AP-39

ConocoPhillips
East Vacuum Playa

Correspondence
2009

TETRA TECH, INC.

October 15, 2009

Mr. Jim Griswold
Hydrologist
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: **Vacuum Glorieta East Unit, East Tank Battery Playa**
Project Update
Units N & O, Sec 27, T17S, R35E
AP 039 / 1RP 413

Dear Mr. Griswold:

On behalf of ConocoPhillips, Tetra Tech submits this update report describing activities performed to date in mitigating the petroleum hydrocarbon / produced water affected soil found in a playa (Site) and monitoring groundwater quality in the vicinity of the playa located east of ConocoPhillips' historic Vacuum Glorieta East Unit, East Tank Battery. The Site is located on State owned land, within Lea County, New Mexico (32˚ 47.932' N, 103˚ 26.726' W). Impairment of the soil and groundwater in and below the playa was caused by historic placement of production ponds in the playa beginning in the late 1940's and intermittent releases of crude oil and production water from the 1940's to the most recent release reported to the New Mexico Oil Conservation Division (NMOCD) in October 28, 2002.

According to the Geologic Map of New Mexico,[1] the Site is underlain by the Pliocene-age Ogallala Formation, which consists of fluvial sand, silt, clay, and gravel capped by caliche. The Ogallala sand is very fine to medium grained quartz, silty in part, and calcareous, clay balls are common, clayey in upper part, indistinctly bedded to massive, crossbedded, unconsolidated to weakly cohesive, with local quartzite lenses, and colored various shades of gray and red. The sand may have silt and clay with caliche nodules, colored reddish brown, dusky red, and pink. Gravel, not everywhere present, is mostly quartz, some quartzite, sandstone, limestone, chert, igneous rock, metamorphic rock, and worn *Gryphaea* in intraformational channel deposits and as basal conglomerate. Caliche, hard, sandy and pisolitic at top, produces a "caprock" along Mescalero Ridge. Maximum thickness of the Ogallala is up to 200 feet.

The land surface is a nearly level to very gently undulating constructional plain that has little dissection. Local topography is characterized by a dry playa located on a southeast-sloping plateau consisting of a level to gently rolling prairie broken by draws and playas. Large areas within the region have poorly developed drainage systems. The elevation ranges from 4,400 feet to 3,350 feet above sea level. There is a general slope of about 10 to 15 feet per mile.[2]

[1] New Mexico Bureau of Geology and Mineral Resources, 2003. Geologic Map of New Mexico, 1:500,000.
[2] Turner, M.T., D.N. Cox, B.C Mickelson, A.J. Roath, and C.D Wilson, 1973. Soil Survey Lea County, New Mexico. U.S. Department of Agriculture Soil Conservation Service, 89p.

1910 North Big Spring, Midland, TX 79705
Tel 432.686.8081 Fax 432.682.3946
www.tetratech.com

Soils in the Vacuum Glorieta area are white caliche and black clays, red sandy loams, and sands. Based on drill cuttings collected during the subsurface investigations, the shallow subsurface geology consists of white to light gray caliche to approximately 6-9 feet below ground surface (fbgs), and light reddish brown sand with thin caliche and clay stringers to approximately 70 fbgs. The dry playa contains dark gray clay to a depth of 7-9 fbgs overlying the caliche and sand sequence.

Two local relic drainage ways, both un-named, cross just east of the area from northwest to southeast. These drainage ways end on a flat area to the southeast. These draws are shallow, usually dry, and seldom carry runoff water.

Playas, or shallow ephemeral lakes, are common in the area. The playas provide the only surface drainage in many areas. Aquifer recharge occurs through these playa basins during and after significant rainfall events. Recharge is limited once the clays in the basins swell and effectively stop percolation of groundwater.

The only fresh surface water nearby is a pond created by discharge of cooling water from a power plant located approximately 6 miles to the southeast. There are many dry playas, including the playa in which the Site is located, that briefly hold water following a rainfall event. During the course of this project, the Site has experienced several storm events that filled the playa.

The Site is underlain by the Ogallala Aquifer. The aquifer extends from the ground surface downward, ranging in thickness from 80 feet to more than 200 feet. The formation consists of heterogeneous sequences of clay, silt, sand and gravel. A resistant layer of calcium carbonate-cemented caliche, known locally as the caprock, occurs near the surface of much of the area.[3]

The Ogallala Formation can be divided up into the unsaturated zone and the saturated zone. The upper section of the Ogallala is unsaturated and is known as the “Vadose Zone”. The lower section of the Ogallala Formation is the primary water-bearing unit and is the Ogallala Aquifer. Groundwater in the Ogallala Aquifer generally flows from northwest to southeast, normally at right angles to water level contours. Velocities of less than one foot per day are typical, but higher velocities may occur along filled erosional valleys where coarser grained deposits have greater permeabilities.

The nearest water well to the Site is located approximately 675 feet northwest of the Site. No information is available on depth to water for this well. A water well (L010593) is located approximately 1,525 feet north with no depth to water information (New Mexico Office of the State Engineer’s database). There is a water well located approximately 2,190 feet to the south with depth to water reported as 33 feet. A water well (L10297), located to approximately 2,450 feet to the southwest, has a depth to water of 42 feet. A water well located approximately 2,460 feet east of the Site has depth to water of 85 feet. A water well (L04793 [3]) located approximately 2,285 feet to the southeast has no depth to water information. A water well (L05362) located approximately 3,500 feet west, has a depth to water of 80 feet.

Shallow groundwater at the Site occurs under unconfined conditions. In the three monitoring wells drilled at the Site, groundwater was encountered at a depth of approximately 60 fbgs. Based on groundwater elevations measured in 2004 in the three monitoring wells, groundwater flow direction was determined to be southeast at a gradient of 0.004 feet per foot. Measured

[3] Asworth, J.B. and J. Hopkins, 1995. Aquifers of Texas. Texas Water Development Board Report 345, 69p.

again this year, groundwater flow direction was determined to be west-southwest at a gradient of 0.002 feet per foot.

Recharge of the aquifer system in the area mainly occurs in two ways: (1) infiltration of precipitation runoff in and around playa lakes and (2) direct infiltration of precipitation into the coarse eolian surfical deposits.

Project Events

Abatement plans were submitted to the NMOCD in 2005 and again in 2007. The NMOCD (Wayne Price) approved the plan in October 17, 2008. Events that have occurred since the approval are (Documentation of communication presented in Appendix A):

November 20, 2008	Excavation at the Site resumed.
December 2, 2008	Work stopped owing to a north-south crude oil steel pipeline crossing ahead of excavation. NMOCD notified.
December 18, 2008	The NMOCD was informed that ConocoPhillips Production (COP) was working with ConocoPhillips Pipe Line (CPPL) to develop alternatives to moving the pipeline.
.	
February 8, 2009	A mobile boring unit was used to collect soil samples west of pipeline to describe subsurface conditions.
February 16, 2009	The NMOCD (Glenn VonGonten) was provided soil data describing the subsurface conditions west of the pipeline and how those conditions related to the working face of the excavation. Data indicated a stringer of affected soil was found on both sides of the pipeline. A request was made to stop work, and complete the proposed abatement plan work. No response.
April 15, 2009	The excavation was re-started and advanced toward the pipeline.
April 17, 2009	The NMOCD (Glenn VonGonten) was informed of a very hard caliche caprock floor. From the previous boring event, data indicated petroleum hydrocarbon was present a 2,000 milligrams per kilogram (mg/Kg) at 21 fbgs or 1 foot below the caprock.
April 29, 2009	The NMOCD (Glenn VonGonten) was informed that the pipeline was taken out-of-service and the excavation had advanced through the pipeline rights-of-way. Data were presented showing the condition of soil along the advancing excavation face, sidewalls and floor.
May 5, 2009	The NMOCD (Glenn VonGonten) was informed that the CPPL pipeline was reconnected and was back in service. The excavation had advanced to within 10 feet of an east-west pipeline. Work was stopped to wait for the NMOCD to provide guidance.
July 8, 2009	NMOCD representatives (Jim Griswold and Larry Johnson) met with COP (Rudy Quiroz and John Gates), CPPL (Kirby Shipp), and Tetra Tech (Charles Durrett) representatives at the Site to discuss a path forward.

July 9, 2009 — A letter was submitted to NMOCD describing the Company's understanding of the July 8, 2009 meeting. The Company understood that:

1. No further excavation is necessary.
2. Owing to the continuous flushing of the excavation, a geo-membrane will not be required.
3. Groundwater samples will be collected from the two existing monitoring wells and analyzed for chloride, total petroleum hydrocarbons (diesel and gasoline range), and BTEX (Method 8021) now.
4. Backfilling will be initiated after ConocoPhillips receives NMOCD's approval to proceed.
5. Surface restoration, with exception of the geo-membrane, will be completed in accordance with the proposed abatement plan.
6. One monitoring well will be installed and all monitoring wells will be re-sampled (Figure 1, proposed location).
7. A path forward plan will be based on findings of the groundwater sampling and analyses.

July 13, 2009 — NMOCD (Jim Griswold) agreed with most of the July 9th letter, with the following conditions:

1. Backfilled materials must be verifiably clean of any hydrocarbon, chloride, or excessive metals contamination.
2. The seed mixture for re-vegetation must be acceptable to the State Land Office.
3. The new groundwater monitoring well should be installed in the area where the highest levels of absorbed soil contamination had been previously observed, rather than in the area southeast of the excavation depicted in Figure 1 of your letter. This well should incorporate a screened interval no more that 15 feet in length installed to span the air/water interface taking into account seasonal fluctuations in the water table. Top of casing elevation of this well should be established with an accuracy of at least 0.01 feet relative to the existing wells.

July 15, 2009 — Clarification was requested and received on the construction of the monitoring well.

July 21, 2009 — Backfill stockpile soil and groundwater samples were collected from the two existing monitoring wells and submitted to a laboratory for analyses.

August 14, 2009 — Backfill and groundwater data were submitted to the NMOCD (Jim Griswold) for review and comment. In the communication, Tetra Tech indicated that we planned to precede with backfilling the excavation. The NMOCD did not respond.

August 2, 2009 — Backfilling the excavation began.

.

August 27, 2009 — Backfilling excavation completed.

September18, 2009 — Two existing monitoring wells (VG-2 and -3) were re-developed, one new monitoring well (VG-4) was established, and groundwater sampling was performed.

Current Status

After the meeting between NMOCD, ConocoPhillips and Tetra Tech representatives on July 8, 2009, a schedule was set to address the agency's guidance. The backfill stockpile and groundwater from two monitoring wells (VG-2 and -3) were sampled on July 21, 2009. Laboratory analyses of the backfill stockpile material and groundwater were submitted to

NMOCD on July 21, 2009 for review and comment (Tables 1 and 2, Appendix B). Backfilling the playa excavation re-started on August 2, 2009. As described in the August 14 memo, the backfill stockpile was excavated across the west face of the stockpile. Field chloride titrations were performed on soil collected from each row of the stockpile working face to ensure the chloride concentrations were dispersed in the soil returned to the playa excavation. The excavation was backfilled to approximately 4 fbgs and the remaining void was backfilled with soil borrowed from a privately owned playa pit located near the Site.

Table 1
ConocoPhillips
Vacuum Glorieta East Unit, East Tank Battery Playa
Backfill Stockpile Laboratory Analyses
August 14, 2009

Parameters	Composite Sampling Locations				Average
	North	East	South	West	
Sample Depth (ft)	1	1	1	1	1
Petroleum Hydrocarbon (mg/Kg)					
Diesel Range	ND	ND	43	7.8	13
Gasoline Range	ND	ND	ND	ND	ND
Total	ND	ND	43	7.8	13
Volatile Organic Hydrocarbons (mg/Kg)					
Benzene	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND
Xylenes (Total)	ND	ND	ND	ND	ND
Inorganic Analysis (mg/Kg)					
Chloride	ND	14.9	405	97.5	129.35

ft = Feet into pile
mg/Kg = Milligrams per kilogram
ND = Not detected at or above laboratory detection limits

Laboratory analyses of the groundwater samples collected on July 12, 2009 from monitoring wells VG-2 and -3 indicated the presence of petroleum hydrocarbons in VG-3 (Table 2).

On September 28, 2009 one new monitoring well (VG-4) was installed in the playa to replace VG-1 (Figure 1). Monitoring well VG-1 was plugged and abandoned in 2005 to allow the working face of the excavation to advance westward. VG-4 was installed using a truck mounted air rotary unit. Difficulty was encounter during drilling and mud rotary techniques were applied to complete the boring. Well installation included (Appendix C):

1. Setting a 4-inch diameter PVC casing with 15 feet of 0.02-inch slot screen.
2. Screening. The well screen was placed across the water table interface with 5 feet of well screen above the water table and 10 feet into the water table.
3. Sand packing to approximately 2 feet above the screen.
4. Placing a bentonite seal to approximately 10 feet above the sand.
5. Cementing from bentonite pack to surface (cement containing 3-5 percent bentonite).
6. Protecting the well from playa flooding by extending the PVC well casing approximately 3 feet above ground surface, and

7. Protecting the well with an above ground locking, metal security casing.

Table 2
ConocoPhillips
Vacuum Glorieta East Unit, East Tank Battery Playa
Groundwater Laboratory Analyses

Sampling Date	Monitoring Well	Depth to Water (ft)	Petroleum Hydrocarbons (mg/L)			Volatile Organic Compounds (mg/L)				Chloride (mg/L)
			Diesel Range	Gasoline Range	TPH	Benzene	Ethyl-benzene	Toluene	Xylenes (Total)	
6-Feb-04	VG-1	59.62	-	-	-	0.0031	0.0024	ND	0.0029	**1,040.0**
	VG-2	62.77	-	-	-	ND	ND	ND	ND	109.0
	VG-3	62.15	-	-	-	ND	ND	ND	ND	33.7
16-Sep-04	VG-1	60.26	-	-	-	0.005	ND	ND	ND	**1,140.0**
14-Jan-05	VG-1	-	-	-	-	**0.752**	0.147	ND	ND	**2,880.0**
	VG-2	-	-	-	-	ND	ND	ND	ND	88.3
	VG-3	-	-	-	-	ND	ND	ND	ND	35.6
12-Jul-05	VG-1	59.03	-	-	-	**0.128**	ND	0.0301	ND	**623.0**
	VG-2	61.43	-	-	-	ND	ND	ND	ND	202.0
	VG-3	60.74	-	-	-	ND	ND	ND	ND	36.4
13-Jul-05	VG-1	Plugged & Abandoned								
21-Jul-09	VG-2	61.71	ND	ND	ND	ND	ND	ND	ND	62.1
	VG-3	60.81	0.15	ND	0.15	ND	ND	ND	ND	37.3
22-Sep-09	VG-2	61.71	ND	ND	ND	ND	ND	ND	ND	65.2
	VG-3	60.81	6.3	ND	6.3	ND	ND	ND	ND	37.9
	VG-4	60.63	20	5.6	25.6	**0.34**	0.35	0.02	0.53	**2,440**

VG = Vacuum Glorieta monitoring well
ft = Feet below ground surface
mg/L = Milligrams per liter
TPH = Total petroleum hydrocarbons
- = Not collected or analyzed
ND = Not detected at or above laboratory detection limits

All three monitoring wells were re-sampled on September 21, 2009 (Table 2). Laboratory analyses indicated petroleum hydrocarbons are present in wells VG-3 and VG-4. Benzene and other volatile organic hydrocarbons were only present in VG-4. Data from an interface probe survey indicated 0.1-feet of oil was on groundwater at VG-4

A topographic and elevation survey of the three monitoring wells was completed on September 28, 2009. The survey information and depth to water data were used in the U.S. Environmental Protection Agency's on-line tools for site assessment calculator[4] to determine the groundwater flow direction to be to the west-southwest (316.1º) at a gradient of 0.002068 feet per foot.

The New Mexico State Land Office was contacted regarding a seed mixture to be applied to the restored surface. Once the information is received, soil amendments and the seed mix will be applied.

[4] USEPA. 2009. Modeling subsurface petroleum hydrocarbon transport, updated 1/31/2007. http:/epa.gov/athens

Path Forward

Tetra Tech recommends installing one new monitoring well northwest (Figure 1) of the playa and quarterly monitoring the groundwater conditions for one year before any other actions are taken to remediate the Site.

This concludes the update of the project. If you have any questions or comments, please call me or Mr. Tom Wynn (ConocoPhillips, 918-661-0310).

Respectfully,
Tetra Tech, Inc.

Charles Durrett
Senior Project Manager

Cc: Mr. Tom Wynn, ConocoPhillips
Mr. Rudy Quiroz, ConocoPhillips

FIGURE 1	VACUUM GLORIETA EAST UNIT, EAST BATTERY PLAYA MONITORING WELL LOCATIONS (VG-1 ABADONED)
ConocoPhillips	TETRA TECH, INC.
Lea County, New Mexico Units N & O, Sec 34, T17S, R35E	PROJECT NO. 9640003CO DRAWING BY: CWD DRAWING DATE: 10/09/2009 COPL PROJECT FILE

DRILLING LOG

TETRA TECH, INC.

SOIL BORING/MONITORING WELL LOG

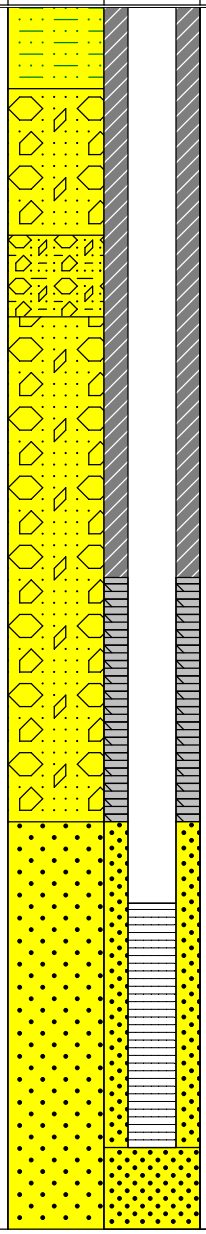
VG-4

BORING/WELL NO.

CLIENT/PROJECT: ConocoPhillips
LOCATION: Vacuum Glorieta
COUNTY, STATE: Lea County, NM
LOGGED BY: Jeff Deems
DATE/TIME START: 9-17-09/9:45
DATE/TIME FINISH:

PROJECT NUMBER: 115-9640003CO
DRILLING CO: Scarborough
DRILL TYPE: Midway Air Rotary
BORING DIAMETER: 7.5
GROUND SURFACE ELEVATION: 3928.58
GPS COORDINATES (N/E): 32.798962093 -103.446201697

DEPTH (feet-bgs)	SAMPLE NUMBER	SAMPLE INTERVAL	PID READING (ppm)	LITHOLOGIC DESCRIPTION
0			BG 0.0	CLAYEY SAND: Top soil, caliche Lt. tan
			27.2	SAND AND GRAVEL: Dk. Tan ,Gvl.,Sand,Dry,Hard
10			272.0	
			417.0	GRAVEL AND SAND: Grey-Green, Hard, Dry ,Some hard Red Sandstone,Vf
20			251.0	SAND AND GRAVEL: Soft Grey-Green, loamy Sand, Some gvl.Moist, VF
			128.8	
30			316.0	
			247.0	
40			249.0	
			220.0	
50			364.0	SAND: Dark Grey-Grey Sand, Very miost, some Gvl.,Vf
			54.7	
60			20.2	
			2.4	
70				



% RECOVERY	SYMBOLS	ELEVATION (feet-msl)
		3920
		3910
		3900
		3890
		3880
		3870
		3860

WELL COMPLETION INFORMATION

Measuring Point Description : Top of Casing
Measuring Point Elevation (ft MSL): 3931.97
Boring Total Depth (ft BGS): 75
Initial Water Level (ft BTOC): 64.02

Type of Casing / Screen: 4" PVC / 0.020" Slot
Casing Diameter (inches): 4
Well Screen Slot Size (inch): 0.020
Well Completion: Above Ground Security Casing

APPENDIX A

Communications

Durrett, Charles

From: Durrett, Charles
Sent: Friday, August 14, 2009 11:26 AM
To: 'Griswold, Jim, EMNRD'
Cc: 'Wynn, Tom R'; 'Quiroz, Rudy R.'; 'Gates, John W'; Miller, Gary
Subject: ConocoPhillips Vacuum Glorieta AP039/1RP 413
Attachments: VG Lab Data.pdf

Mr, Griswold, attached are the groundwater data collected July 21, 2009 and soil backfill pile data (below) collected the same day. The backfill came from CRI in 2005.

We propose to excavate across the west face of the soil backfill pile; combining low and elevated chloride soil. Field titrations for chloride will be made across the advancing excavation face to ensure the backfill material is properly handled.

We are planning to begin backfilling August 24, 2009.

Parameters	Composite Sampling Locations				Average
	North	East	South	West	
Sample Depth (ft)	1	1	1	1	1
Total Petroleum Hydrocarbon (mg/kg)					
Diesel Range	ND	ND	43	7.8	13
Gasoline Range	ND	ND	ND	ND	ND
Total	ND	ND	43	7.8	13
Volatile Organics (mg/kg)					
Benzene	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND
Xylenes (Total)	ND	ND	ND	ND	ND
Inorganic Analysis (mg/kg)					
Chloride	ND	14.9	405	97.5	129.35

ft = Feet into pile
mg/kg = Milligrams per kilogram
ND = Not detected at or below laboratory detection limits

Respectfully,

Charlie

Charles Durrett | **Project Manager II**
1910 N. Big Spring Midland, TX 79705
Main: 432.686.8081 | Fax: 432.682.3946
charles.durrett@tetratech.com

Tetra Tech | Complex World, CLEAR SOLUTIONS™ www.tetratech.com

Durrett, Charles

From: Griswold, Jim, EMNRD [Jim.Griswold@state.nm.us]
Sent: Monday, July 13, 2009 9:36 AM
To: Durrett, Charles
Subject: AP-39 East Vacuum Glorieta, East Tank Battery Playa

Charlie,

Let me start by thanking you and Conoco-Phillips for meeting with Larry Johnson and myself last week at the site in Buckeye. I have reviewed your letter of July 9th and am in general agreement based on our discussions on-site. Your client is approved to begin backfilling of the existing excavation with the following conditions:

1. Backfilled materials must be verifiably clean of any hydrocarbon, chloride, or excessive metals contamination.

2. The seed mixture for re-vegetation must be acceptable to the State Land Office.

3. The new groundwater monitoring well should be installed in the area where the highest levels of adsorbed soil contamination had been previously observed rather than in the area southeast of the excavation as depicted in Figure 1 (page 2) of your letter. This well should incorporate a screened interval no more than 15 feet in length installed to span the air/water interface taking into account seasonal fluctuations in the water table. Top of casing elevation of this well should be established with an accuracy of at least 0.01 feet relative to the existing wells.

I look forward to reviewing Tetra Tech's report summarizing these activities. Thanks again.

Jim Griswold
Hydrologist
Environmental Bureau
ENMRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

direct: 505.476.3465
email: jim.griswold@state.nm.us

TETRA TECH, INC.

July 9, 2009

Mr. Jim Griswold
Hydrologist
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: **East Vacuum Glorieta, East Tank Battery Playa**
Record of Understanding
SW¼ & SE ¼, Sec 27, T17S, R35E
AP 039 / 1RP 413

Dear Mr. Griswold:

On behalf of ConocoPhillips, Tetra Tech requests permission to backfill and to complete re-vegetation as part of ConocoPhillips' efforts to mitigate a release of petroleum hydrocarbons and produced water into a playa (Site) located east of ConocoPhillips' East Vacuum Glorieta, East Tank Battery (now abandoned). The Site is located on State owned land, within Lea County, New Mexico (32° 47.932' N, 103° 26.726' W).

This request is based on information provided in a series of emails to the New Mexico Oil Conservation Division (NMOCD Santa Fe; attached), and your and Mr. Larry Johnson's (NMOCD Hobbs) visit to the Site on July 8, 2009. From our discussion at the Site, it is my understanding that:

1. No further excavation is necessary;
2. Owing to the continuous flushing of the excavation, a geo-membrane will not be required;
3. Groundwater samples will be collected from the two existing monitoring wells and analyzed for chloride, total petroleum hydrocarbons (diesel and gasoline range), and BTEX (Method 8021) now;
4. Backfilling will be initiated after ConocoPhillips receives NMOCD's approval to proceed;
5. Surface restoration, with exception of the geo-membrane, will be completed in accordance with the proposed abatement plan
6. One monitoring well will be installed and all monitoring wells will be re-sampled (Figure 1, proposed location).
7. A path forward plan will be based on findings of the groundwater sampling and analyses.

If this understanding is acceptable to the NMOCD, ConocoPhillips is prepared to charge Tetra Tech with the task of executing this approach. If you have any questions concerning this proposed action, please contact Mr. Tom Wynn (918-661-0310) or me.

Sincerely,

Charles Durrett
Senior Project Manager

Cc: Mr. Larry Johnson, NMOCD District 1
Mr. Tom Wynn, ConocoPhillips
Mr. Rudy Quiroz, ConocoPhillips

1703 West Industrial Avenue, Midland, TX 79701
Tel 432.686.8081 Fax 432.686.8085
www.tetratech.com

FIGURE 1	EXISTING MONITORING WELLS AND PRPOSED MONITORING WELL LOCATIONS
ConocoPhillips	TETRA TECH, INC.
East Vacuum Glorieta, East Battery Playa Lea County, New Mexico Unit C, Sec 34, T17S, R35E	PROJECT NO. 115-9640007 DRAWING BY: CWD DRAWING DATE: 07/09/2009
	COP PROJECT FILE

Source: Google Earth, 2009

Durrett, Charles

From: VonGonten, Glenn, EMNRD [Glenn.VonGonten@state.nm.us]
Sent: Monday, May 11, 2009 10:38 AM
To: Durrett, Charles
Cc: Griswold, Jim, EMNRD
Subject: RE: ConocoPhillips Vacuum Glorieta AP039/1RP 413

Charles,
I have given this project to Jim Griswold. Jim will try to look at it this week.

Glenn

From: Durrett, Charles [mailto:Charles.Durrett@tetratech.com]
Sent: Saturday, May 09, 2009 8:17 AM
To: VonGonten, Glenn, EMNRD
Cc: Wynn, Tom R; Quiroz, Rudy R.; Shipp, Kirby M; Miller, Gary
Subject: FW: ConocoPhillips Vacuum Glorieta AP039/1RP 413

We request permission to backfill and remediate the entire excavation in accordance with the abatement plan.

From: Durrett, Charles
Sent: Tuesday, May 05, 2009 8:45 AM
To: VonGonten, Glenn, EMNRD
Cc: 'Wynn, Tom R'; 'Quiroz, Rudy R.'; 'Shipp, Kirby M'; Miller, Gary
Subject: FW: ConocoPhillips Vacuum Glorieta - Question

Mr. VonGonten, ConocoPhillips Pipe Line will be reconnecting its pipeline and stabilizing the area below the line this week. The excavation was advanced to the north and is within 10 feet of an east-west crude oil pipeline (Figure 2). We have withdrawn from the open excavation and wait for further direction from NMOCD. We request permission to backfill and remediate the entire excavation in accordance with the abatement plan.

From: Durrett, Charles
Sent: Wednesday, April 29, 2009 8:58 AM
To: VonGonten, Glenn, EMNRD
Cc: 'Wynn, Tom R'; 'Quiroz, Rudy R.'; 'Shipp, Kirby M'
Subject: FW: ConocoPhillips Vacuum Glorieta - Question

Mr. VonGoten, as directed by Mr. Price, we have advanced the excavation into and through ConocoPhillips Pipe Line right-of-way and have achieved the results shown on Figure 2. Removing a segment of the pipeline has taken a battery out-of-service, and ConocoPhillips is unable to move the crude to market. We request permission to backfill and remediate the entire excavation in accordance with the abatement plan.

From: Durrett, Charles
Sent: Friday, April 17, 2009 9:35 AM
To: VonGonten, Glenn, EMNRD
Cc: Tom.R.Wynn@conocophillips.com; Rudy.R.Quiroz@conocophillips.com; Kirby.M.Shipp@conocophillips.com; Miller, Gary
Subject: ConocoPhillips Vacuum Glorieta - Question

Mr. VonGonten, as I indicated last week, we re-started excavating the historic pit Wednesday and have removed an area of approximately 20 x 50 ft to a depth of approximately 12 fbgs. In the process, we hit a very hard caliche caprock. Our boring (SB-4, see below) indicates a TPH of 2,000 mg/Kg at 21 fbgs or 1 foot below the caprock. Groundwater is approximately 50 fbgs. To continue excavating downward would require chiseling the caprock. The caprock is outside the playa boundary and is providing a natural barrier that has slowed the migration of hydrocarbon and chloride.

Our approved abatement plan said that we would excavate to a depth of 7 - 9 feet or to the caprock, lay a geomembrane, backfill, and restore the surface. The plan also indicated that we would install two new monitoring wells to compliment the two already on site. One of these monitoring wells could be installed in this affected area to complete delineation. We are waiting for laboratory analyses for the excavation face and if the data indicates a clear boundary has been achieved, we would like to cap the entire area and move on to restoring the site.

Therefore, we request your approval to proceed with this action.

Respectfully,

Charles Durrett
Sr. Project Manger

From: Durrett, Charles
Sent: Monday, February 16, 2009 9:21 AM
To: Glenn.VonGonten@state.nm.us
Cc: Wynn, Tom R; Quiroz, Rudy R.; Gates, John W
Subject: FW: ConocoPhillips Vacuum Glorieta - Question

Mr. von Gonten, during previous discussions with Mr. Wayne Price concerning ConocoPhillips subject remediation project (see information in the e-mail train below), he asked for additional information. New information provided herein further develops our desire to stop excavation, leave an active 4" crude oil line in place, begin backfilling, and complete remediation at this site.

Tetra Tech recently bored 5 holes West of the pipeline in question (Figure attached) and found a stringer of affected soil immediately adjacent to line at boring SB-4 (Table 1). This stringer connects with affected soil (wall sample M) immediately East of the line in the excavation (Table 2; photograph in email train).

Table 1
Soil Borings
February 8, 2009

Constituents	Sample Boring (SB) Locations									
	SB-1		SB-2		SB-3		SB-4		SB-5	
Sample Depth (bgs)	6	21	9	21	9	21	9	21	9	21
Moisture (%)	11.80	4.77	8.09	2.92	3.03	1.76	8.08	4.47	8.59	5.65
Chloride (mg/Kg)	257.00	31	107	137	22.90	287	926	1,840	27	117
Total Petroleum Hyrdocarbons (mg/Kg)										
DRO	ND	12.00	ND	ND	27.0	160.00	820	2,000	ND	ND
GRO	ND	ND	ND	ND	ND	0.28	120	66	ND	ND
Total										
Volatile Organic Compounds (mg/Kg)										
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	0.001	2.30	0.76	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	0.07	0.05	ND	ND
Xylenes, Total	ND	ND	ND	ND	ND	0.007	3.60	1.240	ND	ND
BTEX, Total	ND	ND	ND	ND	ND	0.008	5.97	2.046	ND	ND

DRO = Diesel range hydrocarbons
GRO = Gasoline range hydrocarbons
% = Percent
bgs = Feet below ground surface
mg/Kg = Milligrams per kilogram
ND = Not detected at the reporting limit

Table 2
Excavation Samples
November 24, 2008

Constituents	Excavation Sampling Locations			
	N	S	M	F
	North Side	South Side	Middle	Floor
Moisture (%)	4.55	8.54	7.98	8.28
Chloride (mg/Kg)	ND	1,180	278	350
Total Petroleum Hyrdocarbons (mg/Kg)				
DRO	6.1	ND	4,200	1,600
GRO	ND	ND	440	92
Total	6.1	ND	4,640	1,692
Volatile Organic Compounds (mg/Kg)				
Benzene	ND	ND	0.59J	ND
Ethylbenzene	ND	ND	20.00	ND
Toluene	ND	ND	5.20	ND
Xylenes, Total	ND	ND	28.20	0.098
BTEX, Total	ND	ND	53.99	0.098

DRO = Diesel range hydrocarbons
GRO = Gasoline range hydrocarbons
% = Percent
mg/Kg = Milligrams per kilogram
ND = Not detected at the reporting limit
J = Estimated value between Method Detection Limit and Practical Quantitation Limit

Soil data (Table 1) in borings BS 1 and -2 indicate the stringer ended before reaching these locations.
To successfully remove the remaining material, ConocoPhillips would have to move the pipeline to the west at an estimated cost of $48,000. Production lost is estimated at 2,250 barrels of oil (5 days of down time $40 a barrel) revenue lost $90,000 or more.
Approximately 50 - 100 cubic yards (cy) of affected soil remain around the pipeline. Approximately 11,000 cy of material has been excavated from the playa and adjacent land. To keep the line in-place and safeguard groundwater, we suggest sufficient soil be removed from adjacent to and below the line to allow laying a geo-membrane below the line. Once completed, the area would be backfilled with clean material and re-vegetated.
We request your review of the information presented and approval of this approach. If you have any questions, concerning this action please call me or Mr. Tom Wynn (ConocoPhillips, 918-661-0310).

From: Price, Wayne, EMNRD [mailto:wayne.price@state.nm.us]
Sent: Thursday, December 18, 2008 4:09 PM
To: Durrett, Charles
Cc: Wynn, Tom R
Subject: RE: ConocoPhillips Vacuum Glorieta - Question

Thank You for the up-date.

From: Durrett, Charles [mailto:cdurrett@tetratech.com]
Sent: Thursday, December 18, 2008 2:34 PM
To: Price, Wayne, EMNRD
Cc: Wynn, Tom R
Subject: FW: ConocoPhillips Vacuum Glorieta - Question

Wayne, ConocoPhillips Pipe Line and ConocoPhillips E&P are working together to determine the cost to move the line. We are planning a North - South trench on the West side of the pipeline to ensure the re-located line will be outside the affected area. This will be completed early in 2009.

With this pending activity we will not be able to complete a written report to you in the timeframe you requested (report within 60 days).

From: Durrett, Charles
Sent: Wednesday, December 03, 2008 4:00 PM
To: 'Price, Wayne, EMNRD'
Cc: Tom.R.Wynn@conocophillips.com; John.W.Gates@conocophillips.com
Subject: RE: ConocoPhillips Vacuum Glorieta - Question

The 4" steel pipeline is owned by ConocoPhillips Pipe Line Co. and runs at 80 psi. It's a crude oil line.

One photo is worth a thousand words.

From: Price, Wayne, EMNRD [mailto:wayne.price@state.nm.us]
Sent: Wednesday, December 03, 2008 3:30 PM
To: Durrett, Charles
Cc: Tom.R.Wynn@conocophillips.com; John.W.Gates@conocophillips.com
Subject: RE: ConocoPhillips Vacuum Glorieta - Question

I agree safety first. However, You need to find out who, what and where about the line before we make any long term decisions.
Please investigate. It might be that you can have it moved

From: Durrett, Charles [mailto:cdurrett@tetratech.com]
Sent: Wednesday, December 03, 2008 12:59 PM
To: Price, Wayne, EMNRD
Cc: Tom.R.Wynn@conocophillips.com; Gates, John W [John.W.Gates@conocophillips.com]
Subject: ConocoPhillips Vacuum Glorieta - Question

Wayne, we've run into a bit of a problem. We're facing a N-S buried gas pipeline 4' in front of the advancing excavation. Owing to safety concerns, we have stopped excavation. Approximately 1,400 cy of affected material has been removed during this event. I suggest no further excavation and go forward with remediation. Do you agree with this approach?

ConocoPhillips
East Vacuum Glorieta, East Tank Battery Playa
Soil Analysis
24-Nov-08

Constituents	Excavation Sampling Locations			
	N	S	M	F
	North Side	South Side	Middle	Floor
Moisture ((%)	4.55	8.54	7.98	8.28
Chloride (mg/Kg)	ND	1,180	278	350
Total Petroleum Hydrocarbons (mg/Kg)				
DRO	6.1	ND	4,200	1,600
GRO	ND	ND	440	92
Total	6.1	ND	4,640	1,692
Volatile Organic Compounds (mg/Kg)				
Benzene	ND	ND	0.59J	ND
Ethylbenzene	ND	ND	20.00	ND
Toluene	ND	ND	5.20	ND

Xylenes, Total	ND	ND	28.20	0.098
BTEX, Total	ND	ND	53.99	0.098

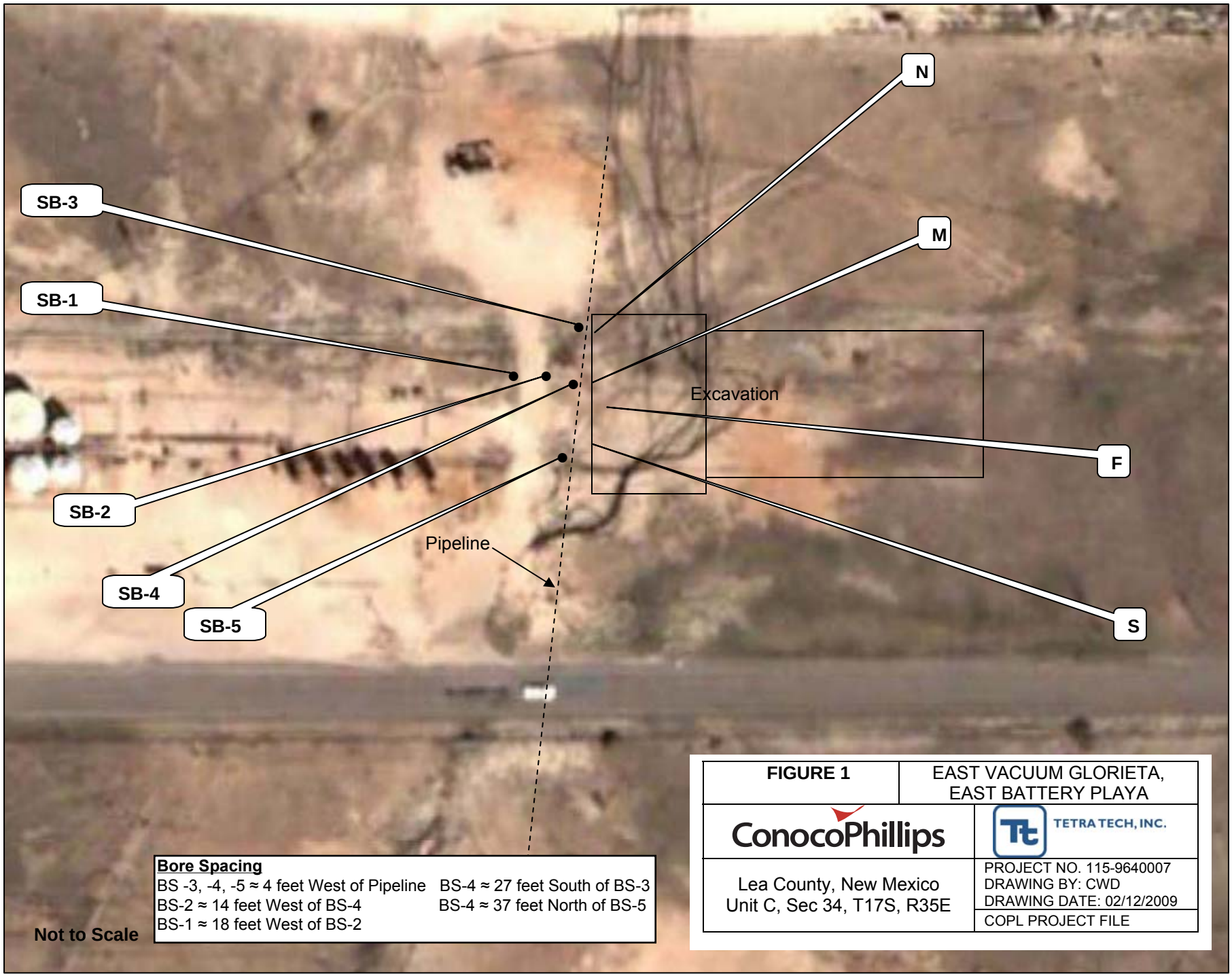
DRO = Diesel range hydrocarbons
GRO = Gasoline range hydrocarbons
% = Percent
mg/Kg = Milligrams per kilogram
ND = Not detected at the reporting limit
J = Estimated value between Method Detection Limit and Practical Quantitation Limit

Charles Durrett | **Project Manager II**
Main: 432.686.8081 | Fax: 432.682.3946
charles.durrett@tetratech.com

This inbound email has been scanned by the MessageLabs Email Security System.

This inbound email has been scanned by the MessageLabs Email Security System.

Confidentiality Notice: This e-mail, including all attachments is for the sole use of the intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure or distribution is prohibited unless specifically provided under the New Mexico Inspection of Public Records Act. If you are not the intended recipient, please contact the sender and destroy all copies of this message. -- This email has been scanned by the Sybari - Antigen Email System.



Bore Spacing

BS -3, -4, -5 ≈ 4 feet West of Pipeline
BS-2 ≈ 14 feet West of BS-4
BS-1 ≈ 18 feet West of BS-2
BS-4 ≈ 27 feet South of BS-3
BS-4 ≈ 37 feet North of BS-5

Not to Scale

FIGURE 1	EAST VACUUM GLORIETA, EAST BATTERY PLAYA
ConocoPhillips	TETRA TECH, INC.
Lea County, New Mexico Unit C, Sec 34, T17S, R35E	PROJECT NO. 115-9640007 DRAWING BY: CWD DRAWING DATE: 02/12/2009
	COPL PROJECT FILE

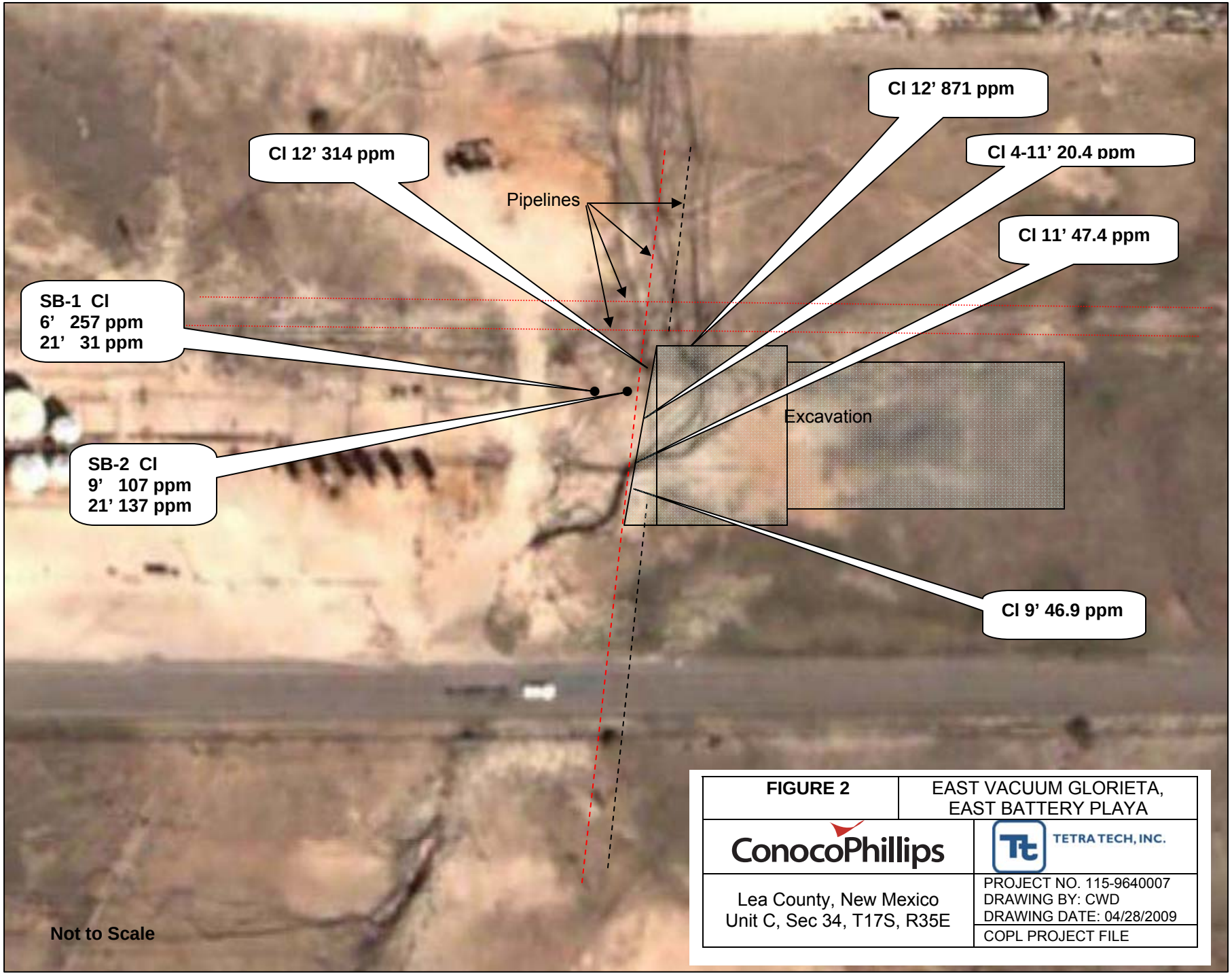


FIGURE 2	EAST VACUUM GLORIETA, EAST BATTERY PLAYA
ConocoPhillips	TETRA TECH, INC.
Lea County, New Mexico Unit C, Sec 34, T17S, R35E	PROJECT NO. 115-9640007 DRAWING BY: CWD DRAWING DATE: 04/28/2009
	COPL PROJECT FILE

APPENDIX B

Laboratory Analyses

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

09091160

Report To:		Project Name:	Vacuum Glorietta
Tetra Tech		Site:	Buckeye, NM
Charlie Durrett		Site Address:	
1910 N. Big Spring St			
Midland		PO Number:	4512008751
TX		State:	New Mexico
79705-		State Cert. No.:	
ph: (432) 682-4559	fax:	Date Reported:	10/2/2009

I. SAMPLE RECEIPT:

All samples were received intact. The internal ice chest temperatures were measured on receipt and are recorded on the attached Sample Receipt Checklist.

II: ANALYSES AND EXCEPTIONS:

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

SW8015B - Diesel Range Organics analysis:

Due to limited sample volume, a Matrix Spike (MS) or Matrix Spike Duplicate (MSD) was not extracted for Batch ID: 94113. A Laboratory Control Sample (LCS) and a Laboratory Control Sample Duplicate (LCSD) were extracted with the analytical batch and serve as the batch quality control (QC). The LCS and LCSD recovered acceptably and precision criteria were met.

III. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report (" mg\kg-dry " or " ug\kg-dry ").

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than

10/5/2009

Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

09091160

the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or by his designee, as verified by the following signature.

10/5/2009

Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Conoco Phillips

Certificate of Analysis Number:

09091160

Report To: **Tetra Tech**
Charlie Durrett
1910 N. Big Spring St

Midland
TX
79705-
ph: (432) 682-4559 **fax: (432) 686-8085**

Fax To:

Project Name: **Vacuum Glorietta**
Site: **Buckeye, NM**
Site Address:

PO Number: **4512008751**
State: **New Mexico**
State Cert. No.:
Date Reported: **10/2/2009**

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
VG2	09091160-01	Water	9/22/2009 3:00:00 PM	9/24/2009 9:30:00 AM	298258	☐
VG3	09091160-02	Water	9/22/2009 3:30:00 PM	9/24/2009 9:30:00 AM	298258	☐
VG4	09091160-03	Water	9/22/2009 4:00:00 PM	9/24/2009 9:30:00 AM	298258	☐

Erica Cardenas
Project Manager

10/5/2009
Date

Kesavalu M. Bagawandoss Ph.D., J.D.
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: VG2 **Collected:** 09/22/2009 15:00 **SPL Sample ID:** 09091160-01

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Diesel Range Organics (C10-C28)	ND			0.1	1	09/28/09 18:50	NW	5223487
Surr: n-Pentacosane	58.8		%	20-150	1	09/28/09 18:50	NW	5223487

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3510C	09/26/2009 10:20	N_M	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Gasoline Range Organics	ND			0.1	1	10/01/09 14:47	D_R	5227996
Surr: 1,4-Difluorobenzene	88.3		%	60-155	1	10/01/09 14:47	D_R	5227996
Surr: 4-Bromofluorobenzene	86.3		%	50-158	1	10/01/09 14:47	D_R	5227996
ION CHROMATOGRAPHY					**MCL**	**E300.0**	**Units: mg/L**	
Chloride	65.2			5	10	09/25/09 17:02	BDG	5219517
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/L**	
Benzene	ND			1	1	09/28/09 14:23	D_R	5222203
Toluene	ND			1	1	09/28/09 14:23	D_R	5222203
Ethylbenzene	ND			1	1	09/28/09 14:23	D_R	5222203
m,p-Xylene	ND			1	1	09/28/09 14:23	D_R	5222203
o-Xylene	ND			1	1	09/28/09 14:23	D_R	5222203
Xylenes,Total	ND			1	1	09/28/09 14:23	D_R	5222203
Surr: 1,4-Difluorobenzene	93.7		%	70-130	1	09/28/09 14:23	D_R	5222203
Surr: 4-Bromofluorobenzene	91.2		%	70-130	1	09/28/09 14:23	D_R	5222203

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: VG3 **Collected:** 09/22/2009 15:30 **SPL Sample ID:** 09091160-02

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Diesel Range Organics (C10-C28)	6.3			0.5	5	09/29/09 15:10	NW	5223499
Surr: n-Pentacosane	60.4		%	20-150	5	09/29/09 15:10	NW	5223499

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3510C	09/26/2009 10:20	N_M	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Gasoline Range Organics	ND			0.1	1	10/01/09 15:18	D_R	5227997
Surr: 1,4-Difluorobenzene	91.4		%	60-155	1	10/01/09 15:18	D_R	5227997
Surr: 4-Bromofluorobenzene	88.3		%	50-158	1	10/01/09 15:18	D_R	5227997
ION CHROMATOGRAPHY					**MCL**	**E300.0**	**Units: mg/L**	
Chloride	37.9			5	10	09/25/09 17:19	BDG	5219518
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/L**	
Benzene	ND			1	1	09/28/09 14:55	D_R	5222204
Toluene	ND			1	1	09/28/09 14:55	D_R	5222204
Ethylbenzene	ND			1	1	09/28/09 14:55	D_R	5222204
m,p-Xylene	ND			1	1	09/28/09 14:55	D_R	5222204
o-Xylene	ND			1	1	09/28/09 14:55	D_R	5222204
Xylenes,Total	ND			1	1	09/28/09 14:55	D_R	5222204
Surr: 1,4-Difluorobenzene	95.0		%	70-130	1	09/28/09 14:55	D_R	5222204
Surr: 4-Bromofluorobenzene	93.2		%	70-130	1	09/28/09 14:55	D_R	5222204

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: VG4 **Collected:** 09/22/2009 16:00 **SPL Sample ID:** 09091160-03

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Diesel Range Organics (C10-C28)	20			2	20	09/28/09 23:55	NW	5223490
Surr: n-Pentacosane	D	*	%	20-150	20	09/28/09 23:55	NW	5223490

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3510C	09/26/2009 10:20	N_M	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Gasoline Range Organics	5.6			0.5	5	10/01/09 15:50	D_R	5227998
Surr: 1,4-Difluorobenzene	93.3		%	60-155	5	10/01/09 15:50	D_R	5227998
Surr: 4-Bromofluorobenzene	103		%	50-158	5	10/01/09 15:50	D_R	5227998
ION CHROMATOGRAPHY					**MCL**	**E300.0**	**Units: mg/L**	
Chloride	2440			250	500	09/25/09 17:36	BDG	5219519
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/L**	
Benzene	340			1	1	09/28/09 15:26	D_R	5222205
Toluene	20			1	1	09/28/09 15:26	D_R	5222205
Ethylbenzene	350			5	5	09/28/09 20:10	D_R	5222210
m,p-Xylene	370			1	1	09/28/09 15:26	D_R	5222205
o-Xylene	160			1	1	09/28/09 15:26	D_R	5222205
Xylenes,Total	530			1	1	09/28/09 15:26	D_R	5222205
Surr: 1,4-Difluorobenzene	96.4		%	70-130	5	09/28/09 20:10	D_R	5222210
Surr: 1,4-Difluorobenzene	96.0		%	70-130	1	09/28/09 15:26	D_R	5222205
Surr: 4-Bromofluorobenzene	99.0		%	70-130	5	09/28/09 20:10	D_R	5222210
Surr: 4-Bromofluorobenzene	118		%	70-130	1	09/28/09 15:26	D_R	5222205

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 09091160
Lab Batch ID: 94113

Method Blank

RunID: HP_V_090928A-5223483 Units: mg/L
Analysis Date: 09/28/2009 15:47 Analyst: NW
Preparation Date: 09/26/2009 10:20 Prep By: N_M Method SW3510C

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09091160-01B	VG2
09091160-02B	VG3
09091160-03B	VG4

Analyte	Result	Rep Limit
Diesel Range Organics (C10-C28)	ND	0.10
Surr: n-Pentacosane	84.2	20-150

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: HP_V_090928A-5223484 Units: mg/L
Analysis Date: 09/28/2009 16:07 Analyst: NW
Preparation Date: 09/26/2009 10:20 Prep By: N_M Method SW3510C

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Diesel Range Organics (C10-C28)	1.00	0.783	78.3	1.00	0.710	71.0	9.7	39	21	130
Surr: n-Pentacosane	0.0500	0.0406	81.2	0.0500	0.0344	68.8	16.5	30	20	150

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 09091160
Lab Batch ID: R284915

Method Blank

RunID: HP_N_090928A-5222202 Units: ug/L
Analysis Date: 09/28/2009 13:17 Analyst: D_R

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09091160-01A	VG2
09091160-02A	VG3
09091160-03A	VG4

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	94.4	70-130
Surr: 4-Bromofluorobenzene	92.5	70-130

Laboratory Control Sample (LCS)

RunID: HP_N_090928A-5222282 Units: ug/L
Analysis Date: 09/28/2009 12:14 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	21.1	105	70	130
Ethylbenzene	20.0	21.8	109	70	130
Toluene	20.0	21.3	107	70	130
m,p-Xylene	40.0	44.9	112	70	130
o-Xylene	20.0	21.7	109	70	130
Xylenes,Total	60.0	66.6	111	70	130
Surr: 1,4-Difluorobenzene	100	94.8	94.8	70	130
Surr: 4-Bromofluorobenzene	100	93.1	93.1	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09091263-01
RunID: HP_N_090928A-5222206 Units: ug/L
Analysis Date: 09/28/2009 17:02 Analyst: D_R

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Purgeable Aromatics** **WorkOrder:** **09091160**
Method: **SW8021B** **Lab Batch ID:** **R284915**

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	20.1	101	20	20.0	99.8	0.844	31	66	141
Ethylbenzene	ND	20	21.1	105	20	20.9	104	1.04	28	52	136
Toluene	ND	20	20.7	104	20	20.2	101	2.58	25	61	131
m,p-Xylene	ND	40	42.9	107	40	42.6	107	0.749	36	60	130
o-Xylene	ND	20	20.7	103	20	20.6	103	0.217	30	64	130
Xylenes,Total	ND	60	63.6	106	60	63.2	105	0.576	36	60	130
Surr: 1,4-Difluorobenzene	ND	100	94.3	94.3	100	94.4	94.4	0.149	30	70	130
Surr: 4-Bromofluorobenzene	ND	100	93	93.0	100	92.7	92.7	0.261	30	70	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 09091160
Lab Batch ID: R285198

Method Blank

RunID: HP_N_091001A-5226782 Units: mg/L
Analysis Date: 10/01/2009 3:14 Analyst: D_R

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	86.8	60-155
Surr: 4-Bromofluorobenzene	85.6	50-158

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09091160-01A	VG2
09091160-02A	VG3
09091160-03A	VG4

Laboratory Control Sample (LCS)

RunID: HP_N_091001A-5226781 Units: mg/L
Analysis Date: 10/01/2009 2:11 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1.00	0.997	99.7	42	136
Surr: 1,4-Difluorobenzene	0.100	0.0933	93.3	60	155
Surr: 4-Bromofluorobenzene	0.100	0.0901	90.1	50	158

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09091219-02
RunID: HP_N_091001A-5226784 Units: mg/L
Analysis Date: 10/01/2009 5:52 Analyst: D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	0.244	1	1.06	81.8	1	1.02	77.2	4.47	36	22	174
Surr: 1,4-Difluorobenzene	ND	0.1	0.0941	94.1	0.1	0.0936	93.6	0.533	30	60	155
Surr: 4-Bromofluorobenzene	ND	0.1	0.0919	91.9	0.1	0.0905	90.5	1.54	30	50	158

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Ion Chromatography** **WorkOrder:** **09091160**
Method: **E300.0** **Lab Batch ID:** **R284742A**

Method Blank

RunID: IC2_090925A-5219501 Units: mg/L
Analysis Date: 09/25/2009 11:27 Analyst: BDG

Analyte	Result	Rep Limit
Chloride	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09091160-01C	VG2
09091160-02C	VG3
09091160-03C	VG4

Laboratory Control Sample (LCS)

RunID: IC2_090925A-5219502 Units: mg/L
Analysis Date: 09/25/2009 11:44 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	10.00	9.744	97.44	85	115

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09091160-01
RunID: IC2_090925A-5219522 Units: mg/L
Analysis Date: 09/25/2009 19:13 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	65.24	100	166.4	101.2	100	163.3	98.07	1.902	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

Sample Receipt Checklist

And

Chain of Custody

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	**09091160**	Received By:	**RE**
Date and Time Received:	**9/24/2009 9:30:00 AM**	Carrier name:	**Fedex-Standard Overnight**
Temperature:	**5.5°C**	Chilled by:	**Water Ice**

1.	**Shipping container/cooler in good condition?**	Yes	☑	No	☐	Not Present ☐
2.	**Custody seals intact on shippping container/cooler?**	Yes	☐	No	☐	Not Present ☑
3.	**Custody seals intact on sample bottles?**	Yes	☐	No	☐	Not Present ☑
4.	**Chain of custody present?**	Yes	☑	No	☐	
5.	**Chain of custody signed when relinquished and received?**	Yes	☑	No	☐	
6.	**Chain of custody agrees with sample labels?**	Yes	☑	No	☐	
7.	**Samples in proper container/bottle?**	Yes	☑	No	☐	
8.	**Sample containers intact?**	Yes	☑	No	☐	
9.	**Sufficient sample volume for indicated test?**	Yes	☑	No	☐	
10.	**All samples received within holding time?**	Yes	☑	No	☐	
11.	**Container/Temp Blank temperature in compliance?**	Yes	☑	No	☐	
12.	**Water - VOA vials have zero headspace?**	Yes	☑	No	☐	VOA Vials Not Present ☐
13.	**Water - Preservation checked upon receipt (except VOA*)?**	Yes	☐	No	☐	Not Applicable ☑

***VOA Preservation Checked After Sample Analysis**

SPL Representative: | **Contact Date & Time:**

Client Name Contacted:

Non Conformance Issues:

Client Instructions:

SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No. 292258 / 09091160 page 1 of 2

Client Name: TetraTech 79705
Address: 1910 N Big Spring Midland
Phone/Fax: 432 682 8081
Client Contact: CArrott Email:
Project Name/No.:
Site Name: Vacuume Glorietta
Site Location: Buckeye, NY
Invoice To: Ph:

matrix: W=water S=soil O=oil SL=sludge X=other
bottle: P=plastic A=amber glass G=glass V=vial X=other
size: 1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other
pres.: 1=HCl 2=HNO3 3=H2SO4 X=other

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis: TPH GRO 8021	TPH DRO	BTEX 8021	CL 300.0
V1-1	22/9/9	300			W	V	40	X	3		X	X	
VG-2						V	40	X	3	X			
VG 2						P	1	X	1	X			X
VG 2						A	1	X	1		X		
V1-3		330				V	40	1	3			X	
VG-3						V	40	1	3	X			
VG-3						P	1	X	1				X
VG-3						A	1	X	1		X		
V1-4		400				V	40	1	3			X	
V1-4	22/9/9	400			W	V	40	1	3	X			

Client/Consultant Remarks:

Laboratory remarks:

Intact? Y N
Ice? Y N
Temp: 5.2 c

Requested TAT

Contract ☐ 72hr ☐
24hr ☐ Standard ☐
48hr ☐
Other ☐ _____

Special Reporting Requirements Results: Fax ☐ Email ☐ PDF ☐
Standard QC ☐ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial):

	date	time	
1. Relinquished by Sampler:	23/9/9	4:00	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 9/24/09	time 0930	6. Received by Laboratory:

☐ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775

☐ 459 Hughes Drive
Traverse City, MI 49686 (231) 947-5777

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

09071148

Report To:		Project Name:	Vacuum Glorietta
Tetra Tech		Site:	Buckeye, NM
Charlie Durrett		Site Address:	
1910 N. Big Spring St			
Midland		PO Number:	
TX		State:	New Mexico
79705-		State Cert. No.:	
ph: (432) 682-4559	fax:	Date Reported:	8/3/2009

I. SAMPLE RECEIPT:

All samples were received intact. The internal ice chest temperatures were measured on receipt and are recorded on the attached Sample Receipt Checklist.

II: ANALYSES AND EXCEPTIONS:

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

Diesel Range Organics (8015):

Due to limited sample volume, a Matrix Spike (MS) or Matrix Spike Duplicate (MSD) was not extracted for Batch ID: 92257. A Laboratory Control Sample (LCS) and a Laboratory Control Sample Duplicate (LCSD) were extracted with the analytical batch and serve as the batch quality control (QC). The LCS and LCSD recovered acceptably and precision criteria were met.

Ion Chromatography:

Sample ID "South" (SPL ID:09071148-05) was randomly selected for use in SPL's quality control program for Batch ID: R279628. The Matrix Spike Duplicate (MSD) recovery was outside of the advisable quality control limits due to possible matrix interference. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

III. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report (" mg\kg-dry " or " ug\kg-dry ").

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

8/3/2009

Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

09071148

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or by his designee, as verified by the following signature.

8/3/2009

Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Conoco Phillips

Certificate of Analysis Number:

09071148

Report To: Tetra Tech
Charlie Durrett
1910 N. Big Spring St

Midland
TX
79705-
ph: (432) 682-4559 fax: (432) 686-8085

Fax To:

Project Name: Vacuum Glorietta
Site: Buckeye, NM
Site Address:

PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 8/3/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
VG-2	09071148-01	Water	7/21/2009 10:00:00 AM	7/22/2009 9:00:00 AM	326254	☐
VG-3	09071148-02	Water	7/21/2009 11:00:00 AM	7/22/2009 9:00:00 AM	326254	☐
North	09071148-03	Soil	7/21/2009 11:15:00 AM	7/22/2009 9:00:00 AM	326254	☐
West	09071148-04	Soil	7/21/2009 11:20:00 AM	7/22/2009 9:00:00 AM	326254	☐
South	09071148-05	Soil	7/21/2009 11:25:00 AM	7/22/2009 9:00:00 AM	326255	☐
East	09071148-06	Soil	7/21/2009 11:30:00 AM	7/22/2009 9:00:00 AM	326255	☐
Trip Blank	09071148-07	Water	7/21/2009 12:40:00 PM	7/22/2009 9:00:00 AM	326255	☑

Erica Cardenas
Project Manager

8/3/2009
Date

Kesavalu M. Bagawandoss Ph.D., J.D.
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: VG-2 **Collected:** 07/21/2009 10:00 **SPL Sample ID:** 09071148-01

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Diesel Range Organics (C10-C28)	ND			0.1	1	07/24/09 15:08	AM	5133818
Surr: n-Pentacosane	35.6		%	20-150	1	07/24/09 15:08	AM	5133818

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3510C	07/23/2009 10:22	A_G	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Gasoline Range Organics	ND			0.1	1	07/24/09 22:54	CLJ	5130208
Surr: 1,4-Difluorobenzene	92.6		%	60-155	1	07/24/09 22:54	CLJ	5130208
Surr: 4-Bromofluorobenzene	102		%	50-158	1	07/24/09 22:54	CLJ	5130208
ION CHROMATOGRAPHY					**MCL**	**E300.0**	**Units: mg/L**	
Chloride	62.1			5	10	07/22/09 17:52	BDG	5127319
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/L**	
Benzene	ND			1	1	07/24/09 22:54	CLJ	5130239
Toluene	ND			1	1	07/24/09 22:54	CLJ	5130239
Ethylbenzene	ND			1	1	07/24/09 22:54	CLJ	5130239
m,p-Xylene	ND			1	1	07/24/09 22:54	CLJ	5130239
o-Xylene	ND			1	1	07/24/09 22:54	CLJ	5130239
Xylenes,Total	ND			1	1	07/24/09 22:54	CLJ	5130239
Surr: 1,4-Difluorobenzene	97.6		%	70-130	1	07/24/09 22:54	CLJ	5130239
Surr: 4-Bromofluorobenzene	106		%	70-130	1	07/24/09 22:54	CLJ	5130239

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: VG-3 **Collected:** 07/21/2009 11:00 **SPL Sample ID:** 09071148-02

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Diesel Range Organics (C10-C28)	0.15			0.1	1	07/24/09 15:29	AM	5133819
Surr: n-Pentacosane	36.8		%	20-150	1	07/24/09 15:29	AM	5133819

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3510C	07/23/2009 10:22	A_G	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Gasoline Range Organics	ND			0.1	1	07/24/09 23:22	CLJ	5130209
Surr: 1,4-Difluorobenzene	93.2		%	60-155	1	07/24/09 23:22	CLJ	5130209
Surr: 4-Bromofluorobenzene	99.0		%	50-158	1	07/24/09 23:22	CLJ	5130209
ION CHROMATOGRAPHY					**MCL**	**E300.0**	**Units: mg/L**	
Chloride	37.3			2.5	5	07/22/09 18:09	BDG	5127320
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/L**	
Benzene	ND			1	1	07/24/09 23:22	CLJ	5130240
Toluene	ND			1	1	07/24/09 23:22	CLJ	5130240
Ethylbenzene	ND			1	1	07/24/09 23:22	CLJ	5130240
m,p-Xylene	ND			1	1	07/24/09 23:22	CLJ	5130240
o-Xylene	ND			1	1	07/24/09 23:22	CLJ	5130240
Xylenes,Total	ND			1	1	07/24/09 23:22	CLJ	5130240
Surr: 1,4-Difluorobenzene	98.2		%	70-130	1	07/24/09 23:22	CLJ	5130240
Surr: 4-Bromofluorobenzene	108		%	70-130	1	07/24/09 23:22	CLJ	5130240

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: North **Collected:** 07/21/2009 11:15 **SPL Sample ID:** 09071148-03

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	ND			5.4	1	08/01/09 14:14	NW	5138867
Surr: n-Pentacosane	75.3		%	20-154	1	08/01/09 14:14	NW	5138867

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	07/29/2009 10:22	FAK	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.11	1	07/23/09 10:31	WLV	5127553
Surr: 1,4-Difluorobenzene	98.4		%	63-142	1	07/23/09 10:31	WLV	5127553
Surr: 4-Bromofluorobenzene	98.8		%	50-159	1	07/23/09 10:31	WLV	5127553

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 15:29	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	ND			5.41	1	07/24/09 19:31	BDG	5129970
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	7.52			0	1	07/22/09 15:59	EB1	5125514
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1.1	1	07/23/09 10:31	WLV	5127053
Toluene	ND			1.1	1	07/23/09 10:31	WLV	5127053
Ethylbenzene	ND			1.1	1	07/23/09 10:31	WLV	5127053
m,p-Xylene	ND			1.1	1	07/23/09 10:31	WLV	5127053
o-Xylene	ND			1.1	1	07/23/09 10:31	WLV	5127053
Xylenes,Total	ND			1.1	1	07/23/09 10:31	WLV	5127053
Surr: 1,4-Difluorobenzene	97.1		%	70-130	1	07/23/09 10:31	WLV	5127053
Surr: 4-Bromofluorobenzene	97.0		%	63-145	1	07/23/09 10:31	WLV	5127053

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 15:29	XML	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: West **Collected:** 07/21/2009 11:20 **SPL Sample ID:** 09071148-04

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	7.8			5.2	1	08/01/09 15:36	NW	5138869
Surr: n-Pentacosane	68.5		%	20-154	1	08/01/09 15:36	NW	5138869

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	07/29/2009 10:22	FAK	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.1	1	07/23/09 6:13	WLV	5127548
Surr: 1,4-Difluorobenzene	96.0		%	63-142	1	07/23/09 6:13	WLV	5127548
Surr: 4-Bromofluorobenzene	101		%	50-159	1	07/23/09 6:13	WLV	5127548

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 15:31	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	97.5			5.21	1	07/24/09 19:48	BDG	5129971
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	4			0	1	07/22/09 15:59	EB1	5125513
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1	1	07/23/09 6:13	WLV	5127048
Toluene	ND			1	1	07/23/09 6:13	WLV	5127048
Ethylbenzene	ND			1	1	07/23/09 6:13	WLV	5127048
m,p-Xylene	ND			1	1	07/23/09 6:13	WLV	5127048
o-Xylene	ND			1	1	07/23/09 6:13	WLV	5127048
Xylenes,Total	ND			1	1	07/23/09 6:13	WLV	5127048
Surr: 1,4-Difluorobenzene	96.6		%	70-130	1	07/23/09 6:13	WLV	5127048
Surr: 4-Bromofluorobenzene	99.0		%	63-145	1	07/23/09 6:13	WLV	5127048

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 15:31	XML	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: South **Collected:** 07/21/2009 11:25 **SPL Sample ID:** 09071148-05

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	43			20	4	08/01/09 16:16	NW	5138870
Surr: n-Pentacosane	47.9		%	20-154	4	08/01/09 16:16	NW	5138870

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	07/29/2009 10:22	FAK	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.1	1	07/23/09 11:28	WLV	5127554
Surr: 1,4-Difluorobenzene	97.5		%	63-142	1	07/23/09 11:28	WLV	5127554
Surr: 4-Bromofluorobenzene	101		%	50-159	1	07/23/09 11:28	WLV	5127554

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 16:04	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	405			10.2	2	07/30/09 20:29	BDG	5136682
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	1.63			0	1	07/22/09 15:59	EB1	5125512
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1	1	07/23/09 11:28	WLV	5127055
Toluene	ND			1	1	07/23/09 11:28	WLV	5127055
Ethylbenzene	ND			1	1	07/23/09 11:28	WLV	5127055
m,p-Xylene	ND			1	1	07/23/09 11:28	WLV	5127055
o-Xylene	ND			1	1	07/23/09 11:28	WLV	5127055
Xylenes,Total	ND			1	1	07/23/09 11:28	WLV	5127055
Surr: 1,4-Difluorobenzene	97.8		%	70-130	1	07/23/09 11:28	WLV	5127055
Surr: 4-Bromofluorobenzene	100		%	63-145	1	07/23/09 11:28	WLV	5127055

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 16:04	XML	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: East **Collected:** 07/21/2009 11:30 **SPL Sample ID:** 09071148-06

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	ND			5.3	1	08/01/09 14:55	NW	5138868
Surr: n-Pentacosane	72.1		%	20-154	1	08/01/09 14:55	NW	5138868

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	07/29/2009 10:22	FAK	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.11	1	07/23/09 11:56	WLV	5127555
Surr: 1,4-Difluorobenzene	98.2		%	63-142	1	07/23/09 11:56	WLV	5127555
Surr: 4-Bromofluorobenzene	102		%	50-159	1	07/23/09 11:56	WLV	5127555

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 16:07	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	14.9			5.34	1	07/24/09 20:21	BDG	5129972
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	6.35			0	1	07/22/09 15:59	EB1	5125511
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1.1	1	07/23/09 11:56	WLV	5127056
Toluene	ND			1.1	1	07/23/09 11:56	WLV	5127056
Ethylbenzene	ND			1.1	1	07/23/09 11:56	WLV	5127056
m,p-Xylene	ND			1.1	1	07/23/09 11:56	WLV	5127056
o-Xylene	ND			1.1	1	07/23/09 11:56	WLV	5127056
Xylenes,Total	ND			1.1	1	07/23/09 11:56	WLV	5127056
Surr: 1,4-Difluorobenzene	96.5		%	70-130	1	07/23/09 11:56	WLV	5127056
Surr: 4-Bromofluorobenzene	101		%	63-145	1	07/23/09 11:56	WLV	5127056

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 16:07	XML	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Diesel Range Organics **WorkOrder:** 09071148
Method: SW8015B **Lab Batch ID:** 92257

Method Blank

RunID: HP_V_090729D-5133815 Units: mg/L
Analysis Date: 07/24/2009 14:07 Analyst: AM
Preparation Date: 07/23/2009 10:22 Prep By: A_G Method: SW3510C

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-01B	VG-2
09071148-02B	VG-3

Analyte	Result	Rep Limit
Diesel Range Organics (C10-C28)	ND	0.10
Surr: n-Pentacosane	54.4	20-150

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: HP_V_090729D-5133816 Units: mg/L
Analysis Date: 07/24/2009 14:28 Analyst: AM
Preparation Date: 07/23/2009 10:22 Prep By: A_G Method: SW3510C

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Diesel Range Organics (C10-C28)	1.00	0.497	49.7	1.00	0.669	66.9	29.5	39	21	130
Surr: n-Pentacosane	0.0500	0.0236	47.2	0.0500	0.0317	63.4	29.3	30	20	150

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Diesel Range Organics **WorkOrder:** 09071148
Method: SW8015B **Lab Batch ID:** 92410

Method Blank

RunID: HP_V_090729I-5138860 Units: mg/kg
Analysis Date: 07/29/2009 22:21 Analyst: NW
Preparation Date: 07/29/2009 10:22 Prep By: FAK Method: SW3550B

Analyte	Result	Rep Limit
Diesel Range Organics (C10-C28)	ND	5.0
Surr: n-Pentacosane	72.8	20-154

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03B	North
09071148-04B	West
09071148-05B	South
09071148-06B	East

Laboratory Control Sample (LCS)

RunID: HP_V_090729I-5138861 Units: mg/kg
Analysis Date: 07/29/2009 22:41 Analyst: NW
Preparation Date: 07/29/2009 10:22 Prep By: FAK Method: SW3550B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics (C10-C28)	33.3	24.2	72.6	57	150
Surr: n-Pentacosane	1.66	1.19	71.4	20	154

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071455-01
RunID: HP_V_090729I-5138863 Units: mg/kg-dry
Analysis Date: 07/30/2009 0:03 Analyst: NW
Preparation Date: 07/29/2009 10:22 Prep By: FAK Method: SW3550B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics (C10-C28)	ND	89.8	154	35.8	89.8	178	61.6	14.0	50	21	175
Surr: n-Pentacosane	ND	4.47	3.02	67.4	4.47	3.15	70.5	4.46	30	20	154

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 09071148
Lab Batch ID: R278994

Method Blank

RunID: HP_O_090722D-5127047 Units: ug/kg
Analysis Date: 07/23/2009 5:16 Analyst: WLV
Preparation Date: 07/23/2009 5:16 Prep By: Method: SW5030B

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	95.5	70-130
Surr: 4-Bromofluorobenzene	96.4	63-145

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03A	North
09071148-04A	West
09071148-05A	South
09071148-06A	East

Laboratory Control Sample (LCS)

RunID: HP_O_090722D-5127046 Units: ug/kg
Analysis Date: 07/23/2009 3:50 Analyst: WLV
Preparation Date: 07/23/2009 3:50 Prep By: Method: SW5030B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.6	103	70	130
Ethylbenzene	20.0	20.6	103	75	122
Toluene	20.0	21.8	109	75	123
m,p-Xylene	40.0	40.1	100	74	122
o-Xylene	20.0	20.2	101	70	130
Xylenes,Total	60.0	60.3	101	70	130
Surr: 1,4-Difluorobenzene	100	96.8	96.8	70	130
Surr: 4-Bromofluorobenzene	100	98.2	98.2	63	145

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-04
RunID: HP_O_090722D-5127049 Units: ug/kg-dry
Analysis Date: 07/23/2009 7:39 Analyst: WLV
Preparation Date: 07/22/2009 15:58 Prep By: XML Method: SW5030B

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Purgeable Aromatics** **WorkOrder:** **09071148**
Method: **SW8021B** **Lab Batch ID:** **R278994**

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20.8	15.9	76.4	20.8	16.1	77.2	1.04	31	41	133
Ethylbenzene	ND	20.8	11.8	56.5	20.8	12.5	60.0	5.97	39	31	129
Toluene	ND	20.8	14.0	67.3	20.8	14.7	70.6	4.85	25	34	130
m,p-Xylene	ND	41.7	21.8	52.4	41.7	24.0	57.5	9.30	26	35	123
o-Xylene	ND	20.8	12.3	59.2	20.8	12.7	61.2	3.35	35	33	124
Xylenes,Total	ND	62.5	34.1	54.6	62.5	36.7	58.7	7.20	35	33	124
Surr: 1,4-Difluorobenzene	ND	104	99.7	95.7	104	101	96.9	1.28	30	70	130
Surr: 4-Bromofluorobenzene	ND	104	105	101	104	105	100	0.132	30	63	145

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 09071148
Lab Batch ID: R279027

Method Blank

RunID: HP_O_090723A-5127547 Units: mg/kg
Analysis Date: 07/23/2009 5:16 Analyst: WLV
Preparation Date: 07/23/2009 5:16 Prep By: Method: SW5030B

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	96.6	63-142
Surr: 4-Bromofluorobenzene	97.9	50-159

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03A	North
09071148-04A	West
09071148-05A	South
09071148-06A	East

Laboratory Control Sample (LCS)

RunID: HP_O_090723A-5127546 Units: mg/kg
Analysis Date: 07/23/2009 4:19 Analyst: WLV
Preparation Date: 07/23/2009 4:19 Prep By: Method: SW5030B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1.00	1.19	119	70	130
Surr: 1,4-Difluorobenzene	0.100	0.102	101	63	142
Surr: 4-Bromofluorobenzene	0.100	0.103	103	50	159

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-04
RunID: HP_O_090723A-5127549 Units: mg/kg-dry
Analysis Date: 07/23/2009 6:42 Analyst: WLV
Preparation Date: 07/22/2009 15:59 Prep By: XML Method: SW5030B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	1.04	0.952	91.3	1.04	0.862	82.8	9.83	50	26	147
Surr: 1,4-Difluorobenzene	ND	0.104	0.106	102	0.104	0.107	103	1.17	30	63	142
Surr: 4-Bromofluorobenzene	ND	0.104	0.108	103	0.104	0.108	104	0.483	30	50	159

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 09071148
Lab Batch ID: R279208

Method Blank

RunID: HP_P_090724B-5130207 Units: mg/L
Analysis Date: 07/24/2009 22:26 Analyst: CLJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-01A	VG-2
09071148-02A	VG-3

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	93.5	60-155
Surr: 4-Bromofluorobenzene	102.1	50-158

Laboratory Control Sample (LCS)

RunID: HP_P_090724B-5130205 Units: mg/L
Analysis Date: 07/24/2009 21:02 Analyst: CLJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1.00	0.984	98.4	42	136
Surr: 1,4-Difluorobenzene	0.100	0.0969	96.9	60	155
Surr: 4-Bromofluorobenzene	0.100	0.102	102	50	158

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-02
RunID: HP_P_090724B-5130210 Units: mg/L
Analysis Date: 07/25/2009 0:46 Analyst: CLJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	1	0.828	82.8	1	0.803	80.3	3.00	36	22	174
Surr: 1,4-Difluorobenzene	ND	0.1	0.0969	96.9	0.1	0.0958	95.8	1.14	30	60	155
Surr: 4-Bromofluorobenzene	ND	0.1	0.102	101	0.1	0.102	102	0.393	30	50	158

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 09071148
Lab Batch ID: R279212

Method Blank

RunID: HP_P_090724D-5130238 Units: ug/L
Analysis Date: 07/24/2009 22:26 Analyst: CLJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-01A	VG-2
09071148-02A	VG-3

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	96.9	70-130
Surr: 4-Bromofluorobenzene	106.7	70-130

Laboratory Control Sample (LCS)

RunID: HP_P_090724D-5130236 Units: ug/L
Analysis Date: 07/24/2009 21:30 Analyst: CLJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	19.5	97.5	70	130
Ethylbenzene	20.0	19.5	97.4	70	130
Toluene	20.0	19.6	98.2	70	130
m,p-Xylene	40.0	39.2	98.0	70	130
o-Xylene	20.0	18.6	92.9	70	130
Xylenes,Total	60.0	57.8	96.3	70	130
Surr: 1,4-Difluorobenzene	100	99	99.0	70	130
Surr: 4-Bromofluorobenzene	100	108	108	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-01
RunID: HP_P_090724D-5130241 Units: ug/L
Analysis Date: 07/24/2009 23:50 Analyst: CLJ

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Purgeable Aromatics** **WorkOrder:** **09071148**
Method: **SW8021B** **Lab Batch ID:** **R279212**

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	19.9	99.7	20	19.7	98.6	1.09	31	66	141
Ethylbenzene	ND	20	19.0	95.1	20	19.5	97.3	2.23	28	52	136
Toluene	ND	20	19.5	97.6	20	19.7	98.4	0.842	25	61	131
m,p-Xylene	ND	40	37.8	94.5	40	38.6	96.5	2.11	36	60	130
o-Xylene	ND	20	18.1	90.7	20	18.4	92.0	1.50	30	64	130
Xylenes,Total	ND	60	55.9	93.2	60	57.0	95.0	1.91	36	60	130
Surr: 1,4-Difluorobenzene	ND	100	98.1	98.1	100	97.5	97.5	0.603	30	70	130
Surr: 4-Bromofluorobenzene	ND	100	107	107	100	107	107	0.377	30	70	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **PERCENT MOISTURE** **WorkOrder:** **09071148**
Method: **D2216** **Lab Batch ID:** **R278894A**

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03B	North
09071148-04B	West
09071148-05B	South
09071148-06B	East

Sample Duplicate

Original Sample: 09071108-01
RunID: WET_090722O-5125510 Units: wt%
Analysis Date: 07/22/2009 15:59 Analyst: EB1

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Percent Moisture	14.5	14.47	0.240	20

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Ion Chromatography** **WorkOrder:** **09071148**
Method: **E300.0** **Lab Batch ID:** **R279012**

Method Blank

RunID: IC2_090722A-5127314 Units: mg/L
Analysis Date: 07/22/2009 14:52 Analyst: BDG

Analyte	Result	Rep Limit
Chloride	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-01C	VG-2
09071148-02C	VG-3

Laboratory Control Sample (LCS)

RunID: IC2_090722A-5127315 Units: mg/L
Analysis Date: 07/22/2009 15:09 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	10.00	9.560	95.60	85	115

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-02
RunID: IC2_090722A-5127321 Units: mg/L
Analysis Date: 07/22/2009 18:26 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	37.31	50	90.03	105.4	50	91.32	108.0	1.431	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Ion Chromatography** **WorkOrder:** **09071148**
Method: **E300.0 MOD** **Lab Batch ID:** **R279187**

Method Blank

RunID: IC2_090724B-5129962 Units: mg/kg
Analysis Date: 07/24/2009 16:27 Analyst: BDG

Analyte	Result	Rep Limit
Chloride	ND	5.0

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03B	North
09071148-04B	West
09071148-06B	East

Laboratory Control Sample (LCS)

RunID: IC2_090724B-5129963 Units: mg/kg
Analysis Date: 07/24/2009 16:43 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	100.0	99.73	99.73	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09070987-01
RunID: IC2_090724B-5129965 Units: mg/kg-dry
Analysis Date: 07/24/2009 17:17 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	569.7	641	1268	109.0	641	1242	104.9	2.091	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Ion Chromatography** **WorkOrder:** **09071148**
Method: **E300.0 MOD** **Lab Batch ID:** **R279628**

Method Blank

RunID: IC1_090730A-5136679 Units: mg/kg
Analysis Date: 07/30/2009 19:54 Analyst: BDG

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-05B	South

Analyte	Result	Rep Limit
Chloride	ND	5.0

Laboratory Control Sample (LCS)

RunID: IC1_090730A-5136680 Units: mg/kg
Analysis Date: 07/30/2009 20:11 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	100.0	98.04	98.04	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-05
RunID: IC1_090730A-5136683 Units: mg/kg-dry
Analysis Date: 07/30/2009 20:47 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	404.6	203.3	654.8	123.1	203.3	685.5	138.2 *	4.579	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

Sample Receipt Checklist

And

Chain of Custody

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	**09071148**	Received By:	**RE**
Date and Time Received:	**7/22/2009 9:00:00 AM**	Carrier name:	**Fedex-Standard Overnight**
Temperature:	**5.9°C**	Chilled by:	**Water Ice**

1.	**Shipping container/cooler in good condition?**	Yes	☑	No	☐	Not Present ☐
2.	**Custody seals intact on shippping container/cooler?**	Yes	☑	No	☐	Not Present ☐
3.	**Custody seals intact on sample bottles?**	Yes	☐	No	☐	Not Present ☑
4.	**Chain of custody present?**	Yes	☑	No	☐	
5.	**Chain of custody signed when relinquished and received?**	Yes	☑	No	☐	
6.	**Chain of custody agrees with sample labels?**	Yes	☑	No	☐	
7.	**Samples in proper container/bottle?**	Yes	☑	No	☐	
8.	**Sample containers intact?**	Yes	☑	No	☐	
9.	**Sufficient sample volume for indicated test?**	Yes	☑	No	☐	
10.	**All samples received within holding time?**	Yes	☑	No	☐	
11.	**Container/Temp Blank temperature in compliance?**	Yes	☑	No	☐	
12.	**Water - VOA vials have zero headspace?**	Yes	☑	No	☐	VOA Vials Not Present ☐
13.	**Water - Preservation checked upon receipt (except VOA*)?**	Yes	☑	No	☐	Not Applicable ☐

***VOA Preservation Checked After Sample Analysis**

SPL Representative: **Contact Date & Time:**

Client Name Contacted:

Non Conformance Issues:

Client Instructions:

SPL, Inc.
Analysis Request & Chain of Custody Record

SPL Workorder No.: 09071148 | 326255 | page ____ of ____

Client Name: ConocoPhillips BM+R / Tetra Tech
Address: 1410 N Big Spring
City: Midland State: TX Zip: 79705
Phone/Fax: 432 686 8081
Client Contact: Charles Durrett Email: Charles.durrett@tetratech.com
Project Name/No.: Vacuum Glorieta 96400030
Site Name: Vacuum Glorieta
Site Location: Buckeye NM
Invoice To: COP BM+R Ph:

matrix: W=water S=soil O=oil A=air SL=sludge E=encore X=other
bottle: P=plastic A=amber glass G=glass V=vial X=other
size: 1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other
pres.: 1=HCl 2=HNO3 3=H2SO4 X=other

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis: TPH DRO	TPH GRO	BTEX (8021)	Cl (300)
South	7/21/09	1125			S	G	4		2	X	X	X	X
East	7/21/09	1130			S	G	4		2	X	X	X	X
Trip Blanks	7/21/09	1240											

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp: 5.9c

Requested TAT
☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☒ Standard
☐ 3 Business Days
☐ Other ____
Rush TAT requires prior notice

Special Reporting Requirements Results: Fax ☐ Email ☐ PDF ☐
Standard QC ☐ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial): KO

	date	time		
1. Relinquished by Sampler:	7/21/09	1400	2. Received by:	
3. Relinquished by:	date	time	4. Received by:	
5. Relinquished by:	date 7/22/09	time 0900	6. Received by Laboratory:	

☐ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775

☐ 459 Hughes Drive
Traverse City, MI 49686 (231) 947-5777

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

09071148

Report To:		Project Name:	Vacuum Glorietta
Tetra Tech		Site:	Buckeye, NM
Charlie Durrett		Site Address:	
1910 N. Big Spring St			
Midland		PO Number:	
TX		State:	New Mexico
79705-		State Cert. No.:	
ph: (432) 682-4559	fax:	Date Reported:	8/3/2009

I. SAMPLE RECEIPT:

All samples were received intact. The internal ice chest temperatures were measured on receipt and are recorded on the attached Sample Receipt Checklist.

II: ANALYSES AND EXCEPTIONS:

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

Diesel Range Organics (8015):

Due to limited sample volume, a Matrix Spike (MS) or Matrix Spike Duplicate (MSD) was not extracted for Batch ID: 92257. A Laboratory Control Sample (LCS) and a Laboratory Control Sample Duplicate (LCSD) were extracted with the analytical batch and serve as the batch quality control (QC). The LCS and LCSD recovered acceptably and precision criteria were met.

Ion Chromatography:

Sample ID "South" (SPL ID:09071148-05) was randomly selected for use in SPL's quality control program for Batch ID: R279628. The Matrix Spike Duplicate (MSD) recovery was outside of the advisable quality control limits due to possible matrix interference. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

III. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report (" mg\kg-dry " or " ug\kg-dry ").

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

8/3/2009

Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

09071148

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or by his designee, as verified by the following signature.

8/3/2009

Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Conoco Phillips

Certificate of Analysis Number:

09071148

Report To: Tetra Tech
Charlie Durrett
1910 N. Big Spring St

Midland
TX
79705-
ph: (432) 682-4559 fax: (432) 686-8085

Fax To:

Project Name: Vacuum Glorietta
Site: Buckeye, NM
Site Address:

PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 8/3/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
VG-2	09071148-01	Water	7/21/2009 10:00:00 AM	7/22/2009 9:00:00 AM	326254	☐
VG-3	09071148-02	Water	7/21/2009 11:00:00 AM	7/22/2009 9:00:00 AM	326254	☐
North	09071148-03	Soil	7/21/2009 11:15:00 AM	7/22/2009 9:00:00 AM	326254	☐
West	09071148-04	Soil	7/21/2009 11:20:00 AM	7/22/2009 9:00:00 AM	326254	☐
South	09071148-05	Soil	7/21/2009 11:25:00 AM	7/22/2009 9:00:00 AM	326255	☐
East	09071148-06	Soil	7/21/2009 11:30:00 AM	7/22/2009 9:00:00 AM	326255	☐
Trip Blank	09071148-07	Water	7/21/2009 12:40:00 PM	7/22/2009 9:00:00 AM	326255	☑

Erica Cardenas
Project Manager

8/3/2009
Date

Kesavalu M. Bagawandoss Ph.D., J.D.
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: VG-2 **Collected:** 07/21/2009 10:00 **SPL Sample ID:** 09071148-01

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Diesel Range Organics (C10-C28)	ND			0.1	1	07/24/09 15:08	AM	5133818
Surr: n-Pentacosane	35.6		%	20-150	1	07/24/09 15:08	AM	5133818

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3510C	07/23/2009 10:22	A_G	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Gasoline Range Organics	ND			0.1	1	07/24/09 22:54	CLJ	5130208
Surr: 1,4-Difluorobenzene	92.6		%	60-155	1	07/24/09 22:54	CLJ	5130208
Surr: 4-Bromofluorobenzene	102		%	50-158	1	07/24/09 22:54	CLJ	5130208
ION CHROMATOGRAPHY					**MCL**	**E300.0**	**Units: mg/L**	
Chloride	62.1			5	10	07/22/09 17:52	BDG	5127319
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/L**	
Benzene	ND			1	1	07/24/09 22:54	CLJ	5130239
Toluene	ND			1	1	07/24/09 22:54	CLJ	5130239
Ethylbenzene	ND			1	1	07/24/09 22:54	CLJ	5130239
m,p-Xylene	ND			1	1	07/24/09 22:54	CLJ	5130239
o-Xylene	ND			1	1	07/24/09 22:54	CLJ	5130239
Xylenes,Total	ND			1	1	07/24/09 22:54	CLJ	5130239
Surr: 1,4-Difluorobenzene	97.6		%	70-130	1	07/24/09 22:54	CLJ	5130239
Surr: 4-Bromofluorobenzene	106		%	70-130	1	07/24/09 22:54	CLJ	5130239

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: VG-3 **Collected:** 07/21/2009 11:00 **SPL Sample ID:** 09071148-02

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Diesel Range Organics (C10-C28)	0.15			0.1	1	07/24/09 15:29	AM	5133819
Surr: n-Pentacosane	36.8		%	20-150	1	07/24/09 15:29	AM	5133819

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3510C	07/23/2009 10:22	A_G	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/L**	
Gasoline Range Organics	ND			0.1	1	07/24/09 23:22	CLJ	5130209
Surr: 1,4-Difluorobenzene	93.2		%	60-155	1	07/24/09 23:22	CLJ	5130209
Surr: 4-Bromofluorobenzene	99.0		%	50-158	1	07/24/09 23:22	CLJ	5130209
ION CHROMATOGRAPHY					**MCL**	**E300.0**	**Units: mg/L**	
Chloride	37.3			2.5	5	07/22/09 18:09	BDG	5127320
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/L**	
Benzene	ND			1	1	07/24/09 23:22	CLJ	5130240
Toluene	ND			1	1	07/24/09 23:22	CLJ	5130240
Ethylbenzene	ND			1	1	07/24/09 23:22	CLJ	5130240
m,p-Xylene	ND			1	1	07/24/09 23:22	CLJ	5130240
o-Xylene	ND			1	1	07/24/09 23:22	CLJ	5130240
Xylenes,Total	ND			1	1	07/24/09 23:22	CLJ	5130240
Surr: 1,4-Difluorobenzene	98.2		%	70-130	1	07/24/09 23:22	CLJ	5130240
Surr: 4-Bromofluorobenzene	108		%	70-130	1	07/24/09 23:22	CLJ	5130240

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: North **Collected:** 07/21/2009 11:15 **SPL Sample ID:** 09071148-03

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	ND			5.4	1	08/01/09 14:14	NW	5138867
Surr: n-Pentacosane	75.3		%	20-154	1	08/01/09 14:14	NW	5138867

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	07/29/2009 10:22	FAK	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.11	1	07/23/09 10:31	WLV	5127553
Surr: 1,4-Difluorobenzene	98.4		%	63-142	1	07/23/09 10:31	WLV	5127553
Surr: 4-Bromofluorobenzene	98.8		%	50-159	1	07/23/09 10:31	WLV	5127553

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 15:29	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	ND			5.41	1	07/24/09 19:31	BDG	5129970
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	7.52			0	1	07/22/09 15:59	EB1	5125514
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1.1	1	07/23/09 10:31	WLV	5127053
Toluene	ND			1.1	1	07/23/09 10:31	WLV	5127053
Ethylbenzene	ND			1.1	1	07/23/09 10:31	WLV	5127053
m,p-Xylene	ND			1.1	1	07/23/09 10:31	WLV	5127053
o-Xylene	ND			1.1	1	07/23/09 10:31	WLV	5127053
Xylenes,Total	ND			1.1	1	07/23/09 10:31	WLV	5127053
Surr: 1,4-Difluorobenzene	97.1		%	70-130	1	07/23/09 10:31	WLV	5127053
Surr: 4-Bromofluorobenzene	97.0		%	63-145	1	07/23/09 10:31	WLV	5127053

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 15:29	XML	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: West **Collected:** 07/21/2009 11:20 **SPL Sample ID:** 09071148-04

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	7.8			5.2	1	08/01/09 15:36	NW	5138869
Surr: n-Pentacosane	68.5		%	20-154	1	08/01/09 15:36	NW	5138869

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	07/29/2009 10:22	FAK	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.1	1	07/23/09 6:13	WLV	5127548
Surr: 1,4-Difluorobenzene	96.0		%	63-142	1	07/23/09 6:13	WLV	5127548
Surr: 4-Bromofluorobenzene	101		%	50-159	1	07/23/09 6:13	WLV	5127548

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 15:31	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	97.5			5.21	1	07/24/09 19:48	BDG	5129971
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	4			0	1	07/22/09 15:59	EB1	5125513
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1	1	07/23/09 6:13	WLV	5127048
Toluene	ND			1	1	07/23/09 6:13	WLV	5127048
Ethylbenzene	ND			1	1	07/23/09 6:13	WLV	5127048
m,p-Xylene	ND			1	1	07/23/09 6:13	WLV	5127048
o-Xylene	ND			1	1	07/23/09 6:13	WLV	5127048
Xylenes,Total	ND			1	1	07/23/09 6:13	WLV	5127048
Surr: 1,4-Difluorobenzene	96.6		%	70-130	1	07/23/09 6:13	WLV	5127048
Surr: 4-Bromofluorobenzene	99.0		%	63-145	1	07/23/09 6:13	WLV	5127048

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 15:31	XML	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: South **Collected:** 07/21/2009 11:25 **SPL Sample ID:** 09071148-05

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	43			20	4	08/01/09 16:16	NW	5138870
Surr: n-Pentacosane	47.9		%	20-154	4	08/01/09 16:16	NW	5138870

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	07/29/2009 10:22	FAK	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.1	1	07/23/09 11:28	WLV	5127554
Surr: 1,4-Difluorobenzene	97.5		%	63-142	1	07/23/09 11:28	WLV	5127554
Surr: 4-Bromofluorobenzene	101		%	50-159	1	07/23/09 11:28	WLV	5127554

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 16:04	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	405			10.2	2	07/30/09 20:29	BDG	5136682
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	1.63			0	1	07/22/09 15:59	EB1	5125512
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1	1	07/23/09 11:28	WLV	5127055
Toluene	ND			1	1	07/23/09 11:28	WLV	5127055
Ethylbenzene	ND			1	1	07/23/09 11:28	WLV	5127055
m,p-Xylene	ND			1	1	07/23/09 11:28	WLV	5127055
o-Xylene	ND			1	1	07/23/09 11:28	WLV	5127055
Xylenes,Total	ND			1	1	07/23/09 11:28	WLV	5127055
Surr: 1,4-Difluorobenzene	97.8		%	70-130	1	07/23/09 11:28	WLV	5127055
Surr: 4-Bromofluorobenzene	100		%	63-145	1	07/23/09 11:28	WLV	5127055

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 16:04	XML	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: East **Collected:** 07/21/2009 11:30 **SPL Sample ID:** 09071148-06

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	ND			5.3	1	08/01/09 14:55	NW	5138868
Surr: n-Pentacosane	72.1		%	20-154	1	08/01/09 14:55	NW	5138868

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	07/29/2009 10:22	FAK	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.11	1	07/23/09 11:56	WLV	5127555
Surr: 1,4-Difluorobenzene	98.2		%	63-142	1	07/23/09 11:56	WLV	5127555
Surr: 4-Bromofluorobenzene	102		%	50-159	1	07/23/09 11:56	WLV	5127555

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 16:07	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	14.9			5.34	1	07/24/09 20:21	BDG	5129972
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	6.35			0	1	07/22/09 15:59	EB1	5125511
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1.1	1	07/23/09 11:56	WLV	5127056
Toluene	ND			1.1	1	07/23/09 11:56	WLV	5127056
Ethylbenzene	ND			1.1	1	07/23/09 11:56	WLV	5127056
m,p-Xylene	ND			1.1	1	07/23/09 11:56	WLV	5127056
o-Xylene	ND			1.1	1	07/23/09 11:56	WLV	5127056
Xylenes,Total	ND			1.1	1	07/23/09 11:56	WLV	5127056
Surr: 1,4-Difluorobenzene	96.5		%	70-130	1	07/23/09 11:56	WLV	5127056
Surr: 4-Bromofluorobenzene	101		%	63-145	1	07/23/09 11:56	WLV	5127056

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	07/22/2009 16:07	XML	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Diesel Range Organics **WorkOrder:** 09071148
Method: SW8015B **Lab Batch ID:** 92257

Method Blank

RunID: HP_V_090729D-5133815 Units: mg/L
Analysis Date: 07/24/2009 14:07 Analyst: AM
Preparation Date: 07/23/2009 10:22 Prep By: A_G Method: SW3510C

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-01B	VG-2
09071148-02B	VG-3

Analyte	Result	Rep Limit
Diesel Range Organics (C10-C28)	ND	0.10
Surr: n-Pentacosane	54.4	20-150

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: HP_V_090729D-5133816 Units: mg/L
Analysis Date: 07/24/2009 14:28 Analyst: AM
Preparation Date: 07/23/2009 10:22 Prep By: A_G Method: SW3510C

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Diesel Range Organics (C10-C28)	1.00	0.497	49.7	1.00	0.669	66.9	29.5	39	21	130
Surr: n-Pentacosane	0.0500	0.0236	47.2	0.0500	0.0317	63.4	29.3	30	20	150

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Diesel Range Organics **WorkOrder:** 09071148
Method: SW8015B **Lab Batch ID:** 92410

Method Blank

RunID: HP_V_090729I-5138860 Units: mg/kg
Analysis Date: 07/29/2009 22:21 Analyst: NW
Preparation Date: 07/29/2009 10:22 Prep By: FAK Method: SW3550B

Analyte	Result	Rep Limit
Diesel Range Organics (C10-C28)	ND	5.0
Surr: n-Pentacosane	72.8	20-154

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03B	North
09071148-04B	West
09071148-05B	South
09071148-06B	East

Laboratory Control Sample (LCS)

RunID: HP_V_090729I-5138861 Units: mg/kg
Analysis Date: 07/29/2009 22:41 Analyst: NW
Preparation Date: 07/29/2009 10:22 Prep By: FAK Method: SW3550B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics (C10-C28)	33.3	24.2	72.6	57	150
Surr: n-Pentacosane	1.66	1.19	71.4	20	154

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071455-01
RunID: HP_V_090729I-5138863 Units: mg/kg-dry
Analysis Date: 07/30/2009 0:03 Analyst: NW
Preparation Date: 07/29/2009 10:22 Prep By: FAK Method: SW3550B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics (C10-C28)	ND	89.8	154	35.8	89.8	178	61.6	14.0	50	21	175
Surr: n-Pentacosane	ND	4.47	3.02	67.4	4.47	3.15	70.5	4.46	30	20	154

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 09071148
Lab Batch ID: R278994

Method Blank

RunID: HP_O_090722D-5127047 Units: ug/kg
Analysis Date: 07/23/2009 5:16 Analyst: WLV
Preparation Date: 07/23/2009 5:16 Prep By: Method: SW5030B

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	95.5	70-130
Surr: 4-Bromofluorobenzene	96.4	63-145

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03A	North
09071148-04A	West
09071148-05A	South
09071148-06A	East

Laboratory Control Sample (LCS)

RunID: HP_O_090722D-5127046 Units: ug/kg
Analysis Date: 07/23/2009 3:50 Analyst: WLV
Preparation Date: 07/23/2009 3:50 Prep By: Method: SW5030B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.6	103	70	130
Ethylbenzene	20.0	20.6	103	75	122
Toluene	20.0	21.8	109	75	123
m,p-Xylene	40.0	40.1	100	74	122
o-Xylene	20.0	20.2	101	70	130
Xylenes,Total	60.0	60.3	101	70	130
Surr: 1,4-Difluorobenzene	100	96.8	96.8	70	130
Surr: 4-Bromofluorobenzene	100	98.2	98.2	63	145

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-04
RunID: HP_O_090722D-5127049 Units: ug/kg-dry
Analysis Date: 07/23/2009 7:39 Analyst: WLV
Preparation Date: 07/22/2009 15:58 Prep By: XML Method: SW5030B

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Purgeable Aromatics** **WorkOrder:** **09071148**
Method: **SW8021B** **Lab Batch ID:** **R278994**

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20.8	15.9	76.4	20.8	16.1	77.2	1.04	31	41	133
Ethylbenzene	ND	20.8	11.8	56.5	20.8	12.5	60.0	5.97	39	31	129
Toluene	ND	20.8	14.0	67.3	20.8	14.7	70.6	4.85	25	34	130
m,p-Xylene	ND	41.7	21.8	52.4	41.7	24.0	57.5	9.30	26	35	123
o-Xylene	ND	20.8	12.3	59.2	20.8	12.7	61.2	3.35	35	33	124
Xylenes,Total	ND	62.5	34.1	54.6	62.5	36.7	58.7	7.20	35	33	124
Surr: 1,4-Difluorobenzene	ND	104	99.7	95.7	104	101	96.9	1.28	30	70	130
Surr: 4-Bromofluorobenzene	ND	104	105	101	104	105	100	0.132	30	63	145

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Gasoline Range Organics
Method: SW8015B

WorkOrder: 09071148
Lab Batch ID: R279027

Method Blank

RunID: HP_O_090723A-5127547 Units: mg/kg
Analysis Date: 07/23/2009 5:16 Analyst: WLV
Preparation Date: 07/23/2009 5:16 Prep By: Method: SW5030B

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	96.6	63-142
Surr: 4-Bromofluorobenzene	97.9	50-159

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03A	North
09071148-04A	West
09071148-05A	South
09071148-06A	East

Laboratory Control Sample (LCS)

RunID: HP_O_090723A-5127546 Units: mg/kg
Analysis Date: 07/23/2009 4:19 Analyst: WLV
Preparation Date: 07/23/2009 4:19 Prep By: Method: SW5030B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1.00	1.19	119	70	130
Surr: 1,4-Difluorobenzene	0.100	0.102	101	63	142
Surr: 4-Bromofluorobenzene	0.100	0.103	103	50	159

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-04
RunID: HP_O_090723A-5127549 Units: mg/kg-dry
Analysis Date: 07/23/2009 6:42 Analyst: WLV
Preparation Date: 07/22/2009 15:59 Prep By: XML Method: SW5030B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	1.04	0.952	91.3	1.04	0.862	82.8	9.83	50	26	147
Surr: 1,4-Difluorobenzene	ND	0.104	0.106	102	0.104	0.107	103	1.17	30	63	142
Surr: 4-Bromofluorobenzene	ND	0.104	0.108	103	0.104	0.108	104	0.483	30	50	159

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 09071148
Lab Batch ID: R279208

Method Blank

RunID: HP_P_090724B-5130207 Units: mg/L
Analysis Date: 07/24/2009 22:26 Analyst: CLJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-01A	VG-2
09071148-02A	VG-3

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	93.5	60-155
Surr: 4-Bromofluorobenzene	102.1	50-158

Laboratory Control Sample (LCS)

RunID: HP_P_090724B-5130205 Units: mg/L
Analysis Date: 07/24/2009 21:02 Analyst: CLJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1.00	0.984	98.4	42	136
Surr: 1,4-Difluorobenzene	0.100	0.0969	96.9	60	155
Surr: 4-Bromofluorobenzene	0.100	0.102	102	50	158

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-02
RunID: HP_P_090724B-5130210 Units: mg/L
Analysis Date: 07/25/2009 0:46 Analyst: CLJ

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	1	0.828	82.8	1	0.803	80.3	3.00	36	22	174
Surr: 1,4-Difluorobenzene	ND	0.1	0.0969	96.9	0.1	0.0958	95.8	1.14	30	60	155
Surr: 4-Bromofluorobenzene	ND	0.1	0.102	101	0.1	0.102	102	0.393	30	50	158

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 09071148
Lab Batch ID: R279212

Method Blank

RunID: HP_P_090724D-5130238 Units: ug/L
Analysis Date: 07/24/2009 22:26 Analyst: CLJ

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-01A	VG-2
09071148-02A	VG-3

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	96.9	70-130
Surr: 4-Bromofluorobenzene	106.7	70-130

Laboratory Control Sample (LCS)

RunID: HP_P_090724D-5130236 Units: ug/L
Analysis Date: 07/24/2009 21:30 Analyst: CLJ

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	19.5	97.5	70	130
Ethylbenzene	20.0	19.5	97.4	70	130
Toluene	20.0	19.6	98.2	70	130
m,p-Xylene	40.0	39.2	98.0	70	130
o-Xylene	20.0	18.6	92.9	70	130
Xylenes,Total	60.0	57.8	96.3	70	130
Surr: 1,4-Difluorobenzene	100	99	99.0	70	130
Surr: 4-Bromofluorobenzene	100	108	108	70	130

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-01
RunID: HP_P_090724D-5130241 Units: ug/L
Analysis Date: 07/24/2009 23:50 Analyst: CLJ

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Purgeable Aromatics** **WorkOrder:** **09071148**
Method: **SW8021B** **Lab Batch ID:** **R279212**

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	19.9	99.7	20	19.7	98.6	1.09	31	66	141
Ethylbenzene	ND	20	19.0	95.1	20	19.5	97.3	2.23	28	52	136
Toluene	ND	20	19.5	97.6	20	19.7	98.4	0.842	25	61	131
m,p-Xylene	ND	40	37.8	94.5	40	38.6	96.5	2.11	36	60	130
o-Xylene	ND	20	18.1	90.7	20	18.4	92.0	1.50	30	64	130
Xylenes,Total	ND	60	55.9	93.2	60	57.0	95.0	1.91	36	60	130
Surr: 1,4-Difluorobenzene	ND	100	98.1	98.1	100	97.5	97.5	0.603	30	70	130
Surr: 4-Bromofluorobenzene	ND	100	107	107	100	107	107	0.377	30	70	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **PERCENT MOISTURE** **WorkOrder:** **09071148**
Method: **D2216** **Lab Batch ID:** **R278894A**

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03B	North
09071148-04B	West
09071148-05B	South
09071148-06B	East

Sample Duplicate

Original Sample: 09071108-01
RunID: WET_090722O-5125510 Units: wt%
Analysis Date: 07/22/2009 15:59 Analyst: EB1

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Percent Moisture	14.5	14.47	0.240	20

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: Ion Chromatography **WorkOrder:** 09071148
Method: E300.0 **Lab Batch ID:** R279012

Method Blank

RunID: IC2_090722A-5127314 Units: mg/L
Analysis Date: 07/22/2009 14:52 Analyst: BDG

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-01C	VG-2
09071148-02C	VG-3

Analyte	Result	Rep Limit
Chloride	ND	0.50

Laboratory Control Sample (LCS)

RunID: IC2_090722A-5127315 Units: mg/L
Analysis Date: 07/22/2009 15:09 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	10.00	9.560	95.60	85	115

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-02
RunID: IC2_090722A-5127321 Units: mg/L
Analysis Date: 07/22/2009 18:26 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	37.31	50	90.03	105.4	50	91.32	108.0	1.431	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Ion Chromatography** **WorkOrder:** **09071148**
Method: **E300.0 MOD** **Lab Batch ID:** **R279187**

Method Blank

RunID: IC2_090724B-5129962 Units: mg/kg
Analysis Date: 07/24/2009 16:27 Analyst: BDG

Analyte	Result	Rep Limit
Chloride	ND	5.0

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-03B	North
09071148-04B	West
09071148-06B	East

Laboratory Control Sample (LCS)

RunID: IC2_090724B-5129963 Units: mg/kg
Analysis Date: 07/24/2009 16:43 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	100.0	99.73	99.73	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09070987-01
RunID: IC2_090724B-5129965 Units: mg/kg-dry
Analysis Date: 07/24/2009 17:17 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	569.7	641	1268	109.0	641	1242	104.9	2.091	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vacuum Glorietta

Analysis: **Ion Chromatography** **WorkOrder:** **09071148**
Method: **E300.0 MOD** **Lab Batch ID:** **R279628**

Method Blank

RunID: IC1_090730A-5136679 Units: mg/kg
Analysis Date: 07/30/2009 19:54 Analyst: BDG

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09071148-05B	South

Analyte	Result	Rep Limit
Chloride	ND	5.0

Laboratory Control Sample (LCS)

RunID: IC1_090730A-5136680 Units: mg/kg
Analysis Date: 07/30/2009 20:11 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	100.0	98.04	98.04	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09071148-05
RunID: IC1_090730A-5136683 Units: mg/kg-dry
Analysis Date: 07/30/2009 20:47 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	404.6	203.3	654.8	123.1	203.3	685.5	138.2 *	4.579	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

Sample Receipt Checklist

And

Chain of Custody

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	**09071148**	Received By:	**RE**
Date and Time Received:	**7/22/2009 9:00:00 AM**	Carrier name:	**Fedex-Standard Overnight**
Temperature:	**5.9°C**	Chilled by:	**Water Ice**

1.	**Shipping container/cooler in good condition?**	Yes	☑	No	☐	Not Present ☐
2.	**Custody seals intact on shippping container/cooler?**	Yes	☑	No	☐	Not Present ☐
3.	**Custody seals intact on sample bottles?**	Yes	☐	No	☐	Not Present ☑
4.	**Chain of custody present?**	Yes	☑	No	☐	
5.	**Chain of custody signed when relinquished and received?**	Yes	☑	No	☐	
6.	**Chain of custody agrees with sample labels?**	Yes	☑	No	☐	
7.	**Samples in proper container/bottle?**	Yes	☑	No	☐	
8.	**Sample containers intact?**	Yes	☑	No	☐	
9.	**Sufficient sample volume for indicated test?**	Yes	☑	No	☐	
10.	**All samples received within holding time?**	Yes	☑	No	☐	
11.	**Container/Temp Blank temperature in compliance?**	Yes	☑	No	☐	
12.	**Water - VOA vials have zero headspace?**	Yes	☑	No	☐	VOA Vials Not Present ☐
13.	**Water - Preservation checked upon receipt (except VOA*)?**	Yes	☑	No	☐	Not Applicable ☐

***VOA Preservation Checked After Sample Analysis**

SPL Representative: **Contact Date & Time:**

Client Name Contacted:

Non Conformance Issues:

Client Instructions:

SPL, Inc.
Analysis Request & Chain of Custody Record

09071148

SPL Workorder No.: 00001 0109369-00005 / 450258928

326254

page ____ of ____

Client Name: ConocoPhillips RMAR / Tetra Tech
Address: 1910 N Big Spring
City: Midland State: Tx Zip: 79705
Phone/Fax: 432/686-8081
Client Contact: Charles Durrett Email: charles.durrett@tetratech.com
Project Name/No.: Vacuum Glorietta 964000300
Site Name: Vacuum Glorieta
Site Location: Buckeye, NM
Invoice To: COP RMAR Enfos Ph:

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil O=oil A=air SL=sludge E=encore X=other)	bottle (P=plastic A=amber glass G=glass V=vial X=other)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other)	pres. (1=HCl 2=HNO3 3=H2SO4 X=other)	Number of Containers	TPH DRO	TPH GRO	BTEX (8021)	Cl (300)					
VG-2	7/21/09	1000			W	V	40	1	3	[illegible]		X						
VG-2						A	1	1	2	X								
VG-2						V	40	1	3		X							
VG-2						P	16		1				X					
VG-3		1100				V	40	1	3			X						
VG-3						A	1	1	2	X								
VG-3						V	40	1	3		X							
VG-3						P	16		1				X					
North		1115			S	G	4		2	X	X	X	X					
West		1120			S	G	4		2	X	X	X	X					

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☑ Y ☐ N
Temp: 5.9

Requested TAT

☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☒ Standard
☐ 3 Business Days
☐ Other ____
Rush TAT requires prior notice

Special Reporting Requirements Results: Fax ☐ Email ☐ PDF ☐
Standard QC ☐ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial): [signature]

1. Relinquished by Sampler: [signature]	date 7/21/09	time 1400	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 7/22/09	time 0900	6. Received by Laboratory: [signature]

☐ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901
☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (337) 237-4775
☐ 459 Hughes Drive, Traverse City, MI 49686 (231) 947-5777

SPL, Inc.
Analysis Request & Chain of Custody Record

SPL Workorder No.: 09071148 | 326255 | page ____ of ____

Client Name: ConocoPhillips BM+R / Tetra Tech
Address: 1410 N Big Spring
City: Midland State: TX Zip: 79705
Phone/Fax: 432 686 8081
Client Contact: Charles Durrett Email: Charles.durrett@tetratech.com
Project Name/No.: Vacuum Glorieta 96400030
Site Name: Vacuum Glorieta
Site Location: Buckeye NM
Invoice To: COP BM+R Ph:

matrix: W=water S=soil O=oil A=air SL=sludge E=encore X=other
bottle: P=plastic A=amber glass G=glass V=vial X=other
size: 1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other
pres.: 1=HCl 2=HNO3 3=H2SO4 X=other

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis: TPH DRO	TPH GRO	BTEX (8021)	Cl (300)
South	7/21/09	1125			S	G	4		2	X	X	X	X
East	7/21/09	1130			S	G	4		2	X	X	X	X
Trip Blanks	7/21/09	1240											

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp: 5.9c

Requested TAT
☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☒ Standard
☐ 3 Business Days
☐ Other ____
Rush TAT requires prior notice

Special Reporting Requirements Results: Fax ☐ Email ☐ PDF ☐
Standard QC ☐ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial): KO

	date	time		
1. Relinquished by Sampler:	7/21/09	1400	2. Received by:	
3. Relinquished by:	date	time	4. Received by:	
5. Relinquished by:	date 7/22/09	time 0900	6. Received by Laboratory:	

☐ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775

☐ 459 Hughes Drive
Traverse City, MI 49686 (231) 947-5777

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Conoco Phillips

Certificate of Analysis Number:

09020202

Report To:		**Project Name:**	**Vaccum Glorietta/9640007**
Tetra Tech		**Site:**	**Buckeye, NM**
Charlie Durrett		**Site Address:**	
1910 N. Big Spring St			
Midland		**PO Number:**	
TX		**State:**	**New Mexico**
79705-		**State Cert. No.:**	
ph: (432) 682-4559	**fax:**	**Date Reported:**	

This Report Contains A Total Of 22 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

2/17/2009

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

09020202

Report To:		Project Name:	Vaccum Glorietta/9640007
Tetra Tech		Site:	Buckeye, NM
Charlie Durrett		Site Address:	
1910 N. Big Spring St			
Midland		PO Number:	
TX		State:	New Mexico
79705-		State Cert. No.:	
ph: (432) 682-4559	fax:	Date Reported:	

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report (" mg\kg-dry " or " ug\kg-dry ").

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Due to limited sample volume, a Matrix Spike (MS) or Matrix Spike Duplicate (MSD) was not extracted with Batch ID:R264951 for the Gasoline Range Organics analysis by Method 8015B. A Laboratory Control Sample (LCS) and a Laboratory Control Sample Duplicate (LCSD) were extracted with the analytical batch and serve as the batch quality control (QC). The LCS and LCSD recovered acceptably and precision criteria were met.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Erica Cardenas

2/17/2009

Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Conoco Phillips

Certificate of Analysis Number:

09020202

Report To: **Tetra Tech**
Charlie Durrett
1910 N. Big Spring St

Midland
TX
79705-
ph: (432) 682-4559 **fax: (432) 686-8085**

Fax To:

Project Name: **Vaccum Glorietta/9640007**
Site: **Buckeye, NM**
Site Address:

PO Number:
State: **New Mexico**
State Cert. No.:
Date Reported:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
SB-1 6'	09020202-01	Soil	2/4/2009 1:40:00 PM	2/6/2009 10:00:00 AM	270411	☐
SB-1 21'	09020202-02	Soil	2/4/2009 2:15:00 PM	2/6/2009 10:00:00 AM	270411	☐
SB-2 9'	09020202-03	Soil	2/4/2009 2:30:00 PM	2/6/2009 10:00:00 AM	270411	☐
SB-2 21'	09020202-04	Soil	2/4/2009 3:00:00 PM	2/6/2009 10:00:00 AM	270411	☐
SB-3 9'	09020202-05	Soil	2/4/2009 3:15:00 PM	2/6/2009 10:00:00 AM	270411	☐
SB-3 21'	09020202-06	Soil	2/4/2009 3:45:00 PM	2/6/2009 10:00:00 AM	270411	☐
SB-4 9'	09020202-07	Soil	2/4/2009 4:05:00 PM	2/6/2009 10:00:00 AM	270411	☐
SB-4 21'	09020202-08	Soil	2/4/2009 4:30:00 PM	2/6/2009 10:00:00 AM	270411	☐
SB-5 9'	09020202-09	Soil	2/4/2009 4:45:00 PM	2/6/2009 10:00:00 AM	270411	☐
SB-5 21'	09020202-10	Soil	2/4/2009 3:15:00 PM	2/6/2009 10:00:00 AM	270411	☐

Erica Cardenas
Project Manager

2/17/2009
Date

Richard R. Reed
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-1 6' **Collected:** 02/04/2009 13:40 **SPL Sample ID:** 09020202-01

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	ND			5.7	1	02/08/09 16:33	NW	4898782
Surr: n-Pentacosane	103		%	20-154	1	02/08/09 16:33	NW	4898782

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.11	1	02/10/09 18:08	EMB	4902272
Surr: 1,4-Difluorobenzene	99.7		%	63-142	1	02/10/09 18:08	EMB	4902272
Surr: 4-Bromofluorobenzene	97.5		%	50-159	1	02/10/09 18:08	EMB	4902272

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/10/2009 15:27	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	257			11.3	2	02/07/09 2:40	BDG	4897371
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	11.8			0	1	02/06/09 18:04	CFS	4896933
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1.1	1	02/10/09 11:42	NMa	4902111
Toluene	ND			1.1	1	02/10/09 11:42	NMa	4902111
Ethylbenzene	ND			1.1	1	02/10/09 11:42	NMa	4902111
Methyl tert-butyl ether	ND			1.1	1	02/10/09 11:42	NMa	4902111
m,p-Xylene	ND			1.1	1	02/10/09 11:42	NMa	4902111
o-Xylene	ND			1.1	1	02/10/09 11:42	NMa	4902111
Xylenes,Total	ND			1.1	1	02/10/09 11:42	NMa	4902111
Surr: 1,4-Difluorobenzene	108		%	77-126	1	02/10/09 11:42	NMa	4902111
Surr: 4-Bromofluorobenzene	110		%	60-160	1	02/10/09 11:42	NMa	4902111

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:01	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-1 21' **Collected:** 02/04/2009 14:15 **SPL Sample ID:** 09020202-02

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	12			5.3	1	02/08/09 17:34	NW	4898785
Surr: n-Pentacosane	78.8		%	20-154	1	02/08/09 17:34	NW	4898785

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.11	1	02/10/09 18:37	EMB	4902273
Surr: 1,4-Difluorobenzene	100		%	63-142	1	02/10/09 18:37	EMB	4902273
Surr: 4-Bromofluorobenzene	97.4		%	50-159	1	02/10/09 18:37	EMB	4902273

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/10/2009 15:29	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	31.1			5.25	1	02/07/09 1:48	BDG	4897368
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	4.77			0	1	02/06/09 18:04	CFS	4896931
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1.1	1	02/10/09 12:11	NMa	4902090
Toluene	ND			1.1	1	02/10/09 12:11	NMa	4902090
Ethylbenzene	ND			1.1	1	02/10/09 12:11	NMa	4902090
Methyl tert-butyl ether	ND			1.1	1	02/10/09 12:11	NMa	4902090
m,p-Xylene	ND			1.1	1	02/10/09 12:11	NMa	4902090
o-Xylene	ND			1.1	1	02/10/09 12:11	NMa	4902090
Xylenes,Total	ND			1.1	1	02/10/09 12:11	NMa	4902090
Surr: 1,4-Difluorobenzene	108		%	77-126	1	02/10/09 12:11	NMa	4902090
Surr: 4-Bromofluorobenzene	110		%	60-160	1	02/10/09 12:11	NMa	4902090

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:03	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-2 9' **Collected:** 02/04/2009 14:30 **SPL Sample ID:** 09020202-03

Site: Buckeye, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**	**Units: mg/kg-dry**		
Diesel Range Organics (C10-C28)	ND		5.4		1	02/08/09 17:54	NW	4898786
Surr: n-Pentacosane	81.3		% 20-154		1	02/08/09 17:54	NW	4898786

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**	**Units: mg/kg-dry**		
Gasoline Range Organics	ND		0.11		1	02/10/09 19:06	EMB	4902274
Surr: 1,4-Difluorobenzene	100		% 63-142		1	02/10/09 19:06	EMB	4902274
Surr: 4-Bromofluorobenzene	98.5		% 50-159		1	02/10/09 19:06	EMB	4902274

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:41	EM B	1.00

ION CHROMATOGRAPHY				**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**		
Chloride	107		5.44		1	02/07/09 2:57	BDG	4897372
PERCENT MOISTURE				**MCL**	**D2216**	**Units: wt%**		
Percent Moisture	8.09		0		1	02/06/09 18:04	CFS	4896930
PURGEABLE AROMATICS				**MCL**	**SW8021B**	**Units: ug/kg-dry**		
Benzene	ND		1.1		1	02/10/09 12:40	NMa	4902091
Toluene	ND		1.1		1	02/10/09 12:40	NMa	4902091
Ethylbenzene	ND		1.1		1	02/10/09 12:40	NMa	4902091
Methyl tert-butyl ether	ND		1.1		1	02/10/09 12:40	NMa	4902091
m,p-Xylene	ND		1.1		1	02/10/09 12:40	NMa	4902091
o-Xylene	ND		1.1		1	02/10/09 12:40	NMa	4902091
Xylenes,Total	ND		1.1		1	02/10/09 12:40	NMa	4902091
Surr: 1,4-Difluorobenzene	108		% 77-126		1	02/10/09 12:40	NMa	4902091
Surr: 4-Bromofluorobenzene	108		% 60-160		1	02/10/09 12:40	NMa	4902091

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:05	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-2 21' **Collected:** 02/04/2009 15:00 **SPL Sample ID:** 09020202-04

Site: Buckeye, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS				**MCL**	**SW8015B**	**Units: mg/kg-dry**		
Diesel Range Organics (C10-C28)	ND		5.2		1	02/08/09 18:14	NW	4898787
Surr: n-Pentacosane	85.8		% 20-154		1	02/08/09 18:14	NW	4898787

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS				**MCL**	**SW8015B**	**Units: mg/kg-dry**		
Gasoline Range Organics	ND		0.1		1	02/10/09 19:35	EMB	4902275
Surr: 1,4-Difluorobenzene	99.7		% 63-142		1	02/10/09 19:35	EMB	4902275
Surr: 4-Bromofluorobenzene	97.1		% 50-159		1	02/10/09 19:35	EMB	4902275

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/10/2009 15:37	XML	1.00

ION CHROMATOGRAPHY				**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**		
Chloride	137		5.15		1	02/07/09 3:14	BDG	4897373
PERCENT MOISTURE				**MCL**	**D2216**	**Units: wt%**		
Percent Moisture	2.93		0		1	02/06/09 18:04	CFS	4896929
PURGEABLE AROMATICS				**MCL**	**SW8021B**	**Units: ug/kg-dry**		
Benzene	ND		1		1	02/10/09 13:08	NMa	4902092
Toluene	ND		1		1	02/10/09 13:08	NMa	4902092
Ethylbenzene	ND		1		1	02/10/09 13:08	NMa	4902092
Methyl tert-butyl ether	ND		1		1	02/10/09 13:08	NMa	4902092
m,p-Xylene	ND		1		1	02/10/09 13:08	NMa	4902092
o-Xylene	ND		1		1	02/10/09 13:08	NMa	4902092
Xylenes,Total	ND		1		1	02/10/09 13:08	NMa	4902092
Surr: 1,4-Difluorobenzene	109		% 77-126		1	02/10/09 13:08	NMa	4902092
Surr: 4-Bromofluorobenzene	109		% 60-160		1	02/10/09 13:08	NMa	4902092

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:08	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-3 9' **Collected:** 02/04/2009 15:15 **SPL Sample ID:** 09020202-05

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	27			5.2	1	02/09/09 11:09	NW	4899030
Surr: n-Pentacosane	75.9		%	20-154	1	02/09/09 11:09	NW	4899030

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.1	1	02/10/09 20:04	EMB	4902276
Surr: 1,4-Difluorobenzene	99.9		%	63-142	1	02/10/09 20:04	EMB	4902276
Surr: 4-Bromofluorobenzene	99.7		%	50-159	1	02/10/09 20:04	EMB	4902276

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/10/2009 15:39	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	22.9			5.16	1	02/07/09 3:32	BDG	4897374
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	3.03			0	1	02/06/09 18:04	CFS	4896928
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1	1	02/10/09 13:37	NMa	4902093
Toluene	ND			1	1	02/10/09 13:37	NMa	4902093
Ethylbenzene	ND			1	1	02/10/09 13:37	NMa	4902093
Methyl tert-butyl ether	ND			1	1	02/10/09 13:37	NMa	4902093
m,p-Xylene	ND			1	1	02/10/09 13:37	NMa	4902093
o-Xylene	ND			1	1	02/10/09 13:37	NMa	4902093
Xylenes,Total	ND			1	1	02/10/09 13:37	NMa	4902093
Surr: 1,4-Difluorobenzene	110		%	77-126	1	02/10/09 13:37	NMa	4902093
Surr: 4-Bromofluorobenzene	112		%	60-160	1	02/10/09 13:37	NMa	4902093

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:10	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-3 21' **Collected:** 02/04/2009 15:45 **SPL Sample ID:** 09020202-06

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	160			51	10	02/09/09 13:30	NW	4899193
Surr: n-Pentacosane	132		%	20-154	10	02/09/09 13:30	NW	4899193

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	0.28			0.1	1	02/10/09 20:33	EMB	4902277
Surr: 1,4-Difluorobenzene	101		%	63-142	1	02/10/09 20:33	EMB	4902277
Surr: 4-Bromofluorobenzene	148		%	50-159	1	02/10/09 20:33	EMB	4902277

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/10/2009 15:41	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	287			10.2	2	02/07/09 3:49	BDG	4897375
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	1.76			0	1	02/06/09 18:04	CFS	4896927
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1	1	02/10/09 14:06	NMa	4902094
Toluene	ND			1	1	02/10/09 14:06	NMa	4902094
Ethylbenzene	1.3			1	1	02/10/09 14:06	NMa	4902094
Methyl tert-butyl ether	ND			1	1	02/10/09 14:06	NMa	4902094
m,p-Xylene	2.3			1	1	02/10/09 14:06	NMa	4902094
o-Xylene	4.7			1	1	02/10/09 14:06	NMa	4902094
Xylenes,Total	7			1	1	02/10/09 14:06	NMa	4902094
Surr: 1,4-Difluorobenzene	113		%	77-126	1	02/10/09 14:06	NMa	4902094
Surr: 4-Bromofluorobenzene	117		%	60-160	1	02/10/09 14:06	NMa	4902094

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:12	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-4 9' **Collected:** 02/04/2009 16:05 **SPL Sample ID:** 09020202-07

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	820			270	50	02/09/09 11:49	NW	4899032
Surr: n-Pentacosane	D	*	%	20-154	50	02/09/09 11:49	NW	4899032

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	120			11	100	02/11/09 9:57	EMB	4902908
Surr: 1,4-Difluorobenzene	102		%	63-142	100	02/11/09 9:57	EMB	4902908
Surr: 4-Bromofluorobenzene	214 MI	*	%	50-159	100	02/11/09 9:57	EMB	4902908

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5035A	02/06/2009 14:14	EM B	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	926			27.2	5	02/07/09 4:40	BDG	4897378
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	8.08			0	1	02/06/09 18:04	CFS	4896926
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			27	25	02/10/09 16:59	NMa	4902099
Toluene	73			27	25	02/10/09 16:59	NMa	4902099
Ethylbenzene	2300			27	25	02/10/09 16:59	NMa	4902099
Methyl tert-butyl ether	ND			27	25	02/10/09 16:59	NMa	4902099
m,p-Xylene	2500			27	25	02/10/09 16:59	NMa	4902099
o-Xylene	1100			27	25	02/10/09 16:59	NMa	4902099
Xylenes,Total	3600			27	25	02/10/09 16:59	NMa	4902099
Surr: 1,4-Difluorobenzene	108		%	77-126	25	02/10/09 16:59	NMa	4902099
Surr: 4-Bromofluorobenzene	160		%	60-160	25	02/10/09 16:59	NMa	4902099

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:14	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-4 21' **Collected:** 02/04/2009 16:30 **SPL Sample ID:** 09020202-08

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	2000			260	50	02/09/09 12:09	NW	4899034
Surr: n-Pentacosane	D	*	%	20-154	50	02/09/09 12:09	NW	4899034

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	66			2.6	25	02/10/09 21:31	EMB	4902278
Surr: 1,4-Difluorobenzene	103		%	63-142	25	02/10/09 21:31	EMB	4902278
Surr: 4-Bromofluorobenzene	349MI	*	%	50-159	25	02/10/09 21:31	EMB	4902278

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:16	EM B	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	1840			52.3	10	02/07/09 4:57	BDG	4897379
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	4.47			0	1	02/06/09 18:04	CFS	4896925
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			26	25	02/10/09 17:28	NMa	4902100
Toluene	46			26	25	02/10/09 17:28	NMa	4902100
Ethylbenzene	720			26	25	02/10/09 17:28	NMa	4902100
Methyl tert-butyl ether	ND			26	25	02/10/09 17:28	NMa	4902100
m,p-Xylene	760			26	25	02/10/09 17:28	NMa	4902100
o-Xylene	480			26	25	02/10/09 17:28	NMa	4902100
Xylenes,Total	1240			26.2	25	02/10/09 17:28	NMa	4902100
Surr: 1,4-Difluorobenzene	107		%	77-126	25	02/10/09 17:28	NMa	4902100
Surr: 4-Bromofluorobenzene	179MI	*	%	60-160	25	02/10/09 17:28	NMa	4902100

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:16	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-5 9' **Collected:** 02/04/2009 16:45 **SPL Sample ID:** 09020202-09

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	ND			5.5	1	02/09/09 10:49	NW	4899028
Surr: n-Pentacosane	102		%	20-154	1	02/09/09 10:49	NW	4899028

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.11	1	02/10/09 22:00	EMB	4902279
Surr: 1,4-Difluorobenzene	99.9		%	63-142	1	02/10/09 22:00	EMB	4902279
Surr: 4-Bromofluorobenzene	99.2		%	50-159	1	02/10/09 22:00	EMB	4902279

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/10/2009 15:42	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	27.1			5.47	1	02/07/09 5:14	BDG	4897380
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	8.59			0	1	02/06/09 18:04	CFS	4896924
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1.1	1	02/10/09 16:02	NMa	4902097
Toluene	ND			1.1	1	02/10/09 16:02	NMa	4902097
Ethylbenzene	ND			1.1	1	02/10/09 16:02	NMa	4902097
Methyl tert-butyl ether	ND			1.1	1	02/10/09 16:02	NMa	4902097
m,p-Xylene	ND			1.1	1	02/10/09 16:02	NMa	4902097
o-Xylene	ND			1.1	1	02/10/09 16:02	NMa	4902097
Xylenes,Total	ND			1.1	1	02/10/09 16:02	NMa	4902097
Surr: 1,4-Difluorobenzene	108		%	77-126	1	02/10/09 16:02	NMa	4902097
Surr: 4-Bromofluorobenzene	110		%	60-160	1	02/10/09 16:02	NMa	4902097

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:18	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: SB-5 21' **Collected:** 02/04/2009 15:15 **SPL Sample ID:** 09020202-10

Site: Buckeye, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	ND			5.3	1	02/09/09 10:29	NW	4899027
Surr: n-Pentacosane	93.1		%	20-154	1	02/09/09 10:29	NW	4899027

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	02/06/2009 16:12	QMT	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.11	1	02/10/09 22:29	EMB	4902280
Surr: 1,4-Difluorobenzene	100		%	63-142	1	02/10/09 22:29	EMB	4902280
Surr: 4-Bromofluorobenzene	98.6		%	50-159	1	02/10/09 22:29	EMB	4902280

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/10/2009 15:44	XML	1.00

ION CHROMATOGRAPHY					**MCL**	**E300.0 MOD**	**Units: mg/kg-dry**	
Chloride	117			5.3	1	02/07/09 5:31	BDG	4897381
PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	5.65			0	1	02/06/09 18:04	CFS	4896923
PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1.1	1	02/10/09 16:31	NMa	4902098
Toluene	ND			1.1	1	02/10/09 16:31	NMa	4902098
Ethylbenzene	ND			1.1	1	02/10/09 16:31	NMa	4902098
Methyl tert-butyl ether	ND			1.1	1	02/10/09 16:31	NMa	4902098
m,p-Xylene	ND			1.1	1	02/10/09 16:31	NMa	4902098
o-Xylene	ND			1.1	1	02/10/09 16:31	NMa	4902098
Xylenes,Total	ND			1.1	1	02/10/09 16:31	NMa	4902098
Surr: 1,4-Difluorobenzene	109		%	77-126	1	02/10/09 16:31	NMa	4902098
Surr: 4-Bromofluorobenzene	111		%	60-160	1	02/10/09 16:31	NMa	4902098

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	02/06/2009 14:20	EM B	1.00

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vaccum Glorietta/9640007

Analysis: Diesel Range Organics
Method: SW8015B
WorkOrder: 09020202
Lab Batch ID: 87762

Method Blank

RunID: HP_V_090208A-4899190 Units: mg/kg
Analysis Date: 02/09/2009 13:10 Analyst: NW
Preparation Date: 02/06/2009 16:12 Prep By: QMT Method SW3550B

Analyte	Result	Rep Limit
Diesel Range Organics (C10-C28)	ND	5.0
Surr: n-Pentacosane	88.6	20-154

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09020202-01B	SB-1 6'
09020202-02B	SB-1 21'
09020202-03B	SB-2 9'
09020202-04B	SB-2 21'
09020202-05B	SB-3 9'
09020202-06B	SB-3 21'
09020202-07B	SB-4 9'
09020202-08B	SB-4 21'
09020202-09B	SB-5 9'
09020202-10B	SB-5 21'

Laboratory Control Sample (LCS)

RunID: HP_V_090208A-4899025 Units: mg/kg
Analysis Date: 02/09/2009 9:18 Analyst: NW
Preparation Date: 02/06/2009 16:12 Prep By: QMT Method SW3550B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics (C10-C28)	33.3	34.2	103	57	150
Surr: n-Pentacosane	1.66	1.78	107	20	154

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09020202-01
RunID: HP_V_090208A-4898783 Units: mg/kg-dry
Analysis Date: 02/08/2009 16:53 Analyst: NW
Preparation Date: 02/06/2009 16:12 Prep By: QMT Method SW3550B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics (C10-C28)	ND	37.8	38.3	94.3	37.8	40.7	101	5.96	50	21	175
Surr: n-Pentacosane	ND	1.88	2.13	113	1.88	2.12	112	0.625	30	20	154

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vaccum Glorietta/9640007

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 09020202
Lab Batch ID: R264900

Method Blank

RunID: HP_U_090210B-4902088 Units: ug/kg
Analysis Date: 02/10/2009 11:13 Analyst: NMa
Preparation Date: 02/10/2009 11:13 Prep By: Method SW5030B

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Methyl tert-butyl ether	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	107.1	77-126
Surr: 4-Bromofluorobenzene	106.0	60-160

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09020202-01A	SB-1 6'
09020202-02A	SB-1 21'
09020202-03A	SB-2 9'
09020202-04A	SB-2 21'
09020202-05A	SB-3 9'
09020202-06A	SB-3 21'
09020202-07A	SB-4 9'
09020202-08A	SB-4 21'
09020202-09A	SB-5 9'
09020202-10A	SB-5 21'

Methanolic Preparation Blank

RunID: HP_U_090210B-4902109 Units: ug/kg
Analysis Date: 02/11/2009 2:37 Analyst: NMa
Preparation Date: 02/11/2009 2:37 Prep By: Method SW5030B

Analyte	Result	Rep Limit
Benzene	ND	25
Ethylbenzene	ND	25
Methyl tert-butyl ether	ND	25
Toluene	ND	25
m,p-Xylene	ND	25
o-Xylene	ND	25
Xylenes,Total	ND	25
Surr: 1,4-Difluorobenzene	106.1	77-126
Surr: 4-Bromofluorobenzene	108.3	60-160

Laboratory Control Sample (LCS)

RunID: HP_U_090210B-4902087 Units: ug/kg
Analysis Date: 02/10/2009 10:15 Analyst: NMa
Preparation Date: 02/10/2009 10:15 Prep By: Method SW5030B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	16.9	84.5	70	130
Ethylbenzene	20.0	17.1	85.6	70	130
Methyl tert-butyl ether	20.0	19.5	97.3	70	132
Toluene	20.0	17.2	86.0	70	130

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vaccum Glorietta/9640007

Analysis: Purgeable Aromatics **WorkOrder:** 09020202
Method: SW8021B **Lab Batch ID:** R264900

Laboratory Control Sample (LCS)

RunID: HP_U_090210B-4902087 Units: ug/kg
Analysis Date: 02/10/2009 10:15 Analyst: NMa
Preparation Date: 02/10/2009 10:15 Prep By: Method SW5030B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
m,p-Xylene	40.0	33.8	84.6	70	130
o-Xylene	20.0	17.0	85.0	70	130
Xylenes,Total	60.0	50.8	84.7	70	130
Surr: 1,4-Difluorobenzene	100	107	107	77	126
Surr: 4-Bromofluorobenzene	100	112	112	60	160

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09020255-01
RunID: HP_U_090210B-4902102 Units: ug/kg
Analysis Date: 02/10/2009 18:26 Analyst: NMa
Preparation Date: 02/09/2009 10:10 Prep By: XML Method SW5030B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	6.68	33.4 *	20	4.69	23.5 *	35.0 *	32	36	139
Ethylbenzene	ND	20	15.6	78.1	20	15.6	77.9	0.235	32	25	138
Methyl tert-butyl ether	ND	20	17.3	86.3	20	17.3	86.6	0.368	30	26	147
Toluene	ND	20	8.12	40.6	20	6.13	30.7 *	27.9	34	31	138
m,p-Xylene	ND	40	30.2	75.5	40	29.7	74.3	1.59	34	25	139
o-Xylene	ND	20	14.8	74.0	20	13.8	69.2	6.68	32	19	144
Xylenes,Total	ND	60	ND	75.0	60	ND	72.6	3.24	32	19	144
Surr: 1,4-Difluorobenzene	ND	100	106	106	100	106	106	0.255	30	77	126
Surr: 4-Bromofluorobenzene	ND	100	109	109	100	109	109	0.262	30	60	160

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vaccum Glorietta/9640007

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 09020202
Lab Batch ID: R264918

Method Blank

RunID: HP_O_090210B-4902266 Units: mg/kg
Analysis Date: 02/10/2009 11:16 Analyst: EMB
Preparation Date: 02/10/2009 11:16 Prep By: Method SW5030B

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	98.7	63-142
Surr: 4-Bromofluorobenzene	96.9	50-159

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09020202-01A	SB-1 6'
09020202-02A	SB-1 21'
09020202-03A	SB-2 9'
09020202-04A	SB-2 21'
09020202-05A	SB-3 9'
09020202-06A	SB-3 21'
09020202-08A	SB-4 21'
09020202-09A	SB-5 9'
09020202-10A	SB-5 21'

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: HP_O_090210B-4902267 Units: mg/kg
Analysis Date: 02/10/2009 11:45 Analyst: EMB
Preparation Date: 02/10/2009 11:45 Prep By: Method SW5030B

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Gasoline Range Organics	1.00	0.952	95.2	1.00	0.927	92.7	2.6	50	70	130
Surr: 1,4-Difluorobenzene	0.100	0.0972	97.2	0.100	0.0975	97.5	0.3	30	63	142
Surr: 4-Bromofluorobenzene	0.100	0.0982	98.2	0.100	0.0966	96.6	1.6	30	50	159

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09020202-03
RunID: HP_O_090210B-4902283 Units: mg/kg-dry
Analysis Date: 02/11/2009 1:51 Analyst: EMB
Preparation Date: 02/06/2009 14:57 Prep By: EM Method SW5030B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	1.09	0.874	80.4	1.09	0.860	79.0	1.63	50	26	147
Surr: 1,4-Difluorobenzene	ND	0.109	0.107	97.9	0.109	0.107	98.3	0.408	30	63	142
Surr: 4-Bromofluorobenzene	ND	0.109	0.105	96.7	0.109	0.105	96.5	0.207	30	50	159

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vaccum Glorietta/9640007

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 09020202
Lab Batch ID: R264951

Method Blank

RunID: HP_O_090211A-4902905 Units: mg/kg
Analysis Date: 02/11/2009 8:01 Analyst: EMB
Preparation Date: 02/11/2009 8:01 Prep By: Method SW5030B

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09020202-07A	SB-4 9'

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	100.2	63-142
Surr: 4-Bromofluorobenzene	96.3	50-159

Methanolic Preparation Blank

RunID: HP_O_090211A-4902907 Units: mg/kg
Analysis Date: 02/11/2009 8:59 Analyst: EMB
Preparation Date: 06/25/2005 19:45 Prep By: DO Method SW5030B

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	2.5
Surr: 1,4-Difluorobenzene	101.1	63-142
Surr: 4-Bromofluorobenzene	95.5	50-159

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: HP_O_090211A-4902906 Units: mg/kg
Analysis Date: 02/11/2009 8:30 Analyst: EMB
Preparation Date: 02/11/2009 8:30 Prep By: Method SW5030B

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Gasoline Range Organics	1.00	1.01	101	1.00	0.978	97.8	3.3	50	70	130
Surr: 1,4-Difluorobenzene	0.100	0.0974	97.4	0.100	0.0979	97.9	0.5	30	63	142
Surr: 4-Bromofluorobenzene	0.100	0.0982	98.2	0.100	0.0969	96.9	1.3	30	50	159

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vaccum Glorietta/9640007

Analysis: PERCENT MOISTURE
Method: D2216
WorkOrder: 09020202
Lab Batch ID: R264627A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09020202-01B	SB-1 6'
09020202-02B	SB-1 21'
09020202-03B	SB-2 9'
09020202-04B	SB-2 21'
09020202-05B	SB-3 9'
09020202-06B	SB-3 21'
09020202-07B	SB-4 9'
09020202-08B	SB-4 21'
09020202-09B	SB-5 9'
09020202-10B	SB-5 21'

Sample Duplicate

Original Sample: 09020202-01
RunID: WET_090206K-4896933 Units: wt%
Analysis Date: 02/06/2009 18:04 Analyst: CFS

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Percent Moisture	11.8	11.89	0.925	20

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Vaccum Glorietta/9640007

Analysis: Ion Chromatography
Method: E300.0 MOD

WorkOrder: 09020202
Lab Batch ID: R264643B

Method Blank

RunID: IC2_090206A-4897366 Units: mg/kg
Analysis Date: 02/07/2009 1:15 Analyst: BDG

Analyte	Result	Rep Limit
Chloride	ND	5.0

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09020202-01B	SB-1 6'
09020202-02B	SB-1 21'
09020202-03B	SB-2 9'
09020202-04B	SB-2 21'
09020202-05B	SB-3 9'
09020202-06B	SB-3 21'
09020202-07B	SB-4 9'
09020202-08B	SB-4 21'
09020202-09B	SB-5 9'
09020202-10B	SB-5 21'

Laboratory Control Sample (LCS)

RunID: IC2_090206A-4897367 Units: mg/kg
Analysis Date: 02/07/2009 1:31 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	100.0	103.2	103.2	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09020202-02
RunID: IC2_090206A-4897369 Units: mg/kg-dry
Analysis Date: 02/07/2009 2:06 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	31.10	105	126.8	91.12	105	126.9	91.19	0.05796	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

Sample Receipt Checklist

And

Chain of Custody

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	**09020202**	Received By:	**RE**
Date and Time Received:	**2/6/2009 10:00:00 AM**	Carrier name:	**Fedex-Standard Overnight**
Temperature:	**3.0°C**	Chilled by:	**Water Ice**

1.	**Shipping container/cooler in good condition?**	Yes	☑	No	☐	Not Present ☐
2.	**Custody seals intact on shippping container/cooler?**	Yes	☑	No	☐	Not Present ☐
3.	**Custody seals intact on sample bottles?**	Yes	☐	No	☐	Not Present ☑
4.	**Chain of custody present?**	Yes	☑	No	☐	
5.	**Chain of custody signed when relinquished and received?**	Yes	☑	No	☐	
6.	**Chain of custody agrees with sample labels?**	Yes	☑	No	☐	
7.	**Samples in proper container/bottle?**	Yes	☑	No	☐	
8.	**Sample containers intact?**	Yes	☑	No	☐	
9.	**Sufficient sample volume for indicated test?**	Yes	☑	No	☐	
10.	**All samples received within holding time?**	Yes	☑	No	☐	
11.	**Container/Temp Blank temperature in compliance?**	Yes	☑	No	☐	
12.	**Water - VOA vials have zero headspace?**	Yes	☐	No	☐	VOA Vials Not Present ☑
13.	**Water - Preservation checked upon receipt (except VOA*)?**	Yes	☐	No	☐	Not Applicable ☑

***VOA Preservation Checked After Sample Analysis**

SPL Representative: **Contact Date & Time:**

Client Name Contacted:

Non Conformance Issues:

Client Instructions:

SPL, Inc.
Analysis Request & Chain of Custody Record

09071148

SPL Workorder No. 00001 0109369-00005
4502589 28

326254

page ____ of ____

Client Name: ConocoPhillips RMdR / Tetra Tech
Address: 1910 N Big Spring
City Midland State Tx Zip 79705
Phone/Fax: 432/ 686-8081
Client Contact: Charles Durrett Email: charles.durrett@tetratech.com
Project Name/No.: Vacuum Glorietta 964000300
Site Name: Vacuum Glorieta
Site Location: Buckeye, NM
Invoice To: COP RMdR Enfos Ph:

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil O=oil A=air SL=sludge E=encore X=other)	bottle (P=plastic A=amber glass G=glass V=vial X=other)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other)	pres. (1=HCl 2=HNO3 3=H2SO4 X=other)	Number of Containers	TPH DRO	TPH GRO	BTEX (8021)	Cl (300)					
VG-2	7/21/09	1000			W	V	40	1	3			X						
VG-2						A	1	1	2	X								
VG-2						V	40	1	3		X							
VG-2						P	16		1				X					
VG-3		1100				V	40	1	3			X						
VG-3						A	1	1	2	X								
VG-3						V	40	1	3		X							
VG-3						P	16		1				X					
North		1115			S	G	4		2	X	X	X	X					
West		1120			S	G	4		2	X	X	X	X					

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☑ Y ☐ N
Temp: 5.9

Requested TAT
☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☒ Standard
☐ 3 Business Days
☐ Other ____
Rush TAT requires prior notice

Special Reporting Requirements Results: Fax ☐ Email ☐ PDF ☐
Standard QC ☐ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial):

	date	time	
1. Relinquished by Sampler: [signature]	7/21/09	1400	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	7/22/09	0900	6. Received by Laboratory: [signature]

☐ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775

☐ 459 Hughes Drive
Traverse City, MI 49686 (231) 947-5777

SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No. 270411
09020202
page 1 of 1

Client Name: ConocoPhillips / TetraTech
Address: 1910 N Big Spring Midland TX 79705
Phone/Fax: 432-686-8081
Client Contact: Durrett Email: chdo.durrett@tetratech.com
Project Name/No.: 96400007
Site Name: Vacuum Gloricta
Site Location: Buckeye NM
Invoice To: ConocoPhillips Ph:

matrix: W=water S=soil O=oil SL=sludge X=other
bottle: P=plastic A=amber glass G=glass V=vial X=other
size: 1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other
pres.: 1=HCl 2=HNO3 3=H2SO4 X=other

SAMPLE ID		DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	Requested Analysis: TPH GRO - DRO	BTEX (8021)	Chloride (300)
SB-1	6'	2/4/09	1140		X	S	G	4	X	2	X	X	X
SB-1	21'		2145										
SB-2	9'		2230										
SB-2	21'		3D0										
SB-3	9'		3:15										
SB-3	21'		3:45										
SB-4	9'		4:05										
SB-4	21'		430										
SB-5	9'		445										
SB-5	21'		5:15										

RUSH

Client/Consultant Remarks:

Laboratory remarks:

Intact? Y N
Ice? Y N
Temp: 3.0 c

Requested TAT

Contract ☐ 72hr ☐
24hr ☐ Standard ☐
48hr ☐
Other ☒ ASAP

Special Reporting Requirements Results: Fax ☐ Email ☐ PDF ☐
Standard QC ☐ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial):

	date	time	
1. Relinquished by Sampler:	1/5/09		2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 2/6/09	time 1000	6. Received by Laboratory:

☒ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775

☐ 459 Hughes Drive
Traverse City, MI 49686 (231) 947-5777

TETRA TECH, INC.

July 9, 2009

Mr. Jim Griswold
Hydrologist
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: **East Vacuum Glorieta, East Tank Battery Playa**
Record of Understanding
SW¼ & SE ¼, Sec 27, T17S, R35E
AP 039 / 1RP 413

Dear Mr. Griswold:

On behalf of ConocoPhillips, Tetra Tech requests permission to backfill and to complete re-vegetation as part of ConocoPhillips' efforts to mitigate a release of petroleum hydrocarbons and produced water into a playa (Site) located east of ConocoPhillips' East Vacuum Glorieta, East Tank Battery (now abandoned). The Site is located on State owned land, within Lea County, New Mexico (32° 47.932' N, 103° 26.726' W).

This request is based on information provided in a series of emails to the New Mexico Oil Conservation Division (NMOCD Santa Fe; attached), and your and Mr. Larry Johnson's (NMOCD Hobbs) visit to the Site on July 8, 2009. From our discussion at the Site, it is my understanding that:

1. No further excavation is necessary;
2. Owing to the continuous flushing of the excavation, a geo-membrane will not be required;
3. Groundwater samples will be collected from the two existing monitoring wells and analyzed for chloride, total petroleum hydrocarbons (diesel and gasoline range), and BTEX (Method 8021) now;
4. Backfilling will be initiated after ConocoPhillips receives NMOCD's approval to proceed;
5. Surface restoration, with exception of the geo-membrane, will be completed in accordance with the proposed abatement plan
6. One monitoring well will be installed and all monitoring wells will be re-sampled (Figure 1, proposed location).
7. A path forward plan will be based on findings of the groundwater sampling and analyses.

If this understanding is acceptable to the NMOCD, ConocoPhillips is prepared to charge Tetra Tech with the task of executing this approach. If you have any questions concerning this proposed action, please contact Mr. Tom Wynn (918-661-0310) or me.

Sincerely,

Charles Durrett
Senior Project Manager

Cc: Mr. Larry Johnson, NMOCD District 1
Mr. Tom Wynn, ConocoPhillips
Mr. Rudy Quiroz, ConocoPhillips

1703 West Industrial Avenue, Midland, TX 79701
Tel 432.686.8081 Fax 432.686.8085
www.tetratech.com

FIGURE 1	EXISTING MONITORING WELLS AND PRPOSED MONITORING WELL LOCATIONS
ConocoPhillips	TETRA TECH, INC.
East Vacuum Glorieta, East Battery Playa Lea County, New Mexico Unit C, Sec 34, T17S, R35E	PROJECT NO. 115-9640007 DRAWING BY: CWD DRAWING DATE: 07/09/2009
	COP PROJECT FILE

Source: Google Earth, 2009

Durrett, Charles

From: Durrett, Charles
Sent: Tuesday, May 05, 2009 8:45 AM
To: VonGonten, Glenn, EMNRD
Cc: 'Wynn, Tom R'; 'Quiroz, Rudy R.'; 'Shipp, Kirby M'; Miller, Gary
Subject: FW: ConocoPhillips Vacuum Glorieta - Question
Attachments: Fig1.pdf; Fig2a.pdf

Mr. VonGonten, ConocoPhillips Pipe Line will be reconnecting its pipeline and stabilizing the area below the line this week. The excavation was advanced to the north and is within 10 feet of an east-west crude oil pipeline (Figure 2). We have withdrawn from the open excavation and wait for further direction from NMOCD. We request permission to backfill and remediate the entire excavation in accordance with the abatement plan.

From: Durrett, Charles
Sent: Wednesday, April 29, 2009 8:58 AM
To: VonGonten, Glenn, EMNRD
Cc: 'Wynn, Tom R'; 'Quiroz, Rudy R.'; 'Shipp, Kirby M'
Subject: FW: ConocoPhillips Vacuum Glorieta - Question

Mr. VonGoten, as directed by Mr. Price, we have advanced the excavation into and through ConocoPhillips Pipe Line right-of-way and have achieved the results shown on Figure 2. Removing a segment of the pipeline has taken a battery out-of-service, and ConocoPhillips is unable to move the crude to market. We request permission to backfill and remediate the entire excavation in accordance with the abatement plan.

From: Durrett, Charles
Sent: Friday, April 17, 2009 9:35 AM
To: VonGonten, Glenn, EMNRD
Cc: Tom.R.Wynn@conocophillips.com; Rudy.R.Quiroz@conocophillips.com; Kirby.M.Shipp@conocophillips.com; Miller, Gary
Subject: ConocoPhillips Vacuum Glorieta - Question

Mr. VonGonten, as I indicated last week, we re-started excavating the historic pit Wednesday and have removed an area of approximately 20 x 50 ft to a depth of approximately 12 fbgs. In the process, we hit a very hard caliche caprock. Our boring (SB-4, see below) indicates a TPH of 2,000 mg/Kg at 21 fbgs or 1 foot below the caprock. Groundwater is approximately 50 fbgs. To continue excavating downward would require chiseling the caprock. The caprock is outside the playa boundary and is providing a natural barrier that has slowed the migration of hydrocarbon and chloride.

Our approved abatement plan said that we would excavate to a depth of 7 - 9 feet or to the caprock, lay a geomembrane, backfill, and restore the surface. The plan also indicated that we would install two new monitoring wells to compliment the two already on site. One of these monitoring wells could be installed in this affected area to complete delineation. We are waiting for laboratory analyses for the excavation face and if the data indicates a clear boundary has been achieved, we would like to cap the entire area and move on to restoring the site.

Therefore, we request your approval to proceed with this action.

Respectfully,

Charles Durrett
Sr. Project Manger

From: Durrett, Charles
Sent: Monday, February 16, 2009 9:21 AM
To: Glenn.VonGonten@state.nm.us
Cc: Wynn, Tom R; Quiroz, Rudy R.; Gates, John W
Subject: FW: ConocoPhillips Vacuum Glorieta - Question

Mr. von Gonten, during previous discussions with Mr. Wayne Price concerning ConocoPhillips subject remediation project (see information in the e-mail train below), he asked for additional information. New information provided herein further develops our desire to stop excavation, leave an active 4" crude oil line in place, begin backfilling, and complete remediation at this site.

Tetra Tech recently bored 5 holes West of the pipeline in question (Figure attached) and found a stringer of affected soil immediately adjacent to line at boring SB-4 (Table 1). This stringer connects with affected soil (wall sample M) immediately East of the line in the excavation (Table 2; photograph in email train).

Table 1
Soil Borings
February 8, 2009

Constituents	Sample Boring (SB) Locations									
	SB-1		SB-2		SB-3		SB-4		SB-5	
Sample Depth (bgs)	6	21	9	21	9	21	9	21	9	21
Moisture (%)	11.80	4.77	8.09	2.92	3.03	1.76	8.08	4.47	8.59	5.65
Chloride (mg/Kg)	257.00	31	107	137	22.90	287	926	1,840	27	117
Total Petroleum Hyrdocarbons (mg/Kg)										
DRO	ND	12.00	ND	ND	27.0	160.00	820	2,000	ND	ND
GRO	ND	ND	ND	ND	ND	0.28	120	66	ND	ND
Total										
Volatile Organic Compounds (mg/Kg)										
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	0.001	2.30	0.76	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	0.07	0.05	ND	ND
Xylenes, Total	ND	ND	ND	ND	ND	0.007	3.60	1.240	ND	ND
BTEX, Total	ND	ND	ND	ND	ND	0.008	5.97	2.046	ND	ND

DRO = Diesel range hydrocarbons
GRO = Gasoline range hydrocarbons
% = Percent
bgs = Feet below ground surface
mg/Kg = Milligrams per kilogram
ND = Not detected at the reporting limit

Table 2
Excavation Samples

November 24, 2008

Constituents	Excavation Sampling Locations			
	N	S	M	F
	North Side	South Side	Middle	Floor
Moisture ((%)	4.55	8.54	7.98	8.28
Chloride (mg/Kg)	ND	1,180	278	350
Total Petroleum Hyrdocarbons (mg/Kg)				
DRO	6.1	ND	4,200	1,600
GRO	ND	ND	440	92
Total	6.1	ND	4,640	1,692
Volatile Organic Compounds (mg/Kg)				
Benzene	ND	ND	0.59J	ND
Ethylbenzene	ND	ND	20.00	ND
Toluene	ND	ND	5.20	ND
Xylenes, Total	ND	ND	28.20	0.098
BTEX, Total	ND	ND	53.99	0.098

DRO = Diesel range hydrocarbons
GRO = Gasoline range hydrocarbons
% = Percent
mg/Kg = Milligrams per kilogram
ND = Not detected at the reporting limit
J = Estimated value between Method Detection Limit and Practical Quantitation Limit

Soil data (Table 1) in borings BS 1 and -2 indicate the stringer ended before reaching these locations.
To successfully remove the remaining material, ConocoPhillips would have to move the pipeline to the west at an estimated cost of $48,000. Production lost is estimated at 2,250 barrels of oil (5 days of down time $40 a barrel) revenue lost $90,000 or more.
Approximately 50 - 100 cubic yards (cy) of affected soil remain around the pipeline. Approximately 11,000 cy of material has been excavated from the playa and adjacent land. To keep the line in-place and safeguard groundwater, we suggest sufficient soil be removed from adjacent to and below the line to allow laying a geo-membrane below the line. Once completed, the area would be backfilled with clean material and re-vegetated.
We request your review of the information presented and approval of this approach. If you have any questions, concerning this action please call me or Mr. Tom Wynn (ConocoPhillips, 918-661-0310).

From: Price, Wayne, EMNRD [mailto:wayne.price@state.nm.us]
Sent: Thursday, December 18, 2008 4:09 PM
To: Durrett, Charles
Cc: Wynn, Tom R
Subject: RE: ConocoPhillips Vacuum Glorieta - Question

Thank You for the up-date.

From: Durrett, Charles [mailto:cdurrett@tetratech.com]
Sent: Thursday, December 18, 2008 2:34 PM
To: Price, Wayne, EMNRD
Cc: Wynn, Tom R
Subject: FW: ConocoPhillips Vacuum Glorieta - Question

Wayne, ConocoPhillips Pipe Line and ConocoPhillips E&P are working together to determine the cost to move the line. We are planning a North - South trench on the West side of the pipeline to ensure the re-located line will be outside the affected area. This will be completed early in 2009.

With this pending activity we will not be able to complete a written report to you in the timeframe you requested (report within 60 days).

From: Durrett, Charles
Sent: Wednesday, December 03, 2008 4:00 PM
To: 'Price, Wayne, EMNRD'
Cc: Tom.R.Wynn@conocophillips.com; John.W.Gates@conocophillips.com
Subject: RE: ConocoPhillips Vacuum Glorieta - Question

The 4" steel pipeline is owned by ConocoPhillips Pipe Line Co. and runs at 80 psi. It's a crude oil line.

One photo is worth a thousand words.

From: Price, Wayne, EMNRD [mailto:wayne.price@state.nm.us]
Sent: Wednesday, December 03, 2008 3:30 PM
To: Durrett, Charles
Cc: Tom.R.Wynn@conocophillips.com; John.W.Gates@conocophillips.com
Subject: RE: ConocoPhillips Vacuum Glorieta - Question

I agree safety first. However, You need to find out who, what and where about the line before we make any long term decisions.
Please investigate. It might be that you can have it moved

From: Durrett, Charles [mailto:cdurrett@tetratech.com]
Sent: Wednesday, December 03, 2008 12:59 PM
To: Price, Wayne, EMNRD
Cc: Tom.R.Wynn@conocophillips.com; Gates, John W [John.W.Gates@conocophillips.com]
Subject: ConocoPhillips Vacuum Glorieta - Question

Wayne, we've run into a bit of a problem. We're facing a N-S buried gas pipeline 4' in front of the advancing excavation. Owing to safety concerns, we have stopped excavation. Approximately 1,400 cy of affected material has been removed during this event. I suggest no further excavation and go forward with remediation. Do you agree with this approach?

ConocoPhillips
East Vacuum Glorieta, East Tank Battery Playa
Soil Analysis
24-Nov-08

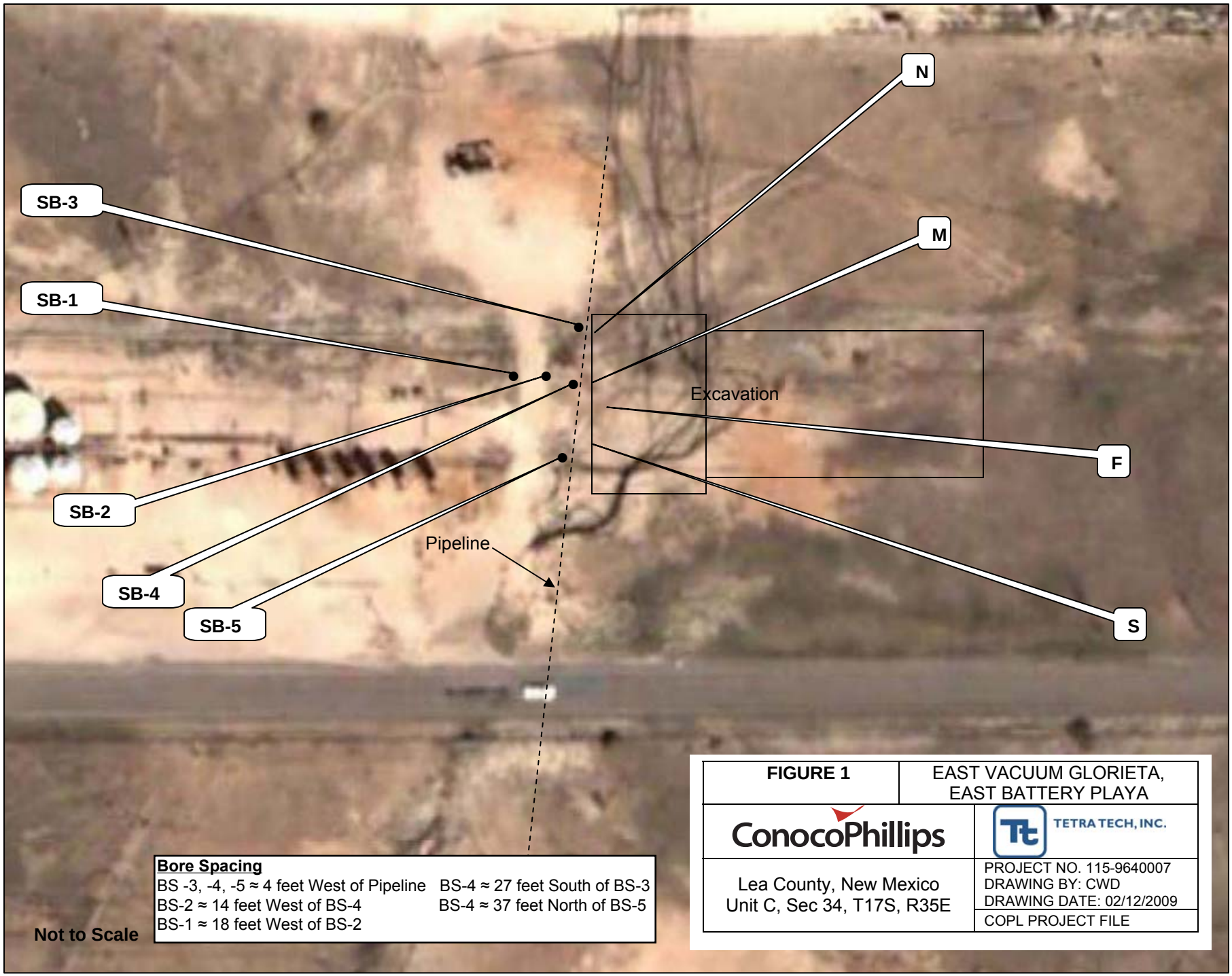
Constituents	Excavation Sampling Locations			
	N	S	M	F
	North Side	South Side	Middle	Floor
Moisture ((%)	4.55	8.54	7.98	8.28
Chloride (mg/Kg)	ND	1,180	278	350
Total Petroleum Hydrocarbons				

(mg/Kg)				
DRO	6.1	ND	4,200	1,600
GRO	ND	ND	440	92
Total	6.1	ND	4,640	1,692
Volatile Organic Compounds (mg/Kg)				
Benzene	ND	ND	0.59J	ND
Ethylbenzene	ND	ND	20.00	ND
Toluene	ND	ND	5.20	ND
Xylenes, Total	ND	ND	28.20	0.098
BTEX, Total	ND	ND	53.99	0.098

DRO = Diesel range hydrocarbons
GRO = Gasoline range hydrocarbons
% = Percent
mg/Kg = Milligrams per kilogram
ND = Not detected at the reporting limit
J = Estimated value between Method Detection Limit and Practical Quantitation Limit

Charles Durrett | **Project Manager II**
Main: 432.686.8081 | Fax: 432.682.3946
charles.durrett@tetratech.com

This inbound email has been scanned by the MessageLabs Email Security System.



Bore Spacing

BS -3, -4, -5 ≈ 4 feet West of Pipeline
BS-2 ≈ 14 feet West of BS-4
BS-1 ≈ 18 feet West of BS-2
BS-4 ≈ 27 feet South of BS-3
BS-4 ≈ 37 feet North of BS-5

Not to Scale

FIGURE 1	EAST VACUUM GLORIETA, EAST BATTERY PLAYA
ConocoPhillips	TETRA TECH, INC.
Lea County, New Mexico Unit C, Sec 34, T17S, R35E	PROJECT NO. 115-9640007 DRAWING BY: CWD DRAWING DATE: 02/12/2009
	COPL PROJECT FILE

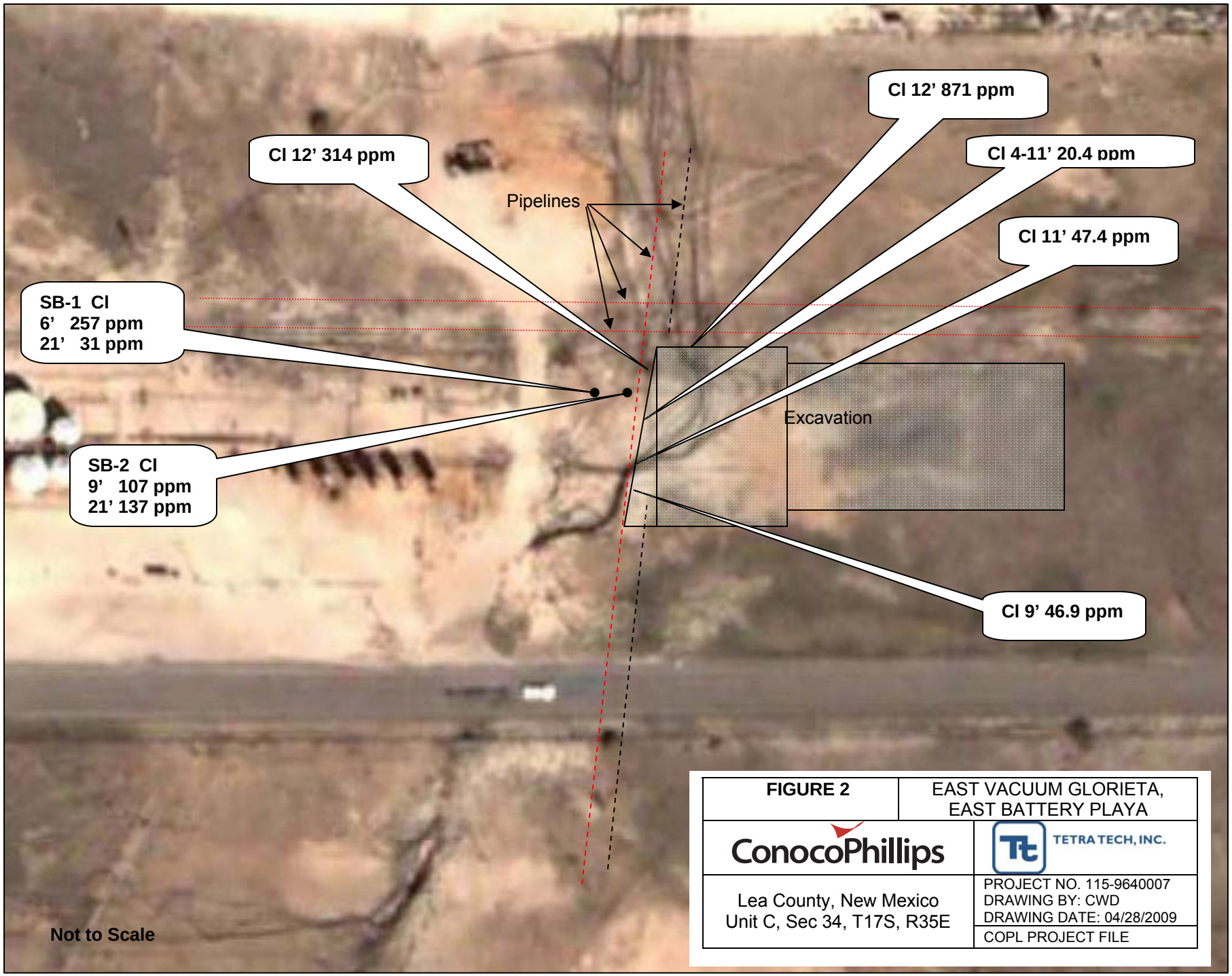


FIGURE 2	EAST VACUUM GLORIETA, EAST BATTERY PLAYA
ConocoPhillips	TETRA TECH, INC.
Lea County, New Mexico Unit C, Sec 34, T17S, R35E	PROJECT NO. 115-9640007 DRAWING BY: CWD DRAWING DATE: 04/28/2009
	COPL PROJECT FILE