

3R - 087

DEC 2009

GWMR

06/18/2010

32087



TETRA TECH, INC.

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

RECEIVED OGD

2010 JUN 25 P 1:28

June 18, 2010

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

RE: (I) ConocoPhillips Company Federal 15 Site, Farmington, New Mexico. 2009 Quarterly
Groundwater Monitoring Report – December 2009

Dear Mr. von Gonten:

Enclosed please find one (I) copy of the above-referenced document as compiled by Tetra Tech, Inc.,
formerly Maxim Technologies, for this Farmington area 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
Project Manager/Geologist

Enclosures (I)

RECEIVED OCD

2010 JUN 25 5 12 28

**QUARTERLY GROUNDWATER
MONITORING REPORT
DECEMBER 2009**

**CONOCOPHILLIPS COMPANY
FEDERAL NO.15
FARMINGTON, SAN JUAN COUNTY, NEW MEXICO**

OCD # 3R087

API # 30-045-20078

Prepared for:



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. 114-690110.100

June 2010

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Site History.....	1
2.0	METHODOLOGY AND RESULTS.....	2
2.1	Groundwater Monitoring Methodology.....	2
2.2	Groundwater Sampling Analytical Results.....	2
3.0	CONCLUSIONS.....	3

FIGURES

1. Site Location Map
2. Site Layout Map
3. Groundwater Elevation Contour Map
4. Geologic Cross Section

TABLES

1. Site History Timeline
2. Groundwater Elevation Summary (January 2005 – December 2009)
3. Groundwater Laboratory Analytical Results Summary (January 2005 – December 2009)

APPENDICES

- Appendix A. Groundwater Sampling Field Forms
- Appendix B. Laboratory Analytical Report

QUARTERLY GROUNDWATER MONITORING REPORT CONOCOPHILLIPS COMPANY FEDERAL #15 FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring completed by Tetra Tech, Inc. (Tetra Tech) on December 16, 2009, at the ConocoPhillips Company Federal No. 15 site in Farmington, New Mexico (Site). This event represents the eighth consecutive quarter of groundwater monitoring conducted by Tetra Tech at the Site.

The Site is located on private property, on the north side of Gila Street between Washington Avenue and English Road. New Mexico 516 (Main Street) is located approximately 0.5 miles to the west. The Site consists of a gas production well and associated equipment and installations. The location and general features of the Site are shown as **Figures 1** and **2**, respectively.

1.1 Site History

The history of the Site is outlined on **Table 1** and discussed in more detail in the following paragraphs.

On October 23, 2004, a release of roughly 15 barrels of condensate was discovered at the Site. Approximately 1,500 cubic yards of affected soil were excavated and replaced with clean fill during the week of October 25, 2004.

Following soil remediation activities, Monitor Wells MW-1, MW-2, MW-3, and MW-4 were installed using 2-inch polyvinyl chloride (PVC) pipe on November 16 and 17, 2004 by Biosphere Environmental Sciences and Technologies, LLC. An additional, down-gradient monitor well (MW-5) was installed on property south of the Site on October 19, 2005 by Spectrum Drilling under the supervision of Tetra Tech.

Monitor Wells MW-1 through MW-4 were initially sampled on January 18, 2005 and again on October 18 and 19, 2005. Monitor Well MW-5 was initially sampled on October 19, 2005.

Due to the presence of light non-aqueous phase liquid (LNAPL) and constituent of concern (COC) concentrations, Tetra Tech conducted quarterly groundwater removal events at Monitor Well MW-2. A vacuum truck was used to pump a total of 4,343 gallons from MW-2 between July 2005 and January 2008. Pumped water was disposed of in an on-site produced water tank (**Figure 2**).

Tetra Tech conducted annual groundwater sampling of Monitor Wells MW-1, MW-2, MW-3, MW-4, and MW-5 in November of 2006 and 2007. The details of each sampling event can be found in the 2006 and 2007 Annual Groundwater Monitoring and Site Activities Reports, dated January 2, 2007 and January 30, 2008, respectively.

Quarterly groundwater monitoring events began in March 2008. Most recently a quarterly sampling event took place on December 16, 2009. This event marks the sixth consecutive quarterly groundwater monitoring event at the Site in which groundwater quality results for benzene, toluene, ethylbenzene and total xylenes (BTEX) were below New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards (GWQS) contained in Title 20, Chapter 6, Part 2, Section 3103 of the New Mexico Administrative Code (20.6.2.3103 NMAC).

2.0 METHODOLOGY AND RESULTS

2.1 Groundwater Monitoring Methodology

Groundwater Elevation Measurements

On December 16, 2009, groundwater elevation measurements were recorded for Monitor Wells MW-1, MW-2, MW-3, MW-4, and MW-5. **Table 2** presents the monitor well specifications and groundwater level data. A groundwater elevation contour map is presented as **Figure 3**, which illustrates that groundwater at the Site flows to the south-southwest at an approximate gradient of 0.02 feet/foot (ft/ft) toward the Animas River, located approximately 3,200 feet south of the Site.

Groundwater sampling

Groundwater quality samples were collected from Monitor Wells MW-1, MW-2, MW-3, MW-4, and MW-5 during the December 16, 2009 groundwater sampling event. Approximately 5 gallons of water, or three well volumes, were purged from each monitor well prior to sampling. A 1.5-inch polyethylene disposable bailer was used in each well to purge and collect groundwater samples. Purged groundwater 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. The samples were analyzed for presence of BTEX by Environmental Protection Agency (EPA) Method 8260B.

2.2 Groundwater Sampling Analytical Results

The December 16, 2009 analysis of collected groundwater samples indicates that all analyzed constituents are present in concentrations either below NMWQCC standards or were not detected above their respective laboratory reporting limits. Groundwater samples collected from MW-1, MW-3, MW-4 and MW-5 did not reveal BTEX in concentrations above the laboratory reporting limit of 1 microgram per liter ($\mu\text{g/l}$) for each individual BTEX component. Benzene concentrations in MW-2 were detected at 5.0 $\mu\text{g/L}$; a duplicate sample collected from MW-2 contained concentrations of Benzene at 1.9 $\mu\text{g/L}$, both are below NMWQCC standards. Historical laboratory analytical data are summarized on **Table 3**. The field groundwater sampling forms are presented in **Appendix A** and the laboratory analytical report is presented in **Appendix B**. A geologic cross section of the Site is included as **Figure 4**.

3.0 CONCLUSIONS

Tetra Tech conducted quarterly pumping events in Monitor Well MW-2 from July 2005 to January 2008. The concentrations of BTEX measured in this well have decreased steadily from January 2005 to December 2009 and are summarized below.

- MW-2 benzene concentrations have decreased from 1,200 µg/L to 5 µg/L in December 2009.
- MW-2 toluene concentrations decreased from 3,300 µg/L to less than the laboratory reporting limit of 1 µg/L.
- MW-2 ethylbenzene concentrations decreased from 380 µg/L to less than the laboratory reporting limit of 1 µg/L.
- MW-2 total xylenes concentrations decreased from 3,500 µg/L to less than the laboratory reporting limit of 1 µg/L.

The decrease in BTEX concentrations suggests that pumping events were effective. Tetra Tech has discontinued pumping of Monitor Well MW-2; but will continue monitoring all wells quarterly in order to move toward closure of the Site.

Benzene in MW-3 has decreased from 190 µg/L in January 2005 to less than the laboratory reporting limit of 1 µg/L in December 2009, while benzene in MW-4 has decreased from 36 µg/L in November 2007 to less than the laboratory reporting limit of 1 µg/L in December 2009. Additionally, chlorides have never been detected above NMWQCC standards in any Site monitor well. Therefore, analysis of this constituent has been discontinued as of the January 2009 sampling event.

If you have any questions regarding the content of this report, please contact Kelly Blanchard at (505) 237-8440 or at kelly.blanchard@tetrattech.com.

FIGURES

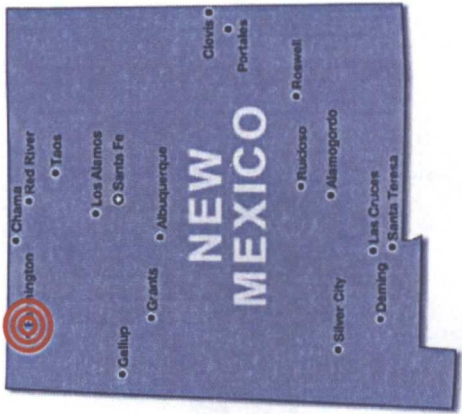
- I. Site Location Map
2. Site Layout Map
3. Groundwater Elevation Contour Map
4. Geologic Cross Section



ConocoPhillipsHigh Resolution Aerial Imagery

FIGURE 1.

Site Location Map
ConocoPhillips Company
Federal No.15
Farmington, NM



Approximate ConocoPhillips
Federal #15 Site location







Latitude = 36.759339 deg N
Longitude = -108.149891 deg W



TETRA TECH, INC.



Figure 2. Site Layout Map
ConocoPhillips Company
Federal No. 15
Farmington, New Mexico

-  Monitoring Well
-  Well Head
-  General Site Boundary
-  Produced Water Tank
-  Waste Water Sump
-  Berm



TETRA TECH, INC.



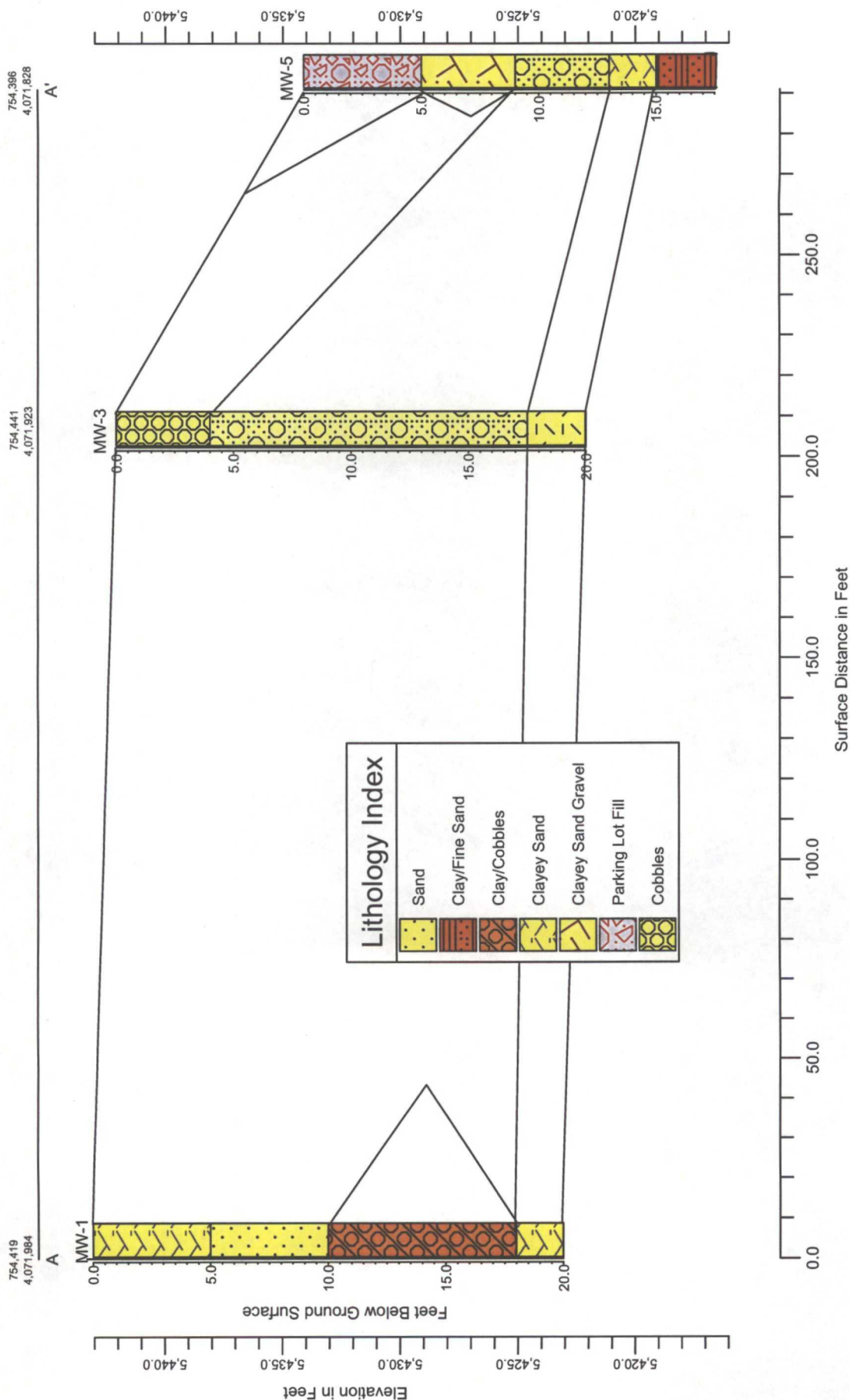
Figure 3: Groundwater Elevation Contour Map 12/16/2009
 ConocoPhillips Company
 Federal No.15
 Farmington, New Mexico

- Monitoring Well
- Well Head
- Groundwater contour line
- Inferred groundwater contour line
- General Site Boundary



TETRA TECH, INC.

Figure 4.
Federal No. 15 - Cross-Section A-A'



TABLES

I. Site History Timeline

2. Groundwater Elevation Summary (January 2005 – December 2009)

3. Laboratory Analytical Data Summary (January 2005 – December 2009)

Table 1. Site History Timeline - ConocoPhillips Company Federal No. 15

Date/Time Period	Event/Action	Description
October 23, 2004	Release Discovered	Estimated that 15 barrels of condensate was released to the subsurface soil and groundwater
October 25-29, 2004	Soil Excavation	Approximately 1500 cubic yards of impacted soil excavated and replaced with clean fill
November 16-17, 2004	Monitor Well Installation	Monitor wells MW-1, MW-2, MW-3, and MW-4 installed to depths of approximately 20 ft BGS
January 18, 2005	Monitor Well Sampling	Initial sampling of monitor wells MW-1, MW-2, MW-3, and MW-4
July 7, 2005	Groundwater Removal from Monitor Well MW-2	First removal of groundwater - 145 gallons removed
October 18-19, 2005	Monitor Well Sampling	Second sampling of monitor wells MW-1, MW-2, MW-3, and MW-4
October 19, 2005	Monitor Well Installation	Monitor well MW-5 installed to a depth of 17.5 ft BGS
October 19, 2005	Groundwater Removal from Monitor Well MW-2	558 gallons removed
October 20, 2005	Monitor Well Sampling	Initial sampling of monitor well MW-5
February 16, 2006	Groundwater Removal from Monitor Well MW-2	236 gallons removed
May 15, 2006		296 gallons removed
August 2, 2006		380 gallons removed
November 14, 2006		440 gallons removed
November 14-15, 2006	Monitor Well Sampling	Third sampling of monitor wells MW-1, MW-2, MW-3, and MW-4; second sampling of monitor well MW-5
February 20, 2007	Groundwater Removal from Monitor Well MW-2	346 gallons removed
May 15, 2007		474 gallons removed
August 21, 2007		528 gallons removed
November 7, 2007		575 gallons removed
November 7, 2007	Monitor Well Sampling	Fourth sampling of monitor wells MW-1, MW-2, MW-3, and MW-4; third sampling of monitor well MW-5
January 16, 2008	Groundwater Removal from Monitor Well MW-2	365 gallons removed
March 18, 2008	Groundwater Removal from Monitor Well MW-2	278 gallons removed
March 18, 2008	Groundwater Removal from Monitor Well MW-4	288 gallons removed
March 18, 2008	Monitor Well Sampling	Initiation of quarterly sampling for monitor wells MW-1, MW-2, MW-3, MW-4, and MW-5
July 21, 2008	Monitor Well Sampling	Continuation of quarterly sampling for monitor wells MW-1, MW-2, MW-3, MW-4, and MW-5
October 21, 2008	Monitor Well Sampling	Continuation of quarterly sampling for monitor wells MW-1, MW-2, MW-3, MW-4, and MW-5. First quarter of compliance with all COCs below NMWQCC standards.
January 22, 2009	Monitor Well Sampling	Continuation of quarterly sampling for monitor wells MW-1, MW-2, MW-3, MW-4, and MW-5. Second quarter of compliance with all COCs below NMWQCC standards.
March 30, 2009	Monitor Well Sampling	Continuation of quarterly sampling for monitor wells MW-1, MW-2, MW-3, MW-4, and MW-5. Third quarter of compliance with all COCs below NMWQCC standards.
June 16, 2009	Monitor Well Sampling	Continuation of quarterly sampling for monitor wells MW-1, MW-2, MW-3, MW-4, and MW-5. Fourth quarter of compliance with all COCs below NMWQCC standards.
September 28, 2009	Monitor Well Sampling	Continuation of quarterly sampling for monitor wells MW-1, MW-2, MW-3, MW-4, and MW-5. Fifth quarter of compliance with all COCs below NMWQCC standards.
December 16, 2009	Monitor Well Sampling	Continuation of quarterly sampling for monitor wells MW-1, MW-2, MW-3, MW-4, and MW-5. Sixth quarter of compliance with all COCs below NMWQCC standards.

Table 2. Groundwater Elevation Summary (January 2005 - December 2009) - ConocoPhillips Company Federal No.15

Well ID	Date Installed	Total Depth (ft bgs)	Screen Interval (ft)	Date Measured	Groundwater Level (ft TOC)	Elevation (ft msl) (TOC)	Groundwater Elevation (ft msl)
MW-1	11/17/2004	20	5 - 20	1/18/2005	8.92	5437.99	5429.07
				7/7/2005	9.33		5428.66
				10/19/2005	8.03		5429.96
				2/16/2006	8.84		5429.15
				5/15/2006	8.96		5429.03
				8/2/2006	8.35		5429.64
				11/14/2006	8.10		5429.89
				2/20/2007	8.76		5429.23
				5/15/2007	9.67 ⁽¹⁾		5428.32
				8/21/2007	NM		NM
				11/7/2007	AM		AM
				1/16/2008	7.10		5430.89
				3/18/2008	7.61		5430.38
				7/21/2008	4.82		5433.17
				10/21/2008	4.72		5433.27
				1/22/2009	7.12		5430.87
				3/30/2009	7.98		5430.01
				6/16/2009	8.78		5429.21
				9/28/2009	9.51		5428.48
				12/16/2009	9.31		5428.68
MW-2	11/17/2004	20	5 - 20	1/18/2005	9.49	5437.33	5427.84
				7/7/2005	9.55		5427.78
				10/19/2005	8.66		5428.67
				2/16/2006	9.01		5428.32
				5/15/2006	9.00		5428.33
				8/2/2006	8.52		5428.81
				11/14/2006	8.28		5429.05
				2/20/2007	8.87		5428.46
				5/15/2007	8.59		5428.74
				8/21/2007	6.67		5430.66
				11/7/2007	AM		AM
				1/16/2008	7.41		5429.92
				3/18/2008	8.00		5429.33
				7/21/2008	4.63		5432.70
				10/21/2008	4.37		5432.96
				1/22/2009	7.39		5429.94
				3/30/2009	8.23		5429.10
				6/16/2009	8.73		5428.60
				9/28/2009	9.48		5427.85
				12/16/2009	9.49		5427.84
MW-3	11/22/2004	20	5 - 20	1/18/2005	8.54	5435.13	5426.59
				7/7/2005	8.51		5426.62
				10/19/2005	7.75		5427.38
				2/16/2006	NM		NM
				5/15/2006	8.42		5426.71
				8/2/2006	7.99		5427.14
				11/14/2006	7.72		5427.41
				2/20/2007	8.23		5426.90
				5/15/2007	7.90		5427.23
				8/21/2007	NM		NM
				11/7/2007	AM		AM
				1/16/2008	7.20		5427.93
				3/18/2008	7.73		5427.40
				7/21/2008	5.00		5430.13
				10/21/2008	4.12		5431.01
				1/22/2009	7.17		5427.96
				3/30/2009	7.91		5427.22
				6/16/2009	8.23		5426.90
				9/28/2009	8.85		5426.28
				12/16/2009	8.94		5426.19

Table 2. Groundwater Elevation Summary (January 2005 - December 2009) - ConocoPhillips Company Federal No.15

Well ID	Date Installed	Total Depth (ft bgs)	Screen Interval (ft)	Date Measured	Groundwater Level (ft TOC)	Elevation (ft msl) (TOC)	Groundwater Elevation (ft msl)
MW-4	11/22/2004	20	5 - 20	1/18/2005	8.65	5434.68	5426.03
				7/7/2005	8.50		5426.18
				10/19/2005	7.72		5426.96
				2/16/2006	8.35		5426.33
				5/15/2006	8.40		5426.28
				8/2/2006	7.96		5426.72
				11/14/2006	7.74		5426.94
				2/20/2007	8.18		5426.50
				5/15/2007	7.91		5426.77
				8/21/2007	NM		NM
				11/7/2007	AM		AM
				1/16/2008	7.37		5427.31
				3/18/2008	7.73		5426.95
				7/21/2008	5.90		5428.78
				10/21/2008	5.53		5429.15
				1/22/2009	7.36		5427.32
				3/30/2009	7.88		5426.80
				6/16/2009	8.18		5426.50
				9/28/2009	8.71		5425.97
				12/16/2009	8.72		5425.96
MW-5	10/19/2005	17.5	3.5-17.5	10/20/2005	9.11	5434.16	5425.05
				2/16/2006	10.62		5423.54
				5/15/2006	10.47		5423.69
				8/2/2006	9.42		5424.74
				11/14/2006	9.05		5425.11
				2/20/2007	9.84		5424.32
				5/15/2007	8.93		5425.23
				8/21/2007	NM		NM
				11/7/2007	AM		AM
				1/16/2008	NM		NM
				3/18/2008	10.21		5423.95
				7/21/2008	7.55		5426.61
				10/21/2008	6.18		5427.98
				1/22/2009	9.20		5424.96
				3/30/2009	10.30		5423.86
				6/16/2009	9.89		5424.27
				9/28/2009	10.53		5423.63
				12/16/2009	11.46		5422.70

Explanation

(1) = Water level near bottom of monitor well
 AM = Anomalous measurement due to meter malfunction - reading not recorded
 bgs = Below ground surface
 ft = Feet
 msl = Mean sea level
 NM = Not measured
 TOC = Top of casing

Table 3. Groundwater Laboratory Analytical Results Summary (January 2005 - December 2009) - ConocoPhillips Company Federal No.15

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	2-Methylnaphthalene (µg/L)	1-Methylnaphthalene (µg/L)	Naphthalene (µg/L)	Total Naphthalene (µg/L)	Chloride (mg/L)
MW-1	1/18/2005	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	85
	10/18/2005	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	39
	11/15/2006	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	36
	11/17/2007	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	44
	3/18/2008	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	7/21/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	54
	10/21/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	57.8
	1/22/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	74.8
	3/30/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	6/16/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	9/28/2009	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA
	12/16/2009	<1.0	1	<1.0	<1.0	NA	NA	NA	NA	NA
MW-2	1/18/2005	1200	3300	380	3500	72	34	51	157	41
	Duplicate	1300	3700	410	3800	NA	NA	NA	NA	NA
	10/19/2005	1100	410	160	470	18	11	15	44	60
	Duplicate	1100	500	150	610	NA	NA	NA	NA	NA
	11/14/2006	23	29	6.6	120	<10	<10	<10	<10	50
	Duplicate	45	57	12	220	NA	NA	NA	NA	NA
	11/17/2007	4.2	8.8	24	74	<10	<10	<10	<10	35
	Duplicate	3.9	7.9	22	69	NA	NA	NA	NA	NA
	3/18/2008	5	<5.0	<5.0	9	NA	NA	NA	NA	NA
	7/21/2008	<5.0	<5.0	13	27	<5.0	<5.0	<5.0	NA	42.7
	Duplicate	<5.0	<5.0	13	27	NA	NA	NA	NA	NA
	10/21/2008	<5.0	<5.0	<5.0	5	<5.0	<5.0	<5.0	NA	71.3
MW-3	Duplicate	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	1/22/2009	<5.0	<5.0	7	17	<5.0	<5.0	<5.0	<5.0	36.1
	Duplicate	<5.0	<5.0	5	12	NA	NA	NA	NA	NA
	3/30/2009	5.7	<5.0	11	22	NA	NA	NA	NA	NA
	6/16/2009	<5.0	<5.0	<5.0	5.1	NA	NA	NA	NA	NA
	Duplicate	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	9/28/2009	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA
	Duplicate	3.4	<1.0	1.8	3.4	NA	NA	NA	NA	NA
	12/16/2009	5	<1.0	1.9	2.1	NA	NA	NA	NA	NA
	Duplicate	1.9	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA
	1/18/2005	190	<5.0	<5.0	<10	<10	<10	<10	<10	34
	10/19/2005	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	42
MW-3	11/14/2006	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	39
	11/17/2007	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	34
	3/18/2008	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	7/21/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	22
	10/21/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	20.6
	1/22/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	22
	3/30/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	6/16/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	9/28/2009	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA
	12/16/2009	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA

Table 3. Groundwater Laboratory Analytical Results Summary (January 2005 - December 2009) - ConocoPhillips Company Federal No.15

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	2-Methylnaphthalene (µg/L)	1-Methylnaphthalene (µg/L)	Naphthalene (µg/L)	Total Naphthalene (µg/L)	Chloride (mg/L)
MW-4	1/18/2005	2.8	<1.0	<1.0	<2.0	<10	<10	<10	<10	37
	10/19/2005	23	2.2	<1.0	4.3	<10	<10	<10	<10	51
	11/14/2006	1.1	<1.0	<1.0	<2.0	<10	<10	<10	<10	44
	1/17/2007	36	<1.0	22	<2.0	<10	<10	<10	<10	24
	3/18/2008	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	7/21/2008	35	<5.0	18	<5.0	<5.0	<5.0	<5.0	NA	22
	10/21/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	25.1
	1/22/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	42.1
	3/30/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	Duplicate	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	6/16/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	9/28/2009	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA
	12/16/2009	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA
	10/20/2005	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	73
MW-5	11/14/2006	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	79
	1/17/2007	<1.0	<1.0	<1.0	<2.0	<10	<10	<10	<10	58
	3/18/2008	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	7/21/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	27.6
	10/21/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	34.5
	1/22/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	35.8
	3/30/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	6/16/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA	NA	NA
	9/28/2009	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA
	12/16/2009	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA
NMWQCC Groundwater Quality Standards		10 (µg/L)	750 (µg/L)	750 (µg/L)	620 (µg/L)	NE	NE	NE	30 (µg/L)	250 mg/L

Explanation

mg/L = milligrams per liter (parts per million)

µg/L = micrograms per liter (parts per billion)

NE=Not established

NMWQCC = New Mexico Water Quality Control Commission

NA = Not analyzed

<1.0 = Not detected at the reporting limit

Constituents in excess of NMWQCC groundwater quality standards are in **BOLD**

APPENDIX A
GROUNDWATER SAMPLING FIELD FORMS



TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Federal #15Page 1 of 5

Project No. _____

Site Location Farmington, NMSite/Well No. MW-1Coded/
Replicate No. _____Date 12/16/09Weather coolTime Sampling
Began 1430Time Sampling
Completed 1457

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 20

Water-Level Elevation _____

Held _____ Depth to Water Below MP 9.31Diameter of Casing 2"Wet _____ Water Column in Well 10.69Gallons Pumped/Bailed
Prior to Sampling _____Gallons per Foot 0.16Gallons in Well 1.71Sampling Pump Intake Setting
(feet below land surface) _____Purging Equipment Purge pump / Bailer X3 = 5.13

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
<u>1454</u>	<u>13.98</u>	<u>6.78</u>	<u>2122</u>	<u>1.379</u>	<u>4.04</u>	<u>-8.5</u>
<u>1456</u>	<u>13.96</u>	<u>6.76</u>	<u>2125</u>	<u>1.381</u>	<u>4.95</u>	<u>-10.7</u>
<u>1457</u>	<u>14.02</u>	<u>6.71</u>	<u>2126</u>	<u>1.382</u>	<u>3.11</u>	<u>-12.2</u>

vol
4.25
4.5
5Sampling Equipment Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX 3 40mL VOA's HCl

Remarks _____

Sampling Personnel _____

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 Federal #15Page 2 of 5

Project No. _____

Site Location Farmington, NMSite/Well No. MW-2Coded/
Replicate No. Duplicate @ 1515Date 12/16/09Weather cloudTime Sampling
Began 1440Time Sampling
Completed 1510

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 20 Water-Level Elevation _____Held _____ Depth to Water Below MP 9.49 Diameter of Casing 2"Wet _____ Water Column in Well 10.51 Gallons Pumped/Bailed
Prior to Sampling _____Gallons per Foot 0.16Gallons in Well 1.68Sampling Pump Intake Setting
(feet below land surface) _____Purging Equipment Purge pump / Bailer x3 = 5.04

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm ³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1502 13:33	13.33	6.88	1778	1.150	4.82	-32.5
1505	14.31	6.83	1798	1.167	4.14	-59.4
1507	14.48	6.85	1786	1.161	3.99	-59.9

Vol
3.5
4.5
5.0Sampling Equipment Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX 3 40mL VOA's HClRemarks duplicate sample collected @ 1515

Sampling Personnel _____

Well Casing Volumes

Gal./ft.	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.85
	1 ½" = 0.10	2 ½" = 0.24	3" ½ = 0.50	6" = 1.46



TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Federal #15Page 3 of 5

Project No. _____

Site Location Farmington, NMSite/Well No. MW-3Coded/
Replicate No. _____Date 12/16/09Weather warm, 45°Time Sampling
Began 1400Time Sampling
Completed 14351445

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 20

Water-Level Elevation _____

Held _____ Depth to Water Below MP 8.94Diameter of Casing 2"Wet _____ Water Column in Well 11.06Gallons Pumped/Bailed
Prior to Sampling _____Gallons per Foot 0.16Gallons in Well 1.7696Sampling Pump Intake Setting
(feet below land surface) _____Purging Equipment Purge pump / Bailer X3 = 5.31

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
<u>1440</u>	<u>14.15</u>	<u>6.82</u>	<u>1721</u>	<u>1.119</u>	<u>2.87</u>	<u>-2.6</u>
<u>1443</u>	<u>14.38</u>	<u>6.82</u>	<u>1713</u>	<u>1.113</u>	<u>3.05</u>	<u>-11.0</u>
<u>1445</u>	<u>14.42</u>	<u>6.81</u>	<u>1711</u>	<u>1.112</u>	<u>2.93</u>	<u>-10.8</u>

gallons
4.25
4.75
5.50Sampling Equipment Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX 3 40mL VOA's HCl

Remarks _____

Sampling Personnel _____

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 Federal #15Page 4 of 5

Project No. _____

Site Location Farmington, NMSite/Well No. MW-4Coded/
Replicate No. _____Date 12/16/09Weather 0001, 38°FTime Sampling
Began 1413Time Sampling
Completed 1430

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 20 Water-Level Elevation _____Held _____ Depth to Water Below MP 8.72 Diameter of Casing 2"Wet _____ Water Column in Well 11.28 Gallons Pumped/Bailed Prior to Sampling 5.5 gallonsGallons per Foot 0.16Gallons in Well 1.805 Sampling Pump Intake Setting (feet below land surface) _____Purging Equipment Purge pump / Bailer x3 = 5.41

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm ³)	TDS (g/L)	DO (mg/L)	ORP (mV)
<u>1423</u>	<u>15.69</u>	<u>6.79</u>	<u>1738</u>	<u>1.130</u>	<u>6.14</u>	<u>-10.9</u>
<u>1425</u>	<u>15.62</u>	<u>6.80</u>	<u>1738</u>	<u>1.129</u>	<u>3.60</u>	<u>-10.5</u>
<u>1427</u>	<u>15.57</u>	<u>6.81</u>	<u>1738</u>	<u>1.130</u>	<u>3.66</u>	<u>-9.3</u>

gallons
04.5
5.0
5.5Sampling Equipment Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX 3 40mL VOA's HCl

Remarks _____

Sampling Personnel _____

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 Federal #15Page 5 of 5

Project No. _____

Site Location Farmington, NMSite/Well No. MW-5Coded/
Replicate No. _____Date 12/16/09Weather Cold, 38°Time Sampling
Began 1445Time Sampling
Completed 1520

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 17.5 Water-Level Elevation _____Held _____ Depth to Water Below MP 11.46 Diameter of Casing 2"Wet _____ Water Column in Well 6.04 Gallons Pumped/Bailed 4.25 gallonsGallons per Foot 0.16Gallons in Well .96 Sampling Pump Intake Setting (feet below land surface) ←Purging Equipment Purge pump / Bailer X3 = 2.89

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm ³)	TDS (g/L)	DO (mg/L)	ORP (mV)
<u>1520</u>	<u>15.51</u>	<u>6.83</u>	<u>1923</u>	<u>1.250</u>	<u>2.23</u>	<u>-31.7</u>

4 gallons

Sampling Equipment Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX 3 40mL VOA's HCl

Remarks _____

Sampling Personnel _____

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
LABORATORY ANALYTICAL REPORT



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

Conoco Phillips

Certificate of Analysis Number:

09120771

<u>Report To:</u> Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110- ph: (505) 237-8440 fax:	<u>Project Name:</u> COP Federal Com #15 <u>Site:</u> Farmington, NM <u>Site Address:</u> <u>PO Number:</u> 4511988512 <u>State:</u> New Mexico <u>State Cert. No.:</u> <u>Date Reported:</u> 12/29/2009
--	---

This Report Contains A Total Of 18 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

12/29/2009

Date



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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:

09120771

Report To: Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110- ph: (505) 237-8440 fax:	Project Name: COP Federal Com #15 Site: Farmington, NM Site Address: PO Number: 4511988512 State: New Mexico State Cert. No.: Date Reported: 12/29/2009
---	--

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.

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 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.

09120771 Page 1

12/29/2009

Erica Cardenas
Project Manager

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

Date



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

Conoco Phillips

Certificate of Analysis Number:

09120771

Report To: Tetra Tech, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 237-8440 fax: (505) 881-3283

Project Name: COP Federal Com #15
Site: Farmington, NM
Site Address:

PO Number: 4511988512

State: New Mexico

State Cert. No.:

Date Reported: 12/29/2009

Fax To:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	09120771-01	Water	12/16/2009 2:57:00 PM	12/18/2009 9:30:00 AM	09120771	<input type="checkbox"/>
MW-2	09120771-02	Water	12/16/2009 3:10:00 PM	12/18/2009 9:30:00 AM	292813	<input type="checkbox"/>
MW-3	09120771-03	Water	12/16/2009 2:45:00 PM	12/18/2009 9:30:00 AM	292813	<input type="checkbox"/>
MW-4	09120771-04	Water	12/16/2009 2:30:00 PM	12/18/2009 9:30:00 AM	292813	<input type="checkbox"/>
MW-5	09120771-05	Water	12/16/2009 3:20:00 PM	12/18/2009 9:30:00 AM	292813	<input type="checkbox"/>
Duplicate	09120771-06	Water	12/16/2009 3:15:00 PM	12/18/2009 9:30:00 AM	292813	<input type="checkbox"/>
Trip Blank	09120771-07	Water	12/16/2009 11:30:00 PM	12/18/2009 9:30:00 AM	292813	<input type="checkbox"/>

12/29/2009

Erica Cardenas
Project Manager

Date

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

Ted Yen
Quality Assurance Officer

09120771 Page 2

12/29/2009 2:32:53 PM



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

Client Sample ID: MW-1

Collected: 12/16/2009 14:57 SPL Sample ID: 09120771-01

Site: Farmington, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
Benzene	ND		1	1	12/23/09 17:34	D_R	5341890
Ethylbenzene	ND		1	1	12/23/09 17:34	D_R	5341890
Toluene	1		1	1	12/23/09 17:34	D_R	5341890
m,p-Xylene	ND		2	1	12/23/09 17:34	D_R	5341890
o-Xylene	ND		1	1	12/23/09 17:34	D_R	5341890
Xylenes, Total	ND		1	1	12/23/09 17:34	D_R	5341890
Surr: 1,2-Dichloroethane-d4	107		% 71-140	1	12/23/09 17:34	D_R	5341890
Surr: 4-Bromofluorobenzene	101		% 70-130	1	12/23/09 17:34	D_R	5341890
Surr: Toluene-d8	102		% 61-121	1	12/23/09 17:34	D_R	5341890

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: MW-2

Collected: 12/16/2009 15:10 SPL Sample ID: 09120771-02

Site: Farmington, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	5		1	1	12/24/09 13:55	D_R	5342958
Ethylbenzene	1.9		1	1	12/24/09 13:55	D_R	5342958
Toluene	ND		1	1	12/24/09 13:55	D_R	5342958
m,p-Xylene	2.1		2	1	12/24/09 13:55	D_R	5342958
o-Xylene	ND		1	1	12/24/09 13:55	D_R	5342958
Xylenes, Total	2.1		1	1	12/24/09 13:55	D_R	5342958
Surr: 1,2-Dichloroethane-d4	107		% 71-140	1	12/24/09 13:55	D_R	5342958
Surr: 4-Bromofluorobenzene	102		% 70-130	1	12/24/09 13:55	D_R	5342958
Surr: Toluene-d8	101		% 61-121	1	12/24/09 13:55	D_R	5342958

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: MW-3

Collected: 12/16/2009 14:45 SPL Sample ID: 09120771-03

Site: Farmington, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
Benzene	ND		1	1	12/24/09 14:17	D_R	5342959
Ethylbenzene	ND		1	1	12/24/09 14:17	D_R	5342959
Toluene	ND		1	1	12/24/09 14:17	D_R	5342959
m,p-Xylene	ND		2	1	12/24/09 14:17	D_R	5342959
o-Xylene	ND		1	1	12/24/09 14:17	D_R	5342959
Xylenes, Total	ND		1	1	12/24/09 14:17	D_R	5342959
Surr: 1,2-Dichloroethane-d4	106		% 71-140	1	12/24/09 14:17	D_R	5342959
Surr: 4-Bromofluorobenzene	102		% 70-130	1	12/24/09 14:17	D_R	5342959
Surr: Toluene-d8	101		% 61-121	1	12/24/09 14:17	D_R	5342959

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: MW-4

Collected: 12/16/2009 14:30

SPL Sample ID: 09120771-04

Site: Farmington, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
Benzene	ND		1	1	12/24/09 14:39	D_R	5342969
Ethylbenzene	ND		1	1	12/24/09 14:39	D_R	5342969
Toluene	ND		1	1	12/24/09 14:39	D_R	5342969
m,p-Xylene	ND		2	1	12/24/09 14:39	D_R	5342969
o-Xylene	ND		1	1	12/24/09 14:39	D_R	5342969
Xylenes, Total	ND		1	1	12/24/09 14:39	D_R	5342969
Surr: 1,2-Dichloroethane-d4	106		% 71-140	1	12/24/09 14:39	D_R	5342969
Surr: 4-Bromofluorobenzene	102		% 70-130	1	12/24/09 14:39	D_R	5342969
Surr: Toluene-d8	102		% 61-121	1	12/24/09 14:39	D_R	5342969

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: MW-5

Collected: 12/16/2009 15:20

SPL Sample ID: 09120771-05

Site: Farmington, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	12/24/09 0:30	D_R	5342015
Ethylbenzene	ND		1	1	12/24/09 0:30	D_R	5342015
Toluene	ND		1	1	12/24/09 0:30	D_R	5342015
m,p-Xylene	ND		2	1	12/24/09 0:30	D_R	5342015
o-Xylene	ND		1	1	12/24/09 0:30	D_R	5342015
Xylenes, Total	ND		1	1	12/24/09 0:30	D_R	5342015
Surr: 1,2-Dichloroethane-d4	108		% 71-140	1	12/24/09 0:30	D_R	5342015
Surr: 4-Bromofluorobenzene	99.7		% 70-130	1	12/24/09 0:30	D_R	5342015
Surr: Toluene-d8	101		% 61-121	1	12/24/09 0:30	D_R	5342015

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: Duplicate

Collected: 12/16/2009 15:15 SPL Sample ID: 09120771-06

Site: Farmington, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	1.9		1	1	12/24/09 0:51	D_R	5342016
Ethylbenzene	ND		1	1	12/24/09 0:51	D_R	5342016
Toluene	ND		1	1	12/24/09 0:51	D_R	5342016
m,p-Xylene	ND		2	1	12/24/09 0:51	D_R	5342016
o-Xylene	ND		1	1	12/24/09 0:51	D_R	5342016
Xylenes, Total	ND		1	1	12/24/09 0:51	D_R	5342016
Surr: 1,2-Dichloroethane-d4	106		% 71-140	1	12/24/09 0:51	D_R	5342016
Surr: 4-Bromofluorobenzene	102		% 70-130	1	12/24/09 0:51	D_R	5342016
Surr: Toluene-d8	100		% 61-121	1	12/24/09 0:51	D_R	5342016

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: Trip Blank

Collected: 12/16/2009 23:30

SPL Sample ID: 09120771-07

Site: Farmington, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	12/24/09 1:13	D_R	5342017
Ethylbenzene	ND		1	1	12/24/09 1:13	D_R	5342017
Toluene	ND		1	1	12/24/09 1:13	D_R	5342017
m,p-Xylene	ND		2	1	12/24/09 1:13	D_R	5342017
o-Xylene	ND		1	1	12/24/09 1:13	D_R	5342017
Xylenes, Total	ND		1	1	12/24/09 1:13	D_R	5342017
Surr: 1,2-Dichloroethane-d4	108		% 71-140	1	12/24/09 1:13	D_R	5342017
Surr: 4-Bromofluorobenzene	102		% 70-130	1	12/24/09 1:13	D_R	5342017
Surr: Toluene-d8	102		% 61-121	1	12/24/09 1:13	D_R	5342017

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



Quality Control Report

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

Conoco Phillips COP Federal Com #15

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09120771
Lab Batch ID: R292161

Method Blank

Samples in Analytical Batch:

RunID: MSDVOA1_091223A-5341869 Units: ug/L
Analysis Date: 12/23/2009 11:10 Analyst: D_R

Lab Sample ID 09120771-01A
Client Sample ID MW-1

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes, Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	108.7	71-140
Surr: 4-Bromofluorobenzene	101.3	70-130
Surr: Toluene-d8	101.3	61-121

Laboratory Control Sample (LCS)

RunID: MSDVOA1_091223A-53418 Units: ug/L
Analysis Date: 12/23/2009 10:05 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	17.9	89.6	70	130
Ethylbenzene	20.0	19.8	99.0	70	130
Toluene	20.0	20.4	102	73	130
m,p-Xylene	40.0	41.9	105	70	130
o-Xylene	20.0	20.8	104	70	130
Xylenes, Total	60.0	62.7	104	70	130
Surr: 1,2-Dichloroethane-d4	50.0	52.7	105	71	140
Surr: 4-Bromofluorobenzene	50.0	50.5	101	70	130
Surr: Toluene-d8	50.0	51.4	103	61	121

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

Sample Spiked: 09120771-01
RunID: MSDVOA1_091223A-53418 Units: ug/L
Analysis Date: 12/23/2009 19:46 Analyst: D_R

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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

MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

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.



Quality Control Report

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

Conoco Phillips
COP Federal Com #15

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09120771
Lab Batch ID: R292161

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	98.8	20	18.3	90.7	8.47	20	67	202
Ethylbenzene	ND	20	21.2	105	20	19.6	96.4	8.24	20	49	165
Toluene	1.04	20	21.8	104	20	20.9	99.1	4.37	20	48	162
m,p-Xylene	ND	40	44.2	107	40	41.0	98.9	7.46	20	44	167
o-Xylene	ND	20	21.8	106	20	20.4	99.0	6.94	20	54	158
Xylenes, Total	2.0	60	66	110	60	61	99	7.3	20	44	167
Surr: 1,2-Dichloroethane-d4	ND	50	52	104	50	51.5	103	0.969	30	71	140
Surr: 4-Bromofluorobenzene	ND	50	50.6	101	50	50.0	99.9	1.31	30	70	130
Surr: Toluene-d8	ND	50	51	102	50	51.4	103	0.720	30	61	121

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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

MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

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.

09120771 Page 12

12/29/2009 2:33:06 PM



Quality Control Report

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

Conoco Phillips COP Federal Com #15

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09120771
Lab Batch ID: R292169

Method Blank

RunID: MSDVOA1_091223B-5342011 Units: ug/L
Analysis Date: 12/23/2009 22:39 Analyst: D_R

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120771-05A	MW-5
09120771-06A	Duplicate
09120771-07A	Trip Blank

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes, Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	106.4	71-140
Surr: 4-Bromofluorobenzene	102.8	70-130
Surr: Toluene-d8	101.8	61-121

Laboratory Control Sample (LCS)

RunID: MSDVOA1_091223B-53420 Units: ug/L
Analysis Date: 12/23/2009 21:34 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	18.1	90.6	70	130
Ethylbenzene	20.0	19.3	96.7	70	130
Toluene	20.0	20.1	100	73	130
m,p-Xylene	40.0	41.2	103	70	130
o-Xylene	20.0	20.4	102	70	130
Xylenes, Total	60.0	61.6	103	70	130
Surr: 1,2-Dichloroethane-d4	50.0	52.1	104	71	140
Surr: 4-Bromofluorobenzene	50.0	50.1	100	70	130
Surr: Toluene-d8	50.0	51.2	102	61	121

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

Sample Spiked: 09120780-01
RunID: MSDVOA1_091223B-53420 Units: ug/L
Analysis Date: 12/23/2009 23:00 Analyst: D_R

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TN/C - Too numerous to count

MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

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.



Quality Control Report

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

Conoco Phillips
COP Federal Com #15

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09120771
Lab Batch ID: R292169

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	19.5	97.5	20	17.9	89.3	8.77	20	67	202
Ethylbenzene	ND	20	20.9	104	20	18.5	92.6	11.9	20	49	165
Toluene	ND	20	21.7	108	20	19.8	99.1	8.97	20	48	162
m,p-Xylene	ND	40	43.5	109	40	38.9	97.4	11.0	20	44	167
o-Xylene	ND	20	21.5	107	20	19.4	97.1	10.0	20	54	158
Xylenes, Total	ND	60	65	110	60	58	97	11	20	44	167
Surr: 1,2-Dichloroethane-d4	ND	50	52.5	105	50	52.9	106	0.883	30	71	140
Surr: 4-Bromofluorobenzene	ND	50	50.1	100	50	49.6	99.1	1.03	30	70	130
Surr: Toluene-d8	ND	50	51.6	103	50	50.9	102	1.49	30	61	121

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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

MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

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.



Quality Control Report

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

Conoco Phillips COP Federal Com #15

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09120771
Lab Batch ID: R292229

Method Blank

RunID: MSDVOA1_091224A-5342950 Units: ug/L
Analysis Date: 12/24/2009 10:56 Analyst: D_R

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120771-02A	MW-2
09120771-03A	MW-3
09120771-04A	MW-4

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes, Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	108.6	71-140
Surr: 4-Bromofluorobenzene	101.6	70-130
Surr: Toluene-d8	100.6	61-121

Laboratory Control Sample (LCS)

RunID: MSDVOA1_091224A-53429 Units: ug/L
Analysis Date: 12/24/2009 9:51 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	18.4	91.8	70	130
Ethylbenzene	20.0	19.6	98.2	70	130
Toluene	20.0	20.7	103	73	130
m,p-Xylene	40.0	41.5	104	70	130
o-Xylene	20.0	20.8	104	70	130
Xylenes, Total	60.0	62.3	104	70	130
Surr: 1,2-Dichloroethane-d4	50.0	52.3	105	71	140
Surr: 4-Bromofluorobenzene	50.0	49.8	99.6	70	130
Surr: Toluene-d8	50.0	51.4	103	61	121

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

Sample Spiked: 09120781-05
RunID: MSDVOA1_091224A-53432 Units: ug/L
Analysis Date: 12/24/2009 15:22 Analyst: D_R

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TN/C - Too numerous to count

MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

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.

09120771 Page 15

12/29/2009 2:33:07 PM



Quality Control Report

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

Conoco Phillips COP Federal Com #15

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09120771
Lab Batch ID: R292229

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	19.0	95.2	20	17.6	88.0	7.90	20	67	202
Ethylbenzene	ND	20	20.8	104	20	18.8	94.1	10.1	20	49	165
Toluene	ND	20	21.5	107	20	19.5	97.5	9.61	20	48	162
m,p-Xylene	ND	40	43.2	108	40	39.4	98.5	9.23	20	44	167
o-Xylene	ND	20	21.3	106	20	19.7	98.3	7.85	20	54	158
Xylenes, Total	ND	60	64.5	107	60	59.1	98.4	8.78	20	44	167
Surr: 1,2-Dichloroethane-d4	ND	50	52.2	104	50	52.7	105	0.928	30	71	140
Surr: 4-Bromofluorobenzene	ND	50	50.6	101	50	50.4	101	0.416	30	70	130
Surr: Toluene-d8	ND	50	51.1	102	50	50.8	102	0.664	30	61	121

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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

MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

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:	09120771	Received By:	BF
Date and Time Received:	12/18/2009 9:30:00 AM	Carrier name:	FedEx
Temperature:	3.0°C	Chilled by:	Water Ice

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

*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

USE FOR REFERENCE ONLY

292813

09120771

page 1 of 1

Client Name: Tetra Tech / Canoco Phillips		Address: 6121 Indian School Rd NE Ste 200		City: Albuquerque NM		State: NM		Zip: 87106		Phone/Fax: 505.237.8440 505.237.8656		Client Contact: Kelly Blanchard Email: kelly.blanchard@tetra-tech.com		Project Name/No.: Federal 15		Site Name: Farmington, NM		Site Location: Canoco Phillips		Invoice To: Canoco Phillips	
SAMPLE ID	DATE	TIME	PH	TIME		matrix	bottle	size	pres.	Number of Containers	Requested Analysis										
				comp	grab																
MW-1	12/16/09	1457				W	V	40	1	1-HCl 2-HNO3 3-H2SO4 X=other	BTEX										
MW-2	12/16/09	1510				W	V	40	1												
MW-3	12/16/09	1445				W	V	40	1												
MW-4	12/16/09	1430				W	V	40	1												
MW-5	12/16/09	1520				W	V	40	1												
Duplicate	12/16/09	1515				W	V	40	1												
Grip Bank	12/17/09	1130				W	V	40	1												

Client/Consultant Remarks: Laboratory remarks: Intact? ☐ Y ☐ N Ice? ☐ Y ☐ N Temp: 3.8 °C PM review (initial):

Requested TAT		Special Reporting Requirements		Special Detection Limits (specify):	
<input type="checkbox"/> 1 Business Day	<input type="checkbox"/> Contract	Stop/hold QC	Level 3 QC <input type="checkbox"/> Level 4 QC <input type="checkbox"/> TX TRP <input type="checkbox"/> LA RECAP <input type="checkbox"/>		
<input type="checkbox"/> 2 Business Days	<input checked="" type="checkbox"/> Standard	V. Requiring field investigation		2. Received by: time	
<input type="checkbox"/> 3 Business Days		3. Relinquished by: date		4. Received by: time	
<input type="checkbox"/> Other		5. Relinquished by: date		6. Received by Laboratory: time	
Rush TAT requires prior notice					

☒ 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