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2009 QUARTERLY GROUNDWATER MONITORING REPORT DECEMBER 2009

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:

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6121 Indian School Rd. NE, Suite 200
Albuquerque, NM 87110
Tetra Tech Project No. 1158690090

June 2010

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QUARTERLY GROUNDWATER MONITORING REPORT SATEGNA NO. 2E, SAN JUAN COUNTY, NEW MEXICO DECEMBER 2009

1.0 INTRODUCTION

This report presents the results of the December 2009 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

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

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. The spilled fluids remained in the berm and none of the condensate was 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 hand-augered 2 soil borings to groundwater at a depth of approximately 8 feet below ground surface (bgs) and submitted groundwater samples to an analytical laboratory for benzene, toluene, ethylbenzene and xylenes (BTEX) analysis. Results of these analyses 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 from a composite soil sample taken from the former location of the AST; the OCD action level for organic vapors is 100 ppm. Total petroleum hydrocarbons (TPH), BTEX, and chloride samples were obtained for soils analysis, and results were all below OCD action levels for BTEX. 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**).

Envirotech noted seepage of groundwater into the excavation on December 4, 2008, and returned to the Site on December 5, 2008 to collect groundwater samples from the excavation for BTEX analysis. The OCD groundwater action levels for benzene, toluene, and total xylenes 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, a vacuum truck was utilized to pump the 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 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 conducted a baseline and the first quarterly groundwater monitoring event at the Site in April 2009.

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 in each well was determined. 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 December 2009 sampling event was 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 is to the southwest. A generalized geologic cross section for the Site is presented in **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, polyvinyl chloride disposable bailer. While bailing each well, groundwater parameter data such as temperature, pH, conductivity, total dissolved solids (TDS), oxidation-reduction potential (ORP) and dissolved oxygen (DO) 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 with chain-of-custody documentation. Laboratory analysis of all groundwater samples collected during the December 2009 groundwater monitoring event was performed by Southern Petroleum Laboratory (SPL) of Houston, Texas.

Each groundwater sample collected was analyzed for dissolved manganese by Environmental Protection Agency (EPA) Method 6010B; BTEX by EPA Method 8260B; and TDS by EPA Method 2540C. Results of all analyses 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 collected from monitor wells MW-1, MW-2 and MW-3 was found to contain TDS concentrations of 2,470 mg/L, 2,470 mg/L, and 3,060 mg/L, respectively.

- **Manganese**

  The NMWQCC domestic water supply groundwater quality standard for manganese is 0.2 mg/L; groundwater collected from monitor well MW-3 was found to contain a manganese concentration of 2.4 mg/L.

The corresponding laboratory analysis report for the December 2009 groundwater sampling event, including quality control summaries, is included in **Appendix B**. A map showing manganese and TDS concentrations in Site wells during the December 2009 groundwater sampling event is included as **Figure 4**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The next quarterly groundwater monitoring event at the Site is scheduled for March 2010. Concentrations of dissolved manganese and TDS have been detected above NMWQCC groundwater quality standards in groundwater monitor wells at the Site. As a result, Tetra Tech recommends that these constituents continue to be monitored as part of the quarterly monitoring program at the Site. BTEX was not found above laboratory detection limits in any Site monitor well, and Tetra Tech will continue to monitor for BTEX parameters in order to move toward Site closure.

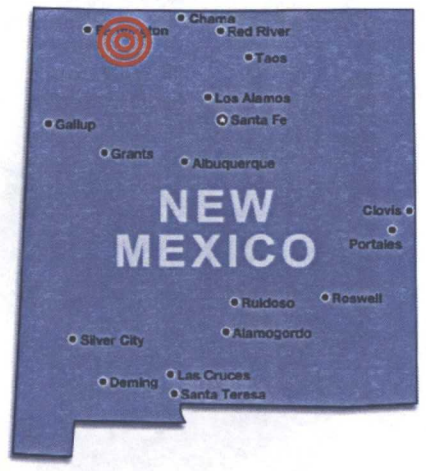
Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

FIGURES

ConocoPhillips High Resolution Aerial Imagery - 2008

FIGURE 1.

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



Directions from HWY 64 to ConocoPhillips Company Sategna No. 2E Site Location

ConocoPhillips Company Sategna No. 2E Site Location

N

TETRA TECH, INC.

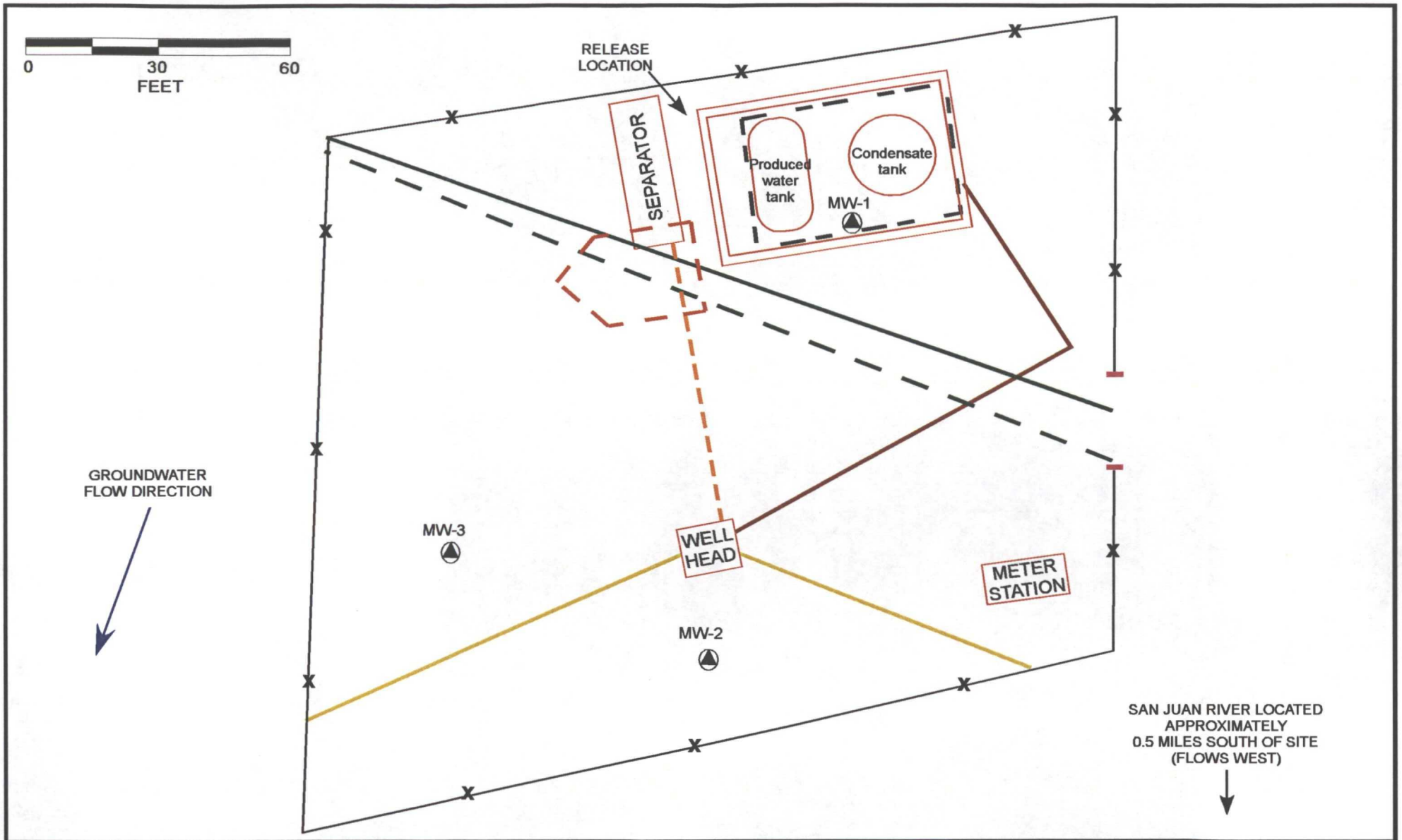
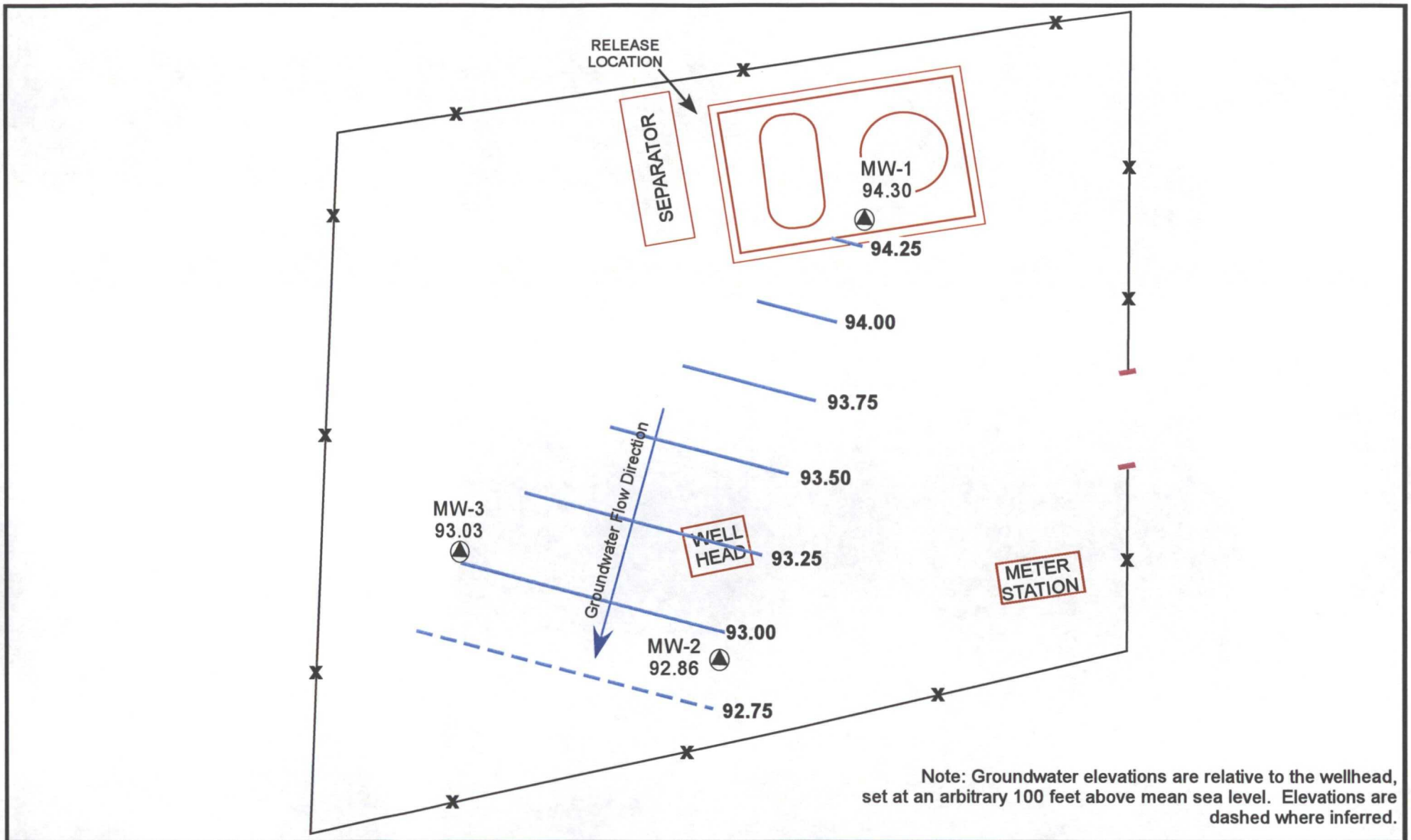


FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico



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

FIGURE 3:
GROUNDWATER ELEVATION MAP
December 2009
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- BERM AND ASSOCIATED EQUIPMENT
- GATED ENTRANCE
- FENCE LINE
- MONITORING WELL

0 30 60
FEET

N

TETRA TECH, INC.

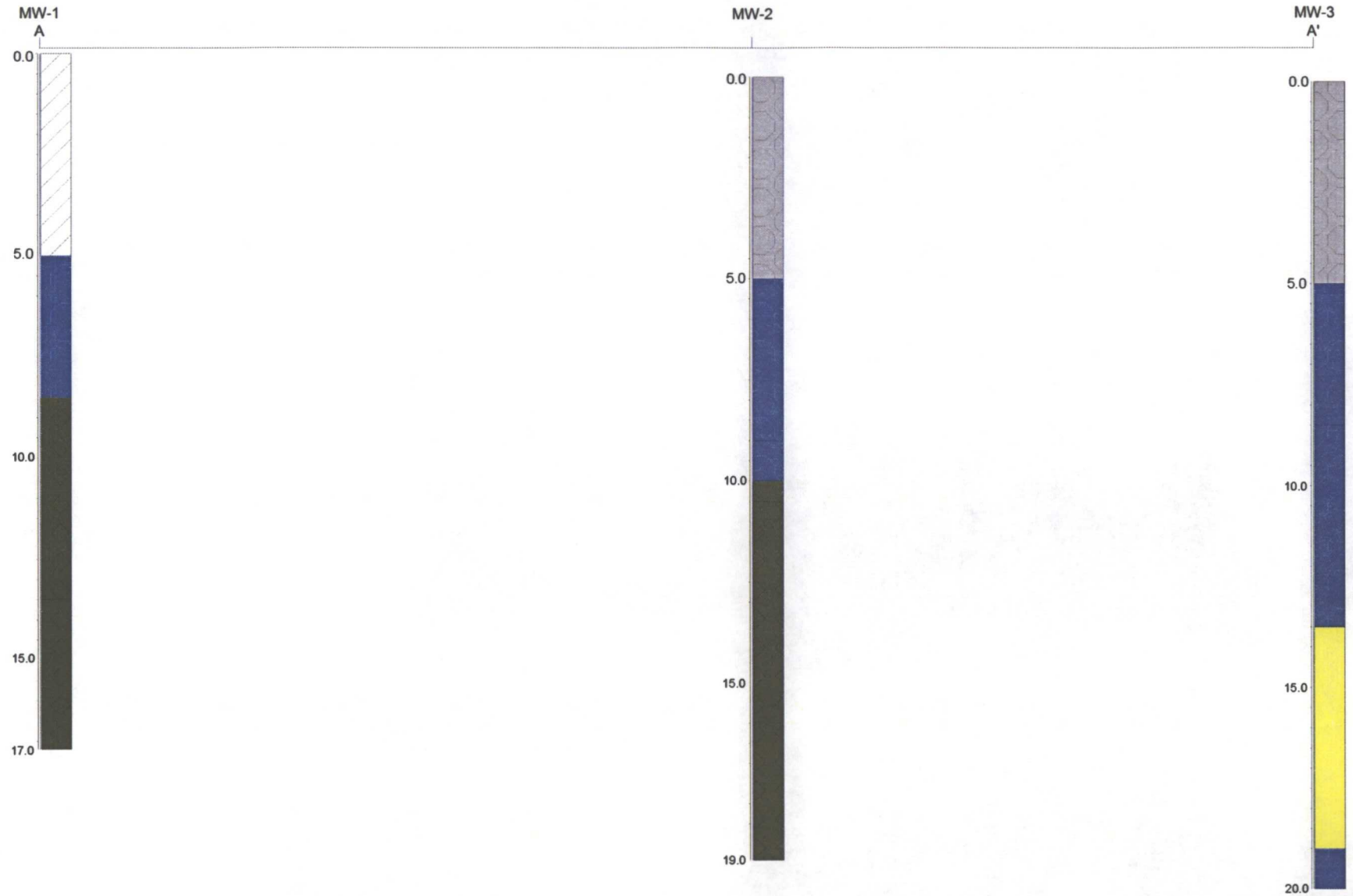


FIGURE 4:
GENERALIZED GEOLOGIC CROSS SECTION
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

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

TETRA TECH, INC.

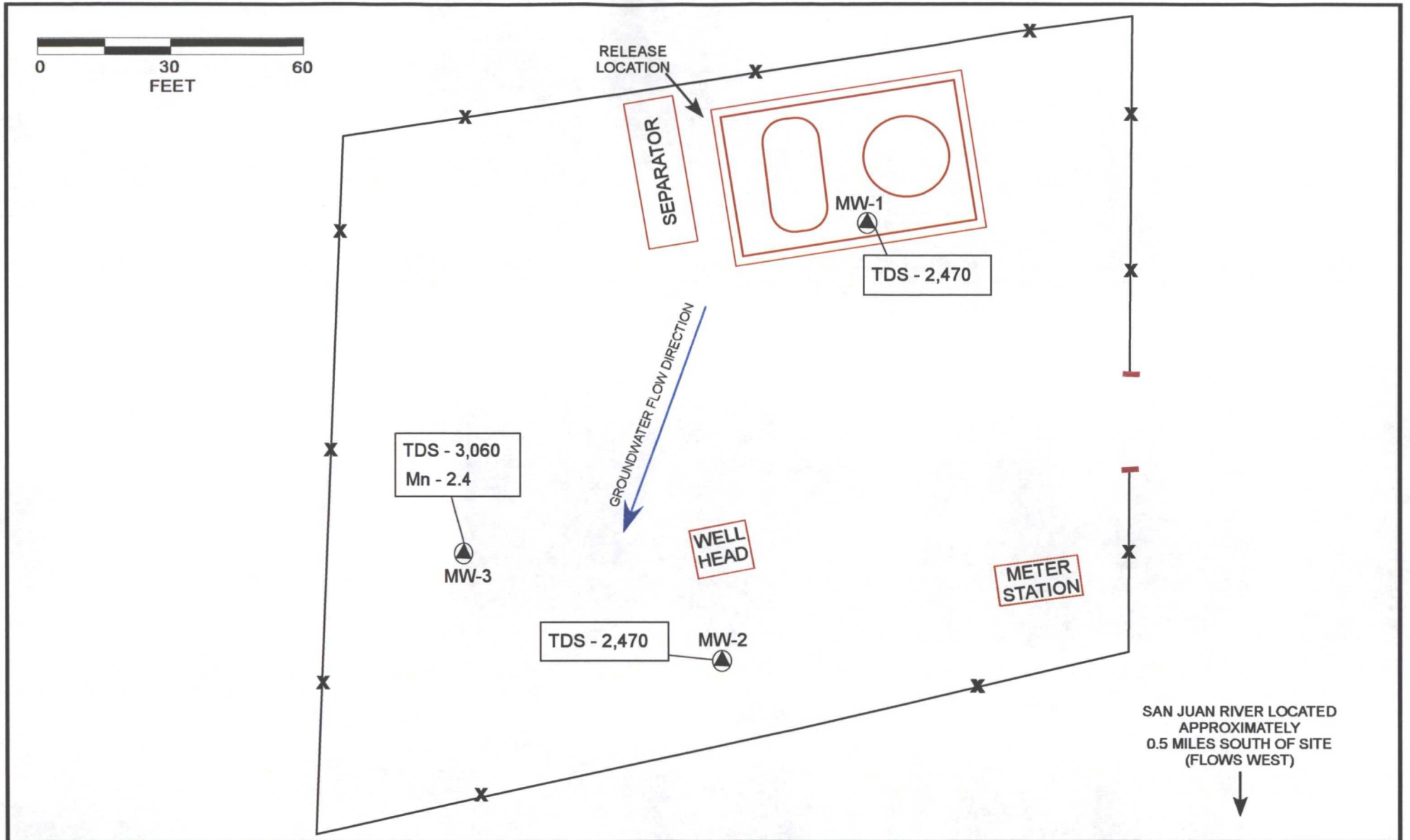


FIGURE 5:
GROUNDWATER QUALITY MAP
December 2009
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- BERM AND ASSOCIATED EQUIPMENT
- GATED ENTRANCE
- FENCE LINE
- MONITOR WELL

TDS - 1,000
Mn - 0.2

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

N

TETRA TECH, INC.

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 via electronic mail. Form C-141 stated that the well was shut down and the production tank was emptied. The spilled fluids remained in the berm and none of the condensate was recovered.
November 25, 2008	Envirotech Inc. of Farmington, NM (Envirotech) obtained heated headspace soil results from just outside of the affected area; results were 0.2 and 1.1 parts per million (ppm). 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, and 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 notes 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 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 (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.

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
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
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

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**
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**
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**
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

APPENDICES

APPENDIX A

Groundwater Sampling Field Forms

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Sategna 2E — Page 1 of 3

Project No.

Site Location Bloomfield, NM

Site/Well No. MW-1 — Coded/ Replicate No. — Date 12/14/09

Weather cold, sunny — Time Sampling Began 1250 — Time Sampling Completed 1305

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation

Total Sounded Depth of Well Below MP 20.3 — Water-Level Elevation

Held — Depth to Water Below MP 5.06 — Diameter of Casing 2"

Wet — Water Column in Well 15.24 — Gallons Pumped/Bailed Prior to Sampling 7.5

Gallons per Foot 0.16

Gallons in Well 2.43 x 3 = 7.29 — Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)	Vol
1303 ~~13.27~~	13.22	7.13	2637	1.714	3.76	77.9	5 gal
1305	13.36	7.03	2637	1.714	3.54	77.4	6.5 gal
1306	13.29	7.10	2629	1.709	2.89	74.1	6.75 gal
1307	13.34	7.09	2633	1.711	2.11	71.0	7.5 gal

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
~~Fe, Mn, Al~~	plastic	none
SO_4^{2-}, TDS	plastic	none

Remarks duplicate for BTEX collected @ 1315

Sampling Personnel Ana Moreno, Christine Mathews

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 Sategna 2E

Project No.

Site Location Bloomfield, NM

Site/Well No. MW-2

Coded/ Replicate No.

Date 12/14/09

Weather cold, sunny

Time Sampling Began 1228

Time Sampling Completed 1245

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface

MP Elevation

Total Sounded Depth of Well Below MP 20.9

Water-Level Elevation

Held ____ Depth to Water Below MP 5.92

Diameter of Casing 2"

Wet ____ Water Column in Well 14.98

Gallons Pumped/Bailed Prior to Sampling 7.5

Gallons per Foot 0.16

Gallons in Well 2.39 x 3 = 7.17

Sampling Pump Intake (feet below land

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1230	12.65	7.09	2772	1.812	3.23	206.7
1240	13.40	7.18	2758	1.760	2.84	204.2
1244	13.62	7.07	2705	1.758	1.92	203.1

Vol
5 gal
6 gal
7.5 gal

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
~~Fe, Mn, Al~~	plastic 3207	none
SO_4^{2-}, TDS	plastic 3207	none

Remarks

Sampling Personnel Christine Mathews, Ana Moreno

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 Sategna 2E — Page 3 of 3

Project No.

Site Location Bloomfield, NM

Site/Well No. MW-3 — Coded/ Replicate No. — Date 12/14/09

Weather Cold, sunny — Time Sampling Began 1320 — Time Sampling Completed 1330

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation

Total Sounded Depth of Well Below MP 20.28 — Water-Level Elevation

Held — Depth to Water Below MP 5.63 — Diameter of Casing 2"

Wet — Water Column in Well 14.65 — Gallons Pumped/Bailed Prior to Sampling 7.25

Gallons per Foot 0.16

Gallons in Well 2.34 x 3 = 7.02 — Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1321	14.03	7.12	3285	2.135	3.28	74.8
1327	14.29	7.13	3324	2.161	3.00	68.5
1325	14.28	7.10	3387	2.706	3.15	62.5

Vol
3.25g
4.00g
4.25g

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
~~Fe, Mn, Al~~	plastic	none
SO_4^{2-}, TDS	plastic	none

Remarks

Sampling Personnel Christine Mathews, Ana Moreno

Well Casing Volumes

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

APPENDIX B

Groundwater Laboratory Analysis Reports

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

Conoco Phillips

Certificate of Analysis Number:

09120605

Report To:		Project Name:	COP 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:	12/28/2009
ph: (505) 237-8440	fax:		

This Report Contains A Total Of 14 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

12/28/2009

Date

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

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

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

09120605

Report To:		Project Name:	COP 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:	12/28/2009
ph: (505) 237-8440	fax:		

I. SAMPLE RECEIPT:

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

II: ANALYSES AND EXCEPTIONS:

There were no exceptions noted.

III. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report (" mg\kg-dry " or " ug\kg-dry ").

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

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

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

Erica Cardenas
Project Manager

Date

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

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

Conoco Phillips

Certificate of Analysis Number:

09120605

Report To: Tetra Tech, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 237-8440 fax: (505) 881-3283

Fax To:

Project Name: COP Sategna 2E
Site: Bloomfield, NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 12/28/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-2	09120605-01	Water	12/14/2009 12:45:00 PM	12/15/2009 9:00:00 AM	292713	☐
MW-1	09120605-02	Water	12/14/2009 1:05:00 PM	12/15/2009 9:00:00 AM	292713	☐
MW-3	09120605-03	Water	12/14/2009 1:30:00 PM	12/15/2009 9:00:00 AM	292713	☐
Duplicate	09120605-04	Water	12/14/2009 1:15:00 PM	12/15/2009 9:00:00 AM	292713	☐
Trip Blank	09120605-05	Water	12/14/2009 4:30:00 PM	12/15/2009 9:00:00 AM	292713	☐

E Cardenas

12/28/2009

Erica Cardenas
Project Manager

Date

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

Ted Yen
Quality Assurance Officer

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

Client Sample ID: MW-2 **Collected:** 12/14/2009 12:45 **SPL Sample ID:** 09120605-01

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED			**MCL**	**SW6010B**	**Units: mg/L**		
Manganese	0.158		0.005	1	12/23/09 18:20	EG	5342395

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/15/2009 19:30	M_W	1.00

TOTAL DISSOLVED SOLIDS			**MCL**	**SM2540 C**	**Units: mg/L**		
Total Dissolved Solids (Residue,Filterable)	2470		20	2	12/15/09 18:00	CFS	5330449
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		1	1	12/19/09 20:58	JC	5335442
Ethylbenzene	ND		1	1	12/19/09 20:58	JC	5335442
Toluene	ND		1	1	12/19/09 20:58	JC	5335442
m,p-Xylene	ND		1	1	12/19/09 20:58	JC	5335442
o-Xylene	ND		1	1	12/19/09 20:58	JC	5335442
Xylenes,Total	ND		1	1	12/19/09 20:58	JC	5335442
Surr: 1,2-Dichloroethane-d4	101	%	70-130	1	12/19/09 20:58	JC	5335442
Surr: 4-Bromofluorobenzene	90.6	%	74-125	1	12/19/09 20:58	JC	5335442
Surr: Toluene-d8	96.2	%	82-118	1	12/19/09 20:58	JC	5335442

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-1 **Collected:** 12/14/2009 13:05 **SPL Sample ID:** 09120605-02

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Manganese	0.152		0.005	1	12/23/09 18:25	EG	5342396

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/15/2009 19:30	M_W	1.00

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	2470		20	2	12/15/09 18:00	CFS	5330450
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	12/19/09 21:25	JC	5335443
Ethylbenzene	ND		1	1	12/19/09 21:25	JC	5335443
Toluene	ND		1	1	12/19/09 21:25	JC	5335443
m,p-Xylene	ND		1	1	12/19/09 21:25	JC	5335443
o-Xylene	ND		1	1	12/19/09 21:25	JC	5335443
Xylenes,Total	ND		1	1	12/19/09 21:25	JC	5335443
Surr: 1,2-Dichloroethane-d4	108	%	70-130	1	12/19/09 21:25	JC	5335443
Surr: 4-Bromofluorobenzene	93.3	%	74-125	1	12/19/09 21:25	JC	5335443
Surr: Toluene-d8	97.1	%	82-118	1	12/19/09 21:25	JC	5335443

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-3 **Collected:** 12/14/2009 13:30 **SPL Sample ID:** 09120605-03

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**		
Manganese	2.4		0.005		1	12/23/09 17:18	EG	5342382

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/15/2009 19:30	M_W	1.00

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**		
Total Dissolved Solids (Residue,Filterable)	3060		20		2	12/15/09 18:00	CFS	5330451
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		1		1	12/19/09 21:53	JC	5335444
Ethylbenzene	ND		1		1	12/19/09 21:53	JC	5335444
Toluene	ND		1		1	12/19/09 21:53	JC	5335444
m,p-Xylene	ND		1		1	12/19/09 21:53	JC	5335444
o-Xylene	ND		1		1	12/19/09 21:53	JC	5335444
Xylenes,Total	ND		1		1	12/19/09 21:53	JC	5335444
Surr: 1,2-Dichloroethane-d4	106	%	70-130		1	12/19/09 21:53	JC	5335444
Surr: 4-Bromofluorobenzene	93.8	%	74-125		1	12/19/09 21:53	JC	5335444
Surr: Toluene-d8	97.5	%	82-118		1	12/19/09 21:53	JC	5335444

Qualifiers:

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

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

Client Sample ID: Duplicate **Collected:** 12/14/2009 13:15 **SPL Sample ID:** 09120605-04

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	12/19/09 22:21	JC	5335445
Ethylbenzene	ND		1	1	12/19/09 22:21	JC	5335445
Toluene	ND		1	1	12/19/09 22:21	JC	5335445
m,p-Xylene	ND		1	1	12/19/09 22:21	JC	5335445
o-Xylene	ND		1	1	12/19/09 22:21	JC	5335445
Xylenes,Total	ND		1	1	12/19/09 22:21	JC	5335445
Surr: 1,2-Dichloroethane-d4	110		% 70-130	1	12/19/09 22:21	JC	5335445
Surr: 4-Bromofluorobenzene	94.3		% 74-125	1	12/19/09 22:21	JC	5335445
Surr: Toluene-d8	97.4		% 82-118	1	12/19/09 22:21	JC	5335445

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: Trip Blank **Collected:** 12/14/2009 16:30 **SPL Sample ID:** 09120605-05

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	12/19/09 22:50	JC	5335446
Ethylbenzene	ND		1	1	12/19/09 22:50	JC	5335446
Toluene	ND		1	1	12/19/09 22:50	JC	5335446
m,p-Xylene	ND		1	1	12/19/09 22:50	JC	5335446
o-Xylene	ND		1	1	12/19/09 22:50	JC	5335446
Xylenes,Total	ND		1	1	12/19/09 22:50	JC	5335446
Surr: 1,2-Dichloroethane-d4	113		% 70-130	1	12/19/09 22:50	JC	5335446
Surr: 4-Bromofluorobenzene	96.6		% 74-125	1	12/19/09 22:50	JC	5335446
Surr: Toluene-d8	97.8		% 82-118	1	12/19/09 22:50	JC	5335446

Qualifiers:

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

Quality Control Documentation

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

Quality Control Report

Conoco Phillips

COP Sategna 2E

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B
WorkOrder: 09120605
Lab Batch ID: 96450

Method Blank

RunID: ICP2_091223B-5342380 Units: mg/L
Analysis Date: 12/23/2009 17:09 Analyst: EG
Preparation Date: 12/15/2009 19:30 Prep By: M_ Method SW3005A

Analyte	Result	Rep Limit
Manganese	ND	0.005

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120605-01C	MW-2
09120605-02C	MW-1
09120605-03C	MW-3

Laboratory Control Sample (LCS)

RunID: ICP2_091223B-5342381 Units: mg/L
Analysis Date: 12/23/2009 17:13 Analyst: EG
Preparation Date: 12/15/2009 19:30 Prep By: M_ Method SW3005A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Manganese	1.000	1.033	103.3	80	120

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

Sample Spiked: 09120605-03
RunID: ICP2_091223B-5342383 Units: mg/L
Analysis Date: 12/23/2009 17:23 Analyst: EG
Preparation Date: 12/15/2009 19:30 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	2.395	1	3.347	95.20	1	3.397	100.2	1.483	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.

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

Quality Control Report

Conoco Phillips

COP Sategna 2E

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 09120605
Method: SW8260B **Lab Batch ID:** R291807

Method Blank

RunID: Q_091219A-5335426 Units: ug/L
Analysis Date: 12/19/2009 13:46 Analyst: JC

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	95.7	70-130
Surr: 4-Bromofluorobenzene	93.7	74-125
Surr: Toluene-d8	96.9	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120605-01A	MW-2
09120605-02A	MW-1
09120605-03A	MW-3
09120605-04A	Duplicate
09120605-05A	Trip Blank

Laboratory Control Sample (LCS)

RunID: Q_091219A-5335425 Units: ug/L
Analysis Date: 12/19/2009 13:20 Analyst: JC

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	18.3	91.6	74	123
Ethylbenzene	20.0	18.0	89.8	72	127
Toluene	20.0	18.1	90.4	74	126
m,p-Xylene	40.0	36.8	92.0	71	129
o-Xylene	20.0	18.7	93.4	74	130
Xylenes,Total	60.0	55.5	92.5	71	130
Surr: 1,2-Dichloroethane-d4	50.0	48.4	96.8	70	130
Surr: 4-Bromofluorobenzene	50.0	50.7	101	74	125
Surr: Toluene-d8	50.0	47.5	94.9	82	118

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

Sample Spiked: 09120620-06
RunID: Q_091219A-5335431 Units: ug/L
Analysis Date: 12/19/2009 15:59 Analyst: JC

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.

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

Quality Control Report

Conoco Phillips

COP Sategna 2E

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 09120605
Method: SW8260B **Lab Batch ID:** R291807

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	17.3	86.4	20	17.8	88.9	2.77	22	70	124
Ethylbenzene	ND	20	17.1	85.4	20	16.4	81.8	4.32	20	76	122
Toluene	ND	20	17.2	86.0	20	17.9	89.5	4.03	24	80	117
m,p-Xylene	ND	40	34.9	87.2	40	35.1	87.7	0.595	20	69	127
o-Xylene	ND	20	18.6	93.1	20	19.0	94.9	1.89	20	84	114
Xylenes,Total	ND	60	53.5	89.2	60	54.1	90.1	1.05	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	49.2	98.4	50	49.6	99.3	0.842	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	51.1	102	50	51.1	102	0.0606	30	74	125
Surr: Toluene-d8	ND	50	48.4	96.7	50	48.0	96.1	0.699	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.

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

Quality Control Report

Conoco Phillips

COP Sategna 2E

Analysis: Total Dissolved Solids
Method: SM2540 C
WorkOrder: 09120605
Lab Batch ID: R291514

Method Blank

RunID: WET_091215N-5330436 Units: mg/L
Analysis Date: 12/15/2009 18:00 Analyst: CFS

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

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120605-01B	MW-2
09120605-02B	MW-1
09120605-03B	MW-3

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

RunID: WET_091215N-5330438 Units: mg/L
Analysis Date: 12/15/2009 18:00 Analyst: CFS

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	202.0	101.0	1.5	10	95	107

Sample Duplicate

Original Sample: 09120578-03
RunID: WET_091215N-5330442 Units: mg/L
Analysis Date: 12/15/2009 18:00 Analyst: CFS

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filterabl	686	688	0.291	10

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

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

Sample Receipt Checklist

And

Chain of Custody

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

Sample Receipt Checklist

Workorder:	**09120605**	Received By:	**RE**
Date and Time Received:	**12/15/2009 9:00:00 AM**	Carrier name:	**Fedex-Standard Overnight**
Temperature:	**1.8°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

09120605

SPL Workorder No. ~~09120602~~ 292713

page 1 of 1

Client Name: Tetra Tech / ConocoPhillips
Address: 6121 Indian School Rd. Ste. 200
City Albuquerque State NM Zip 87110
Phone/Fax: 505-237-8440 505-237-8656
Client Contact: kelly.blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Satagna 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=encore X=other)	bottle (P=plastic A=amber glass G=glass V=vial X=other)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other)	pres. (1=HCl 2=HNO3 3=H2SO4 X=other)	Number of Containers	Requested Analysis: BTEX	Dissolved Manganese	Sulfate, IDS
MW-2	12.14.09	1245		X	W	V	40	1	3	X		
MW-2	12.14.09	1245		X	W	P	1/32		2		X	X
MW-1	12.14.09	1305		X	W	V	40	1	3	X		
MW-1	12.14.09	1305		X	W	P	1/32		2		X	X
MW-3	12.14.09	1330		X	W	V	40	1	3	X		
MW-3	12.14.09	1330		X	W	P	1/32		2		X	X
Duplicate	12.14.09	1315		X	W	V	40	1	3	X		
Trip Blank	12.14.09	1630			W	V	40	1	2	X		

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

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☑ Y ☐ N
Temp: 1.8c

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):

PM review (initial):

	date	time	
1. Relinquished by Sampler: [signature]	~~DATE~~ TIME 1645	~~TIME~~ DATE 12.14.09	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 12/15/09	time 0900	6. Received by Laboratory: [signature]

☐ 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

2009 QUARTERLY GROUNDWATER MONITORING REPORT

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

May 2010

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QUARTERLY GROUNDWATER MONITORING REPORT SATEGNA No. 2E, SAN JUAN COUNTY, NEW MEXICO SEPTEMBER 2009

1.0 INTRODUCTION

This report presents the results of the September 2009 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

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

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. The spilled fluids remained in the berm and none of the condensate was 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 hand-augered 2 soil borings to groundwater at a depth of approximately 8 feet below ground surface (bgs) and submitted groundwater samples to an analytical laboratory for benzene, toluene, ethylbenzene and xylenes (BTEX) analysis. Results of these analyses 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 from a composite soil sample taken from the former location of the AST; the OCD action level for organic vapors is 100 ppm. Total petroleum hydrocarbons (TPH), BTEX, and chloride samples were obtained for soils analysis, and results were all below OCD action levels for BTEX. 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**).

Envirotech noted seepage of groundwater into the excavation on December 4, 2008, and returned to the Site on December 5, 2008 to collect groundwater samples from the excavation for BTEX analysis. The OCD groundwater action levels for benzene, toluene, and total xylenes 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, a vacuum truck was utilized to pump the 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 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 conducted a baseline and quarterly groundwater monitoring event at the Site in April 2009. The second quarterly monitoring event for 2009 was conducted by Tetra Tech on June 17, 2009.

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 for the first quarterly monitoring event at the Site, depth to groundwater in each well was determined. Results are displayed in **Table 2**.

The casings for monitor wells MW-1, MW-2, and MW-3 were surveyed in March 2009 using the wellhead as an arbitrary reference-elevation of 100 feet above mean sea level (amsl). The data obtained from the Site survey and from the September 2009 sampling event was 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 is to the southwest. A generalized geologic cross section for the Site is presented in **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, poly-vinyl chloride disposable bailer. While bailing each well, groundwater parameter data such as temperature, pH, conductivity, total dissolved solids (TDS), oxidation-reduction potential (ORP) and dissolved oxygen (DO) 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 with chain-of-custody documentation. Laboratory analysis of all groundwater samples collected during the September

2009 groundwater monitoring event was performed by Southern Petroleum Laboratory (SPL) of Houston, Texas.

During the September 2009 groundwater monitoring event, each groundwater sample collected was analyzed for dissolved metals (aluminum, iron, and manganese) by EPA Method 6010B; BTEX by EPA Method 8260B; total dissolved solids (TDS) by EPA Method 2540C; and for sulfate by EPA Method 375.4. Results of all analyses are displayed in **Table 3**.

This was the first quarter dissolved metals analysis was conducted. Total metals testing was conducted during prior events as requested by the Oil Conservation Division (OCD) in April of 2008; however, since all New Mexico Water Quality Control Commission (NMWQCC) drinking water standards pertain to dissolved metals concentrations, Tetra Tech requested and received approval from the OCD on September 8, 2009 to run dissolved metals analyses for only those metals which had exceeded the NMWQCC drinking water standards for metals previously run by total metals analysis. The dissolved metals samples were collected in unpreserved containers supplied by the laboratory, which were filtered and preserved by laboratory personnel prior to analysis for dissolved metals. Dissolved metals testing will continue for metals exceeding NMWQCC drinking water standards.

2.3 Groundwater Sampling Analytical Results

The NMWQCC mandates that groundwater quality in New Mexico be protected, and has issued groundwater quality standards in Title 20, Chapter 6, Part 2, Section 3103 of the New Mexico Administrative Code (20.6.2.3103 NMAC). 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.

- **Sulfate**

  The NMWQCC domestic water supply groundwater quality standard for sulfate is 600 milligrams per liter (mg/L); groundwater samples collected from monitor well MW-1, MW-2 and MW-3 were found to contain sulfate at concentrations of 1,770 mg/L, 1,840 mg/L, and 2,230 mg/L, respectively.

- **Total Dissolved Solids**

  The NMWQCC domestic water supply groundwater quality standard for TDS is 1,000 mg/L; groundwater collected from monitor well MW-1, MW-2 and MW-3 was found to contain TDS concentrations of 2,590 mg/L, 2,260 mg/L, and 3,340 mg/L, respectively.

- **Manganese**

  The NMWQCC domestic water supply groundwater quality standard for manganese is 0.2 mg/L; groundwater collected from monitor well MW-1and MW-3 was found to contain manganese concentrations of 0.243 mg/L and 2.68 mg/L, respectively.

The corresponding laboratory analysis reports for the September 2009 groundwater sampling event, including quality control summaries, are included in **Appendix B**. A map showing sulfate, manganese and

TDS concentrations in Site wells during the September 2009 groundwater sampling event is included as **Figure 4**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The next quarterly groundwater monitoring event at the Site is scheduled for December 2009. Concentrations of sulfate, dissolved manganese and TDS have been detected above NMWQCC groundwater quality standards in groundwater monitor wells at the Site. As a result, Tetra Tech recommends that these constituents continue to be monitored as part of the quarterly monitoring program at the Site. Dissolved aluminum and iron will be discontinued from the Site monitoring program since they were not found above NMWQCC groundwater quality standards. BTEX was not found above laboratory detection limits in any Site monitor well, and Tetra Tech will continue to monitor for BTEX parameters in order to move toward Site closure.

Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

FIGURES

ConocoPhillips High Resolution Aerial Imagery - 2008

FIGURE 1.

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

Directions from HWY 64 to ConocoPhillips Company Sategna No. 2E Site Location

ConocoPhillips Company Sategna No. 2E Site Location

N

TETRA TECH, INC.

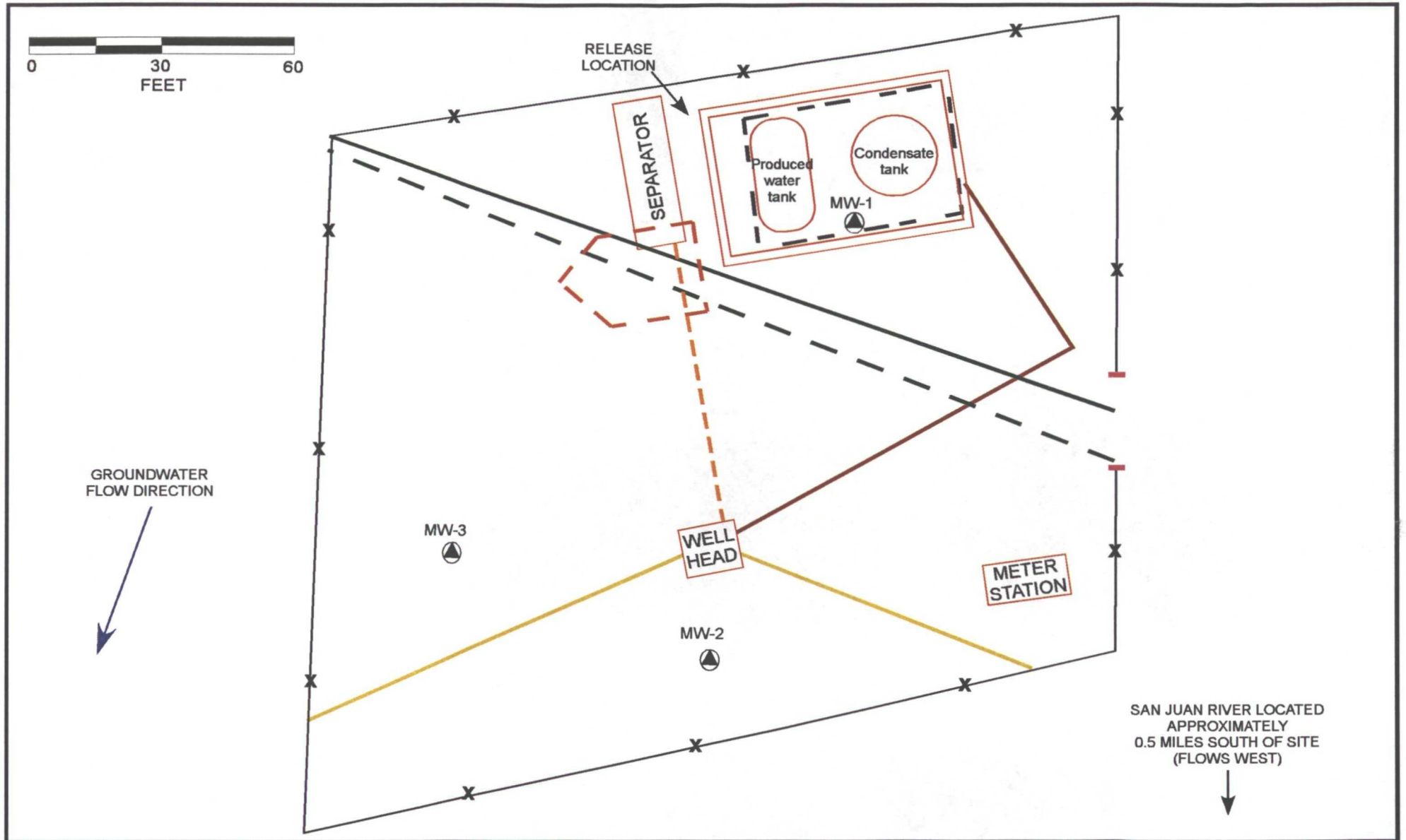


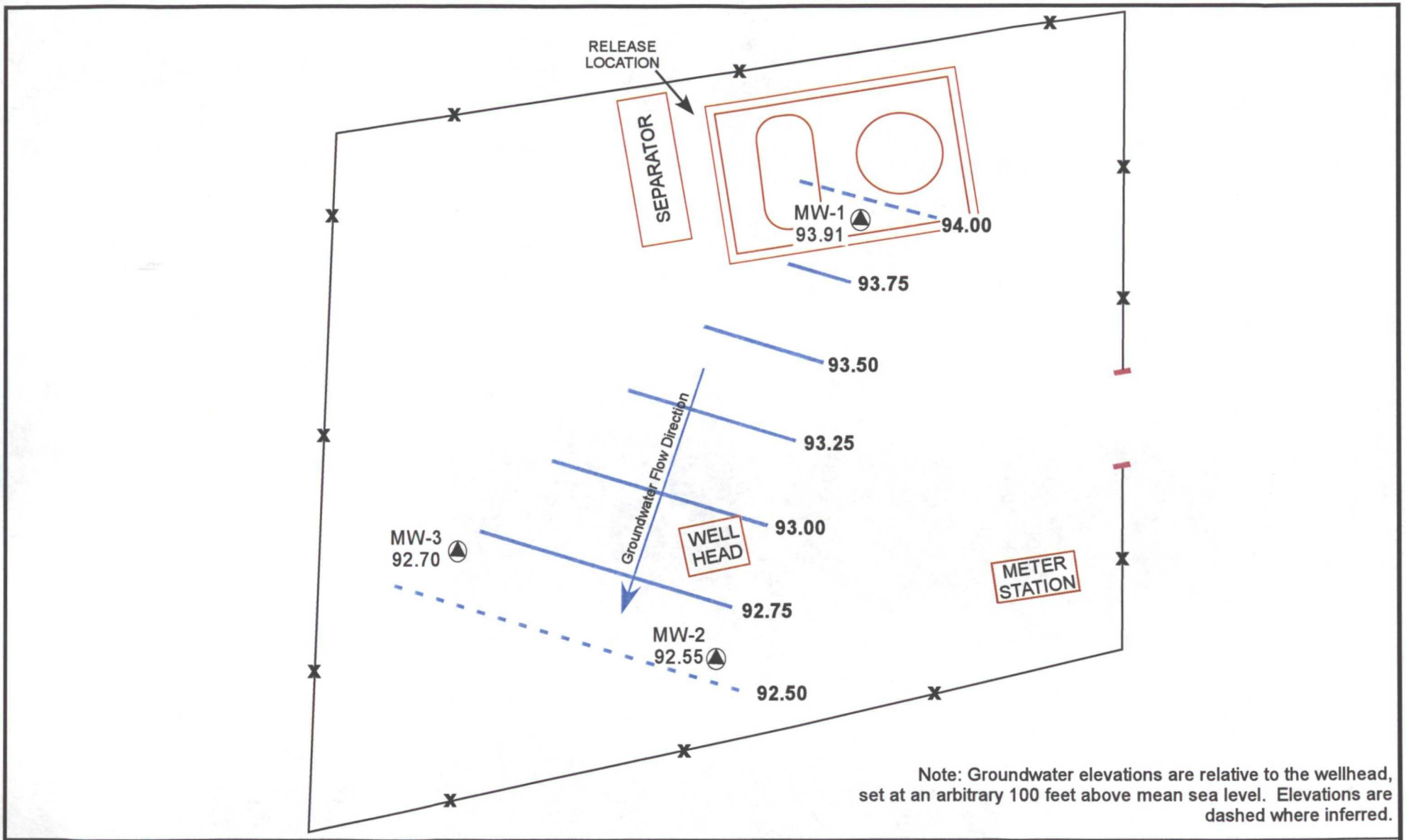
FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

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

N

TETRA TECH, INC.



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

FIGURE 3:
GROUNDWATER ELEVATION MAP
September 2009
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E GAS
PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- BERM AND ASSOCIATED EQUIPMENT
- GATED ENTRANCE
- FENCE LINE
- MONITORING WELL

0 30 60
FEET

N

TETRA TECH, INC.

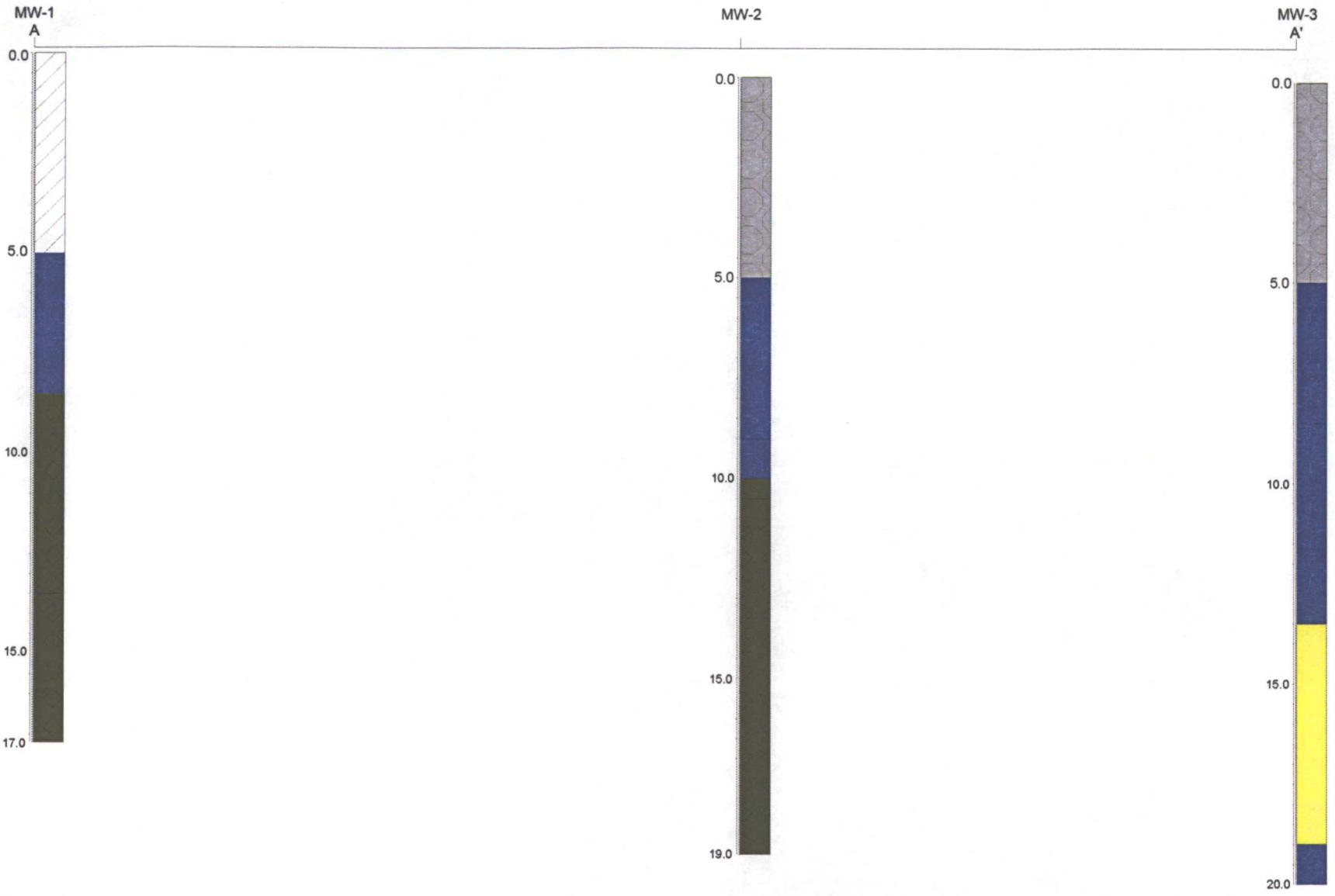


FIGURE 4:
GENERALIZED GEOLOGIC CROSS SECTION
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
NATURAL GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

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

TETRA TECH, INC.

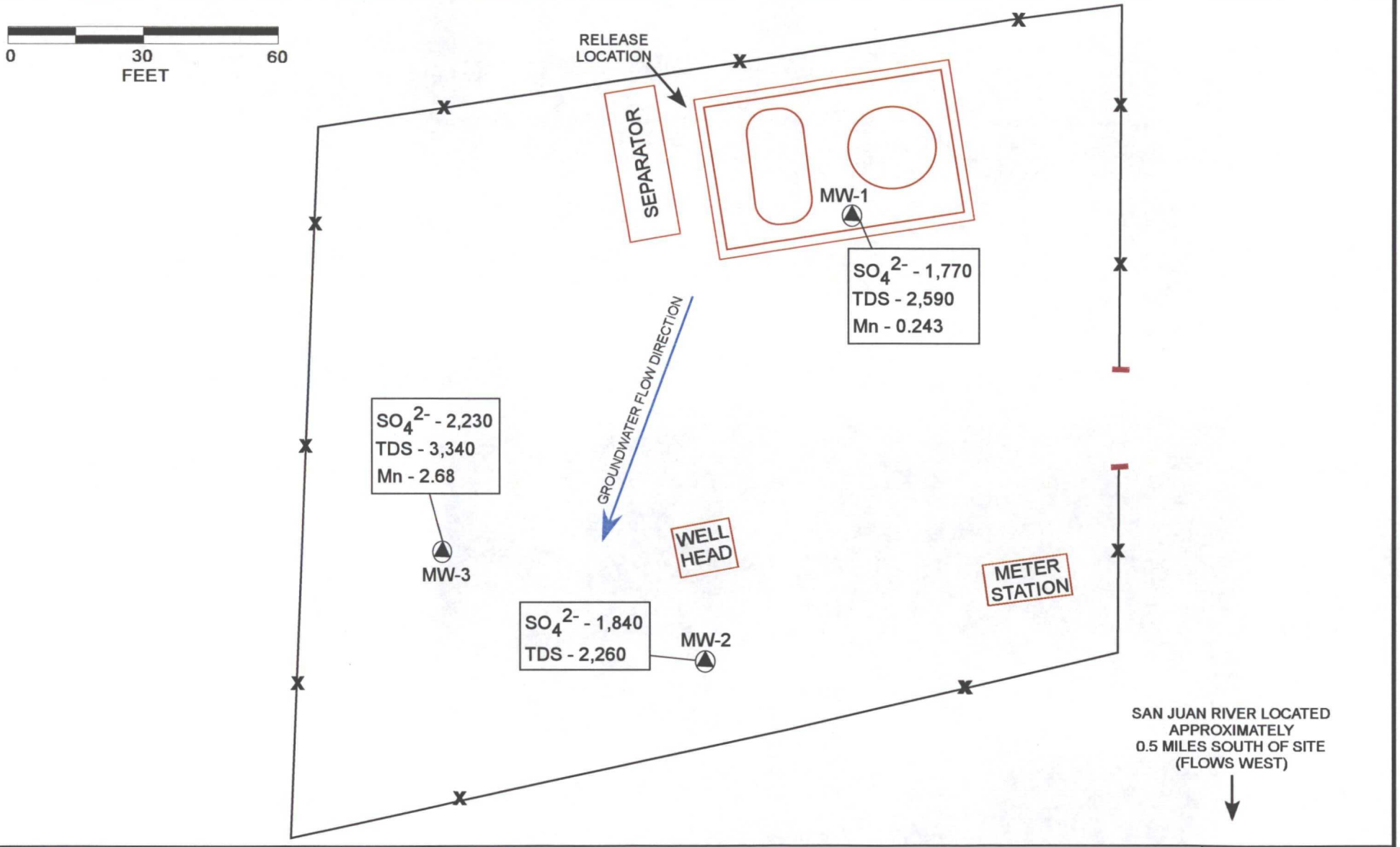


FIGURE 5:
GROUNDWATER QUALITY MAP
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E NATURAL GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- BERM AND ASSOCIATED EQUIPMENT
- GATED ENTRANCE
- FENCE LINE
- MONITOR WELL

SO_4^{2-} - 600
TDS - 1,000
Mn - 0.2

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

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TETRA TECH, INC.

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 via electronic mail. Form C-141 stated that the well was shut down and the production tank was emptied. The spilled fluids remained in the berm and none of the condensate was recovered.
November 25, 2008	Envirotech Inc. of Farmington, NM (Envirotech) obtained heated headspace soil results from just outside of the affected area; results were 0.2 and 1.1 parts per million (ppm). 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, and 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).
December 4, 2008	Results of all other soil analyses at all other sampling locations were below OCD action levels (Appendix A).
December 5, 2008	Envirotech notes 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 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 (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.

Table 1. Site History Timeline

Date	Activity
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.
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.

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
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
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

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**
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**
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**
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 can not be compared to NMWQCC Standards for dissolved metals

APPENDICES

APPENDIX A

Groundwater Sampling Field Forms

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Sategna 2E — Page 1X of 3

Project No.

Site Location Bloomfield, NM

Site/Well No. ~~MW-2~~ MW-1 — Coded/ Replicate No. 1305 — Date 9/28/09

Weather Sunny, windy — Time Sampling Began 1240 — Time Sampling Completed 1310

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation

Total Sounded Depth of Well Below MP ~~20.9~~ V 20.3 — Water-Level Elevation

Held — Depth to Water Below MP ~~5.23~~ 5.45 — Diameter of Casing 2"

Wet — Water Column in Well ~~14.67~~ 14.85 — Gallons Pumped/Bailed Prior to Sampling 7.5 gallons

Gallons per Foot 0.16

Gallons in Well ~~2.3772 = 4.744~~ 2.376 x 3 = 7.128 — Sampling Pump Intake (feet below land

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1259	14.86	7.09	2565	1.6664	2.95	143.1
1301	14.39	6.99	2559	1.662	2.59	144.1
1304	15.59	7.09	2568	1.669	3.28	142.6

Tubidity
904.7
834.5
1100 max

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe, Mn, Al	32 oz. plastic	~~HNO₃~~ NONE
SO_4^{2-}	32 oz. plastic	none

Remarks

Sampling Personnel CB, CM

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 Sategna 2E — Page 2 of 3

Project No.

Site Location Bloomfield, NM

Site/Well No. ~~MW-1~~ MW-3 — Coded/ Replicate No. — Date 9/28/09

Weather Sunny, windy — Time Sampling Began 1200 — Time Sampling Completed 1215

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation

Total Sounded Depth of Well Below MP ~~20.3~~ 20.9 — Water-Level Elevation

Held — Depth to Water Below MP ~~5.45~~ 6.23 — Diameter of Casing 2"

Wet — Water Column in Well ~~14.85~~ 14.67 — Gallons Pumped/Bailed Prior to Sampling 6 gallons

Gallons per Foot 0.16

Gallons in Well ~~2.3472 x 3 = 7.04~~ 2.3472 x 3 = 7.02 — Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1211	16.01	6.98	2629	1.709	4.64	180.9
1213	16.17	6.96	2625	1.707	4.94	181.8
1215	16.06	7.00	2623	1.705	4.89	180.3

Turbidities
#1100 max
1100 max

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe, Mn, Al	32 oz. plastic	~~HNO_3~~ NONE
SO_4^{2-}	32 oz. plastic	none

Remarks H_2O is clear

Sampling Personnel CB, CJ

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 Sategna 2E — Page 3 of 3

Project No.

Site Location Bloomfield, NM

Site/Well No. MW-3 — Coded/ Replicate No. — Date 9/28/09

Weather Sunny, Windy — Time Sampling Began 1225 — Time Sampling Completed 1320

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation

Total Sounded Depth of Well Below MP 20.28 ✓ — Water-Level Elevation

Held — Depth to Water Below MP 5.96 — Diameter of Casing 2"

Wet — Water Column in Well 14.32 — Gallons Pumped/Bailed Prior to Sampling dry @ 3.5 Sampled @ 4 after recharge

Gallons per Foot 0.16

Gallons in Well 2.2912 x 3 = 6.87 — Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1317	15.82	7.06	3305	2.084	3.15	124.4
1319	16.01	7.03	3246	2.110	2.93	99.2

Turbidity 10:75 37.38

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe, Mn, Al	32 oz. plastic	~~HNO₃~~ NONE
SO_4^{2-}	32 oz. plastic	none

Remarks well bailed dry @ 3.5 gallons, let well recharge then sampled @ 4 gallons

Sampling Personnel CB, CM

Well Casing Volumes

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

APPENDIX B

Groundwater Laboratory Analysis Reports

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

Conoco Phillips

Certificate of Analysis Number:

09100121

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:	10/11/2009
ph: (505) 237-8440	fax:		

This Report Contains A Total Of 15 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

10/12/2009

Date

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

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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:
09100121

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:	10/11/2009
ph: (505) 237-8440	fax:		

I. SAMPLE RECEIPT:

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

II: ANALYSES AND EXCEPTIONS:

There were no exceptions noted.

III. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report (" mg\kg-dry " or " ug\kg-dry ").

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

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

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

Erica Cardenas — Date
Project Manager

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

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

Conoco Phillips

Certificate of Analysis Number:

09100121

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: 10/11/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	09100121-01	Water	9/28/2009 1:10:00 PM	10/2/2009 9:15:00 AM	331816	☐
MW-2	09100121-02	Water	9/28/2009 12:15:00 PM	10/2/2009 9:15:00 AM	331816	☐
MW-3	09100121-03	Water	9/28/2009 1:20:00 PM	10/2/2009 9:15:00 AM	331816	☐
Duplicate	09100121-04	Water	9/28/2009 1:05:00 PM	10/2/2009 9:15:00 AM	331816	☐
Trip Blank	09100121-05	Water	10/1/2009 3:55:00 PM	10/2/2009 9:15:00 AM	331816	☐

E Cardenas

10/12/2009

Erica Cardenas
Project Manager

Date

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

Ted Yen
Quality Assurance Officer

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

Client Sample ID: MW-1 **Collected:** 09/28/2009 13:10 **SPL Sample ID:** 09100121-01

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Sulfate	1770		50	100	10/06/09 14:29	BDG	5234650
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Aluminum	ND		0.1	1	10/10/09 17:56	EG	5240031
Iron	ND		0.02	1	10/10/09 17:56	EG	5240031
Manganese	0.243		0.005	1	10/10/09 17:56	EG	5240031

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	10/02/2009 15:00	R_V	1.00

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	2590		20	2	10/02/09 17:00	CFS	5229592
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	10/05/09 17:24	LT	5232757
Ethylbenzene	ND		1	1	10/05/09 17:24	LT	5232757
Toluene	ND		1	1	10/05/09 17:24	LT	5232757
m,p-Xylene	ND		1	1	10/05/09 17:24	LT	5232757
o-Xylene	ND		1	1	10/05/09 17:24	LT	5232757
Xylenes,Total	ND		1	1	10/05/09 17:24	LT	5232757
Surr: 1,2-Dichloroethane-d4	93.1	%	78-116	1	10/05/09 17:24	LT	5232757
Surr: 4-Bromofluorobenzene	97.9	%	74-125	1	10/05/09 17:24	LT	5232757
Surr: Toluene-d8	91.0	%	82-118	1	10/05/09 17:24	LT	5232757

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
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Client Sample ID: MW-2 **Collected:** 09/28/2009 12:15 **SPL Sample ID:** 09100121-02

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Sulfate	1840		50	100	10/06/09 15:21	BDG	5234653
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Aluminum	ND		0.1	1	10/10/09 18:00	EG	5240032
Iron	0.0217		0.02	1	10/10/09 18:00	EG	5240032
Manganese	0.168		0.005	1	10/10/09 18:00	EG	5240032

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	10/02/2009 15:00	R_V	1.00

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	2260		20	2	10/02/09 17:00	CFS	5229593
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	10/05/09 20:36	LT	5232771
Ethylbenzene	ND		1	1	10/05/09 20:36	LT	5232771
Toluene	ND		1	1	10/05/09 20:36	LT	5232771
m,p-Xylene	ND		1	1	10/05/09 20:36	LT	5232771
o-Xylene	ND		1	1	10/05/09 20:36	LT	5232771
Xylenes,Total	ND		1	1	10/05/09 20:36	LT	5232771
Surr: 1,2-Dichloroethane-d4	96.9	%	78-116	1	10/05/09 20:36	LT	5232771
Surr: 4-Bromofluorobenzene	97.6	%	74-125	1	10/05/09 20:36	LT	5232771
Surr: Toluene-d8	91.0	%	82-118	1	10/05/09 20:36	LT	5232771

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

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Client Sample ID: MW-3 **Collected:** 09/28/2009 13:20 **SPL Sample ID:** 09100121-03

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Sulfate	2230		100	200	10/06/09 15:39	BDG	5234654
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Aluminum	ND		0.1	1	10/10/09 18:05	EG	5240033
Iron	ND		0.02	1	10/10/09 18:05	EG	5240033
Manganese	2.68		0.005	1	10/10/09 18:05	EG	5240033

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	10/02/2009 15:00	R_V	1.00

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	3340		20	2	10/02/09 17:00	CFS	5229594
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	10/05/09 19:41	LT	5232761
Ethylbenzene	ND		1	1	10/05/09 19:41	LT	5232761
Toluene	ND		1	1	10/05/09 19:41	LT	5232761
m,p-Xylene	ND		1	1	10/05/09 19:41	LT	5232761
o-Xylene	ND		1	1	10/05/09 19:41	LT	5232761
Xylenes,Total	ND		1	1	10/05/09 19:41	LT	5232761
Surr: 1,2-Dichloroethane-d4	95.0	%	78-116	1	10/05/09 19:41	LT	5232761
Surr: 4-Bromofluorobenzene	97.2	%	74-125	1	10/05/09 19:41	LT	5232761
Surr: Toluene-d8	90.0	%	82-118	1	10/05/09 19:41	LT	5232761

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
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Client Sample ID: Duplicate **Collected:** 09/28/2009 13:05 **SPL Sample ID:** 09100121-04

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	10/05/09 20:08	LT	5232762
Ethylbenzene	ND			1	1	10/05/09 20:08	LT	5232762
Toluene	ND			1	1	10/05/09 20:08	LT	5232762
m,p-Xylene	ND			1	1	10/05/09 20:08	LT	5232762
o-Xylene	ND			1	1	10/05/09 20:08	LT	5232762
Xylenes,Total	ND			1	1	10/05/09 20:08	LT	5232762
Surr: 1,2-Dichloroethane-d4	96.0		%	78-116	1	10/05/09 20:08	LT	5232762
Surr: 4-Bromofluorobenzene	97.3		%	74-125	1	10/05/09 20:08	LT	5232762
Surr: Toluene-d8	89.4		%	82-118	1	10/05/09 20:08	LT	5232762

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

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Client Sample ID: Trip Blank **Collected:** 10/01/2009 15:55 **SPL Sample ID:** 09100121-05

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	10/05/09 18:46	LT	5232760
Ethylbenzene	ND		1		1	10/05/09 18:46	LT	5232760
Toluene	ND		1		1	10/05/09 18:46	LT	5232760
m,p-Xylene	ND		1		1	10/05/09 18:46	LT	5232760
o-Xylene	ND		1		1	10/05/09 18:46	LT	5232760
Xylenes,Total	ND		1		1	10/05/09 18:46	LT	5232760
Surr: 1,2-Dichloroethane-d4	95.5		% 78-116		1	10/05/09 18:46	LT	5232760
Surr: 4-Bromofluorobenzene	96.7		% 74-125		1	10/05/09 18:46	LT	5232760
Surr: Toluene-d8	90.3		% 82-118		1	10/05/09 18:46	LT	5232760

Qualifiers:

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

Quality Control Documentation

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

Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B
WorkOrder: 09100121
Lab Batch ID: 94319

Method Blank

RunID: ICP2_091010A-5240009 Units: mg/L
Analysis Date: 10/10/2009 16:14 Analyst: EG
Preparation Date: 10/02/2009 15:00 Prep By: R_V Method: SW3005A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100121-01B	MW-1
09100121-02B	MW-2
09100121-03B	MW-3

Analyte	Result	Rep Limit
Aluminum	ND	0.1
Iron	ND	0.02
Manganese	ND	0.005

Laboratory Control Sample (LCS)

RunID: ICP2_091010A-5240010 Units: mg/L
Analysis Date: 10/10/2009 16:18 Analyst: EG
Preparation Date: 10/02/2009 15:00 Prep By: R_V Method: SW3005A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Aluminum	1.000	1.026	102.6	80	120
Iron	1.000	1.055	105.5	80	120
Manganese	1.000	1.040	104.0	80	120

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

Sample Spiked: 09100020-01
RunID: ICP2_091010A-5240012 Units: mg/L
Analysis Date: 10/10/2009 16:27 Analyst: EG
Preparation Date: 10/02/2009 15:00 Prep By: R_V Method: SW3005A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Aluminum	ND	1	1.084	108.4	1	1.034	103.4	4.721	20	75	125
Iron	ND	1	1.079	107.1	1	1.037	102.9	3.970	20	75	125
Manganese	ND	1	1.037	103.2	1	1.028	102.3	0.8717	20	75	125

Qualifiers:

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

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

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
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Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 09100121
Lab Batch ID: R285542

Method Blank

RunID: N_091005C-5232353 Units: ug/L
Analysis Date: 10/05/2009 11:53 Analyst: LT

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	89.9	78-116
Surr: 4-Bromofluorobenzene	96.9	74-125
Surr: Toluene-d8	90.7	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100121-01A	MW-1
09100121-02A	MW-2
09100121-03A	MW-3
09100121-04A	Duplicate
09100121-05A	Trip Blank

Laboratory Control Sample (LCS)

RunID: N_091005C-5232352 Units: ug/L
Analysis Date: 10/05/2009 10:58 Analyst: LT

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	18.5	92.4	74	123
Ethylbenzene	20.0	18.3	91.4	72	127
Toluene	20.0	18.1	90.6	74	126
m,p-Xylene	40.0	38.2	95.5	71	129
o-Xylene	20.0	19.3	96.7	74	130
Xylenes,Total	60.0	57.5	95.9	71	130
Surr: 1,2-Dichloroethane-d4	50.0	45.1	90.2	78	116
Surr: 4-Bromofluorobenzene	50.0	48.2	96.4	74	125
Surr: Toluene-d8	50.0	44.8	89.7	82	118

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

Sample Spiked: 09100121-01
RunID: N_091005C-5232758 Units: ug/L
Analysis Date: 10/05/2009 17:51 Analyst: LT

Qualifiers:

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

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

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

Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 09100121
Method: SW8260B **Lab Batch ID:** R285542

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
1,1-Dichloroethene	ND	20	20.8	104	20	19.6	97.9	6.16	22	61	139
Benzene	ND	20	19.8	99.0	20	19.3	96.4	2.69	22	70	124
Chlorobenzene	ND	20	19.0	94.8	20	18.6	93.2	1.68	21	68	123
Toluene	ND	20	18.3	91.7	20	18.1	90.7	1.08	24	80	117
Trichloroethene	ND	20	21.6	108	20	21.3	107	1.23	21	82	121
Surr: 1,2-Dichloroethane-d4	ND	50	47.9	95.8	50	47.1	94.1	1.83	30	78	116
Surr: 4-Bromofluorobenzene	ND	50	47.4	94.8	50	47.4	94.9	0.114	30	74	125
Surr: Toluene-d8	ND	50	43.7	87.4	50	44.0	88.1	0.733	30	82	118

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
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.

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

Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Total Dissolved Solids
Method: SM2540 C

WorkOrder: 09100121
Lab Batch ID: R285374

Method Blank

RunID: WET_091003F-5229574 Units: mg/L
Analysis Date: 10/02/2009 17:00 Analyst: CFS

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

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100121-01C	MW-1
09100121-02C	MW-2
09100121-03C	MW-3

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

RunID: WET_091003F-5229576 Units: mg/L
Analysis Date: 10/02/2009 17:00 Analyst: CFS

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	202.0	101.0	200.0	201.0	100.5	0.5	10	95	107

Sample Duplicate

Original Sample: 09100121-03
RunID: WET_091003F-5229594 Units: mg/L
Analysis Date: 10/02/2009 17:00 Analyst: CFS

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filterabl	3340	3338	0.0599	10

Qualifiers:

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

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

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HOUSTON, TX 77054
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Quality Control Report

Conoco Phillips

Sategna 2E

Analysis: Ion Chromatography
Method: E300.0
WorkOrder: 09100121
Lab Batch ID: R285669

Method Blank

RunID: IC1_091006A-5234637 Units: mg/L
Analysis Date: 10/06/2009 10:39 Analyst: BDG

Analyte	Result	Rep Limit
Sulfate	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100121-01C	MW-1
09100121-02C	MW-2
09100121-03C	MW-3

Laboratory Control Sample (LCS)

RunID: IC1_091006A-5234638 Units: mg/L
Analysis Date: 10/06/2009 10:57 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10.00	10.84	108.4	85	115

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

Sample Spiked: 09100245-01
RunID: IC1_091006A-5234656 Units: mg/L
Analysis Date: 10/06/2009 17:25 Analyst: BDG

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	ND	10	10.86	108.6	10	11.32	113.2	4.149	20	80	120

Qualifiers:

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

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

Sample Receipt Checklist

And

Chain of Custody

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

Sample Receipt Checklist

Workorder:	**09100121**	Received By:	**T_B**
Date and Time Received:	**10/2/2009 9:15:00 AM**	Carrier name:	**Fedex-Priority**
Temperature:	**1.5°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. 331816

09100b21

page 1 of 1

Client Name: TetraTech / ConocoPhillips
Address: 6121 Indian School Rd Ste 200
City Albuquerque State NM Zip 87110
Phone/Fax: 505.237.8440 505.237.8656
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Satagra 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=encore X=other)	bottle (P=plastic A=amber glass G=glass V=vial X=other)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other)	pres. (1=HCl 2=HNO3 3=H2SO4 X=other)	Number of Containers	Requested Analysis: BTEX ONLY	Dissolved Iron, Manganese, Aluminum	Sulfate and TDS
MW-1	9-28-09	1310		X	W	V	40	1	3	X		
MW-1	9-28-09	1310		X	W	P	32	NONE	2		X	X
MW-2	9-28-09	1215		X	W	V	40	1	3	X		
MW-2	9-28-09	1215		X	W	P	32	NONE	2		X	X
MW-3	1320	9-28-09		X	W	V	40	1	3	X		
MW-3	9-28-09	1320		X	W	P	32	NONE	2		X	X
Duplicate	9-28-09	1305		X	W	V	40	1	3	X		
Trip Blank	~~9-28-09~~ 10-1-09 CM	1555			W	V	40	1	2	X		

Client/Consultant Remarks: Please filter & preserve metals container prior to analysis

Laboratory remarks: RUSH

Intact? Y N
Ice? Y N
Temp: 1.5

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

Rush TAT requires prior notice

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

Special Detection Limits (Specify):

PM review (initial):

	date	time		
1. Relinquished By Sampler:	10-1-09	1630	2. Received by:	
3. Relinquished by:	date	time	4. Received by:	
5. Relinquished by:	date 10/2/09	time 9:15	6. Received by Laboratory:	

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