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TETRATECH, INC.

May 5, 2011

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

RE: (1) ConocoPhillips Nell Hall No. 1 March 2009 Semi-Annual Report
Flora Vista, New Mexico
(2) ConocoPhillips Nell Hall No. 1 September 2009 Semi-Annual Report
Flora Vista, New Mexico

Dear Mr. von Gonten:

Enclosed please find a copy of the above-referenced documents as compiled by Tetra Tech, Inc. These reports supersede any previously submitted reports for this site during the noted dates.

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

Cc: Brandon Powell, NMOCD
Terry Lauck, ConocoPhillips
Chris Jaquez, Landowner

Enclosures (2)

32090

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

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**SEMI-ANNUAL GROUNDWATER
MONITORING REPORT
MARCH 2009 SAMPLING EVENT**

**CONOCOPHILLIPS
NELL HALL #1
FLORA VISTA, NEW MEXICO**

OCD # 3R0090

Prepared for:



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

May 2009

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SEMI-ANNUAL GROUNDWATER MONITORING REPORT CONOCOPHILLIPS 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 March 30, 2009, at the ConocoPhillips 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 wells 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 March 30, 2009. Groundwater samples collected during these events were analyzed for the presence of benzene, toluene, ethylbenzene, and xylenes (BTEX), and ferrous iron.

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 (6) 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 indicates 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 (**Figure 5**). 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-5 and MW-6 during this event as a continuation of semi-annual monitoring at the Site; MW-4 was dry and was not sampled. 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 ferrous iron by Standard Method 20, 3500-Fe D.

2.2 Groundwater Sampling Analytical Results

The March 2009 analytical results indicate that samples collected from monitor well MW-5 were below New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards for all analyzed constituents. However, the groundwater sample collected from MW-6 contained 31.8 milligrams per liter (mg/L) ferrous iron, which is above the NMWQCC groundwater quality standard of 1 mg/L. This concentration can be explained by the following: hydrocarbon impacts provide a carbon source, which stimulates aerobic bio-degradation, consuming readily available oxygen in the surrounding groundwater. The result is an anoxic system where soluble ferrous iron ions are generated (Vance, 1994). Although benzene in

MW-6 was not found above laboratory detection limits during the October 2008 sampling event, this constituent was detected at 42 micrograms per liter (ug/L) in March 2009; the NMWQCC groundwater quality standard for benzene is 10 ug/L. Benzene has 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 March 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 scheduled for October 2009. 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@tetrattech.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, Inc. 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](http://2the4.net/iron.htm)>.

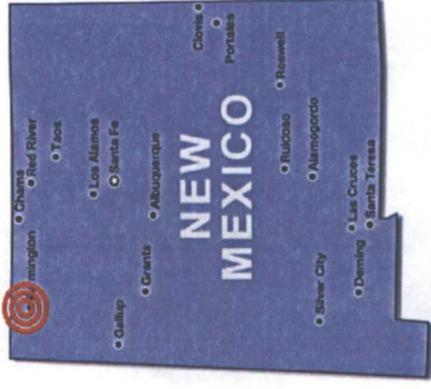
FIGURES

1. Site Location Map
2. Site Layout Map
3. MW-5 Hydrograph (March 2004 – March 2009)
4. MW-6 Hydrograph (March 2004 – March 2009)
5. Groundwater Elevation Contour Map
6. Inverse Relationship between Benzene and Depth to Water in MW-6



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



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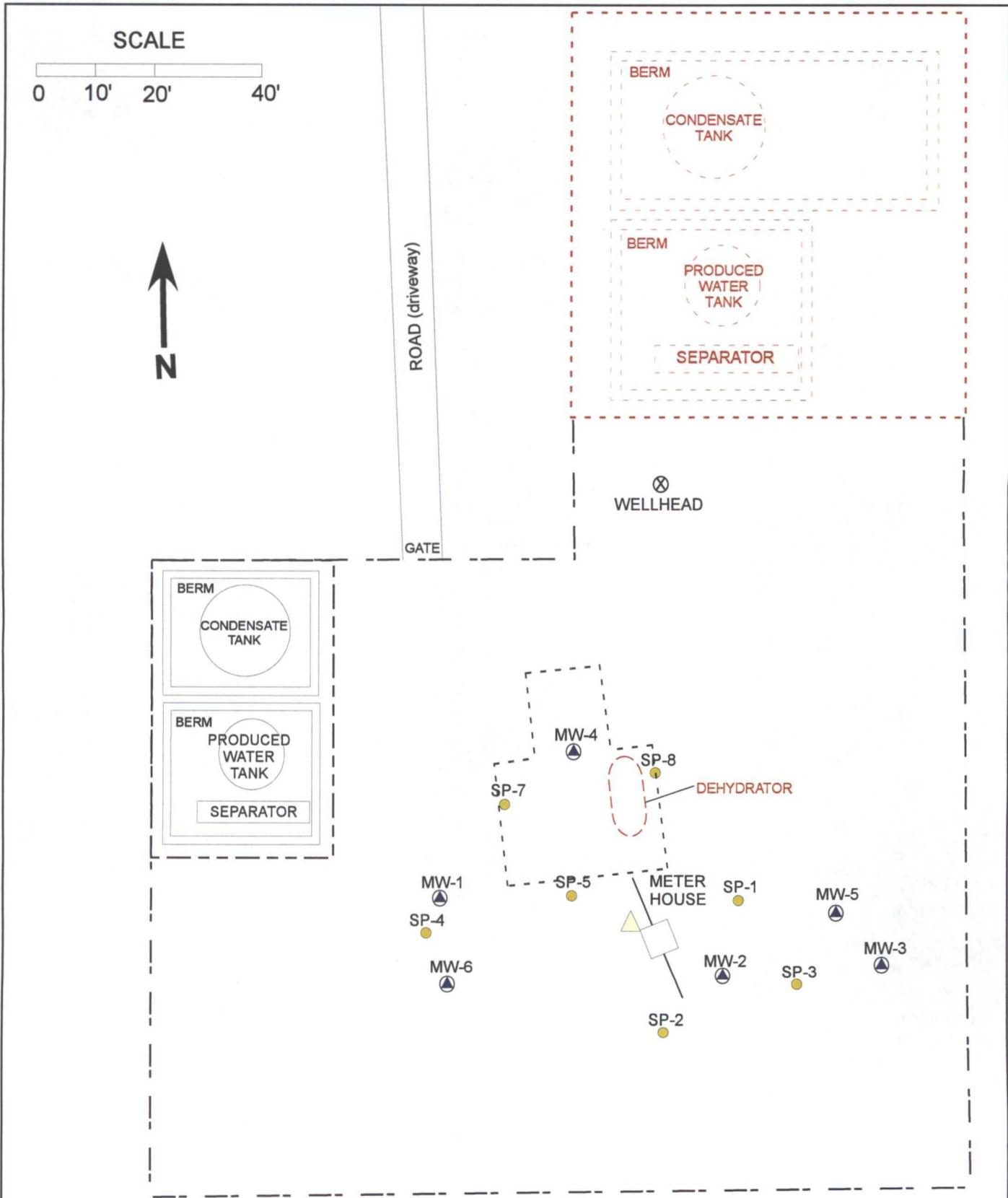


FIGURE 2:
 SITE LAYOUT MAP
 CONOCOPHILLIPS COMPANY
 Nell Hall No. 1
 Flora Vista, New Mexico
 Sec 07, Twp 30N, Rng 11W

- 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.



Figure 3. MW-5 Hydrograph (March 2004 - March 2009) - ConocoPhillips Nell Hall #1

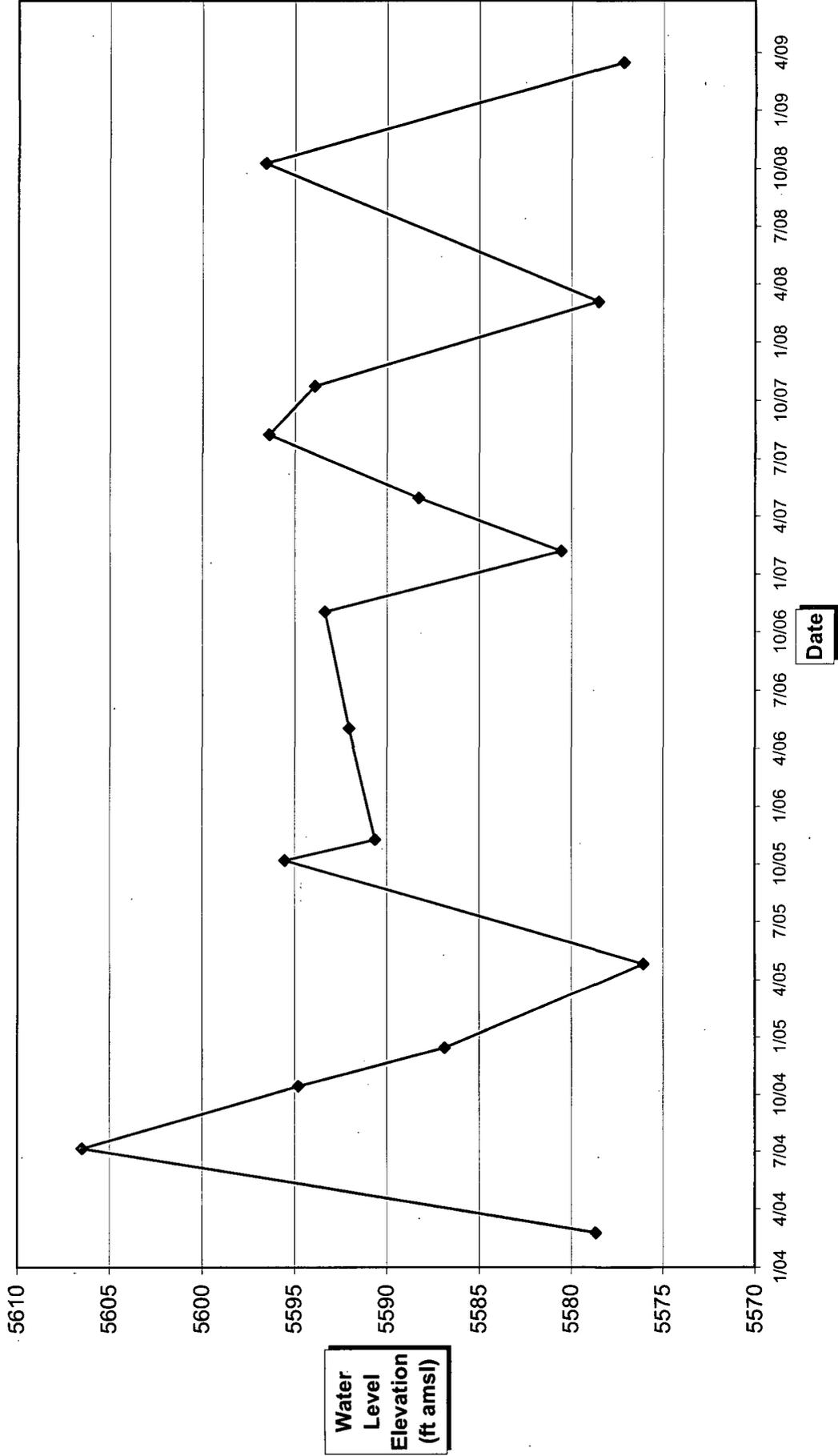
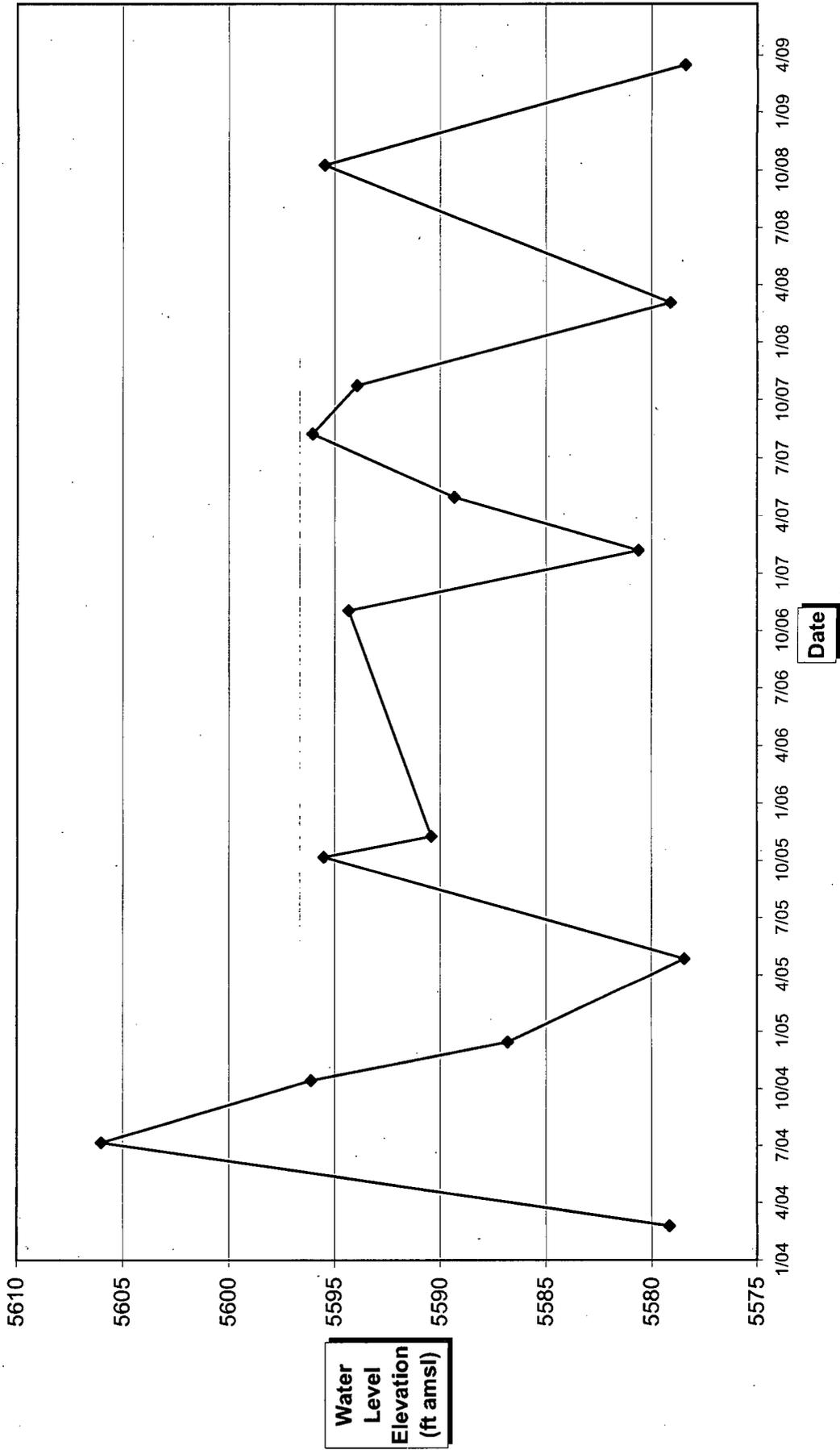


Figure 4. MW-6 Hydrograph (March 2004 - March 2009) - ConocoPhillips Nell Hall #1



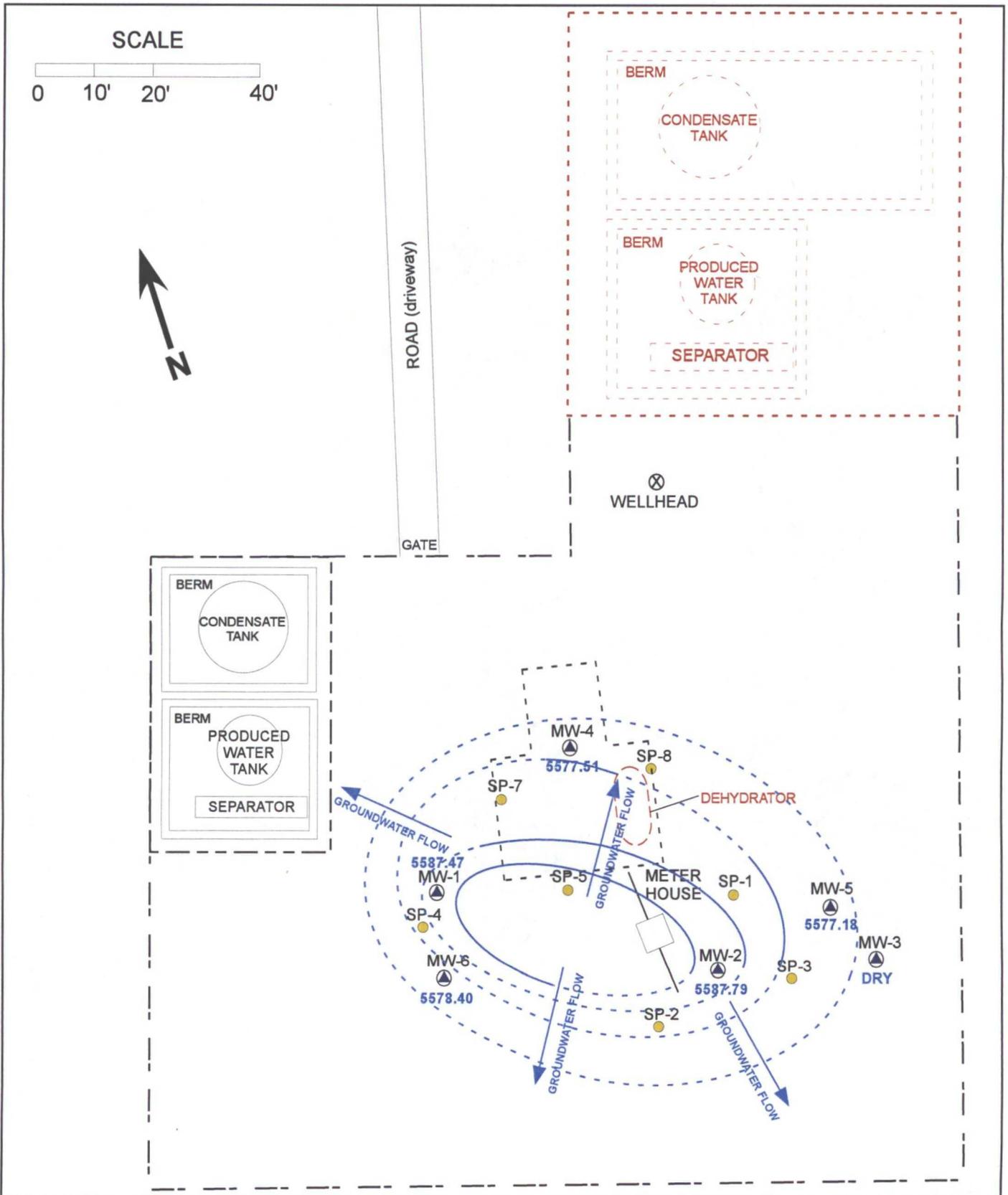


FIGURE 3:
GROUNDWATER ELEVATION
CONTOUR MAP
CONOCOPHILLIPS
Nell Hall #1
San Juan County, New Mexico

LEGEND

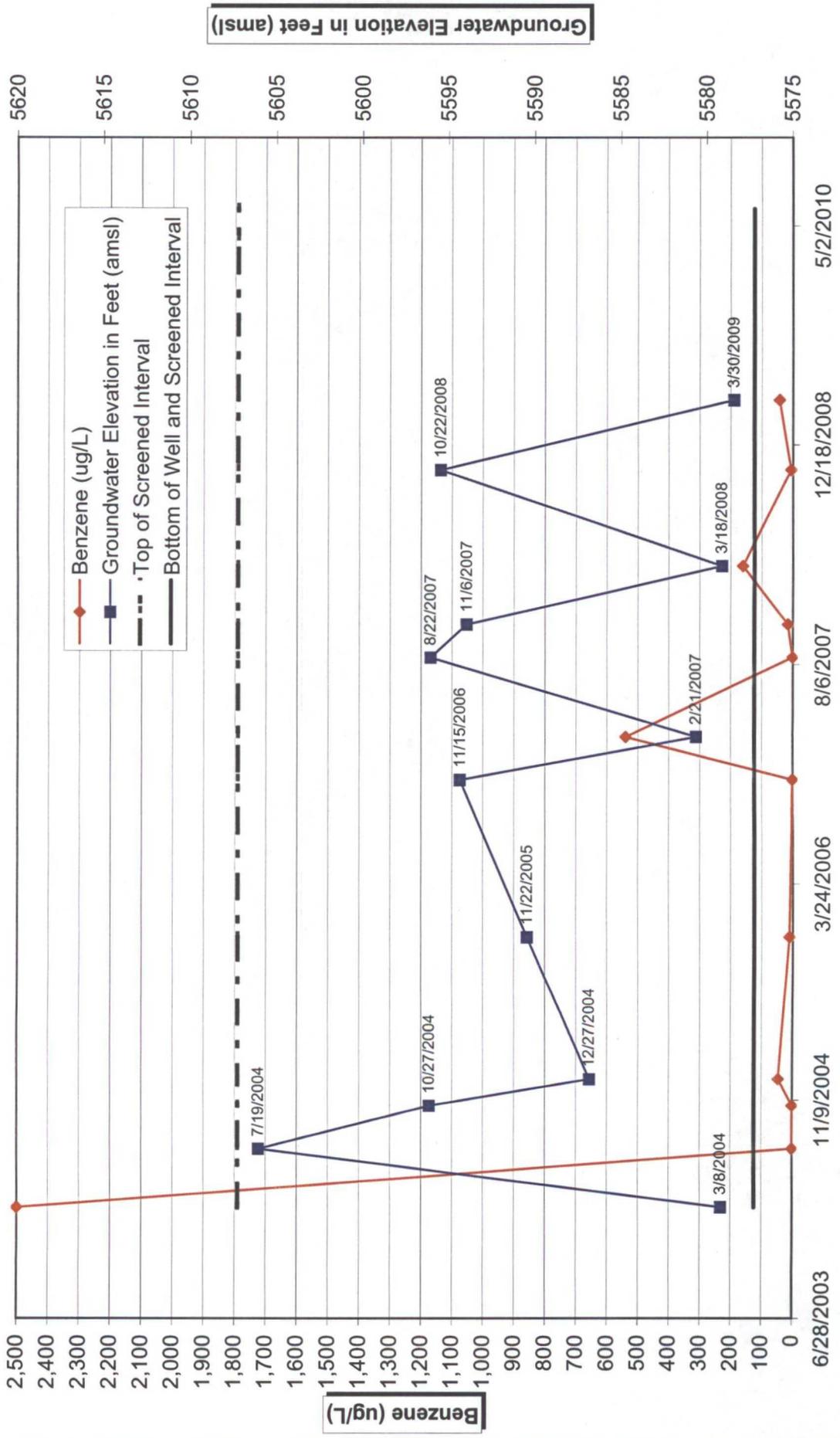
- ⊙ - Monitoring Well Locations
- - Sparge Point Locations
- - Fence
- - - Previous Equipment Placement
- - - Approximate Excavation Location
- - - Groundwater Elevation Contour (dashed where inferred)

NOTE: SP-1 Removed.



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



TABLES

- I. Site History Timeline
2. Groundwater Elevation Summary (March 2004 – March 2009)
3. Laboratory Analytical Data Summary (March 2004 – March 2009)

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 Limited Partnership acquired the Nell Hall No. 1 from Beta Development Company
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 assessment (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 Petroleum 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 Neil 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)
March 30, 2009	Monitor Well sampling	Monitor Wells MW-5 and MW-6 were sampled. MW-4 was found to be dry during the sampling event. Benzene was reported at a concentration above the groundwater quality standard in MW-6 with a concentration of 42 µg/L.

Table 2. Groundwater Elevation Summary (March 2004 - March 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					
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					
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					
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					

Table 2. Groundwater Elevation Summary (March 2004 - March 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					
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					

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

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



WATER SAMPLING FIELD FORM

Project Name Nell Hall #1

Page 1 of 3

Project No. 1158690044

Site Location Flora Vista, NM

Site/Well No. MW-4

Coded/
Replicate No. _____

Date 8/30/09

Weather partly cloudy,
cold & windy.

Time Sampling
Began _____

Time Sampling
Completed N/A

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____ MP Elevation 5614.87 feet AMSL

Total Sounded Depth of Well Below MP 37.57 feet Water-Level Elevation 5595.91 feet AMSL

Held _____ Depth to Water Below MP 37.56 Diameter of Casing 2 inches

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

Gallons per Foot 0.16

Gallons in Well _____ Sampling Pump Intake Setting (feet below land surface) NA

Purging Equipment _____

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (C°)	pH	Conductivity	TDS (g/L)	ORP (mV)

Sampling Equipment _____

Constituents Sampled	Container Description	Preservative
<u>BTEX</u>	<u>3 - 40 mL glass VOAs</u>	<u>HCL</u>
<u>Phosphate</u>	<u>1 - 1000 mL plastic</u>	<u>H₂SO₄</u>
<u>Nitrate/Sulfate</u>	<u>1 - 1000 mL plastic</u>	<u>None</u>
<u>Ferrous Iron</u>	<u>1 - 500 mL amber glass</u>	<u>None</u>

Remarks well is dry, cannot sample.

Sampling Personnel CB, CM, KB

Well Casing Volumes				
Gal./ft.	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3 ½" = 0.50	6" = 1.46



WATER SAMPLING FIELD FORM

Project Name Nell Hall #1

Page 2 of 3

Project No. 1158690044

Site Location Flora Vista, NM

Site/Well No. MW-5 Coded/Replicate No. _____

Date 3/30/09

Weather partly cloudy, windy, cold snowing Time Sampling Began _____

Time Sampling Completed 11:28

14:30

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____

MP Elevation 5615.86 feet AMSL

Total Sounded Depth of Well Below MP 42.7 feet

Water-Level Elevation 5578.53 feet AMSL

Held _____ Depth to Water Below MP 38.08

Diameter of Casing 2 inches

Wet _____ Water Column in Well 4.02

Gallons Pumped/Bailed Prior to Sampling _____

Gallons per Foot 0.16

Sampling Pump Intake Setting (feet below land surface) NA

Gallons in Well 0.6432 x 5 = 1.929

Purging Equipment bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (C°)	pH	Conductivity	TDS (g/L)	ORP (mV)

Sampling Equipment Disposable polyethylene bailer

Constituents Sampled

Container Description

Preservative

<u>BTEX</u>	<u>3 - 40 mL glass VOAs</u>	<u>HCL</u>
<u>Phosphate</u>	<u>1 - 1000 mL plastic</u>	<u>H₂SO₄</u>
<u>Nitrate/Sulfate</u>	<u>1 - 1000 mL plastic</u>	<u>None</u>
<u>Ferrous Iron</u>	<u>1 - 500 mL amber glass</u>	<u>None</u>

Remarks V. slow recharge

Sampling Personnel CB, CM, KB

Well Casing Volumes				
Gal./ft.	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3 ½" = 0.50	6" = 1.46



WATER SAMPLING FIELD FORM

Project Name Nell Hall #1

Page 3 of 3

Project No. 1158690044

Site Location Flora Vista, NM

Site/Well No. MW-6

Coded/
Replicate No. _____

Date 3/30/09

Weather partly cloudy,
cold & windy
snowing

Time Sampling
Began _____

Time Sampling
Completed 14:20

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____

MP Elevation 5615.44 feet AMSL

Total Sounded Depth of Well Below MP 38.21 feet

Water-Level Elevation 5595.45 feet AMSL

Held _____ Depth to Water Below MP 46.75 37.04

Diameter of Casing 2 inches

Wet _____ Water Column in Well 1.17

Gallons Pumped/Bailed
Prior to Sampling ~ 65 0.5 gallons

Gallons per Foot 0.16

Gallons in Well 0.1872 x 3
= 0.5616

Sampling Pump Intake Setting
(feet below land surface) NA

Purging Equipment bauler

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (C°)	pH	Conductivity	TDS (g/L)	ORP (mV)

Sampling Equipment bauler

Constituents Sampled	Container Description	Preservative
BTEX	<u>(2) 2 - 40 mL glass VOAs</u>	HCL
Ferrous Iron <u>(partially full)</u>	1- 500 mL amber glass	None

Remarks bailed well dry. Reattempt to sample on 3/31/09 at 0835

Sampling Personnel CB, CM, KB

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

duplicate
R:\Share\Maxim Forms\Field Forms\Nell Hall MW-6 Water Sampling Field Form (10-08).xls
→ well bailed dry again. will return for 3rd attempt

APPENDIX B
LABORATORY ANALYTICAL REPORT



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

Conoco Phillips

Certificate of Analysis Number:

09040042

Report To: Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110 ph: (505) 237-8440 fax:	Project Name: COP Nell Hall Site: Nell Hall Site Address: PO Number: 4509596741 State: New Mexico State Cert. No.: Date Reported: 4/13/2009
--	--

This Report Contains A Total Of 10 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

4/14/2009

Date



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

Case Narrative for:
 Conoco Phillips

Certificate of Analysis Number:
09040042

<p>Report To:</p> <p>Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110 ph: (505) 237-8440 fax:</p>	<p>Project Name: COP Nell Hall</p> <p>Site: Nell Hall</p> <p>Site Address:</p> <p>PO Number: 4509596741</p> <p>State: New Mexico</p> <p>State Cert. No.:</p> <p>Date Reported: 4/13/2009</p>
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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.

Both samples were received expired for Ferrous Iron. The holding time for Ferrous Iron is immediate and should be performed at the time of sampling. Client is aware of the holding time and request SPL to perform the analysis.

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.

Your sample ID MW-5" (SPL ID: 09040042-02) was randomly selected for use in SPL's quality control program for the Ferrous Iron analysis by Standard Method M3500-Fe D (Batch ID: R269396). The Matrix Spike Duplicate (MSD) recoveries were outside of the advisable quality control limits due to possible matrix interference for the following analytes: Ferrous Iron.

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.

Erica Cardenas
 Project Manager

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

09040042 Page 1
 4/14/2009

Date



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

Conoco Phillips

Certificate of Analysis Number:

09040042

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 Nell Hall
Site: Nell Hall
Site Address:
PO Number: 4509596741
State: New Mexico
State Cert. No.:
Date Reported: 4/13/2009

Fax To:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-6	09040042-01	Water	3/30/2009 2:20:00 PM	4/2/2009 10:00:00 AM		<input type="checkbox"/>
MW-5	09040042-02	Water	3/30/2009 2:30:00 PM	4/2/2009 10:00:00 AM		<input type="checkbox"/>

Erica Cardenas

Erica Cardenas
 Project Manager

4/14/2009

Date

Kesavalu M. Bagawandoss
 Laboratory Director

Ted Yen
 Quality Assurance Officer



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

Client Sample ID: MW-6

Collected: 03/30/2009 14:20 SPL Sample ID: 09040042-01

Site: Nell Hall

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
IRON, FERROUS				MCL	M3500-FE D	Units: mg/L	
Iron, Ferrous	31.8		2	20	04/02/09 13:45	ESK	4971767
VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	42		5	1	04/03/09 22:48	JC	4977557
Ethylbenzene	ND		5	1	04/03/09 22:48	JC	4977557
Toluene	ND		5	1	04/03/09 22:48	JC	4977557
m,p-Xylene	10		5	1	04/03/09 22:48	JC	4977557
o-Xylene	ND		5	1	04/03/09 22:48	JC	4977557
Xylenes, Total	10		5	1	04/03/09 22:48	JC	4977557
Surr: 1,2-Dichloroethane-d4	102	/	% 62-130	1	04/03/09 22:48	JC	4977557
Surr: 4-Bromofluorobenzene	106	/	% 70-130	1	04/03/09 22:48	JC	4977557
Surr: Toluene-d8	102	/	% 74-122	1	04/03/09 22:48	JC	4977557

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: 03/30/2009 14:30 SPL Sample ID: 09040042-02

Site: Nell Hall

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
IRON, FERROUS				MCL	M3500-FE D	Units: mg/L	
Iron, Ferrous	0.822		0.1	1	04/02/09 13:45	ESK	4971768
VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		5	1	04/03/09 22:21	JC	4977556
Ethylbenzene	ND		5	1	04/03/09 22:21	JC	4977556
Toluene	ND		5	1	04/03/09 22:21	JC	4977556
m,p-Xylene	ND		5	1	04/03/09 22:21	JC	4977556
o-Xylene	ND		5	1	04/03/09 22:21	JC	4977556
Xylenes, Total	ND		5	1	04/03/09 22:21	JC	4977556
Surr: 1,2-Dichloroethane-d4	100		% 62-130	1	04/03/09 22:21	JC	4977556
Surr: 4-Bromofluorobenzene	104		% 70-130	1	04/03/09 22:21	JC	4977556
Surr: Toluene-d8	96.0		% 74-122	1	04/03/09 22:21	JC	4977556

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

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

Quality Control Documentation



Quality Control Report

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

Conoco Phillips
COP Nell Hall

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09040042
Lab Batch ID: R269764

Method Blank

Samples in Analytical Batch:

RunID: Q_090403E-4977542 Units: ug/L
Analysis Date: 04/03/2009 15:12 Analyst: JC
Preparation Date: 04/03/2009 15:12 Prep By: Method
Lab Sample ID: 09040042-01A
Client Sample ID: MW-6
Lab Sample ID: 09040042-02A
Client Sample ID: MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, m,p-Xylene, o-Xylene, Xylenes, Total, and various Surrogate compounds.

Laboratory Control Sample (LCS)

RunID: Q_090403E-4977541 Units: ug/L
Analysis Date: 04/03/2009 14:45 Analyst: JC
Preparation Date: 04/03/2009 14:45 Prep By: Method

Table with 7 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, m,p-Xylene, o-Xylene, Xylenes, Total, and various Surrogate compounds.

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

Sample Spiked: 09031247-04
RunID: Q_090403E-4977544 Units: ug/L
Analysis Date: 04/03/2009 16:30 Analyst: JC

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
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

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



Quality Control Report

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

Conoco Phillips
COP Nell Hall

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09040042
Lab Batch ID: R269764

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, m,p-Xylene, o-Xylene, Xylenes, Total, and various Surrogate compounds.

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
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

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



Quality Control Report

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

Conoco Phillips
COP Nell Hall

Analysis: Iron, Ferrous
Method: M3500-Fe D

WorkOrder: 09040042
Lab Batch ID: R269396

Method Blank

Samples in Analytical Batch:

RunID: WET_090402D-4971763 Units: mg/L
Analysis Date: 04/02/2009 13:45 Analyst: ESK

Lab Sample ID Client Sample ID
09040042-01B MW-6
09040042-02B MW-5

Table with 3 columns: Analyte, Result, Rep Limit. Row: Iron, Ferrous, ND, 0.10

Laboratory Control Sample (LCS)

RunID: WET_090402D-4971764 Units: mg/L
Analysis Date: 04/02/2009 13:45 Analyst: ESK

Table with 7 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Iron, Ferrous, 2.000, 2.100, 105.0, 85, 115

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

Sample Spiked: 09040042-02
RunID: WET_090402D-4971769 Units: mg/L
Analysis Date: 04/02/2009 13:45 Analyst: ESK

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Iron, Ferrous, 0.8219, 1, 1.729, 90.74, 1, 1.627, 80.52 *, 6.090, 20, 85, 115

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B/V - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits
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

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:	09040042	Received By:	RE
Date and Time Received:	4/2/2009 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 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?
 Ferrous Iron was received expired. 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:



Analysis Request and Chain of Custody Record

SPL Workorder No. **09040042**

Company Name: Tetra Tech / Conoco Phillips
 3880 Interchange Drive, Houston, TX 77064
 Contact: Kelly Blanchard
 Address: 6121 Indian School Rd. NE, Ste. 200
 Phone/Fax: (506) 237-8440 / (506) 237-8666
 Email Address: kelly.blanchard@tetratech.com

Invoice To:
 Purchase Order No:
 Project Name/No: Nell Hall#1
 Site Address:

SAMPLE ID	DATE	TIME
MW-6	3/30/09	1420
MW-4	3/30/09	1420
MW-5	3/30/09	1430
MW-5	3/30/09	1430
Attestate	3/30/09	

Sampling Event Description
 Quarterly
 Semi-Annual
 WC-Waste Char.
 Other (describe below)

QA/QC Level
 TRIP LVL 3
 STD Other
 Water Soil Sludge Other

Number Containers	Container Type	Preservative	BTEX - 8260	Nitrite	Sulfate, Orthophosphate (PO)	Ferrous Iron
3	VOA HCl	HCl	X			
1	Amber HCl	HCl		X		
3	VOA-HCl	HCl	X			
1	Amber HCl	HCl		X		

RUSH
 Laboratory

3.0c

Special Detection Limits (Specify):
 Special Reporting Requirements (Specify):

TAT
 24hr
 72hr
 48hr
 10 day
 Other

Relinquished by Sampler:

Kelly Blanchard

Relinquished by:

Received by:

Date: 4-1-09
 Time: 1630

Date: 4/2/09
 Time: 1000

Received by: *Kelly Blanchard*

PM review: *[Signature]*