3R - 432

SEP 2010 QUARTERLY GWMR

02/02/2011

TETRA TECH, INC.

6121 Indian School Rd. NE Suite 200
Albuquerque, NM 87110
(505) 237-8440

February 2, 2011

Mr. Glenn von Gonten
State of New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: ConocoPhillips Company Charles et al. No. 1 - Groundwater Monitoring Report, San Juan County, New Mexico

Dear Mr. von Gonten:

Enclosed please find one copy of the above-referenced document as compiled by Tetra Tech, Inc., for this San Juan County site.

Please do not hesitate to contact me at (505) 237-8440 if you have any questions or require additional information.

Sincerely,

Kelly E. Blanchard

Kelly E. Blanchard
Project Manager/Geologist

Cc: Terry Lauck, ConocoPhillips (electronic only)
Steve Austin, Navajo Nation EPA

Enclosures (1)

3R432

SEPTEMBER 2010 QUARTERLY GROUNDWATER MONITORING REPORT

CONOCOPHILLIPS COMPANY

CHARLES ET AL. NO. 1
NATURAL GAS PRODUCTION SITE
SAN JUAN COUNTY, NEW MEXICO

API # 30-045-06623

Prepared for:

ConocoPhillips

Risk Management and Remediation
420 South Keeler Avenue
Bartlesville, OK 74004

Prepared by:

TETRA TECH, INC.

6121 Indian School Rd. NE, Suite 200
Albuquerque, NM 87110
Tetra Tech Project No. 114-690155

January 2011

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SEPTEMBER 2010 QUARTERLY GROUNDWATER MONITORING REPORT CHARLES ET AL. NO.1, SAN JUAN COUNTY, NEW MEXICO

1.0 INTRODUCTION

This report discusses the groundwater sampling event performed by Tetra Tech, Inc. (Tetra Tech) on September 21, 2010 at the ConocoPhillips Company Charles et al. No. 1 remediation site located near the Angel Peak area of northwestern New Mexico (Site). The Site is situated on Navajo Nation land in Section 12, Township 27N, Range 9W, of San Juan County, New Mexico. A site location map and detail map are included as **Figures 1** and **2**, respectively.

1.1 Site Background

The historical timeline for the Site is summarized below, and is also presented in **Table 1**.

The Charles et al. No. 1 natural gas production well was spudded in April 1965 by the Austral Oil Company of Houston, TX. Operatorship of the well was transferred several times before a subsidiary of Burlington Resources became the operator in August 1992. The well was abandoned shortly thereafter due to low production. The well was recompleted and production was restored on May 20, 2003. ConocoPhillips acquired Burlington Resources on March 30, 2006.

A ConocoPhillips employee discovered an area of dead vegetation approximately 100 feet from the Blanco Wash while investigating a pipeline release on June 23, 2008 (**Figure 2**). ConocoPhillips reported the release to the NMOCD by phone and E-mail on June 24, 2008 and followed-up with submittal of a Form C-141 to NMOCD on June 30, 2008. Envirotech, Inc. (Envirotech) advanced several soil borings and installed seven piezometer/monitor wells using a hand auger between the dates of June 25 and 26, 2008. Solar-powered soil vapor extraction (SVE) equipment was installed over Monitor Well MW-1 on August 14, 2008 to facilitate the remediation of the area (Envirotech, 2009).

Envirotech conducted quarterly groundwater sampling events beginning June 25, 2008; and recommended discontinuing sampling Monitor Wells MW-5, MW-6, and MW-7 in March 2009. Tetra Tech began monitoring the Charles et al. No. 1 remediation site in March, 2010. This report represents the third round of monitoring conducted by Tetra Tech at the Site.

2.0 MONITORING SUMMARY, SAMPLING METHODOLOGY, AND RESULTS

2.1 Monitoring Summary

A groundwater sampling event was conducted at the Site on September 21, 2010. Prior to collection of groundwater samples from Monitor Wells MW-1, MW-2, MW-3 and MW-4, depth to groundwater was

measured in all Site monitor wells using a dual interface probe (**Table 2**). A groundwater elevation map reflecting September 21, 2010 groundwater elevations is presented as **Figure 3**. A historical groundwater elevation summary is included in **Table 2**.

2.2 Groundwater Sampling Methodology

During the September 21, 2010 groundwater monitoring event, Monitor Wells MW-1, MW-2, MW-3, and MW-4 were purged of at least 3 casing volumes of groundwater using a 1.5-inch diameter, polyethylene dedicated bailer. While bailing Monitor Wells MW-2, MW-3, and MW-4, groundwater parameters were collected using a YSI 556 multi-parameter sonde and results were recorded on a Tetra Tech Water Sampling Field Form (**Appendix A**). Parameters were not collected on Monitor Well MW-1 due to a light non-aqueous phase liquid (LNAPL) sheen present in purge water. Groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped under chain-of-custody documentation to Southern Petroleum Laboratory (SPL) of Houston, Texas. September 2010 groundwater samples were analyzed for BTEX by EPA Method 8260B (**Table 3**). The Laboratory analytical report is included as **Appendix B**.

2.3 Groundwater Sampling Analytical Results

The Navajo Nation Environmental Protection Agency (NNEPA) has not established groundwater quality standards; however drinking water quality on Navajo Nation land is mandated in Part II the Navajo Nation Primary Drinking Water Regulations (NNPDWR). Drinking water quality standards have been set for the protection of human health, domestic water supply, and irrigation use. Exceedences of NNPDWR water quality standards in Site monitoring wells are discussed below.

- **Benzene**
  - The NNPDWR drinking water quality standard for benzene is 5 µg/L. The laboratory analysis of groundwater samples collected from Monitor Well MW-1 revealed a concentration of 2,300 µg/L.
- **Toluene**
  - The NNPDWR drinking water quality standard for toluene is 1000 µg/L. The laboratory analysis of groundwater samples collected from Monitor Well MW-1 revealed a concentration of 1,100 µg/L.

The corresponding laboratory analytical report for the September 2010 groundwater sampling event is included as **Appendix B**. A historical laboratory analytical summary is available as **Table 3**. A Site map showing the concentration of benzene present in groundwater is included as **Figure 4**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Groundwater samples collected from MW-1 have continually exceeded NNPDWR groundwater quality standards for benzene constituents from June 2008 to September 2010. Monitoring Well MW-1 was also found to exceed NNPDWR groundwater quality standards for toluene in September of 2010. Based on the

historical groundwater quality data, groundwater samples collected from MW-3 and MW-4 have never exceeded NNPDWR groundwater quality standards for BTEX constituents during sampling conducted from June 2008 to September 2010.

Tetra Tech recommends continued quarterly groundwater sampling at the Site in order to provide sufficient data for Site closure. Site closure will be requested when groundwater analytical results indicate that all constituents of concern are consistently below NNPDWR drinking water quality standards. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

4.0 REFERENCES

Envirotech Incorporated (2009). *June 2009 Groundwater Monitoring Report.* Prepared for ConocoPhillips. Report Dated August 2009.

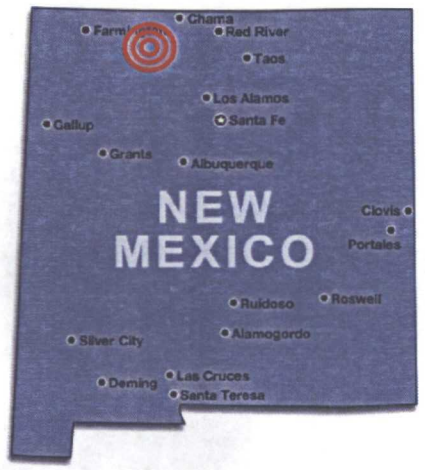
State of New Mexico Energy Minerals and Natural Resources Form C-141 (2003). *Release Notification and Corrective Action.* Dated June 30, 2008.

FIGURES

1. Site Location Map
2. Site Detail Map
3. Groundwater Elevation Contour Map – September 2010
4. Benzene Concentration Contour Map – September 2010

FIGURE 1.

Site Location Map
ConocoPhillips
Company
Charles et al. No. 1
San Juan County, NM



ConocoPhillips Company
Charles et al. No. 1
Remediation Site Location

Latitude: 36.58643° N
Longitude: -107.73593° W

N

TETRA TECH, INC.

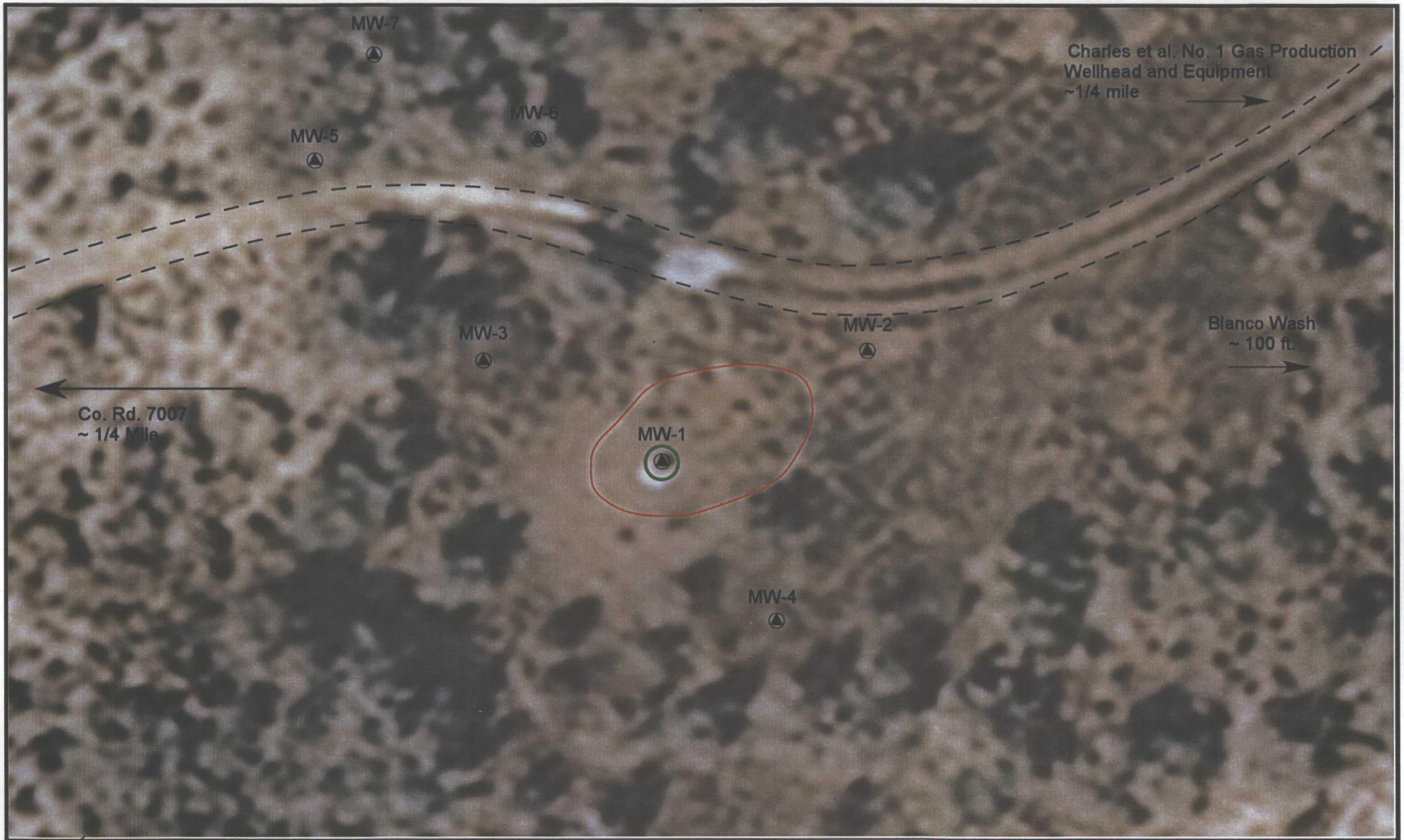


FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
Charles et al. No. 1
GAS PRODUCTION WELL
Sec 12, T27N, R9W
San Juan County, New Mexico

LEGEND

- MONITORING WELL
- SOLAR POWERED SVE EQUIPMENT
- ACCESS ROAD
- APPROXIMATE AREA OF DEAD VEGETATION IN JUNE 2008

NOT TO SCALE

N

TETRA TECH, INC.

FIGURE 3:
GROUNDWATER ELEVATION MAP
SEPTEMBER 2010
CONOCOPHILLIPS COMPANY
Charles et al. No. 1
GAS PRODUCTION WELL
Sec 12, T27N, R9W
San Juan County, New Mexico

LEGEND

- MONITORING WELL
- SOLAR POWERED SVE EQUIPMENT
- ACCESS ROAD
- GROUNDWATER ELEVATION CONTOUR LINE (DASHED WHERE INFERRED)
- APPROXIMATE AREA OF DEAD VEGETATION IN JUNE 2008

NOT TO SCALE

N

TETRA TECH, INC.

FIGURE 4:
BENZENE CONCENTRATION MAP
SEPTEMBER 2010
CONOCOPHILLIPS COMPANY
Charles et al. No. 1
GAS PRODUCTION WELL
Sec 12, T27N, R9W
San Juan County, New Mexico

LEGEND

- MONITORING WELL
- SOLAR POWERED SVE EQUIPMENT
- ACCESS ROAD
- BENZENE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- APPROXIMATE AREA OF DEAD VEGETATION IN JUNE 2008

NOT TO SCALE

N

TETRA TECH, INC.

TABLES

Table 1. ConocoPhillips Company, Charles et al. No. 1 - Site History Timeline

DATE	ACTIVITY
April 12, 1965	Well spudded by Austral Oil Company Inc.
March 30, 1978	Change in operatorship to the Superior Oil Company.
September 1, 1986	Change in operatorship to Mobil Producing TX and NM Inc.
August 1, 1992	Change in operatorship to Meridian Oil Inc, a subsidiary of Burlington Resources.
August 1, 2001	Burlington Resources abandons well due to low production.
May 20, 2003	The Charles et al. No. 1 natural gas Well returned to production.
March 31, 2006	ConocoPhillips acquired Burlington Resources.
June 23, 2008	A release was discovered from the pipe running from the wellhead to the meter house; upon walking the pipeline, an area of dead vegetation was also discovered approximately 100 feet from Blanco Wash.
June 24, 2008	ConocoPhillips reported the release to the New Mexico Oil Conservation Division (NMOCD) via phone and email.
June 25-26, 2008	Envirotech, Inc. of Farmington, NM advances several soil borings and installed piezometers using a hand auger to determine the extent of impact (Envirotech, 2009). Envirotech also installed Monitoring Wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, and MW-7; and obtained water level measurements and samples from all of the wells.
August 14, 2008	Envirotech, Inc. installed solar-powered Soil Vapor Extraction (SVE) equipment over the existing Monitor Well, MW-1; and obtained water level measurements and samples from all of the wells.
October 2, 2008	Envirotech, Inc. completed the third round of groundwater sampling.
January 13, 2009	Envirotech, Inc. completed the fourth round of groundwater sampling.
March 23, 2009	Envirotech, Inc. completed the fifth round of groundwater sampling and recommended sampling only Monitor Wells MW-1, MW-2, MW-3, and MW-4.
June 29, 2009	Envirotech, Inc. completed the sixth round of groundwater sampling and recommended drilling additional monitoring wells down-gradient of MW-2.
March 30, 2010	Tetra Tech, Inc. completed the seventh round of groundwater sampling.
June 11, 2010	Tetra Tech, Inc. completed the eighth round of groundwater sampling.
September 21, 2010	Tetra Tech, Inc. completed the ninth round of groundwater sampling.

Table 2. ConocoPhillips Company, Charles et al. No. 1 - Groundwater Elevation Summary

Monitor Well	TOC Elevation* (ft AMSL)	Sample Date	Depth to Water (ft)	GW Elevation (ft AMSL)
MW-1	5917.87	6/25/2008	4.71	5913.16
		8/14/2008	5.21	5912.66
	5917.05	10/2/2008	5.13	5911.92
		1/13/2009	4.41	5912.64
		3/23/2009	3.01	5914.04
		6/29/2009	2.12	5914.93
		3/30/2010	2.68	5914.37
		6/11/2010	4.74	5912.31
		9/21/2010	5.52	5911.53
MW-2	5917.33	6/25/2008	4.66	5912.67
		8/14/2008	5.35	5911.98
	5916.53	10/2/2008	5.12	5911.41
		1/13/2009	3.15	5913.38
		3/23/2009	2.65	5913.88
		6/29/2009	4.20	5912.33
		3/30/2010	2.57	5913.96
		6/11/2010	4.63	5911.90
		9/21/2010	5.53	5911.00
MW-3	5920.57	6/25/2008	7.16	5913.41
		8/14/2008	8.86	5911.71
	5919.8	10/2/2008	7.63	5912.17
		1/13/2009	5.56	5914.24
		3/23/2009	5.56	5914.24
		6/29/2009	1.10	5918.70
		3/30/2010	5.38	5914.42
		6/11/2010	7.44	5912.36
		9/21/2010	8.22	5911.58
MW-4	5920.48	6/25/2008	4.27	5916.21
		8/14/2008	7.89	5912.59
	5919.69	10/2/2008	7.73	5911.96
		1/13/2009	5.94	5913.75
		3/23/2009	5.64	5914.05
		6/29/2009	6.84	5912.85
		3/30/2010	5.40	5914.29
		6/11/2010	7.23	5912.46
		9/21/2010	8.17	5911.52
MW-5	5923.63	6/26/2008	8.23	5915.4
		8/14/2008	8.68	5914.95
	5921.55	10/2/2008	8.70	5912.85
		1/13/2009	6.96	5914.59
		3/23/2009	6.58	5914.97
		6/29/2009	4.10	5917.45
		3/30/2010	NM	NA
		6/11/2010	8.20	5913.35
		9/21/2010	9.25	5912.30

Table 2. ConocoPhillips Company, Charles et al. No. 1 - Groundwater Elevation Summary

Monitor Well	TOC Elevation* (ft AMSL)	Sample Date	Depth to Water (ft)	GW Elevation (ft AMSL)
MW-6	5920.68	6/26/2008	6.75	5913.93
		8/14/2008	6.97	5913.71
	5918.64	10/2/2008	6.83	5911.81
		1/13/2009	4.89	5913.75
		3/23/2009	4.12	5914.52
		6/29/2009	1.80	5916.84
		3/30/2010	NM	NA
		6/11/2010	6.63	5912.01
		9/21/2010	7.41	5911.23
MW-7	5920.75	6/26/2008	6.32	5914.43
		8/14/2008	7.17	5913.58
	5918.74	10/2/2008	6.42	5912.32
		1/13/2009	NM	NA
		3/23/2009	4.67	5914.07
		6/29/2009	1.56	5917.18
		3/30/2010	NM	NA
		6/11/2010	NM	NA
		9/21/2010	NM	NA

Explanation

ft = feet
AMSL = Above mean sea level
DTW = Depth to water
NA = Not available
NM = Not measured
* Elevation Measurements obtained from 2009 Envirotech investigation
Note: Measurements between 6/25/2008 and 6/29/2009 obtained by Envirotech, Inc.

Table 3. ConocoPhillips Company, Charles et al. No. 1 - Groundwater Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
MW-1	6/25/2008	**1850**	486	**971**	379
	9/25/2008	**575**	660	293	1547
	1/13/2009	**494**	581	474	3572
	3/23/2009	**210**	311	378	1418
	6/29/2009	**839**	107	674	3404
	3/30/2010	**480**	110	250	1573
	6/11/2010	**3,200**	450	690	4,510
	9/21/2010	**2,300**	**1100**	620	4,840
MW-2	6/25/2008	4.2	4.6	1.6	1.1
	9/25/2008	19.5	25.8	5.1	100.8
	1/13/2009	2.1	2	2.2	28.1
	3/23/2009	1.4	0.4	0.6	7.3
	6/29/2009	1.5	ND	0.2	0.4
	3/30/2010	< 1.0	< 1.0	< 1.0	< 1.0
	6/11/2010	< 1.0	< 1.0	< 1.0	< 1.0
	9/21/2010	< 1.0	< 1.0	< 1.0	< 1.0
MW-3	6/25/2008	ND	ND	ND	ND
	9/25/2008	ND	2.3	0.9	12.1
	1/13/2009	ND	ND	ND	ND
	3/23/2009	ND	0.2	0.2	1.4
	6/29/2009	ND	1.7	0.7	8.2
	3/30/2010	< 1.0	< 1.0	< 1.0	< 1.0
	6/11/2010	< 1.0	< 1.0	< 1.0	< 1.0
	9/21/2010	<1.0	<1.0	<1.0	<1.0
MW-4	6/25/2008	3.8	19.9	1.4	7
	9/25/2008	ND	ND	ND	ND
	1/13/2009	ND	ND	ND	ND
	3/23/2009	ND	ND	ND	ND
	6/29/2009	ND	ND	0.2	2.9
	3/30/2010	< 1.0	< 1.0	< 1.0	< 1.0
	6/11/2010	< 1.0	< 1.0	< 1.0	< 1.0
	9/21/2010	<1.0	<1.0	<1.0	<1.0
MW-5	6/26/2008	ND	ND	ND	ND
	9/25/2008	ND	ND	ND	ND
	1/13/2009	ND	ND	ND	ND
	3/23/2009	ND	ND	ND	ND
	6/29/2009	NS	NS	NS	NS
	3/30/2010	NS	NS	NS	NS
	6/11/2010	NS	NS	NS	NS
	9/21/2010	NS	NS	NS	NS

Table 3. ConocoPhillips Company, Charles et al. No. 1 - Groundwater Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
MW-6	6/26/2008	ND	ND	ND	ND
	9/25/2008	ND	ND	ND	ND
	1/13/2009	ND	ND	ND	ND
	3/23/2009	ND	ND	ND	ND
	6/29/2009	NS	NS	NS	NS
	3/30/2010	NS	NS	NS	NS
	6/11/2010	NS	NS	NS	NS
	9/21/2010	NS	NS	NS	NS
MW-7	6/26/2008	ND	ND	ND	ND
	9/25/2008	ND	ND	ND	ND
	1/13/2009	NS	NS	NS	NS
	3/23/2009	ND	ND	ND	ND
	6/29/2009	NS	NS	NS	NS
	3/30/2010	NS	NS	NS	NS
	6/11/2010	NS	NS	NS	NS
	9/21/2010	NS	NS	NS	NS
NNEPA Standards		**5 (µg/L)**	**1000 (µg/L)**	**700 (µg/L)**	**10,000 (µg/L)**

Explanation
ND = Not Detected
NS = Not Sampled
NNEPA = Navajo Nation Environmental Protection Agency
mg/L = milligrams per liter (parts per million)
µg/L = micrograms per liter (parts per billion)
< 1.0= Below laboratory detection limit of 1.0 ug/L
Bold = concentrations that exceed the NNEPA limits

Note: Analytes sampled between 6/25/2008 and 6/29/2009 obtained by Envirotech, Inc.

APPENDICES

APPENDIX A

September 2010 Quarterly Groundwater Sampling Field Forms

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Charles Et Al #1 Page 1 of 4

Project No.

Site Location San Juan County, NM

Site/Well No. MW-1 Coded/ Replicate No. 1550 Date 9.21.10

Weather Sunny, partly cloudy, hot Time Sampling Began Time Sampling Completed 1545

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation

Total Sounded Depth of Well Below MP 7.17 Water-Level Elevation

Held Depth to Water Below MP 5.52 Diameter of Casing 2"

Wet Water Column in Well 1.6 Gallons Pumped/Bailed Prior to Sampling 1 bailer fulls due to low volume

Gallons per Foot 0.16

Gallons in Well .256 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer X3 = .768

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)

Sampling Equipment Purge Pump/Bailer No parameters due to low well volume. Sheen

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl

Remarks Water is black with strong hydrocarbon odor and sheen w/sediment.

Sampling Personnel Caleb Brown & Christine Mathews

Well Casing Volumes

Gal./ft.							
	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3" ½ = 0.50	6" = 1.46

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Charles Et Al #1 Page 2 of 4

ject No.

Site Location Angel Peak area, San Juan County, NM

Site/Well No. MW-2 Coded/ Replicate No. Date 9.21.10

Weather Sunny, partly cloudy, hot Time Sampling Began 1625 Time Sampling Completed 1635

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation

Total Sounded Depth of Well Below MP 7.46 Water-Level Elevation

Held Depth to Water Below MP 5.53 Diameter of Casing 2"

Wet Water Column in Well 1.93 Gallons Pumped/Bailed Prior to Sampling 1 bailer full due to low well volume

Gallons per Foot 0.16

Gallons in Well .308 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer X3 = .9264

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)

Sampling Equipment Purge Pump/Bailer No parameters due to low well volume

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl

Remarks H_2O is black with sediment & bio odor

Sampling Personnel Cassie Brown and Christine Mathews

Well Casing Volumes

Gal./ft.							
	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3" ½ = 0.50	6" = 1.46

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Charles Et Al #1 Page 3 of 4

Project No.

Site Location Angel Peak area ~~Bloomfield NM~~ San Juan County, NM

Site/Well No. MW-3 Coded/ Replicate No. Date 9.21.10

Weather Sunny, partly Cloudy, hot Time Sampling Began 1620 Time Sampling Completed 1625

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation

Total Sounded Depth of Well Below MP 10.91 Water-Level Elevation

Held Depth to Water Below MP 8.22 Diameter of Casing 2"

Wet Water Column in Well 2.19 Gallons Pumped/Bailed Prior to Sampling 1 bailer full due to low well volume

Gallons per Foot 0.16

Gallons in Well .350 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer X3 = 1.05

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)

Sampling Equipment Purge Pump/Bailer No parameters taken due to low well volume.

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl

Remarks

Sampling Personnel Calen Brown & Christine Mathews

Well Casing Volumes

Gal./ft.							
	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3" ½ = 0.50	6" = 1.46

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Charles Et Al #1 Page 4 of 4

Project No.

Site Location Angel Peak area ~~Bloomfield NM~~ San Juan County, NM

Site/Well No. MW-4 Coded/ Replicate No. Date 9-21-10

Weather Sunny partly Cloudy, hot Time Sampling Began 1605 Time Sampling Completed 1615

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation

Total Sounded Depth of Well Below MP 10.38 Water-Level Elevation

Held Depth to Water Below MP 8.17 Diameter of Casing 2"

Wet Water Column in Well 2.21 Gallons Pumped/Bailed Prior to Sampling 1 bailer full due to low well volume

Gallons per Foot 0.16

Gallons in Well .354 X3 = 1.061 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)

Sampling Equipment Purge Pump/Bailer No parameters due to low well volume

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl

Remarks water is black with sediment & bio odor

Sampling Personnel Cassie Braun & Christine Mathews

Well Casing Volumes

Gal./ft.							
	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3" ½ = 0.50	6" = 1.46

APPENDIX B

September 2010 Quarterly Groundwater Laboratory Analytical Report

SPL Inc.
8880 Interchange Drive
Houston, TX 77054
Phone: (713) 660-0901
Fax: (713) 660-8975

Certificate of Analysis

October 7, 2010

Workorder: H10090580

Kelly Blanchard
Tetra Tech
6121 Indian School Road NE
Suite 200
Albuquerque, NM 87110

Project: COP - Charles Et Al No. 1

Project Number: COP - Charles Et Al No. 1

Site: COP - Charles Et Al No. 1, San Juan County, NM

PO Number: ENFOS

NELAC Cert. No.: T104704205-09-3

This Report Contains A Total Of 16 Pages

Excluding Any Attachments

SPL Inc.
8880 Interchange Drive
Houston, TX 77054
Phone: (713) 660-0901
Fax: (713) 660-8975

Certificate of Analysis

October 7, 2010

Workorder: H10090580

Kelly Blanchard
Tetra Tech
6121 Indian School Road NE
Suite 200
Albuquerque, NM 87110

Project: COP - Charles Et Al No. 1

Project Number: COP - Charles Et Al No. 1

Site: COP - Charles Et Al No. 1, San Juan County, NM

PO Number: ENFOS

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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.

There were no exceptions noted.

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.

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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.

Erica Cardenas, Senior Project Manager

Enclosures

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SAMPLE SUMMARY

Workorder: H10090580 : COP - Charles Et Al No. 1 | Project Number: COP - Charles Et Al No. 1

Lab ID	Sample ID	Matrix	COC ID	Date/Time Collected	Date/Time Received
H10090580001	MW-1	Water		9/21/2010 15:45	9/23/2010 09:00
H10090580002	MW-2	Water		9/21/2010 16:30	9/23/2010 09:00
H10090580003	MW-3	Water		9/21/2010 16:25	9/23/2010 09:00
H10090580004	MW-4	Water		9/21/2010 16:15	9/23/2010 09:00
H10090580005	Trip Blank	Water		9/22/2010 13:45	9/23/2010 09:00
H10090580006	Duplicate	Water		9/21/2010 15:50	9/23/2010 09:00

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ANALYTICAL RESULTS

Workorder: H10090580 : COP - Charles Et Al No. 1 Project Number: COP - Charles Et Al No. 1

Lab ID: **H10090580001** Date/Time Received: 9/23/2010 09:00 Matrix: Water

Sample ID: **MW-1** Date/Time Collected: 9/21/2010 15:45

VOLATILES

Analysis Desc: SW-846 8260B SW-846 5030Analytical Batches:

Batch: 2675 SW-846 8260B on 09/30/2010 12:08 by LKT

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	2300		25	3.2	25			2675
Ethylbenzene	620		25	12	25			2675
Toluene	1100		25	3.4	25			2675
m,p-Xylene	4000		25	14	25			2675
o-Xylene	840		25	8.6	25			2675
Xylenes, Total	4840		25	8.6	25			2675
4-Bromofluorobenzene (S)	117 %		74-125		25			2675
1,2-Dichloroethane-d4 (S)	103 %		70-130		25			2675
Toluene-d8 (S)	104 %		82-118		25			2675

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ANALYTICAL RESULTS

Workorder: H10090580 : COP - Charles Et Al No. 1 | Project Number: COP - Charles Et Al No. 1

Lab ID: **H10090580002** | Date/Time Received: 9/23/2010 09:00 | Matrix: Water

Sample ID: **MW-2** | Date/Time Collected: 9/21/2010 16:30

VOLATILES

Analysis Desc: SW-846 8260B | SW-846 5030Analytical Batches:

Batch: 2675 SW-846 8260B on 09/30/2010 19:17 by LKT

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.13	1			2675
Ethylbenzene	ND		1.0	0.48	1			2675
Toluene	ND		1.0	0.13	1			2675
m,p-Xylene	ND		1.0	0.58	1			2675
o-Xylene	ND		1.0	0.35	1			2675
Xylenes, Total	ND		1.0	0.35	1			2675
4-Bromofluorobenzene (S)	102 %		74-125		1			2675
1,2-Dichloroethane-d4 (S)	100 %		70-130		1			2675
Toluene-d8 (S)	91 %		82-118		1			2675

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ANALYTICAL RESULTS

Workorder: H10090580 : COP - Charles Et Al No. 1 | Project Number: COP - Charles Et Al No. 1

Lab ID: **H10090580003** | Date/Time Received: 9/23/2010 09:00 | Matrix: Water

Sample ID: **MW-3** | Date/Time Collected: 9/21/2010 16:25

VOLATILES

Analysis Desc: SW-846 8260B | SW-846 5030Analytical Batches:

Batch: 2675 SW-846 8260B on 09/30/2010 19:48 by LKT

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.13	1			2675
Ethylbenzene	ND		1.0	0.48	1			2675
Toluene	ND		1.0	0.13	1			2675
m,p-Xylene	ND		1.0	0.58	1			2675
o-Xylene	ND		1.0	0.35	1			2675
Xylenes, Total	ND		1.0	0.35	1			2675
4-Bromofluorobenzene (S)	108 %		74-125		1			2675
1,2-Dichloroethane-d4 (S)	103 %		70-130		1			2675
Toluene-d8 (S)	104 %		82-118		1			2675

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ANALYTICAL RESULTS

Workorder: H10090580 : COP - Charles Et Al No. 1 Project Number: COP - Charles Et Al No. 1

Lab ID: **H10090580004** Date/Time Received: 9/23/2010 09:00 Matrix: Water

Sample ID: **MW-4** Date/Time Collected: 9/21/2010 16:15

VOLATILES

Analysis Desc: SW-846 8260B SW-846 5030Analytical Batches:

Batch: 2685 SW-846 8260B on 10/01/2010 15:28 by LKT

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.13	1			2685
Ethylbenzene	ND		1.0	0.48	1			2685
Toluene	ND		1.0	0.13	1			2685
m,p-Xylene	ND		1.0	0.58	1			2685
o-Xylene	ND		1.0	0.35	1			2685
Xylenes, Total	ND		1.0	0.35	1			2685
4-Bromofluorobenzene (S)	96.7 %		74-125		1			2685
1,2-Dichloroethane-d4 (S)	81.8 %		70-130		1			2685
Toluene-d8 (S)	99.8 %		82-118		1			2685

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ANALYTICAL RESULTS

Workorder: H10090580 : COP - Charles Et Al No. 1 Project Number: COP - Charles Et Al No. 1

Lab ID: **H10090580005** Date/Time Received: 9/23/2010 09:00 Matrix: Water

Sample ID: **Trip Blank** Date/Time Collected: 9/22/2010 13:45

VOLATILES

Analysis Desc: SW-846 8260B SW-846 5030Analytical Batches:
Batch: 2675 SW-846 8260B on 09/30/2010 15:43 by LKT

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.13	1			2675
Ethylbenzene	ND		1.0	0.48	1			2675
Toluene	ND		1.0	0.13	1			2675
m,p-Xylene	ND		1.0	0.58	1			2675
o-Xylene	ND		1.0	0.35	1			2675
Xylenes, Total	ND		1.0	0.35	1			2675
4-Bromofluorobenzene (S)	107 %		74-125		1			2675
1,2-Dichloroethane-d4 (S)	103 %		70-130		1			2675
Toluene-d8 (S)	104 %		82-118		1			2675

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ANALYTICAL RESULTS

Workorder: H10090580 : COP - Charles Et Al No. 1 Project Number: COP - Charles Et Al No. 1

Lab ID: **H10090580006** Date/Time Received: 9/23/2010 09:00 Matrix: Water

Sample ID: **Duplicate** Date/Time Collected: 9/21/2010 15:50

VOLATILES

Analysis Desc: SW-846 8260B SW-846 5030Analytical Batches

Batch: 2675 SW-846 8260B on 09/30/2010 12:39 by LKT

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	2900		25	3.2	25			2675
Ethylbenzene	660		25	12	25			2675
Toluene	810		25	3.4	25			2675
m,p-Xylene	3600		25	14	25			2675
o-Xylene	760		25	8.6	25			2675
Xylenes, Total	4360		25	8.6	25			2675
4-Bromofluorobenzene (S)	107 %		74-125		25			2675
1,2-Dichloroethane-d4 (S)	103 %		70-130		25			2675
Toluene-d8 (S)	99.7 %		82-118		25			2675

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QUALITY CONTROL DATA

Workorder: H10090580 : COP - Charles Et Al No. 1 Project Number: COP - Charles Et Al No. 1

QC Batch: MSV/2674 Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030 Preparation: 09/30/2010 00:00 by LKT

Associated Lab Samples: H10090438008 H10090508001 H10090508002 H10090508003 H10090508004 H10090508005 H10090508006 H10090580001 H10090580002 H10090580003 H10090580005 H10090580006 H10090581005 H10090624004

METHOD BLANK: 73074

Analysis Date/Time Analyst: 09/30/2010 09:59 LKT

Parameter	Units	Blank Result	Qualifiers	Reporting Limit
Benzene	ug/l	ND		1.0
Ethylbenzene	ug/l	ND		1.0
Toluene	ug/l	ND		1.0
m,p-Xylene	ug/l	ND		1.0
o-Xylene	ug/l	ND		1.0
Xylenes, Total	ug/l	ND		1.0
4-Bromofluorobenzene (S)	%	108		74-125
1,2-Dichloroethane-d4 (S)	%	103		70-130
Toluene-d8 (S)	%	101		82-118

LABORATORY CONTROL SAMPLE: 73075

Analysis Date/Time Analyst: 09/30/2010 09:29 LKT

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits
Benzene	ug/l	20	18.3	91.7	74-123
Ethylbenzene	ug/l	20	18.5	92.4	72-127
Toluene	ug/l	20	18.4	91.8	74-126
m,p-Xylene	ug/l	40	37.7	94.2	71-129
o-Xylene	ug/l	20	19.3	96.5	74-130
Xylenes, Total	ug/l	60	57.0	95.0	71-130
4-Bromofluorobenzene (S)	%			110	74-125
1,2-Dichloroethane-d4 (S)	%			96.5	70-130
Toluene-d8 (S)	%			101	82-118

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 73078 73079 Original: H10090508001

MS Analysis Date/Time Analyst: 09/30/2010 14:42 LKT

MSD Analysis Date/Time Analyst: 09/30/2010 15:13 LKT

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Benzene	ug/l	ND	20	18.4	17.2	92.0	85.9	70-124	6.9	20
Ethylbenzene	ug/l	ND	20	18.6	18.6	93.0	92.8	35-175	0.2	20

QC results presented in the QC Control Data 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. Also, MS/MSD % recoveries are calculated by the SPL LIMS using any detected value greater than the MDL.

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QUALITY CONTROL DATA

Workorder: H10090580 : COP - Charles Et Al No. 1 Project Number: COP - Charles Et Al No. 1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 73078 73079 Original: H10090508001

MS Analysis Date/Time Analyst: 09/30/2010 14:42 LKT

MSD Analysis Date/Time Analyst: 09/30/2010 15:13 LKT

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Toluene	ug/l	ND	20	18.2	17.4	91.2	87.1	70-131	4.6	20
m,p-Xylene	ug/l	ND	40	35.4	34.3	88.5	85.6	35-175	3.3	20
o-Xylene	ug/l	ND	20	19.2	18.2	96.1	91.2	35-175	5.3	20
Xylenes, Total	ug/l	ND	60	54.63	52.49	91.1	87.5	35-175	4.0	20
4-Bromofluorobenzene (S)	%	99.6				116	115	74-125		
1,2-Dichloroethane-d4 (S)	%	108				97.6	103	70-130		
Toluene-d8 (S)	%	97.9				99.7	101	82-118		

QC results presented in the QC Control Data 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. Also, MS/MSD % recoveries are calculated by the SPL LIMS using any detected value greater than the MDL.

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Legend

(S) - Indicates analyte is a surrogate

Qualifier	Qualifier Description
*	Recovery/RPD value outside QC limits
+	DCS Concentration
B	Analyte detected in the Method Blank
C	MTBE results were not confirmed by GCMS
D	Recovery out of range due to dilution
E	Results exceed calibration range
H	Exceeds holding time
I	Estimated value, between MDL and PQL (Florida)
J	Estimated value
JN	The analysis indicates the presence of an analyte
MI	Matrix Interference
N	Recovery outside of control limits
NC	Not Calculable (Sample Duplicate)
NC	Not Calculated - Sample concentration > 4 times the spike
ND	Not Detected at reporting Limits
P	Pesticide dual column results, greater then 25%
Q	Received past holding time
TNTC	Too numerous to count
U	Not Detected at reporting Limits

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: H10090580 : COP - Charles Et Al No. 1 Project Number: COP - Charles Et Al No. 1

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
H10090580001	**MW-1**	SW-846 5030	MSV/2674	SW-846 8260B	MSV/2675
H10090580002	**MW-2**	SW-846 5030	MSV/2674	SW-846 8260B	MSV/2675
H10090580003	**MW-3**	SW-846 5030	MSV/2674	SW-846 8260B	MSV/2675
H10090580005	**Trip Blank**	SW-846 5030	MSV/2674	SW-846 8260B	MSV/2675
H10090580006	**Duplicate**	SW-846 5030	MSV/2674	SW-846 8260B	MSV/2675
H10090580004	**MW-4**	SW-846 5030	MSV/2684	SW-846 8260B	MSV/2685

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Sample Receipt Checklist

WorkOrder:	H10090580	Received By	BAF
Date and Time	09/23/2010 09:00	Carrier Name:	FEDEXS
Temperature:	2.0°C	Chilled By:	Water Ice

1.	Shipping container/cooler in good condition?	YES
2.	Custody seals intact on shipping container/cooler?	YES
3.	Custody seals intact on sample bottles?	Not Present
4.	Chain of custody present?	YES
5.	Chain of custody signed when relinquished and received?	YES
6.	Chain of custody agrees with sample labels?	YES
7.	Samples in proper container/bottle?	YES
8.	Samples containers intact?	YES
9.	Sufficient sample volume for indicated test?	YES
10.	All samples received within holding time?	YES
11.	Container/Temp Blank temperature in compliance?	YES
12.	Water - VOA vials have zero headspace?	YES
13.	Water - Preservation checked upon receipt(except VOA*)?	Not Applicable

*VOA Preservation Checked After Sample Analysis

SPL Representative: Contact Date & Time:

Client Name Contacted:

Client Instructions:

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H10090580

Chain of Custody Record

Client: Tetra Tech/ Conoco Phillips

SPL Workorder Number

Attention: Kelly Blanchard/Tetra Tech

Phone: 505-237-8440 Fax: 505-237-8656 | email: kelly.blanchard@tetratech.com

City: Albuquerque | State: | Zip Code: 87110

Project Name: Charles B #1

P.O. Number:

Sampled By: Cassie Brown

Signature: Cassie Brown

Sample ID	Collected Date	Collected Time	Sample Type Comp	Sample Type Grab	Matrix Water	Matrix Soil	Bottle Type	Preservative Type	# of Containers	Requested Analysis BTEX: 8260
MW-1	9/21/10	1545		X	X		VOA	HCl	3	X
MW-2	9/21/10	1630		X	X		VOA	HCl	3	X
MW-3	9/21/10	1625		X	X		VOA	HCl	3	X
MW-4	9/21/10	1615		X	X		VOA	HCl	3	X
Trip Blank	9/22/10	1345		X	X		VOA	HCl	2	X
Duplicate	9/21/10	1550		X	X		VOA	HCl	3	X

Turnaround Time Requirements: (24 hr) (48 hr) (72 hr) (Standard)

Remarks:

Intact? (Y) or N

Temperature: 2.0

Bottle Types: 1. 3/40ml Vials 2. 1L Glass 3. 1L Plastic 4. 1L Amber Glass 5. 8oz Plastic

Preservative Types: 1. NONE 2. HNO3 3. HCL 4. H2SO4

Relinquished by/Sampler	Date	Time	Received by:
Cassie Brown	9.22.10	1400	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
	9/23/10	900	