URS

February 15, 2007

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

RE: SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA

Dear Mr. Wickham:

On behalf of the Chevron Pipe Line Company (CPL), URS Corporation (URS) has conducted fourth quarter 2006 groundwater monitoring activities at the Chevron Sunol Pipeline release site located in Sunol, California. This *Fourth Quarter 2006 Groundwater Monitoring Report* discusses the release history and previous investigation activities, the hydrogeology at the site, the sampling methodologies, and the analytical results for groundwater samples collected as part of fourth quarter 2006 groundwater monitoring program. This report also provides findings and recommendations based on the investigation and remediation activities conducted at the site to date.

This Report was conducted to fulfill the Alameda County of Environmental Health (ACEH) staff's requests stated in their December 30, 2005 and January 17, 2007 comment letters to CPL. Specifically, this Report is intended to meet the requirement that a fourth quarter 2006 groundwater monitoring report be submitted by February 15, 2007.

If you have any questions on the Report, please call me at 510-874-3201.

Sincerely yours,

URS CORPORATION

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Senior Project Manager

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February 12, 2007

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

Dear Mr. Wickham:

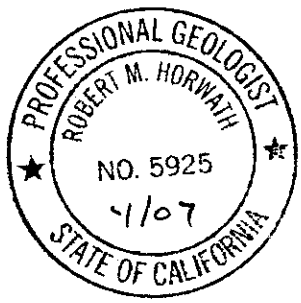
I declare, under penalty of perjury, that the information and/or recommendations contained in URS' report titled "**SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA - Fourth Quarter 2006 Groundwater Monitoring Report**" are true and correct to the best of my knowledge at the present time.

Submitted by:

Jeffrey Cosgray
Chevron Pipe Line Company

This report ("**Fourth Quarter 2006 Groundwater Monitoring Report**") was prepared under my direct supervision. The information presented in this report is based on our review of available data obtained during our additional monitoring well installation and quarterly sampling activities and our previous subsurface investigation efforts. To the best of our knowledge, we have incorporated into our recommendations all relevant data pertaining to the Chevron Pipeline Release site in Sunol, California.

The fourth quarter groundwater monitoring report discussed herein was developed in accordance with the standard of care used to develop this type of report. The assumptions that were made and the recommendations for continued field activities were based on our professional experience and protocols reported in the literature for similar investigations.



URS Corporation
Approved by:

Robert M. Horwath

Robert Horwath, P.G.

FOURTH QUARTER 2006 GROUNDWATER MONITORING REPORT

CHEVRON SUNOL PIPELINE SUNOL, CALIFORNIA

Prepared for

Chevron Pipe Line Company
4800 Fournace Place, E320C
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February 2007

URS Corporation
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ACEH	Alameda County Department of Environmental Health
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CPL	Chevron Pipe Line Company
DO	dissolved oxygen
HASP	Health and Safety Plan
HSA	hollow-stem auger
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
µg/L	microgram(s) per liter
mg/kg	milligram(s) per kilogram
MS	matrix spike
MSD	matrix spike duplicate
msl	mean sea level
ORP	oxygen reduction potential
PID	photoionization detector
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RPD	relative percent difference
SFPUC	San Francisco Public Utilities Commission
Site	Chevron Sunol Pipeline site
SVE	soil vapor extraction
TPH-GRO	total petroleum hydrocarbons quantified as gasoline range organics
URS	URS Corporation
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

On behalf of the Chevron Pipe Line Company (CPL), URS Corporation (URS) has prepared this groundwater monitoring report summarizing the fourth quarter 2006 monitoring activities for the Chevron Sunol Pipeline site (Site) in Sunol, California. Quarterly groundwater monitoring was conducted to fulfill the request stated in the December 30, 2005 Alameda County Environmental Health (ACEH) comment letter to CPL (Appendix A).

This report describes the measured groundwater levels, sampling methodologies, current hydrogeologic conditions, and groundwater analytical results. Specifically, this report is intended to fulfill the ACEH's technical report request provided in the January 17, 2007 letter (Appendix A) to submit the fourth quarter groundwater monitoring report by February 15, 2007.

2.1 RELEASE HISTORY AND LOCATION

A release of unleaded gasoline occurred at the Site on August 14, 2005, when a third party damaged an underground pipeline (the Bay Area Product Line) during dirt road grading activities. CPL estimated that approximately 700 barrels (29,400 gallons) of unleaded gasoline were released. Approximately 85 barrels of gasoline were recovered while draining the line and approximately 615 barrels were released as a spray downslope of the pipeline onto the adjacent hillside and Calaveras Road. A portion of the 615 barrels released downslope was recovered along with 152 tons of gasoline-impacted soil and debris, which were disposed of as part of the emergency remedial activities.

The location of the pipeline release is approximately 2.7 miles south of the intersection of Interstate 680 and Calaveras Road, between Mileposts 2.7 and 2.8 of Calaveras Road, in Sunol Valley, Valle de San Jose Mexican land grant (La Costa Valley Quadrangle) in Alameda County, California. The release location is approximately 4 miles southeast of the city of Sunol, California (Figure 1). The pipeline extends along Calaveras Road and traverses a steep hillside above the east side of the road (Figure 2). The San Francisco Public Utilities Commission (SFPUC) owns the property where the release occurred and leases it to a cattle rancher. A tree nursery (Valley Crest Tree Company) is located immediately west of Calaveras Road at the Site. This operation also leases the property from the SFPUC.

The release location is on a steep, west-facing slope with a grade of 80 to 90 percent in some locations. The grade directly beneath the release location was measured to be 84 percent using an inclinometer on August 25, 2005. Vegetation at the release location is predominantly oak woodlands. A very small stream is located approximately 150 to 200 feet north of and downhill from the release location. This stream flows into the Alameda Creek floodplain and joins Alameda Creek seasonally. URS and CPL staff observed no visible impacts to this stream immediately after the release. A surface-water sample was collected on October 19, 2005, and the sample results confirmed these visual observations (URS 2005). URS has continued to collect a sample from this stream to analyze for the presence of gasoline compounds during quarterly monitoring activities.

CPL conducted emergency remedial activities immediately after the release occurred. The pipeline rupture was repaired and surface soils surrounding the release were excavated,

characterized, and disposed of off site at an appropriate landfill according to CPL's spill response contractor. In total, 152 tons of gasoline-impacted soil and debris were disposed of as part of the emergency remedial activities. The excavation for the repaired section of the pipeline was left open and exposed. The impacted portion of Calaveras Road was repaved. During May of 2006, CPL backfilled around the exposed portion of the pipeline, re-graded the dirt road, and placed bollards on either side of the pipeline across the dirt road.

2.2 PREVIOUS INVESTIGATION AND REMEDIAL ACTIVITIES

In response to ACEH's request to evaluate the soil and groundwater impacts of the release, CPL retained URS to conduct an initial subsurface investigation. The purpose of the initial subsurface investigation was to evaluate the lateral and vertical extent of gasoline impacts to soil and groundwater at the release location. As part of this investigation, URS advanced 19 direct push Geoprobe® borings, nine hand-augered borings, two hollow-stem auger (HSA) borings, and four air-rotary auger borings to collect soil and groundwater samples. These activities were conducted between August 25 and November 10, 2005. Three of the air-rotary borings were completed as groundwater monitoring wells (MW-1 through MW-3). The soil boring and monitoring well locations are shown on Figure 2. The investigation results were presented in the *Subsurface Investigation Report* (URS 2005), which was submitted to ACEH on December 15, 2005.

URS conducted the first phase of the initial investigation (10 soil borings [SB-1 through SB-10]) along Calaveras Road in the right-of-way of the County of Alameda Public Works Agency. Typically, the direct-push sampling equipment encountered refusal at approximately 20 feet below ground surface (bgs). No groundwater was encountered during this sampling effort.

The second phase of the initial investigation was conducted on SFPUC property on the east side of Calaveras Road on the hillside where the release occurred. This phase of the investigation included advancing nine direct-push borings and nine hand-augered borings (SB-11 through SB-27, and SB-13R). During this investigation high photoionization detector (PID) readings and strong gasoline odors were noted in soils from the borings located closest to the spill location. Reduced PID readings and weaker gasoline odors were noted in soils collected farther away from the spill location.

In the nursery on the west side of Calaveras Road, URS advanced two borings with an auger rig in an attempt to locate groundwater (HSA-1 and HSA-2) as part of the third phase of the initial investigation. Groundwater was apparently encountered in HSA-1 at 37 feet bgs, but not enough water was present to collect a sample. Groundwater was not encountered at HSA-2.

Although groundwater was not sampled, this drilling effort was successful in evaluating site geology to the depths of 37 and 50.5 feet bgs, where refusal was encountered for the two borings. In both borings a gravel layer was encountered where gasoline odors were present. The top of the gravel layer varied in depth from 17–23 feet bgs and the bottom of the layer varied from 37–43 feet bgs. Highly weathered clayey bedrock was encountered at 43 feet bgs at HSA-2; this bedrock was underlain by increasingly less weathered sandy siltstone bedrock from 45 feet bgs to the total explored depth of 50.5 feet bgs.

Due to the difficult drilling conditions encountered at the nursery (i.e., cobbles and refusal with the auger rig), an air-rotary casing hammer drill rig was used during the fourth phase of the initial investigation to drill four exploratory borings (AR-1 through AR-4) to a maximum depth of 108 feet bgs (AR-2) and complete three of them as monitoring wells (MW-1 through MW-3) to approximately 40 feet bgs. Groundwater was initially encountered in only two of the wells (MW-1 and MW-2), but was present in all three wells after winter rainfall. Although groundwater was not encountered at AR-2, a 75-foot-thick siltstone/claystone confining layer beneath the unconsolidated gravel layer was identified.

On November 5 and 8, 2005, as part of site remediation activities, URS installed four soil vapor extraction (SVE) wells (SVE-1D through SVE-4D) on the dirt road where the release occurred. URS installed and ran a mobile SVE system experimentally for the week beginning November 8, 2005. After the system was determined to be successful, URS continued to operate the system through February 13, 2006. Over the 3 months of operation the SVE system removed approximately 1,041 gallons of hydrocarbons. URS documented the design strategy, operation, monitoring, sampling activities, evaluation, and future recommendations of the SVE system in *Interim Remediation Report, Soil Vapor Extraction System for the Chevron Pipeline Release Location, Sunol, California* (URS 2006a).

URS conducted a fifth phase of subsurface investigation from January 17 to 31, 2006 to address the ACEH's request to fully define the extent of contamination in soil and groundwater at the

site. As part of the additional subsurface investigation activities URS installed four additional groundwater monitoring wells (MW-4 through MW-7, Figure 2). Three of the wells were installed along Calaveras Road into the confined sandstone water-bearing zone. One well was installed to the west of Calaveras Road to the north of MW-1 and MW-3 into the unconfined nursery water-bearing zone (URS 2006b).

The most recent and sixth phase of subsurface investigation was conducted on August 16 and 17, 2006 and included installing two additional groundwater monitoring wells (MW-8 and MW-9). MW-8 was installed along Calaveras Road within unconsolidated soils overlying the confined sandstone water-bearing zone. MW-8 was installed to monitor potential shallow contaminant migration from the hillside below the release location to the nursery unconfined water-bearing zone. MW-9 was installed to the northeast of MW-4 and to the north of MW-1 on the nursery property. MW-9 was installed to monitor potential northward contaminant migration observed at MW-1 during quarterly groundwater monitoring activities. MW-8 and MW-9 have been incorporated into the quarter groundwater monitoring program. The details of this investigation are presented in *Additional Groundwater Monitoring Well Installation and Third Quarter 2006 Groundwater Monitoring Report* (URS 2006c).

On November 7 through 10, 2006, as part of continued site remediation activities, URS installed five additional soil vapor extraction (SVE) wells (SVE-5 through SVE-9) below the dirt road on the steep hillside where the release occurred. The additional SVE wells were intended to expand the coverage provided by the existing SVE well network to include the impacted steep hillside area below the release location. URS installed a mobile SVE system on November 28, 2006 and is currently operating the system. As of February 2, 2007 the SVE system has removed approximately 630 gallons of additional hydrocarbons. URS documented the design strategy, and initial operation, monitoring, and sampling activities in *Soil Vapor Extraction System Start-Up, Chevron Sunol Pipeline, Sunol, California* (URS 2006d).

On November 14 through 17, 2006, URS conducted fourth quarter groundwater monitoring activities to assess the groundwater conditions at the Site. As part of this field effort, URS measured the fluid levels and collected analytical samples at all nine groundwater monitoring wells (MW-1 through MW-9). URS also collected a surface-water sample for analysis from the very small stream, located northwest and downslope of the release location, at the Site (Figure 2).

3.1 FLUID LEVEL COLLECTION AND SAMPLING METHODOLOGY

On November 14, 2006, prior to collecting groundwater samples, the fluid levels were measured at each well from the top of casing using an electronic oil/water interface meter. Free product was detected at MW-9 with a thickness of 0.08 feet. Measurable free-product was not encountered at MW-1. The measured fluid levels are displayed in Table 1 and the calculated groundwater and product elevations are displayed in Table 2.

After measuring the fluid levels at each well, URS conducted groundwater sampling. Fourth quarter sampling efforts were complicated due to slow recharge rates, seasonally low groundwater levels, and the presence of free-product or sheen. As a result, several purging methods were utilized to collect groundwater samples:

- MW-1 and MW-9 were bailed due to the presence of sheen or measurable free product.
- MW-2 and MW-5 were purged using low-flow methods.
- MW-3 and MW-4 were purged dry because the wells were not hydraulically connected to the unconfined water-bearing zone.
- MW-6 through MW-8 were purged dry due to the slow recharge of the confined sandstone water-bearing zone.

Pumping methods were conducted using disposable low-density polyethylene tubing and a stainless steel electronic submersible continuous discharge pump. Bailing was conducted using disposable clear polyvinyl chloride (PVC) bailers.

A surface-water sample, labeled SW-Creek, was also collected from the very small stream northwest and downslope of the release location.

3.2 MW-1 AND MW-9

Due to the presence of sheen at MW-1 and measurable free-product at MW-9, the wells were bailed using disposable bailers. Parameters such as temperature, pH, conductivity, oxygen reduction potential (ORP), dissolved oxygen (DO), and turbidity were monitored during purging using a multiparameter water quality meter. The readings are included on the sampling forms in Appendix G. Groundwater samples were collected after removing approximately three well volumes from each well and allowing parameters to stabilize. Dissolved oxygen readings are artificially high at both wells because groundwater was decanted into the multiparameter water quality meter from the bailer.

At MW-9, increased product thickness was observed as the well was purged. Prior to purging the product thickness was measured at 0.07 feet and after purging and prior to sampling the thickness was 0.21 feet. The samples were collected out of the bottom of the bailer to minimize the amount of product in the groundwater sample.

3.3 MW-2 AND MW-5

After remeasuring the groundwater levels at MW-2 and MW-5, the pump intake was slowly lowered into position in the center of the well screen in MW-5 because the water level was higher than the top of the screen and at the center of the water column in MW-2 because the water level was lower than the top of the screen.

Low-flow purging rates were between 250 and 1000 milliliters per minute depending on the rate of recharge at each well. During low-flow purging, the water level in each well was measured periodically to monitor drawdown. Although the drawdown at MW-5 was greater than 0.33 foot, the water level stabilized at 1.33 feet below the static water level after an initial drop when purging began. The static and final groundwater levels before and after sampling are provided on the low-flow groundwater sampling forms for MW-2 and MW-5, included in Appendix G.

In addition to monitoring the water levels in the wells during low-flow sampling, parameters including temperature, pH, conductivity, ORP, DO, and turbidity of the groundwater were monitored using an in-line flow-through cell and multiparameter water quality meter. The multiparameter water quality meter was calibrated prior to sampling. During purging, the

parameter readings described above were recorded every 3 minutes until the parameters stabilized.

The parameters were considered to be stable when three consecutive readings were within the following guidelines: pH +/- 0.2 pH units, conductivity +/- 3 percent of reading, ORP +/- 20 millivolts , DO +/- 0.2 milligram per liter, turbidity +/- 1.0 nephelometric turbidity units (Appendix G).

After monitoring the field parameters, the flow through cell was detached from the pump and tubing assembly. Groundwater samples were collected from MW-2 and MW-5 directly from the pump tubing.

3.4 MW-3 AND MW-4

Due to the seasonal groundwater elevation lows, the groundwater encountered at MW-3 and MW-4 was not hydraulically connected with the unconfined water-bearing zone and represented standing water in the sump and sandpack of each well installed below the gravel/bedrock contact. Therefore, both wells were purged dry and the groundwater samples collected did not represent formation water.

Parameters such as temperature, pH, conductivity, ORP, DO, and turbidity were recorded at MW-3 and MW-4 but were not evaluated for stability because the purge water represented stagnant water and not groundwater from formation. The sampling forms are included in Appendix G.

After the wells were purged dry, the water levels were monitored until sufficient water was present to collect the groundwater samples. The recharge at MW-3 was so minimal that samples were only collected for gasoline compound and methane analysis.

3.5 MW-6 THROUGH MW-8

Because of slow recharge rates at MW-6 through MW-8, screened within the confined sandstone water-bearing zone, low-flow purging methods were not attempted. Instead, the monitoring wells were purged dry using a submersible pump. At MW-6, MW-7, and MW-8, approximately 30, 35, and 4 gallons were removed from each well, respectively. Parameters such as temperature, pH,

conductivity, ORP, DO, and turbidity were recorded during purging and are included on the sampling forms in Appendix G.

After the wells were purged dry, the recharging water levels were monitored until sufficient water was present to collect the groundwater samples. Once a sufficient water column was present, the pump was restarted and operated for approximately 1 minute to flush out any stagnant water remaining in the pump and tubing assembly. The flow-rate during sample collection at MW-6 through MW-8 was approximately 250 to 500 milliliters per minute.

3.6 ANALYTICAL PROGRAM

The groundwater samples from each well were collected in laboratory-provided containers and placed on ice in a cooler immediately after collection. Each sample cooler included a trip blank and was submitted to Lancaster Analytical Laboratory in Lancaster, Pennsylvania, a California Certified Laboratory, under URS chain-of-custody procedures. The samples were analyzed on a standard turn-around time.

As discussed in *Additional Subsurface Investigation Report* (URS 2006d), groundwater samples collected during quarterly groundwater sampling activities are analyzed for the following parameters:

Gasoline Compounds

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by USEPA Method 8260B
- Ethanol and methanol by USEPA Method 8015B
- Total petroleum hydrocarbons – gasoline range organics (TPH-GRO) by N. CA LUFT GRO

Geochemical Indicator Parameters

- Nitrate and sulfate by USEPA Method 300.0
- Total manganese and dissolved iron by USEPA Method 6010B
- Ferrous iron by SM20 Method 3500-FE B Modified
- Methane by USEPA Method 8015B Modified
- Alkalinity including breakdown by USEPA Method 310.1
- Total dissolved solids (TDS) by USEPA Method 160.1

The surface-water sample was analyzed for BTEX, ethanol, methanol, and TPH-GRO.

The sample collected from MW-3 was analyzed only for gasoline compounds and methane due to insufficient recharge.

4.1 HYDROGEOLOGY

4.1.1 Unconfined Water-Bearing Zone

As part of the fourth quarter 2006 groundwater monitoring activities, the fluid levels were measured in each well from the top of casing using an electronic oil/water interface meter. Free product was detected in MW-9 with a thickness of 0.08 feet. Product sheen was detected at MW-1. Free product or sheen has not been detected in the other seven wells (MW-2 through MW-8) during any quarterly monitoring activities. The measured depths to product and groundwater are displayed in Table 2 and the calculated product and groundwater elevations are displayed in Table 3.

The groundwater elevations for the unconfined water-bearing zone wells (MW-1 through MW-4 and MW-9), located in the nursery, range from a high of 291.14 feet above average mean sea level (msl) at MW-2 to a low of 290.45 feet msl at MW-9. The groundwater elevation for MW-8, which screens an apparent recharge source for the nursery unconfined water-bearing zone, was 315.20 feet msl.

Due to the current continuing dry seasonal conditions, the groundwater elevations for the fourth quarter groundwater levels are similar to third quarter elevations. As previously discussed in *Additional Groundwater Monitoring Well Installation and Third Quarter 2006 Groundwater Monitoring Report*, MW-3 and MW-4 remain disconnected from the unconfined water-bearing zone and are not included in the contouring of the nursery water-bearing zone (URS 2006a). Only the groundwater data from MW-1, MW-2, and MW-9 were considered in the contouring of the nursery unconfined water-bearing zone. Based on data from these wells, the inferred local groundwater flow direction within the nursery unconfined water-bearing zone remains in a northerly direction with an inferred hydraulic gradient of 0.008 feet/feet.

Although URS hypothesized that the shallow soils screened by MW-8 are part of the unsaturated zone where groundwater flow is intermittent, groundwater has been present at MW-8 since the well was developed on August 18, 2006 (URS 2006e). The consistent presence of groundwater at MW-8 during seasonal dry periods suggests that an unconfined water-bearing zone exists within shallow soils along Calaveras Road. This shallow unconfined water-bearing zone appears to act as a local recharge source for the nursery unconfined water-bearing zone.

The groundwater recharge from the hillside appears to flow into the unconfined nursery water-bearing zone in a northwesterly direction with a steep hydraulic, as observed during third and fourth quarter monitoring activities. The hydraulic gradient has not been calculated because MW-8 is the only well screening the apparent hillside recharge source for the unconfined water-bearing zone. Figure 3 provides groundwater contours for the local recharge source and the unconfined water-bearing zone as well as bedrock surface contours for the gravel-siltstone contact for comparison.

4.1.2 Confined Water-Bearing Zone

The potentiometric surface elevations for the confined sandstone water-bearing zone wells (MW-5 through MW-7), located along the eastern shoulder of Calaveras Road, range from 315.01 to 323.44 feet msl, with the highest groundwater elevation measured from MW-5, the middle well. The groundwater flow direction and hydraulic gradient have not been calculated for the confined sandstone water-bearing zone during any of the quarterly monitoring activities because these wells are installed in essentially a straight line along Calaveras Road at the base of the hill slope for monitoring purposes. The relative groundwater elevations for these wells are similar with previous quarterly groundwater levels and will continue to be monitored during future quarterly groundwater sampling events. The groundwater elevations for these wells are displayed on Figure 4.

This section presents the analytical results from the groundwater samples collected from the fourth quarter 2006 groundwater monitoring activities and summarizes the groundwater data collected during all four quarters of 2006. Tables 3 and 4 provide summaries of the groundwater analytical results for all four quarters for gasoline compounds and geochemical indicators and other parameters, respectively. The complete laboratory analytical reports for the fourth quarter groundwater data are provided as Appendix D.

During the fourth quarter of 2006 groundwater samples were collected from all nine monitoring wells (MW-1 through MW-9). A surface water sample was collected from the very small stream (Figure 2).

5.1 FOURTH QUARTER 2006 GROUNDWATER MONITORING RESULTS

5.1.1 Gasoline Compounds

Unconfined Water-Bearing Zone Wells

The unconfined water bearing zone wells include nursery unconfined water-bearing zone wells (MW-1 through MW-4 and MW-9) and the Calaveras Road shallow unconfined water-bearing zone well (MW-8). The fourth quarter groundwater sample results are as follows:

- MW-1 contained product sheen during fourth quarter 2006 groundwater monitoring activities. Groundwater samples were collected after attempting to remove the product sheen from the well. The MW-1 sample contained TPH-GRO at 38,000 micrograms per liter (µg/L), benzene at 14 µg/L, toluene at 110 µg/L, ethylbenzene at 38 µg/L, and xylenes at 5,900 µg/L.
- The MW-2 sample contained trace amounts of benzene at 0.7 µg/L.
- The MW-3 sample contained TPH-GRO at 86 µg/L and toluene at 1 µg/L.
- The MW-4 sample contained trace amounts of xylenes at 0.5 µg/L.
- The MW-8 sample contained TPH-GRO at 990 µg/L, benzene at 76 µg/L, toluene at 80 µg/L, ethylbenzene at 69 µg/L, and xylenes at 190 µg/L.
- MW-9 contained measurable free-product during fourth quarter 2006 groundwater monitoring activities. Groundwater samples were collected after attempting to remove the

product from the well. The MW-9 sample contained TPH-GRO at 74,000 µg/L, benzene at 480 µg/L, toluene at 12,000 µg/L, ethylbenzene at 2,200 µg/L, and xylenes at 17,000 µg/L.

Ethanol and methanol concentrations were below their respective laboratory reporting limits for all unconfined water-bearing zone wells.

Confined Water-Bearing Zone Wells

The confined water-bearing zone wells include MW-5 through MW-7 located along Calaveras Road. The fourth quarter groundwater sample results are as follows:

- The MW-5 sample contained toluene at 2 µg/L.
- The MW-6 sample concentrations were below laboratory limits for of all constituents.
- The MW-7 sample contained benzene at 0.7 µg/L, toluene at 2 µg/L, ethylbenzene at 0.6 µg/L, and xylenes at 2 µg/L.

TPH-GRO, ethanol, and methanol concentrations were below their respective laboratory reporting limits for all of the confined water-bearing zone wells.

Surface Water Sample

The surface water sampling location is shown on Figure 2. Surface water concentrations remained below laboratory limits for all gasoline compounds during the fourth quarter.

5.1.2 Geochemical Indicators and Other Parameters

Table 4 presented the geochemical indicator parameters collected for MW-1 through MW-9 during fourth quarter 2006 groundwater monitoring activities. URS has collected three quarters of data since the second quarter of 2006. A more detailed analysis of the geochemical indicators and other parameters is presented in the following section.

5.2 SUMMARY OF 2006 GROUNDWATER RESULTS

The following provides a summary of the groundwater and surface water analytical results for gasoline compounds and chemical indicator and other parameters for all four quarterly sampling events in 2006.

5.2.1 Gasoline Compounds

Unconfined Water-Bearing Zone Wells

- MW-1 groundwater concentrations showed a significant decrease between the first and second quarters of 2006. TPH-GRO decreased 35 percent, benzene decreased 74 percent, toluene decreased 88 percent, ethylbenzene decreased 96 percent, and xylenes decreased 6 percent. A groundwater sample was not collected during the third quarter due to the presence of free-product, but the concentrations for the fourth quarter were consistent with the second quarter results, when free-product was not observed.
- MW-2 (the up-gradient well) groundwater concentrations have consistently been below laboratory limits with the exception of benzene, which was reported in trace amounts in the third and fourth quarters.
- MW-3 and MW-4 groundwater concentrations were below laboratory limits for the first and second quarters. Low levels of TPH-GRO, benzene, toluene, and xylenes were reported during the third and fourth quarters, but the groundwater was not representative of the unconfined water-bearing zone.
- MW-8 was installed during August 2006 and was incorporated into the groundwater monitoring program during the third quarter. Groundwater concentrations showed a significant decrease between the third and fourth quarters. TPH-GRO decreased 94 percent, benzene decreased 60 percent, toluene decreased 97 percent, ethylbenzene decreased 88 percent, and xylenes decreased 32 percent.
- MW-9 (the down-gradient well) was installed during August 2006 and was incorporated into the groundwater monitoring program during the third quarter. A groundwater sample was not collected during the third quarter due to the presence of free-product. Although free product was present during the fourth quarter, a groundwater sample was collected from below the product layer. The results are displayed in Section 5.1.1.

Confined Water-Bearing Zone Wells

- MW-5 groundwater concentrations were below laboratory limits during the second and third quarters. Low levels of toluene and xylenes were present during the first quarter and low levels of toluene were present during the fourth quarter.
- MW-6 groundwater concentrations for all gasoline compounds have been below laboratory reporting limits during all four quarters.
- MW-7 groundwater concentrations have consistently been below laboratory limits for TPH-GRO for all four quarters. Trace to low levels of BTEX constituents have been present during all four quarters.

Surface Water Sample

- The surface water sample was incorporated into the groundwater monitoring program during the second quarter. The sampling location is shown on Figure 2. Surface water concentrations have been below laboratory limits for the second, third, and fourth quarters. Due to free product observed at MW-9, the sampling point of the very small stream is being relocated to the north and west of MW-9, where this stream flows into the floodplain, to better monitor potential contaminant migration into surface water.

5.2.2 Geochemical Indicators and Other Parameters

Geochemical indicator parameters have been collected from groundwater monitoring wells at the Site since the second quarter of 2006. The purpose of collecting these parameters is to assess the potential for enhanced bioremediation and/or monitored natural attenuation of the unleaded gasoline in the groundwater at the Site. Due to the complexity of the Site hydrogeology, the groundwater monitoring wells at the Site monitor two distinctive hydrogeologic units. The unconfined water-bearing zone wells include nursery unconfined water-bearing zone wells (MW-1 through MW-4 and MW-9) and the Calaveras Road shallow unconfined water-bearing zone well (MW-8). The confined water-bearing zone wells include MW-5 through MW-7 located along Calaveras Road.

Unconfined Water-Bearing Zone Wells

Based on the groundwater contour map (Figure 3), groundwater monitoring well MW-2 is considered to be the upgradient background well for the unconfined water-bearing zone at the Site. Except for a trace amount of benzene detected in the third and fourth quarters of 2006, the concentrations of all other gasoline compounds in MW-2 have been below their respective laboratory reporting limits. The DO concentrations ranged from 0.2 to 0.32 mg/L, while the ORP values ranged from 25.69 to 220.94 mV. These values indicate that the background groundwater condition at the Site is anaerobic. As oxygen is depleted in the subsurface, anaerobic microbes use alternative electron acceptors. The terminal electron acceptors of choice for anaerobic respiration are nitrate (NO_3^-), manganese (Mn IV or Mn^{4+}), ferric iron (Fe III or Fe^{3+}), sulfate (SO_4^{2-}), and methane, in that order (Wiedemeier et al. 1999). The relatively high concentrations of sulfate compared with nitrate, manganese, and iron concentrations may affect the consumption sequence in the plume if anaerobic biodegradation takes place. These parameters were sampled in anticipation of anaerobic degradation at the Site once the concentrations of the gasoline plume decrease to relatively low levels.

Based on the current concentrations of the gasoline components detected in groundwater monitoring wells MW-1, MW-8, and MW-9, URS recommends to discontinue sampling the anaerobic electron acceptors (nitrate, manganese, ferric iron, sulfate, methane), TDS, and alkalinity at the unconfined water-bearing zone wells (MW-1 through MW-4, MW-8, and MW-9). DO and ORP will continue to be sampled to gauge the oxygen levels in the groundwater at the Site for consideration of enhanced bioremediation.

Confined Water-Bearing Zone Wells

Based on the sampling results since the first quarter of 2006, the concentrations of the gasoline compounds in the confined water bearing zone wells (MW-5 through MW-7) have been either below laboratory reporting limits or present at low levels. Because of the relatively low concentrations, URS recommends to discontinue sampling all of the geochemical indicator parameters and other parameters at these three wells. The concentrations of the gasoline compounds will continue to be sampled at these three wells.

6.1 SUMMARY OF QA/QC REVIEW PARAMETERS

The quality assurance/quality control (QA/QC) program includes using standard sample collection procedures in the field and established analytical methodologies in the laboratory. Laboratory and field QC sample results were evaluated to assess the quality of the individual sample results and overall method performance. Analytical performance was evaluated on a "batch QC" basis by evaluating the QC sample results for groups of samples that were prepared and analyzed together. The data evaluation performed included review of:

- Blanks (laboratory method blanks and trip blanks)
- Spikes (laboratory control sample spikes, matrix control spikes, and surrogate spikes)
- Duplicates (laboratory control sample duplicates and field duplicates)
- Sample Integrity (chain-of-custody documentation, sample preservation, and holding time compliance)

6.1.1 Method Holding Times

Analytical methods have prescribed holding times. The method holding time is defined as the maximum amount of time after collection that a sample may be held prior to extraction and/or analysis. Sample integrity becomes questionable for samples extracted and/or analyzed outside of the prescribed holding times due to degradation and/or volatilization of the sample. The QA/QC review identifies results with exceeded method holding times. No analytical method holding times were exceeded during the current reporting period.

6.1.2 Method Blanks

Method blanks are prepared in the laboratory using deionized, distilled (Reagent Grade Type II) water. Method blanks are extracted and/or analyzed following the same procedures as an environmental sample. Analysis of the method blank indicates potential sources of contamination from laboratory procedures (e.g., contaminated reagents, improperly cleaned laboratory equipment) or persistent contamination due to the presence of certain compounds in the ambient laboratory environment. The QA/QC review identifies method blanks with detections of target analytes and evaluates the effect of the detections on associated sample results.

6.1.3 Trip Blanks

Trip blanks are samples of deionized, distilled (Reagent Grade Type II) water that are prepared in the laboratory, taken to the field, retained on site throughout sample collection, returned to the laboratory, and analyzed with the environmental samples. The QA/QC review identifies trip blanks with detections of target analytes and evaluates the effect of the detections on associated sample results.

6.1.4 Matrix Spikes and Laboratory Control Samples

Matrix spikes (MSs), matrix spike duplicates (MSDs), laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs) are analyzed by the laboratory to evaluate the accuracy and precision of the sample extraction and analysis procedures and to evaluate potential matrix interference. Matrix interference, the effect of the sample matrix on the analysis, may partially or completely mask the response of analytical instrumentation to the target analyte(s). Matrix interference may have a varying impact on the accuracy and precision of the extraction and/or analysis procedures, and may bias the sample results high or low.

The MS or MSD is prepared by adding a known quantity of the target compound(s) to a sample. The sample is then extracted and/or analyzed as a typical environmental sample and the results are reported as percent recovery. The spike percent recovery is defined as:

$$\text{Recovery (\%)} = \frac{\text{spike analysis result - original sample concentration}}{\text{concentration of spike addition}} \text{ x100\%}$$

MS and MSD recoveries are reviewed for compliance with laboratory-established control limits to evaluate the accuracy of the extraction and/or analysis procedures.

LCSs and LCSDs are prepared exactly like MSs and MSDs using a clean control matrix rather than an environmental sample. Typical control matrices include Reagent Grade Type II water and clean sand. LCSs and LCSDs are used to evaluate laboratory accuracy independent of matrix effects.

The QA/QC review identifies spike recoveries outside laboratory control limits and evaluates the effect of these recoveries on the associated sample results.

6.1.5 Laboratory Duplicate Analyses

The laboratory performs duplicate analyses to evaluate the precision of analytical procedures. The laboratory may perform MSD and/or LCSD analyses.

Precision is evaluated by calculating a relative percent difference (RPD) using the following equation:

$$\text{RPD (\%)} = \left| \frac{\text{(Spike Concentration – Spike Duplicate Concentration)}}{\frac{1}{2}\text{(Spike Concentration + Spike Duplicate Concentration)}} \right| \text{ x } 100\%$$

The RPD is compared to laboratory-established control limits to evaluate analytical precision. The QA/QC review identifies RPDs outside laboratory control limits and evaluates the effect of these recoveries on the associated sample results.

6.1.6 Field Duplicate Analyses

Field duplicate samples are collected in the field and analyzed to evaluate the heterogeneity of the matrices. No field duplicates were collected during this sampling event.

6.1.7 Surrogate Recoveries

Surrogates are organic compounds that are similar to the target analytes in terms of their chemical structures and response to the analytical instrumentation, but are not usually detected in environmental samples. Surrogates are added to each environmental and laboratory QC sample to monitor the effect of the matrix on the accuracy of the extraction and/or analysis of organic analytes. Results for surrogate analyses are reported in terms of percent recovery (defined above). Reported recoveries are compared to laboratory-established control limits to evaluate sample-specific accuracy. The QA/QC review identifies surrogate recoveries outside laboratory control limits and evaluates the effect of these recoveries on the sample results.

6.2 EXPLANATION OF ANALYTICAL DATA QUALIFIERS

The analytical data were reviewed and qualified following USEPA guidelines for organic data review (USEPA 1999). A “J” qualifier indicates that the analyte was positively identified, but that the associated numerical value is an approximate concentration of the analyte in the sample.

A "UJ" qualifier indicates that the analyte was not detected above the reported sample quantitation limit (i.e., the laboratory reporting limit); however, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. An "R" qualifier indicates that the sample results were rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria and, therefore, the presence or absence of the analyte could not be verified.

6.3 SUMMARY OF QA/QC REVIEW FINDINGS

The results of the data evaluation are summarized in the following paragraphs.

All reported results for the laboratory method blanks were nondetect (less than the laboratory reporting limit), indicating no evidence of contamination from laboratory instrumentation with the exception of the following:

- Sulfate was detected in the method blank of batch 06321196101A (samples MW-5, MW-6, MW-7, and MW-8). Since the sample results are greater than 10 times the result in the method blank, no qualification is necessary.

All reported results for the trip blanks were nondetect (less than the laboratory reporting limit), indicating no evidence of contamination during shipping of the laboratory samples

All reported LCSs, MSs, and surrogate spike recoveries were within laboratory QC limits, with the exception of the following:

- Low manganese recovery in MS/MSD for batch 063251848011, which includes samples from MW-5, MW-6, MW-7, and MW-8. The manganese detections in this batch were qualified with a "J".
- High iron MS/MSD and RPD observed in batch 063231848002, which includes sample MW-2. The iron non-detections in this batch were qualified with "UJ".
- High sulfate RPD observed in batch 06321196101A, which includes samples from MW-5, MW-6, MW-7, and MW-8. The sulfate detections in this batch were qualified with a "J".
- High sulfate RPD observed in batch 06319196601A, which includes sample MW-2. The sulfate detections in this batch were qualified with a "J".

- High nitrate nitrogen DUP RPD was observed in batch 06320186101B, which includes samples MW-1, MW-4, and MW-9. The nitrate nitrogen detections in the batch were qualified with a "J".

Chain-of-custody documentation is complete and consistent. Samples were preserved as required per method specifications. All samples were analyzed within method-specified holding times. Based on the data quality evaluation, no systematic problems were detected and the overall data objectives for sample contamination, precision, accuracy, and sample integrity were met. These analytical data are of acceptable quality and may be used for their intended purposes.

Based on the results of the fourth quarter groundwater sampling activities, URS presented the following findings:

- Measurable free-product has been encountered at MW-9 during third and fourth quarter groundwater monitoring activities. The presence of free product at MW-9 warrants further downgradient investigation to evaluate the extent of the contaminant plume.
- Due to the seasonal lack of precipitation, MW-3 and MW-4 were hydraulically disconnected from the unconfined nursery water-bearing zone during third and fourth quarter groundwater monitoring activities. Therefore, the groundwater samples collected from these wells during the third and fourth quarter 2006 sampling activities did not represent formation water.
- The shallow unconfined water-bearing zone screened by MW-8 appears to act as a local recharge source for the nursery unconfined water-bearing zone. The decrease in contaminant concentrations at MW-8 between the third and fourth quarter 2006 groundwater monitoring activities suggests that the influx of contaminants into the nursery water-bearing zone from the hillside is decreasing significantly and will continue to decrease over time. Continued groundwater monitoring will confirm or refute this observation.
- The DO and ORP concentrations at MW-2 indicate that the background groundwater condition within the nursery unconfined water-bearing zone is anaerobic.

Based on the findings of the fourth quarter groundwater monitoring activities, URS has made or is currently implementing the following recommendations:

- Continue quarterly groundwater monitoring at all nine monitoring wells (MW-1 through MW-9) to further assess the effect of seasonal groundwater fluctuations on groundwater flow direction and contaminant transport. URS proposes to eliminate groundwater sample collection from MW-3 and MW-4 during periods when the wells are not in hydraulic connection with the unconfined water-bearing zone.
- Due to complex subsurface conditions, URS suggests collecting additional subsurface data prior to installing additional monitoring wells downgradient from MW-9. In an effort to place future groundwater monitoring wells in optimal locations to fully characterize the extent of contamination, URS is currently evaluating geophysical methods and soil-gas sampling as tools to gain additional information about groundwater behavior and associated contaminant

migration in the shallow subsurface. After evaluating the various methods, URS will present a discussion of the suggested method(s) in a work plan for additional site characterization by March 19, 2007, as requested by the ACEH staff.

- Due to free product observed at MW-9, URS proposes installing a sorbent boom within the well to passively collect free-product as an alternative to manual product removal with a bailer. If measurable free product is once again encountered at MW-1, the use of a sorbent boom will also be assessed at this well location.
- URS is currently assessing a new sampling location from the very small stream to better monitor potential contaminant migration into surface water. The new location will be implemented during first quarter 2007 monitoring activities at the request of the ACEH staff. The rationale for the new sampling location will be discussed in the First Quarter 2007 Groundwater Monitoring Report by May 15, 2007, as requested by the ACEH staff.
- Discontinue ethanol and methanol analysis during future quarterly groundwater sampling, as approved by the ACEH staff in their January 17, 2007 comment letter.
- Discontinue sampling for the following geochemical indicator parameters: nitrate, manganese, ferrous iron, total dissolved iron, sulfate, methane, TDS, and alkalinity at all monitoring wells (MW-1 through MW-9). Parameters such as temperature, pH, conductivity, DO, ORP, and turbidity will continue to be evaluated for stabilization when low-flow purging methods are achievable.
- Continue SVE operation for the nine SVE wells located along the steep hillside below the release location and submit a quarterly report by March 20, 2007, as requested by the ACEH staff.

No evaluation is thorough enough to preclude the possibility that materials that are currently considered hazardous or materials that may be considered hazardous in the future may be present at a site. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants presently considered nonhazardous may, in the future, fall under different regulatory standards and require remediation. Opinions and judgments expressed herein, which are based on understanding and interpretation of current regulatory standards, should not be construed as legal opinions. This document and the information contained herein have been prepared solely for CPL's use, and reliance on this report by third parties will be at such party's sole risk.

The report discussed herein was developed in accordance with the standard of care used to develop this type of report. The assumptions that were made and the recommendations for additional field activities were based on our professional experience and protocols reported in the literature for similar investigations.

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Tables

TABLE 1
Monitoring Well Groundwater Levels
Fourth Quarter 2006 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Screen Interval (feet bgs)	Date	Depth to Groundwater (feet TOC-N)	Depth to Product (feet TOC-N)	Product Thickness (feet)
MW-1	29.3-39.3	2/21/2006	36.34	--	--
		6/7/2006	34.28	--	--
		8/22/2006	37.11	37.08	0.03
		11/14/2006	37.05	--	--
MW-2	23.3-38.3	2/21/2006	32.19	--	--
		6/7/2006	30.23	--	--
		8/22/2006	33.11	--	--
		11/14/2006	33.01	--	--
MW-3	21.3-36.3	2/21/2006	31.97	--	--
		6/7/2006	30.91	--	--
		8/22/2006	34.66	--	--
		11/14/2006	34.71	--	--
MW-4	30.7-40.7	2/21/2006	36.72	--	--
		6/7/2006	35.76	--	--
		8/22/2006	38.79	--	--
		11/14/2006	38.84	--	--
MW-5	39.5-49.5	2/21/2006	11.48	--	--
		6/7/2006	10.61	--	--
		8/22/2006	11.93	--	--
		11/14/2006	11.37	--	--
MW-6	34.7-49.7	2/21/2006	18.02	--	--
		6/7/2006	16.83	--	--
		8/22/2006	18.66	--	--
		11/14/2006	17.37	--	--
MW-7	34.7-49.7	2/21/2006	15.43	--	--
		6/7/2006	16.68	--	--
		8/22/2006	16.77	--	--
		11/14/2006	16.99	--	--
MW-8	14.5-24.5	8/22/2006	18.71	--	--
		11/14/2006	18.73	--	--
MW-9	36.0-46.0	8/22/2006	42.59	42.55	0.04
		11/14/2006	42.62	42.54	0.08

Notes:
Groundwater and product levels measured from top of casing - north.
Screen intervals measured from feet below ground surface (ft bgs)

TABLE 2
Monitoring Well Groundwater Elevations
Fourth Quarter 2006 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Date Completed	Ground Surface Elevation (feet msl)	Top of Casing Elevation (feet msl)	Date Measured	Groundwater Elevation (feet msl)	Product Elevation (feet msl)	Product Thickness (feet)
MW-1	10/20/2005	328.49	328.04	2/21/2006	291.70	--	--
				6/7/2006	293.76	--	--
				8/22/2006	290.93	290.96	0.03
				11/14/2006	290.99	--	--
MW-2	10/21/2005	324.85	324.15	2/21/2006	291.96	--	--
				6/7/2006	293.92	--	--
				8/22/2006	291.04	--	--
				11/14/2006	291.14	--	--
MW-3	10/21/2005	326.05	325.65	2/21/2006	293.68	--	--
				6/7/2006	294.74	--	--
				8/22/2006	290.99	--	--
				11/14/2006	290.94	--	--
MW-4	1/31/2006	329.97	329.67	2/21/2006	292.95	--	--
				6/7/2006	293.91	--	--
				8/22/2006	290.88	--	--
				11/14/2006	290.83	--	--
MW-5	1/27/2006	335.14	334.81	2/21/2006	323.33	--	--
				6/7/2006	324.20	--	--
				8/22/2006	322.88	--	--
				11/14/2006	323.44	--	--
MW-6	1/27/2006	332.61	332.38	2/21/2006	314.36	--	--
				6/7/2006	315.55	--	--
				8/22/2006	313.72	--	--
				11/14/2006	315.01	--	--
MW-7	1/27/2006	336.46	336.22	2/21/2006	320.79	--	--
				6/7/2006	319.54	--	--
				8/22/2006	319.45	--	--
				11/14/2006	319.23	--	--
MW-8	8/15/2006	335.23	333.93	8/22/2006	315.22	--	--
				11/14/2006	315.20	--	--
MW-9	8/16/2006	333.49	333.07	8/22/2006	290.48	290.52	0.04
				11/14/2006	290.45	290.53	0.08

Notes:
All elevations displayed in feet above average mean sea level (msl).
Groundwater and product elevations calculated from depths as measured from top of casing - north.
MW-1 through MW-3 surveyed on October 31, 2005.
MW-4 through MW-7 surveyed on February 14, 2006.

TABLE 3
Summary of Groundwater Analytical Results
Gasoline Compounds
Fourth Quarter 2006 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Date	Gasoline Compounds						
		TPH-GRO	Benzene	Toluene	Ethylbenzene	Xylenes	Ethanol	Methanol
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-1	2/22/2006	**57,000**	**38**	**2,700**	**3,000**	**8,700**	<1,000	<200
	6/8/2006	**37,000**	**10**	**330**	**120**	**8,200**	<250	<200
	Q3 2006[2)]	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
	11/15/2006	**38,000**	**14**	**110**	**38**	**5,900**	<250	<200
MW-2	2/21/2006[1)]	<50 / <50	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<0.5 / <0.5	<50 / <50	<200 / <200
	6/7/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	8/23/2006	<50	0.5	<0.5	<0.5	<0.5	<50	<200
	11/14/2006	<50	**0.7**	<0.5	<0.5	<0.5	<50	<200
MW-3	2/21/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	6/7/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	8/23/2006	**170**	<0.5	<0.5	<0.5	<0.5	<50	<200
	11/14/2006	**86**	<0.5	**1**	<0.5	<0.5	<50	<200
MW-4	2/21/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	6/7/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	8/23/2006	**70**	**0.6**	<0.5	<0.5	**1**	<50	<200
	11/15/2006	<50	<0.5	<0.5	<0.5	0.5	<50	<200
MW-5	2/22/2006	<50	<0.5	**0.6**	<0.5	**1**	<50	<200
	6/8/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	8/24/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	11/16/2006	<50	<0.5	**2**	<0.5	<0.5	<50	<200
MW-6	2/22/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	6/7/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	8/22/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	11/16/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
MW-7	2/22/2006	<50	**0.7**	**2**	**0.9**	**5**	<50	<200
	6/8/2006	<50	**0.7**	<0.5	**1**	**4**	<50	<200
	8/22/2006[1)]	<50 / <50	**2 / 2**	<0.5 / <0.5	**1 / 0.6 J**	**3 / 2 J**	<50	<200
	11/16/2006	<50	**0.7**	**2**	**0.6**	**2**	<50	<200
MW-8	8/24/2006	**18,000**	**190**	**2,600**	**590**	**2,800**	<250	<200
	11/16/2006	**990**	**76**	**80**	**69**	**190**	<50	<200
MW-9	Q3 2006[2)]	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
	11/15/2006	**74,000**	**480**	**12,000**	**2,200**	**17,000**	<1,000	<200
SW-Creek	6/7/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	8/22/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200
	11/15/2006	<50	<0.5	<0.5	<0.5	<0.5	<50	<200

Notes:
Bold values exceed laboratory reporting limits.
NS - Not Sampled
J qualifier - The ethylbenzene and xylenes results in sample MW-7 and the MW-7 duplicate were qualified with a J, indicating that it was not possible to verify that the sample matrix was homogeneous and the results repeatable.

1) Both sample and duplicate concentrations from well location are displayed.
2) Sample not collected during quarterly monitoring due to the presence of measurable free product.

TABLE 4
Summary of Groundwater Analytical Results
Geochemical Indicators and Other Parameters
Fourth Quarter 2006 Groundwater Monitoring Report
Chevron Sunol Pipeline

Well ID	Date	Geochemical Indicators and Other Parameters											
		DO[1] (mg/L)	ORP[1] (mV)	Nitrate (mg/L)	Manganese (mg/L)	Ferrous Iron (mg/L)	Dissolved Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)	pH[1]	TDS (mg/L)	Alkalinity to pH 4.5 (mg/L) as $CaCO_3$	Alkalinity to pH 8.3 (mg/L) as $CaCO_3$
MW-1	6/8/2006	0.28	88.15	2.60	0.116	<0.008	<0.052	48.30	<0.002	6.62	494.00	317.00	<0.46
	Q3 2006	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]
	11/15/2006	4.87[6]	25.00	0.37 J	1.000	0.220	0.079	108.00	<0.002	6.67	882.00	597.00	<0.46
MW-2	6/7/2006	NR[3]	36.43	11.90	0.003	<0.008	<0.052	47.50	<0.002	6.56	465.00	286.00	<0.46
	8/23/2006	0.32	25.69	7.00	0.024	0.015	<0.052	121.00	0.005	6.63	811.00	470.00	<0.46
	11/14/2006	0.20	220.84	4.00	0.021	0.021	<0.052 UJ	126.00 J	0.004	6.72	867.00	530.00	<0.46
MW-3	6/7/2006	0.37	31.23	10.90	0.005	<0.008	<0.052	45.10	<0.002	6.56	446.00	274.00	<0.46
	8/23/2006	0.30	-1.80	<0.25	0.368	0.240	<0.052	26.30	1.500	6.60	711.00	421.00	<0.46
	11/14/2006	0.12	-17.57	NM[5]	NM[5]	NM[5]	NM[5]	NM[5]	0.42	6.95	NM[5]	NM[5]	NM[5]
MW-4	6/7/2006	0.28	29.57	9.20	0.020	0.059	<0.052	60.20	<0.002	6.65	423.00	282.00	<0.46
	8/23/2006	NR[3]	-22.49	<0.25	0.226	0.700	<0.052	78.40	0.003	6.62	590.00	396.00	<0.46
	11/15/2006	3.46[6]	106.00	0.34 J	0.137	0.470	<0.052	90.30	0.003	6.74	672.00	490.00	<0.46
MW-5	6/8/2006	0.19	12.05	<0.25	0.029	0.120	<0.052	71.30	0.004	7.24	502.00	313.00	2.60
	8/24/2006	NR[3]	-151.92	<0.25	0.021	0.280	<0.052	72.20	0.0054 J	7.32	506.00	320.00	<0.46
	11/16/2006	0.08	-48.11	<0.25	0.020 J	0.280	<0.052	73.80 J	0.005	7.45	513.00	320.00	<0.46
MW-6	6/7/2006	NM[2]	NM[2]	<0.25	0.599	12.600	<0.052	41.60	<0.002	NM[2]	531.00	364.00	3.70
	8/22/2006	NM[2]	NM[2]	<0.25	0.600	5.500	<0.052	36.90	5.800	NM[2]	553.00	375.00	<0.46
	11/16/2006	0.04	-71.00	<0.25	0.203 J	0.700	<0.052	38.30 J	5.700	7.92	541.00	366.00	<0.46
MW-7	6/8/2006	NM[2]	NM[2]	<0.25	0.706	13.400	<0.052	70.40	0.022	NM[2]	542.00	310.00	5.90
	8/22/2006	NM[2]	NM[2]	<0.25	0.160	0.910	<0.052	75.70	0.094	NM[2]	534.00	335.00	<0.46
	11/16/2006	0.06	-24.00	<0.25	0.376	5.800	<0.052	77.60 J	0.061	7.42	533.00	358.00	<0.46
MW-8	8/24/2006	NM[2]	NM[2]	<0.25	0.171	0.140	<0.052	90.20	<0.002 UJ	NM[2]	563.00	362.00	<0.46
	11/16/2006	0.05	-74.00	<0.25	0.123	0.800	<0.052	78.60 J	0.002	7.22	564.00	350.00	<0.46
MW-9	Q3 2006	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]	NM[4]
	11/15/2006	3.01[6]	4.00	<0.25 UJ	4.410	1.200	0.496	29.50	0.009	6.92	836.00	657.00	<0.46

Notes:
DO = Dissolved oxygen
ORP = Oxygen reduction potential
TDS = Total dissolved solids
$CaCO_3$ = Calcium Carbonate
NM = Not measured
NR = Not Reported
J = Estimated result
UJ = Estimated result

1) DO, ORP, and pH values were obtained in the field using a flow-through cell and a multi-parameter meter unless otherwise noted.
2) Field data was not collected for DO, ORP, and pH because groundwater was removed from the well without using the in-line flow-through cell due to insufficient recharge.
3) DO meter did not appear to be functioning correctly.
4) The well was not sampled and parameters were not measured due to the presence of free product at this loaction.
5) The well was purged dry and recharge was insufficient to collect groundwater for geochemical analysis.
6) DO readings were artificially high because purge water was poured into the multi-paramter meter from a bailer.

Figures

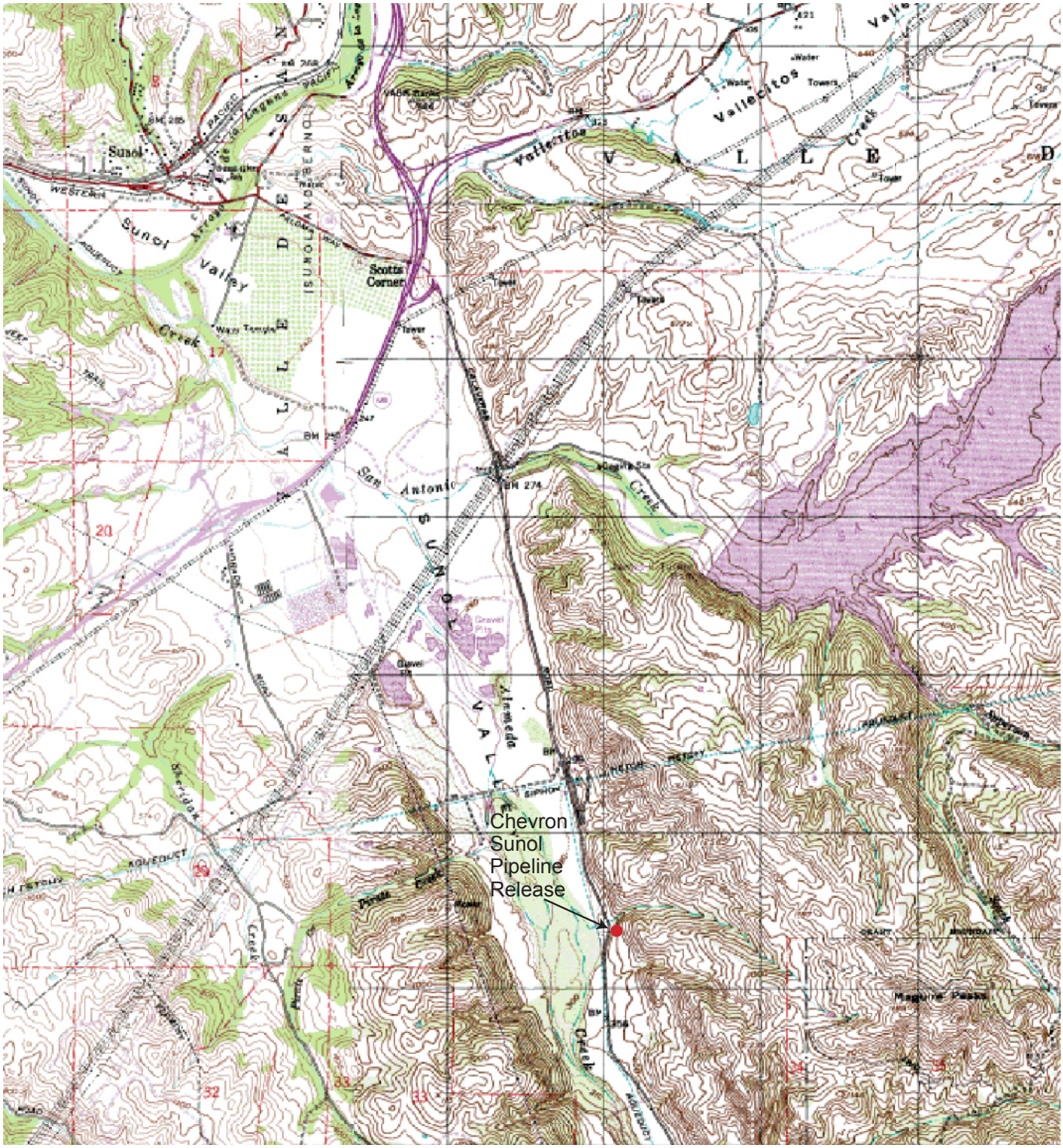


Image obtained from topozone.com

N

0 0.6 1.2 1.8 2.4 3 km

0 0.4 0.8 1.2 1.6 2 mi

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. 26815217	SITE VICINITY MAP CHEVRON SUNOL PIPELINE SUNOL, CALIFORNIA	Figure 1

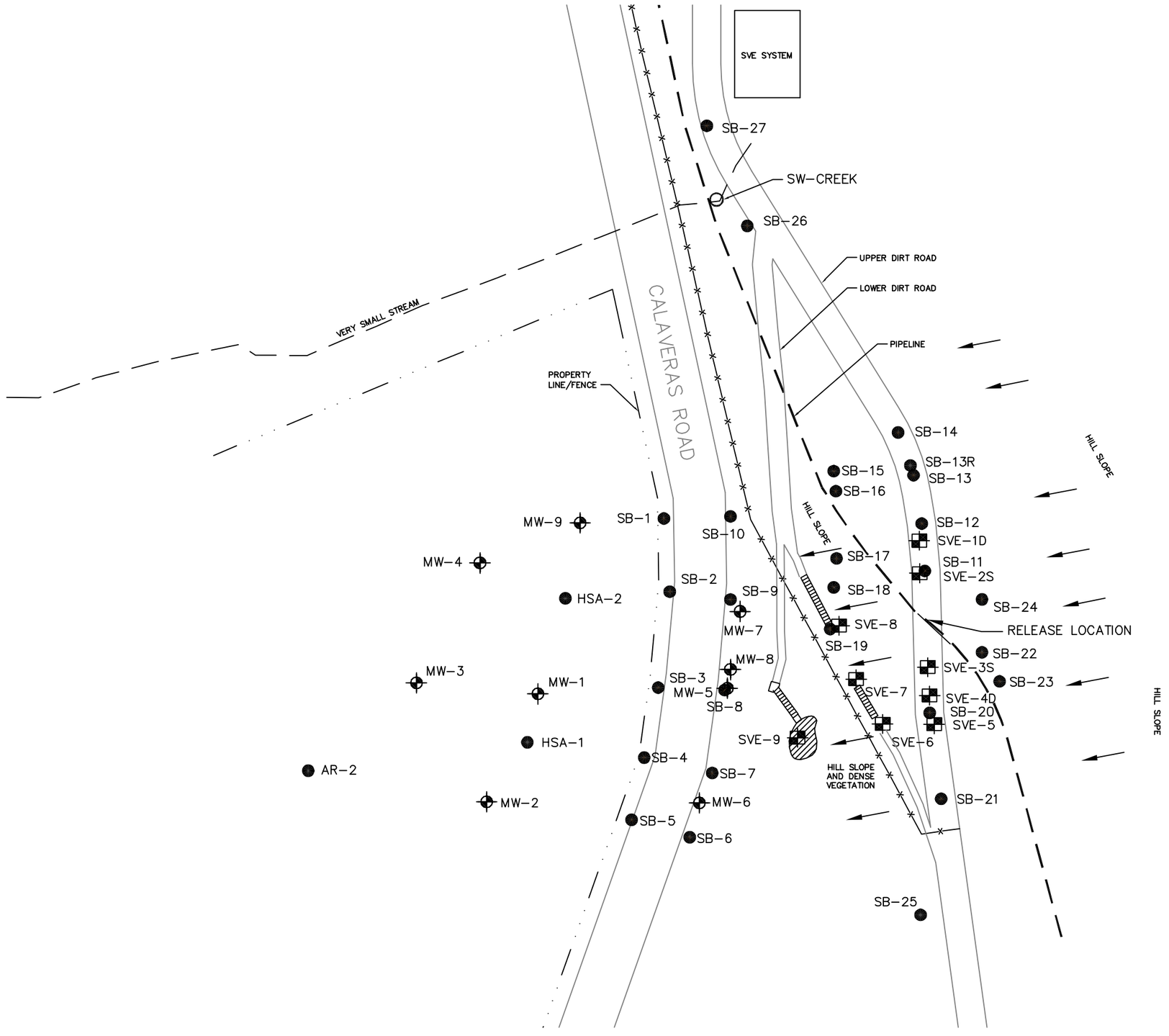
LEGEND:

- SURFACE WATER SAMPLE
- SOIL BORING
- MONITORING WELL
- SVE WELL
- SHELF
- FENCE
- PIPELINE
- HILL SLOPE 80–90% GRADE

NORTH

0 50 100

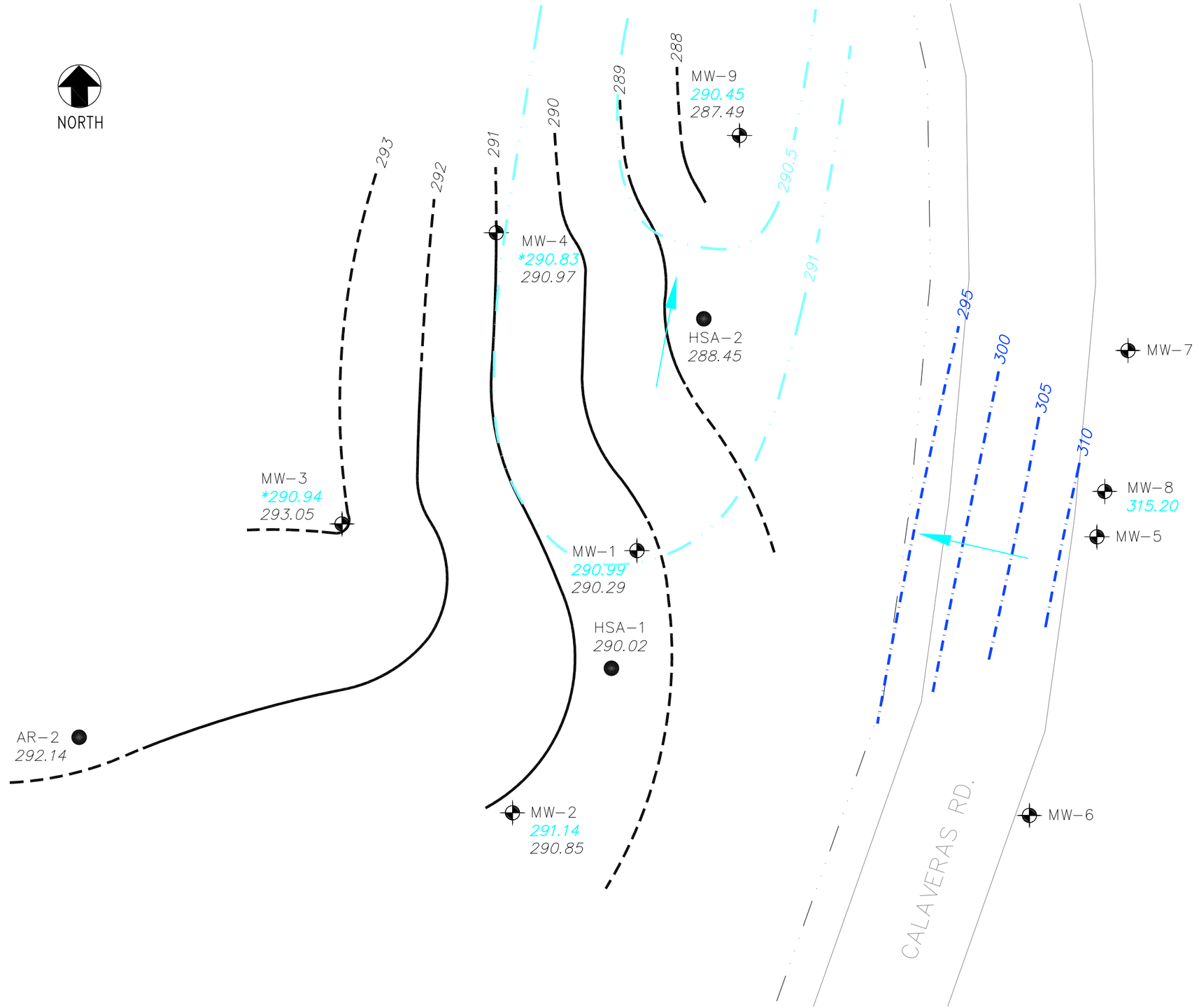
SCALE IN FEET



URS	CHEVRON PIPELINE COMPANY	SVE AND GROUNDWATER MONITORING WELL LOCATIONS CHEVRON SUNOL PIPELINE	Figure 2
	Project No. 26815217		

Feb 15, 2007 – 2:31pm
X:\x_env_waste\Chevron Pipe Line Company\Sunol Spill\Additional Well Installation 1-06\Add. Investigation Report\Figures\Figure 2a.dwg

NORTH



LEGEND:

MW-3	MONITORING WELL
293.68	GROUNDWATER ELEVATION
293.05	BEDROCK CONTACT ELEVATION
HSA-2	SOIL BORING
288.45	BEDROCK CONTACT ELEVATION
293	INFERRED SILTSTONE BEDROCK ELEVATION CONTOUR
292	CALCULATED SILTSTONE BEDROCK ELEVATION CONTOUR
305	INFERRED GROUNDWATER ELEVATION CONTOUR (5 FOOT INTERVALS)
290.5	INFERRED GROUNDWATER ELEVATION CONTOUR (0.5 FOOT INTERVALS)
	INFERRED GROUNDWATER FLOW DIRECTION UNCONFINED ZONE

NOTES:

* GROUNDWATER ELEVATIONS AT MW-3 AND MW-4 ARE NOT INCLUDED IN CONTOURING BECAUSE THE GROUNDWATER ENCOUNTERED IN THESE WELLS ARE NOT IN CONNECTION WITH THE UNCONFINED WATER-BEARING ZONE. THE GROUNDWATER IS STANDING WATER WITHIN THE SUMP OF EACH WELL BELOW THE GRAVEL/BEDROCK CONTACT.

1. ELEVATIONS IN FEET ABOVE AVERAGE MEAN SEA LEVEL (msl).
2. GROUNDWATER ELEVATIONS FOR MW-1 THROUGH MW-4 AND MW-8 AND MW-9, AS MEASURED ON NOVEMBER 14, 2006.
3. BEDROCK ELEVATION DATA OBTAINED FROM THE BORING LOGS OF MW-1 THROUGH MW-4, MW-9, HSA-1, HSA-2, AND AR-2.
4. THE BEDROCK CONTOURS SHOWN REPRESENT THE GRAVEL CONTACT WITH THE WEATHERED SILTSTONE/CLAYSTONE BEDROCK UNIT (POSSIBLY CRETACEOUS-AGE CLAY SHALE OF THE PANOCHE FORMATION).
5. INFERRED HYDRAULIC GRADIENT NORTHERLY FLOW DIRECTION (NURSERY UNCONFINED WATER-BEARING ZONE): DH/DL = 0.008 FT/FT.

20' 0 20'

SCALE 1"= 20'

URS	CHEVRON PIPELINE COMPANY Project No. 26815217	BEDROCK AND UNCONFINED WATER-BEARING ZONE CONTOUR MAP CHEVRON SUNOL PIPELINE	Figure 3

Feb 12, 2007 - 12:01pm
X:\x_env_waste\Chevron Pipe Line Company\Sunol Spill\Additional Well Installation 1-06\Add. Investigation Report\Figures\3_Bedrock Contours_Unconfined Water-Bearing Zone.dwg

NORTH

MW–9

MW–4

MW–3

MW–1

MW–2

MW–7
319.23

MW–8

MW–5
323.44

MW–6
315.01

CALAVERAS RD.

LEGEND:

MW–3
293.68

MONITORING WELL WITH GROUNDWATER ELEVATION

NOTES:

1.) ELEVATIONS IN FEET ABOVE AVERAGE MEAN SEA LEVEL (msl).

2.) GROUNDWATER ELEVATIONS FOR MW–5 THROUGH MW–7 AS MEASURED ON NOVEMBER 14, 2006.

20' 0 20'

SCALE 1"= 20'

URS	CHEVRON PIPELINE COMPANY Project No. 26815217	POTENTIOMETRIC SURFACE ELEVATIONS CONFINED SANDSTONE WATER–BEARING ZONE	Figure 4

Feb 01, 2007 – 11:34am
X:\x_env_waste\Chevron Pipe Line Company\Sunol Spill\Additional Well installation 1-06\Add. Investigation Report\Figures\4_Potentiometric Surface_Confined Sandstone WBZ.dwg

Appendix A
ACEH Letters Dated December 30, 2005 and January 17, 2007

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

December 30, 2005

Mr. Jeff Cosgray
Chevron Pipe Line Company
2811 Hayes Road, Room 1366C
Houston, TX 77082-6696

Subject: SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA

Dear Mr. Cosgray:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site and the report entitled, "Subsurface Investigation Report, Chevron Pipeline Release, Sunol, California," dated December 15, 2005, prepared on your behalf by URS Corporation. The report describes the results of four phases of investigation conducted at the site since a gasoline release occurred on August 14, 2005. The results indicate that gasoline from the pipeline release is present in soil and groundwater within the area of the release, the hillside below the release, and the tree nursery located on the west side of Calaveras Road. Total petroleum hydrocarbons as gasoline (TPHg) were detected in soil at concentrations up to 17,000 milligrams per kilogram (mg/kg) and were detected in groundwater at concentrations up to 570,000 micrograms per liter (µg/L).

The extent of fuel hydrocarbons in the subsurface has not been fully defined. Therefore, we request that you prepare a Work Plan **by February 23, 2006** to fully define the horizontal and vertical extent of contamination at the site. In addition, the free product and elevated concentrations of fuel hydrocarbons in soil and groundwater across a large area of the site will require cleanup. We request that you provide information on interim remediation activities conducted to date and present recommendations for future interim remediation **by March 2, 2006**.

We request that you address the following technical comments, perform the proposed work, and send us the reports described below.

TECHNICAL COMMENTS

1. **Delineation of Soil and Groundwater Contamination.** The extent of shallow soil contamination appears to be sufficiently defined throughout most of the site. However, the horizontal and vertical extent of deeper soil and groundwater contamination has not been fully defined. Please present plans to fully define the extent of soil and groundwater contamination in the Work Plan requested below.

2. **Free Product Distribution and Recovery.** Free product has been observed in well MW-1, which is approximately 80 feet west of Calaveras Road and approximately 175 feet west of the release location. Highly elevated TPHg concentrations that may be indicative of free

phase product in the surrounding soils, have also been detected in grab groundwater samples in the area of the release. Based on these observations, free product appears to be present over a relatively wide area. We request that you present plans in the Work Plan requested below to define the extent of free product, particularly in the area directly downgradient from the release area and the area north of MW-1. Sufficient data are to be collected to evaluate the extent, mobility, and recoverability of the free product in the subsurface. Please also present plans for interim free product recovery in the Work Plan requested below.

3. **Logging Soil Borings.** Sample recovery in the hollow stem auger and rotary casing hammer soil borings was limited to less than one to two feet of sample recovery over intervals of approximately 10 feet or more. The minimal sample recovery limits the ability to locate potential contaminant migration pathways. Please significantly increase the sampling frequency for logging purposes or consider the use of alternative methods to characterize soil conditions. Please present your plans in the Work Plan requested below.

4. **Soil Vapor Extraction Results.** A soil vapor extraction (SVE) system has been installed on the dirt road adjacent to the release as an interim measure. The SVE system is not discussed in detail in the report. Please present information on the design, operation, and sampling results for the SVE system in the Interim Remedial Remediation Report requested below. In addition, please present recommendations regarding the continued operation and expansion of the SVE system as well as recommendations regarding other interim remediation that may be effective for the site.

5. **Quarterly Groundwater Monitoring.** Please collect groundwater samples from monitoring wells on a quarterly basis. Existing groundwater analytical data indicate that fuel oxygenates, 1,2-dichloroethane, and 1,2-dibromomethane are not present at detectable concentrations in groundwater. No analyses appear to have been conducted to date for ethanol and methanol. Please present recommendations for future groundwater analyses in the Work Plan requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **February 23, 2006** – Work Plan for Soil and Groundwater Investigation
- **March 2, 2006** – Interim Remediation Report
- **April 15, 2006** – Quarterly Monitoring Report for the First Quarter 2006

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

Effective **January 31, 2006**, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

In order to facilitate electronic correspondence, we request that you provide up to date electronic mail addresses for all responsible and interested parties. Please provide current electronic mail addresses and notify us of future changes to electronic mail addresses by sending an electronic mail message to me at jerry.wickham@acgov.org.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "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." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Joe Morgan III, URS Corporation, 1333 Broadway, Suite 800, Oakland, CA 94612

Joe Naras, San Francisco Public Utilities Commission, Natural Resources Division, 1657 Rollins Road, Burlingame, CA 94010

Matt Katen, QIC 80201, Zone 7 Water Agency, 100 North Canyons Parkway, Livermore, CA 94551

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

January 17, 2007

Mr. Jeff Cosgray
Chevron Pipe Line Company
4800 Fournace Place
Bellaire, TX 77401-2324

Subject: SLIC Case No. RO0002892, Chevron Sunol Pipeline, 2793 Calaveras Road, Sunol, CA

Dear Mr. Cosgray:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site including the reports entitled, "Additional Groundwater Monitoring Well Installation and Third Quarter 2006 Groundwater Monitoring Report," dated December 4, 2006 and "Soil Vapor Extraction System Start-Up Report," dated December 19, 2006. Both reports were prepared on your behalf by URS Corporation. The "Additional Groundwater Monitoring Well Installation and Third Quarter 2006 Groundwater Monitoring Report," presents the results from installation of two monitoring wells and analytical results from groundwater sampling conducted in August 2006. Groundwater monitoring well MW-8 was installed to monitor contaminant migration through a gravel layer above bedrock on the east side of Calaveras Road. Fuel hydrocarbons were detected at elevated concentrations in soil samples collected from the well boring and in the initial groundwater sample collected from MW-8. Well MW-9 was installed north of existing monitoring wells at the site to help evaluate the downgradient extent of contamination. Free-phase product was observed in well MW-9; therefore, the downgradient extent of dissolved phase contamination has not been determined. We request that you address the technical comments below and submit a Work Plan for additional investigation of the downgradient extent of contamination.

The "Soil Vapor Extraction System Start-Up Report," presents the results from installation of five additional soil vapor extraction (SVE) wells, soil sampling results, SVE start up, SVE system monitoring, and initial mass removal calculations. From system start up on November 28, 2006 to December 8, 2006, the system removed an estimated 920 pounds of hydrocarbons. Well SVE-8, which is located on the hillside slope is not operational due to groundwater in SVE-8. ACEH appreciates the efforts by Chevron Pipe Line Company to install the additional SVE wells on the steep hillside below the fuel release.

We request that you address the following technical comments, perform the proposed work, and send us the reports described below.

TECHNICAL COMMENTS

1. **Downgradient Extent of Contamination and Potential Discharge to Unnamed Creek and Alameda Creek.** Free-phase product is present in well MW-9, which is located approximately 160 feet west northwest of the release location. The purpose of well MW-9

was to assess the downgradient extent of dissolved phase contamination. Based on these results, please present plans in the Work Plan requested below to fully define the extent of free-phase product and the downgradient extent of dissolved phase groundwater contamination.

2. **Potential Discharge to Unnamed Creek and Alameda Creek.** We concur with the proposal to move the sampling location for the unnamed creek to a new location northwest of well MW-9 where the creek flows into the floodplain. Please implement this recommendation during the next quarterly groundwater monitoring. The location of the sampling location for the unnamed creek is to be shown on a detailed topographic map in the next quarterly monitoring report. ACEH will provide technical comments as necessary on the new location following receipt of the quarterly monitoring report.

3. **Conclusions Regarding Unconfined Groundwater at Well MW-8.** The fourth bulleted conclusion in the "Additional Groundwater Monitoring Well Installation and Third Quarter 2006 Groundwater Monitoring Report," regarding unconfined groundwater at well MW-8 indicates that, "the hillside appears to act as a recharge source for the nursery unconfined water-bearing zone." The conclusion goes on to state that, "the presence of groundwater at MW-8, within unconsolidated soils above the sandstone bedrock contact, supports URS' previous hypothesis that groundwater from the hillside acts as a preferential pathway for groundwater transport (URS 2006d)." We assume that the conclusion meant to state that the gravel layer is a preferential pathway for groundwater rather than groundwater acts as a preferential pathway for groundwater. However, this conclusion does not appear to be consistent with previous conclusions and recommendations by URS. Please note that URS submitted correspondence entitled, "Response to ACEH June 5, 2006 Letter – Technical Comment 1. Gravel Layer as Preferential Pathway," dated July 7, 2006, which objected to the installation of well MW-8 and indicated that, "the gravel zone in this area is part of the unsaturated zone rather than a saturated zone migration pathway, nor would wells in this location aid in further understanding of TPH migration or extent because it is in the middle of the impacted and migration pathway area that has already been investigated." The observation of groundwater within the gravel zone does not appear to be consistent with an unsaturated zone. Furthermore, the detection of elevated concentrations of fuel hydrocarbons in groundwater within a saturated preferential pathway does provide useful information to assess the ongoing transport of fuel hydrocarbons from the hillside to the unconfined groundwater west of Calaveras Road. Please revise your evaluation of groundwater flow through the gravel layer and propose any additional investigation or well installation that may be required in the Work Plan requested below.

4. **Quarterly Groundwater Monitoring.** Please continue quarterly groundwater monitoring from the existing wells and a surface water location as discussed in technical comment 2. Since ethanol and methanol have not been detected in results to date, you may discontinue analysis for ethanol and methanol in future groundwater monitoring. The "Additional Groundwater Monitoring Well Installation and Third Quarter 2006 Groundwater Monitoring Report," recommends continuing analysis for geochemical indicators. Please note that ACEH has not requested that you conduct analysis for geochemical indicators. The purpose of analyzing for geochemical indicators is not clear given the groundwater monitoring well network for the site. Wells MWS-1 and MW-9 have free product; well MW-2 appears to be upgradient of the groundwater contamination; wells MW-3 and MW-4 do not appear to sample formation water; and wells MW-5, -6, and -7 monitor the confined bedrock aquifer.

None of these wells appear to effectively monitor a dissolved phase plume in the unconfined aquifer. Only well MW-8, which is directly downslope from the release and contains groundwater with 18,000 micrograms per liter of TPH as gasoline appears to monitor dissolved phase concentrations in the unconfined aquifer. Please describe the rationale for continued monitoring of geochemical indicators. Please present results of the quarterly groundwater sampling in the monitoring reports requested below.

5. **Operation of SVE System.** We concur with the recommendation to monitor the operation of the SVE system. We request that you present results from the SVE system monitoring on a quarterly basis in the monitoring reports requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **February 15, 2007** – Quarterly Groundwater Monitoring Report for the Fourth Quarter 2007
- **March 19, 2007** – Work Plan for Site Characterization
- **March 20, 2007** – Quarterly SVE Operation and Monitoring Report
- **May 15, 2007** – Quarterly Groundwater Monitoring Report for the First Quarter 2007
- **June 20, 2007** – Quarterly SVE Operation and Monitoring Report

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

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PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

AGENCY OVERSIGHT

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If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Colleen Winey, QIC 80201
Zone 7 Water Agency
100 North Canyons Parkway,
Livermore, CA 94551

Joe Morgan III
URS Corporation
1333 Broadway, Suite 800
Oakland, CA 94612

Hanchih Angela Liang
URS Corporation
1333 Broadway, Suite 800
Oakland, CA 94612

Joe Naras
San Francisco Public Utilities Commission
Natural Resources Division
1657 Rollins Road
Burlingame, CA 94010

Craig Freeman
San Francisco Public Utilities Commission
Environmental and Regulatory Compliance Division
1145 Market Street, Suite 500
San Francisco, CA 94103

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

Appendix B
Groundwater Sampling Forms

URS

GROUNDWATER PURGE AND SAMPLING FORM

Well Identifier: MW-1
Date Sampled: 11/15/2006
Project Name: Chevron Sunol Pipeline
Project Number: 26815217
Collector(s): G. White & R. McFarlan
Time (Initial WL): 9:30
Initial Water Level (WL): 37.03 ft.
Depth to Product: --
Total Well Depth (T.D.): 39.56 ft.
Casing Diameter (D): 0.33 ft
Casing Volume (A): 1.6 gal.
Saturated Sandpack Volume (B): 2 gal.
Total Well Volume (A + B): 3.6 gal.

Time	Volume Removed	Temp.	pH	Cond.	Turb.	Odor	Color	ORP	DO	Comments
9:40	Initial	59.88	6.71	1115	7.9	HC Odor	Clear	12	4.03	Slight sheen
9:43	1	60.66	6.68	1130	26	HC Odor	Clear	2	5.85	Slight sheen
9:47	2	60.49	6.68	1129	26.3	HC Odor	Clear	-3	5.17	Slight sheen
9:50	2.5	60.54	6.68	1130	21.7	HC Odor	Clear	-1	4.73	Slight sheen
9:56	3	60.67	6.66	1131	38	HC Odor	Clear	10	5.44	Slight sheen
9:58	3.5	60.74	6.66	1133	21.6	HC Odor	Clear	15	5.67	Slight sheen
10:03	4.5	60.38	6.67	1126	18.4	HC Odor	Clear	22	5.03	Sheen
10:08	5.5	60.44	6.68	1132	17.8	HC Odor	Clear	23	4.78	Sheen
10:12	6	60.78	6.67	1134	10.8	HC Odor	Clear	25	4.87	Sheen

Units for Column Headings:

Volume Removed - Gallons
Temperature - Temp (°F)
Electric Conductivity - Cond. (µS/cm)
Turbidity: Turb. (NTU)
Oxygen Reduction Potential - (mV)
Dissolved Oxygen - (mg/L)

Comments: Dissolved oxygen readings are very high because bailed water was poured into flow-through cell to collect readings.

PURGE METHOD: BAILER X PUMP _____ OTHER _____

Start Purge Time: 9:40
End Purge Time: 10:10
Final Water Level: 37.05 ft.
Time (Final WL): 10:12
Total Volume Purged: 6 gal.
Pump Rate: _____ mL/min
Purged Dry? No
Comments: _____

SAMPLE ID	TIME	ANALYSES	REMARKS
MW-1	10:30	See COC	

Formula for Calculating Casing Volume

$$[A] = \frac{\pi D^2 h}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well diameter (feet)
h= Height of water column (feet)

Formula for Calculating Volume of Water within the Filter Pack

$$[B] = \left[\frac{\pi D_b^2}{4} h_{sat} - \frac{\pi D_a^2}{4} h_{sat} \right] * [f_p] * 7.48 \frac{gal}{ft^3}$$

D_a = Well diameter (feet)
D_b = Boring diameter (feet)
h_{sat} = saturated filter pack length (ft)
f_p = filter pack porosity = 30%

URS

Troll 9000 | Low-Flow System
11/14/06 | ISI Low-Flow Log

Project Information:

Operator Name	Joe Petsche
Company Name	URS Corporation
Project Name	Chevron Sunol Pipeline
Site Name	Calaveras Rd Sunol, CA

Pump Information:

Pump Model/Type	Mega Typhoon
Tubing Type	LDPE
Tubing Diameter	0.38 [in]
Tubing Length	38 [ft]
Pump placement from TOC	35 [ft]

Well Information:

Well Id	MW-2
Well diameter	4 [in]
Well total depth	38.05 [ft bgs]
Depth to top of screen	23.05 [ft bgs]
Screen length	15 [ft]
Depth to Water	33.01 [ft TOC-N]

Pumping information:

Final pumping rate	1000 [mL/min]
Flowcell volume	1398.47 [mL]
Calculated Sample Rate	41955 [sec]
Sample rate	180 [sec]
Stabilized drawdown	0.03 [ft]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	DO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1 +/-3 %	+/-1	+/-2	+/-20
Last 5 Readings	12:30:19	61.95	6.74	1171.90	0.53	0.36	234.19
	12:30:47	61.93	6.74	1171.27	0.41	0.34	233.42
	12:33:53	61.96	6.73	1167.20	0.23	0.26	230.12
	12:37:00	61.81	6.73	1162.26	0.17	0.22	225.97
	12:40:06	61.75	6.72	1160.10	0.21	0.20	220.84
Variance in last 3 readings	12:33:53	0.03	-0.01	-4.07	-0.18	-0.08	-3.30
	12:37:00	-0.15	0.00	-4.94	-0.06	-0.04	-4.15
	12:40:06	-0.06	-0.01	-2.16	0.04	-0.02	-5.13

Notes:

Initial WL - 33.05
Final WL - 33.08
Initial Pumping Rate - 225 mL/min
Final Pumping Rate - 1000mL/min
Total Volume Purged - 9 gallons

URS

Troll 9000 | Low-Flow System
11/14/06 | ISI Low-Flow Log

Project Information:

Operator Name	Joe Petsche
Company Name	URS Corporation
Project Name	Chevron Sunol Pipeline
Site Name	Calaveras Rd Sunol, CA

Pump Information:

Pump Model/Type	Mega Typhoon
Tubing Type	LDPE
Tubing Diameter	0.38 [in]
Tubing Length	38 [ft]
Pump placement from TOC	36 [ft]

Well Information:

Well Id	MW-3
Well diameter	4 [in]
Well total depth	36.84 [ft bgs]
Depth to top of screen	21.84 [ft bgs]
Screen length	15 [ft]
Depth to Water	34.71 [ft TOC-N]

Pumping information:

Final pumping rate	500 [mL/min]
Flowcell volume	1398.47 [mL]
Calculated Sample Rate	41955 [sec]
Sample rate	180 [sec]
Stabilized drawdown	Not Achievable

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	DO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-1 +/-3 %	+/-1	+/-2	+/-20
Last 5 Readings	14:03:13	64.11	6.88	1164.10	89.00	0.47	-22.91
	14:06:20	64.50	6.87	1160.72	91.75	0.44	-22.83
	14:09:25	64.56	6.87	1155.23	68.71	0.35	-22.06
	14:12:32	64.00	6.89	1137.89	153.33	0.24	-20.43
	14:15:38	63.17	6.95	1158.88	64.38	0.12	-17.57
Variance in last 3 readings	14:09:25	0.06	0.00	-5.49	-23.04	-0.09	0.77
	14:12:32	-0.56	0.02	-17.34	84.62	-0.11	1.63
	14:15:38	-0.83	0.06	20.99	-88.95	-0.12	2.86

Notes:

Initial WL - 34.71
Final WL - Purged dry
Initial Pumping Rate - 350 mL/min
Final Pumping Rate - 500 mL/min
Total Volume Purged - 4 gallons

Well not in connection with nursery water-bearing zone.

URS

GROUNDWATER PURGE AND SAMPLING FORM

Well Identifier: MW-4
Date Sampled: 11/15/2006
Project Name: Chevron Sunol Pipeline
Project Number: 26815217
Collector(s): G. White & R. McFarlan
Time (Initial WL): 8:10
Initial Water Level (WL): 38.83 ft.
Depth to Product: --
Total Well Depth (T.D.): 40.64 ft.
Casing Diameter (D): 0.33 ft
Casing Volume (A): 1.2 gal.
Saturated Sandpack Volume (B): 1.1 gal.
Total Well Volume (A + B): 2.3 gal.

Time	Volume Removed	Temp.	pH	Cond.	Turb.	Odor	Color	ORP	DO	Comments
8:27	Initial	58.85	6.53	786.8	2741.2	None	Brown	130	2.13	
8:36	0.75	59.58	6.68	812.8	2398.1	None	Brown	82	6.09	
8:46	2	59.51	6.74	818.2	1077.2	None	Brown	84	4.57	
8:48	2	59.10	6.73	808.6	724.9	None	Brown	86	1.59	
8:55	2.5	59.00	6.76	813.8	527.7	None	Cloudy brown	96	2.61	
9:05	3.5	58.49	6.74	790.6	225.0	None	Clear	106	3.46	

Units for Column Headings:

Volume Removed - Gallons
Temperature - Temp (°F)
Electric Conductivity - Cond. (µS/cm)
Turbidity: Turb. (NTU)
Oxygen Reduction Potential - (mV)
Dissolved Oxygen - (mg/L)

Comments: Dissolved oxygen readings are very high because bailed water was poured into flow-through cell to collect readings.

PURGE METHOD: BAILER X PUMP _____ OTHER _____

Start Purge Time: 8:25
End Purge Time: 9:00
Final Water Level: Dry ft.
Time (Final WL): 9:00
Total Volume Purged: 3.5 gal.
Pump Rate: mL/min
Purged Dry? Yes
Comments: **Well not in connection with nursery water-bearing zone**

SAMPLE ID	TIME	ANALYSES	REMARKS
MW-4	13:30	See COC	Waited for well to recharge after it was purged dry

Formula for Calculating Casing Volume

$$[A] = \frac{\pi D^2 h}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well diameter (feet)
h= Height of water column (feet)

Formula for Calculating Volume of Water within the Filter Pack

$$[B] = \left[\frac{\pi D_b^2}{4} h_{sat} - \frac{\pi D_a^2}{4} h_{sat} \right] * [f_p] * 7.48 \frac{gal}{ft^3}$$

D_a = Well diameter (feet)
D_b = Boring diameter (feet)
h_{sat} = saturated filter pack length (ft)
f_p = filter pack porosity = 30%

URS

Troll 9000 | Low-Flow System
11/16/06 | ISI Low-Flow Log

Project Information:

Operator Name	Greg White
Company Name	URS
Project Name	Chevron Sunol Pipeline
Site Name	Calaveras Rd Sunol, CA

Pump Information:

Pump Model/Type	Mega Typhoon
Tubing Type	LDPE
Tubing Diameter	0.38 [in]
Tubing Length	52 [ft]
Pump placement from TOC	45 [ft]

Well Information:

Well Id	MW-5
Well diameter	4 [in]
Well total depth	49.5 [ft bgs]
Depth to top of screen	39.5 [ft bgs]
Screen length	10 [ft]
Depth to Water	11.24 [ft TOC-N]

Pumping information:

Final pumping rate	250 [mL/min]
Flowcell volume	1710.69 [mL]
Calculated Sample Rate	51321 [sec]
Sample rate	180 [sec]
Stabilized drawdown	0.97 [ft]

Low-Flow Sampling Stabilization Summary

	Time	Temp [F]	pH [pH]	Cond [µS/cm]	Turb [NTU]	DO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.2	+/-1 +/-3 %	+/-1	+/-0.2	+/-20
Last 5 Readings	10:15:59	64.85	7.46	669.23	3.39	0.20	-33.67
	10:19:05	65.06	7.45	672.44	3.24	0.14	-39.18
	10:22:12	65.02	7.45	672.34	2.97	0.10	-43.32
	10:25:18	65.04	7.45	672.55	2.53	0.08	-46.23
	10:28:25	65.12	7.45	673.20	2.49	0.08	-48.11
Variance in last 3 readings	10:22:12	-0.04	0.00	-0.10	-0.27	-0.04	-4.14
	10:25:18	0.02	0.00	0.22	-0.44	-0.02	-2.91
	10:28:25	0.08	0.00	0.65	-0.04	0.00	-1.88

Notes:

Initial WL - 11.08
Final WL - 12.05
Initial Pumping Rate - 400 mL/min
Final Pumping Rate - 250 mL/min
Total Volume Purged - 2.5 gallons

URS

GROUNDWATER PURGE AND SAMPLING FORM

Well Identifier: MW-6 | Date Sampled: 11/16/2006

Project Name: Chevron Sunol Pipeline | Project Number: 26815217

Collector(s): G. White & R. McFarlan | Time (Initial WL): 8:25

Initial Water Level (WL): 17.33 ft. | Depth to Product: --

Total Well Depth (T.D.): 50.5 ft. | Casing Diameter (D): 0.33 ft

Casing Volume (A): 19.5 gal. | Saturated Sandpack Volume (B): 10.2 gal.

Total Well Volume (A + B): 29.7 gal.

Time	Volume Removed	Temp.	pH	Cond.	Turb.	Odor	Color	ORP	DO	Comments
8:40	Initial	63.21	7.94	764.5	25.6		Clear	84	0.24	
8:42	3	63.88	7.88	742.1	6.3		Clear	37	0	
8:44	6	63.86	7.88	732.6	16.1		Clear	1	0	
8:47	9	63.79	7.96	717.8	212.6		Clear	-23	0	
8:50	12	63.80	7.94	700.5	173.7		Clear	-38	0	
8:52	15	63.81	7.95	690.9	202.2		Clear	-45	0	
8:55	18	63.83	7.96	678.6	407.3		Clear	-43	0	
8:57	21	63.87	7.95	664.2	607.8		Clear	-43	0	
8:59	24	63.92	7.77	643.1	220.9		Clear	-38	0	
9:02	27	64.04	7.58	604.7	205.6		Clear	-26	0.02	
9:04	30	64.09	7.66	613.1	437.5		Clear	-34	0.04	
9:08	33	64.02	7.92	635.1	329.9		Clear	-71	0.04	

Units for Column Headings:

Volume Removed - Gallons

Temperature - Temp (°F)

Electric Conductivity - Cond. (µS/cm)

Turbidity: Turb. (NTU)

Oxygen Reduction Potential - (mV)

Dissolved Oxygen - (mg/L)

Comments:

PURGE METHOD: BAILER _____ PUMP X OTHER _____

Start Purge Time: 8:40 | End Purge Time: 9:10

Final Water Level: Dry ft. | Time (Final WL): 9:10

Total Volume Purged: 33 gal. | Pump Rate: _____ mL/min

Purged Dry? Yes | Comments: _____

SAMPLE ID	TIME	ANALYSES	REMARKS
MW-6	9:40	See COC	Waited for well to recharge after it was purged dry

Formula for Calculating Casing Volume

$$[A] = \frac{\pi D^2 h}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well diameter (feet)
h= Height of water column (feet)

Formula for Calculating Volume of Water within the Filter Pack

$$[B] = \left[\frac{\pi D_b^2}{4} h_{sat} - \frac{\pi D_a^2}{4} h_{sat} \right] * [f_p] * 7.48 \frac{gal}{ft^3}$$

D_a = Well diameter (feet)
D_b = Boring diameter (feet)
h_{sat} = saturated filter pack length (ft)
f_p = filter pack porosity = 30%

URS

GROUNDWATER PURGE AND SAMPLING FORM

Well Identifier: MW-7
Date Sampled: 11/16/2006
Project Name: Chevron Sunol Pipeline
Project Number: 26815217
Collector(s): G. White & R. McFarlan
Time (Initial WL): 12:45
Initial Water Level (WL): 17.21 ft.
Depth to Product: --
Total Well Depth (T.D.): 49.75 ft.
Casing Diameter (D): 0.33 ft
Casing Volume (A): 21.2 gal.
Saturated Sandpack Volume (B): 10.2 gal.
Total Well Volume (A + B): 31.4 gal.

Time	Volume Removed	Temp.	pH	Cond.	Turb.	Odor	Color	ORP	DO	Comments
12:50	Initial	65.02	7.45	705.7	48.0		Clear	-5	0.75	
12:53	3	64.67	7.45	704.2	10.0		Clear	-41	0.01	
12:56	6	64.72	7.41	704	5.7		Clear	-53	0	
13:00	9	64.87	7.4	704.2	2.6		Clear	-42	0.16	
13:03	12	65.16	7.4	706.6	4.7		Clear	-30	0.32	
13:05	15	65.41	7.4	706.2	20.5		Clear	-21	0.47	
13:08	18	65.88	7.41	711	16.6		Clear	-13	0.88	
13:11	21	65.86	7.4	705.4	16.3		Clear	-5	0.93	
13:14	24	65.23	7.35	689.4	30.5		Clear	-8	0.2	
13:17	27	64.96	7.35	685.9	245.1		Clear	-15	0.06	
13:20	30	64.92	7.38	671.2	112.2		Clear	-18	0.04	
13:21	31	65	7.42	674.7	171.4		Clear	-24	0.06	

Units for Column Headings:

Volume Removed - Gallons
Temperature - Temp (°F)
Electric Conductivity - Cond. (µS/cm)
Turbidity: Turb. (NTU)
Oxygen Reduction Potential - (mV)
Dissolved Oxygen - (mg/L)

Comments:

PURGE METHOD: BAILER _____ PUMP X OTHER _____

Start Purge Time: 12:50
End Purge Time: 13:20
Final Water Level: Dry ft.
Time (Final WL): 13:20
Total Volume Purged: 31 gal.
Pump Rate: mL/min
Purged Dry? Yes
Comments:

SAMPLE ID	TIME	ANALYSES	REMARKS
MW-7	13:45	See COC	Waited for well to recharge after it was purged dry

Formula for Calculating Casing Volume

$$[A] = \frac{\pi D^2 h}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well diameter (feet)
h= Height of water column (feet)

Formula for Calculating Volume of Water within the Filter Pack

$$[B] = \left[\frac{\pi D_b^2}{4} h_{sat} - \frac{\pi D_a^2}{4} h_{sat} \right] * [f_p] * 7.48 \frac{gal}{ft^3}$$

D_a = Well diameter (feet)
D_b = Boring diameter (feet)
h_{sat} = saturated filter pack length (ft)
f_p = filter pack porosity = 30%

URS

GROUNDWATER PURGE AND SAMPLING FORM

Well Identifier: MW-8 | Date Sampled: 11/16/2006

Project Name: Chevron Sunol Pipeline | Project Number: 26815217

Collector(s): G. White & R. McFarlan | Time (Initial WL): 11:00

Initial Water Level (WL): 18.75 ft. | Depth to Product: --

Total Well Depth (T.D.): 24.26 ft. | Casing Diameter (D): 0.167 ft

Casing Volume (A): 0.9 gal. | Saturated Sandpack Volume (B): 4.3 gal.

Total Well Volume (A + B): 5.2 gal.

Time	Volume Removed	Temp.	pH	Cond.	Turb.	Odor	Color	ORP	DO	Comments
11:21	Initial	65.38	7.27	735	125.1		Clear	-36	3.24	
11:24	1	66.61	7.18	741.8	133.6		Clear	-60	0.11	
11:26	2	66.61	7.21	744.1	131.2		Clear	-63	0.05	
11:30	2.5	66.65	7.22	741.8	132.7		Clear	-68	0.05	
11:32	3	66.69	7.22	741	127.2		Clear	-71	0.04	
11:36	3.5	67.64	7.22	749.3	105.9		Clear	-74	0.05	

Units for Column Headings:

Volume Removed - Gallons

Temperature - Temp (°F)

Electric Conductivity - Cond. (µS/cm)

Turbidity: Turb. (NTU)

Oxygen Reduction Potential - (mV)

Dissolved Oxygen - (mg/L)

Comments:

PURGE METHOD: BAILER _____ PUMP X OTHER _____

Start Purge Time: 11:20 | End Purge Time: 11:37

Final Water Level: Dry ft. | Time (Final WL): 11:37

Total Volume Purged: 3.5 gal. | Pump Rate: _____ mL/min

Purged Dry? Yes | Comments: _____

SAMPLE ID	TIME	ANALYSES	REMARKS
MW-8	12:00	See COC	Waited for well to recharge after it was purged dry

Formula for Calculating Casing Volume

$$[A] = \frac{\pi D^2 h}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well diameter (feet)
h= Height of water column (feet)

Formula for Calculating Volume of Water within the Filter Pack

$$[B] = \left[\frac{\pi D_b^2}{4} h_{sat} - \frac{\pi D_a^2}{4} h_{sat} \right] * [f_p] * 7.48 \frac{gal}{ft^3}$$

D_a = Well diameter (feet)
D_b = Boring diameter (feet)
h_{sat} = saturated filter pack length (ft)
f_p = filter pack porosity = 30%

URS

GROUNDWATER PURGE AND SAMPLING FORM

Well Identifier: MW-9 | Date Sampled: 11/15/2006

Project Name: Chevron Sunol Pipeline | Project Number: 26815217

Collector(s): G. White & R. McFarlan | Time (Initial WL): 11:05

Initial Water Level (WL): 42.6 ft. | Depth to Product: 42.53 ft

Total Well Depth (T.D.): 46.21 ft. | Casing Diameter (D): 0.167 ft

Casing Volume (A): 0.6 gal. | Saturated Sandpack Volume (B): 1.9 gal.

Total Well Volume (A + B): 2.5 gal.

Time	Volume Removed	Temp.	pH	Cond.	Turb.	Odor	Color	ORP	DO	Comments
11:38	Initial	65.26	6.72	1149	27.7	HC Odor	Cloudy-gray	-43	2.81	Sheen
11:42	0.5	63.97	6.8	1165	395.7	HC Odor	Cloudy-gray	-45	4.04	Sheen
11:45	1	62.99	6.81	1148	305.0	HC Odor	Cloudy-gray	-30	4.67	Product
11:51	1.5	65.23	6.93	1160	188.0	HC Odor	Grayish-brown	-31	2.51	Product
11:56	3	62.94	6.94	1132	215.3	HC Odor	Grayish-brown	-6	5.4	Product
11:59	4	63.24	6.88	1131	291.7	HC Odor	Grayish-brown	-25	4.75	Product
12:04	4.5	64.3	6.88	1144	181	HC Odor	Grayish-brown	-11	3.91	Sheen
12:07	5.5	63.25	6.91	1124	178	HC Odor	Gray-Clear	-10	4.39	Product
12:13	6.5	64.79	6.98	1144	92.4	HC Odor	Gray-Clear	16	3.52	Product
12:19	7	63.45	6.92	1129	91	HC Odor	Gray-Clear	4	3.01	Product

Units for Column Headings:

Volume Removed - Gallons

Temperature - Temp (°F)

Electric Conductivity - Cond. (µS/cm)

Turbidity: Turb. (NTU)

Oxygen Reduction Potential - (mV)

Dissolved Oxygen - (mg/L)

Comments: At 1 gallon measurable product was present and was being removed. As more groundwater was purged, increased product thickness was also observed 2.5-3 inches of product was the greatest thickness observed in bailer Not pumped due to presence of free product. Dissolved oxygen readings are very high because bailed water was poured into flow-through cell to collect readings.

PURGE METHOD: BAILER X PUMP _____ OTHER _____

Start Purge Time: 11:35 | End Purge Time: 12:20

Final Product/Water Level: 43.29/43.08 (Rising) ft. | Time (Final WL): 12:20

Total Volume Purged: 7 gal. | Pump Rate: _____ mL/min

Purged Dry? No | Comments: Product readily recharging

SAMPLE ID	TIME	ANALYSES	REMARKS
MW-9	12:45	See COC	Samples collected out of bottom of bailer to minimize product volume in sample

Formula for Calculating Casing Volume

$$[A] = \frac{\pi D^2 h}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well diameter (feet)
h= Height of water column (feet)

Formula for Calculating Volume of Water within the Filter Pack

$$[B] = \left[\frac{\pi D_b^2}{4} h_{sat} - \frac{\pi D_a^2}{4} h_{sat} \right] * [f_p] * 7.48 \frac{gal}{ft^3}$$

D_a = Well diameter (feet)
D_b = Boring diameter (feet)
h_{sat} = saturated filter pack length (ft)
f_p = filter pack porosity = 30%

Appendix C
Laboratory Analytical Results

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

713-432-3335

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1014291. Samples arrived at the laboratory on Wednesday, November 15, 2006. The PO# for this group is 0015010091 and the release number is COSGRAY.

Client Description			Lancaster Labs Number
MW-2	Grab	Water	4916253
MW-2_Filtered	Grab	Water	4916254
MW-3	Grab	Water	4916255
Trip Blank	NA	Water	4916256

ELECTRONIC COPY TO	URS	Attn: Angela Liang
ELECTRONIC COPY TO	URS	Attn: Joe Morgan
ELECTRONIC COPY TO	URS	Attn: April Giangerelli
ELECTRONIC COPY TO	URS	Attn: Greg White

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Max E. Snavely
Senior Specialist

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. WW 4916253

MW-2 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-2**
Collected:11/14/2006 12:45 by GW

Account Number: 11875

Submitted: 11/15/2006 09:25
Reported: 11/27/2006 at 16:54
Discard: 12/28/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUNM2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	N.D.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07058	Manganese	7439-96-5	21.1	0.36	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	530,000.	460.	ug/l as CaCO3	1
00212	Total Dissolved Solids	n.a.	867,000.	19,400.	ug/l	1
00228	Sulfate	14808-79-8	126,000.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	4,000.	250.	ug/l	5
08344	Ferrous Iron	n.a.	21.	8.0	ug/l	1
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
07105	Volatile Headspace Hydrocarbon					
07106	Methane	74-82-8	4.3	2.0	ug/l	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	0.7	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

Lancaster Laboratories Sample No. WW 4916253

MW-2 Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-2
Collected:11/14/2006 12:45 by GW Account Number: 11875

Submitted: 11/15/2006 09:25 Chevron Pipeline Co.
Reported: 11/27/2006 at 16:54 4800 Fournace Place - E320 D
Discard: 12/28/2006 Bellaire TX 77401

SUNM2

01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/16/2006 23:28	Steven A Skiles	1
07058	Manganese	SW-846 6010B	1	11/20/2006 23:09	John P Hook	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	11/17/2006 13:53	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	11/17/2006 13:53	Geraldine C Smith	1
00212	Total Dissolved Solids	EPA 160.1	1	11/16/2006 09:13	Yolunder Y Bunch	1
00228	Sulfate	EPA 300.0	1	11/17/2006 02:09	Ashley M Heckman	10
00368	Nitrate Nitrogen	EPA 300.0	1	11/15/2006 16:08	Ashley M Heckman	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	11/15/2006 19:30	Daniel S Smith	1
01412	Methanol and Ethanol	SW-846 8015B	1	11/17/2006 14:06	Hai D Nguyen	1
07105	Volatile Headspace Hydrocarbon	SW-846 8015B modified	1	11/16/2006 18:18	Hai D Nguyen	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/19/2006 22:55	Kelly E Brickley	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/16/2006 23:28	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/19/2006 22:55	Kelly E Brickley	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/19/2006 20:14	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4916254

MW-2_Filtered **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-2**
Collected:11/14/2006 12:45 by GW Account Number: 11875

Submitted: 11/15/2006 09:25
Reported: 11/27/2006 at 16:54
Discard: 12/28/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUN2F

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	N.D.	52.2	ug/l	1

State of California Lab Certification No. 2116
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/20/2006 23:13	John P Hook	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/19/2006 20:14	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4916255

MW-3 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-3**
Collected:11/14/2006 14:45 by GW

Account Number: 11875

Submitted: 11/15/2006 09:25
Reported: 11/27/2006 at 16:54
Discard: 12/28/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUNM3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	86.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
07105	Volatile Headspace Hydrocarbon					
07106	Methane	74-82-8	420.	10.	ug/l	5
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	1.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/16/2006 23:50	Steven A Skiles	1
01412	Methanol and Ethanol	SW-846 8015B	1	11/17/2006 14:23	Hai D Nguyen	1
07105	Volatile Headspace Hydrocarbon	SW-846 8015B modified	1	11/20/2006 15:47	Hai D Nguyen	5
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/19/2006 23:18	Kelly E Brickley	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/16/2006 23:50	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/19/2006 23:18	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4916255

MW-3 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-3**
Collected:11/14/2006 14:45 by GW Account Number: 11875

Submitted: 11/15/2006 09:25 Chevron Pipeline Co.
Reported: 11/27/2006 at 16:54 4800 Fournace Place - E320 D
Discard: 12/28/2006 Bellaire TX 77401

SUNM3

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4916256

Trip Blank **NA** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 QA**
Collected:11/14/2006

Account Number: 11875

Submitted: 11/15/2006 09:25
Reported: 11/27/2006 at 16:54
Discard: 12/28/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUNQA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
06053	BTEX by 8260B					
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
06053	BTEX by 8260B	SW-846 8260B	1	11/23/2006 06:39	Kelly E Brickley	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/23/2006 06:39	Kelly E Brickley	1

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Analysis Report

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014291
Reported: 11/27/06 at 04:54 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06319196601A	Sample number(s): 4916253							
Sulfate	N.D.	0.30	mg/l	98		89-110		
Nitrate Nitrogen	N.D.	0.050	mg/l	102		90-110		
Batch number: 06319834401A	Sample number(s): 4916253							
Ferrous Iron	N.D.	0.0080	mg/l	99		95-105		
Batch number: 063200017A	Sample number(s): 4916253,4916255							
Methane	N.D.	2.0	ug/l	97		80-120		
Batch number: 06320021201A	Sample number(s): 4916253							
Total Dissolved Solids	N.D.	9.7	mg/l	94		80-120		
Batch number: 06320C20A	Sample number(s): 4916253,4916255							
TPH-GRO - Waters	N.D.	50.	ug/l	117	114	70-130	3	30
Batch number: 063210018A	Sample number(s): 4916253,4916255							
Methanol (by Direct Injection)	N.D.	200.	ug/l	104		66-131		
Batch number: 06321020201A	Sample number(s): 4916253							
Alkalinity to pH 4.5				100		98-103		
Batch number: 063231848002	Sample number(s): 4916253-4916254							
Iron	N.D.	0.0522	mg/l	106		90-112		
Manganese	N.D.	0.00036	mg/l	105		90-110		
Batch number: D063234AA	Sample number(s): 4916253,4916255							
Ethanol	N.D.	50.	ug/l	126		35-168		
Benzene	N.D.	0.5	ug/l	93		85-117		
Toluene	N.D.	0.5	ug/l	90		85-115		
Ethylbenzene	N.D.	0.5	ug/l	93		82-119		
Xylene (Total)	N.D.	0.5	ug/l	94		83-113		
Batch number: D063263AA	Sample number(s): 4916256							
Benzene	N.D.	0.5	ug/l	100		85-117		
Toluene	N.D.	0.5	ug/l	104		85-115		
Ethylbenzene	N.D.	0.5	ug/l	99		82-119		
Xylene (Total)	N.D.	0.5	ug/l	104		83-113		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

	MS	MSD	MS/MSD	RPD	BKG	DUP	DUP	Dup RPD

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014291
Reported: 11/27/06 at 04:54 PM

Analysis Name	%REC	%REC	Limits	RPD	MAX	Conc	Conc	RPD	Max
Batch number: 06319196601A	Sample number(s): 4916253 UNSPK: P912262 BKG: P912262								
Sulfate	101		90-110			N.D.	N.D.	13* (1)	3
Nitrate Nitrogen	99		90-110			N.D.	N.D.	0 (1)	2
Batch number: 06319834401A	Sample number(s): 4916253 UNSPK: P916190 BKG: P916190								
Ferrous Iron	95	99	86-110	3	4	5.8	5.8	1 (1)	8
Batch number: 063200017A	Sample number(s): 4916253,4916255 UNSPK: P916686								
Methane	88	86	63-124	2	20				
Batch number: 06320021201A	Sample number(s): 4916253 UNSPK: P916347 BKG: P915944								
Total Dissolved Solids	100	111	60-140	4	5	17,700.	17,800.	1	5
Batch number: 06320C20A	Sample number(s): 4916253,4916255 UNSPK: P916340								
TPH-GRO - Waters	121		63-154						
Batch number: 063210018A	Sample number(s): 4916253,4916255 UNSPK: P917807								
Methanol (by Direct Injection)	104	100	56-146	4	20				
Batch number: 06321020201A	Sample number(s): 4916253 UNSPK: P916127 BKG: P916127								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	99	98	64-130	0	2	136.	137.	1	4
Batch number: 063231848002	Sample number(s): 4916253-4916254 UNSPK: P916269 BKG: P916269								
Iron	130*	137*	75-125	4	20	0.516	0.861	50* (1)	20
Manganese	98	104	75-125	4	20	0.318	0.322	1	20
Batch number: D063234AA	Sample number(s): 4916253,4916255 UNSPK: P916181								
Ethanol	106	98	34-161	8	30				
Benzene	96	93	83-128	3	30				
Toluene	98	92	83-127	6	30				
Ethylbenzene	99	94	82-129	5	30				
Xylene (Total)	98	95	82-130	3	30				
Batch number: D063263AA	Sample number(s): 4916256 UNSPK: P918971								
Benzene	(2)	(2)	83-128	10	30				
Toluene	102	101	83-127	1	30				
Ethylbenzene	100	100	82-129	0	30				
Xylene (Total)	102	102	82-130	0	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Volatile Headspace Hydrocarbon
Batch number: 063200017A

	Propene
4916253	57
4916255	82
Blank	93
LCS	92
MS	70
MSD	75

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014291
Reported: 11/27/06 at 04:54 PM

Surrogate Quality Control

Limits: 38-129

Analysis Name: TPH-GRO - Waters
Batch number: 06320C20A

	Trifluorotoluene-F
4916253	76
4916255	82
Blank	74
LCS	104
LCSD	106
MS	102
Limits:	63-135

Analysis Name: Methanol and Ethanol
Batch number: 063210018A

	Acetone
4916253	100
4916255	105
Blank	102
LCS	100
MS	102
MSD	99
Limits:	60-145

Analysis Name: BTEX+5 Oxygenates+EDC+EDB+ETOH
Batch number: D063234AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4916253	109	111	99	103
4916255	110	110	99	103
Blank	108	109	100	103
LCS	108	112	101	107
MS	110	109	98	110
MSD	113	113	100	110
Limits:	80-116	77-113	80-113	78-113

Analysis Name: BTEX by 8260B
Batch number: D063263AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4916256	102	102	98	102
Blank	104	103	99	97
LCS	106	99	101	108
MS	101	100	105	108
MSD	101	102	102	108
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron California Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11875 Sample #: 4916253-56 SCR#: 242098
Group# 101429

Facility #:
Site Address: Chevron Sunol Pipeline
Chevron PM: Lead Consultant:
Consultant/Office: URS- Oakland
Consultant Prj. Mgr.: Joe Morgan
Consultant Phone #: 510-874-3201 Fax #: 510-874-3268
Sampler: Greg White & Joe Petsche
Service Order #: ☐ Non SAR:

Analyses Requested

Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Field Point Name	Matrix	Repeat Sample	Top Depth	Year Month Day	Time Collected	New Field Pt.	Grab	Composite	Total Number of Containers	BTEX + MTBE 8260 ☒ 8021 ☐	TPH 8015 MOD GRO	TPH 8015 MOD DRO ☐ Silica Gel Cleanup Methane	8260 Full Scan TDS	Lead 7420 ☐ 7421 ☐ Dissolved Fe	Magnesium	Sulfate/Alkalinity	Ferrous Fe	Nitrate	Ethanol + Methanol
MW-2	W			11/14/06	1245		X		13	X	X	X	X	X	X	X	X	X	X
MW-3	W			11/14/06	1445		X		7	X	X	X							X
Trip Blank	W			11/14/06					1	X									

Comments / Remarks
- No MTBE
- L.b Filter Dissolved Fe

Send Results to Joe Morgan, Angela Liang, Greg White of URS

Turnaround Time Requested (TAT) (please circle)
~~STD. TAT~~ 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I – Full
Type VI (Raw Data) ☐ Coelt Deliverable not needed
WIP (RWQCB)
Disk

	Date	Time		Date	Time
Relinquished by:	11/14/06	16:00	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS (FedEx) Other			Received by:	11/15/06	0925
Temperature Upon Receipt 2.3°C C°			Custody Seals Intact? (Yes) No		

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Lancaster Laboratories

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

713-432-3335

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1014513. Samples arrived at the laboratory on Thursday, November 16, 2006. The PO# for this group is 0015010091 and the release number is COSGRAY.

Client Description			Lancaster Labs Number
MW-1	Grab	Water	4917362
MW-1_Filtered	Grab	Water	4917363
MW-9	Grab	Water	4917364
MW-9_Filtered	Grab	Water	4917365
Trip Blank	NA	Water	4917366
MW-4	Grab	Water	4917367
MW-4_Filtered	Grab	Water	4917368
SW-Creek	Grab	Water	4917369
WP-SVE-DR-1-2-3	Composite	Soil	4917370
Trip Blank	NA	Water	4917371

ELECTRONIC COPY TO	URS	Attn: Angela Liang
ELECTRONIC COPY TO	URS	Attn: Joe Morgan
ELECTRONIC COPY TO	URS	Attn: April Giangerelli
ELECTRONIC COPY TO	URS	Attn: Greg White

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Marla S. Lord
Senior Specialist

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. WW 4917362

MW-1 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-1**
Collected:11/15/2006 10:30 by GW

Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

1CSPI

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	38,000.	500.	ug/l	10
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07058	Manganese	7439-96-5	1,000.	0.36	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	597,000.	460.	ug/l as CaCO3	1
00212	Total Dissolved Solids	n.a.	882,000.	38,800.	ug/l	1
00228	Sulfate	14808-79-8	108,000.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	370.	250.	ug/l	5
08344	Ferrous Iron	n.a.	220.	8.0	ug/l	1
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
07105	Volatile Headspace Hydrocarbon					
07106	Methane	74-82-8	N.D.	2.0	ug/l	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	250.	ug/l	5
05401	Benzene	71-43-2	14.	3.	ug/l	5
05407	Toluene	108-88-3	110.	3.	ug/l	5
05415	Ethylbenzene	100-41-4	38.	3.	ug/l	5
06310	Xylene (Total)	1330-20-7	5,900.	25.	ug/l	50

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

Lancaster Laboratories Sample No. WW 4917362

MW-1 Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-1
Collected:11/15/2006 10:30 by GW Account Number: 11875

Submitted: 11/16/2006 09:00 Chevron Pipeline Co.
Reported: 11/30/2006 at 10:22 4800 Fournace Place - E320 D
Discard: 12/31/2006 Bellaire TX 77401

1CSPI

01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/18/2006 11:52	Martha L Seidel	10
07058	Manganese	SW-846 6010B	1	11/20/2006 14:34	Joanne M Gates	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	11/20/2006 17:48	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	11/20/2006 17:48	Geraldine C Smith	1
00212	Total Dissolved Solids	EPA 160.1	1	11/17/2006 09:04	Yolunder Y Bunch	1
00228	Sulfate	EPA 300.0	1	11/17/2006 21:51	Ashley M Heckman	10
00368	Nitrate Nitrogen	EPA 300.0	1	11/16/2006 15:45	Ashley M Heckman	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	11/16/2006 21:20	Daniel S Smith	1
01412	Methanol and Ethanol	SW-846 8015B	1	11/17/2006 14:40	Hai D Nguyen	1
07105	Volatile Headspace Hydrocarbon	SW-846 8015B modified	1	11/20/2006 21:25	Hai D Nguyen	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/20/2006 06:45	Dawn M Harle	5
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/20/2006 07:08	Dawn M Harle	50
01146	GC VOA Water Prep	SW-846 5030B	1	11/18/2006 11:52	Martha L Seidel	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/20/2006 06:45	Dawn M Harle	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	11/20/2006 07:08	Dawn M Harle	50
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/19/2006 20:38	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4917363

MW-1_Filtered Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-1
Collected:11/15/2006 10:30 by GW

Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	78.9	52.2	ug/l	1

State of California Lab Certification No. 2116
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/20/2006 14:48	Joanne M Gates	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/19/2006 20:38	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4917364

MW-9 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-9**
Collected:11/15/2006 12:45 by GW

Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

9CSPI

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	74,000.	2,500.	ug/l	50
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07058	Manganese	7439-96-5	4,410.	0.36	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	657,000.	460.	ug/l as CaCO3	1
00212	Total Dissolved Solids	n.a.	836,000.	19,400.	ug/l	1
00228	Sulfate	14808-79-8	29,500.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	250.	ug/l	5
08344	Ferrous Iron	n.a.	1,200.	32.	ug/l	4
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
07105	Volatile Headspace Hydrocarbon					
07106	Methane	74-82-8	8.8	2.0	ug/l	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	1,000.	ug/l	20
05401	Benzene	71-43-2	480.	10.	ug/l	20
05407	Toluene	108-88-3	12,000.	50.	ug/l	100
05415	Ethylbenzene	100-41-4	2,200.	10.	ug/l	20
06310	Xylene (Total)	1330-20-7	17,000.	50.	ug/l	100

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

Lancaster Laboratories Sample No. WW 4917364

MW-9 Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-9
Collected:11/15/2006 12:45 by GW Account Number: 11875

Submitted: 11/16/2006 09:00 Chevron Pipeline Co.
Reported: 11/30/2006 at 10:22 4800 Fournace Place - E320 D
Discard: 12/31/2006 Bellaire TX 77401

9CSPI

01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/18/2006 12:13	Martha L Seidel	50
07058	Manganese	SW-846 6010B	1	11/20/2006 14:53	Joanne M Gates	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	11/20/2006 17:48	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	11/20/2006 17:48	Geraldine C Smith	1
00212	Total Dissolved Solids	EPA 160.1	1	11/17/2006 09:04	Yolunder Y Bunch	1
00228	Sulfate	EPA 300.0	1	11/16/2006 16:01	Ashley M Heckman	5
00368	Nitrate Nitrogen	EPA 300.0	1	11/16/2006 16:01	Ashley M Heckman	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	11/16/2006 21:20	Daniel S Smith	4
01412	Methanol and Ethanol	SW-846 8015B	1	11/17/2006 14:58	Hai D Nguyen	1
07105	Volatile Headspace Hydrocarbon	SW-846 8015B modified	1	11/20/2006 21:39	Hai D Nguyen	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/20/2006 07:31	Dawn M Harle	20
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/20/2006 07:54	Dawn M Harle	100
01146	GC VOA Water Prep	SW-846 5030B	1	11/18/2006 12:13	Martha L Seidel	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/20/2006 07:31	Dawn M Harle	20
01163	GC/MS VOA Water Prep	SW-846 5030B	2	11/20/2006 07:54	Dawn M Harle	100
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/19/2006 20:38	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4917365

MW-9_Filtered Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-9
Collected:11/15/2006 12:45 by GW Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	496.	52.2	ug/l	1

State of California Lab Certification No. 2116
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/20/2006 14:58	Joanne M Gates	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/19/2006 20:38	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4917366

Trip Blank **NA** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 TB**
Collected:11/15/2006

Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

QASPI

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/26/2006 21:55	Dawn M Harle	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/26/2006 21:55	Dawn M Harle	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4917367

MW-4 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-4**
Collected:11/15/2006 13:30 by GW

Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

4CSPI

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	N.D.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07058	Manganese	7439-96-5	137.	0.36	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	490,000.	460.	ug/l as CaCO3	1
00212	Total Dissolved Solids	n.a.	672,000.	19,400.	ug/l	1
00228	Sulfate	14808-79-8	90,300.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	340.	250.	ug/l	5
08344	Ferrous Iron	n.a.	470.	8.0	ug/l	1
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
07105	Volatile Headspace Hydrocarbon					
07106	Methane	74-82-8	3.2	2.0	ug/l	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	0.5	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

Lancaster Laboratories Sample No. WW 4917367

MW-4 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-4**
Collected:11/15/2006 13:30 by GW

Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
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Bellaire TX 77401

4CSPI

01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/17/2006 19:55	Martha L Seidel	1
07058	Manganese	SW-846 6010B	1	11/20/2006 15:03	Joanne M Gates	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	11/20/2006 17:48	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	11/20/2006 17:48	Geraldine C Smith	1
00212	Total Dissolved Solids	EPA 160.1	1	11/17/2006 09:04	Yolunder Y Bunch	1
00228	Sulfate	EPA 300.0	1	11/17/2006 22:06	Ashley M Heckman	10
00368	Nitrate Nitrogen	EPA 300.0	1	11/16/2006 16:16	Ashley M Heckman	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	11/16/2006 21:20	Daniel S Smith	1
01412	Methanol and Ethanol	SW-846 8015B	1	11/17/2006 15:15	Hai D Nguyen	1
07105	Volatile Headspace Hydrocarbon	SW-846 8015B modified	1	11/20/2006 21:52	Hai D Nguyen	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/20/2006 08:18	Dawn M Harle	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/17/2006 19:55	Martha L Seidel	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/20/2006 08:18	Dawn M Harle	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/19/2006 20:38	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4917368

MW-4_Filtered Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-4
Collected:11/15/2006 13:30 by GW

Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	N.D.	52.2	ug/l	1

State of California Lab Certification No. 2116
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/20/2006 15:07	Joanne M Gates	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/19/2006 20:38	James L Mertz	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4917369

SW-Creek Grab Water
NA URSO
Sunol Pipeline SL0600100443 SW-Creek
Collected:11/15/2006 14:15 by GW Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SWCRK

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	N.D.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/17/2006 20:28	Martha L Seidel	1
01412	Methanol and Ethanol	SW-846 8015B	1	11/17/2006 15:33	Hai D Nguyen	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/20/2006 08:41	Dawn M Harle	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/20/2006 08:41	Dawn M Harle	1

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Analysis Report

Lancaster Laboratories Sample No. SW 4917370

WP-SVE-DR-1-2-3 **Composite Soil**
NA **URSO**
Sunol Pipeline **SL0600100443 WP-SVE-DR**
Collected:11/15/2006 14:30 by GW Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SVEDR

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01725	TPH-GRO - Soils	n.a.	330.	20.	mg/kg	500
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised. The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	N.D.	0.062	mg/kg	124.38
05466	Toluene	108-88-3	N.D.	0.12	mg/kg	124.38
05474	Ethylbenzene	100-41-4	N.D.	0.12	mg/kg	124.38
06301	Xylene (Total)	1330-20-7	4.9	0.12	mg/kg	124.38

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/20/2006 07:17	Linda C Pape	500
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/21/2006 18:37	Kerri E Koch	124.38
00374	GC/MS - Bulk Sample Prep	SW-846 5030A	1	11/21/2006 14:08	Kerri E Koch	n.a.
01150	GC - Bulk Soil Prep	SW-846 5035	1	11/17/2006 01:43	Jesse L Mertz	n.a.

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Analysis Report

Lancaster Laboratories Sample No. WW 4917371

Trip Blank **NA** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 TB**
Collected:11/15/2006

Account Number: 11875

Submitted: 11/16/2006 09:00
Reported: 11/30/2006 at 10:22
Discard: 12/31/2006

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

QA501

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/26/2006 22:19	Dawn M Harle	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/26/2006 22:19	Dawn M Harle	1

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014513
Reported: 11/30/06 at 10:22 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06320196101B	Sample number(s): 4917362,4917364,4917367							
Sulfate	N.D.	0.30	mg/l	100		89-110		
Nitrate Nitrogen	N.D.	0.050	mg/l	102		90-110		
Batch number: 06320834401A	Sample number(s): 4917362,4917364,4917367							
Ferrous Iron	N.D.	0.0080	mg/l	99		95-105		
Batch number: 063210018A	Sample number(s): 4917362,4917364,4917367,4917369							
Methanol (by Direct Injection)	N.D.	200.	ug/l	104		66-131		
Batch number: 06321021201A	Sample number(s): 4917362,4917364,4917367							
Total Dissolved Solids	N.D.	9.7	mg/l	100		80-120		
Batch number: 06321A33B	Sample number(s): 4917370							
TPH-GRO - Soils	N.D.	1.0	mg/kg	100		67-119		
Batch number: 06321A51A	Sample number(s): 4917367,4917369							
TPH-GRO - Waters	N.D.	50.	ug/l	116	119	70-130	3	30
Batch number: 06321B54A	Sample number(s): 4917362,4917364							
TPH-GRO - Waters	N.D.	50.	ug/l	119	119	70-130	1	30
Batch number: 063231848003	Sample number(s): 4917362-4917365,4917367-4917368							
Iron	N.D.	0.0522	mg/l	96		90-112		
Manganese	N.D.	0.00036	mg/l	99		90-110		
Batch number: 063240030A	Sample number(s): 4917362,4917364,4917367							
Methane	N.D.	2.0	ug/l	98		80-120		
Batch number: 06324020202A	Sample number(s): 4917362,4917364,4917367							
Alkalinity to pH 4.5				100		98-103		
Batch number: D063242AA	Sample number(s): 4917362,4917364,4917367,4917369							
Ethanol	N.D.	50.	ug/l	110		35-168		
Benzene	N.D.	0.5	ug/l	95		85-117		
Toluene	N.D.	0.5	ug/l	94		85-115		
Ethylbenzene	N.D.	0.5	ug/l	93		82-119		
Xylene (Total)	N.D.	0.5	ug/l	96		83-113		
Batch number: Q063252AA	Sample number(s): 4917370							
Benzene	N.D.	63.	ug/kg	98	97	77-119	1	30
Toluene	N.D.	130.	ug/kg	97	96	81-116	1	30
Ethylbenzene	N.D.	130.	ug/kg	92	91	82-115	1	30
Xylene (Total)	N.D.	130.	ug/kg	94	93	82-117	1	30
Batch number: Z063302AA	Sample number(s): 4917366,4917371							
Ethanol	N.D.	50.	ug/l	98		35-168		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014513
Reported: 11/30/06 at 10:22 AM

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Benzene	N.D.	0.5	ug/l	97		85-117		
Toluene	N.D.	0.5	ug/l	105		85-115		
Ethylbenzene	N.D.	0.5	ug/l	103		82-119		
Xylene (Total)	N.D.	0.5	ug/l	106		83-113		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 06320196101B	Sample number(s): 4917362,4917364,4917367 UNSPK: P917319 BKG: P917319								
Sulfate	106		90-110			215.	211.	2	3
Nitrate Nitrogen	100		90-110			6.9	6.2	10*	2
Batch number: 06320834401A	Sample number(s): 4917362,4917364,4917367 UNSPK: P917629 BKG: P917629								
Ferrous Iron	99	98	86-110	1	4	3.6	3.6	1 (1)	8
Batch number: 063210018A	Sample number(s): 4917362,4917364,4917367,4917369 UNSPK: P917807								
Methanol (by Direct Injection)	104	100	56-146	4	20				
Batch number: 06321021201A	Sample number(s): 4917362,4917364,4917367 UNSPK: P917319 BKG: P917319								
Total Dissolved Solids	102	104	60-140	1	5	4,100.	4,060.	1	5
Batch number: 06321A33B	Sample number(s): 4917370 UNSPK: P906635								
TPH-GRO - Soils	72	73	39-118	1	30				
Batch number: 06321A51A	Sample number(s): 4917367,4917369 UNSPK: P917433								
TPH-GRO - Waters	120		63-154						
Batch number: 06321B54A	Sample number(s): 4917362,4917364 UNSPK: P917902								
TPH-GRO - Waters	122		63-154						
Batch number: 063231848003	Sample number(s): 4917362-4917365,4917367-4917368 UNSPK: P916409 BKG: P916409								
Iron	124	117	75-125	5	20	0.379	0.472	22* (1)	20
Manganese	103	103	75-125	0	20	0.0236	0.0244	3 (1)	20
Batch number: 063240030A	Sample number(s): 4917362,4917364,4917367 UNSPK: P917319								
Methane	97	83	63-124	15	20				
Batch number: 06324020202A	Sample number(s): 4917362,4917364,4917367 UNSPK: P917229 BKG: P917229								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	98	98	64-130	0	2	98.2	98.5	0	4
Batch number: D063242AA	Sample number(s): 4917362,4917364,4917367,4917369 UNSPK: P917581								
Ethanol	89	97	34-161	8	30				
Benzene	98	97	83-128	0	30				
Toluene	98	97	83-127	1	30				
Ethylbenzene	99	98	82-129	1	30				
Xylene (Total)	100	98	82-130	2	30				
Batch number: Q063252AA	Sample number(s): 4917370 UNSPK: 4917370								

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014513
Reported: 11/30/06 at 10:22 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Benzene	99	98	59-120	0	30				
Toluene	100	98	52-121	1	30				
Ethylbenzene	96	96	54-116	0	30				
Xylene (Total)	191*	312*	44-127	39*	30				
Batch number: Z063302AA	Sample number(s): 4917366,4917371 UNSPK: P921907								
Ethanol	125	144	34-161	14	30				
Benzene	102	101	83-128	1	30				
Toluene	110	111	83-127	1	30				
Ethylbenzene	109	109	82-129	0	30				
Xylene (Total)	111	110	82-130	1	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Methanol and Ethanol
Batch number: 063210018A

	Acetone
4917362	103
4917364	102
4917367	99
4917369	102
Blank	102
LCS	100
MS	102
MSD	99
Limits:	60-145

Analysis Name: TPH-GRO - Soils
Batch number: 06321A33B

	Trifluorotoluene-F
4917370	5*
Blank	93
LCS	102
MS	92
MSD	89
Limits:	61-122

Analysis Name: TPH-GRO - Waters
Batch number: 06321A51A

	Trifluorotoluene-F
4917367	89
4917369	87

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014513
Reported: 11/30/06 at 10:22 AM

Surrogate Quality Control

Blank	85
LCS	89
LCSD	89
MS	91
Limits:	63-135

Analysis Name: TPH-GRO - Waters
Batch number: 06321B54A

	Trifluorotoluene-F
4917362	111
4917364	97
Blank	96
LCS	104
LCSD	102
MS	101
Limits:	63-135

Analysis Name: Volatile Headspace Hydrocarbon
Batch number: 063240030A

	Propene
4917362	48
4917364	67
4917367	68
Blank	107
LCS	98
MS	69
MSD	59
Limits:	38-129

Analysis Name: BTEX+5 Oxygenates+EDC+EDB+ETOH
Batch number: D063242AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4917362	111	110	101	108
4917364	111	108	102	108
4917367	111	106	97	99
4917369	112	109	99	103
Blank	112	109	99	102
LCS	113	113	101	110
MS	115	113	100	109
MSD	113	115*	100	110
Limits:	80-116	77-113	80-113	78-113

Analysis Name: BTEX+MTBE by 8260B
Batch number: Q063252AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4917370	90	92	92	88
Blank	98	103	99	89
LCS	96	99	100	94
LCSD	96	98	99	93
MS	91	92	92	89

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014513
Reported: 11/30/06 at 10:22 AM

Surrogate Quality Control

MSD	90	93	92	89
Limits:	71-114	70-109	70-123	70-111

Analysis Name: BTEX+5 Oxygenates+EDC+EDB+ETOH
Batch number: Z063302AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4917366	112	104	108	101
4917371	112	103	108	101
Blank	106	101	108	99
LCS	107	103	107	108
MS	108	103	106	106
MSD	107	102	109	104
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron California Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

242099

Acct. #: 11875 Grp For Lancaster Laboratories use only Sample #: 1014513 SCR#:
Sample # 491 7362-71

Analyses Requested

Facility #:
Site Address: Chevron Sunol Pipeline
Chevron PM: Lead Consultant:
Consultant/Office: URS - Oakland
Consultant Prj. Mgr.: Joe Morgan
Consultant Phone #: 510-874-3201 Fax #: 510-874-3268
Sampler: Greg White, Raven McFarlen
Service Order #: ☐ Non SAR:

Field Point Name	Matrix	Repeat Sample	Top Depth	Year Month Day	Time Collected	New Field Pt.	Grab	Composite	Total Number of Containers	Preservation Codes													
										BTEX + MTBE 8260 ☒ 8021 ☐	TPH 8015 MOD GRO	TPH 8015 MOD DRO ☐ Silica Gel Cleanup ☐	8260 full scan	MeHane	Oxygenates TDS	Lead 7420 ☐ 7421 ☐ Dissolved Fe	Manganese	Sulfate/Alkalinity	Ferrous Fe	Nitrate	Ethanol + Methanol		
MW-1	W			11/15/06	1030		X		13	X	X			X	X	X	X	X	X	X	X		
MW-9	W			11/15/06	1245		X		13	X	X			X	X	X	X	X	X	X	X		
Trip Blank	W								1	X													

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Comments / Remarks
- No MTBE
- Lab Filter Dissolved Fe

Send Results to Joe Morgan, Angela Liang, Greg White of URS

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I – Full
Type VI (Raw Data) ☐ Coelt Deliverable not needed
WIP (RWQCB)
Disk

Relinquished by:	Date	Time	Received by:	Date	Time
	11/17/06	13:30			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other			Received by:	Date	Time
Temperature Upon Receipt 4.6 C°			Custody Seals Intact? Yes No	11/16/06	0900

Chevron California Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Grp #1014513 242100

For Lancaster Laboratories use only
Acct. #: 11875 Sample #: 4917362-71 SCR#:

Facility #:
Site Address: Chevron Sunol Pipeline
Chevron PM: Lead Consultant:
Consultant/Office: URS-Oakland
Consultant Prj. Mgr.: Joe Morgan
Consultant Phone #: 510-874-3201 Fax #: 510-874-3268
Sampler: Greg White, Renee McFarlin
Service Order #: ☐ Non SAR:

Analyses Requested / Preservation Codes

Field Point Name	Matrix	Repeat Sample	Top Depth	Year Month Day	Time Collected	New Field Pt.	Grab	Composite	Total Number of Containers	BTEX + MTBE 8260 ☒ 8021 ☐	TPH 8015 MOD GRO	~~TPH 8015 MOD DRO~~ ☐ Silica Gel Cleanup	~~8260 full scan~~ Methane	~~Oxygenates~~ TDS	~~Lead 7420~~ ☐ 7421 ☐ Dissolved Fe	Manganese	Sulfate / Alkalinity	Ferrous Fe	Nitrate	Ethanol + Methanol
MW-4	W			11/15/06	1330		X		6	X	X		X	X	X	X	X	X	X	X
SW-Creek	W			11/15/06	1415		X		5	X	X									X
WP-SVE-DR-1	S			11/15/06	1430		X		1	X	X									
WP-SVE-DR-2	S			11/15/06	1430		X		1	X	X									
WP-SVE-DR-3	S			11/15/06	1430		X		1	X	X									
Trip Blank	W								1	X										

* Composite At Lab (WP-SVE-DR-1, -2, -3)

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Comments / Remarks
- No MTBE
- Lab Filter Dissolved Fe

Send Results to Joe Morgan, Angela Liang, Greg White of URS

*Composite Soil Sample at Lab

Turnaround Time Requested (TAT) (please circle)

STD. TAT (circled) 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I – Full
Type VI (Raw Data) ☐ Coelt Deliverable not needed
WIP (RWQCB)
Disk

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	11/15/06	1500			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx (circled) Other ____			Received by: [signature]	11/16/06	0900
Temperature Upon Receipt 4.7C C°			Custody Seals Intact? Yes (circled) No		

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Lancaster Laboratories
2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

REVISED

ANALYTICAL RESULTS

Prepared for:

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

713-432-3335

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1014733. Samples arrived at the laboratory on Friday, November 17, 2006. The PO# for this group is 0015010091 and the release number is COSGRAY.

Client Description			Lancaster Labs Number
MW-8	Grab	Water	4918880
MW-8_Filtered	Grab	Water	4918881
MW-7	Grab	Water	4918882
MW-7_Filtered	Grab	Water	4918883
Trip Blank		Water	4918884

ELECTRONIC COPY TO	URS	Attn: Angela Liang
ELECTRONIC COPY TO	URS	Attn: Joe Morgan
ELECTRONIC COPY TO	URS	Attn: April Giangerelli
ELECTRONIC COPY TO	URS	Attn: Greg White

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

REVISED

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Susan M. Goshert
Group Leader

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

REVISED

Lancaster Laboratories Sample No. WW 4918880

MW-8 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-8**
Collected:11/16/2006 12:00 by RM

Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/12/2006 at 10:29
Discard: 01/12/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUN08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	990.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07058	Manganese	7439-96-5	123.	0.36	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	350,000.	460.	ug/l as CaCO3	1
00212	Total Dissolved Solids	n.a.	564,000.	9,700.	ug/l	1
00228	Sulfate	14808-79-8	78,600.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	N.D.	250.	ug/l	5
08344	Ferrous Iron	n.a.	800.	32.	ug/l	4
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
07105	Volatile Headspace Hydrocarbon					
07106	Methane	74-82-8	2.4	2.0	ug/l	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	76.	0.5	ug/l	1
05407	Toluene	108-88-3	80.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	69.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	190.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4918880

MW-8 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-8**
Collected:11/16/2006 12:00 by RM Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/12/2006 at 10:29
Discard: 01/12/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUN08

01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/20/2006 17:57	Steven A Skiles	1
07058	Manganese	SW-846 6010B	1	11/22/2006 01:51	John P Hook	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	11/21/2006 14:28	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	11/21/2006 14:28	Geraldine C Smith	1
00212	Total Dissolved Solids	EPA 160.1	1	11/20/2006 09:03	Yolunder Y Bunch	1
00228	Sulfate	EPA 300.0	1	11/17/2006 18:01	Ashley M Heckman	10
00368	Nitrate Nitrogen	EPA 300.0	1	11/17/2006 17:15	Ashley M Heckman	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	11/18/2006 05:45	Daniel S Smith	4
01412	Methanol and Ethanol	SW-846 8015B	1	11/21/2006 13:24	Hai D Nguyen	1
07105	Volatile Headspace Hydrocarbon	SW-846 8015B modified	1	11/21/2006 17:54	Hai D Nguyen	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/23/2006 01:12	Kelly E Brickley	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/20/2006 17:57	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/23/2006 01:12	Kelly E Brickley	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/21/2006 11:45	Megersa Deyessa	1

Lancaster Laboratories

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Analysis Report

REVISED

Lancaster Laboratories Sample No. WW 4918881

MW-8_Filtered Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-8
Collected:11/16/2006 12:00 by RM Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/12/2006 at 10:29
Discard: 01/12/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	N.D.	52.2	ug/l	1

State of California Lab Certification No. 2116
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/22/2006 01:56	John P Hook	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/21/2006 11:45	Megersa Deyessa	1

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Analysis Report

REVISED

Lancaster Laboratories Sample No. WW 4918882

MW-7 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-7**
Collected:11/16/2006 13:45 by RM

Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/12/2006 at 10:29
Discard: 01/12/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUN07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	N.D.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07058	Manganese	7439-96-5	376.	0.36	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	358,000.	460.	ug/l as CaCO3	1
00212	Total Dissolved Solids	n.a.	533,000.	9,700.	ug/l	1
00228	Sulfate	14808-79-8	77,600.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	N.D.	250.	ug/l	5
08344	Ferrous Iron	n.a.	5,800.	160.	ug/l	20
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
07105	Volatile Headspace Hydrocarbon					
07106	Methane	74-82-8	61.	2.0	ug/l	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	0.7	0.5	ug/l	1
05407	Toluene	108-88-3	2.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	0.6	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	2.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

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Analysis Report

REVISED

Lancaster Laboratories Sample No. WW 4918882

MW-7 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-7**
Collected:11/16/2006 13:45 by RM Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/12/2006 at 10:29
Discard: 01/12/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUN07

01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/20/2006 18:18	Steven A Skiles	1
07058	Manganese	SW-846 6010B	1	11/22/2006 02:10	John P Hook	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	11/21/2006 14:28	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	11/21/2006 14:28	Geraldine C Smith	1
00212	Total Dissolved Solids	EPA 160.1	1	11/20/2006 09:03	Yolunder Y Bunch	1
00228	Sulfate	EPA 300.0	1	11/17/2006 19:33	Ashley M Heckman	10
00368	Nitrate Nitrogen	EPA 300.0	1	11/17/2006 19:18	Ashley M Heckman	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	11/18/2006 05:45	Daniel S Smith	20
01412	Methanol and Ethanol	SW-846 8015B	1	11/21/2006 13:41	Hai D Nguyen	1
07105	Volatile Headspace Hydrocarbon	SW-846 8015B modified	1	11/21/2006 18:07	Hai D Nguyen	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/23/2006 01:36	Kelly E Brickley	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/20/2006 18:18	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/23/2006 01:36	Kelly E Brickley	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/21/2006 11:45	Megersa Deyessa	1

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Analysis Report

REVISED

Lancaster Laboratories Sample No. WW 4918883

MW-7_Filtered Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-7
Collected:11/16/2006 13:45 by RM

Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/12/2006 at 10:29
Discard: 01/12/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	N.D.	52.2	ug/l	1

State of California Lab Certification No. 2116
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/22/2006 02:15	John P Hook	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/21/2006 11:45	Megersa Deyessa	1

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Analysis Report

REVISED

Lancaster Laboratories Sample No. WW 4918884

Trip Blank **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 Trip Blank**
Collected:11/16/2006 Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/12/2006 at 10:29
Discard: 01/12/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

SUNTB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
06053	BTEX by 8260B					
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
06053	BTEX by 8260B	SW-846 8260B	1	11/23/2006 05:07	Kelly E Brickley	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/23/2006 05:07	Kelly E Brickley	1

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Analysis Report

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014733
Reported: 12/12/06 at 10:29 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06321196101A	Sample number(s): 4918880,4918882							
Sulfate	0.35	0.30	mg/l	103		89-110		
Nitrate Nitrogen	N.D.	0.050	mg/l	100		90-110		
Batch number: 06322834401A	Sample number(s): 4918880,4918882							
Ferrous Iron	N.D.	0.0080	mg/l	100		95-105		
Batch number: 06324021201A	Sample number(s): 4918880,4918882							
Total Dissolved Solids	N.D.	9.7	mg/l	93		80-120		
Batch number: 06324A20A	Sample number(s): 4918880,4918882							
TPH-GRO - Waters	N.D.	50.	ug/l	121	122	70-130	0	30
Batch number: 063250003A	Sample number(s): 4918880,4918882							
Methane	N.D.	2.0	ug/l	103		80-120		
Batch number: 063250005A	Sample number(s): 4918880,4918882							
Methanol (by Direct Injection)	N.D.	200.	ug/l	108		66-131		
Batch number: 06325020201A	Sample number(s): 4918880,4918882							
Alkalinity to pH 4.5				100		98-103		
Batch number: 063251848004	Sample number(s): 4918880-4918883							
Iron	N.D.	0.0522	mg/l	100		90-112		
Manganese	N.D.	0.00036	mg/l	101		90-110		
Batch number: D063263AA	Sample number(s): 4918884							
Benzene	N.D.	0.5	ug/l	100		85-117		
Toluene	N.D.	0.5	ug/l	104		85-115		
Ethylbenzene	N.D.	0.5	ug/l	99		82-119		
Xylene (Total)	N.D.	0.5	ug/l	104		83-113		
Batch number: Z063263AA	Sample number(s): 4918880,4918882							
Ethanol	N.D.	50.	ug/l	96		35-168		
Benzene	N.D.	0.5	ug/l	97		85-117		
Toluene	N.D.	0.5	ug/l	101		85-115		
Ethylbenzene	N.D.	0.5	ug/l	98		82-119		
Xylene (Total)	N.D.	0.5	ug/l	100		83-113		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

	MS	MSD	MS/MSD	RPD	BKG	DUP	DUP	Dup RPD

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014733
Reported: 12/12/06 at 10:29 AM

Analysis Name	%REC	%REC	Limits	RPD	MAX	Conc	Conc	RPD	Max
Batch number: 06321196101A	Sample number(s): 4918880,4918882 UNSPK: 4918880 BKG: 4918880								
Sulfate	113*		90-110			78.6	75.8	4*	3
Nitrate Nitrogen	110		90-110			N.D.	N.D.	0 (1)	2
Batch number: 06322834401A	Sample number(s): 4918880,4918882 UNSPK: P918853 BKG: P918853								
Ferrous Iron	100	101	86-110	0	4	2.8	2.8	1 (1)	8
Batch number: 06324021201A	Sample number(s): 4918880,4918882 UNSPK: P917994 BKG: P917994								
Total Dissolved Solids	108	100	60-140	4	5	1,630.	1,580.	3	5
Batch number: 06324A20A	Sample number(s): 4918880,4918882 UNSPK: P919057								
TPH-GRO - Waters	118		63-154						
Batch number: 063250003A	Sample number(s): 4918880,4918882 UNSPK: P917994								
Methane	93	97	63-124	3	20				
Batch number: 063250005A	Sample number(s): 4918880,4918882 UNSPK: P919702								
Methanol (by Direct Injection)	108	104	56-146	4	20				
Batch number: 06325020201A	Sample number(s): 4918880,4918882 UNSPK: P917994 BKG: P917994								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	99	97	64-130	1	2	343.	344.	0	4
Batch number: 063251848004	Sample number(s): 4918880-4918883 UNSPK: P918417 BKG: P918417								
Iron	(2)	(2)	75-125	1	20	18.1	18.1	0	20
Manganese	98	97	75-125	0	20	0.554	0.553	0	20
Batch number: D063263AA	Sample number(s): 4918884 UNSPK: P918971								
Benzene	(2)	(2)	83-128	10	30				
Toluene	102	101	83-127	1	30				
Ethylbenzene	100	100	82-129	0	30				
Xylene (Total)	102	102	82-130	0	30				
Batch number: Z063263AA	Sample number(s): 4918880,4918882 UNSPK: P920478								
Ethanol	112	97	34-161	14	30				
Benzene	118	97	83-128	19	30				
Toluene	116	99	83-127	16	30				
Ethylbenzene	122	99	82-129	17	30				
Xylene (Total)	119	98	82-130	16	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-GRO - Waters
Batch number: 06324A20A

	Trifluorotoluene-F
4918880	88
4918882	75
Blank	74
LCS	106
LCSD	106
MS	106

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014733
Reported: 12/12/06 at 10:29 AM

Surrogate Quality Control

Limits:	63-135			

Analysis Name: Volatile Headspace Hydrocarbon
Batch number: 063250003A

	Propene
4918880	65
4918882	72
Blank	100
LCS	97
MS	59
MSD	62
Limits:	38-129

Analysis Name: Methanol and Ethanol
Batch number: 063250005A

	Acetone
4918880	104
4918882	104
Blank	106
LCS	106
MS	106
MSD	100
Limits:	60-145

Analysis Name: BTEX by 8260B
Batch number: D063263AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4918884	106	102	101	100
Blank	104	103	99	97
LCS	106	99	101	108
MS	101	100	103	108
MSD	101	102	100	108
Limits:	80-116	77-113	80-113	78-113

Analysis Name: BTEX+5 Oxygenates+EDC+EDB+ETOH
Batch number: Z063263AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4918880	102	95	105	101
4918882	104	95	101	99
Blank	101	95	103	100
LCS	101	97	102	103
MS	103	99	103	103
MSD	102	97	106	103
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Generic Analysis Request/Chain of Custody

004250

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11875 Sample #: 1014733 / 4918880-84 SCR#: _____

Facility #: _____
Site Address: Chevron Sunol Pipeline
Chevron PM: _____ Lead Consultant: _____
Consultant/Office: URS- Oakland
Consultant Prj. Mgr.: Joe Morgan
Consultant Phone #: 510-874-3201 Fax #: 510-874-3268
Sampler: R. McFarlin, G. White
Service Order #: _____ ☐ Non SAR: _____

Analyses Requested

Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Matrix: Water	Matrix: Oil	Matrix: Air	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates + Ethanol + Methanol	TPH GRO 8015	TPHD ☐ Extended Rng. ☐ Silica Gel Cleanup	Lead Total ☐ Diss ☐ Method	VPH/EPH	NWTPH-HCID ☐ Quantification Menu	Sulfate/Alkalinity	Ferrous Fe	Nitrate
MW-8	11/12/06	12:00	X			X			13	X	X	X	X	X		X	X	X	X	X
MW-7	11/12/06	13:45	X			X			13	X	X	X	X	X		X	X	X	X	X
Trip Blank						X			1	X										

TDS
Dissolved Fe
Lab Filter- Dissolved Fe

Comments / Remarks
- No MTBE
- Lab Filter- Dissolved Fe

Send Results to Angela Liang, Joe Morgan, Greg White.

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
	11/16/06	1500			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other _____			Received by:	Date	Time
Temperature Upon Receipt 4.3C C°			Custody Seals Intact? Yes No	11/17/06	0940

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

713-432-3335

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1014742. Samples arrived at the laboratory on Friday, November 17, 2006. The PO# for this group is 0015010091 and the release number is COSGRAY.

Client Description			Lancaster Labs Number
MW-6	Grab	Water	4918944
MW-6_Filtered	Grab	Water	4918945
MW-5	Grab	Water	4918946
MW-5_Filtered	Grab	Water	4918947
Trip Blank	NA	Water	4918948

ELECTRONIC COPY TO	URS	Attn: Angela Liang
ELECTRONIC COPY TO	URS	Attn: Joe Morgan
ELECTRONIC COPY TO	URS	Attn: Greg White

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Analysis Report

Questions? Contact your Client Services Representative
Megan A Moeller at (717) 656-2300

Respectfully Submitted,

Marla S. Lord
Senior Specialist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4918944

MW-6 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-6**
Collected:11/16/2006 09:40 by GW

Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/05/2006 at 09:43
Discard: 01/05/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

6URSO

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	N.D.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07058	Manganese	7439-96-5	203.	0.36	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	366,000.	460.	ug/l as CaCO3	1
00212	Total Dissolved Solids	n.a.	541,000.	9,700.	ug/l	1
00228	Sulfate	14808-79-8	38,300.	1,500.	ug/l	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	250.	ug/l	5
08344	Ferrous Iron	n.a.	700.	8.0	ug/l	1
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
07105	Volatile Headspace Hydrocarbon					
07106	Methane	74-82-8	5,700.	400.	ug/l	200
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

Lancaster Laboratories Sample No. WW 4918944

MW-6 Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-6
Collected:11/16/2006 09:40 by GW

Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/05/2006 at 09:43
Discard: 01/05/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

6URSO

01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/20/2006 18:40	Steven A Skiles	1
07058	Manganese	SW-846 6010B	1	11/22/2006 15:05	Choon Y Tian	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	11/27/2006 14:36	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	11/27/2006 14:36	Geraldine C Smith	1
00212	Total Dissolved Solids	EPA 160.1	1	11/21/2006 08:54	Yolunder Y Bunch	1
00228	Sulfate	EPA 300.0	1	11/17/2006 14:57	Ashley M Heckman	5
00368	Nitrate Nitrogen	EPA 300.0	1	11/17/2006 14:57	Ashley M Heckman	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	11/18/2006 05:45	Daniel S Smith	1
01412	Methanol and Ethanol	SW-846 8015B	1	11/21/2006 13:59	Hai D Nguyen	1
07105	Volatile Headspace Hydrocarbon	SW-846 8015B modified	1	11/22/2006 14:16	Hai D Nguyen	200
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/23/2006 02:00	Kelly E Brickley	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/20/2006 18:40	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/23/2006 02:00	Kelly E Brickley	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/21/2006 20:30	Annamaria Stipkovits	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4918945

MW-6_Filtered Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-6
Collected:11/16/2006 09:40 by GW

Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/05/2006 at 09:43
Discard: 01/05/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	N.D.	52.2	ug/l	1

State of California Lab Certification No. 2116
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/22/2006 15:08	Choon Y Tian	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/21/2006 20:30	Annamaria Stipkovits	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4918946

MW-5 **Grab** **Water**
NA **URSO**
Sunol Pipeline **SL0600100443 MW-5**
Collected:11/16/2006 10:35 by GW

Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/05/2006 at 09:43
Discard: 01/05/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

5URSO

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	N.D.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
07058	Manganese	7439-96-5	20.2	0.36	ug/l	1
00201	Alkalinity to pH 8.3	n.a.	N.D.	460.	ug/l as CaCO3	1
00202	Alkalinity to pH 4.5	n.a.	320,000.	460.	ug/l as CaCO3	1
00212	Total Dissolved Solids	n.a.	513,000.	9,700.	ug/l	1
00228	Sulfate	14808-79-8	73,800.	3,000.	ug/l	10
00368	Nitrate Nitrogen	14797-55-8	N.D.	250.	ug/l	5
08344	Ferrous Iron	n.a.	280.	8.0	ug/l	1
01412	Methanol and Ethanol					
01414	Methanol (by Direct Injection)	67-56-1	N.D.	200.	ug/l	1
07105	Volatile Headspace Hydrocarbon					
07106	Methane	74-82-8	4.8	2.0	ug/l	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	2.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor

Lancaster Laboratories Sample No. WW 4918946

MW-5 Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-5
Collected:11/16/2006 10:35 by GW Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/05/2006 at 09:43
Discard: 01/05/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

5URSO

01728	TPH-GRO - Waters	TPH GRO SW-846 8015B mod	1	11/20/2006 19:02	Steven A Skiles	1
07058	Manganese	SW-846 6010B	1	11/22/2006 15:20	Choon Y Tian	1
00201	Alkalinity to pH 8.3	EPA 310.1	1	11/27/2006 14:36	Geraldine C Smith	1
00202	Alkalinity to pH 4.5	EPA 310.1	1	11/27/2006 14:36	Geraldine C Smith	1
00212	Total Dissolved Solids	EPA 160.1	1	11/21/2006 08:54	Yolunder Y Bunch	1
00228	Sulfate	EPA 300.0	1	11/20/2006 14:04	Ashley M Heckman	10
00368	Nitrate Nitrogen	EPA 300.0	1	11/17/2006 15:43	Ashley M Heckman	5
08344	Ferrous Iron	SM20 3500-Fe B modified	1	11/18/2006 05:45	Daniel S Smith	1
01412	Methanol and Ethanol	SW-846 8015B	1	11/21/2006 14:16	Hai D Nguyen	1
07105	Volatile Headspace Hydrocarbon	SW-846 8015B modified	1	11/21/2006 18:34	Hai D Nguyen	1
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/23/2006 02:24	Kelly E Brickley	1
01146	GC VOA Water Prep	SW-846 5030B	1	11/20/2006 19:02	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/23/2006 02:24	Kelly E Brickley	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/21/2006 20:30	Annamaria Stipkovits	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4918947

MW-5_Filtered Grab Water
NA URSO
Sunol Pipeline SL0600100443 MW-5
Collected:11/16/2006 10:35 by GW

Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/05/2006 at 09:43
Discard: 01/05/2007

Chevron Pipeline Co.
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Bellaire TX 77401

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01754	Iron	7439-89-6	N.D.	52.2	ug/l	1

State of California Lab Certification No. 2116
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01754	Iron	SW-846 6010B	1	11/22/2006 15:23	Choon Y Tian	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	11/21/2006 20:30	Annamaria Stipkovits	1

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Analysis Report

Lancaster Laboratories Sample No. WW 4918948

Trip Blank NA Water
NA URSO
Sunol Pipeline SL0600100443 Trip Blank
Collected:11/16/2006 by GW

Account Number: 11875

Submitted: 11/17/2006 09:40
Reported: 12/05/2006 at 09:43
Discard: 01/05/2007

Chevron Pipeline Co.
4800 Fournace Place - E320 D
Bellaire TX 77401

TBURS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH					
01587	Ethanol	64-17-5	N.D.	50.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01594	BTEX+5 Oxygenates+EDC+EDB+ETOH	SW-846 8260B	1	11/23/2006 05:30	Kelly E Brickley	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/23/2006 05:30	Kelly E Brickley	1

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Analysis Report

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014742
Reported: 12/05/06 at 09:43 AM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 06321196101A	Sample number(s): 4918944,4918946							
Sulfate	0.35	0.30	mg/l	103		89-110		
Nitrate Nitrogen	N.D.	0.050	mg/l	100		90-110		
Batch number: 06322834401A	Sample number(s): 4918944,4918946							
Ferrous Iron	N.D.	0.0080	mg/l	100		95-105		
Batch number: 06324A20A	Sample number(s): 4918944,4918946							
TPH-GRO - Waters	N.D.	50.	ug/l	121	122	70-130	0	30
Batch number: 063250003A	Sample number(s): 4918944,4918946							
Methane	N.D.	2.0	ug/l	103		80-120		
Batch number: 063250005A	Sample number(s): 4918944,4918946							
Methanol (by Direct Injection)	N.D.	200.	ug/l	108		66-131		
Batch number: 06325021201A	Sample number(s): 4918944,4918946							
Total Dissolved Solids	N.D.	9.7	mg/l	93		80-120		
Batch number: 063251848011	Sample number(s): 4918944-4918947							
Iron	N.D.	0.0522	mg/l	99		90-112		
Manganese	N.D.	0.00036	mg/l	101		90-110		
Batch number: 06331020201A	Sample number(s): 4918944,4918946							
Alkalinity to pH 4.5				100		98-103		
Batch number: D063263AA	Sample number(s): 4918948							
Ethanol	N.D.	50.	ug/l	115		35-168		
Benzene	N.D.	0.5	ug/l	100		85-117		
Toluene	N.D.	0.5	ug/l	104		85-115		
Ethylbenzene	N.D.	0.5	ug/l	99		82-119		
Xylene (Total)	N.D.	0.5	ug/l	104		83-113		
Batch number: Z063263AA	Sample number(s): 4918944,4918946							
Ethanol	N.D.	50.	ug/l	96		35-168		
Benzene	N.D.	0.5	ug/l	97		85-117		
Toluene	N.D.	0.5	ug/l	101		85-115		
Ethylbenzene	N.D.	0.5	ug/l	98		82-119		
Xylene (Total)	N.D.	0.5	ug/l	100		83-113		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

	MS	MSD	MS/MSD	RPD	BKG	DUP	DUP	Dup RPD

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014742
Reported: 12/05/06 at 09:43 AM

Analysis Name	%REC	%REC	Limits	RPD	MAX	Conc	Conc	RPD	Max
Batch number: 06321196101A	Sample number(s): 4918944,4918946 UNSPK: P918880 BKG: P918880								
Sulfate	113*		90-110			78.6	75.8	4*	3
Nitrate Nitrogen	110		90-110			N.D.	N.D.	0 (1)	2
Batch number: 06322834401A	Sample number(s): 4918944,4918946 UNSPK: P918853 BKG: P918853								
Ferrous Iron	100	101	86-110	0	4	2.8	2.8	1 (1)	8
Batch number: 06324A20A	Sample number(s): 4918944,4918946 UNSPK: P919057								
TPH-GRO - Waters	118		63-154						
Batch number: 063250003A	Sample number(s): 4918944,4918946 UNSPK: P917994								
Methane	93	97	63-124	3	20				
Batch number: 063250005A	Sample number(s): 4918944,4918946 UNSPK: P919702								
Methanol (by Direct Injection)	108	104	56-146	4	20				
Batch number: 06325021201A	Sample number(s): 4918944,4918946 UNSPK: P918888 BKG: P918888								
Total Dissolved Solids	102	101	60-140	0	5	784.	788.	1	5
Batch number: 063251848011	Sample number(s): 4918944-4918947 UNSPK: P920927 BKG: P920927								
Iron	97	94	75-125	2	20	0.525	0.477	10 (1)	20
Manganese	66*	55*	75-125	3	20	1.82	1.66	9	20
Batch number: 06331020201A	Sample number(s): 4918944,4918946 UNSPK: P920426 BKG: P920426								
Alkalinity to pH 8.3						N.D.	N.D.	0 (1)	4
Alkalinity to pH 4.5	99	99	64-130	0	2	58.9	59.0	0	4
Batch number: D063263AA	Sample number(s): 4918948 UNSPK: P918971								
Ethanol	106	91	34-161	14	30				
Benzene	(2)	(2)	83-128	10	30				
Toluene	102	101	83-127	1	30				
Ethylbenzene	100	100	82-129	0	30				
Xylene (Total)	102	102	82-130	0	30				
Batch number: Z063263AA	Sample number(s): 4918944,4918946 UNSPK: P920478								
Ethanol	112	97	34-161	14	30				
Benzene	118	97	83-128	19	30				
Toluene	116	99	83-127	16	30				
Ethylbenzene	122	99	82-129	17	30				
Xylene (Total)	119	98	82-130	16	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-GRO - Waters
Batch number: 06324A20A

	Trifluorotoluene-F
4918944	73
4918946	75
Blank	74
LCS	106
LCSD	106

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014742
Reported: 12/05/06 at 09:43 AM

Surrogate Quality Control

MS	106
Limits:	63-135

Analysis Name: Volatile Headspace Hydrocarbon
Batch number: 063250003A

	Propene
4918944	93
4918946	61
Blank	100
LCS	97
MS	59
MSD	62
Limits:	38-129

Analysis Name: Methanol and Ethanol
Batch number: 063250005A

	Acetone
4918944	109
4918946	104
Blank	106
LCS	106
MS	106
MSD	100
Limits:	60-145

Analysis Name: BTEX+5 Oxygenates+EDC+EDB+ETOH
Batch number: D063263AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4918948	100	102	98	102
Blank	104	103	99	97
LCS	106	99	101	108
MS	101	100	103	108
MSD	101	102	100	108
Limits:	80-116	77-113	80-113	78-113

Analysis Name: BTEX+5 Oxygenates+EDC+EDB+ETOH
Batch number: Z063263AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4918944	102	95	104	98
4918946	106	95	104	98
Blank	101	95	103	100
LCS	101	97	102	103
MS	103	99	103	103
MSD	102	97	106	103
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron Pipeline Co. Group Number: 1014742
Reported: 12/05/06 at 09:43 AM

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Chevron Generic Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Grp # 1014742 004203

For Lancaster Laboratories use only

Acct. #: 11875 Sample #: 491894-48 SCR#:

Facility #:

Site Address: Chevron Sunol Pipeline

Chevron PM: Lead Consultant:

Consultant/Office: URS-Oakland

Consultant Prj. Mgr.: Joe Morgan

Consultant Phone #: 510-874-3201 Fax #: 510-874-3268

Sampler: G. White & R. McFarlan

Service Order #: ☐ Non SAR:

Analyses Requested

Preservation Codes

Matrix

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water (☐ Potable ☐ NPDES)	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Ethanol + Methanol	Oxygenates	Methane	TPH GRO 8015	TPH ☐ Extended Rfg. ☐ Silica Gel Cleanup	Lead-Total ☐ Diss ☐ Method	TDS	Dissolved Fe	NWTPH-HCID ☐ quantification Manganese	Sulfate / Alkalinity	Ferrous Fe	Nitrate
MW-6	11/16/06	0940	x			x		13	x	x	x	x	x	x			x	x	x	x	x	x
MW-5	11/16/06	1035	x			x		13	x	x	x	x	x	x			x	x	x	x	x	x
Trip Blank	"					x		1	x													

Preservative Codes

H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Comments / Remarks
- No MTBE
- Lab Filter Dissolved Fe

Send Results to Joe Morgan, Angela Liang, Greg White of URS

Turnaround Time Requested (TAT) (please circle)

STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)

QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
	11/16/06	1500			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other			Received by:	Date	Time
Temperature Upon Receipt 3.5 C°			Custody Seals Intact? Yes No	11/17/06	0940

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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