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**SEPTEMBER 2010 QUARTERLY GROUNDWATER
MONITORING REPORT**

CONOCOPHILLIPS COMPANY

**SAN JUAN 27-5 No. 34A
NATURAL GAS PRODUCTION SITE
RIO ARRIBA COUNTY, NEW MEXICO**

OCD# TBD

API # 30-039-23739

Prepared for:



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. 114-690182

March 2011

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SEPTEMBER 2010 QUARTERLY GROUNDWATER MONITORING REPORT

SAN JUAN 27-5 NO. 34A, RIO ARRIBA COUNTY, NEW MEXICO

1.0 INTRODUCTION

This report details the results of quarterly groundwater monitoring completed by Tetra Tech, Inc. (Tetra Tech) on September 21, 2010 at the ConocoPhillips Company San Juan 27-5 No. 34A gas well site in Unit Letter E, Section 30, Township 27N, Range 05W, of Rio Arriba County, New Mexico (Site). This sampling event represents the sixth quarter of groundwater monitoring conducted by Tetra Tech at the Site.

The Site is located on BLM land outside of Blanco, NM in Section 30, Township 27N, Range 5W, of Rio Arriba County. The location and general features of the Site are presented as **Figures 1 and 2**, respectively. A generalized geologic cross section is presented as **Figure 3**.

1.1 Site Background

Hydrocarbon impacts were discovered beneath an aboveground storage tank (AST) during tank removal at the Site on January 30, 2009. Envirotech Inc. of Farmington, NM (Envirotech) was contacted for spill assessment services following the discovery. Envirotech collected a 5-point composite soil sample from beneath the AST; 4 grab soil samples from test holes advanced around the AST; and an additional 5-point composite soil sample collected from "a small area...excavated to approximately 17 [feet] bgs..." (Envirotech, 2009). All soil samples collected were field analyzed for total petroleum hydrocarbons (TPH) using Environmental Protection Agency (EPA) method 418.1, and for organic vapors using a photoionization detector (PID). The 5-point composite soil samples were also sent for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021, and for TPH analysis by EPA Method 8015. Soil sample results from both 5-point composite samples and from one of the test holes were above recommended action levels; all other samples were below.

On March 3, 2009, Envirotech returned to the Site to continue sampling activities. A 49' x 49' x 20' deep area had been excavated prior to Envirotech arriving on site. Groundwater was encountered at 20 ft below ground surface (bgs); Envirotech sampled the groundwater for analysis of volatile organic compound (VOC) using EPA method 8260 (Envirotech, 2009). Laboratory results for benzene were found at a concentration above the NMWQCC standard at 96 micrograms per liter (ug/L) in the groundwater sample. Composite soil samples were collected from the bottom of the excavation and from each of the 4 walls; then field analyzed for organic vapors and TPH. All results were below recommended action levels for organic vapors. TPH concentrations were below recommended action levels in all samples excluding one taken from the south wall of the excavation. Subsequently the excavation was continued along the south wall 4 feet further; field TPH analysis on an additional sample was below recommended action levels and excavation activities stopped. Final excavation dimensions

were reported at 53 feet by 49 feet by 20 feet deep. Personal communication on July 13, 2009 between Tetra Tech and Wade Hack, ConocoPhillips field manager, revealed that the area of the excavation was within the current location of the waste water tank and the AST at the Site (**Figure 2**). A total of 1,900 cubic yards of impacted soil were removed from the Site and transported to an OCD permitted facility located in Farmington, New Mexico. Envirotech recommended the installation of groundwater monitoring wells to determine "groundwater gradient and the extent of groundwater contamination" (Envirotech, 2009).

Between July 15, 2009 and July 16, 2009, EnviroDrill of Albuquerque, New Mexico installed 4 groundwater monitor wells at the Site under the supervision of Tetra Tech: MW-1, MW-2, MW-3, and MW-4. All wells were drilled using a CME-75 drill rig, hollow stem augers, and split-spoon sampling techniques; 15 feet of 0.010 polyvinylchloride (PVC) slotted screen was placed in each well.

Tetra Tech began groundwater quality monitoring of the Site on July 28, 2009. The most recent groundwater quality monitoring event took place on September 21, 2010. This event marks the sixth consecutive round of quarterly monitoring conducted by Tetra Tech at the Site. Site history is outlined in **Table 1**.

2.0 MONITORING SUMMARY, SAMPLING METHODOLOGY AND ANALYTICAL RESULTS

2.1 Monitoring Summary

On September 21, 2010, groundwater elevation measurements were recorded in Monitor Wells MW-1, MW-2, MW-3 and MW-4. **Table 2** presents the monitor well specifications and groundwater level data. A groundwater elevation contour map is presented as **Figure 4**, and illustrates that groundwater at the Site flows north-northeast. Groundwater flow direction changed slightly from previous monitoring events, possibly due to the construction of a stock pond northeast of the site.

2.2 Groundwater Sampling Methodology

Groundwater quality samples were collected from Monitor Wells MW-1, MW-2, MW-3 and MW-4 during the September 21, 2010 groundwater sampling event. Approximately three well volumes were purged from each monitor well prior to sampling. A 1.5-inch polyethylene, dedicated bailer was used in each well to purge and collect groundwater samples. The purged water was disposed of in the on-site produced water tank (**Figure 2**). Samples were placed in laboratory prepared bottles, packed on ice, and shipped under chain of custody documentation to Southern Petroleum Laboratory located in Houston, Texas. Groundwater samples were analyzed for the presence of BTEX by Environmental Protection Agency (EPA) Method 8260B and dissolved manganese by EPA Method 6010B. Field sampling forms are included as **Appendix A**.

2.3 Groundwater Sampling Analytical Results

The New Mexico Water Quality Control Commission (NMWQCC) mandates that groundwater quality in New Mexico be protected, and has issued groundwater quality standards in Title 20, Chapter 6, Part 2, Section 3103 of the New Mexico Administrative Code (20.6.2.3103 NMAC).

- **Manganese**

The groundwater quality standard for manganese is 0.2 milligrams per liter (mg/L). Groundwater collected from monitor wells MW-1, MW-2 and MW-3 were found to contain manganese at concentrations of 0.784 mg/L; 2.25 mg/L; and 2.87 mg/L, respectively.

No other analyzed constituents were found above NMWQCC groundwater quality standards in Site monitor wells. A historical summary of groundwater analytical results is provided in **Table 3**.

The corresponding laboratory analytical report for the September 2010 groundwater sampling event is included as **Appendix B**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on six consecutive quarters of groundwater monitoring, samples collected from Monitor Wells MW-1, MW-2, MW-3, and MW-4 have never exceeded NMWQCC groundwater quality standards for BTEX constituents. Groundwater samples collected from MW-1, MW-2, and MW-3 consistently exceed NMWQCC groundwater quality standards for dissolved manganese.

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 quality results begin to indicate that all constituents of concern are consistently below NMWQCC groundwater quality standards, or are stable and likely representative of site background conditions. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetrattech.com if you have any questions or require additional information.

4.0 REFERENCES

Envirotech Incorporated (2009). Burlington Resources Spill Closure Report Located at San Juan 27-5 #34A, Section 30, Township 27N, Range 5W, Rio Arriba County, New Mexico. Prepared for ConocoPhillips Company. Report Dated March 20, 2009. 3 pp (not including Figures, Tables, and Appendices).

FIGURES

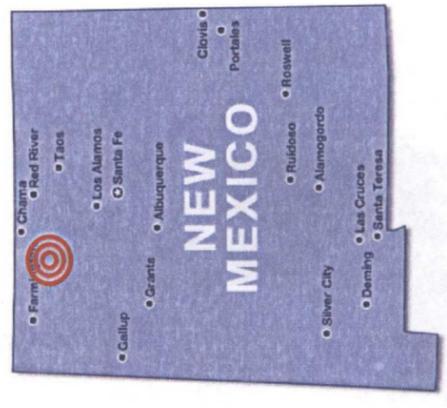
1. Site Location Map
2. Site Detail Map
3. Generalized Geologic Cross Section
4. Groundwater Elevation Contour Map – September 2010



ConocoPhillips High Resolution Aerial Imagery - 2008

FIGURE 1.

Site Location Map
 ConocoPhillips
 Company
 San Juan 27-5 No. 34A
 Rio Arriba County, NM

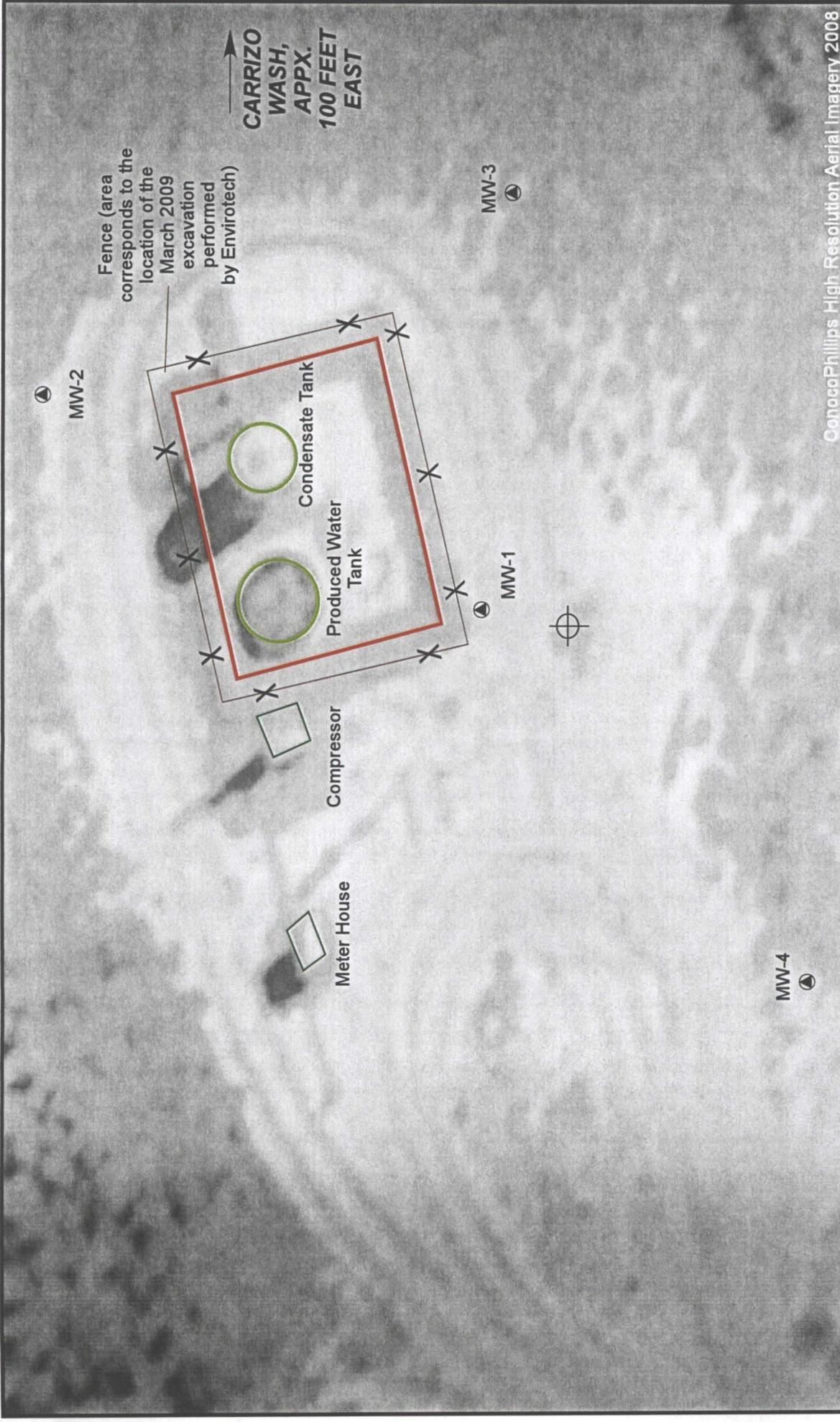


ConocoPhillips Company
 San Juan 27-5 #34A Site
 Location

Latitude: 34.547445° N
 Longitude: -107.406587° W



TETRA TECH, INC.



ConocoPhillips High Resolution Aerial Imagery 2008

LEGEND

-  WELLHEAD
-  MONITOR WELL
-  BERM
-  EQUIPMENT



TETRA TECH, INC.

FIGURE 2:
 SITE LAYOUT MAP
 CONOCOPHILLIPS COMPANY
 SAN JUAN 27-5 No. 34A
 GAS PRODUCTION WELL
 Sec 30, T27N, R5W
 Rio Arriba County, New Mexico

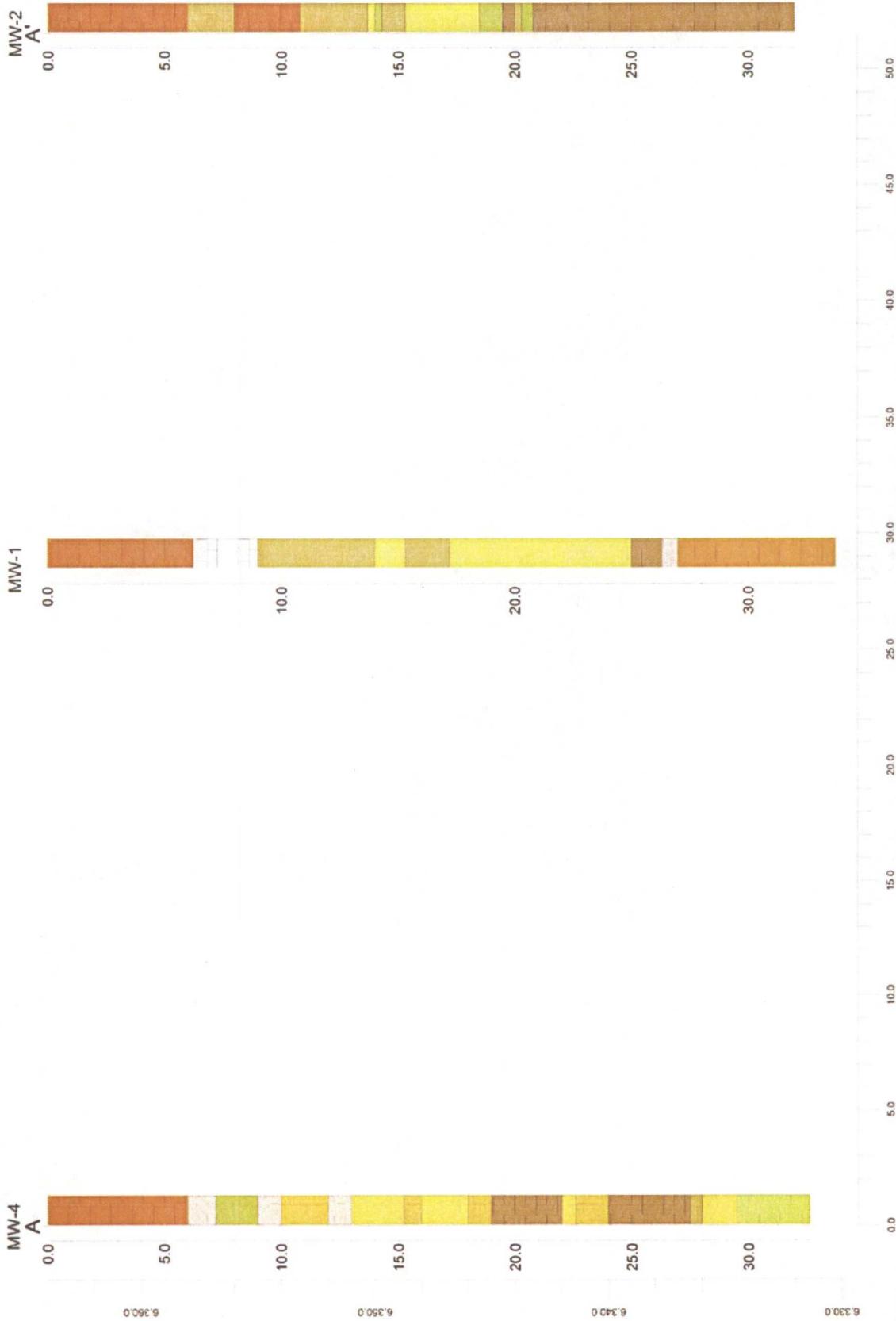
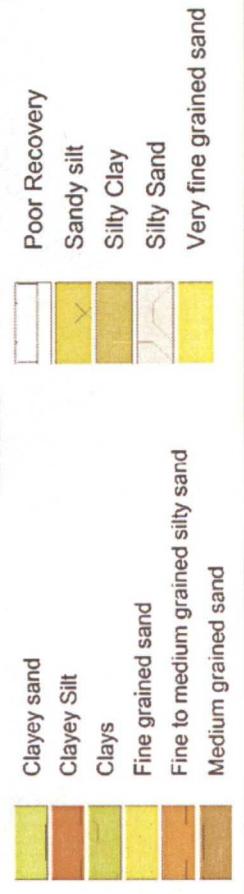
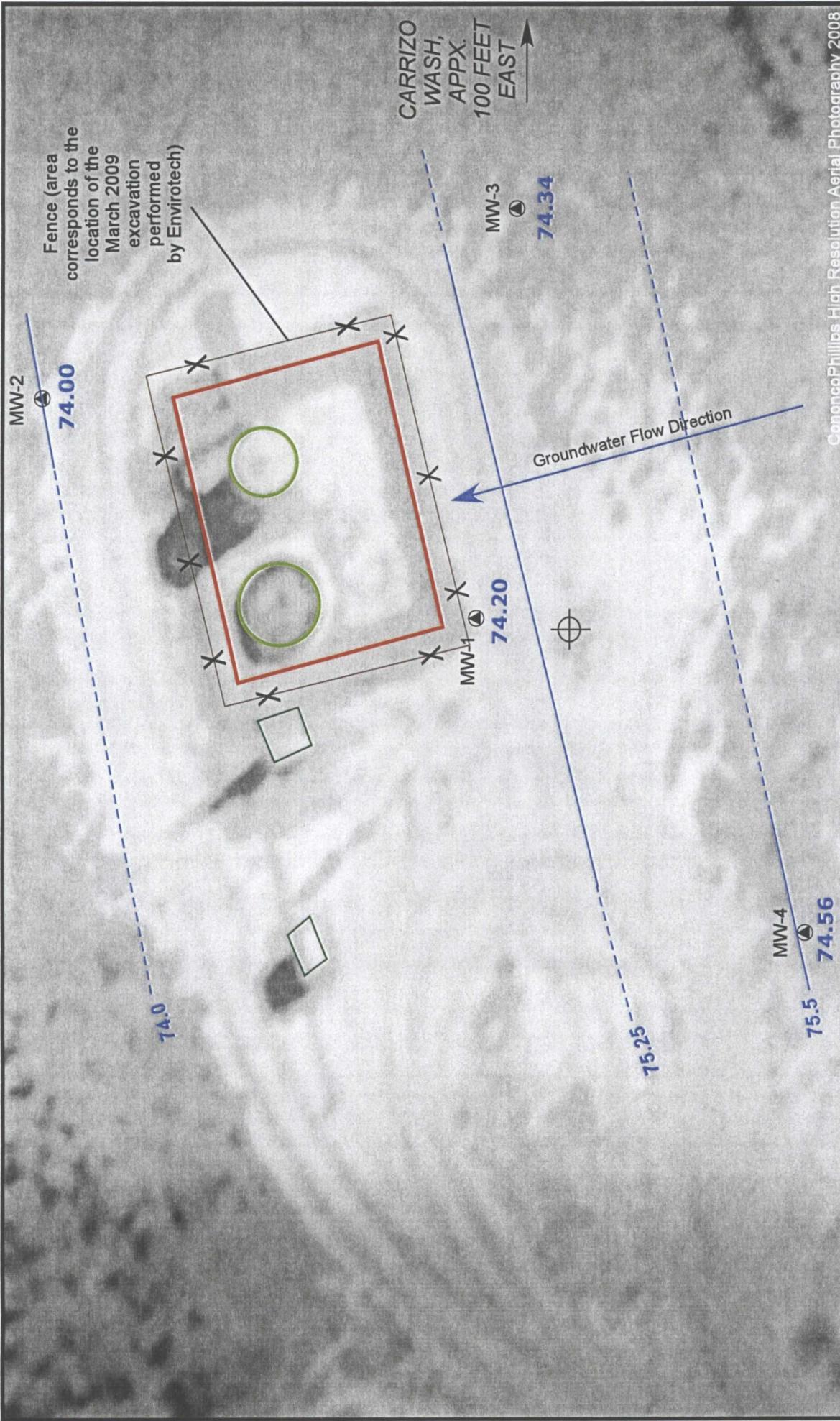


FIGURE 3:
GENERALIZED GEOLOGIC CROSS SECTION
CONOCOPHILLIPS COMPANY
 San Juan 27-5 #34A
 Sec 30, T27N, R5W
 Rio Arriba County, New Mexico

LEGEND



TETRA TECH, INC.



ConocoPhillips High Resolution Aerial Photography 2008



TETRA TECH, INC.

LEGEND

- ⊕ WELLHEAD
- MONITOR WELL
- BERM
- EQUIPMENT
- GROUNDWATER ELEVATION CONTOUR IN FEET (Dashed where inferred)
- ⬆ N
- 0 30 60 FEET

FIGURE 4:
 GROUNDWATER CONTOUR MAP
 SEPTEMBER 2010
 CONOCOPHILLIPS COMPANY
 SAN JUAN 27-5 No. 34A
 GAS PRODUCTION WELL
 Sec 30, T27N, R5W
 Rio Arriba County, New Mexico

TABLES

I. Site History Timeline

2. Groundwater Elevation Data Summary (July 2009 – September 2010)

3. Groundwater Laboratory Analytical Results Summary (July 2009 – September 2010)

Table 1. Site History Timeline – ConocoPhillips Company, San Juan 27-5 No. 34A

DATE	ACTIVITY
January 30, 2009	Hydrocarbon impacts are visually confirmed during tank removal at the Site. Envirotech Inc. of Farmington, New Mexico (Envirotech) conduct spill assessment and initial soil sampling.
March 3, 2009	Envirotech oversees soil excavation at the Site. Final dimensions of excavated area are 53'x49'x20' deep. Groundwater is encountered at 20' bgs and sampled. Laboratory results for benzene were found at a concentration of 95.6 micrograms per liter (ug/L), above the NMWQCC standard.
March 20, 2009	Envirotech excavation report states that a total of 1,900 cubic yards of soil was removed from the Site and transported to an OCD-permitted facility in Farmington, NM. Envirotech recommended the installation of groundwater monitoring wells at the Site (Envirotech, 2009).
April 2, 2009	Tetra Tech visits the Site visit to determine placement of proposed groundwater monitoring wells.
July 15, 2009 & July 16, 2009	Four groundwater monitor wells are installed by EnviroDrill under the supervision of Tetra Tech (MW-1, MW-2, MW-3, MW-4).
July 28, 2009	Baseline quarterly groundwater monitoring event was conducted at the Site by Tetra Tech.
September 29, 2009	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.
December 15, 2009	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.
April 8, 2010	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.
June 8, 2010	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.
September 21, 2010	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.

Table 2. Groundwater Elevation Data Summary - ConocoPhillips' Company San Juan 27-5 No. 34A

Well ID	Total Depth (ft bgs)	Screen Interval (ft)	* TOC Elevation (ft)	Date Measured	Depth to Groundwater (ft below TOC)	Relative Groundwater Elevation
MW-1	33.22	18.73 - 33.73	97.44	7/28/2009	23.21	74.23
				9/29/2009	23.88	73.56
				12/15/2009	24.15	73.29
				4/8/2010	21.76	75.68
				6/8/2010	22.26	75.18
MW-2	34.35	15.00 - 30.00	96.78	9/21/2010	23.24	74.20
				7/28/2009	22.72	74.06
				9/29/2009	23.40	73.38
				12/15/2009	23.66	73.12
				4/8/2010	21.21	75.57
MW-3	33.15	17.55 - 32.55	97.24	6/8/2010	21.81	74.97
				9/21/2010	22.78	74.00
				7/28/2009	22.84	74.40
				9/29/2009	23.54	73.70
				12/15/2009	23.80	73.44
MW-4	32.65	17.60 - 32.60	97.23	4/8/2010	21.22	76.02
				6/8/2010	21.90	75.34
				9/21/2010	22.90	74.34
				7/28/2009	22.62	74.61
				9/29/2009	23.31	73.92
				12/15/2009	23.57	73.66
				4/8/2010	21.25	75.98
				6/8/2010	21.75	75.48
				9/21/2010	22.67	74.56

ft = Feet
 TOC = Top of casing
 bgs = below ground surface
 *Groundwater elevation is relative to an arbitrary 100 feet

Table 3. Groundwater Laboratory Analytical Results Summary - ConocoPhillips Company San Juan 27-5 No. 34A

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Dissolved Manganese (mg/L)	Total Dissolved Solids (mg/L)
MW-1	7/28/2009	< 5	< 5	< 5	< 5	NA	NA
	9/29/2009	< 1	< 1	< 1	< 1	0.694	NA
	12/15/2009	< 1	< 1	< 1	< 1	0.576	NA
	4/8/2010	< 1	< 1	< 1	< 1	0.896	640
	6/8/2010	< 1	< 1	< 1	< 1	0.612	NA
	9/21/2010	< 1	< 1	< 1	< 1	0.784	NA
MW-2	7/28/2009	< 5	< 5	< 5	< 5	NA	NA
	9/29/2009	< 1	< 1	< 1	< 1	1.38	NA
	12/15/2009	< 1	< 1	< 1	< 1	1.92	NA
	4/8/2010	< 1	< 1	< 1	< 1	2.43	700
	6/8/2010	< 1	< 1	< 1	< 1	2.12	NA
	9/21/2010	< 1	< 1	< 1	< 1	2.25	NA
MW-3	7/28/2009	< 5	< 5	< 5	< 5	NA	NA
	9/29/2009	< 1	< 1	< 1	< 1	1.7	NA
	12/15/2009	< 1	< 1	< 1	< 1	2.04	NA
	4/8/2010	< 1	< 1	< 1	< 1	2.51	525
	6/8/2010	< 1	< 1	< 1	< 1	2.51	NA
	9/21/2010	< 1	< 1	< 1	< 1	2.87	NA
MW-4	7/28/2009	< 5	< 5	< 5	< 5	NA	NA
	9/29/2009	< 1	< 1	< 1	< 1	0.269	NA
	12/15/2009	< 1	< 1	< 1	< 1	0.0579	NA
	4/8/2010	< 1	< 1	< 1	< 1	0.121	684
	6/8/2010	< 1	< 1	< 1	< 1	0.0384	NA
	9/21/2010	< 1	< 1	< 1	< 1	0.0301	NA
NMWQCC Standards		10 (µg/L)	750 (µg/L)	750 (µg/L)	620 (µg/L)	0.2 (mg/L)	1000 (mg/L)

Explanation

ND = Not Detected
 NMWQCC = New Mexico Water Quality Control Commission
 mg/L = milligrams per liter (parts per million)
 µg/L = micrograms per liter (parts per billion)
 NA = Not Analyzed
 < 1.0 = Below laboratory detection limit of 1.0 µg/L
Bold = concentrations that exceed the NMWQCC limits

APPENDIX A

APPENDIX A

September 2010 Quarterly Groundwater Sampling Field Forms



WATER SAMPLING FIELD FORM

Project Name San Juan 27-5 34A

Page 1 of 4

Project No. _____

Site Location San Juan County, New Mexico

Site/Well No. MW-1

Coded/ Replicate No. Duplicate @ 1100

Date 9-21-10

Weather Sunny, warm 70°

Time Sampling Began 1025

Time Sampling Completed 1055

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 33.2/14

Water-Level Elevation _____

Held _____ Depth to Water Below MP 23.24

Diameter of Casing 2"

Wet _____ Water Column in Well 9.9

Gallons Pumped/Bailed Prior to Sampling 5 gallons

Gallons per Foot 0.16

Gallons in Well 1.584

Sampling Pump Intake Setting (feet below land surface) _____

Purging Equipment Purge pump/Bailer X3 = 4.752

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm ³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1051	13.37	7.33	785	.510	2.98	28.6	-10.6	4.0
1052	13.15	7.40	786	.511	2.73	25.6	-13.2	4.5
1053	13.04	7.39	790	.513	2.60	24.9	-15.8	4.75
1054	13.09	7.39	789	.513	2.65	25.0	-17.2	5.0

Sampling Equipment Purge Pump/Bailer

Constituents Sampled _____ Container Description _____ Preservative _____

BTEX _____ 3 40mL VOA's _____ HCl _____

~~Fe, Mn, Al~~ _____ 100% plastic _____ none _____

Remarks No odor or sheen observed

Sampling Personnel Christine Matthews & Cassie Brown

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



WATER SAMPLING FIELD FORM

Project Name San Juan 27-5 34A

Page 2 of 4

Project No. _____

Site Location San Juan County, New Mexico

Site/Well No. MW-2

Coded/
Replicate No. _____

Date 9-21-10

Weather Sunny, Warm
70°

Time Sampling
Began 1020

Time Sampling
Completed 1125

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 34.35

Water-Level Elevation _____

Held _____ Depth to Water Below MP 22.78

Diameter of Casing 2"

Wet _____ Water Column in Well 11.54

Gallons Pumped/Bailed
Prior to Sampling 3 (bailed dry)

Gallons per Foot 0.16

Gallons in Well 1,846

Sampling Pump Intake Setting
(feet below land surface) _____

Purging Equipment Purge pump/Bailer X3 = 5.539

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1122	12.94	7.49	11025	11025	9.30	47.8	32.0	2.5
1123	12.93	7.29	9590	16	4.07	38.7	17.0	2.75
1123	12.93	7.29	946	.615	4.07	38.7	17.0	2.75
1124	12.88	7.24	941	.612	3.95	38.2	14.8	3

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe, Mn, Al	plastic 16 oz	none

Remarks bailed dry @ 2.25 gallons, no odor or steen observed

Sampling Personnel Christine Matthews ? Cassie Brown

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



WATER SAMPLING FIELD FORM

Project Name San Juan 27-5 34A

Page 3 of 4

Project No. _____

Site Location San Juan County, New Mexico

Site/Well No. MW-3 Coded/Replicate No. _____

Date 9-21-10

Weather Sunny, warm 70° Time Sampling Began 1025

Time Sampling Completed 1045

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 33.15⁴ Water-Level Elevation _____

Held _____ Depth to Water Below MP 22.90 Diameter of Casing 2"

Wet _____ Water Column in Well 10.24 Gallons Pumped/Bailed Prior to Sampling 5

Gallons per Foot 0.16 Sampling Pump Intake Setting (feet below land surface) _____

Gallons in Well 1.6384

Purging Equipment Purge pump (Bailer) X3 = 4.915

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1038	13.60	6.89	850	.553	3.53	33.9	-10.7	4
1040	13.31	6.94	849	.552	3.44	33.2	-12.4	4.5
1041	13.28	6.97	847	.551	3.12	30.0	-12.7	4.75
1042	13.34	6.98	850	.553	3.16	30.4	-14.1	5

Sampling Equipment Purge Pump/Bailer

Constituents Sampled _____ Container Description _____ Preservative _____

BTEX _____ 3 40mL VOA's _____ HCl _____

Fe, Mn, Al _____ plastic ke oz none _____

Remarks No odor or sheen observed

Sampling Personnel Christine Matthews & Cassie Brown

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



WATER SAMPLING FIELD FORM

Project Name San Juan 27-5 34A

Page 4 of 4

Subject No. _____

Site Location San Juan County, New Mexico

Site/Well No. MW-4

Coded/
Replicate No. _____

Date 9-21-10

Weather Sunny, warm
70°

Time Sampling
Began 1015

Time Sampling
Completed 1110

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 ~~32.65~~ 33.48

Water-Level Elevation _____

Hold _____ Depth to Water Below MP 22.67

Diameter of Casing 2"

Wet _____ Water Column in Well 10.81

Gallons Pumped/Bailed
Prior to Sampling ~~2.5~~ 3.0

Gallons per Foot 0.16

Gallons in Well 1.7296

Sampling Pump Intake Setting
(feet below land surface) _____

Purging Equipment Purge pump/Bailer X3 = 5.18

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm ²)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
<u>1106</u>	<u>13.56</u>	<u>7.68</u>	<u>1008</u>	<u>.654</u>	<u>3.96</u>	<u>37.6</u>	<u>524</u>	<u>2.75</u>
<u>1108</u>	<u>13.21</u>	<u>7.57</u>	<u>1005</u>	<u>.653</u>	<u>3.62</u>	<u>34.5</u>	<u>54.6</u>	<u>3.00</u>
<u>1109</u>	<u>13.22</u>	<u>7.55</u>	<u>1007</u>	<u>.655</u>	<u>3.49</u>	<u>33.5</u>	<u>56.0</u>	<u>3.25</u>

Sampling Equipment Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX

3 40mL VOA's

HCl

Fe, Mn, Al

plastic 16oz

none

Remarks bailed only @ 2.5 gallons, no odor or sheen observed

Sampling Personnel Christine Matthews & Cassie Brown

Well Casing Volumes

Gal./ft.	<u>1 1/4" = 0.077</u>	<u>2" = 0.16</u>	<u>3" = 0.37</u>	<u>4" = 0.65</u>
	<u>1 1/2" = 0.10</u>	<u>2 1/2" = 0.24</u>	<u>3 1/2" = 0.50</u>	<u>6" = 1.46</u>

APPENDIX B

September 2010 Quarterly Groundwater Sampling Field Forms



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

Certificate of Analysis

October 7, 2010

Workorder: H10090575

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

Project: COP - San Juan 27-5 34A

Project Number: COP - San Juan

Site: Rio Ariba County, NM

PO Number: ENFOS

NELAC Cert. No.: T104704205-09-3

This Report Contains A Total Of 17 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: H10090575

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

Project: COP - San Juan 27-5 34A

Project Number: COP - San Juan

Site: Rio Arriba County, NM

PO Number: ENFOS

NELAC Cert. No.: T104704205-09-3

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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Certificate of Analysis

October 7, 2010

Workorder: H10090575

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

Project: COP - San Juan 27-5 34A

Project Number: COP - San Juan

Site: Rio Arriba County, NM

PO Number: ENFOS

NELAC Cert. No.: T104704205-09-3

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 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: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

Lab ID	Sample ID	Matrix	COC ID	Date/Time Collected	Date/Time Received
H10090575001	MW-1	Water		9/21/2010 10:55	9/23/2010 09:00
H10090575002	MW-2	Water		9/21/2010 11:25	9/23/2010 09:00
H10090575003	MW-3	Water		9/21/2010 10:45	9/23/2010 09:00
H10090575004	MW-4	Water		9/21/2010 11:10	9/23/2010 09:00
H10090575005	Trip Blank	Water		9/22/2010 13:30	9/23/2010 09:00
H10090575006	Duplicate	Water		9/21/2010 11:00	9/23/2010 09:00



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ANALYTICAL RESULTS

Workorder: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

Lab ID: H10090575001

Date/Time Received: 9/23/2010 09:00 Matrix: Water

Sample ID: MW-1

Date/Time Collected: 9/21/2010 10:55

VOLATILES

Analysis Desc: SW-846 8260B

SW-846 5030 Analytical Batches:

Batch: 2657 SW-846/8260B on 09/26/2010 17:20 by JMC

Parameters	Results					Batch Information	
	ug/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Benzene	ND		1.0	0.13	1		2657
Ethylbenzene	ND		1.0	0.48	1		2657
Toluene	ND		1.0	0.13	1		2657
m,p-Xylene	ND		1.0	0.58	1		2657
o-Xylene	ND		1.0	0.35	1		2657
Xylenes, Total	ND		1.0	0.35	1		2657
4-Bromofluorobenzene (S)	111 %		74-125		1		2657
1,2-Dichloroethane-d4 (S)	102 %		70-130		1		2657
Toluene-d8 (S)	106 %		82-118		1		2657

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B

Preparation Batches:

Batch: 2090 SW-846 3010A on 09/23/2010 13:00 by R_V

Analytical Batches:

Batch: 1651 SW-846 6010B on 09/30/2010 23:35 by EBG

Parameters	Results					Batch Information	
	mg/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Manganese	0.784		0.00500	0.000300	1		2090 1651



ANALYTICAL RESULTS

Workorder: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

Lab ID: H10090575002
 Sample ID: MW-2

Date/Time Received: 9/23/2010 09:00 Matrix: Water
 Date/Time Collected: 9/21/2010 11:25

VOLATILES

Analysis Desc: SW-846 8260B SW-846 5030 Analytical Batches:
 Batch: 2657 SW-846 8260B on 09/26/2010 17:48 by JMC

Parameters	Results					Batch Information	
	ug/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Benzene	ND		1.0	0.13	1		2657
Ethylbenzene	ND		1.0	0.48	1		2657
Toluene	ND		1.0	0.13	1		2657
m,p-Xylene	ND		1.0	0.58	1		2657
o-Xylene	ND		1.0	0.35	1		2657
Xylenes, Total	ND		1.0	0.35	1		2657
4-Bromofluorobenzene (S)	111 %		74-125		1		2657
1,2-Dichloroethane-d4 (S)	105 %		70-130		1		2657
Toluene-d8 (S)	107 %		82-118		1		2657

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B Preparation Batches:
 Batch: 2090 SW-846 3010A on 09/23/2010 13:00 by R_V
 Analytical Batches:
 Batch: 1651 SW-846 6010B on 09/30/2010 23:41 by EBG

Parameters	Results					Batch Information	
	mg/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Manganese	2.25		0.00500	0.000300	1		2090 1651



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ANALYTICAL RESULTS

Workorder: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

Lab ID: H10090575003

Date/Time Received: 9/23/2010 09:00

Matrix: Water

Sample ID: MW-3

Date/Time Collected: 9/21/2010 10:45

VOLATILES

Analysis Desc: SW-846 8260B

SW-846 5030 Analytical Batches:

Batch: 2657 SW-846 8260B on 09/26/2010 18:15 by JMC

Parameters	Results					Batch Information	
	ug/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Benzene	ND		1.0	0.13	1		2657
Ethylbenzene	ND		1.0	0.48	1		2657
Toluene	ND		1.0	0.13	1		2657
m,p-Xylene	ND		1.0	0.58	1		2657
o-Xylene	ND		1.0	0.35	1		2657
Xylenes, Total	ND		1.0	0.35	1		2657
4-Bromofluorobenzene (S)	110 %		74-125		1		2657
1,2-Dichloroethane-d4 (S)	102 %		70-130		1		2657
Toluene-d8 (S)	109 %		82-118		1		2657

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B

Preparation Batches:

Batch: 2090 SW-846 3010A on 09/23/2010 13:00 by R_V

Analytical Batches:

Batch: 1651 SW-846 6010B on 09/30/2010 23:47 by EBG

Parameters	Results					Batch Information	
	mg/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Manganese	2.87		0.00500	0.000300	1		2090 1651



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ANALYTICAL RESULTS

Workorder: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

Lab ID: H10090575004

Date/Time Received: 9/23/2010 09:00 Matrix: Water

Sample ID: MW-4

Date/Time Collected: 9/21/2010 11:10

VOLATILES

Analysis Desc: SW-846 8260B

SW-846 5030 Analytical Batches:

Batch: 2657 SW-846 8260B on 09/26/2010 18:43 by JMC

Parameters	Results					Batch Information	
	ug/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Benzene	ND		1.0	0.13	1		2657
Ethylbenzene	ND		1.0	0.48	1		2657
Toluene	ND		1.0	0.13	1		2657
m,p-Xylene	ND		1.0	0.58	1		2657
o-Xylene	ND		1.0	0.35	1		2657
Xylenes, Total	ND		1.0	0.35	1		2657
4-Bromofluorobenzene (S)	112 %		74-125		1		2657
1,2-Dichloroethane-d4 (S)	107 %		70-130		1		2657
Toluene-d8 (S)	107 %		82-118		1		2657

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B

Preparation Batches:

Batch: 2090 SW-846 3010A on 09/23/2010 13:00 by R_V

Analytical Batches:

Batch: 1651 SW-846 6010B on 09/30/2010 23:54 by EBG

Parameters	Results					Batch Information	
	mg/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Manganese	0.0301		0.00500	0.000300	1		2090 1651



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ANALYTICAL RESULTS

Workorder: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

Lab ID: H10090575005

Date/Time Received: 9/23/2010 09:00

Matrix: Water

Sample ID: Trip Blank

Date/Time Collected: 9/22/2010 13:30

VOLATILES

Analysis Desc: SW-846 8260B

SW-846 5030 Analytical Batches:

Batch: 2657 SW-846 8260B on 09/26/2010 19:11 by JMC

Parameters	Results					Batch Information	
	ug/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Benzene	ND		1.0	0.13	1		2657
Ethylbenzene	ND		1.0	0.48	1		2657
Toluene	ND		1.0	0.13	1		2657
m,p-Xylene	ND		1.0	0.58	1		2657
o-Xylene	ND		1.0	0.35	1		2657
Xylenes, Total	ND		1.0	0.35	1		2657
4-Bromofluorobenzene (S)	111 %		74-125		1		2657
1,2-Dichloroethane-d4 (S)	111 %		70-130		1		2657
Toluene-d8 (S)	98.5 %		82-118		1		2657



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ANALYTICAL RESULTS

Workorder: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

Lab ID: H10090575006

Date/Time Received: 9/23/2010 09:00

Matrix: Water

Sample ID: Duplicate

Date/Time Collected: 9/21/2010 11:00

VOLATILES

Analysis Desc: SW-846 8260B

SW-846 5030 Analytical Batches:

Batch: 2657 SW-846 8260B on 09/26/2010 19:39 by JMC

Parameters	Results					Batch Information	
	ug/l	Qual	Report Limit	MDL	DF	RegLmt	Prep Analysis
Benzene	ND		1.0	0.13	1		2657
Ethylbenzene	ND		1.0	0.48	1		2657
Toluene	ND		1.0	0.13	1		2657
m,p-Xylene	ND		1.0	0.58	1		2657
o-Xylene	ND		1.0	0.35	1		2657
Xylenes, Total	ND		1.0	0.35	1		2657
4-Bromofluorobenzene (S)	105 %		74-125		1		2657
1,2-Dichloroethane-d4 (S)	96.4 %		70-130		1		2657
Toluene-d8 (S)	93.2 %		82-118		1		2657



QUALITY CONTROL DATA

Workorder: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

QC Batch: MSV/2656 Analysis Method: SW-846 8260B
 QC Batch Method: SW-846 5030 Preparation: 09/26/2010 00:00 by JMC
 Associated Lab Samples: H10090573001 H10090573005 H10090574001 H10090574002 H10090574003 H10090575001
 H10090575002 H10090575003 H10090575004 H10090575005 H10090575006

METHOD BLANK: 72101
 Analysis Date/Time Analyst: 09/26/2010 11:16 JMC

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)	%	107		74-125
1,2-Dichloroethane-d4 (S)	%	99.6		70-130
Toluene-d8 (S)	%	105		82-118

LABORATORY CONTROL SAMPLE: 72102
 Analysis Date/Time Analyst: 09/26/2010 10:48 JMC

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits
Benzene	ug/l	20	19.5	97.5	74-123
Ethylbenzene	ug/l	20	19.6	97.8	72-127
Toluene	ug/l	20	19.0	95.2	74-126
m,p-Xylene	ug/l	40	39.4	98.5	71-129
o-Xylene	ug/l	20	19.2	96.0	74-130
Xylenes, Total	ug/l	60	58.59	97.7	71-130
4-Bromofluorobenzene (S)	%			102	74-125
1,2-Dichloroethane-d4 (S)	%			101	70-130
Toluene-d8 (S)	%			97.1	82-118

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 72103 72104 Original: H10090573001

MS Analysis Date/Time Analyst: 09/26/2010 12:12 JMC

MSD Analysis Date/Time Analyst: 09/26/2010 12:40 JMC

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Benzene	ug/l	820	20	828	696	NC	NC	70-124	NC	20
Ethylbenzene	ug/l	740	20	588	794	NC	NC	35-175	NC	20
Toluene	ug/l	810	20	683	666	NC	NC	70-131	NC	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: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 72103 72104 Original: H10090573001

MS Analysis Date/Time Analyst: 09/26/2010 12:12 JMC

MSD Analysis Date/Time Analyst: 09/26/2010 12:40 JMC

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
m,p-Xylene	ug/l	1600	40	1410	1500	NC	NC	35-175	NC	20
o-Xylene	ug/l	1000	20	853	897	NC	NC	35-175	NC	20
Xylenes, Total	ug/l	2600	60	2260	2397	NC	NC	35-175	NC	20
4-Bromofluorobenzene (S)	%	111				84.1	139 *	74-125	*	
1,2-Dichloroethane-d4 (S)	%	92.4				101	98.1	70-130		
Toluene-d8 (S)	%	107				75.5 *	113	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.



QUALITY CONTROL DATA

Workorder: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

QC Batch: DIGM/2090 Analysis Method: SW-846 6010B
 QC Batch Method: SW-846 3010A Preparation: 09/23/2010 13:00 by R_V
 Associated Lab Samples: H10090575001 H10090575002 H10090575003 H10090575004

METHOD BLANK: 71116

Analysis Date/Time Analyst: 09/30/2010 22:09 EBG

Parameter	Units	Blank Result	Qualifiers	Reporting Limit
Manganese	mg/l	ND		0.00500

LABORATORY CONTROL SAMPLE: 71117

Analysis Date/Time Analyst: 09/30/2010 22:15 EBG

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits
Manganese	mg/l	0.10	0.0992	99.2	80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 71118 71119 Original: H10090573001

MS Analysis Date/Time Analyst: 09/30/2010 22:27 EBG

MSD Analysis Date/Time Analyst: 09/30/2010 22:34 EBG

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Manganese	mg/l	0.752	0.10	0.8495	0.8535	NC	NC	75-125	NC	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.



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 than 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: H10090575 : COP - San Juan 27-5 34A

Project Number: COP - San Juan

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
H10090575001	MW-1	SW-846 3010A	DIGM/2090	SW-846 6010B	ICP/1651
H10090575002	MW-2	SW-846 3010A	DIGM/2090	SW-846 6010B	ICP/1651
H10090575003	MW-3	SW-846 3010A	DIGM/2090	SW-846 6010B	ICP/1651
H10090575004	MW-4	SW-846 3010A	DIGM/2090	SW-846 6010B	ICP/1651
H10090575001	MW-1	SW-846 5030	MSV/2656	SW-846 8260B	MSV/2657
H10090575002	MW-2	SW-846 5030	MSV/2656	SW-846 8260B	MSV/2657
H10090575003	MW-3	SW-846 5030	MSV/2656	SW-846 8260B	MSV/2657
H10090575004	MW-4	SW-846 5030	MSV/2656	SW-846 8260B	MSV/2657
H10090575005	Trip Blank	SW-846 5030	MSV/2656	SW-846 8260B	MSV/2657
H10090575006	Duplicate	SW-846 5030	MSV/2656	SW-846 8260B	MSV/2657



Sample Receipt Checklist

WorkOrder:	H10090575	Received By	LOG
Date and Time	09/23/2010 09:00	Carrier Name:	FEDEXS
Temperature:	1.4/2.0/3.3°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:
Client Name Contacted:
Client Instructions:

Contact Date & Time:

