3R - 090

SEP 2009
GWMR

NOV 2011

3R090

SEMI-ANNUAL GROUNDWATER MONITORING REPORT SEPTEMBER 2009 SAMPLING EVENT

CONOCOPHILLIPS COMPANY NELL HALL #1 FLORA VISTA, NEW MEXICO

OCD # 3R0090

API # TBD

Prepared for:

ConocoPhillips

600 North Dairy Ashford
Houston, TX 77079

Prepared by:

TETRA TECH, INC.

6121 Indian School Rd. NE, Suite 200
Albuquerque, NM 87110
Tetra Tech Project No. 8690099.100

November 2009

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

SEMI-ANNUAL GROUNDWATER MONITORING REPORT CONOCOPHILLIPS COMPANY NELL HALL #1 FLORA VISTA, NEW MEXICO

1.0 INTRODUCTION

This report presents the results of the semi-annual groundwater monitoring event conducted by Tetra Tech, Inc. (Tetra Tech) on September 30, 2009, at the ConocoPhillips Company Nell Hall #1 site in Flora Vista, New Mexico (Site).

The Site is located on Flora Vista Road in Flora Vista, New Mexico, approximately 2 miles west of Aztec, New Mexico. The Site consists of a gas production well and associated equipment. The location and general features of the Site are shown on **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.

The environmental investigation at the Site began with the attempted closure of an unlined dehydrator discharge pit in the early 1990's. Soil impacts were discovered during earthmoving activities and groundwater monitor wells MW-1, MW-2, and MW-3 were subsequently installed to determine if hydrocarbons had impacted groundwater beneath the Site. Due to an ongoing drought, the water table fell below the screened intervals of the installed groundwater monitor wells, and continuous sampling of these well was not possible. On February 17 and 18, 2004, Souder Miller and Associates installed three additional monitor wells (MW-4, MW-5, and MW-6) at sufficient depths to intersect the water table and to account for the effects of further seasonal/drought-based water table fluctuations. Groundwater monitor wells MW-4 and MW-6 were installed to 35 feet below ground surface (bgs) with a 30-foot screened interval and MW-5 was installed to 39 feet bgs with a 35-foot screened interval. This screened interval was chosen in order to allow for continuous sampling of these wells even in the event of a water table fluctuation of up to 25 feet (Souder Miller and Associates, 2004).

Following installation, MW-4, MW-5, and MW-6 were sampled by Tetra Tech on a quarterly basis in 2004, on a semi-annual basis in 2005, annually in 2006, and finally on a semi-annual basis beginning in February 2007 and continuing to the present. The latest semi-annual sampling event was performed by Tetra Tech on September 30, 2009.

2.0 METHODOLOGY AND RESULTS

The following sections describe the groundwater monitoring methodology used at the Site and results of laboratory analysis of groundwater samples.

2.1 Groundwater Monitoring Methodology

Groundwater Elevation Measurements

Prior to the start of groundwater sampling activities, the depth to water at each groundwater monitor well within the Site was gauged using an interface probe, and the results were recorded on the groundwater sampling field form (**Table 2, Appendix A**). The probe was decontaminated with an Alconox solution and de-ionized water before each monitor well was gauged. It should be noted that for determination of flow direction and gradient, water levels in the six groundwater monitor wells at the Site are collected during each sampling event when possible.

Table 2 presents the monitor well specifications and groundwater level data. Hydrographs illustrating the groundwater level fluctuations since March 2004 in groundwater monitor wells MW-5 and MW-6 are presented on **Figures 3** and **4**, respectively. The data indicate that groundwater elevations are consistently lowest during the late-winter/early-spring months. In October 2008, the groundwater at the Site flowed along a shallow gradient to the northeast and southwest from the approximate center of the Site. In March 2009, a noticeably steeper groundwater gradient was found at the Site. In addition, there appears to be a mounding effect near the meter house at the Site, causing groundwater to flow away from this area in a steep, radial pattern. Groundwater elevation data collected during the September 2009 sampling event shows a similar mounding effect at the Site. Historically, the groundwater flow direction and gradient vary from season to season. These fluctuations are believed to be the result of changes in irrigation rates and/or changes in base-flow conditions in the Animas River, which, at its closest point, lies approximately 0.6 mile to the south, southeast of the Site (**Figure 1**).

Groundwater Sampling

Groundwater quality samples were collected from monitor wells MW-4, MW-5 and MW-6 during this event as a continuation of semi-annual monitoring at the Site. Three well volumes were purged from each monitor well before sampling was performed. A 1.5-inch disposable, dedicated polyethylene bailer was used to purge the well and to collect the groundwater sample. The purge water generated during the event was disposed of in the on-site waste water tank (**Figure 2**). The groundwater samples were placed 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 by Environmental Protection Agency (EPA) Method 8260B and for dissolved iron by EPA Method 6010B.

Total metals testing was conducted during prior events as requested by the OCD in April of 2008. Tetra Tech requested and received approval from the OCD on September 8, 2009 to run dissolved metals analyses for only those metals which had exceeded the NMWQCC drinking water standards for metals previously run by total metals analysis. The dissolved metals samples were collected in unpreserved containers supplied by the laboratory, which were filtered and preserved by laboratory personnel prior to analysis for dissolved metals. Dissolved metals testing will continue for metals exceeding NMWQCC drinking water standards.

2.2 Groundwater Sampling Analytical Results

The September 2009 analytical results indicate that samples collected from monitor wells MW-4 and MW-5 were below New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards and laboratory detection limits for all analyzed constituents. The groundwater sample collected from MW-6 contained 1.06 milligrams per liter (mg/L) dissolved iron, which is slightly above the NMWQCC groundwater quality standard of 1 mg/L. Prior to this sampling event, Tetra Tech was collecting samples for ferrous iron analysis in order to monitor natural attenuation through biodegradation. These previous ferrous iron results can be explained by the following: benzene, toluene, ethylbenzene and xylenes were detected in MW-6 at concentrations of 96 micrograms per liter (ug/L), 4.7 ug/L, 62 ug/L and 120 ug/L, respectively. The benzene concentration for MW-6 is above the NMWQCC quality standard of 10 ug/L.

Benzene concentrations in MW-6 have fluctuated throughout previous groundwater sampling events at the Site (**Table 3**). These results are postulated to be related to the fluctuating water table at the Site. To investigate this possibility, a graph depicting benzene and depth to water versus time in MW-6 was prepared and is attached as **Figure 6**. The graph illustrates an inverse relationship between benzene concentrations and water column thickness in this groundwater monitor well. Historically elevated benzene concentrations in MW-6 (peaking at 2,500 ug/L in March 2004) should be viewed in this regard. It should also be noted that the March 2004 groundwater sample was collected immediately following installation of MW-6 in February 2004, in which soil samples collected at 25 and 30 feet bgs each resulted in an exceedence of the 50 milligram per kilogram (mg/kg) regulatory limit for BTEX, and soil samples collected at 25, 30, and 35 feet bgs were found to contain total petroleum hydrocarbons (TPH) at levels greater than the 100 mg/kg regulatory limit (Souder Miller and Associates, 2004).

Historical laboratory analytical data, including the September 2009 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**.

3.0 CONCLUSIONS

Tetra Tech will continue semi-annual groundwater sampling at the Site. The next groundwater sampling event is tentatively scheduled for March 2010. Samples will be collected from MW-4, MW-5, and MW-6 for BTEX analyses by EPA Method 8260B and dissolved iron by EPA Method 6010B. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

4.0 REFERENCES

Souder Miller and Associates (2004). *Nell Hall Monitor well Installation Report.* Prepared for ConocoPhillips Company Report Dated May 7. 64 pp.

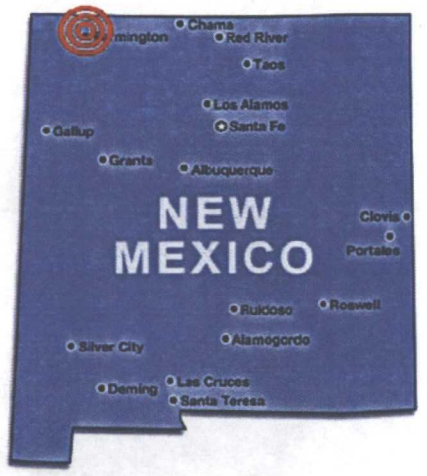
Vance, David B. 1994. Online version of: 'Iron – The Environmental Impact of a Universal Element'. National Environmental Journal May/June. 4(3): 24-25. <www.http://2the4.net/iron.htm>.

FIGURES

ConocoPhillips 2008 High Resolution Aerial Photography

FIGURE 1.

Site Location Map
ConocoPhillips Company
Nell Hall No. 1
Flora Vista, New Mexico
Sec 07, Twp 30N, Rng 11W



Approximate ConocoPhillips Nell Hall #1 Site location

N

TETRA TECH, INC.

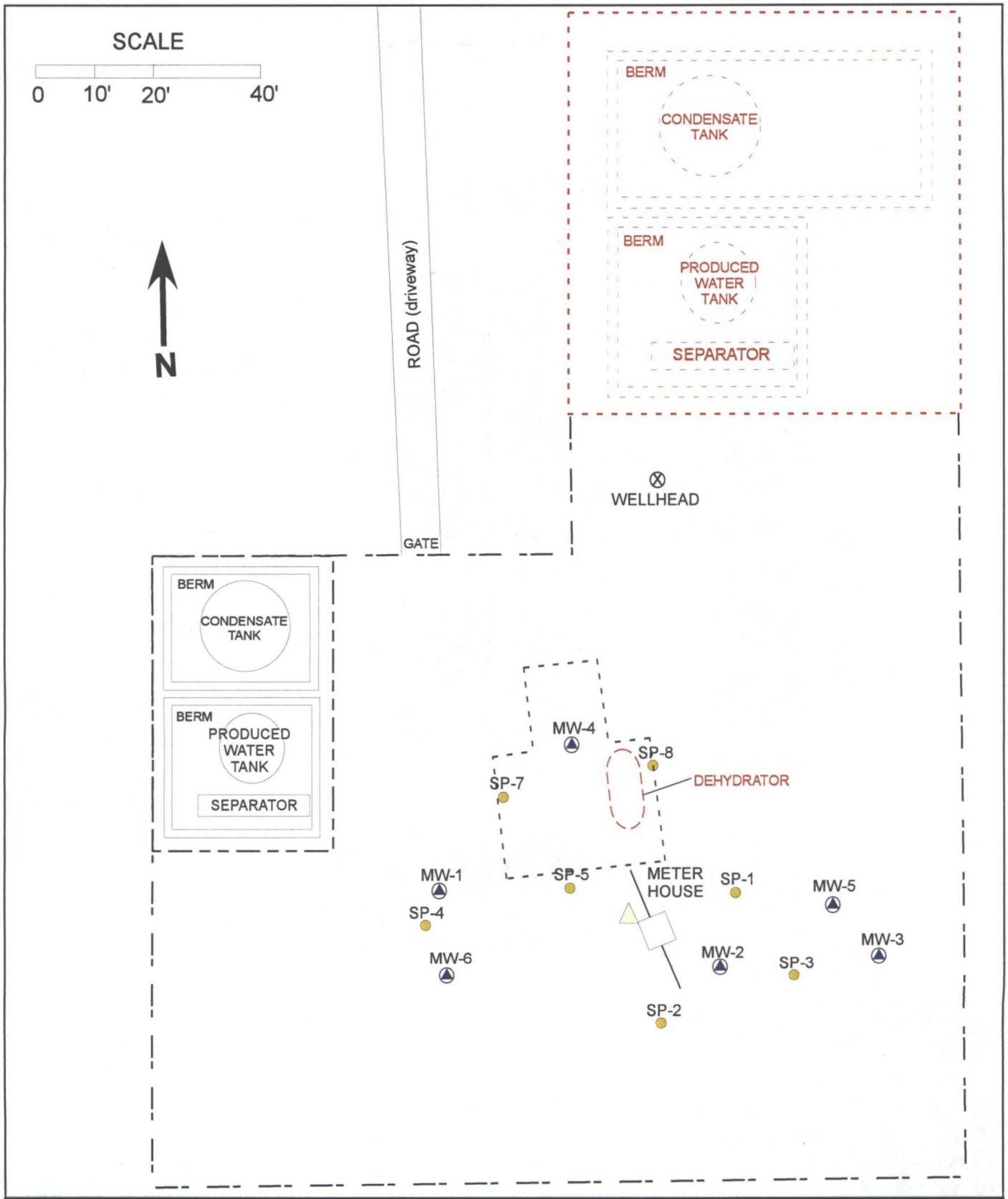


FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
Nell Hall No. 1
Flora Vista, New Mexico
Sec 07, Twp 30N, Rng 11W

LEGEND

MW-2 - Monitoring Well Locations
SP-3 - Sparge Point Locations
- Survey Control Point
- Fence
- Previous Equipment Placement
- Approximate 1994 Excavation Location

NOTE: SP-1 Removed.

TETRA TECH, INC.

Figure 3. MW-5 Hydrograph (March 2004 - September 2009) - ConocoPhillips Company Nell Hall No.1

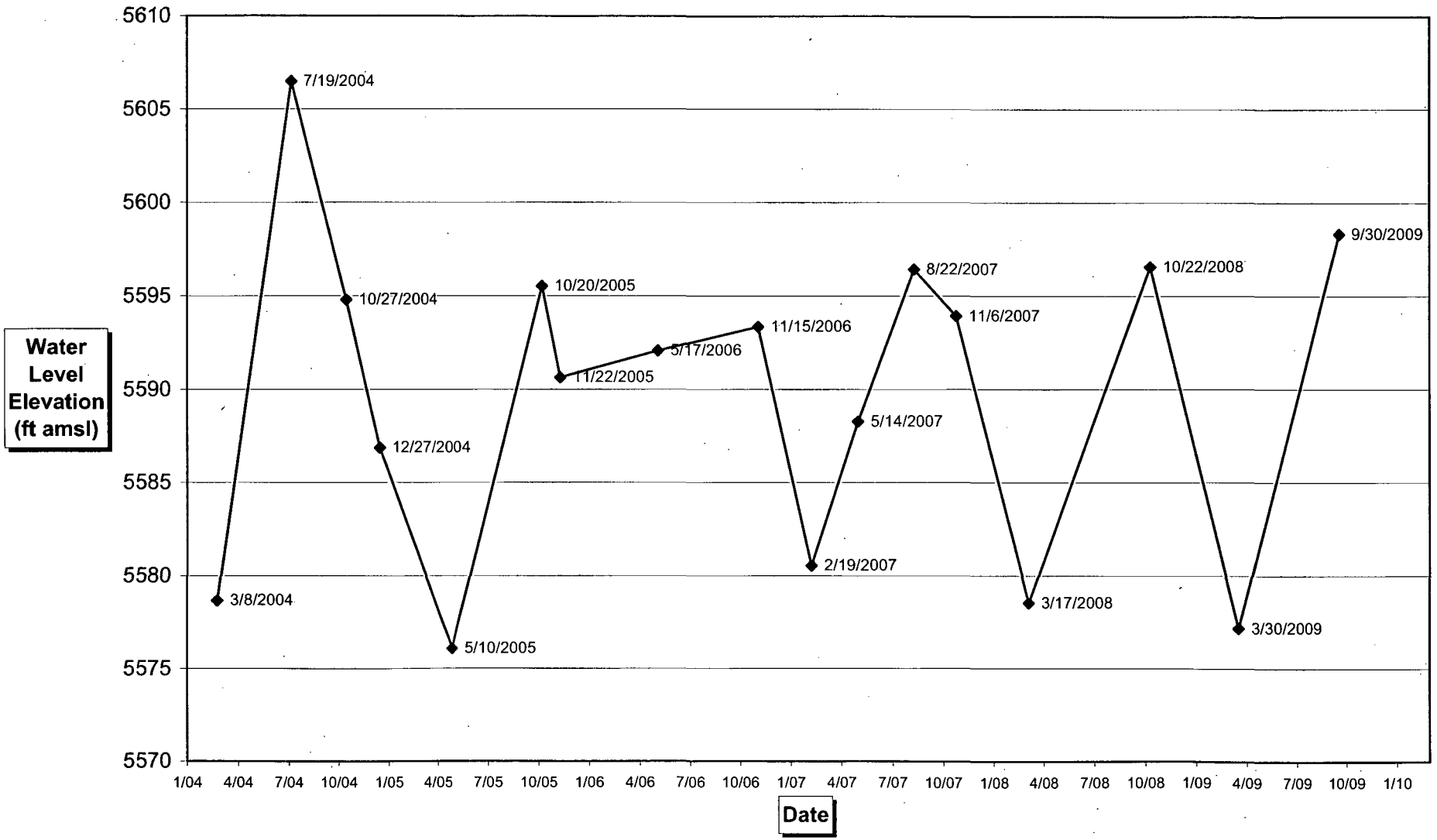
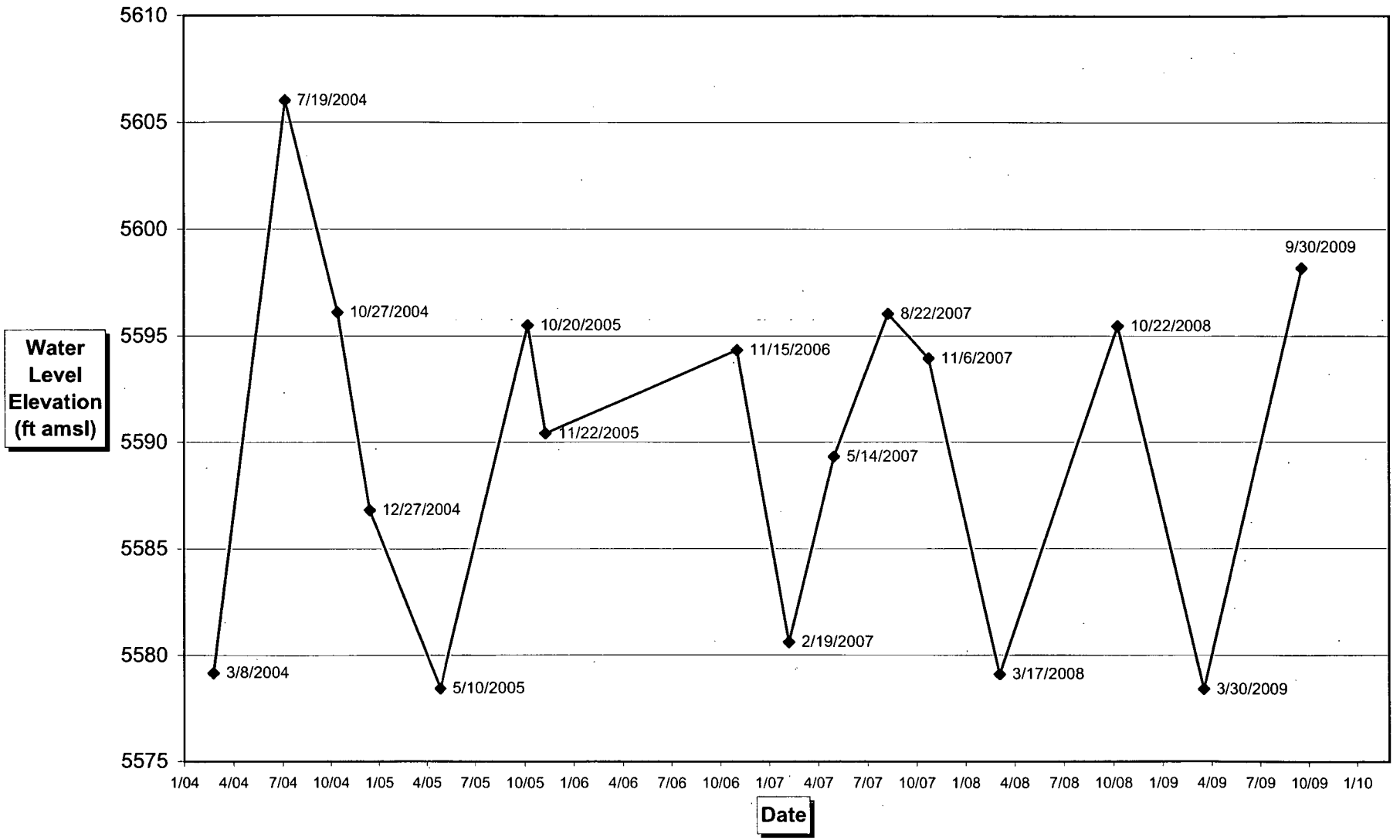


Figure 4. MW-6 Hydrograph (March 2004 - September 2009) - ConocoPhillips Company Nell Hall No. 1



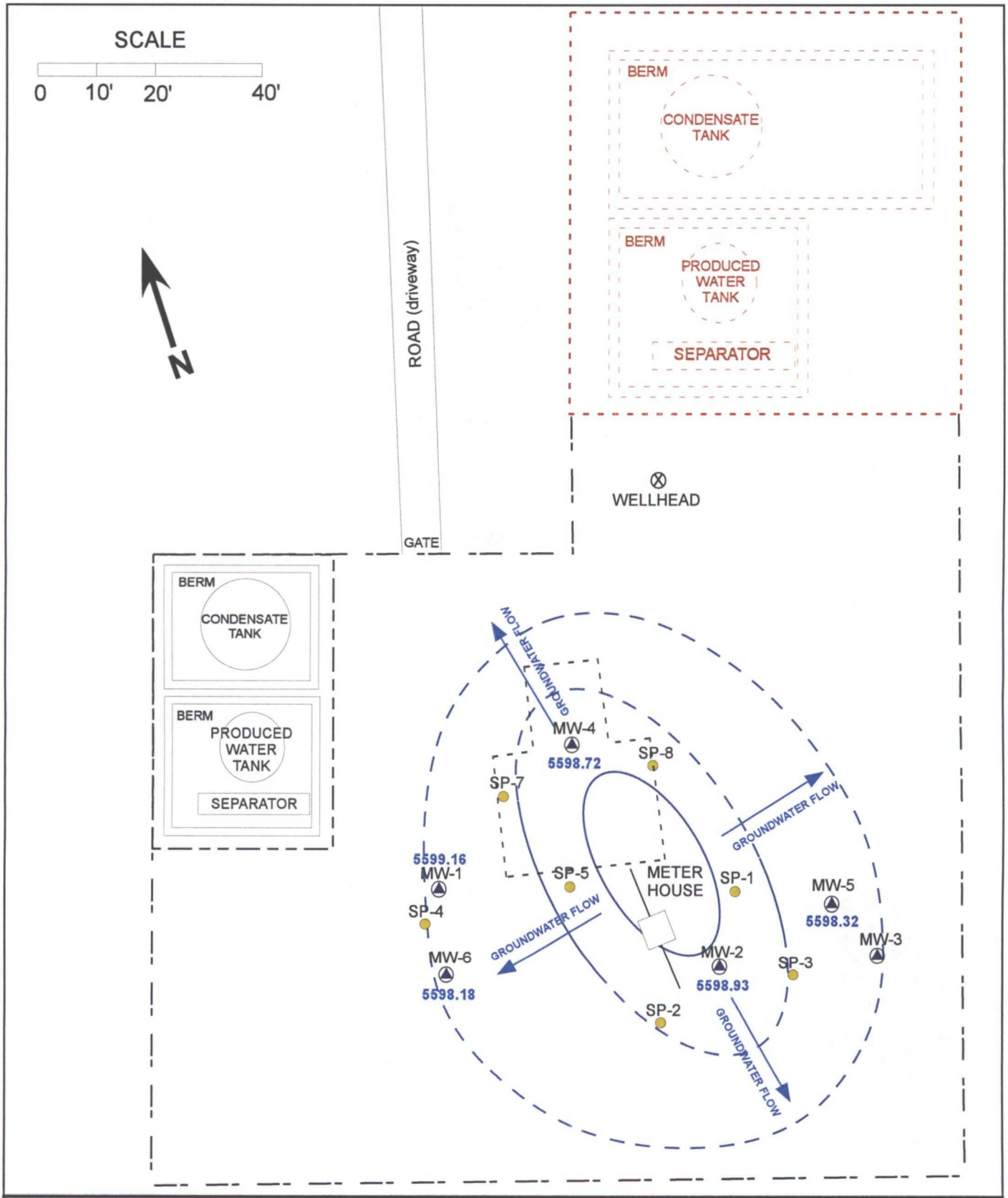


FIGURE 5:
GROUNDWATER ELEVATION CONTOUR MAP SEPT. 2009
CONOCOPHILLIPS COMPANY
Nell Hall #1
San Juan County, New Mexico

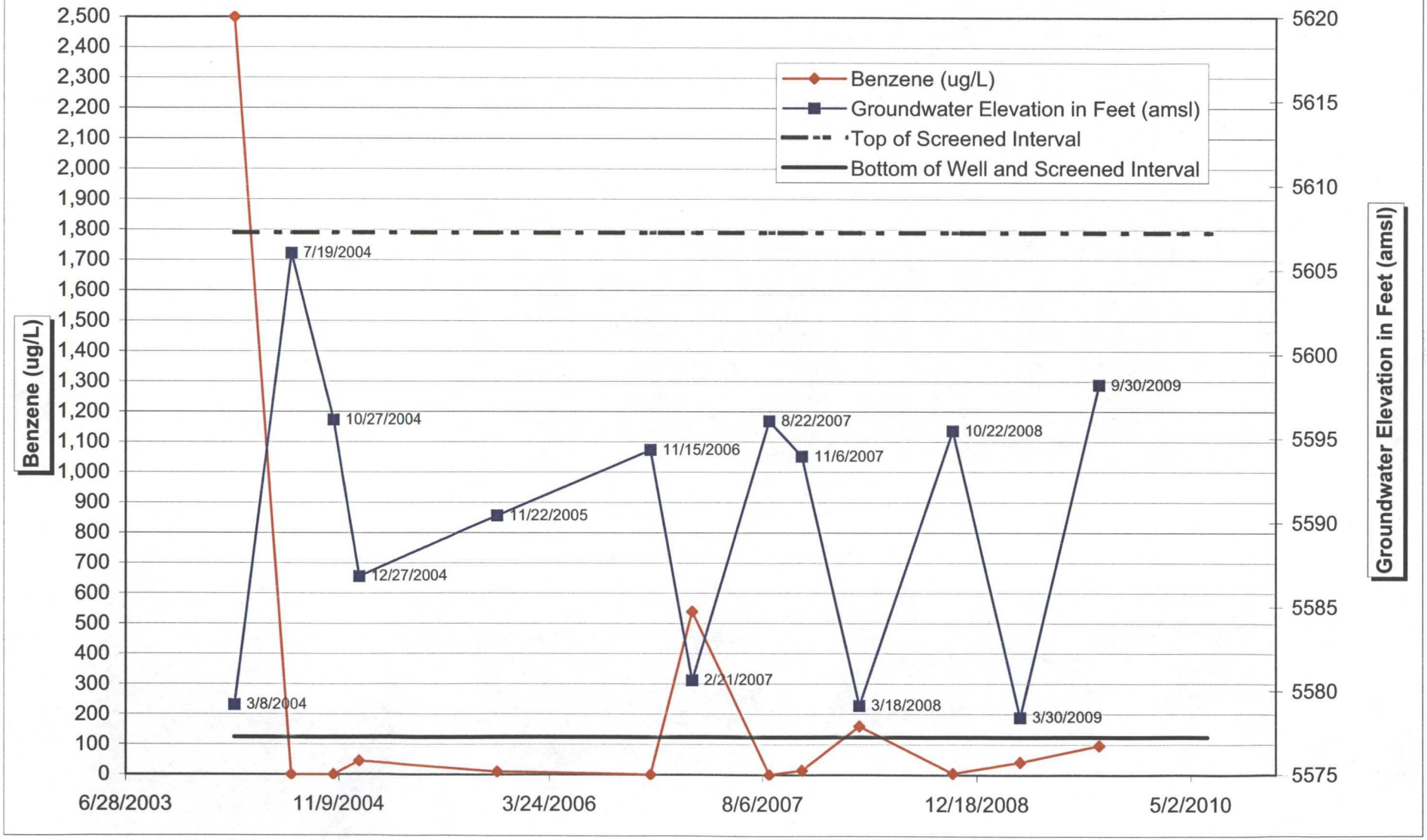
LEGEND

- Monitoring Well Locations
- Sparge Point Locations
- Fence
- Previous Equipment Placement
- Approximate Excavation Location
- Groundwater Elevation Contour (dashed where inferred)

NOTE: SP-1 Removed.

TETRA TECH, INC.

Figure 6. Inverse Relationship Between Benzene and Depth to Water in MW-6
ConocoPhillips Company Nell Hall No.1



TABLES

Table 1. Site History Timeline - ConocoPhillips Company Nell Hall No. 1

Date/Time Period	Event/Action	Description/Comments
February 20, 1961	Well Spudded	Southwest Production Company spudded the Nell Hall No. 1
September 1, 1963	Operator Change	Beta Development Company acquired the Nell Hall No. 1 from Southwest Production Company
September 15, 1988	Operator Change	*Mesa Operating Limpited Partnership acquired the Nell Hall No. 1 from Beta* Development Compnay
July 1, 1991	Operator Change	Conoco Inc. acquired the Nell Hall No. 1 from Mesa Operating Limited Partnership
May 3, 1994	Pit Remediation	Conoco stopped flow to the dehydrator, sampled the soil in the unlined dehydrator pit and encountered hydrocarbon-impacted soil.
August 31 through September 1, 1994	Pit Remediation	Conoco removed the dehydrator and Flint Engineering & Construction Co. excavated soil in the vicinity of the former dehydrator pit to a depth of 16 feet. A soil sample at the bottom of the excavation revealed TPH of 380 ppm.
September 21 through October 7, 1994	Pit Remediation	Flint landfarmed the excavated soil on site
June 1 and 2, 1995	Soil Borings and Groundwater Sampling	Philip Environmental Services Corp. completed initial subsurface assesment (3 temporary monitor wells and 3 additional borings)
June 15, 1995	Soil Borings and Groundwater Sampling	Philip Environmental Services Corp. completed an additional soil boring.
March 27, 1997	Monitor Well Sampling	On Site Technologies, LTD found insufficient water in the 3 monitor wells for sampling.
March, 2002	Groundwater sampling	Continued sampling recommended until four (4) sampling events demonstrate contamination levels below NMWQCC groundwater quality standards.
June, 2002	Groundwater sampling	Continued sampling recommended until four (4) sampling events demonstrate contamination levels below NMWQCC groundwater quality standards.
September, 2002	Groundwater sampling	Continued sampling recommended until four (4) sampling events demonstrate contamination levels below NMWQCC groundwater quality standards.
January 1, 2003	Operator Name Change	Conoco Inc. and Phillips Petroluem Company merged to form ConocoPhillips Company.
February 17 and 18, 2004	Monitor Well Installation	Monitor Wells MW-4, MW-5, and MW-6 were installed at deeper depths (35 to 39 feet BGS) to adequately intersect the water table, as previously installed groundwater monitoring wells continually went dry. The lowest water levels at the site are found to occur in early spring and late winter. Installed 30 to 35 feet of screen to allow for seasonal groundwater fluctuations of up to 25 feet.
March 8 through December 27, 2004	Monitor Well Sampling	Quarterly groundwater sampling of Monitor Wells MW-4, MW-5, and MW-6; benzene spike in March (MW-6) coincides with MW-6 well installation and discovery of BTEX and TPH impacts to soil at 25-35 feet bgs in MW-6 soil samples collected during drilling.
May 11 through November 22, 2005	Monitor Well Sampling	Semi-annual sampling of monitor wells MW-4, MW-5, and MW-6
November 15, 2006	Monitor Well Sampling	Annual sampling of monitor wells MW-4, MW-5, and MW-6

Table 1. Site History Timeline - ConocoPhillips Company Nell Hall No. 1

Date/Time Period	Event/Action	Description/Comments
February 21, 2007 through October 22, 2008	Monitor Well Sampling	Resumption of semi-annual sampling of Monitor Wells MW-4, MW-5, and MW-6 during summer and fall months when water is most likely to be present in wells.
February 4, 2008	PEPA Report	Preliminary Exposure Pathway Assessment (PEPA) report completed and submitted to ConocoPhillips; internal document for ConocoPhillips use only.
February 6, 2009	BTEX vs. depth to water plotted in MW-6	BTEX concentrations show inverse relationship to water column thickness in MW-6; plotted from 2/21/07 to 10/22/08 (N=5)
September 30, 2009	Monitor Well Sampling	Groundwater samples collected from MW-4, MW-5 and MW-6. MW-6 benzene concentration of 96 µg/L; dissolved iron concentration of 1.06 milligrams per liter (mg/L).

Table 2. Groundwater Elevation Summary (March 2004 - September 2009) - ConocoPhillips Company Nell Hall No. 1

Well ID	Date Installed	Total Depth (ft. below TOC)	Screen Interval (ft below TOC)	Elevation (ft. msl) (TOC)	Date Measured	Groundwater Level (ft below TOC)	Groundwater Elevation (ft amsl)
MW-1	Unknown	28.55	Unknown	5615.72	5/10/2005	Dry	NC
					10/20/2005	19.25	5596.47
					11/22/2005	24.15	5591.57
					5/17/2006	NM	NC
					11/15/2006	21.40	5594.32
					2/19/2007	Dry	NC
					5/14/2007	24.85	5590.87
					8/22/2007	24.61	5591.11
					11/6/2007	20.87	5594.85
					3/17/2008	Dry	NC
					10/22/2008	19.38	5596.34
					3/30/2009	28.25	5587.47
					9/30/2009	16.56	5599.16
MW-2	Unknown	27.32	Unknown	5614.94	5/10/2005	Dry	NC
					10/20/2005	18.81	5596.13
					11/22/2005	23.74	5591.20
					5/17/2006	22.06	5592.88
					11/15/2006	21.01	5593.93
					2/19/2007	Dry	NC
					5/14/2007	Dry	NC
					8/22/2007	18.03	5596.91
					11/6/2007	20.43	5594.51
					3/17/2008	Dry	NC
					10/22/2008	18.83	5596.11
					3/30/2009	27.15	5587.79
					9/30/2009	16.01	5598.93
MW-3	Unknown	27.45	Unknown	5615.53	5/10/2005	Dry	NC
					10/20/2005	19.36	5596.17
					11/22/2005	24.24	5591.29
					5/17/2006	22.82	5592.71
					11/15/2006	21.53	5594.00
					2/19/2007	Dry	NC
					5/14/2007	Dry	NC
					8/22/2007	18.36	5597.17
					11/6/2007	20.95	5594.58
					3/17/2008	Dry	NC
					10/22/2008	19.34	5596.19
					3/30/2009	Dry	NC
					9/30/2009	NM	NC
MW-4	2/18/2004	37.57	7.57 - 37.57	5614.87	3/8/2004	36.04	5578.83
					7/19/2004	8.44	5606.43
					10/27/2004	19.69	5595.18
					12/27/2004	27.58	5587.29
					5/10/2005	Dry	NC
					10/20/2005	18.87	5596.00
					11/22/2005	23.93	5590.94
					5/17/2006	NM	NC
					11/15/2006	21.02	5593.85
					2/19/2007	34.40	5580.47
					5/14/2007	27.56	5587.31
					8/22/2007	18.18	5596.69
					11/6/2007	20.48	5594.39
					3/17/2008	36.08	5578.79
					10/22/2008	18.96	5595.91
					3/30/2009	37.36	5577.51
					9/30/2009	16.15	5598.72

Table 2. Groundwater Elevation Summary (March 2004 - September 2009) - ConocoPhillips Company Nell Hall No. 1

Well ID	Date Installed	Total Depth (ft. below TOC)	Screen Interval (ft below TOC)	Elevation (ft. msl) (TOC)	Date Measured	Groundwater Level (ft below TOC)	Groundwater Elevation (ft amsl)
MW-5	2/17/2004	42.7	7.7 - 42.7	5615.86	3/8/2004	37.19	5578.67
					7/19/2004	9.38	5606.48
					10/27/2004	21.07	5594.79
					12/27/2004	28.99	5586.87
					5/10/2005	39.79	5576.07
					10/20/2005	20.34	5595.52
					11/22/2005	25.23	5590.63
					5/17/2006	23.80	5592.06
					11/15/2006	22.51	5593.35
					2/19/2007	35.31	5580.55
					5/14/2007	27.59	5588.27
					8/22/2007	19.45	5596.41
					11/6/2007	21.94	5593.92
					3/17/2008	37.33	5578.53
					10/22/2008	19.3	5596.56
					3/30/2009	38.68	5577.18
					9/30/2009	17.54	5598.32
MW-6	2/18/2004	38.21	8.21 - 38.21	5615.44	3/8/2004	36.27	5579.17
					7/19/2004	9.43	5606.01
					10/27/2004	19.33	5596.11
					12/27/2004	28.62	5586.82
					5/10/2005	Dry	NC
					10/20/2005	19.94	5595.50
					11/22/2005	25.02	5590.42
					5/17/2006	NM	NC
					11/15/2006	21.12	5594.32
					2/19/2007	34.82	5580.62
					5/14/2007	26.12	5589.32
					8/22/2007	19.41	5596.03
					11/6/2007	21.51	5593.93
					3/17/2008	36.34	5579.10
					10/22/2008	19.99	5595.45
					3/30/2009	37.04	5578.40
					9/30/2009	17.26	5598.18

Explanation

amsl = Above mean sea level
bgs = Below ground surface
ft = Feet
NC = Not calculated
NM = Not measured
TOC = Top of casing

Table 3. Groundwater Analytical Results Summary (March 2004 - September 2009)
ConocoPhillips Company Nell Hall No. 1

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Ferrous Iron (mg/L)	Phosphate (mg/L)	Dissolved Iron (mg/L)
MW-4	3/8/2004	13	12	64	1,400	NA	NA	NA	NA	NA
	7/19/2004	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
	10/27/2004	11	8	21	130	NA	NA	NA	NA	NA
	12/27/2004	<2.5	<2.5	<2.5	<0.5	NA	NA	NA	NA	NA
	5/11/2005	Dry								
	11/22/2005	<0.5	<0.7	<0.8	<0.8	<0.40	105	2.7	<0.25	NA
	11/15/2006	<0.5	<0.7	<0.8	<0.8	<0.25	110	0.083	<0.25	NA
	2/21/2007	<0.5	<0.7	<0.8	<0.8	<0.25	59.6	1.6	0.28	NA
	8/22/2007	<0.5	<0.7	<0.8	<0.8	<0.25	96.5	0.04	<0.25	NA
	11/6/2007	<0.5	<0.7	<0.8	<0.8	3.3	111	<0.008	0.17	NA
	3/17/2008	<5	<5	<5	<5	<0.5	64.5	0.187	0.9	NA
	10/22/2008	<5	<5	<5	<5	1.9	93.8	<0.1	0.18	NA
	3/30/2009	Dry								
	9/30/2009	<1	<1	<1	<1	NA	NA	NA	NA	<0.02
MW-5	3/8/2004	1.1	<0.5	1	17	NA	NA	NA	NA	NA
	7/19/2004	<0.5	0.55	<0.5	0.72	NA	NA	NA	NA	NA
	10/27/2004	<0.5	<0.5	<0.5	<1.0	NA	NA	NA	NA	NA
	12/27/2004	<0.5	<0.5	<0.5	<1.0	NA	NA	NA	NA	NA
	5/11/2005	<0.5	<0.7	<0.8	<0.8	2.3	139	<0.0080	1.2	NA
	11/22/2005	<0.5	<0.7	<0.8	<0.8	<0.40	38	<0.0080	0.43	NA
	11/15/2006	<0.5	<0.7	<0.8	<0.8	2.3	77.9	<0.0080	<0.25	NA
	2/21/2007	<0.5	<0.7	<0.8	<0.8	1.3	83.3	<0.0080	0.28	NA
	8/22/2007	<0.5	<0.7	<0.8	<0.8	5.6	125	<0.0080	<0.25	NA
	11/6/2007	<0.5	<0.7	<0.8	<0.8	4	59	<0.0080	<0.25	NA
	3/17/2008	<5	<5	<5	<5	0.986	69.7	0.876	1.4	NA
	10/22/2008	<5	<5	<5	<5	0.532	105	<.1	<.15	NA
	3/30/2009	<5	<5	<5	<5	NA	NA	0.822	NA	NA
	9/30/2009	<1	<1	<1	<1	NA	NA	NA	NA	<0.02
MW-6	3/8/2004	2,500	14	1,600	21,031	NA	NA	NA	NA	NA
	7/19/2004	<0.5	<0.5	0.98	2.6	NA	NA	NA	NA	NA
	10/27/2004	0.4	0.3	0.5	2.1	NA	NA	NA	NA	NA
	12/27/2004	45	6.8	14	71.7	NA	NA	NA	NA	NA
	5/11/2005	Dry								
	11/22/2005	10	0.7	16	150	<0.40	3.4	7.7	2.8	NA
	11/15/2006	<0.5	<0.7	<0.8	<0.8	<0.25	41.3	0.19	<0.25	NA
	2/21/2007	540	<1	76	810	<0.25	1.8	6.4	9.0	NA
	8/22/2007	<0.5	<0.7	<0.8	<0.8	<0.25	12.6	0.95	<0.25	NA
	11/6/2007	15	<0.7	47	390	<0.25	5.6	3.6	0.1	NA
	3/18/2008	160	<5	<5	33	NA	NA	8.88	NA	NA
	10/22/2008	<5	<5	<5	<5	<1.0	5.15	38.7	0.9	NA
	3/30/2009	42	<5	<5	10	NA	NA	31.8	NA	NA
	9/30/2009	96	4.7	62	120	NA	NA	NA	NA	1.06
NMWQCC Standards		10 (µg/L)	750 (µg/L)	750 (µg/L)	620 (µg/L)	10 (mg/L)	600 (mg/L)	NE	NE	1 (mg/L)

Explanation

mg/L = milligrams per liter (parts per million)
NA = Not Analyzed
NE = Not Established
NMWQCC = New Mexico Water Quality Control Commission
µg/L = micrograms per liter (parts per billion)

APPENDIX A

GROUNDWATER SAMPLING FIELD FORMS

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Nell Hall No. 1 Page 1 of 3

Project No.

Site Location Flora Vista, NM

Site/Well No. MW-4 Coded/ Replicate No. Date 9-29-09

Weather Sunny, Windy 85° Time Sampling Began 1600 Time Sampling Completed 1620

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 37.57 Water-Level Elevation

Held Depth to Water Below MP 16.15 Diameter of Casing 2"

Wet Water Column in Well 21.42 Gallons Pumped/Bailed Prior to Sampling 10.75 gallons

Gallons per Foot 3.427 0.16

Gallons in Well X3 = 10.2816

Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1612	18.94	6.37	934	.605	5.14	111.7
1614	17.55	6.49	949	.617	4.90	98.4
1616	17.63	6.59	930	.605	4.50	92.0

Turbidity
77.46
70.36
93.34

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe Dissolved	16 oz plastic	None

Remarks odor of weathered hydrocarbons, no sheen, ~~black particulate in H2O~~

Sampling Personnel CM, CB

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 Nell Hall No. 1 Page 2 of 3

Project No.

Site Location Flora Vista, NM

Site/Well No. MW-5 Coded/ Replicate No. Date 9-30-09

Weather Sunny, Windy 85° Time Sampling Began 1628 Time Sampling Completed 1648

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 42.7 Water-Level Elevation

Held Depth to Water Below MP 17.54 Diameter of Casing 2"

Wet Water Column in Well 25.16 Gallons Pumped/Bailed Prior to Sampling 12.5 gallons

Gallons per Foot 4 (0.258.16)

Gallons in Well x3 = 12.07 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1630	16.86	6.88	1101	0.716	8.33	94.6
1632	16.74	6.73	1109	0.721	8.31	89.3
1635	16.71	6.75	1106	0.719	8.05	88.8

turb
335.3
106.4
136.7

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe Dissolved	16 oz plastic	None

Remarks light brown H_2O, no odor, no sheen

Sampling Personnel CM, CB

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 Nell Hall No. 1 — Page 3 of 3

Project No.

Site Location Flora Vista, NM

Site/Well No. MW-6 — Coded/ Replicate No. 1725 — Date 9-30-09

Weather Sunny, Windy 86° — Time Sampling Began 1711 — Time Sampling Completed 1720

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 38.21 — Water-Level Elevation

Held ____ Depth to Water Below MP 17.26 — Diameter of Casing 2"

Wet ____ Water Column in Well 20.95 — Gallons Pumped/Bailed Prior to Sampling 10.25

Gallons per Foot 0.16

Gallons in Well 3.352 x 3 = 10.056

Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1711	17.96	6.75	1069	0.695	4.31	-61.8
1713	17.09	6.67	1088	0.707	2.73	-59.9
1715	16.93	6.64	1093	0.710	2.24	-60.4

turb
54.98
74.03
70.9
error

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe Dissolved	16 oz plastic	None

Remarks odor of weathered hydrocarbons, gray H_2O w/ black particulate matter no sheen

Sampling Personnel CM, CB

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:

09100086

Report To:		Project Name:	COP Nell Hall
Tetra Tech, Inc.		Site:	Flora Vista, NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	10/14/2009
ph: (505) 237-8440 fax:			

This Report Contains A Total Of 14 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

10/14/2009

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:
09100086

Report To:		Project Name:	COP Nell Hall
Tetra Tech, Inc.		Site:	Flora Vista, NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	10/14/2009
ph: (505) 237-8440	fax:		

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.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or by his designee, as verified by the following signature.

Erica Cardenas
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:

09100086

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

Fax To:

Project Name: COP Nell Hall
Site: Flora Vista, NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 10/14/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-4	09100086-01	Water	9/30/2009 4:20:00 PM	10/2/2009 9:15:00 AM	324171	☐
MW-5	09100086-02	Water	9/30/2009 4:48:00 PM	10/2/2009 9:15:00 AM	324171	☐
MW-6	09100086-03	Water	9/30/2009 5:20:00 PM	10/2/2009 9:15:00 AM	324171	☐
Duplicate	09100086-04	Water	9/30/2009 5:25:00 PM	10/2/2009 9:15:00 AM	324171	☐
Trip Blank	09100086-05	Water	10/1/2009 4:15:00 PM	10/2/2009 9:15:00 AM	324171	☐

Erica Cardenas
Project Manager

10/14/2009
Date

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

Ted Yen
Quality Assurance Officer

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

Client Sample ID: MW-4 **Collected:** 09/30/2009 16:20 **SPL Sample ID:** 09100086-01

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Iron	ND		0.02	1	10/13/09 11:30	AB1	5243650

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	10/05/2009 15:30	R_V	1.00

VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	10/06/09 16:03	LU_L	5235590
Ethylbenzene	ND		1	1	10/06/09 16:03	LU_L	5235590
Toluene	ND		1	1	10/06/09 16:03	LU_L	5235590
m,p-Xylene	ND		1	1	10/06/09 16:03	LU_L	5235590
o-Xylene	ND		1	1	10/06/09 16:03	LU_L	5235590
Xylenes,Total	ND		1	1	10/06/09 16:03	LU_L	5235590
Surr: 1,2-Dichloroethane-d4	97.4		% 78-116	1	10/06/09 16:03	LU_L	5235590
Surr: 4-Bromofluorobenzene	103		% 74-125	1	10/06/09 16:03	LU_L	5235590
Surr: Toluene-d8	99.1		% 82-118	1	10/06/09 16:03	LU_L	5235590

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:** 09/30/2009 16:48 **SPL Sample ID:** 09100086-02

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED			**MCL**	**SW6010B**	**Units: mg/L**		
Iron	ND		0.02	1	10/13/09 11:34	AB1	5243651

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	10/05/2009 15:30	R_V	1.00

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	10/07/09 20:20	LU_L	5236952
Ethylbenzene	ND		1	1	10/07/09 20:20	LU_L	5236952
Toluene	ND		1	1	10/07/09 20:20	LU_L	5236952
m,p-Xylene	ND		1	1	10/07/09 20:20	LU_L	5236952
o-Xylene	ND		1	1	10/07/09 20:20	LU_L	5236952
Xylenes,Total	ND		1	1	10/07/09 20:20	LU_L	5236952
Surr: 1,2-Dichloroethane-d4	96.5	%	78-116	1	10/07/09 20:20	LU_L	5236952
Surr: 4-Bromofluorobenzene	105	%	74-125	1	10/07/09 20:20	LU_L	5236952
Surr: Toluene-d8	101	%	82-118	1	10/07/09 20:20	LU_L	5236952

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-6 **Collected:** 09/30/2009 17:20 **SPL Sample ID:** 09100086-03

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED			**MCL**	**SW6010B**	**Units: mg/L**		
Iron	1.06		0.02	1	10/13/09 11:39	AB1	5243652

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	10/05/2009 15:30	R_V	1.00

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	96		1	1	10/07/09 21:41	LU_L	5236955
Ethylbenzene	62		1	1	10/07/09 21:41	LU_L	5236955
Toluene	4.7		1	1	10/07/09 21:41	LU_L	5236955
m,p-Xylene	120		1	1	10/07/09 21:41	LU_L	5236955
o-Xylene	ND		1	1	10/07/09 21:41	LU_L	5236955
Xylenes,Total	120		1	1	10/07/09 21:41	LU_L	5236955
Surr: 1,2-Dichloroethane-d4	93.9	%	78-116	1	10/07/09 21:41	LU_L	5236955
Surr: 4-Bromofluorobenzene	102	%	74-125	1	10/07/09 21:41	LU_L	5236955
Surr: Toluene-d8	99.1	%	82-118	1	10/07/09 21:41	LU_L	5236955

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:** 09/30/2009 17:25 **SPL Sample ID:** 09100086-04

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	91		1	1	10/07/09 22:08	LU_L	5236956
Ethylbenzene	61		1	1	10/07/09 22:08	LU_L	5236956
Toluene	4.9		1	1	10/07/09 22:08	LU_L	5236956
m,p-Xylene	120		1	1	10/07/09 22:08	LU_L	5236956
o-Xylene	ND		1	1	10/07/09 22:08	LU_L	5236956
Xylenes,Total	120		1	1	10/07/09 22:08	LU_L	5236956
Surr: 1,2-Dichloroethane-d4	90.4		% 78-116	1	10/07/09 22:08	LU_L	5236956
Surr: 4-Bromofluorobenzene	105		% 74-125	1	10/07/09 22:08	LU_L	5236956
Surr: Toluene-d8	101		% 82-118	1	10/07/09 22:08	LU_L	5236956

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 Nell Hall

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B
WorkOrder: 09100086
Lab Batch ID: 94379

Method Blank

RunID: ICP2_091013A-5243640 Units: mg/L
Analysis Date: 10/13/2009 10:46 Analyst: AB1
Preparation Date: 10/05/2009 15:30 Prep By: R_V Method SW3005A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100086-01B	MW-4
09100086-02B	MW-5
09100086-03B	MW-6

Analyte	Result	Rep Limit
Iron	ND	0.02

Laboratory Control Sample (LCS)

RunID: ICP2_091013A-5243641 Units: mg/L
Analysis Date: 10/13/2009 10:50 Analyst: AB1
Preparation Date: 10/05/2009 15:30 Prep By: R_V Method SW3005A

	Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Iron		1.000	1.013	101.3	80	120

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

Sample Spiked: 09100090-01
RunID: ICP2_091013A-5243643 Units: mg/L
Analysis Date: 10/13/2009 10:59 Analyst: AB1
Preparation Date: 10/05/2009 15:30 Prep By: R_V 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
Iron	0.02370	1	0.9650	94.13	1	1.010	98.63	4.557	20	75	125

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 Nell Hall

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 09100086
Method: SW8260B **Lab Batch ID:** R285726

Method Blank

RunID: K_091006B-5235589 Units: ug/L
Analysis Date: 10/06/2009 12:54 Analyst: LU_L

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100086-01A	MW-4

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	96.2	78-116
Surr: 4-Bromofluorobenzene	99.9	74-125
Surr: Toluene-d8	98.4	82-118

Laboratory Control Sample (LCS)

RunID: K_091006B-5235588 Units: ug/L
Analysis Date: 10/06/2009 12:00 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	21.8	109	74	123
Ethylbenzene	20.0	19.9	99.5	72	127
Toluene	20.0	19.9	99.5	74	126
m,p-Xylene	40.0	39.3	98.3	71	129
o-Xylene	20.0	19.9	99.5	74	130
Xylenes,Total	60.0	59.2	98.7	71	130
Surr: 1,2-Dichloroethane-d4	50.0	49.1	98.1	78	116
Surr: 4-Bromofluorobenzene	50.0	50.3	101	74	125
Surr: Toluene-d8	50.0	50.4	101	82	118

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

Sample Spiked: 09100086-01
RunID: K_091006B-5235591 Units: ug/L
Analysis Date: 10/06/2009 16:30 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 Nell Hall

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 09100086
Method: SW8260B **Lab Batch ID:** R285726

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	20.2	101	20	19.6	97.9	2.96	22	70	124
Ethylbenzene	ND	20	18.0	90.2	20	18.4	91.8	1.73	20	76	122
Toluene	ND	20	19.0	94.9	20	18.5	92.7	2.38	24	80	117
m,p-Xylene	ND	40	35.6	88.9	40	35.3	88.3	0.666	20	69	127
o-Xylene	ND	20	18.5	92.5	20	18.2	90.9	1.70	20	84	114
Xylenes,Total	ND	60	54.1	90.1	60	53.5	89.2	1.02	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	48.8	97.5	50	47.5	95.1	2.53	30	78	116
Surr: 4-Bromofluorobenzene	ND	50	51.1	102	50	50.2	100	1.81	30	74	125
Surr: Toluene-d8	ND	50	49.4	98.7	50	49.1	98.1	0.646	30	82	118

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 Nell Hall

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 09100086
Lab Batch ID: R285815

Method Blank

RunID: K_091007D-5236951 Units: ug/L
Analysis Date: 10/07/2009 19:52 Analyst: LU_L

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	90.1	78-116
Surr: 4-Bromofluorobenzene	102.9	74-125
Surr: Toluene-d8	99.1	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100086-02A	MW-5
09100086-03A	MW-6
09100086-04A	Duplicate

Laboratory Control Sample (LCS)

RunID: K_091007D-5236950 Units: ug/L
Analysis Date: 10/07/2009 12:11 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	19.4	96.9	74	123
Ethylbenzene	20.0	18.1	90.6	72	127
Toluene	20.0	18.2	90.9	74	126
m,p-Xylene	40.0	36.2	90.5	71	129
o-Xylene	20.0	18.4	91.8	74	130
Xylenes,Total	60.0	54.6	90.9	71	130
Surr: 1,2-Dichloroethane-d4	50.0	47.8	95.7	78	116
Surr: 4-Bromofluorobenzene	50.0	50.8	102	74	125
Surr: Toluene-d8	50.0	49.7	99.4	82	118

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

Sample Spiked: 09100086-02
RunID: K_091007D-5236953 Units: ug/L
Analysis Date: 10/07/2009 20:47 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 Nell Hall

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 09100086
Lab Batch ID: R285815

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	99.8	20	20.0	100	0.420	22	70	124
Ethylbenzene	ND	20	18.0	90.1	20	18.0	89.8	0.239	20	76	122
Toluene	ND	20	18.7	93.5	20	18.4	91.9	1.80	24	80	117
m,p-Xylene	ND	40	36.4	91.0	40	37.0	92.5	1.69	20	69	127
o-Xylene	ND	20	18.6	93.1	20	19.0	95.2	2.24	20	84	114
Xylenes,Total	ND	60	55	92	60	56	93	1.9	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	47.1	94.2	50	47.2	94.4	0.189	30	78	116
Surr: 4-Bromofluorobenzene	ND	50	49.9	99.8	50	50.1	100	0.428	30	74	125
Surr: Toluene-d8	ND	50	48.8	97.6	50	49.1	98.2	0.552	30	82	118

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:	09100086	Received By:	AMV
Date and Time Received:	10/2/2009 9:15:00 AM	Carrier name:	Fedex-Standard Overnight
Temperature:	2.0°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: 1. Lab did not receive the Trip Blank. Logged Trip Blank in on hold. AMV

Client Instructions: _____

SPL, Inc.
Analysis Request & Chain of Custody Record

SPL Workorder No. 0910008b | 324171 | page ____ of ____

Client Name: Tetra Tech / ConocoPhillips
Address: 6121 Indian School Rd Ste 200
City: Albuquerque State: NM Zip: 87110
Phone/Fax: 505.237.8440 505.237.8656
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: ~~Nell Hall #1~~
Site Name: Nell Hall #1
Site Location: Flora Vista, NM
Invoice To: ConocoPhillips Ph:

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil O=oil A=air SL=sludge E=encore 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)	Number of Containers	Requested Analysis: BTEX ONLY	Requested Analysis: Dissolved Fe
MW-4	9-30-09	1620		X	W	V	40	1	3	X	
MW-4	9-30-09	1620		X	W	P	16	NONE	1		X
MW-5	9-30-09	1648		X	W	V	40	1	3	X	
MW-5	9-30-09	1648		X	W	P	16	NONE	1		X
MW-6	9-30-09	1720		X	W	V	40	1	3	X	
MW-6	9-30-09	1720		X	W	P	16	NONE	1		X
Duplicate	9-30-09	1725		X	W	V	40	1	3	X	
Trip Blank	10-1-09	1615			W	V	40	1	2	X	

Client/Consultant Remarks: Please Filter & preserve dissolved Fe bottles
Laboratory remarks:
Intact? Y N
Ice? Y N
Temp: 2.0

Requested TAT
- 1 Business Day
- 2 Business Days
- 3 Business Days
- Contract
- Standard
- Other ____

Rush TAT requires prior notice

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):

	date	time		
1. Relinquished by: Kelly Blanchard	10-1-09		2. Received by:	
3. Relinquished by:	date	time	4. Received by:	
5. Relinquished by:	date 10/2/09	time 9:15	6. Received by Laboratory: Amanda Vicknair	

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