3R - 428

MARCH 2011 QUARTERLY GWMR

JUNE 2011

3R428

QUARTERLY GROUNDWATER MONITORING REPORT
MARCH 2011

CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
PRODUCTION FACILITY
SAN JUAN COUNTY, NEW MEXICO

OCD No. - TBD

API # 30-045-24060

Prepared for:

ConocoPhillips

Risk Management and Remediation
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. 1158690090

June 2011

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QUARTERLY GROUNDWATER MONITORING REPORT SATEGNA NO. 2E, SAN JUAN COUNTY, NEW MEXICO MARCH 2011

1.0 INTRODUCTION

This report presents the results of the March 14, 2011 quarterly groundwater monitoring event conducted by Tetra Tech, Inc. (Tetra Tech) at the ConocoPhillips Company (ConocoPhillips) Sategna No. 2E gas well production facility (Site) located on private land within Section 21, Township 29N, Range 11W of Bloomfield, New Mexico (**Figure 1**). A Site detail map is included as **Figure 2**.

1.1 Site Background

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

On November 24, 2008, approximately 8 barrels of condensate were found to have been released from an on-Site, aboveground storage tank (AST) as a result of corrosion in the tank. New Mexico Oil Conservation Division (OCD) Form C-141 was filled out by ConocoPhillips staff and notice was given to OCD via electronic mail. Form C-141 stated that the well was shut down and the production tank was emptied. Fluid remained in the berm and none of the condensate had been recovered. On November 25, 2008, Envirotech Inc. of Farmington, New Mexico (Envirotech) obtained grab soil samples from just outside the affected area for analysis of organic vapors. Results of this analysis were below OCD recommended action levels. Envirotech also used a hand auger to complete 2 soil borings to approximately 8 feet below ground surface (bgs), where groundwater was encountered. Two groundwater samples were submitted by Envirotech to an analytical laboratory for analysis of benzene, toluene, ethylbenzene and xylenes (BTEX). Analytical results revealed BTEX in concentrations below OCD action levels for these constituents.

On December 4, 2008, Envirotech returned to the Site and obtained grab and composite soil samples from an excavation measuring approximately 30 feet by 18 feet by 5 feet deep (**Figure 2**). Heated headspace organic vapor results ranged from 6.5 parts per million (ppm) in a grab soil sample obtained from the bottom of the excavation to 1,400 ppm in a composite soil sample taken from the former location of the AST; the OCD action level for organic vapors is 100 ppm. Soil samples were collected and analyzed for total petroleum hydrocarbons (TPH), BTEX, and chloride. Analytical results were below OCD action levels for BTEX. The soil sample collected from the location of the AST contained 205 mg/kg of TPH, a soil sample collected from the location of the below grade tank contained 521 mg/kg TPH; the OCD action level is 100 mg/kg.

Groundwater seepage into the excavation was noted by Envirotech December 4, 2008, subsequently, groundwater samples were collected from the excavation on December 5, 2008. The OCD groundwater action levels for BTEX are 10 ug/l, 750 ug/l, and 620 ug/l, respectively. Benzene was found at a concentration of 327 ug/l, toluene was detected at 4,300 ug/l, and total xylenes were found at a concentration of 8,480 ug/L. During the week of December 8, 2008, groundwater was pumped from the bottom of the excavated area using a vacuum truck. Once removed, further excavation took place and groundwater slowly seeped into the excavation; this process was repeated a total of 4 times. The first time water was pumped from the surface of the excavation, a hydrocarbon odor and free-phase, light non-aqueous phase liquid (LNAPL) were present. By the fourth and last event, neither the hydrocarbon odor nor free-phase LNAPL was present in the groundwater seepage. Each pumping event removed approximately 30-60 barrels of liquid from the Site.

In January 2009, Tetra Tech conducted a site visit to determine proposed groundwater monitor well locations. Groundwater monitor wells were installed at the Site on March 4, 2009 and March 5, 2009. Tetra Tech initiated quarterly groundwater monitoring events with a baseline in April 2009.

During construction and trenching for relocation and reinstallation of production well equipment, additional hydrocarbon soil impacts were discovered and work was stopped. On April 2, 2009 Envirotech conducted an exploratory trench between the proposed location of the separator tank and the well head, and found an abandoned sewer line associated with hydrocarbon impacted soils. Trench work was halted and the excavated soils were stockpiled on site. Tetra Tech returned to the site on April 23 and 24, 2009 to oversee removal of the hydrocarbon impacted soils that were discovered by the previous trenching west of the bermed area. Photoionization detector readings in the field indicated levels below the OCD action level, however, lab results were above the OCD action level for TPH in samples collected from all four walls of the excavation. The bottom sample results were below OCD action levels. The excavation was backfilled and equipment was reinstalled before analytical results were available.

Tetra Tech has continued quarterly groundwater monitoring since April 2, 2009. This report represents the ninth consecutive quarterly monitoring event.

2.0 MONITORING SUMMARY AND SAMPLING METHODOLOGY AND RESULTS

2.1 Monitoring Summary

Prior to collection of groundwater samples from Monitor Wells MW-1, MW-2 and MW-3, depth to groundwater was measured in each well using a dual interface probe. Results are displayed in **Table 2.** The casings for Monitor Wells MW-1, MW-2, and MW-3 were surveyed in March 2009 using an arbitrary reference-elevation of 100 feet. The data obtained from the Site survey and from the March 14, 2011 sampling event were used to create a groundwater elevation map for the Site (**Figure 3**). Using these data,

it was determined that the groundwater flow direction at the Site continues to be to the southwest. A generalized geologic cross section for the Site is presented as **Figure 4**.

2.2 Groundwater Sampling Methodology

During the groundwater monitoring event, Site monitor wells were purged of at least 3 casing volumes of groundwater using a 1.5-inch diameter, polyethylene disposable bailer. While bailing each well, groundwater parameters were collected using a YSI 556 multi-parameter sonde and results were recorded on a Tetra Tech Water Sampling Field Form (**Appendix A**). Collected groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped under chain-of-custody documentation to Southern Petroleum Laboratory (SPL) of Houston, Texas.

Groundwater samples were analyzed for dissolved manganese by Environmental Protection Agency (EPA) Method 6010B; BTEX by EPA Method 8260B; and Total Dissolved Solids (TDS) by EPA Method 2540C. Analytical results are displayed in **Table 3**.

2.3 Groundwater Sampling Analytical Results

The New Mexico Water Quality Control Commission (NMWQCC) mandates that groundwater quality in New Mexico be protected, and has issued groundwater quality standards in Title 20, Chapter 6, Part 2, Section 3103 of the New Mexico Administrative Code (20.6.2.3103 NMAC). Groundwater quality standards have been set for the protection of human health, domestic water supply, and irrigation use. Exceedences of NMWQCC groundwater quality standards in Site monitor wells are discussed below.

- **Total Dissolved Solids**

  The NMWQCC domestic water supply groundwater quality standard for TDS is 1,000 mg/L; groundwater samples collected from Monitor Wells MW-1, MW-2 and MW-3 were found to contain TDS concentrations of 2,770 mg/L, 2,680 mg/L, and 3,200 mg/L, respectively.

- **Manganese**

  The NMWQCC domestic water supply groundwater quality standard for manganese is 0.2 mg/L; groundwater samples collected from Monitor Wells MW-1 and MW-3 were found to contain a manganese concentration of 0.323 and 2.08 mg/L, respectively.

- **Sulfate**

  The NMWQCC domestic water supply groundwater quality standard for sulfate is 600 mg/L; groundwater samples collected from Monitor Wells MW-1, MW-2, and MW-3 were found to contain sulfate in concentrations of 1,820 mg/L, 1,850 mg/L, and 2,090 mg/L, respectively.

The corresponding laboratory analysis report for the March 14, 2011 groundwater sampling event is included in **Appendix B**. A map showing TDS, manganese, and sulfate concentrations in Site wells during the March 14, 2011 groundwater sampling event is included as **Figure 5**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

After nine quarters of monitoring, groundwater samples collected from Site monitor wells have never exceeded laboratory detection limits and therefore have been below NMWQCC groundwater quality standards for BTEX. Monitoring Wells MW-1, MW-2, and MW-3 were found to have concentrations exceeding the NMWQCC standard for sulfate and TDS. Groundwater samples collected from Monitoring Wells MW-1 and MW-3 were found to exceed the NMWQCC standard for dissolved manganese. Sulfate and dissolved manganese concentrations appear to be stable.

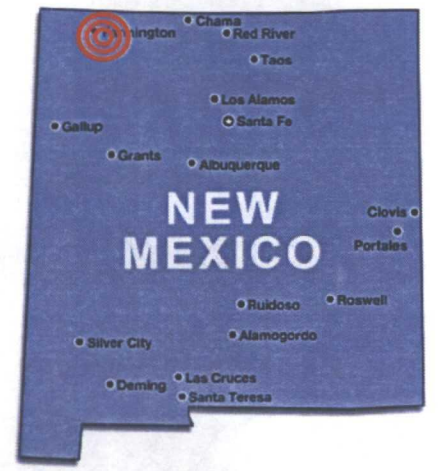
Since BTEX is below standards in all three monitoring wells, Tetra Tech recommends the discontinuation of sampling and analysis of BTEX. Quarterly monitoring will continue for sulfate, dissolved manganese and TDS. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

FIGURES

1. Site Location Map
2. Site Detail Map
3. Groundwater Elevation Map – March 2011
4. Generalized Geologic Cross Section
5. Groundwater Quality Map (Manganese, Total Dissolved Solids, and Sulfate – March 2011

FIGURE 1.

Site Location Map
ConocoPhillips
Company
Sategna No. 2E
Bloomfield, NM



ConocoPhillips Company
Sategna No. 2E Site Location

Lat = 36.708123N
Lon = -107.994456W

N

Feet

0 250 500

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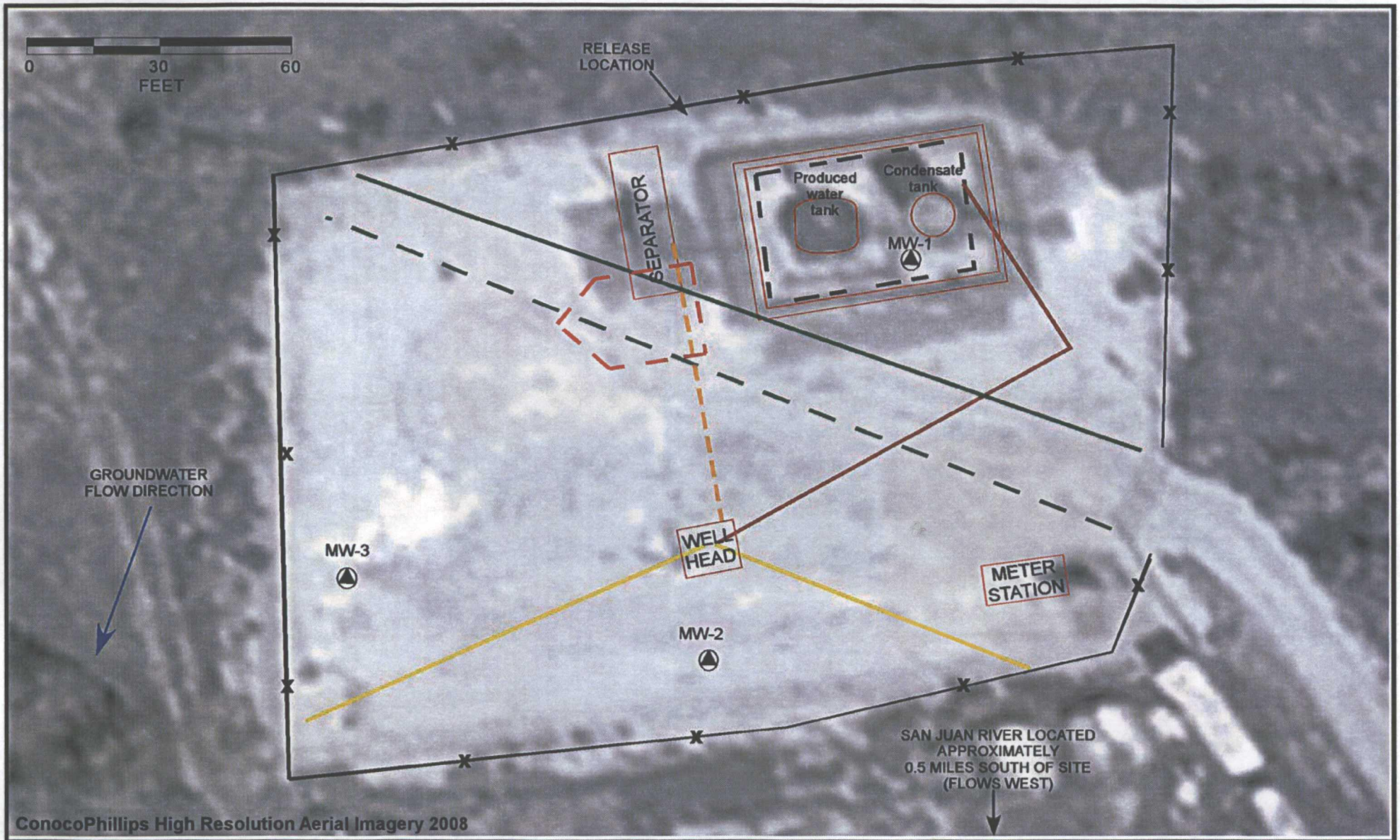

FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- GENERAL AREA OF DECEMBER 2008 EXCAVATION
- BERM AND ASSOCIATED EQUIPMENT
- FENCE LINE
- MONITOR WELL
- ACTIVE SEWER LINE
- ABANDONED SEWER LINE
- SEPARATOR LINE
- GAS LINE
- ELECTRIC LINE
- GENERAL AREA OF MAR/APR 2009 EXCAVATION

N

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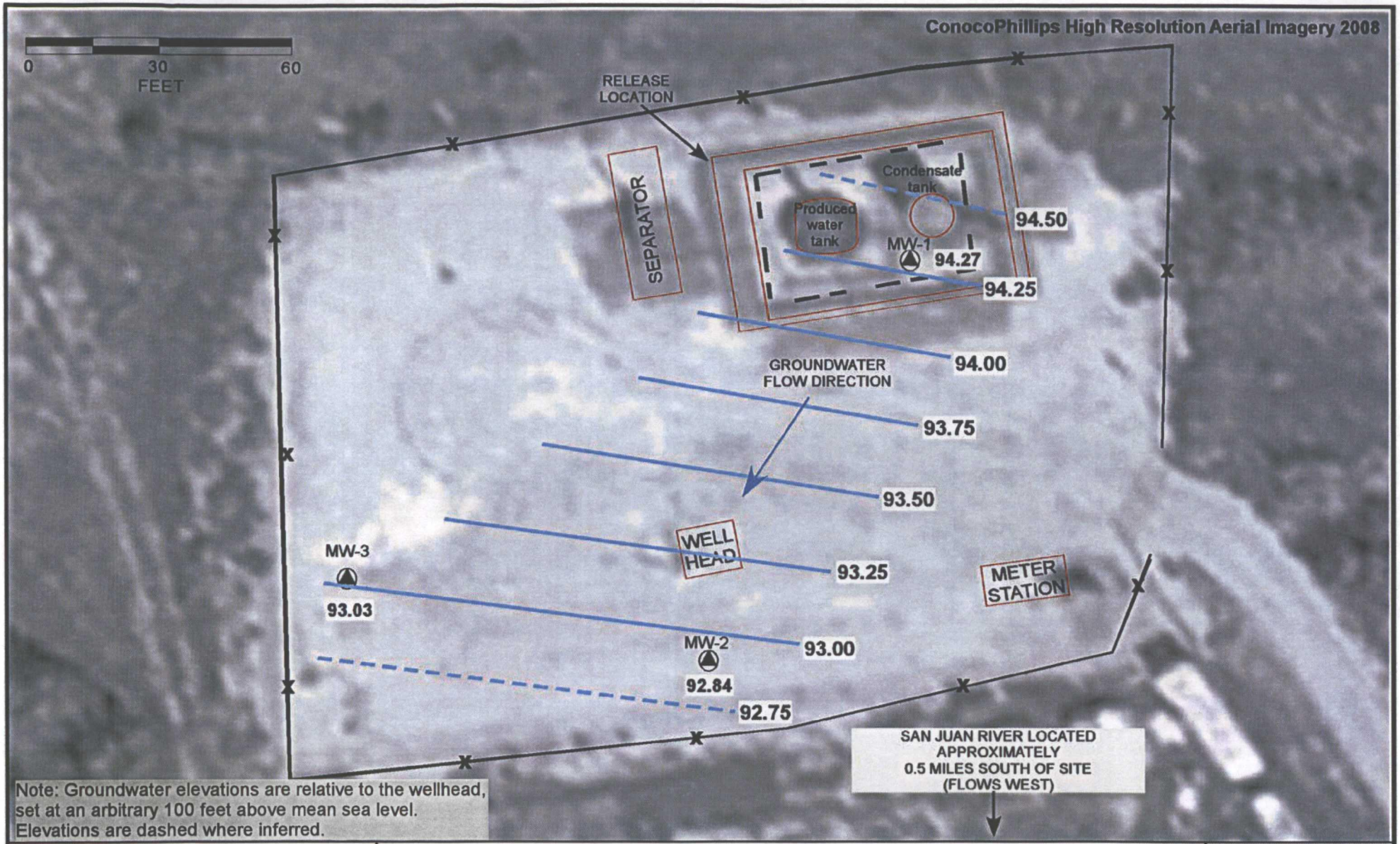

FIGURE 3:
GROUNDWATER ELEVATION MAP
March 2011
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- BERM AND ASSOCIATED EQUIPMENT
- FENCE LINE
- MONITORING WELL
- GROUNDWATER ELEVATION CONTOUR LINE (DASHED WHERE INFERRED)

N

TETRA TECH, INC.

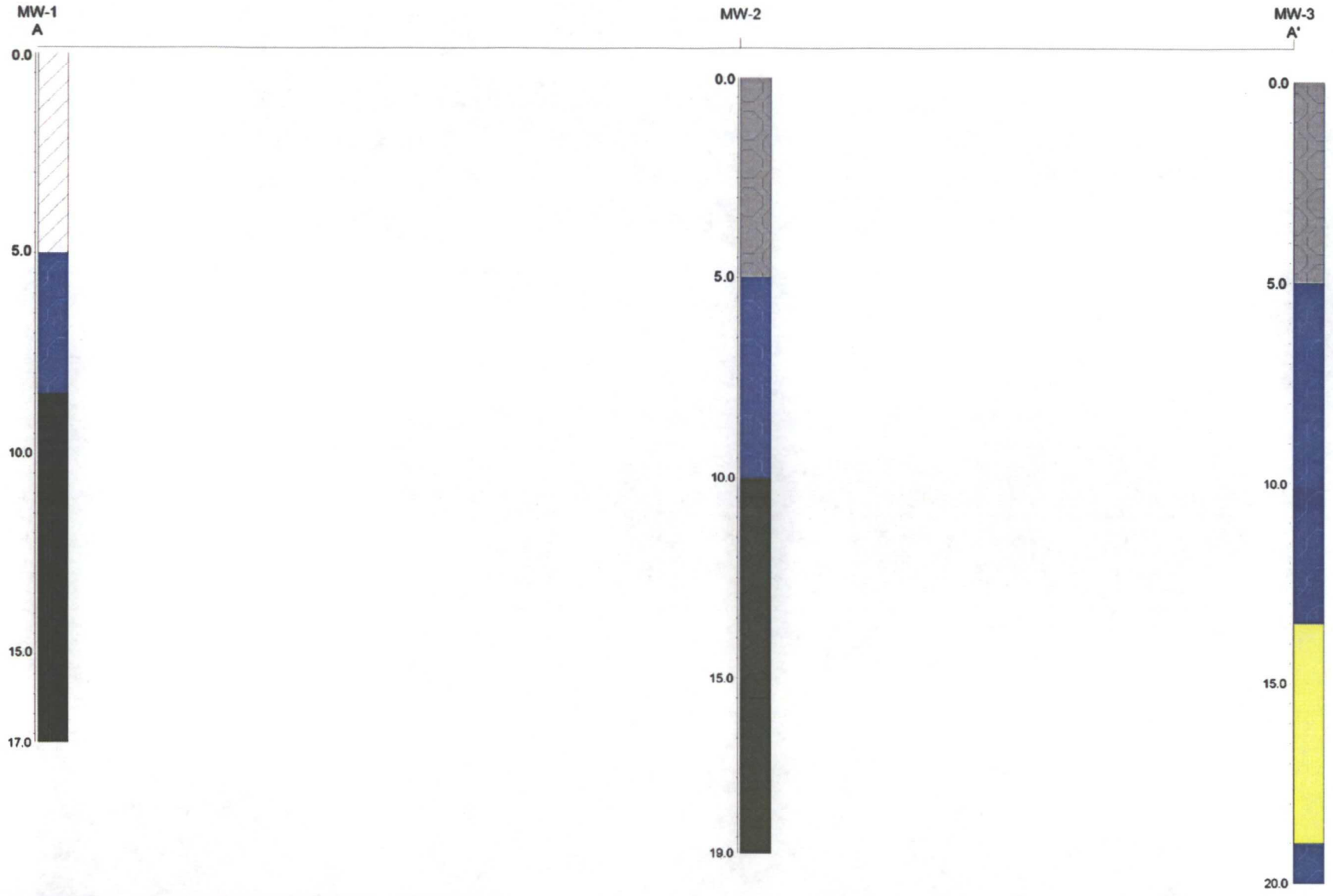

FIGURE 4:
GENERALIZED GEOLOGIC CROSS SECTION
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- Backfill from excavation
- Clay
- Clayey sand with cobbles
- Coarse grained sand
- Well graded sand with clay

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FIGURE 5:
GROUNDWATER QUALITY MAP
March 2011
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- BERM AND ASSOCIATED EQUIPMENT
- FENCE LINE
- MONITOR WELL

TDS - 1,000
Mn - 0.2
Sulfate - 600

Total Dissolved Solids, Manganese, and Sulfate Concentrations in Site Monitoring Wells.
NMWQCC Groundwater Quality Standards Shown at Left (mg/L).

N

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TABLES

Table 1. Site History Timeline

Date	Activity
November 24, 2008	Approximately eight (8) barrels of condensate were found to have spilled from an on-Site, aboveground storage tank (AST); corrosion was thought to be the cause of the release. Form C-141 was filled out by ConocoPhillips staff and notice was given to Brandon Powell of the New Mexico Oil Conservation Division (NMOCD) via electronic mail. Form C-141 stated that the well was shut down and the production tank was emptied.
November 25, 2008	Envirotech Inc. of Farmington, NM (Envirotech) collected soil samples and analyzed them using the heated headspace soil method; results were 0.2 and 1.1 parts per million (ppm) from outside the excavated area. Depth of soil samples was not noted. Envirotech hand augered two soil borings to groundwater at a depth of approximately 8 feet below ground surface (bgs) and submitted groundwater samples for analysis. Results were below OCD action levels for benzene, toluene, ethylbenzene, and total xylenes (BTEX) in groundwater. Envirotech notes that groundwater levels in the soil borings increased to approximately 5 feet bgs, and groundwater beneath the Site was thought to be under confined aquifer conditions (Kerr, 2009).
December 4, 2008	Envirotech returned to the Site and obtained grab and composite soil samples from an excavation measuring approximately* 30 feet by 18 feet by 5 feet deep (Figure 2). Heated headspace results show values ranging from 6.5 ppm in a grab soil sample obtained from the bottom of the excavation to 1,400 ppm from a composite soil sample taken from the former location of the AST. Total petroleum hydrocarbons (TPH), BTEX, and chloride samples were obtained for soils analysis, results were all below OCD action levels for BTEX; one soil sample obtained for chlorides showed results of 370 milligrams per kilogram (mg/kg). Results for TPH analysis obtained through Environmental Protection Agency (EPA) method 8015B for the composite soil sample taken at the site of the AST revealed results of 205 mg/kg; the OCD action level is 100 mg/kg. Results for TPH analysis obtained through EPA method 418.1 for the composite soil sample obtained at the location of the below ground tank revealed results of 521 mg/kg. The below ground tank was located within the berm and adjacent to the AST (Figure 2). Results of all other soil analyses at all other sampling locations were below OCD action levels (Appendix A).
December 5, 2008	Envirotech noted seepage of groundwater into the excavation on December 4, 2008, and returns to the Site on December 5, 2008 to collect groundwater samples from the excavation for BTEX analysis. (Kerr, 2009). The OCD groundwater action levels for benzene, toluene, and total xylenes were 10 ug/l, 750 ug/l, and 620 ug/l, respectively. Benzene was found at a concentration of 327 ug/l, toluene was detected at 4,300 ug/l, and total xylenes were found at a concentration of 8,480 ug/L (Appendix A).
Week of December 8, 2008	A vacuum truck was utilized to pump groundwater seepage from the surface of the excavated area. Once removed, further excavation took place and groundwater slowly seeped into the excavation; this process was repeated a total of four (4) times. The first time water was pumped from the surface of the excavation, a hydrocarbon odor and free-phase, light non-aqueous phase liquid (LNAPL) were present. By the fourth and last event, neither the hydrocarbon odor nor free-phase LNAPL was present in the groundwater seepage. Each pumping event removed approximately 30-60 barrels of liquid from the Site (Frost, 2009).
January 20, 2009 & January 30, 2009	Tetra Tech conducted a Site visit to determine proposed groundwater monitoring well locations.
March 4-5, 2009	Tetra Tech installed three groundwater monitor wells at the Site: MW-1, MW-2, and MW-3.
March 2009	Construction and trenching for relocation of well operational equipment and tanks uncovered additional hydrocarbon impacted soils between the well head and separator tank. Work was stopped.
April 2, 2009	Tetra Tech conducted the first quarterly groundwater monitoring event at the Site.

Table 1. Site History Timeline

Date	Activity
April 2, 2009	Envirotech created an exploratory trench between the proposed location of the separator tank and the well head and found an abandoned sewer line associated with hydrocarbon-impacted soils. The trenching was stopped and the excavated soils were stockpiled on site.
April 23 - 24, 2009	Tetra Tech provided oversight for removal of approximately 96 cubic yards of hydrocarbon-impacted soils located west of the tank berm and in the vicinity of the abandoned sewer line.
June 17, 2009	Tetra Tech conducted the second quarterly groundwater monitoring event at the Site.
September 28, 2009	Tetra Tech conducted the third quarterly groundwater monitoring event at the Site.
December 14, 2009	Tetra Tech conducted the fourth quarterly groundwater monitoring event at the Site.
March 31, 2010	Tetra Tech conducted the fifth quarterly groundwater monitoring event at the Site.
June 7, 2010	Tetra Tech conducted the sixth quarterly groundwater monitoring event at the Site.
September 23, 2010	Tetra Tech conducted the seventh quarterly groundwater monitoring event at the Site.
December 14, 2010	Tetra Tech conducted the eighth quarterly groundwater monitoring event at the Site.
March 14, 2011	Tetra Tech conducted the ninth quarterly groundwater monitoring event at the Site.

Table 2 - Groundwater Elevation Data Summary

Well ID	Total Depth (ft bgs)	Screen Interval (ft)	*Elevation (ft) (TOC)	Date Measured	Depth to Groundwater (ft below TOC)	Relative Groundwater Elevation
MW-1	20.30	2.2 - 17.2	99.36	4/2/2009	5.15	94.21
				6/17/2009	5.43	93.93
				9/28/2009	5.45	93.91
				12/14/2009	5.06	94.30
				3/31/2010	5.03	94.33
				6/7/2010	5.41	93.95
				9/23/2010	5.25	94.11
				12/14/2010	5.07	94.29
				3/14/2011	5.09	94.27
MW-2	20.90	3.33 - 18.33	98.78	4/2/2009	5.96	92.82
				6/17/2009	6.21	92.57
				9/28/2009	6.23	92.55
				12/14/2009	5.92	92.86
				3/31/2010	5.90	92.88
				6/7/2010	6.21	92.57
				9/23/2010	6.06	92.72
				12/14/2010	5.91	92.87
				3/14/2011	5.94	92.84
MW-3	20.28	3.0 - 18.0	98.66	4/2/2009	5.70	92.96
				6/17/2009	5.97	92.69
				9/28/2009	5.96	92.70
				12/14/2009	5.63	93.03
				3/31/2010	5.61	93.05
				6/7/2010	5.95	92.71
				9/23/2010	5.77	92.89
				12/14/2010	5.61	93.05
				3/14/2011	5.63	93.03

ft = Feet

TOC = Top of casing

bgs = below ground surface

* Elevation relative to wellhead, set at 100 feet.

Table 3. Groundwater Laboratory Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Sulfate (mg/L)	Aluminum (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)
MW-1	4/2/2009	< 5	< 5	< 5	< 5	1790	7.25*	7.2*	2.7*	NA
	6/17/2009	< 5	< 5	< 5	< 5	1420	6.87*	5.63*	2.37*	NA
	9/28/2009	< 1	< 1	< 1	< 1	1770	<0.1	<0.02	**0.243**	2590
	12/14/2009	<1	<1	<1	<1	NA	NA	NA	0.152	2470
	3/31/2010	<1	<1	<1	<1	1320	NA	NA	0.176	2470
	6/7/2010	<1	<1	<1	<1	1330	NA	NA	**0.206**	2580
	9/23/2010	<1	<1	<1	<1	1560	NA	NA	**0.238**	3210
	12/14/010	<1	<1	<1	<1	1600	NA	NA	**0.232**	2520
	3/14/2011	<1	<1	<1	<1	1820	NA	NA	**0.323**	2770
MW-2	4/2/2009	< 5	< 5	< 5	< 5	1850	10.1*	10.4*	6.76*	NA
	6/17/2009	< 5	< 5	< 5	< 5	1610	5.24*	5.52*	2.6*	NA
	9/28/2009	< 1	< 1	< 1	< 1	1840	<0.1	0.0217	0.168	2260
	12/14/2009	<1	<1	<1	<1	NA	NA	NA	0.158	2470
	3/31/2010	<1	<1	<1	<1	1530	NA	NA	0.136	2620
	6/7/2010	<1	<1	<1	<1	1290	NA	NA	0.157	2590
	9/23/2010	<1	<1	<1	<1	1510	NA	NA	0.0981	2800
	12/14/010	<1	<1	<1	<1	1610	NA	NA	0.128	3000
	3/14/2011	<1	<1	<1	<1	1850	NA	NA	0.158	2680
MW-3	4/2/2009	< 5	< 5	< 5	< 5	2110	0.848*	1.02*	1.9*	NA
	6/17/2009	< 5	< 5	< 5	< 5	1650	0.702*	1.49*	2.22*	NA
	9/28/2009	< 1	< 1	< 1	< 1	2230	<0.1	<0.02	**2.68**	3340
	12/14/2009	<1	<1	<1	<1	NA	NA	NA	**2.4**	3060
	3/31/2010	<1	<1	<1	<1	1660	NA	NA	**1.71**	3090
	6/7/2010	<1	<1	<1	<1	1760	NA	NA	**0.968**	2650
	9/23/2010	<1	<1	<1	<1	1910	NA	NA	**1.68**	3570
	12/14/010	<1	<1	<1	<1	1900	NA	NA	**1.13**	3000
	3/14/2011	<1	<1	<1	<1	2090	NA	NA	**2.08**	3200
NMWQCC Standards		**10 (µg/L)**	**750 (µg/L)**	**750 (µg/L)**	**620 (µg/L)**	**600 (mg/L)**	**5 (mg/L)**	**1 (mg/L)**	**0.2 (mg/L)**	**1000 (mg/L)**

Explanation
ND = Not Detected
NMWQCC = New Mexico Water Quality Control Commission
mg/L = milligrams per liter (parts per million)
µg/L = micrograms per liter (parts per billion)
NA = Not Analyzed
<0.7 = Below laboratory detection limit of 0.7 ug/L
Bold = concentrations that exceed the NMWQCC limits
* = Results reported for total metals analysis, results cannot be compared to NMWQCC Standards for dissolved metals

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 3.16.11

Weather Sunny, warm 65° Time Sampling Began Time Sampling Completed —

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation 97.75

Total Sounded Depth of Well Below MP ~~37.57~~ 37.75 Water-Level Elevation DRY

Field ____ Depth to Water Below MP 37.38 Diameter of Casing 2"

Wet ____ Water Column in Well 0.19 Gallons Pumped/Bailed Prior to Sampling —

Gallons per Foot 0.16

Gallons in Well 0.0304 Sampling Pump Intake Setting (feet below land surface) —

Purging Equipment Purge pump / Bailer X3 = 0.0912

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)

Sampling Equipment Purge Pump/Bailer

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

Remarks DRY - no sample collected

Sampling Personnel C. Mathews & C. Brown

Well Casing Volumes

Gal./ft.							
	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.66
	1½" = 0.10	2½" = 0.24	3"½ = 0.50	6" = 1.46

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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 3.16.11

Weather Sunny, warm 65° Time Sampling Began 1155 Time Sampling Completed 1210

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface —

MP Elevation 98.81

Total Sounded Depth of Well Below MP ~~42.7~~ 42.88

Water-Level Elevation 59.56

Held ____ Depth to Water Below MP 39.25

Diameter of Casing 2"

Wet ____ Water Column in Well 3.63

Gallons Pumped/Bailed Prior to Sampling 1.50

Gallons per Foot 0.16

Gallons in Well .5808

Sampling Pump Intake Setting (feet below land surface) ____

Purging Equipment Purge pump / Bailer X3 = 1.742

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1202	16.13	7.24	777	0.608	4.14	41.8	-46.8	.75
1204	15.97	7.18	768	0.603	3.33	33.8	-39.0	1.25
1206	15.90	7.15	765	0.602	3.53	35.8	-26.2	1.50

Sampling Equipment Purge Pump/Bailer

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

Remarks H2O is light brown. no odor or sheen observed.

Sampling Personnel C. Mathews & A. Brown

Well Casing Volumes

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

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Neil Hall No. 1 Page 3 of 3

Project No.

Site Location Flora Vista, NM

Site/Well No. MW-6 Coded/ Replicate No. 1235 Date 3.16.11

Weather Sunny, warm 65 Time Sampling Began 1225 Time Sampling Completed 1230

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface —

MP Elevation 98.41

Total Sounded Depth of Well Below MP ~~38.21~~ 37.42

Water-Level Elevation DRY (water likely in silt trap @ bottom of well)

Held ____ Depth to Water Below MP 37.21

Diameter of Casing 2"

Wet ____ Water Column in Well .21

Gallons Pumped/Bailed Prior to Sampling 0.1

Gallons per Foot 0.16

Gallons in Well 0.0336

Sampling Pump Intake Setting (feet below land surface) —

Purging Equipment Purge pump (Bailer) X3 = 0.1003

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)

Sampling Equipment Purge Pump/Bailer

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

Remarks H_2O is clear w/ black particulate. Bio odor observed, no sheen.

Sampling Personnel C. Mathews & C. Brown

Well Casing Volumes

Gal./ft.	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½" = 0.10	2½" = 0.24	3" ½ = 0.50	6" = 1.46

APPENDIX B

Groundwater Laboratory Analysis Reports

ACCUTEST LABORATORIES

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

Conoco Phillips

Certificate of Analysis Number:

11030377

Report To:		Project Name:	Sategna 2E
Tetra Tech, Inc.		Site:	Bloomfield, 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:	3/22/2011
ph (505) 237-8440	fax: (505) 881-3283		

This Report Contains A Total Of 18 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

3/22/2011

Date

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

Version 2.1 - Modified February 11, 2011

ACCUTEST LABORATORIES

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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:
11030377

Report To:		Project Name:	Sategna 2E
Tetra Tech, Inc.		Site:	Bloomfield, 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:	3/22/2011
ph (505) 237-8440	fax: (505) 881-3283		

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

3/22/2011

Erica Cardenas
Project Manager

Date

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

ACCUTEST LABORATORIES

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

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

11030377

his designee, as verified by the following signature.

3/22/2011

Erica Cardenas
Project Manager

Date

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

ACCUTEST LABORATORIES

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

Conoco Phillips

Certificate of Analysis Number:

11030377

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: Sategna 2E
Site: Bloomfield, NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 3/22/2011

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	11030377-01	Water	03/14/2011 14:45	3/16/2011 9:10:00 AM	302875	☐
MW-2	11030377-02	Water	03/14/2011 14:35	3/16/2011 9:10:00 AM	302875	☐
MW-3	11030377-03	Water	03/14/2011 15:00	3/16/2011 9:10:00 AM	302875	☐
Duplicate	11030377-04	Water	03/14/2011 14:50	3/16/2011 9:10:00 AM	302875	☐
Trip Blank	11030377-05	Water	03/14/2011 21:40	3/16/2011 9:10:00 AM	302625	☐

Erica Cardenas
Project Manager

3/22/2011
Date

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

Ted Yen
Quality Assurance Officer

ACCUTEST LABORATORIES

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

Client Sample ID MW-1 **Collected:** 03/14/2011 14:45 **SPL Sample ID:** 11030377-01

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Sulfate	1820		500	1000	03/17/11 21:42	ESK	5746682
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Manganese	0.323		0.005	1	03/18/11 16:36	R_V	5747867

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

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	2770		20	2	03/16/11 14:30	MM1	5745724
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	03/17/11 12:22	LU_L	5746392
Ethylbenzene	ND		1	1	03/17/11 12:22	LU_L	5746392
Toluene	ND		1	1	03/17/11 12:22	LU_L	5746392
m,p-Xylene	ND		2	1	03/17/11 12:22	LU_L	5746392
o-Xylene	ND		1	1	03/17/11 12:22	LU_L	5746392
Xylenes,Total	ND		1	1	03/17/11 12:22	LU_L	5746392
Surr: 1,2-Dichloroethane-d4	91.6	%	70-130	1	03/17/11 12:22	LU_L	5746392
Surr: 4-Bromofluorobenzene	106	%	74-125	1	03/17/11 12:22	LU_L	5746392
Surr: Toluene-d8	96.9	%	82-118	1	03/17/11 12:22	LU_L	5746392

Qualifiers:

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

ACCUTEST LABORATORIES

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

Client Sample ID MW-2 **Collected:** 03/14/2011 14:35 **SPL Sample ID:** 11030377-02

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Sulfate	1850		500	1000	03/17/11 21:58	ESK	5746683
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Manganese	0.158		0.005	1	03/18/11 16:43	R_V	5747868

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

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	2680		50	5	03/16/11 14:30	MM1	5745725
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	03/17/11 13:38	LU_L	5746395
Ethylbenzene	ND		1	1	03/17/11 13:38	LU_L	5746395
Toluene	ND		1	1	03/17/11 13:38	LU_L	5746395
m,p-Xylene	ND		2	1	03/17/11 13:38	LU_L	5746395
o-Xylene	ND		1	1	03/17/11 13:38	LU_L	5746395
Xylenes,Total	ND		1	1	03/17/11 13:38	LU_L	5746395
Surr: 1,2-Dichloroethane-d4	92.4	%	70-130	1	03/17/11 13:38	LU_L	5746395
Surr: 4-Bromofluorobenzene	103	%	74-125	1	03/17/11 13:38	LU_L	5746395
Surr: Toluene-d8	95.2	%	82-118	1	03/17/11 13:38	LU_L	5746395

Qualifiers:

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

ACCUTEST LABORATORIES

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

Client Sample ID MW-3 **Collected:** 03/14/2011 15:00 **SPL Sample ID:** 11030377-03

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Sulfate	2090		500	1000	03/17/11 22:14	ESK	5746684
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Manganese	2.08		0.005	1	03/18/11 16:49	R_V	5747869

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

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	3200		40	4	03/16/11 14:30	MM1	5745726
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	03/16/11 21:27	LU_L	5745539
Ethylbenzene	ND		1	1	03/16/11 21:27	LU_L	5745539
Toluene	ND		1	1	03/16/11 21:27	LU_L	5745539
m,p-Xylene	ND		2	1	03/16/11 21:27	LU_L	5745539
o-Xylene	ND		1	1	03/16/11 21:27	LU_L	5745539
Xylenes,Total	ND		1	1	03/16/11 21:27	LU_L	5745539
Surr: 1,2-Dichloroethane-d4	93.2	%	70-130	1	03/16/11 21:27	LU_L	5745539
Surr: 4-Bromofluorobenzene	103	%	74-125	1	03/16/11 21:27	LU_L	5745539
Surr: Toluene-d8	96.0	%	82-118	1	03/16/11 21:27	LU_L	5745539

Qualifiers:

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

ACCUTEST LABORATORIES

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

Client Sample ID Duplicate **Collected:** 03/14/2011 14:50 **SPL Sample ID:** 11030377-04

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		1	1	03/16/11 21:02	LU_L	5745538
Ethylbenzene	ND		1	1	03/16/11 21:02	LU_L	5745538
Toluene	ND		1	1	03/16/11 21:02	LU_L	5745538
m,p-Xylene	ND		2	1	03/16/11 21:02	LU_L	5745538
o-Xylene	ND		1	1	03/16/11 21:02	LU_L	5745538
Xylenes,Total	ND		1	1	03/16/11 21:02	LU_L	5745538
Surr: 1,2-Dichloroethane-d4	94.5		% 70-130	1	03/16/11 21:02	LU_L	5745538
Surr: 4-Bromofluorobenzene	104		% 74-125	1	03/16/11 21:02	LU_L	5745538
Surr: Toluene-d8	97.7		% 82-118	1	03/16/11 21:02	LU_L	5745538

Qualifiers:

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

ACCUTEST LABORATORIES

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

Client Sample ID Trip Blank **Collected:** 03/14/2011 21:40 **SPL Sample ID:** 11030377-05

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		1	1	03/16/11 20:36	LU_L	5745537
Ethylbenzene	ND		1	1	03/16/11 20:36	LU_L	5745537
Toluene	ND		1	1	03/16/11 20:36	LU_L	5745537
m,p-Xylene	ND		2	1	03/16/11 20:36	LU_L	5745537
o-Xylene	ND		1	1	03/16/11 20:36	LU_L	5745537
Xylenes,Total	ND		1	1	03/16/11 20:36	LU_L	5745537
Surr: 1,2-Dichloroethane-d4	93.7		% 70-130	1	03/16/11 20:36	LU_L	5745537
Surr: 4-Bromofluorobenzene	99.7		% 74-125	1	03/16/11 20:36	LU_L	5745537
Surr: Toluene-d8	95.1		% 82-118	1	03/16/11 20:36	LU_L	5745537

Qualifiers:

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

Quality Control Documentation

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Sategna 2E

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

WorkOrder: 11030377
Lab Batch ID: 105503

Method Blank

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

Analyte	Result	Rep Limit
Manganese	ND	0.005

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030377-01B	MW-1
11030377-02B	MW-2
11030377-03B	MW-3

Laboratory Control Sample (LCS)

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

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

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

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

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

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

3/22/2011 12:29:21 PM

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030377
Lab Batch ID: R317172

Method Blank

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

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	94.2	70-130
Surr: 4-Bromofluorobenzene	106.3	74-125
Surr: Toluene-d8	94.6	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030377-03A	MW-3
11030377-04A	Duplicate
11030377-05A	Trip Blank

Laboratory Control Sample (LCS)

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

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

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

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

3/22/2011 12:29:21 PM

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030377
Lab Batch ID: R317172

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

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

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

Version 2.1 - Modified February 11, 2011

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030377
Lab Batch ID: R317230

Method Blank

RunID: K_110317A-5746391 Units: ug/L
Analysis Date: 03/17/2011 11:29 Analyst: LU_L

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030377-01A	MW-1
11030377-02A	MW-2

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	91.0	70-130
Surr: 4-Bromofluorobenzene	102.8	74-125
Surr: Toluene-d8	95.1	82-118

Laboratory Control Sample (LCS)

RunID: K_110317A-5746390 Units: ug/L
Analysis Date: 03/17/2011 11:03 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.9	104	74	123
Ethylbenzene	20.0	19.6	98.0	72	127
Toluene	20.0	19.7	98.3	74	126
m,p-Xylene	40.0	40.8	102	71	129
o-Xylene	20.0	20.4	102	74	130
Xylenes,Total	60.0	61.2	102	71	130
Surr: 1,2-Dichloroethane-d4	50.0	47.2	94.4	70	130
Surr: 4-Bromofluorobenzene	50.0	52.8	106	74	125
Surr: Toluene-d8	50.0	48.1	96.2	82	118

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

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

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ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 11030377
Lab Batch ID: R317230

Sample Spiked: 11030377-01
RunID: K_110317A-5746393 Units: ug/L
Analysis Date: 03/17/2011 12:48 Analyst: LU_L

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	21.6	108	20	21.8	109	0.973	22	70	124
Ethylbenzene	ND	20	19.2	95.8	20	19.6	98.2	2.43	20	76	122
Toluene	ND	20	19.8	98.8	20	20.2	101	2.39	24	80	117
m,p-Xylene	ND	40	37.3	93.3	40	39.8	99.5	6.45	20	69	127
o-Xylene	ND	20	19.3	96.6	20	20.3	102	5.06	20	84	114
Xylenes,Total	ND	60	56.6	94.4	60	60.1	100	5.98	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	45.8	91.5	50	45.6	91.2	0.387	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	52.3	105	50	53.2	106	1.72	30	74	125
Surr: Toluene-d8	ND	50	47.3	94.6	50	48.2	96.4	1.90	30	82	118

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
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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

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Version 2.1 - Modified February 11, 2011

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Total Dissolved Solids
Method: SM2540 C

WorkOrder: 11030377
Lab Batch ID: R317179

Method Blank

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

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

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030377-01C	MW-1
11030377-02C	MW-2
11030377-03C	MW-3

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

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

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

Sample Duplicate

Original Sample: 11030373-01
RunID: WET_110316N-5745719 Units: mg/L
Analysis Date: 03/16/2011 14:30 Analyst: MM1

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filterabl	14200	14030	1.06	10

Qualifiers:

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B - 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
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TNTC - Too numerous to count

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Version 2.1 - Modified February 11, 2011

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 11030377
Lab Batch ID: R317237C

Method Blank

RunID: IC1_110317B-5746656 Units: mg/L
Analysis Date: 03/17/2011 9:52 Analyst: ESK

Analyte	Result	Rep Limit
Sulfate	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030377-01C	MW-1
11030377-02C	MW-2
11030377-03C	MW-3

Laboratory Control Sample (LCS)

RunID: IC1_110317B-5746657 Units: mg/L
Analysis Date: 03/17/2011 10:08 Analyst: ESK

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10.00	10.23	102.3	90	110

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

Sample Spiked: 11030377-03
RunID: IC1_110317B-5746685 Units: mg/L
Analysis Date: 03/17/2011 22:30 Analyst: ESK

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	2090	5000	7092	100.0	5000	7064	99.48	0.3978	15	80	120

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

And

Chain of Custody

ACCUTEST LABORATORIES

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

Sample Receipt Checklist

Workorder:	**11030377**	Received By:	**NB**
Date and Time Received:	**3/16/2011 9:10:00 AM**	Carrier name:	**Fedex-Standard Overnight**
Temperature:	**4.0/4.0°C**	Chilled by:	**Water Ice**

1. **Shipping container/cooler in good condition?**	Yes ☑	No ☐	Not Present ☐	
2. **Custody seals intact on 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. 302875
1103077
page 1 of 2

Client Name: Tetra Tech
Address: 6121 Indian School Rd NE #200
City Albuquerque State NM Zip 87110
Phone/Fax: (505) 269-0888 505-237-8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Saiegna CE
Site Name:
Site Location: Bloomfield NM
Invoice To: ConocoPhillips Ph:

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil O=oil A=air SL=sludge E=ecore 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	Dissolved Mn	Sulfate, TDS
MW-1	3.14.11	1445		X	W	V	40	1	3			
MW-1	3.14.11	1445		X	W	P	16	Ø	1			
MW-1	3.14.11	1445		X	W	P	1	Ø	1			
MW-2	3.14.11	1435		X	W	V	40	1	3			
MW-2	3.14.11	1435		X	W	P	16	Ø	1			
MW-2	3.14.11	1435		X	W	P	1	Ø	1			
MW-3	3.14.11	1500		X	W	V	40	1	3			
MW-3	3.14.11	1500		X	W	P	16	Ø	1			
MW-3	3.14.11	1500		X	W	P	1	Ø	1			
Duplicate	3.14.11	1450		X	W	V	40	1	3			

LIGHT HOLDS

Client/Consultant Remarks: please filter & preserve metals before analysis

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp:

Requested TAT
☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☒ Standard
☐ 3 Business Days
☐ 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): NMWQCC Standards provided to lab

PM review (initial):

	date	time	
1. Relinquished by: Kelly Blanchard	3.15.11	0730	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 3/16/11	time 0910	6. Received by Laboratory:

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

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

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

SPL, Inc.
Analysis Request & Chain of Custody Record

SPL Workorder No. 1103077 | 302625 | page 2 of 2

Client Name: Tetra Tech
Address: 6121 Indian School Rd NE #200
City Albuquerque State NM Zip 87110
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Salegna 2E
Site Name:
Site Location: Bloomfield, NM
Invoice To: ConocoPhillips Ph:

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil O=oil A=air SL=sludge E=entire 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
Trip Blank	3.14.11	~~1400~~ 2140		X	W	V	40	1	2	X

Client/Consultant Remarks: Please filter & preserve metals before analysis

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp:

Requested TAT
☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☒ Standard
☐ 3 Business Days
☐ 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): NMWQCC Standards provided to lab

PM review (initial):

	date	time	
1. Relinquished by: Sampler	3/15/11	0730	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 3/16/11	time 0910	6. Received by Laboratory:

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

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