3R - 097

CLOSURE REQUEST

05/05/2009

3R097

TETRA TECH, INC.

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

May 5, 2009

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

RE: Shepherd and Kelsey #1, Quarterly Groundwater Monitoring and Site Closure Report

Dear Mr. von Gonten:

Enclosed please find a copy of the above-referenced document created by Tetra Tech, Inc. for this Bloomfield area ConocoPhillips site. The site has met compliance with 9 quarters of groundwater monitoring with all constituents of concern below New Mexico Water Quality Control Commission Standards.

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

Sincerely,

Kelly E. Blanchard

Kelly E. Blanchard
Project Manager

Enclosures (1)

QUARTERLY GROUNDWATER MONITORING AND SITE CLOSURE REPORT

CONOCOPHILLIPS
SHEPHERD & KELSEY #1
BLOOMFIELD, NEW MEXICO

OCD # 3R0097

Prepared for:

ConocoPhillips

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. 8690041.100

March 24, 2009

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QUARTERLY GROUNDWATER MONITORING AND SITE CLOSURE REPORT CONOCOPHILLIPS SHEPHERD & KELSEY #1 BLOOMFIELD, NEW MEXICO

1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring program completed by Tetra Tech, Inc. (Tetra Tech), on behalf of ConocoPhillips Company at the Shepherd & Kelsey #1 Site in Bloomfield, New Mexico. On behalf of ConocoPhillips, Tetra Tech is requesting no further action at the site.

The site is located on the southwest side of Bloomfield, New Mexico, south of Highway 64 and the San Juan River. The site consists of an abandoned natural gas production well. All associated equipment and installations at the site have been removed. The location and general layout of the Shepherd & Kelsey #1 site are shown on **Figures 1** and **2**, respectively.

1.1 Site History

The history of the ConocoPhillips Shepherd and Kelsey #1 site is outlined on **Table 1** and discussed in more detail in the following paragraphs.

Monitor well SB-12 was sampled quarterly from June of 2001 until April 2004. In 2005, the well was sampled in May and November, at which time quarterly sampling resumed. The most recent quarterly sampling results for monitor well SB-12 are summarized below.

- **February 2006 sampling event:** Benzene was detected at a concentration of 7 micrograms per liter (µg/L). Ethylbenzene and xylenes were detected at concentrations of 4 µg/L and 12 µg/L, respectively.
- **May 2006 sampling event:** Benzene was detected at a concentration of 12 µg/L, which is slightly above the New Mexico Water Quality Control Commission (NMWQCC) standard of 10 µg/L. Ethylbenzene and xylenes were detected at concentrations of 1 µg/L and 3 µg/L, respectively.
- **August and November 2006 sampling events:** No BTEX constituents were detected. All concentrations were lower than laboratory detection limits.
- **February 2007 sampling event:** Ethylbenzene and xylenes were detected at concentrations of 3 µg/L and 1 µg/L, respectively. Benzene and toluene were not detected.

- **May 2007 sampling event:** Ethylbenzene was detected at a concentration of 2 µg/L. Benzene, toluene, and xylenes were not detected.
- **August, November 2007 and January 2008 sampling events:** No BTEX constituents were detected. All concentrations were lower than laboratory detection limits.
- **March 2008:** Samples collected from SB-12 represent the eighth consecutive quarter of results below the NMWQCC standards for the well, qualifying the site for no further action.
- **July 2008:** Confirmatory samples were collected from monitor well SB-12. Results remain below NMWQCC standards. The Southern Petroleum Laboratory report for this sampling event is provided in Appendix A.

A geologic cross-section, **Figure 4**, was created using previous boring log data collected by Souder Miller & Associates during soil sampling in October 2003. Boring locations and a cross-section profile are shown in **Figure 2**.

2.0 METHODOLOGY AND RESULTS

The following subsections describe the groundwater monitoring methodology and sampling analytical results.

2.1 Groundwater Monitoring Methodology

Groundwater Elevation Measurements

Groundwater elevation measurements collected during 2007 and 2008 cannot be used to compile groundwater elevation maps due to constantly changing top of casing heights at the site. This was a result of the use of agricultural machinery at the site following production well abandonment. A groundwater elevation contour map from August 2007, the date of the most recent top of casing survey event, is presented in **Figure 3**. As with other historic groundwater elevation maps, the groundwater flow direction is to the north. Historic groundwater elevation data has been summarized in **Table 2**.

Groundwater sampling

Groundwater samples were collected from monitoring well SB-12 during the July 24, 2008 sampling event. Approximately 2 gallons of water, or three well volumes, were purged from the well before sampling. A 1.5-inch dedicated, clear, poly-vinyl, disposable bailer was used to collect the groundwater samples. The groundwater samples were contained in laboratory prepared bottles, packed on ice, and shipped with chain of custody documentation to Southern Petroleum

Laboratory located in Houston, Texas. The samples were analyzed for the presence of BTEX using Environmental Protection Agency (EPA) Method 8260B.

2.2 Groundwater Sampling Analytical Results

Laboratory analytical results from August 2006 through July 2008 groundwater sampling events were below NWQCC standards. This includes one round of sampling conducted on August 20, 2007 in which all six monitoring wells were sampled at the site in order to confirm compliance. **Table 3** presents the historical laboratory analytical results. The laboratory analytical report for July 24, 2008 is included in **Appendix A**.

3.0 CONCLUSIONS

The most recent sampling event on July 24, 2008 represents the ninth consecutive quarter of results indicating concentrations of BTEX in monitor well SB-12 below NMWQCC standards. Because nine consecutive quarters of results have been below NMWQCC standards, Tetra Tech recommends no further action be granted by NMOCD since compliance has been met. Upon approval of closure by the NMOCD, ConocoPhillips will plug and abandon all wells at the Shepherd and Kelsey #1 site. If you have any questions or require additional information please contact Kelly Blanchard at Tetra Tech at 505-237-8440 or kelly.blanchard@tetratech.com.

FIGURES

FIGURE 1.
SITE LOCATION MAP
CONOCOPHILLIPS
SHEPHERD & KELSEY #1
Bloomfield, New Mexico

N

1/2
0 1 mile

★=Approximate Site Location

TETRA TECH, INC.

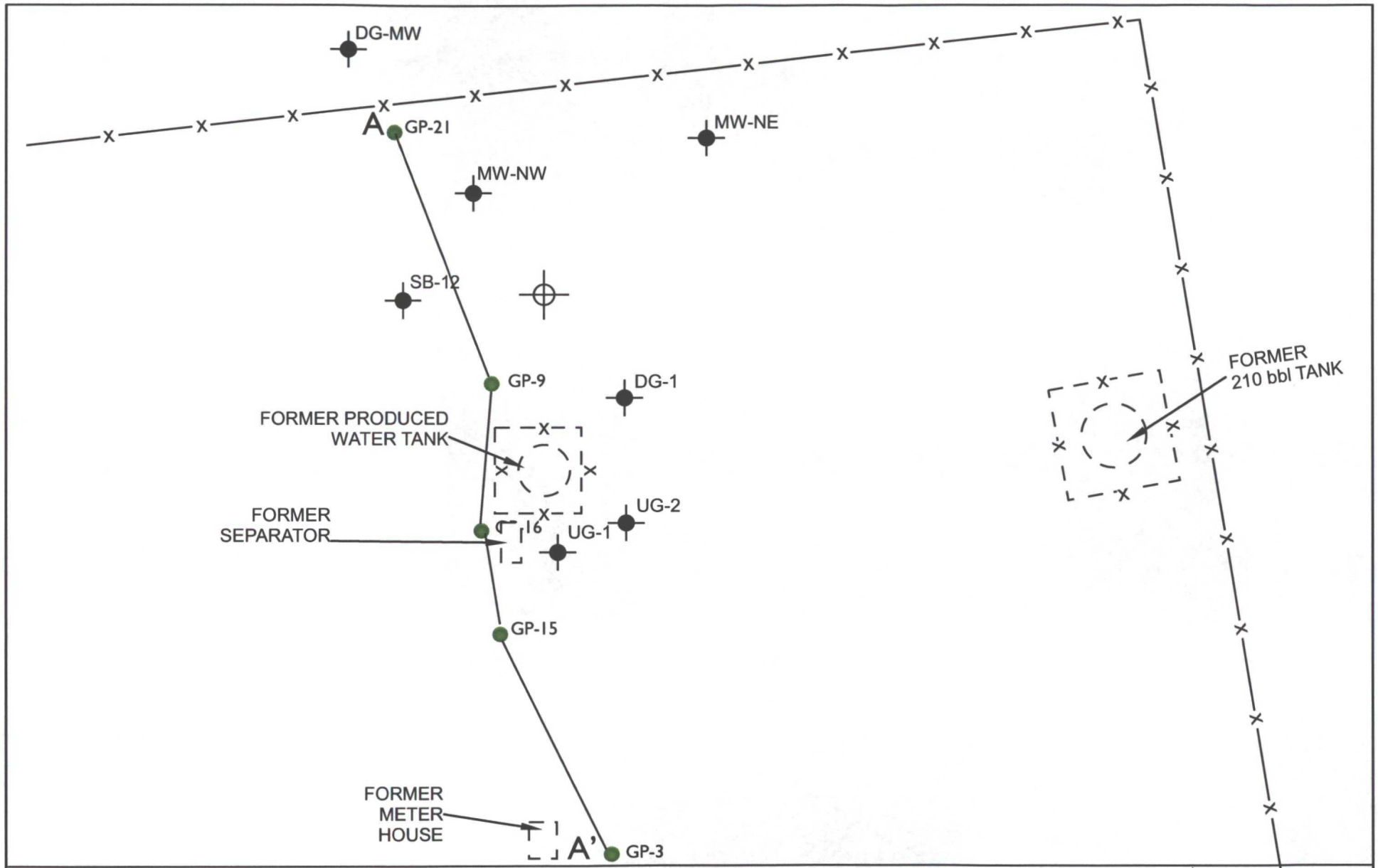


FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS
SHEPHERD AND KELSEY #1

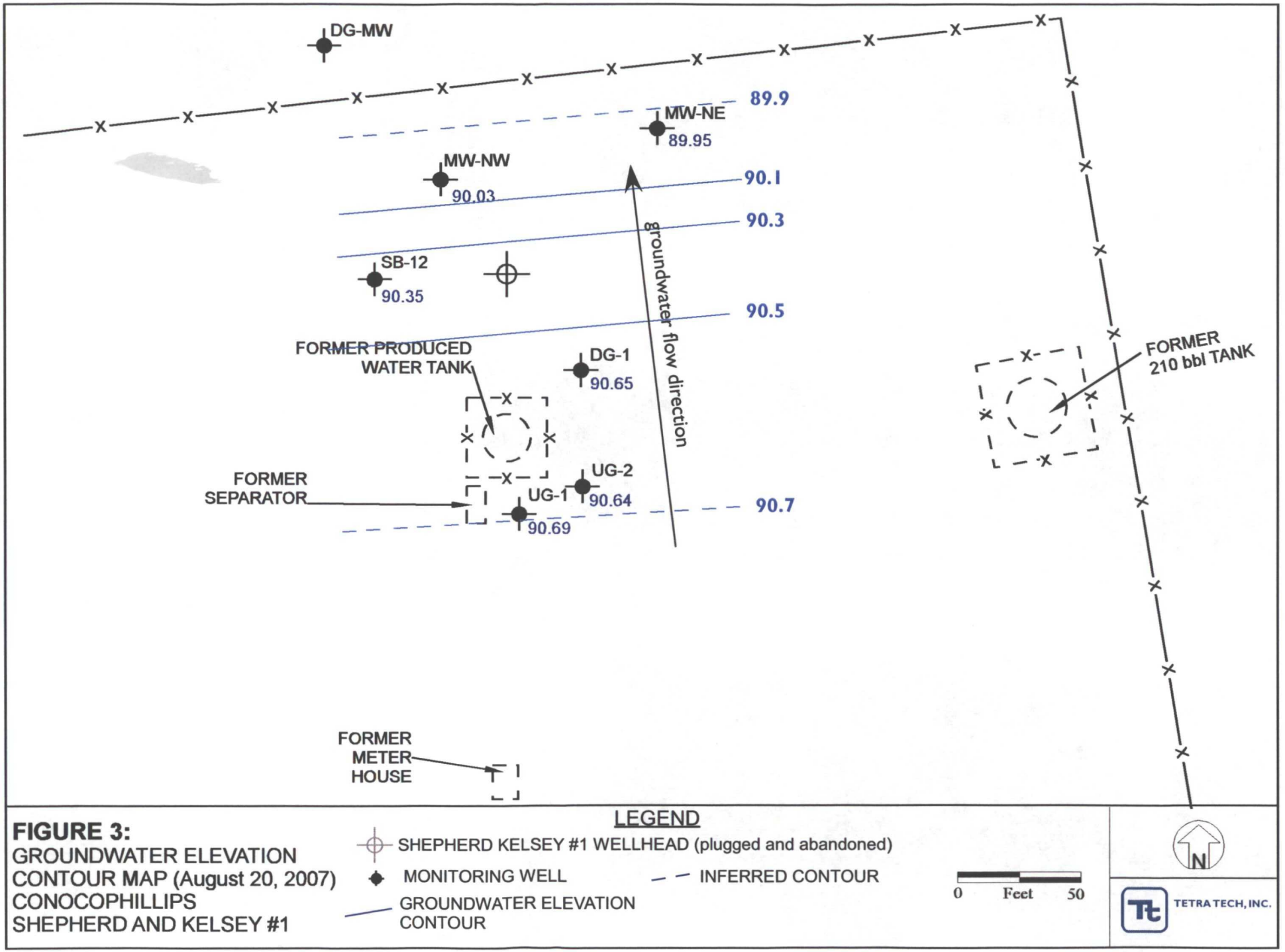


FIGURE 3:
GROUNDWATER ELEVATION CONTOUR MAP (August 20, 2007)
CONOCOPHILLIPS
SHEPHERD AND KELSEY #1

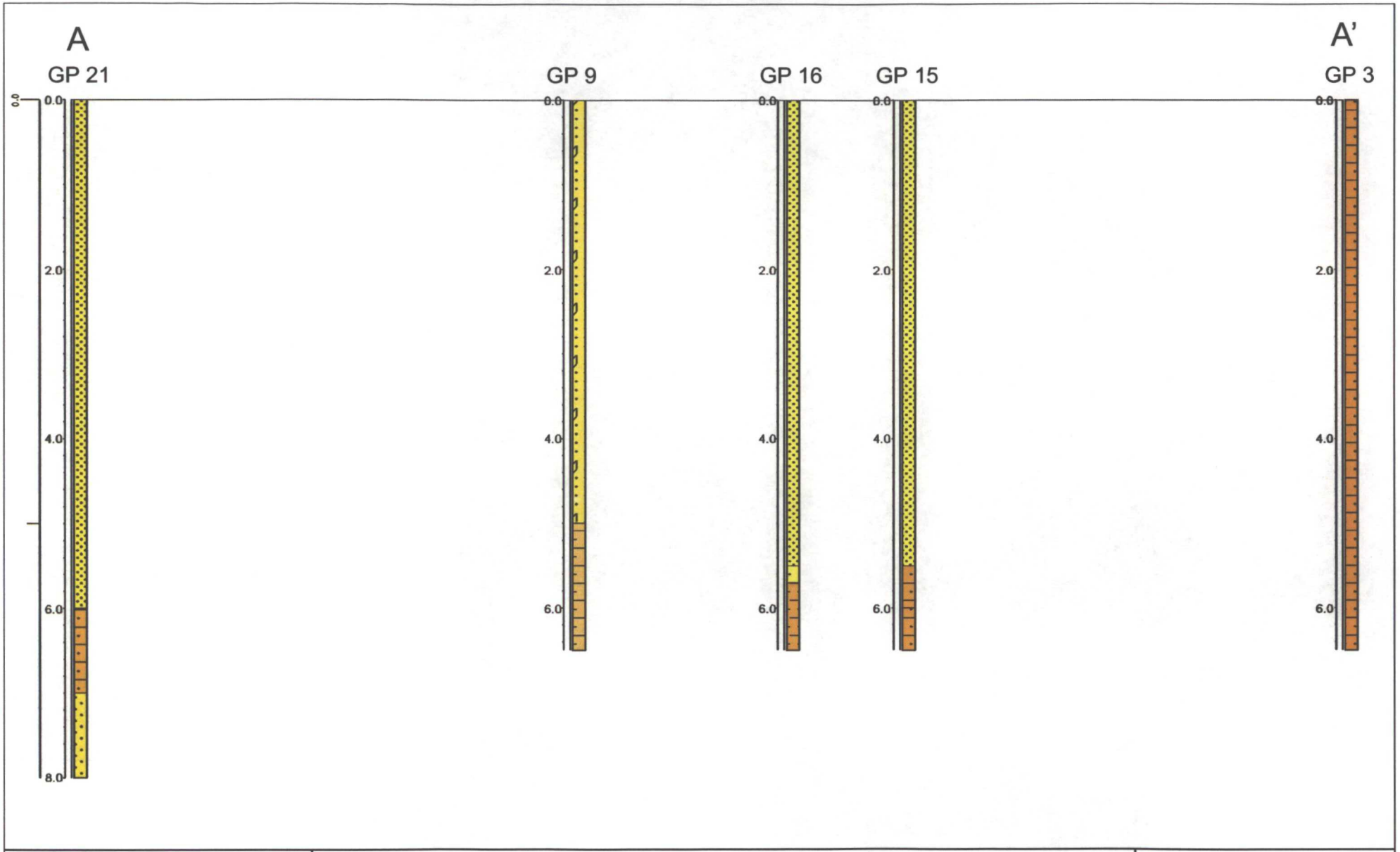


FIGURE 4:
CONOCOPHILLIPS
SHEPHERD & KELSEY #1
CROSS-SECTION

LEGEND

- clayey sand
- poorly graded sand
- sand
- sandy fat clay
- well graded clayey sand
- well graded sand
- well graded silty sand

TETRA TECH, INC.

TABLES

Table 1. Site History Timeline - ConocoPhillips Shepherd and Kelsey #1

Date/Time Period	Event/Action	Description
August 26,1993	Monitoring Well Installation	Monitoring wells UG-1, UG-2 and DG-1 were installed to check for hydrocarbon impacts to soil and groundwater caused by the use of an earthen dehydrator unit drip pit; BTEX was primary constituent of concern (COC); polycyclic aromatic hydrocarbons (PAHs) not detected during investigation
October 24-26, 1994	Soil Borings / Monitoring Well Installation and Site Assessment	NMOCD approved Bio-Air Sparging Remediation Project was initiated and soil borings SB-1 through SB-36 were completed. Also, monitoring wells MW-1 (MW-NE) and MW-2 (MW-NW) were installed BioRem Consultant Inc.
Prior to March 1997	Site Specific Risk Based Assessment	On Site Technologies LTD reported that the air sparge system had been relatively inoperable except for periods of high groundwater levels. ConocoPhillips determined that natural attenuation would complete remediation efforts. To verify the RBCA evaluation the installation of one down gradient monitoring well was requested by NMOCD.
March 4, 1997	Monitor Well Installation	Monitor well DG-MW (MW-1) was installed by On Site Technologies, LTD.
March 20, 1997 to September 14, 1998	Monitor Well Sampling	Monitor well DG-MW (MW-1) was sampled quarterly for BTEX; benzene detected above NMWQCC standards in 1997; subsequent results were below detection limit
January 5, 2000	Request for Site Closure	Site closure requested by On Site Technologies LTD based on 1998 groundwater results being below NMWQCC standards.
February 10, 2000	*Pit Remediation and Closure* Report Submitted	ConocoPhillips submitted a pit remediation and closure report to NMOCD
June 14, 2001	Monitor Well Sampling by Souder, Miller & Associates	Monitor wells MW-NE, DG-1, DG-MW (MW-1), SB-12, UG-1, and UG-2 were sampled for BTEX
June 14, 2001 to October 6, 2003		Monitor wells MW-NE, DG-1, and SB-12 were sampled quarterly for BTEX
October 1, 2003	Geoprobe Investigation	Total of 23 Geoprobe borings advanced to 7 feet just above the water table at selected locations of the site; no benzene or xylenes were detected but ethlybenzene, toluene and TPH concentrations were above NMOCD's Surface Impoundment Closure Guidelines in soil samples taken from the northern and western portions of the site
October 6, 2003	Partial Compliance Achieved	Groundwater results for monitor wells below NMWQCC standards except for SB-12; discontinue quarterly sampling in all wells except for SB-12
January 30, 2004 to April 26, 2004	Monitor Well Sampling	Monitor well SB-12 sampled quarterly for BTEX
May 10, 2005 and November 21, 2005		Monitor well SB-12 sampled for BTEX
August 1, 2006		SB-12 was sampled for BTEX. Top of casing elevation measurements have changed due to damaged from equipment utilized during site activities.
August 20, 2007		Top of casing survey was done on all existing monitoring wells at the site by Tetra Tech. Monitor wells MW-NE, MW-NW, SB-12. UG-1, UG-2, and DG-1 were sampled for BTEX; results were below NMWQCC standards confirming continued compliance
February 17, 2006 to March 17, 2008	Compliance Achieved	Monitor well SB-12 sampled quarterly for BTEX; 8 consecutive quarters with results below NMWQCC standards have been achieved
May 20, 2008	Site Closure Requested	Tetra Tech requested closure of the site; no response from NMOCD
November 6, 2008	Monitoring Well Sampling	Monitoring well SB-12 was sampled for BTEX. It is discovered that other monitoring points UG-1, UG-2 and DG-1 have had their casings broken. Water level data collected from these points is not valid due to the shallow gradient at the site. Minimal errors provide inaccurate data
January 15, 2008	Monitoring Well Sampling	Monitoring well SB-12 was sampled for BTEX. It is discovered that top of casing elevations for monitoring points continue to change due to further damage. All groundwater levels collected are inconclusive due to the lack of accurate top of casing elevations and shallow groundwater gradient at the site.
July 24, 2008	Monitor Well Sampling	Monitor well SB-12 sampled quarterly for BTEX; 9 consecutive quarters with results below NMWQCC standards have been achieved

Table 2. Groundwater Elevation Summary (June 1996 - March 2008) - ConocoPhillips Shephard and Kelsey #1

Well ID	Total Depth (ft. bgs)	Screen Interval (ft)	Elevation[1] (ft.) (TOC)	Date Measured	Groundwater Level (ft TOC)	Relative Groundwater Elevation (ft TOC)
SB-12	11.31	4	97.41	6/14/2001	6.90	90.51
				9/19/2001	7.25	90.16
				12/13/2001	6.39	91.02
				3/12/2002	6.11	91.30
				6/19/2002	6.76	90.65
				9/17/2002	6.66	90.75
				1/2/2003	NM	NC
				3/20/2003	5.53	91.88
				6/11/2003	6.57	90.84
				10/6/2003	6.43	90.98
				1/30/2004	5.80	91.61
				4/26/2004	5.61	91.80
				5/10/2005	5.03	92.38
				11/21/2005	6.01	93.00
				2/17/2006	5.76	91.65
				5/16/2006	5.73	91.68
				8/1/2006	7.08	90.33
				11/16/2006	5.78[4]	unknown[5]
				2/21/2007	6.40[4]	unknown[5]
				5/14/2007	5.32[4]	unknown[5]
				8/20/2007	7.06	90.35
				11/6/2007	6.31	91.10
				1/15/2008	5.65[2]	unknown[5]
				3/17/2008	5.47[2]	unknown[5]
DG-1	9.05	4	97.18	6/15/2001	6.15	91.03
				9/19/2001	6.57	90.61
				12/13/2001	6.49	90.69
				3/12/2002	6.23	90.95
				6/19/2002	6.88	90.30
				9/17/2002	6.75	90.43
				1/2/2003	NM	NC
				3/20/2003	5.69	91.49
				6/11/2003	6.75	90.43
				10/6/2003	6.54	90.64
				1/30/2004	5.95	91.23
				4/26/2004	4.78	92.40
				5/10/2005	5.55	91.63
				11/21/2005	5.95	94.94
				2/17/2006	5.84	91.34
				5/16/2006	5.90	91.28
				8/1/2006	6.73	90.45
				11/16/2006	5.45[4]	unknown[5]
				2/21/2007	5.00[4]	unknown[5]
				5/14/2007	4.89[4]	unknown[5]
				8/20/2007	6.530	90.650
				11/6/2007	5.80[2]	unknown[5]
				1/15/2008	4.94[2]	unknown[5]
				3/17/2008	4.93[2]	unknown[5]

Table 2. Groundwater Elevation Summary (June 1996 - March 2008) - ConocoPhillips Shephard and Kelsey #1

Well ID	Total Depth (ft. bgs)	Screen Interval (ft)	Elevation[1] (ft.) (TOC)	Date Measured	Groundwater Level (ft TOC)	Relative Groundwater Elevation (ft TOC)
UG-1	9.83	4	96.92	6/14/2001	5.81	91.110
				3/12/2002	5.62	91.300
				6/19/2002	6.02	90.900
				9/17/2002	5.94	90.980
				1/2/2003	NM	NC
				3/20/2003	4.87	92.050
				6/11/2003	5.68	91.240
				10/6/2003	5.74	91.180
				1/30/2004	5.16	91.760
				4/26/2004	5.08	91.840
				5/10/2005	4.02[2]	unknown[5]
				11/21/2005	5.00[2]	unknown[5]
				2/17/2006	4.82[2]	unknown[5]
				5/16/2006	5.15[2]	unknown[5]
				8/1/2006	6.32[3]	unknown[5]
				11/16/2006	5.35[4]	unknown[5]
				2/21/2007	4.81[4]	unknown[5]
				5/14/2007	4.84[4]	unknown[5]
				8/20/2007	6.23	90.690
				11/6/2007	5.45[2]	unknown[5]
				1/15/2008	5.50[2]	unknown[5]
				3/17/2008	4.55[2]	unknown[5]
UG-2	9.84	4	97.01	6/14/2001	4.99	92.02
				3/12/2002	6.19	90.82
				6/19/2002	5.14	91.87
				9/17/2002	5.09	91.92
				1/2/2003	NM	NC
				3/20/2003	4.21	92.80
				6/11/2003	4.91	92.10
				10/6/2003	4.91	92.10
				1/30/2004	4.45	92.56
				4/26/2004	4.37	92.64
				5/10/2005	5.79	91.22
				11/21/2005	5.42	95.81
				2/17/2006	5.33	91.68
				5/16/2006	5.13	91.88
				8/1/2006	6.41	90.60
				11/16/2006	5.18[4]	unknown[5]
				2/21/2007	4.71[4]	unknown[5]
				5/14/2007	4.62[4]	unknown[5]
				8/20/2007	6.37	90.64
				11/6/2007	5.65[2]	unknown[5]
				1/15/2008	5.30[2]	unknown[5]
				3/17/2008	4.78[2]	unknown[5]

Table 2. Groundwater Elevation Summary (June 1996 - March 2008) - ConocoPhillips Shephard and Kelsey #1

Well ID	Total Depth (ft. bgs)	Screen Interval (ft)	Elevation[1] (ft.) (TOC)	Date Measured	Groundwater Level (ft TOC)	Relative Groundwater Elevation (ft TOC)
MW-NE	5.42	4	96.66	6/12/1996	2.54	94.12
				9/16/1997	NM	NC
				12/2/1997	2.31	94.35
				3/13/1998	2.19	94.47
				6/9/1998	2.12	94.54
				9/14/1998	3.28	93.38
				6/14/2001	6.40	90.26
				9/19/2001	7.62	89.04
				12/13/2001	6.86	89.80
				3/12/2002	6.53	90.13
				6/19/2002	7.40	89.26
				9/17/2002	7.01	89.65
				1/2/2003	NM	NC
				3/20/2003	6.01	90.65
				6/11/2003	6.87	89.79
				10/6/2003	6.84	89.82
				1/30/2004	6.27	90.39
				4/26/2004	6.01	93.99
				2/21/2007	6.04	-6.04
				5/16/2007	-	-
				8/20/2007	6.71	89.95
				11/6/2007	5.87	90.79
				1/15/2008	5.40	91.26
				3/17/2008	4.93	91.73
MW-NW	5.42	4	96.74	8/20/2007	6.71	90.03
				11/6/2007	5.80	90.94
				1/15/2008	5.28	91.46
				3/17/2008	4.83	91.91
DG-MW	Unknown	4	Unknown	6/15/2001	2.25	unknown[5]
				10/6/2003	3.10	unknown[5]
				1/30/2004	2.47	unknown[5]
				4/26/2004	2.21	unknown[5]
				could not locate		unknown[5]

Explanation

bgs = below ground surface
ft = Feet
NC = Not calculated
NM = Not measured
TOC = Top of casing

[1] Elevation relative to MW-NE TOC
[2] Groundwater depth anomolous due to broken casing
[3] Casing has been repaired and extended
[4] Casing has been repaired and cut down
[5] Top of casing heights continually modified post servey completion due to use of agricultural machinery causing inaccuracies in groundwater elevation calculations therefore, true elevations are unknown

Table 3. Groundwater Analytical Data Summary (March 1997 - July 2008) - ConocoPhillips Shephard and Kelsey #1

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
DG-MW	3/20/1997	50.3	10.2	6.3	43.9
	6/12/1997	BDL	BDL	BDL	BDL
	9/16/1997	BDL	BDL	BDL	BDL
	12/5/1997	BDL	BDL	BDL	BDL
	3/13/1998	BDL	BDL	BDL	BDL
	6/9/1998	BDL	BDL	BDL	BDL
	9/14/1998	BDL	BDL	BDL	BDL
	6/15/2001	BDL	BDL	BDL	BDL
	10/6/2003	BDL	BDL	BDL	BDL
MW-NW	8/20/2007	<0.5	<0.7	0.9	7
UG-1	6/14/2001	BDL	BDL	BDL	BDL
	8/20/2007	<0.5	<0.7	<0.8	<0.8
UG-2	6/14/2001	BDL	BDL	BDL	BDL
	8/20/2007	<0.5	<0.7	<0.8	<0.8
MW-NE	6/15/2001	9.6	BDL	8.3	1.9
	9/19/2001	24	0.7	18	26.5
	12/13/2001	10	BDL	6	4.7
	3/12/2002	25	BDL	24	32
	6/19/2002	12	BDL	5.9	5.4
	9/17/2002	13	BDL	11	10.8
	3/20/2003	5.8	1.9	12	4.7
	6/11/2003	2.3	0.8	3.1	2.8
	10/6/2003	5	BDL	3.6	2.3
	8/20/2007	<0.5	<0.7	<0.8	<0.8
DG-1	6/15/2001	BDL	BDL	54	285
	9/19/2001	BDL	BDL	BDL	BDL
	12/13/2001	BDL	BDL	BDL	BDL
	3/12/2002	BDL	BDL	BDL	BDL
	6/19/2002	BDL	BDL	BDL	BDL
	9/17/2002	BDL	BDL	BDL	BDL
	3/20/2003	BDL	BDL	BDL	BDL
	6/11/2003	BDL	BDL	BDL	BDL
	10/6/2003	BDL	BDL	BDL	BDL
	8/20/2007	<0.5	<0.7	<0.8	<0.8

Table 3. Groundwater Analytical Data Summary (March 1997 - July 2008) - ConocoPhillips Shephard and Kelsey #1

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
SB-12	6/14/2001	**42**	5.5	72	370
	9/19/2001	**111**	BDL	120	**810**
	12/13/2001	**28**	BDL	63	322.9
	3/12/2002	**64**	BDL	56	211.4
	6/19/2002	**130**	BDL	76	380
	9/17/2002	**40**	BDL	51	245.1
	3/20/2003	**53**	10	41	213
	6/11/2003	**370**	BDL	19	53.8
	10/6/2003	6.1	BDL	30	182
	1/30/2004	**12**	BDL	16	74.2
	4/26/2004	**45**	BDL	21	100
	5/10/2005	**24**	<0.7	18	140
	11/21/2005	<0.5	<0.7	14	68
	2/17/2006	7	<0.7	4	12
	5/16/2006	**12**	<0.7	1	3
	8/1/2006	<0.5	<0.7	<0.8	<0.8
	11/16/2006	<0.5	<0.7	<0.8	<0.8
	2/21/2007	<0.5	<0.7	3	1
	5/14/2007	<0.5	<0.7	2	<0.8
	8/20/2007	<0.5	<0.7	<0.8	<0.8
	11/6/2007	<0.5	<0.7	<0.8	<0.8
	1/15/2008	<0.5	<0.5	<0.5	<0.5
	3/17/2008	<0.5	<0.5	<0.5	<0.5
	7/24/2008	<0.5	<0.5	<0.5	<0.5
NMWQCC Standards		**10 (µg/L)**	**750 (µg/L)**	**750 (µg/L)**	**620 (µg/L)**

Explanation
BDL = Below laboratory detection limits; detection limit not specified
<0.5 = Below laboratory detection limits
NMWQCC = New Mexico Water Quality Control Commission
µg/L = micrograms per liter (parts per billion)

APPENDIX A

LABORATORY ANALYTICAL REPORT – JULY

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

Conoco Phillips

Certificate of Analysis Number:

08071611

Report To:		Project Name:	COP Shepherd Kelsey #1
Tetra Tech EM, Inc.		Site:	Bloomfield, NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	4509668194
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	8/7/2008
ph: (505) 881-3188	fax:		

This Report Contains A Total Of 8 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

8/8/2008

Date

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

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

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

08071611

Report To:		Project Name:	COP Shepherd Kelsey #1
Tetra Tech EM, Inc.		Site:	Bloomfield, NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	4509668194
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	8/7/2008
ph: (505) 881-3188	fax:		

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.

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.

Bethany Agarwal

Bethany A. Agarwal
Senior Project Manager

Date

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

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

Conoco Phillips

Certificate of Analysis Number:

08071611

Report To: Tetra Tech EM, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 881-3188 fax: (505) 881-3283

Fax To:

Project Name: COP Shepherd Kelsey #1
Site: Bloomfield, NM
Site Address:

PO Number: 4509668194
State: New Mexico
State Cert. No.:
Date Reported: 8/7/2008

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
SB-12	08071611-01	Water	7/24/2008 5:00:00 PM	7/26/2008 10:00:00 AM	311311	☐

Bethany A. Agarwal
Senior Project Manager

8/8/2008
Date

Richard R. Reed
Laboratory Director

Ted Yen
Quality Assurance Officer

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

Client Sample ID: SB-12 **Collected:** 07/24/2008 17:00 **SPL Sample ID:** 08071611-01

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		5	1	08/02/08 0:20	LU_L	4606593
Ethylbenzene	ND		5	1	08/02/08 0:20	LU_L	4606593
Toluene	ND		5	1	08/02/08 0:20	LU_L	4606593
m,p-Xylene	ND		5	1	08/02/08 0:20	LU_L	4606593
o-Xylene	ND		5	1	08/02/08 0:20	LU_L	4606593
Xylenes,Total	ND		5	1	08/02/08 0:20	LU_L	4606593
Surr: 1,2-Dichloroethane-d4	92.0		% 62-130	1	08/02/08 0:20	LU_L	4606593
Surr: 4-Bromofluorobenzene	94.0		% 70-130	1	08/02/08 0:20	LU_L	4606593
Surr: Toluene-d8	92.0		% 74-122	1	08/02/08 0:20	LU_L	4606593

Qualifiers:

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

Quality Control Documentation

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

Quality Control Report

Conoco Phillips

COP Shepherd Kelsey #1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 08071611
Lab Batch ID: R247125

Method Blank

RunID: K_080801B-4606589 Units: ug/L
Analysis Date: 08/01/2008 16:59 Analyst: LU_L
Preparation Date: 08/01/2008 16:59 Prep By: Method

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
08071611-01A	SB-12

Analyte	Result	Rep Limit
Benzene	ND	5.0
Ethylbenzene	ND	5.0
Toluene	ND	5.0
m,p-Xylene	ND	5.0
o-Xylene	ND	5.0
Xylenes,Total	ND	5.0
Surr: 1,2-Dichloroethane-d4	88.0	62-130
Surr: 4-Bromofluorobenzene	96.0	70-130
Surr: Toluene-d8	96.0	74-122

Laboratory Control Sample (LCS)

RunID: K_080801B-4606588 Units: ug/L
Analysis Date: 08/01/2008 16:20 Analyst: LU_L
Preparation Date: 08/01/2008 16:20 Prep By: Method

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.0	100	76	126
Ethylbenzene	20.0	19.0	95.0	67	122
Toluene	20.0	19.0	95.0	70	131
m,p-Xylene	40.0	40.0	100	72	150
o-Xylene	20.0	21.0	105	78	141
Xylenes,Total	60	61	100	72	150
Surr: 1,2-Dichloroethane-d4	50.0	47	94.0	62	130
Surr: 4-Bromofluorobenzene	50.0	49	98.0	70	130
Surr: Toluene-d8	50.0	47	94.0	74	122

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

Sample Spiked: 08071802-02
RunID: K_080801B-4606591 Units: ug/L
Analysis Date: 08/01/2008 18:58 Analyst: LU_L

Qualifiers:

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

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

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

Quality Control Report

Conoco Phillips

COP Shepherd Kelsey #1

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 08071611
Method: SW8260B **Lab Batch ID:** R247125

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	20.0	100	20	21.0	105	4.88	22	76	127
Ethylbenzene	ND	20	20.0	100	20	19.0	95.0	5.13	20	35	175
Toluene	ND	20	19.0	95.0	20	19.0	95.0	0	24	70	131
m,p-Xylene	ND	40	39.0	97.5	40	39.0	97.5	0	20	35	175
o-Xylene	ND	20	20.0	100	20	20.0	100	0	20	35	175
Xylenes,Total	ND	60	59	98	60	59	98	0	20	35	175
Surr: 1,2-Dichloroethane-d4	ND	50	45	90.0	50	42.0	84.0	6.90	30	62	130
Surr: 4-Bromofluorobenzene	ND	50	49	98.0	50	49.0	98.0	0	30	70	130
Surr: Toluene-d8	ND	50	48	96.0	50	48.0	96.0	0	30	74	122

Qualifiers:

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

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

Sample Receipt Checklist

And

Chain of Custody

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

Sample Receipt Checklist

Workorder:	08071611	Received By:	BB
Date and Time Received:	7/26/2008 10:00:00 AM	Carrier name:	Fedex-Priority
Temperature:	3.0°C	Chilled by:	Water Ice

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

*VOA Preservation Checked After Sample Analysis

SPL Representative: _____ Contact Date & Time: _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No.: 0807161 1 — 311311

page 1 of 1

Client Name: TetraTech
Address: 4221 Indian School Rd NE Suite 200
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email:
Project Name/No.: Shephard and Kelsey #1
Site Name: 6083
Site Location: Bloomfield, NM
Invoice To: ConocoPhillips Ph:

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

Requested Analysis: BTEX

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	Number of Containers	BTEX
SB-12	2-24-08	17:00		X	W	G	40	1	3	X

Client/Consultant Remarks:

Laboratory remarks:

Intact? Y N
Ice? Y N
Temp: 5.0°C

Requested TAT

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

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

Special Detection Limits (specify):

PM review (initial): AR PA

	date	time	
1. Relinquished by Sampler: Kelly Blanchard	7-25-08	1000	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 7/24/08	time 10:00	6. Received by Laboratory: B. Blanco

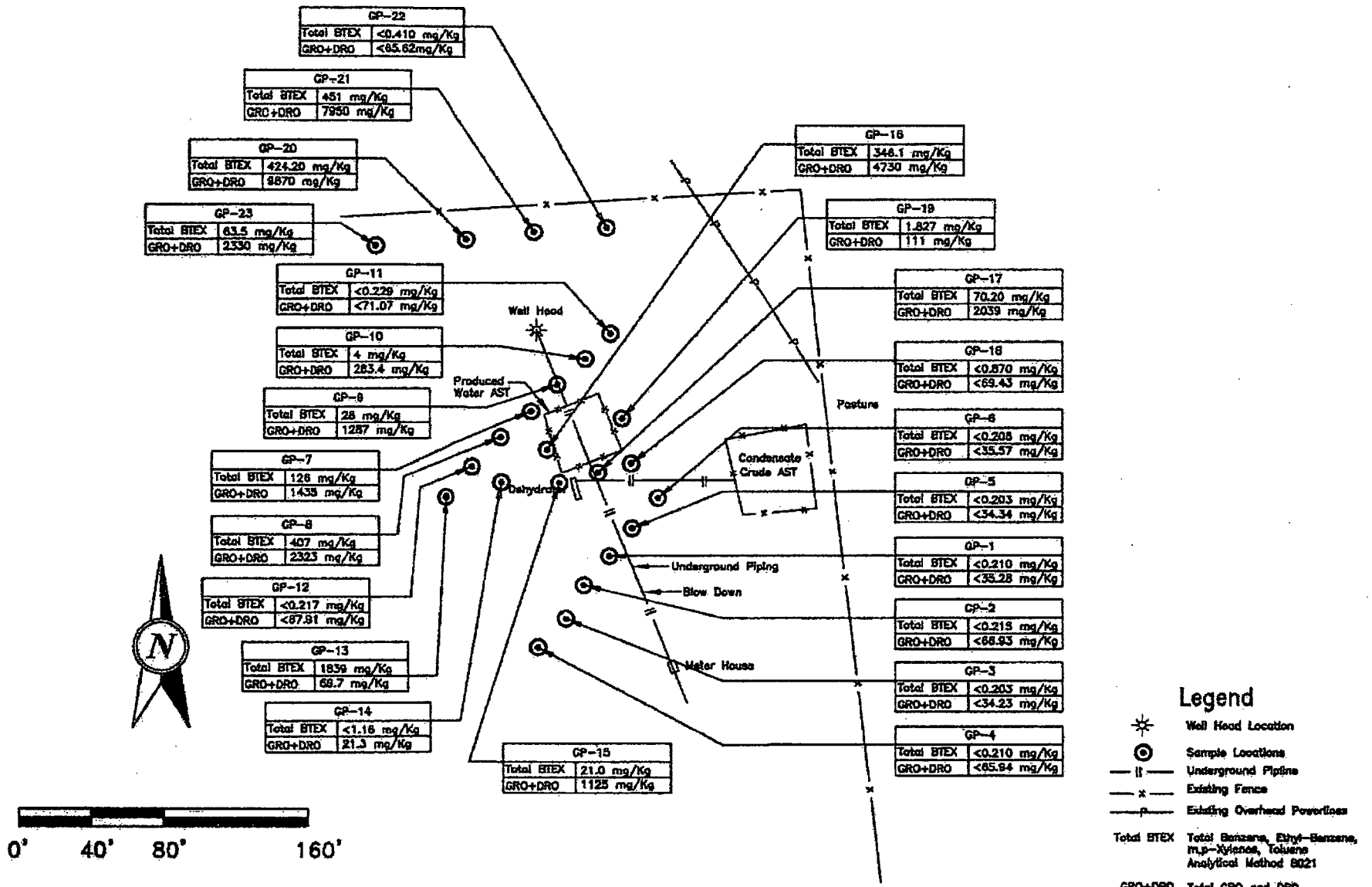
☐ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

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

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

APPENDIX B

SOUDER MILLER & ASSOCIATES BORING LOCATIONS AND BETEX / TPH RESULTS



SMA Civil / Environmental Scientists & Engineers 612 East Murray Farmington, New Mexico 87401 (505) 325-6667 Santa Fe – Farmington Albuquerque – Las Cruces	APPROVED: RSA	DATE: 1/14/04
	DRWN BY: JNAKAI	DATE: 1/7/04
	CHK'D BY: WJG	DATE: 1/14/04
	PROJECT NO: 5114224	FIGURE 3 of 3

Boring Locations and BTEX/TPH Results
Conoco Phillips
SW/4 Section 29, T-29-N, R-11-W, N.M.P.M.
Shepard and Kelsey #1 Well Location
Bloomfield, NM