	**Numbers of samples**	**TPH-G**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Total Xylenes**
Analytical Method		8015M	8020			
4.5 -5.0 feet	5	X	X	X	X	X
9.5-10.0 feet	5	X	X	X	X	X
14.5 - 15.0 feet	5	X	X	X	X	X
19.5 - 20.0 feet	5	X	X	X	X	X
24.5 - 25.0 feet	5	X	X	X	X	X
Groundwater	2	X	X	X	X	X
IDW Soil	1	X	X	X	X	X
IDW Purge & decon water	1	X	X	X	X	X
Duplicates, equipment blanks, trip blanks	5	X	X	X	X	X
Total	**34**					

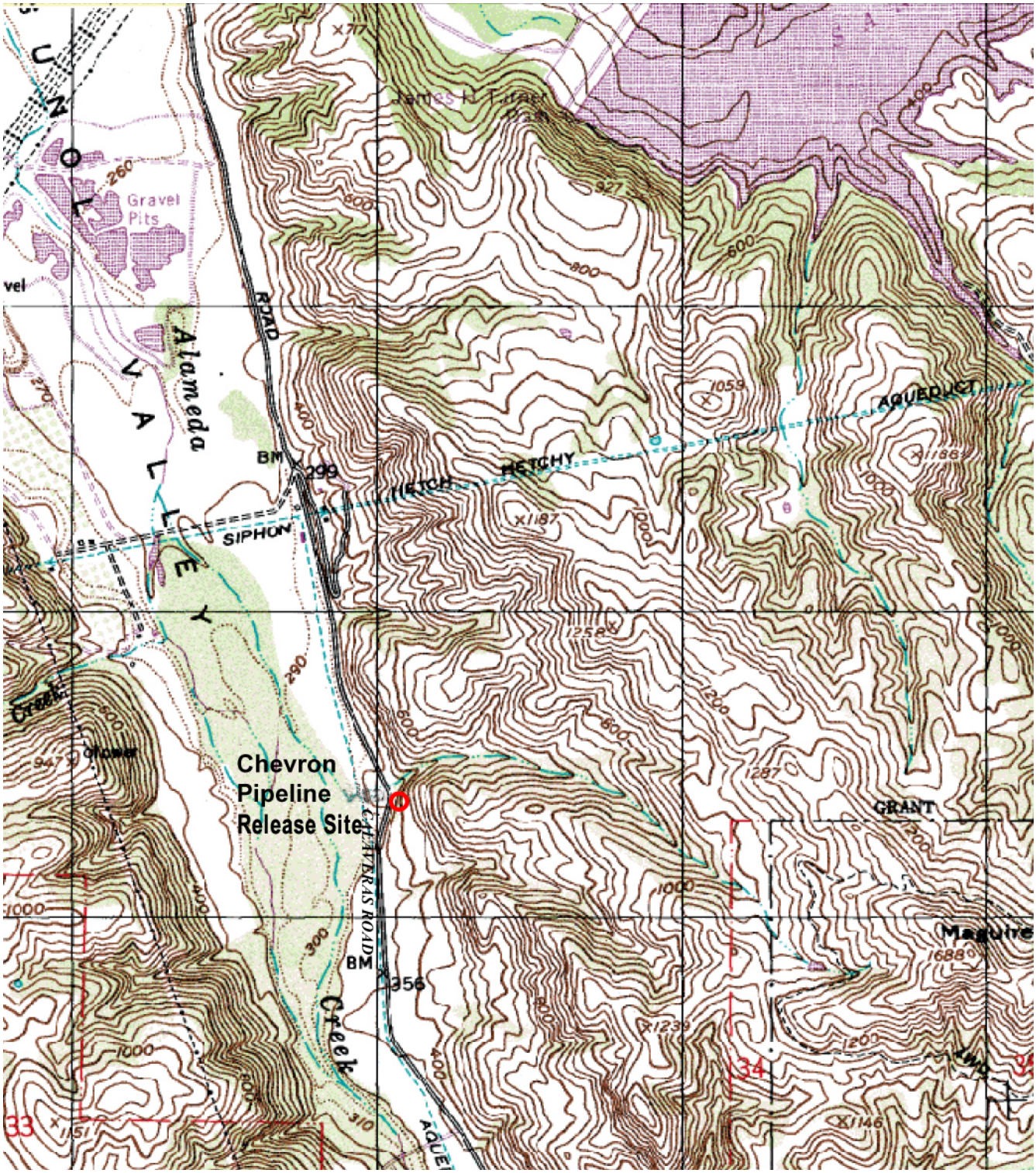

Image obtained from topozone.com

0 0.2 0.4 0.6 0.8 1 mi

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MAP REFERENCE:

PORTION OF U.S.G.S. QUANDRANGLE MAP
7 1/2 MINUTE SERIES (TOPOGRAPHIC)
LA COSTA VALLEY QUADRANGLE

URS	Chevron Pipeline Company Project No. 26818071	SITE VICINITY MAP	Figure 1

NORTH

0 50 100

SCALE IN FEET

LEGEND:

- SURFACE WATER SAMPLE LOCATIONS
- MONITORING WELL
- ABANDONED MONITORING WELLS
- PROPOSED BORING AND MONITORING WELL
- PROPOSED BORING
- SVE WELL
- SHELF
- STAIRS
- FENCE
- PIPELINE
- VERY SMALL STREAM
- PROPERTY LINE/FENCE
- HILL SLOPE 80–90% GRADE

CURRENT STREAM SAMPLE LOCATION

VERY SMALL STREAM

MW–10

PROPERTY LINE/FENCE

CALAVERAS ROAD

MW–11

MW–9

MW–4

MW–3

MW–1

MW–2

SW–CREEK
(Former Surface Water Sampling Location)

UPPER DIRT ROAD

LOWER DIRT ROAD

PIPELINE

HILL SLOPE

(IF REQUIRED)

50′

HILL SLOPE

SVE–1D

SVE–2S

MW–7

40′

SVE–8

RELEASE LOCATION

10′

MW–8

SVE–3S

SVE–7

SVE–4D

MW–5

50′

SVE–9

SVE–6

SVE–5

HILL SLOPE

HILL SLOPE AND DENSE VEGETATION

MW–6

50′

(IF REQUIRED)

URS	CHEVRON PIPELINE COMPANY Project No. 26818071	PROPOSED BORING AND MONITORING WELL LOCATIONS CHEVRON SUNOL PIPELINE	Figure 2

Sep 01, 2011 – 1:39pm
X:\x_env_waste\Chevron Pipeline Company\Sunol Spill\Site Figures\Current CADD\FIGURE 2_090111_Proposed_Borings.dwg