

3R - 098

**QUARTERLY
GWMR**

06/03/2011



TETRA TECH, INC.

June 3, 2011

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

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

RECEIVED OGD

2011 JUN -7 A 10:59

RE: (1 and 2) ConocoPhillips Company, Nell Hall No. 1, San Juan County, New Mexico - September 2010 and March 2011 Semi-Annual Groundwater Monitoring Reports
(3) ConocoPhillips Company Randleman No. 1 Site, San Juan County, New Mexico - September 2010 Quarterly Groundwater Monitoring Report
(4) ConocoPhillips Company, San Juan 27-5 No. 34A, Rio Arriba County, New Mexico - March 2011 Quarterly Groundwater Monitoring Report
(5) ConocoPhillips Company, Sategna No. 2E, San Juan County, New Mexico - March 2011 Quarterly Groundwater Monitoring Report
(6) ConocoPhillips Company, Shepherd & Kelsey No. 1E, San Juan County, New Mexico - March 2011 Quarterly Groundwater Monitoring Report
(7 and 8) ConocoPhillips Company Wilmuth No. 1 Site, San Juan County, New Mexico - December 2010 and March 2011 Quarterly Groundwater Monitoring Reports

Dear Mr. von Gonten:

Enclosed please find a copy of the above-referenced documents as compiled by Tetra Tech, Inc., for these San Juan Basin sites.

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 (8)

Cc: Brandon Powell, New Mexico Oil Conservation Division (Aztec, NM Office)
Terry Lauck, ConocoPhillips Company Risk Management and Remediation (electronic only)
Chris Jaquez, Landowner (Nell Hall No. 1 only)

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**QUARTERLY GROUNDWATER MONITORING REPORT
MARCH 2011 SAMPLING EVENT**

**CONOCOPHILLIPS COMPANY
SHEPHERD & KELSEY NO.1E
BLOOMFIELD, SAN JUAN COUNTY, NEW MEXICO**

OCD # 3RP-98-0
API # - 30-045-24316

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. 9690121.100

June 2011

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QUARTERLY GROUNDWATER MONITORING REPORT CONOCOPHILLIPS COMPANY SHEPHERD & KELSEY NO. 1E BLOOMFIELD, NEW MEXICO

I.0 INTRODUCTION

ConocoPhillips Company (ConocoPhillips) retained Tetra Tech, Inc (Tetra Tech) to perform additional site characterization work and quarterly groundwater monitoring at the Shepherd & Kelsey No. 1E site in Bloomfield, New Mexico (Site). This report presents the results of a quarterly groundwater monitoring event conducted at the Site by Tetra Tech on March 14, 2011. This sampling event represents the tenth consecutive quarter of groundwater monitoring completed by Tetra Tech at the Site to include all four Site monitoring wells.

The Site is located on private land leased by ConocoPhillips near the intersection of New Mexico Highway 64 and County Road 5097 in Bloomfield, NM. The Site consists of a gas production well head with associated equipment and installations and is surrounded by agricultural land. The geographical location coordinates are 36° 42' 6.8"N and 108° 01' 12.2" W; the location and general features of the Site are presented as **Figure 1** and **Figure 2**, respectively.

I.1 Site History

A historical timeline for the Site is presented in **Table 1**, and is discussed in more detail below.

Contaminated soil was discovered at the Site during routine maintenance on June 5, 2007. Envirotech Inc. of Farmington, New Mexico (Envirotech) performed soil excavation (Excavation #1, **Figure 2**) at the Site, during which three soil samples were collected and analyzed for total petroleum hydrocarbons (TPH). The concentration of TPH was found to be below the New Mexico Oil Conservation Division (NMOCD) recommended action level. On June 12, 2007 a separate area of TPH soil contamination was discovered. An excavation of the additional area was performed by Envirotech from June 15 through June 18, 2007 (Excavation #2, **Figure 2**). Soil samples taken during the second excavation were found to be above the NMOCD recommended action level for TPH. Groundwater samples collected from the excavation were found to contain benzene and total xylenes above New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards. Monitor Well MW-1 was installed by Envirotech on September 26, 2007. Soil and groundwater samples collected during drilling were analyzed for TPH and for benzene, toluene, ethylbenzene and total xylenes (BTEX); results were below NMOCD recommended action levels. In November 2007, Envirotech recommended plugging and abandoning MW-1 and a no further action status from NMOCD. However, in April 2008, NMOCD indicated that further investigation was necessary before closure could be granted.

Tetra Tech began quarterly sampling of MW-1 on October 23, 2008. On January 22, 2009, three additional groundwater monitor wells were installed by WDC Exploration and Drilling of Peralta, NM (WDC), under the supervision of Tetra Tech. Monitor Wells MW-2, MW-3, and MW-4 were initially sampled on January 30, 2009 and have since been incorporated into the quarterly monitoring schedule.

with MW-1. Typically, a generalized geologic cross section would have been prepared using soil sampling data collected during drilling activities and added as a figure to this report; however, due to the shallow depth to groundwater, soil samples were not collected, therefore, this could not be compiled.

2.0 METHODOLOGY AND RESULTS

Quarterly groundwater sampling was conducted on March 14, 2011. Groundwater samples were collected from Monitor Wells MW-1, MW-2, MW-3 and MW-4. Prior to sampling, depth to groundwater in each well was recorded using a dual interface probe. Results are summarized in **Table 2**.

The casings for all Site monitor wells were surveyed by Tetra Tech in January 2009, with the wellhead assigned an arbitrary reference elevation of 100 feet above mean sea level (amsl). Using these data, it was determined that the groundwater flow direction at the Site is to the south (**Figure 3**).

2.1 Groundwater Sampling Methodology

Monitor Wells MW-1, MW-2, MW-3, and MW-4 were sampled during the March 14, 2011 groundwater monitoring event. Prior to sampling, all monitor wells were purged of at least 3 casing volumes of groundwater using a dedicated, 1.5-inch diameter, polyethylene disposable bailer. Groundwater quality parameters were collected using a YSI 556 multi-parameter sonde during each purge. Results were recorded on a Tetra Tech Water Sampling Field Form (**Appendix A**). Groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped under chain-of-custody documentation to Southern Petroleum Laboratory (SPL) of Houston, Texas. Samples were analyzed for dissolved manganese by EPA Method 6010B; total dissolved solids (TDS) by EPA Method 2540C; and for BTEX by EPA Method 8260B.

2.2 Groundwater Sampling Analytical Results

The 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). A historical summary of groundwater analytical results is provided in **Table 3**. The laboratory analytical report is included as **Appendix B**.

- **Manganese**

The groundwater quality standard for dissolved manganese is 0.2 milligrams per liter (mg/L). Groundwater samples collected on March 14, 2011 from Monitor Well MW-2 and MW-4 were found to contain dissolved manganese at concentrations of 0.242 mg/L and 0.602 mg/L, respectively.

- **TDS**

The groundwater quality standard for TDS is 1000 mg/L. Groundwater samples collected from Monitor Well MW-2 and Monitor Well MW-4 were found at concentrations of 1,000 mg/L and 1,810 mg/L, respectively.

3.0 CONCLUSIONS

This is the tenth consecutive quarter with groundwater sample analytical results below NMWQCC standards for BTEX for all four Site monitoring wells. During this latest monitoring period, two wells (MW-2 and MW-4) revealed dissolved manganese and TDS concentrations at or above the NMWQCC standard. In order to move toward Site closure with NMOCD, continued groundwater quality monitoring is recommended for TDS and dissolved manganese to determine if seasonal trends are influencing Site groundwater quality and if the levels appear to be stable and at background concentrations. BTEX analysis will be discontinued at the site. The next groundwater monitoring event is scheduled for June 2011. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetrattech.com if you have any questions or require additional information.

FIGURES

1. Site Location Map
2. Site Detail Map
3. Groundwater Contour Map – March 2011



FIGURE 1.

Site Location Map
ConocoPhillips Company
Shepherd & Kelsey No. 1E
Bloomfield, NM
36° 42' 6.8" N
108° 01' 12.2" W



Approximate
Site location



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ConocoPhillips High Resolution Aerial Imagery 2008

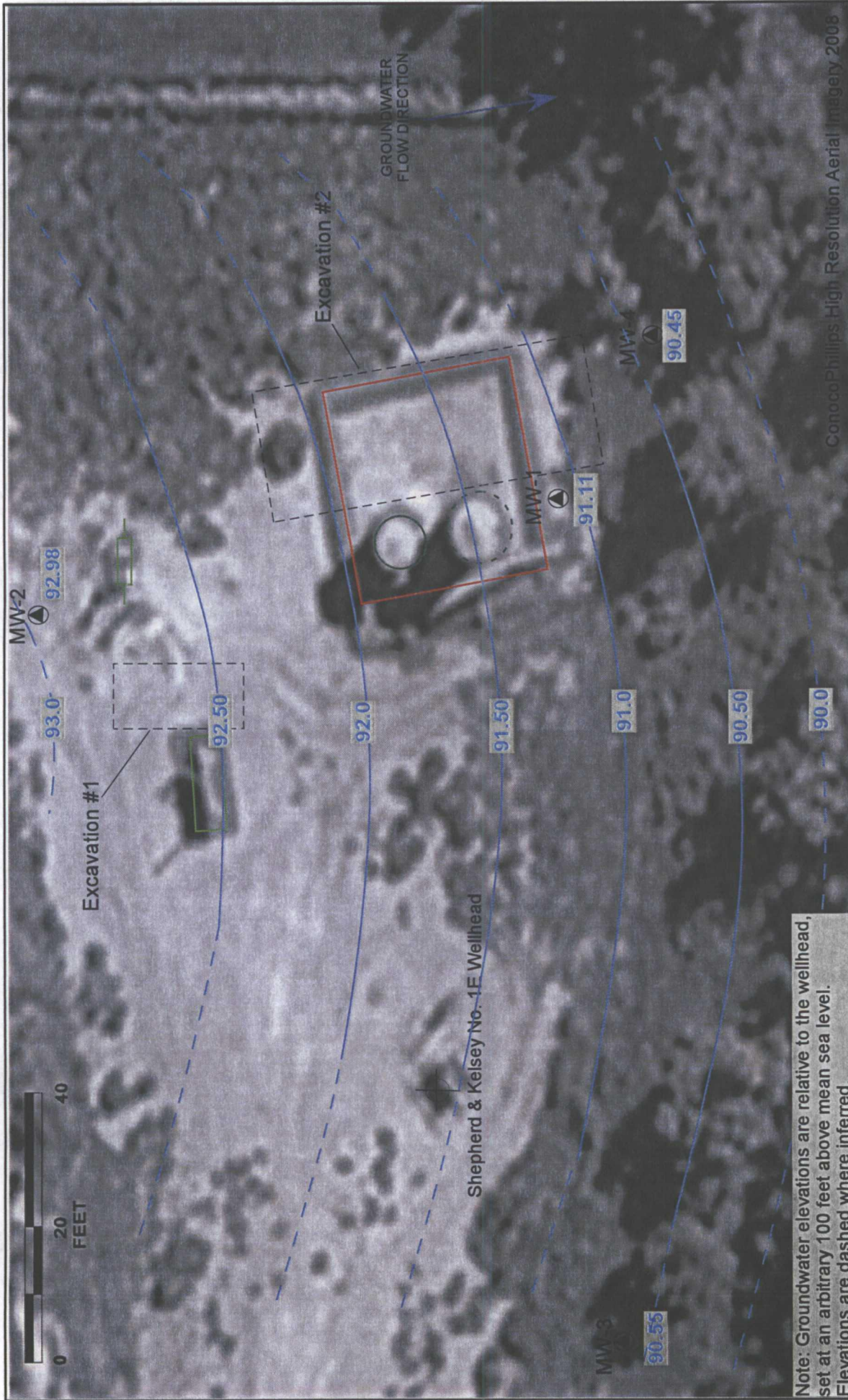
FIGURE 2:
SITE DETAIL MAP
CONOCOPHILLIPS COMPANY
SHEPHERD & KELSEY No.1E
 Section 29 of T29N, R11W
 Bloomfield, New Mexico

LEGEND

- ⊕ WELLHEAD
- BERM
- EQUIPMENT
- CONDENSATE TANK
- PRODUCED WATER TANK
- A A' PLAN VIEW OF CROSS-SECTION



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Note: Groundwater elevations are relative to the wellhead, set at an arbitrary 100 feet above mean sea level. Elevations are dashed where inferred.

ConocoPhillips High Resolution Aerial Imagery 2008

FIGURE 3:
GROUNDWATER CONTOUR MAP
 March 2011
 CONOCOPHILLIPS COMPANY
 SHEPHERD & KELSEY No.1E
 Section 29 of T29N, R11W
 Bloomfield, New Mexico

LEGEND

- WELLHEAD
- BERM
- EQUIPMENT
- CONDENSATE TANK
- PRODUCED WATER TANK
- GROUNDWATER CONTOUR LINE
- INFERRED GROUNDWATER CONTOUR LINE



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TABLES

- I. Site History Timeline
2. Groundwater Elevation Data Summary
3. Groundwater Laboratory Analytical Results Summary

Table 1. Site History Timeline - ConocoPhillips Company Shepherd and Kelsey No. 1E

DATE	ACTIVITY
5-Jun-07	Hydrocarbon-impacted soil discovered during routine maintenance at the Site. Soil excavation was performed at the Site, and three soil samples were obtained. Sample results showed total petroleum hydrocarbon (TPH) concentrations below the NMOCD regulations of 100 parts per million (ppm). Original source of contamination was unknown.
12-Jun-07	A separate area of TPH soil contamination discovered.
June 15-18, 2007	A 50 foot by 20 foot by 4 foot excavation was completed. Soil samples taken from the second excavation show TPH at 992 ppm. Water samples obtained show benzene and total xylenes above State of New Mexico drinking water standards.
26-Sep-07	Ground water monitoring well installed to a depth of ten (10) feet below ground surface (bgs) by Envirotech Inc. of Farmington, NM (Envirotech). Depth to groundwater recorded at four (4) feet bgs. Soil and groundwater samples obtained for TPH, benzene, and benzene, toluene, ethylbenzene and total xylenes (BTEX) were below the respective NMOCD regulations of 100 ppm, 10 ppm and 50 ppm.
Nov-07	Envirotech report recommends plugging and abandonment of the temporary ground water monitoring well and no further action for the Site (Envirotech, 2007).
Apr-08	Oil Conservation Division of NM Energy, Minerals, and Resources Dept. indicates additional investigation and sampling is necessary for closure consideration during a meeting with Glenn von Gonten.
23-Oct-08	1st quarter sampling of MW-1 by Tetra Tech.
Jan-09	Installed additional monitoring wells MW-2, MW-3 and MW-4.
30-Jan-09	2nd quarter sampling of MW-1 by Tetra Tech; initial sampling of MW-2, MW-3, and MW-4.
1-Apr-09	Quarterly sampling of monitor wells MW-1, MW-2, MW-3, and MW-4.
18-Jun-09	Quarterly sampling of monitor wells MW-1, MW-2, MW-3, and MW-4.
21-Sep-09	Quarterly sampling of monitor wells MW-1, MW-2, MW-3, and MW-4. Dissolved metals analysis initiated at the Site for metals with elevated total metal concentrations.
14-Dec-09	Quarterly sampling of monitor wells MW-1, MW-2, MW-3, and MW-4.
31-Mar-10	Quarterly sampling of monitor wells MW-1, MW-2, MW-3, and MW-4.
7-Jun-10	Quarterly sampling of monitor wells MW-1, MW-2, MW-3, and MW-4.
29-Sep-10	Quarterly sampling of monitor wells MW-1, MW-2, MW-3, and MW-4.
14-Dec-10	Tetra Tech conducted the ninth quarterly groundwater monitoring event at the Site (sampling of monitor wells MW-1, MW-2, MW-3, and MW-4.)
14-Mar-11	Tetra Tech conducted the tenth quarterly groundwater monitoring event at the Site (sampling of monitor wells MW-1, MW-2, MW-3, and MW-4.)

Table 2. Groundwater Elevation Data Summary - ConocoPhillips Company Shepherd & Kelsey No. 1E

Well ID	Total Depth (ft bgs)	Screen Interval (ft)	*Elevation (ft) (TOC)	Date Measured	Depth to Groundwater (ft below TOC)	Relative Groundwater Elevation
MW-1	12	2.5-10.0	96.53	10/23/2008	4.02	92.51
				1/30/2009	5.70	90.83
				4/1/2009	5.90	90.63
				6/18/2009	4.01	92.52
				9/21/2009	5.62	90.91
				12/14/2009	5.51	91.02
				3/31/2010	5.72	90.81
				6/7/2010	4.74	91.79
				9/26/2010	5.10	91.43
				12/14/2010	4.76	91.77
				3/14/2011	5.42	91.11
MW-2	20.30	3.0 - 18.0	98.05	1/30/2009	5.41	92.64
				4/1/2009	5.78	92.27
				6/18/2009	2.50	95.55
				9/21/2009	4.60	93.45
				12/14/2009	4.99	93.06
				3/31/2010	5.53	92.52
				6/7/2010	2.70	95.35
				9/29/2010	3.56	94.49
				12/14/2010	4.23	93.82
				3/14/2011	5.07	92.98
MW-3	20.10	3.0 - 18.0	95.60	1/30/2009	5.29	90.31
				4/1/2009	5.46	90.14
				6/18/2009	3.64	91.96
				9/21/2009	5.25	90.35
				12/14/2009	5.19	90.41
				3/31/2010	5.30	90.30
				6/7/2010	5.52	90.08
				9/29/2010	4.81	90.79
				12/14/2010	5.13	90.47
				3/14/2011	5.05	90.55
MW-4	20.70	3.7 - 18.7	96.23	1/30/2009	6.33	89.90
				4/1/2009	6.40	89.83
				6/18/2009	5.51	90.72
				9/21/2009	6.13	90.10
				12/14/2009	5.91	90.32
				3/31/2010	6.10	90.13
				6/7/2010	5.31	90.92
				9/29/2010	5.59	90.64
				12/14/2010	5.57	90.66
				3/14/2011	5.78	90.45

ft = Feet

TOC = Top of casing

bgs = below ground surface

* Elevation relative to wellhead

Table 3. Groundwater Laboratory Analytical Results - ConocoPhillips Company Shepherd & Kelsey No. 1E

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Sulfate (mg/L)	Aluminum (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)
MW-1	9/26/2007	0.4	0.4	0.5	1.1	NA	NA	NA	NA	NA
	10/23/2008	<5	<5	<5	<5	438	NA	2.59*	0.417*	NA
	1/30/2009	<5	<5	<5	<5	303	0.658*	1.45*	0.276*	692
	4/1/2009	<5	<5	<5	<5	258	1.19*	1.9*	0.416*	1,340
	6/18/2009	<5	<5	<5	<5	NA	0.187*	0.209*	NA**	NA
	9/21/2009	<1	<1	<1	<2	324	<0.1	0.0458	0.0356	700
	12/14/2009	<1	<1	<1	<1	NA	NA	NA	0.0539	661
	3/31/2010	<1	<1	<1	<1	NA	NA	NA	0.0662	697
	6/7/2010	<1	<1	<1	<1	NA	NA	NA	0.0599	778
	9/29/2010	<1	<1	<1	<1	NA	NA	NA	0.117	853
MW-2	12/14/2010	<1	<1	<1	<1	NA	NA	NA	0.102	770
	3/14/2011	<1	<1	<1	<1	NA	NA	NA	0.117	782
	1/30/2009	<5	<5	<5	<5	706	11.3*	22.4*	2.06*	1,130
	4/1/2009	<5	<5	<5	<5	613	4.39*	11.3*	0.964*	1,420
	6/18/2009	<5	<5	<5	<5	NA	2.38*	4.01*	NA**	NA
	9/21/2009	<1	<1	<1	<2	421	<0.1	<0.02	0.158	740
	12/14/2009	<1	<1	<1	<1	NA	NA	NA	0.106	764
	3/31/2010	<1	<1	<1	<1	NA	NA	NA	0.144	804
	6/7/2010	<1	<1	<1	<1	NA	NA	NA	0.152	826
	9/29/2010	<1	<1	<1	<1	NA	NA	NA	0.212	1090
MW-3	12/14/2010	<1	<1	<1	<1	NA	NA	NA	0.194	1120
	3/14/2011	<1	<1	<1	<1	NA	NA	NA	0.242	1000
	1/30/2009	<5	<5	<5	<5	427	4.34*	5.77*	0.675*	918
	4/1/2009	<5	<5	<5	<5	416	1.45*	3.0*	0.615*	1,010
	6/18/2009	<5	<5	<5	<5	NA	0.67*	1.57*	NA**	NA
	9/21/2009	<1	<1	<1	<2	359	<0.1	<0.02	0.115	733
	12/14/2009	<1	<1	<1	<1	NA	NA	NA	0.154	712
	3/31/2010	<1	<1	<1	<1	NA	NA	NA	0.219	898
	6/7/2010	<1	<1	<1	<1	NA	NA	NA	0.132	841
	9/29/2010	<1	<1	<1	<1	NA	NA	NA	0.147	849
MW-4	12/14/2010	<1	<1	<1	<1	NA	NA	NA	0.161	835
	3/14/2011	<1	<1	<1	<1	NA	NA	NA	0.156	882
	1/30/2009	<5	<5	<5	<5	539	7.29*	19.4*	16.7*	1,000
	4/1/2009	<5	<5	<5	<5	512	11.4*	23.4*	3.36*	1,010
	6/18/2009	<5	<5	<5	<5	NA	0.344*	0.362*	NA**	NA
	9/21/2009	<1	<1	<1	<2	472	<0.1	0.0376	0.286	963
	12/14/2009	<1	<1	<1	<1	NA	NA	NA	0.283	861
	3/31/2010	<1	<1	<1	<1	NA	NA	NA	0.336	1000
	6/7/2010	<1	<1	<1	<1	NA	NA	NA	0.373	1300
	9/29/2010	<1	<1	<1	<1	NA	NA	NA	0.571	1720
NMWQCC Groundwater Quality Standard	12/14/2010	<1	<1	<1	<1	NA	NA	NA	0.514	1580
	3/14/2011	<1	<1	<1	<1	NA	NA	NA	0.602	1810

Notes:

MW = monitor well
NMWQCC = New Mexico Water Quality Control Commission
Constituents in **BOLD** exceed NMWQCC Groundwater Quality Standards
VOCs = volatile organic compounds
mg/L = milligrams per liter
µg/L = micrograms per liter
NA** = not analyzed due to lab error
NA = not analyzed
NE = not established
TDS - total dissolved solids
Total Xylenes = the sum of m,p-xylene and o-xylene.
* = Results reported for total metals analysis, results can not be compared to NMWQCC Standards for dissolved metals
Analytical results for 9/26/2007 are presented as reported by Envirotech Inc.

APPENDIX A
Groundwater Sampling Field Forms



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WATER SAMPLING FIELD FORM

Project Name Shepherd & Kelsey 1EPage 1 of 4

Site No. _____

Site Location Bloomfield, NMSite/Well No. MW-1Coded/
Replicate No. 1820Date 3.14.11Weather Sunny, cool 60°
WarmTime Sampling
Began 1805Time Sampling
Completed 1815

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____

MP Elevation 96.53Total Sounded Depth of Well Below MP 11.96 11.91Water-Level Elevation 91.11Held _____ Depth to Water Below MP 5.42Diameter of Casing 2"Wet _____ Water Column in Well 6.49Gallons Pumped/Bailed
Prior to Sampling 3.25Gallons per Foot 0.16Gallons in Well 1.038Sampling Pump Intake Setting
(feet below land surface) _____

Purging Equipment

Purge pump BailerX3 = 3.1152

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
<u>1810</u>	<u>8.47</u>	<u>7.48</u>	<u>737</u>	<u>0.699</u>	<u>2.34</u>	<u>20.0</u>	<u>14.0</u>	<u>2.25</u>
<u>1811</u>	<u>8.36</u>	<u>7.42</u>	<u>732</u>	<u>0.698</u>	<u>2.23</u>	<u>19.0</u>	<u>13.8</u>	<u>2.75</u>
<u>1813</u>	<u>8.32</u>	<u>7.39</u>	<u>730</u>	<u>0.696</u>	<u>2.13</u>	<u>18.1</u>	<u>13.1</u>	<u>3.25</u>

Sampling Equipment

Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX

3 40mL VOA's

HCl

Dissolved Mn

16 oz Plastic

None

TDS

16 oz Plastic

None

Remarks

H₂O is clear, no odor or sheen detected

Sampling Personnel

Christine Mathews, Cassie Brown

Well Casing Volumes

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



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WATER SAMPLING FIELD FORM

Project Name Shepherd & Kelsey 1EPage 2 of 4

ect No. _____

Site Location Bloomfield, NMSite/Well No. MW-2Coded/
Replicate No. _____Date 3.14.11Weather Sunny, warm 60°Time Sampling
Began 1805Time Sampling
Completed 1825

EVACUATION DATA

Description of Measuring Point (MP) Top of CasingHeight of MP Above/Below Land Surface _____ MP Elevation 98.05Total Sounded Depth of Well Below MP 20.2 20.03Water-Level Elevation 92.98Held _____ Depth to Water Below MP 5.07Diameter of Casing 2"Wet _____ Water Column in Well 14.96Gallons Pumped/Bailed
Prior to Sampling 7.25Gallons per Foot 0.16Gallons in Well 2.394Sampling Pump Intake Setting
(feet below land surface) _____Purging Equipment Purge pump / Bailer X3 = 7.18

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
<u>1818</u>	<u>11.63</u>	<u>7.43</u>	<u>1124</u>	<u>0.981</u>	<u>2.01</u>	<u>18.4</u>	<u>-6.5</u>	<u>6.0</u>
<u>1820</u>	<u>11.63</u>	<u>7.40</u>	<u>1118</u>	<u>0.975</u>	<u>1.95</u>	<u>17.9</u>	<u>-17.3</u>	<u>6.5</u>
<u>1823</u>	<u>11.47</u>	<u>7.39</u>	<u>1114</u>	<u>0.977</u>	<u>2.20</u>	<u>24.9</u>	<u>-17.6</u>	<u>7.25</u>

Sampling Equipment Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX 3 40mL VOA's HClDissolved Mn 16 oz Plastic NoneTDS 16 oz Plastic NoneRemarks H₂O started clear, then turned brown @ 2 volumes, back toSampling Personnel Christine Mathews, Cassie Brown light brown @ 3 volumes. No odoror sheen
observed.

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



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WATER SAMPLING FIELD FORM

Project Name Shepherd & Kelsey 1EPage 3 of 4

Sect No. _____

Site Location Bloomfield, NMSite/Well No. MW-3Coded/
Replicate No. _____Date 3-14-11Weather Sunny, warm 60°Time Sampling
Began 1830Time Sampling
Completed 1845

EVACUATION DATA

Description of Measuring Point (MP) Top of CasingHeight of MP Above/Below Land Surface _____ MP Elevation 95.6Total Sounded Depth of Well Below MP 20.11 20.12 Water-Level Elevation 90.55Held _____ Depth to Water Below MP 5.05 Diameter of Casing 2"Wet _____ Water Column in Well 15.07 Gallons Pumped/Bailed Prior to Sampling 7.25Gallons per Foot 0.16Gallons in Well 2.411 Sampling Pump Intake Setting (feet below land surface) _____Purging Equipment Purge pump / Bailer X3 = 7.234

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1840	7.79	7.41	801	0.776	7.12	65.7	1.0	6.25
1842	7.68	7.40	799	0.776	2.72	22.6	-2.0	6.75
1843	7.60	7.37	1798	0.777	2.37	19.8	-2.5	7.25

Sampling Equipment Purge Pump/Bailer

Constituents Sampled _____ Container Description _____ Preservative _____

BTEX _____ 3 40mL VOA's _____ HCl _____

Dissolved Mn _____ 16 oz Plastic _____ None _____

TDS _____ 16 oz Plastic _____ None _____

Remarks H₂O is clear, no odor or green detected some orange bacteria @ bottomSampling Personnel Christine Mathews, Cassie Brown

Well Casing Volumes

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



TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Shepherd & Kelsey 1EPage 4 of 4

Act No. _____

Site Location Bloomfield, NMSite/Well No. MW-4Coded/
Replicate No. _____Date 8.14.11Weather sunny, warm 60°Time Sampling
Began 1840Time Sampling
Completed 1855

EVACUATION DATA

Description of Measuring Point (MP) Top of CasingHeight of MP Above/Below Land Surface —MP Elevation 96.23Total Sounded Depth of Well Below MP 20.37 20.41Water-Level Elevation 90.45Held — Depth to Water Below MP 5.78Diameter of Casing 2"Wet — Water Column in Well 14.63Gallons Pumped/Bailed
Prior to Sampling 7.25Gallons per Foot 0.16Gallons in Well 2.341Sampling Pump Intake Setting
(feet below land surface) —Purging Equipment Purge pump/Bailer 83 = 7.022

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1849	11.88	7.32	1555	1.347	1.61	150	2.1	6.0
1851	12.03	7.34	1561	1.349	2.32	21.7	-3.7	6.5
1853	12.02	7.35	1557	1.346	1.72	16.0	-7.0	7.0

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Dissolved Mn	16 oz Plastic	None
TDS	16 oz Plastic	None

Remarks H₂O started out orange w/ orange particulates until 1 vol.Sampling Personnel Christine Mathews, Cassie Brown after 1 vol. H₂O was light 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

no color
or sheen
observed

APPENDIX B
Groundwater Laboratory Analytical Report



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

Conoco Phillips

Certificate of Analysis Number:
11030374

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 Shepherd Kelsey1E Site: Bloomfield, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 3/22/2011
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This Report Contains A Total Of 16 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

3/22/2011

Date

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

Version 2.1 - Modified February 11, 2011



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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:
11030374

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 Shepherd Kelsey1E Site: Bloomfield, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 3/22/2011
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I. SAMPLE RECEIPT:

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

II. ANALYSES AND EXCEPTIONS:

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

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

11030374 Page 1

3/22/2011

Erica Cardenas
Project Manager

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

Date



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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:
11030374

his designee, as verified by the following signature.

A handwritten signature in black ink, appearing to read "Erica Cardenas".

Erica Cardenas
Project Manager

11030374 Page 2
3/22/2011

Date

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



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

Conoco Phillips

Certificate of Analysis Number:

11030374

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 Shepherd Kelsey1E
Site: Bloomfield, NM
Site Address:

PO Number:
State: New Mexico

State Cert. No.:
Date Reported: 3/22/2011

Fax To:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	11030374-01	Water	03/14/2011 18:15	3/16/2011 9:10:00 AM	302879	☐
MW-2	11030374-02	Water	03/14/2011 18:25	3/16/2011 9:10:00 AM	302879	☐
MW-3	11030374-03	Water	03/14/2011 18:45	3/16/2011 9:10:00 AM	302879	☐
MW-4	11030374-04	Water	03/14/2011 18:55	3/16/2011 9:10:00 AM	302879	☐
MW-4	11030374-04	Water	03/14/2011 18:55	3/16/2011 9:10:00 AM	302904	☐
Duplicate	11030374-05	Water	03/14/2011 18:20	3/16/2011 9:10:00 AM	302904	☐
Trip Blank	11030374-06	Water	03/14/2011 0:00	3/16/2011 9:10:00 AM	302904	☐

Erica Cardenas

3/22/2011

Erica Cardenas
Project Manager

Date

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

Ted Yen
Quality Assurance Officer



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

Client Sample ID MW-1 Collected: 03/14/2011 18:15 SPL Sample ID: 11030374-01

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED				MCL	SW6010B	Units: mg/L	
Manganese	0.117		0.005	1	03/18/11 15:50	R_V	5747860

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	03/16/2011 11:45	M_W	1.00

TOTAL DISSOLVED SOLIDS				MCL	SM2540 C	Units: mg/L	
Total Dissolved Solids (Residue, Filterable)	782		10	1	03/16/11 14:30	MM1	5745728

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	03/16/11 17:29	LU_L	5745530
Ethylbenzene	ND		1	1	03/16/11 17:29	LU_L	5745530
Toluene	ND		1	1	03/16/11 17:29	LU_L	5745530
m,p-Xylene	ND		2	1	03/16/11 17:29	LU_L	5745530
o-Xylene	ND		1	1	03/16/11 17:29	LU_L	5745530
Xylenes, Total	ND		1	1	03/16/11 17:29	LU_L	5745530
Surr: 1,2-Dichloroethane-d4	91.0	%	70-130	1	03/16/11 17:29	LU_L	5745530
Surr: 4-Bromofluorobenzene	102	%	74-125	1	03/16/11 17:29	LU_L	5745530
Surr: Toluene-d8	93.9	%	82-118	1	03/16/11 17:29	LU_L	5745530

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - 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

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3/22/2011 12:43:04 PM



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

Client Sample ID MW-2 Collected: 03/14/2011 18:25 SPL Sample ID: 11030374-02

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED				MCL	SW6010B	Units: mg/L	
Manganese	0.242		0.005	1	03/18/11 15:56	R_V	5747861

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	03/16/2011 11:45	M_W	1.00

TOTAL DISSOLVED SOLIDS				MCL	SM2540 C	Units: mg/L	
Total Dissolved Solids (Residue, Filterable)	1000		10	1	03/16/11 14:30	MM1	5745729

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	03/16/11 19:17	LU_L	5745534
Ethylbenzene	ND		1	1	03/16/11 19:17	LU_L	5745534
Toluene	ND		1	1	03/16/11 19:17	LU_L	5745534
m,p-Xylene	ND		2	1	03/16/11 19:17	LU_L	5745534
o-Xylene	ND		1	1	03/16/11 19:17	LU_L	5745534
Xylenes, Total	ND		1	1	03/16/11 19:17	LU_L	5745534
Surr: 1,2-Dichloroethane-d4	85.5	%	70-130	1	03/16/11 19:17	LU_L	5745534
Surr: 4-Bromofluorobenzene	101	%	74-125	1	03/16/11 19:17	LU_L	5745534
Surr: Toluene-d8	97.0	%	82-118	1	03/16/11 19:17	LU_L	5745534

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - 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

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

Client Sample ID MW-3 Collected: 03/14/2011 18:45 SPL Sample ID: 11030374-03

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED			MCL	SW6010B	Units: mg/L		
Manganese	0.156		0.005	1	03/18/11 16:24	R_V	5747865

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	03/16/2011 11:45	M_W	1.00

TOTAL DISSOLVED SOLIDS			MCL	SM2540 C	Units: mg/L		
Total Dissolved Solids (Residue, Filterable)	882		10	1	03/16/11 14:30	MM1	5745730

VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
Benzene	ND		1	1	03/16/11 19:42	LU_L	5745535
Ethylbenzene	ND		1	1	03/16/11 19:42	LU_L	5745535
Toluene	ND		1	1	03/16/11 19:42	LU_L	5745535
m,p-Xylene	ND		2	1	03/16/11 19:42	LU_L	5745535
o-Xylene	ND		1	1	03/16/11 19:42	LU_L	5745535
Xylenes, Total	ND		1	1	03/16/11 19:42	LU_L	5745535
Surr: 1,2-Dichloroethane-d4	92.3	%	70-130	1	03/16/11 19:42	LU_L	5745535
Surr: 4-Bromofluorobenzene	102	%	74-125	1	03/16/11 19:42	LU_L	5745535
Surr: Toluene-d8	95.2	%	82-118	1	03/16/11 19:42	LU_L	5745535

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - 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
NTNC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

Client Sample ID MW-4

Collected: 03/14/2011 18:55 SPL Sample ID: 11030374-04

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED			MCL	SW6010B	Units: mg/L		
Manganese	0.602		0.005	1	03/18/11 16:30	R_V	5747866

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	03/16/2011 11:45	M_W	1.00

TOTAL DISSOLVED SOLIDS			MCL	SM2540 C	Units: mg/L		
Total Dissolved Solids (Residue, Filterable)	1810		20	2	03/16/11 14:30	MM1	5745731

VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
Benzene	ND		1	1	03/16/11 20:08	LU_L	5745536
Ethylbenzene	ND		1	1	03/16/11 20:08	LU_L	5745536
Toluene	ND		1	1	03/16/11 20:08	LU_L	5745536
m,p-Xylene	ND		2	1	03/16/11 20:08	LU_L	5745536
o-Xylene	ND		1	1	03/16/11 20:08	LU_L	5745536
Xylenes, Total	ND		1	1	03/16/11 20:08	LU_L	5745536
Surr: 1,2-Dichloroethane-d4	90.0	%	70-130	1	03/16/11 20:08	LU_L	5745536
Surr: 4-Bromofluorobenzene	101	%	74-125	1	03/16/11 20:08	LU_L	5745536
Surr: Toluene-d8	96.1	%	82-118	1	03/16/11 20:08	LU_L	5745536

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - 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

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

Client Sample ID Duplicate Collected: 03/14/2011 18:20 SPL Sample ID: 11030374-05

Site: Bloomfield, 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	03/16/11 18:49	LU_L	5745533
Ethylbenzene	ND		1	1	03/16/11 18:49	LU_L	5745533
Toluene	ND		1	1	03/16/11 18:49	LU_L	5745533
m,p-Xylene	ND		2	1	03/16/11 18:49	LU_L	5745533
o-Xylene	ND		1	1	03/16/11 18:49	LU_L	5745533
Xylenes, Total	ND		1	1	03/16/11 18:49	LU_L	5745533
Surr: 1,2-Dichloroethane-d4	89.1		% 70-130	1	03/16/11 18:49	LU_L	5745533
Surr: 4-Bromofluorobenzene	103		% 74-125	1	03/16/11 18:49	LU_L	5745533
Surr: Toluene-d8	96.9		% 82-118	1	03/16/11 18:49	LU_L	5745533

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - 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

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3/22/2011 12:43:08 PM



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

Client Sample ID Trip Blank Collected: 03/14/2011 0:00 SPL Sample ID: 11030374-06

Site: Bloomfield, 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	03/16/11 17:04	LU_L	5745529
Ethylbenzene	ND		1	1	03/16/11 17:04	LU_L	5745529
Toluene	ND		1	1	03/16/11 17:04	LU_L	5745529
m,p-Xylene	ND		2	1	03/16/11 17:04	LU_L	5745529
o-Xylene	ND		1	1	03/16/11 17:04	LU_L	5745529
Xylenes, Total	ND		1	1	03/16/11 17:04	LU_L	5745529
Surr: 1,2-Dichloroethane-d4	92.7		% 70-130	1	03/16/11 17:04	LU_L	5745529
Surr: 4-Bromofluorobenzene	103		% 74-125	1	03/16/11 17:04	LU_L	5745529
Surr: Toluene-d8	95.6		% 82-118	1	03/16/11 17:04	LU_L	5745529

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - 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

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Quality Control Documentation

Quality Control Report

Conoco Phillips
COP Shepherd Kelsey1E

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B

WorkOrder: 11030374
Lab Batch ID: 105503

Method Blank

RunID: ICP2_110318A-5747845 Units: mg/L
Analysis Date: 03/18/2011 14:12 Analyst: R_V
Preparation Date: 03/16/2011 11:45 Prep By: M_ Method SW3005A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030374-01B	MW-1
11030374-02B	MW-2
11030374-03B	MW-3
11030374-04B	MW-4

Analyte	Result	Rep Limit
Manganese	ND	0.005

Laboratory Control Sample (LCS)

RunID: ICP2_110318A-5747846 Units: mg/L
Analysis Date: 03/18/2011 14:18 Analyst: R_V
Preparation Date: 03/16/2011 11:45 Prep By: M_ Method SW3005A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Manganese	0.1000	0.1015	101.5	80	120

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

Sample Spiked: 11030370-02
RunID: ICP2_110318A-5747848 Units: mg/L
Analysis Date: 03/18/2011 14:30 Analyst: R_V
Preparation Date: 03/16/2011 11:45 Prep By: M_ Method SW3005A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Manganese	0.06240	0.1	0.1626	100.2	0.1	0.1620	99.60	0.3697	20	75	125

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.

Version 2.1 - Modified February 11, 2011

Quality Control Report

Conoco Phillips
COP Shepherd Kelsey1E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030374
Lab Batch ID: R317172

Method Blank

RunID: K_110316B-5745528 **Units:** ug/L
Analysis Date: 03/16/2011 16:39 **Analyst:** LU_L

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	94.2	70-130
Surr: 4-Bromofluorobenzene	106.3	74-125
Surr: Toluene-d8	94.6	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030374-01A	MW-1
11030374-02A	MW-2
11030374-03A	MW-3
11030374-04A	MW-4
11030374-05A	Duplicate
11030374-06A	Trip Blank

Laboratory Control Sample (LCS)

RunID: K_110316B-5745527 **Units:** ug/L
Analysis Date: 03/16/2011 15:45 **Analyst:** LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	21.5	107	74	123
Ethylbenzene	20.0	20.9	105	72	127
Toluene	20.0	19.7	98.6	74	126
m,p-Xylene	40.0	41.1	103	71	129
o-Xylene	20.0	20.5	102	74	130
Xylenes, Total	60.0	61.6	103	71	130
Surr: 1,2-Dichloroethane-d4	50.0	44.8	89.7	70	130
Surr: 4-Bromofluorobenzene	50.0	52.9	106	74	125
Surr: Toluene-d8	50.0	47.7	95.4	82	118

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

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.

Version 2.1 - Modified February 11, 2011

Quality Control Report

Conoco Phillips
COP Shepherd Kelsey1E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030374
Lab Batch ID: R317172

Sample Spiked: 11030374-01
RunID: K_110316B-5745531 Units: ug/L
Analysis Date: 03/16/2011 17:58 Analyst: LU_L

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	21.7	108	20	22.2	111	2.64	22	70	124
Ethylbenzene	ND	20	19.9	99.4	20	20.1	100	0.906	20	76	122
Toluene	ND	20	20.0	100	20	20.4	102	1.71	24	80	117
m,p-Xylene	ND	40	40.0	99.9	40	40.1	100	0.347	20	69	127
o-Xylene	ND	20	21.1	105	20	20.2	101	4.37	20	84	114
Xylenes, Total	ND	60	61.1	102	60	60.3	100	1.26	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	42.3	84.6	50	44.5	89.1	5.15	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	51	102	50	50.5	101	0.962	30	74	125
Surr: Toluene-d8	ND	50	47.4	94.9	50	48.0	96.0	1.18	30	82	118

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

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3/22/2011 12:43:13 PM



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

Quality Control Report

Conoco Phillips
COP Shepherd Kelsey1E

Analysis: Total Dissolved Solids
Method: SM2540 C

WorkOrder: 11030374
Lab Batch ID: R317179A

Method Blank

RunID: WET_110316N-5745713 Units: mg/L
Analysis Date: 03/16/2011 14:30 Analyst: MM1

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030374-01C	MW-1
11030374-02C	MW-2
11030374-03C	MW-3
11030374-04C	MW-4

Analyte	Result	Rep Limit
Total Dissolved Solids (Residue,Filterabl)	ND	10

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

RunID: WET_110316N-5745715 Units: mg/L
Analysis Date: 03/16/2011 14:30 Analyst: MM1

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Total Dissolved Solids (Residue,Filterabl)	200.0	199.0	99.50	200.0	198.0	99.00	0.5	10	95	107

Sample Duplicate

Original Sample: 11030374-04
RunID: WET_110316N-5745731 Units: mg/L
Analysis Date: 03/16/2011 14:30 Analyst: MM1

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filterabl)	1810	1836	1.65	10

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.

Version 2.1 - Modified February 11, 2011

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*Sample Receipt Checklist
And
Chain of Custody*



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

Sample Receipt Checklist

Workorder:	11030374	Received By:	NB
Date and Time Received:	3/16/2011 9:10:00 AM	Carrier name:	Fedex-Standard Overnight
Temperature:	4.0/4.0°C	Chilled by:	Water Ice

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

*VOA Preservation Checked After Sample Analysis

SPL Representative:		Contact Date & Time:	
Client Name Contacted:			
Non Conformance Issues:			
Client Instructions:			



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No.

302879

11030374 page 2 of 2

Client Name: Tetra Tech
Address: 6121 Indian School Rd.
City: Albuquerque State: NM Zip: 87106
Phone/Fax: 505-237-8440
Client Contact: Kelly Blandford Email: kelly.blandford@tetratech.com
Project Name/No.: Shepherd & Kekey TE
Site Name: Bloomfield, NM
Site Location: Concord Phillips
Invoice To: Concord Phillips

Ph:

SAMPLE ID	DATE	TIME	comp	grab
MW-1	3.14.11	1815		X
MW-1	3.14.11	1815		X
MW-1	3.14.11	1815		X
MW-2	3.14.11	1825		X
MW-2	3.14.11	1825		X
MW-2	3.14.11	1825		X
MW-3	3.14.11	1845		X
MW-3	3.14.11	1845		X
MW-3	3.14.11	1845		X
MW-4	3.14.11	1855		X

Requested Analysis

matrix bottle size
W=water S=sol A=oil
SL=sludge E=other X=other
P=plastic A=amber glass
G=glass V=vial X=other
1=1 liter 4=4oz 40=vial
8=8oz 16=16oz X=other
1=HCl 2=HNO3
3=H2SO4 X=other
1=NONE

Number of Containers	Requested Analysis
3	BTEX
1	Disolved Mn
1	TDS
3	
1	
1	
3	
1	
1	
3	
1	
1	
3	
1	
1	
3	
1	
1	
3	

Client/Consultant Remarks:

Please filter & preserve metals before analysis

Laboratory remarks:

Infact?

Ice?

Temp:

PM review (initial):

Requested TAT

- ☐ 1 Business Day
☐ 2 Business Days
☐ 3 Business Days
☐ Other

Special Reporting Requirements

- Results: ☐ Fax ☐ Email ☐ PDF
Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

NMULOC Standards Packed to lab

2. Received by:

time 3.15.11 date 3.15.11

4. Received by:

time 0910 date 3.16.11

5. Relinquished by:

time 0910 date 3.16.11

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



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No.		302904	
11030374		page 2 of 2	
Client Name: Tetra Tech		Requested Analysis	
Address: 6421 Indian School Rd NE #200			
City: Albuquerque			
State: NM			
Zip: 87106			
Phone/Fax: 505-237-8440			
Client Contact: Kelly Blandford			
Email: kelly.blandford@tetratech.com			
Project Name/No.: Shepherd & Kelsey JE			
Site Name:			
Site Location: Bloomfield, NM			
Invoice To: Caracé Phillips			
SAMPLE ID	DATE	TIME	Ph:
MU-4	3/14/11	1855	
MU-4	3/14/11	1855	
Duplicate	3/14/11	001820	
Trip Blank	3/14/11	072145	
Laboratory remarks: Please filter metals before analysis		Intact? ☐ Y ☐ N	
Requested TAT		Ice? ☐ Y ☐ N	
☐ 1 Business Day		Temp: ☐ Y ☐ N	
☒ 2 Business Days		Special Detection Limits (specify):	
☐ 3 Business Days		PM review (initial):	
Other		Special Reporting Requirements Results: ☐ Fax ☐ Email ☐ PDF	
Rush TAT requires prior notice		Standard ☒ Level 3 QC ☐ Level 4 QC ☐ TX TRP ☐ LA RECAP	
		Relinquished by: <i>[Signature]</i>	
		date: 3/15/11	
		time: 0730	
		2. Received by:	
		4. Received by:	
		6. Received by Laboratory:	
		date: 3/14/11	
		time: 0910	
		5. Relinquished by:	
		date: 3/14/11	
		time: 0910	
		6. Received by Laboratory:	
		date: 3/14/11	
		time: 0910	
		7. Received by Laboratory:	
		date: 3/14/11	
		time: 0910	
		8. Received by Laboratory:	
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		12. Received by Laboratory:	
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		13. Received by Laboratory:	
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		14. Received by Laboratory:	
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		98. Received by Laboratory:	
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