3R - 428

2013 AGWMR

03 / 21 / 2014

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

March 21, 2014

Re: NMOCD Case No. 3RP-428, 2013 Annual Groundwater Monitoring Report

Dear Mr. von Gonten:

Enclosed is the 2013 Annual Groundwater Monitoring Report for the Sategna No. 2E site. This report, prepared by Conestoga-Rovers & Associates (CRA), contains the results of groundwater monitoring conducted during September 2013.

Please let me know if you have any questions.

Sincerely,

Terry S. Lauck

Enc

CONESTOGA-ROVERS & ASSOCIATES

www.CRAworld.com

2013 Annual Groundwater Monitoring Report

ConocoPhillips Sategna No. 2E
San Juan County, New Mexico
API# 30-045-24060
NMOCD# 3R-428

Prepared for: ConocoPhillips Company

Conestoga-Rovers & Associates
6121 Indian School Road, NE Suite 200
Albuquerque, New Mexico 87110

January 2014 • 074932 • Report No. 5

Partners in Sustainability

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Section 1.0 Introduction

This report presents the results of the September 16, 2013 annual groundwater monitoring event conducted by Conestoga-Rovers & Associates (CRA) at the ConocoPhillips Company (ConocoPhillips) Sategna No. 2E gas well site (Site) located on private land within Unit Letter J, Section 21, Township 29N, Range 11W of Bloomfield, San Juan County, New Mexico (**Figure 1**). A Site detail map is included as **Figure 2**.

1.1 Background

A historical timeline for Site is presented in Table 1, and is discussed below.

On November 24, 2008, approximately 8 barrels of condensate were released from the on-Site, aboveground storage tank (AST). Notification of the release was given to the New Mexico Oil Conservation Division (NMOCD) by ConocoPhillips personnel using NMOCD Form C-141. 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 NMOCD recommended action levels. Envirotech also used a hand auger to complete 2 soil borings to approximately 8 feet below ground surface (bgs), where groundwater was encountered. Two groundwater samples were submitted by Envirotech to an analytical laboratory for analysis of benzene, toluene, ethylbenzene and xylenes (BTEX). Analytical results revealed BTEX in concentrations below NMOCD action levels.

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). Soil samples were collected from the excavation and analyzed for BTEX, total petroleum hydrocarbons (TPH), and chloride. Analytical results were below NMOCD action levels for BTEX. Two grab soil samples collected from below the above-grade and below-grade tanks exceeded the NMOCD action level for total TPH.

Groundwater seepage into the excavation was discovered on December 4, 2008. Subsequently, groundwater samples were collected from the excavation on December 5, 2008. The groundwater sample exceeded the New Mexico Water Quality Control Commission (NMWQCC) for benzene, toluene, and xylenes. Groundwater was recovered from the bottom of the excavated area using a vacuum truck during the week of December 8, 2008. 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 recovered 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 were present in the groundwater seepage. Each pumping event recovered approximately 30-60 barrels of liquid from the Site.

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

Additional hydrocarbon soil impacts were discovered during relocation and reinstallation of well equipment in April 2009. Envirotech uncovered an abandoned sewer line in the same location as hydrocarbon impacted soils while digging an exploratory trench between the wellhead and the proposed separator tank location (Figure 2). Trench work was halted and the excavated soils were stockpiled on site. Tetra Tech returned to the site on April 23 and 24, 2009 to oversee excavation of the hydrocarbon impacted soils from the vicinity of the trench (Figure 2). Photoionization detector readings in the field indicated levels below the NMOCD action level; however, lab results were above the NMOCD action level for TPH in samples collected from all four walls of the excavation. The bottom sample results were below NMOCD action levels. The excavation was backfilled and equipment was reinstalled before analytical results were available. A report detailing this activity, titled Soil Excavation and Sampling Report, was submitted to the NMOCD in July 2009.

Tetra Tech continued quarterly groundwater monitoring from April 2, 2009 to March 2011. The March 2011 Tetra Tech quarterly groundwater monitoring report recommended the discontinuation of sampling and analysis of BTEX for all Site monitor wells. On June 15, 2011, Site consulting responsibilities were transferred from Tetra Tech to CRA of Albuquerque, NM. Quarterly groundwater monitoring was continued by CRA on June 24, 2011. Following the October 2011 sampling event, quarterly sampling was discontinued and annual sampling for dissolved manganese, sulfate, and total dissolved solids (TDS) was initiated.

Section 2.0 Groundwater Monitoring Methodology and Analytical Results

2.1 Groundwater Monitoring Summary

Prior to collection of groundwater samples from Monitor Wells MW-1, MW-2 and MW-3, depth to groundwater was measured in each well using an oil/water interface probe. Results are displayed in **Table 2**.

The casings for Monitor Wells MW-1, MW-2, and MW-3 were surveyed in March 2009 using an arbitrary reference-elevation of 100 feet. Groundwater elevation data were obtained during the September 16, 2013 sampling event, but were determined to be anomalous. These data were used to create a groundwater potentiometric surface map for the Site (**Figure 3**). The groundwater flow direction at the Site continues to be to the southwest. A generalized geologic cross section for the Site is presented as **Figure 4**.

2.2 Groundwater Sampling Methodology

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

Groundwater samples were analyzed for dissolved manganese by Environmental Protection Agency (EPA) Method 6010, sulfate by EPA method 300, and TDS by Standard Method (SM) 2540C. Analytical results are displayed in **Table 3**.

2.3 Groundwater Monitoring 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.

- **Total Dissolved Solids**
  - The NMWQCC domestic water supply groundwater quality standard for TDS is 1,000 mg/L; groundwater samples collected from Monitor Wells MW-1, MW-2 and MW-3 were found to contain TDS concentrations of 2,560 mg/L, 2,570 mg/L, and 2,600 mg/L, respectively.

- **Dissolved Manganese**
  - The NMWQCC domestic water supply groundwater quality standard for dissolved manganese is 0.2 mg/L; groundwater samples collected from Monitor Wells MW-1, MW-2, and MW-3 were found to contain dissolved manganese concentrations of 0.36 mg/L, 0.21 mg/L, and 0.83 mg/L, respectively.

- **Sulfate**
  - The NMWQCC domestic water supply groundwater quality standard for sulfate is 600 mg/L; groundwater samples collected from Monitor Wells MW-1, MW-2, and MW-3 were found to contain sulfate in concentrations of 1,580 mg/L, 1,690 mg/L, and 1,750 mg/L, respectively.

The corresponding laboratory analytical report for the September 16, 2013 groundwater sampling event is included in **Appendix B**.

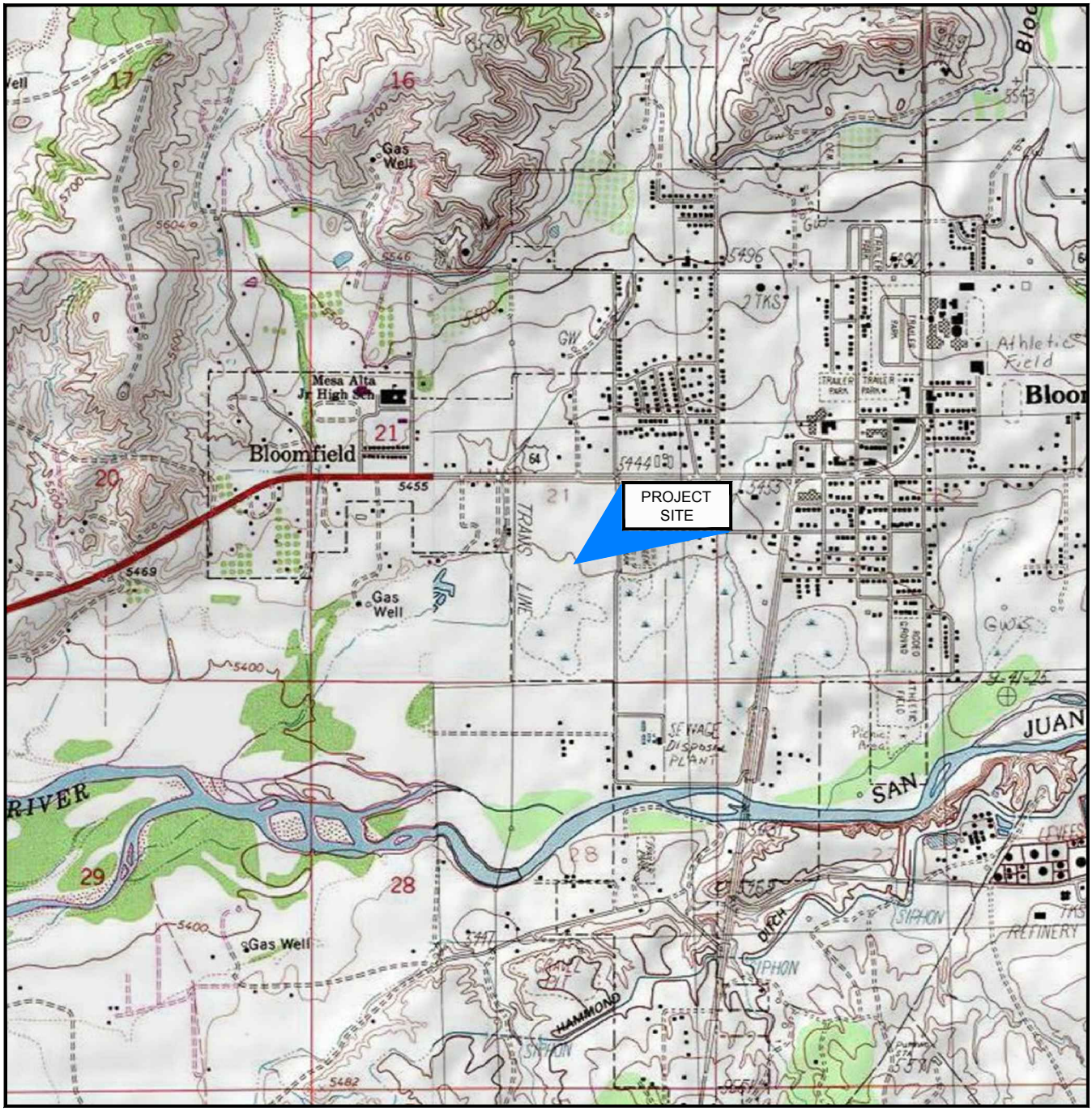
Section 3.0 Conclusions and Recommendations

Monitor Wells MW-1, MW-2, and MW-3 were found to have concentrations of dissolved manganese, sulfate, and TDS exceeding the NMWQCC standards. TDS and sulfate concentrations appear to be stable with 11 and 12 sampling events of data, respectively.

CRA recommends that an upgradient monitor well be installed to provide background water quality data for comparison to water quality data obtained from Site monitor wells.

Annual monitoring will continue for dissolved manganese, sulfates and TDS. Remediation Site closure will be requested when groundwater quality results indicate that all monitored groundwater quality parameters are consistently below NMWQCC groundwater quality standards, are stable, or are representative of background conditions at the Site. The next sampling event is scheduled for September 2014.

FIGURES

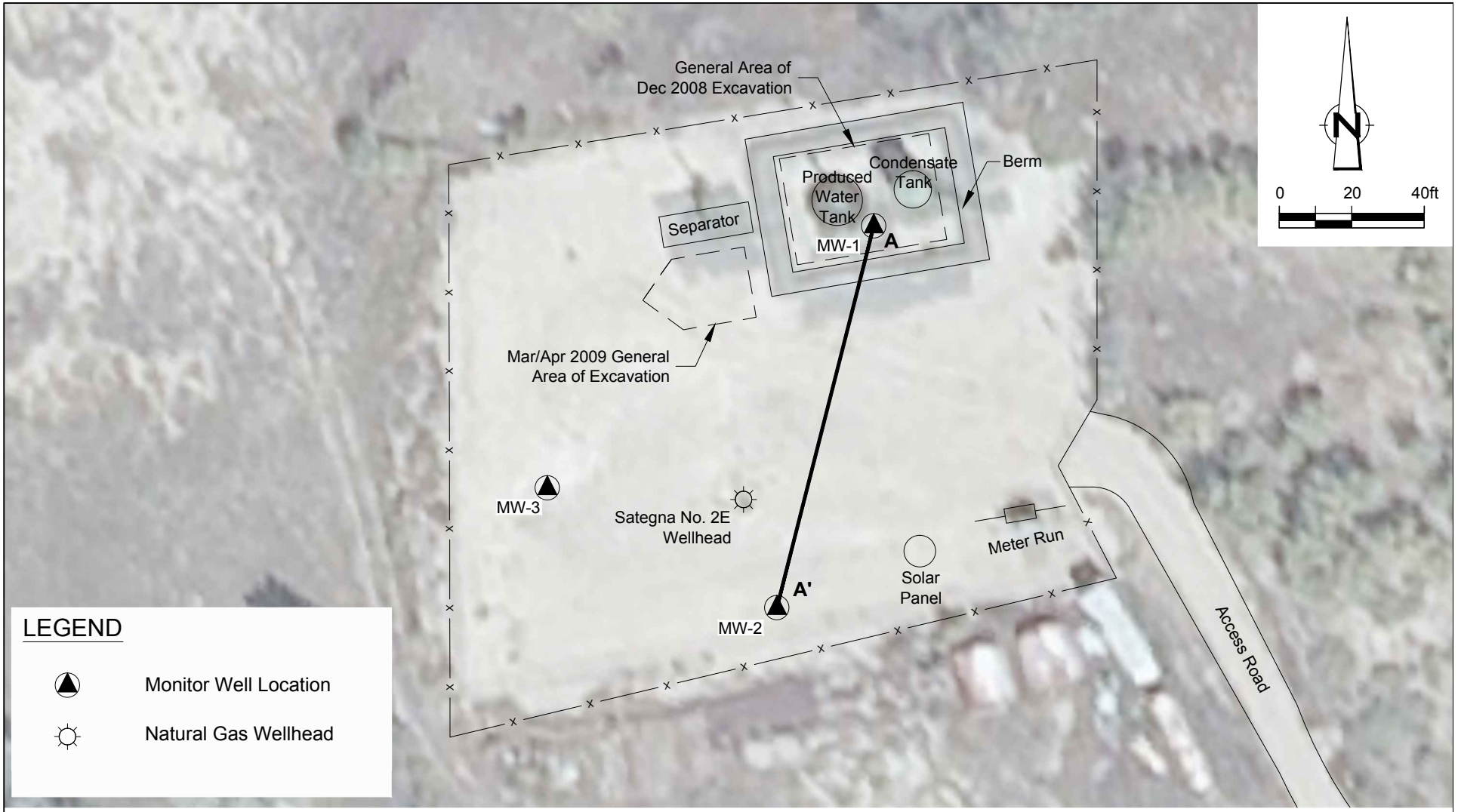


SOURCE: USGS 7.5 MINUTE QUAD
"HORN CANYON AND BLOOMFIELD, NEW MEXICO"

Figure 1

SITE VICINITY MAP
SATEGNA No. 2E NATURAL GAS WELL SITE
SECTION 21, T29N-R11W, BLOOMFIELD, NEW MEXICO
ConocoPhillips Company

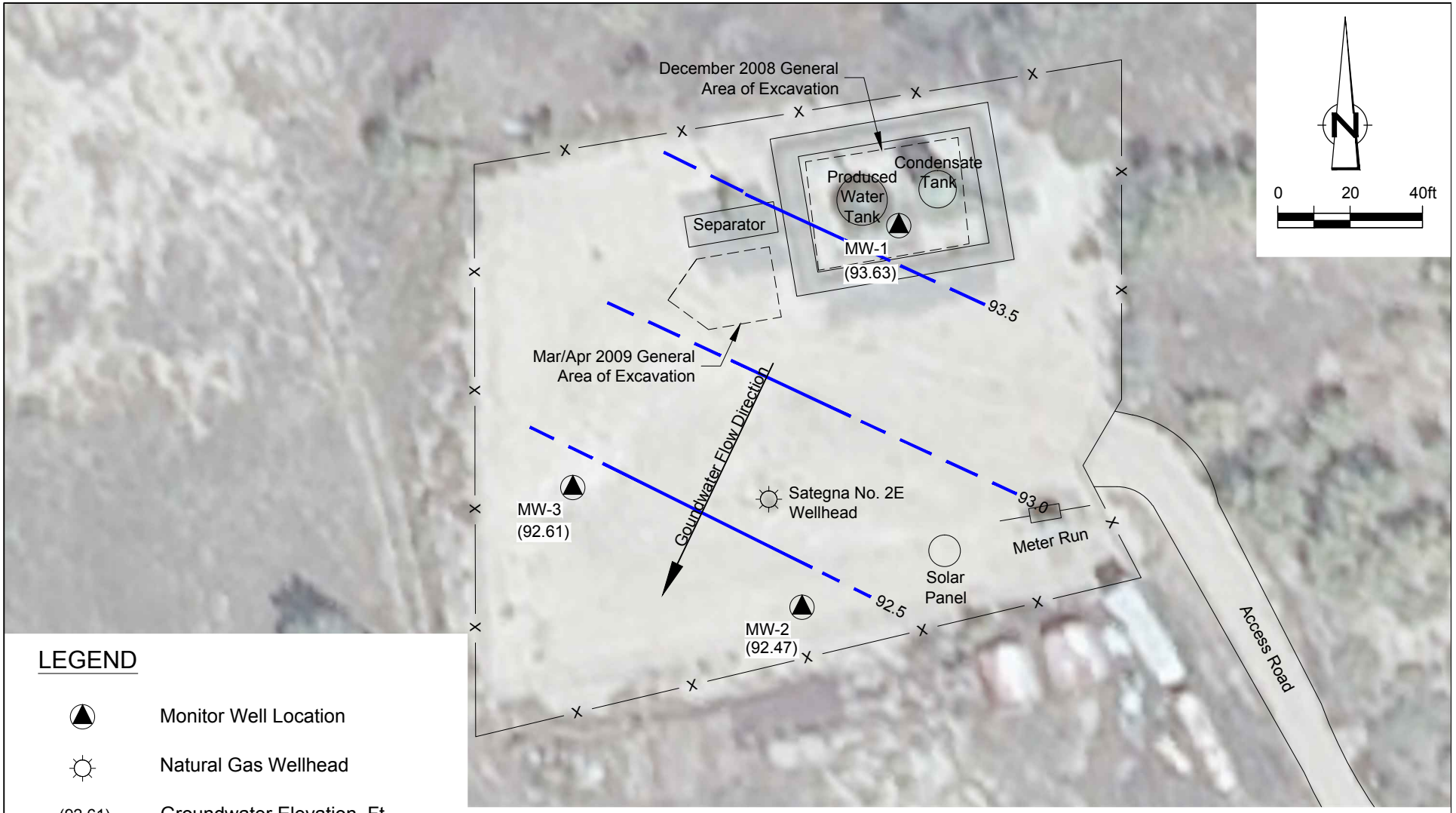
074932-95(005)GN-DL005 DEC 17/2013



ConocoPhillips high resolution aerial imagery 2008.

Figure 2

SITE PLAN
SATEGNA No. 2E NATURAL GAS WELL SITE
SECTION 21, T29N-R11W, BLOOMFIELD, NEW MEXICO
ConocoPhillips Company



LEGEND

- Monitor Well Location
- Natural Gas Wellhead
- (92.61) Groundwater Elevation, Ft
- 92.5 Groundwater Elevation Contour, Ft
- Groundwater Flow Direction

Figure 3

SEPTEMBER 2013 GROUNDWATER POTENTIOMETRIC SURFACE MAP
SATEGNA No. 2E NATURAL GAS WELL SITE
SECTION 21, T29N-R11W, BLOOMFIELD, NEW MEXICO
ConocoPhillips Company

074932-95(005)GN-DL002 DEC 17/2013

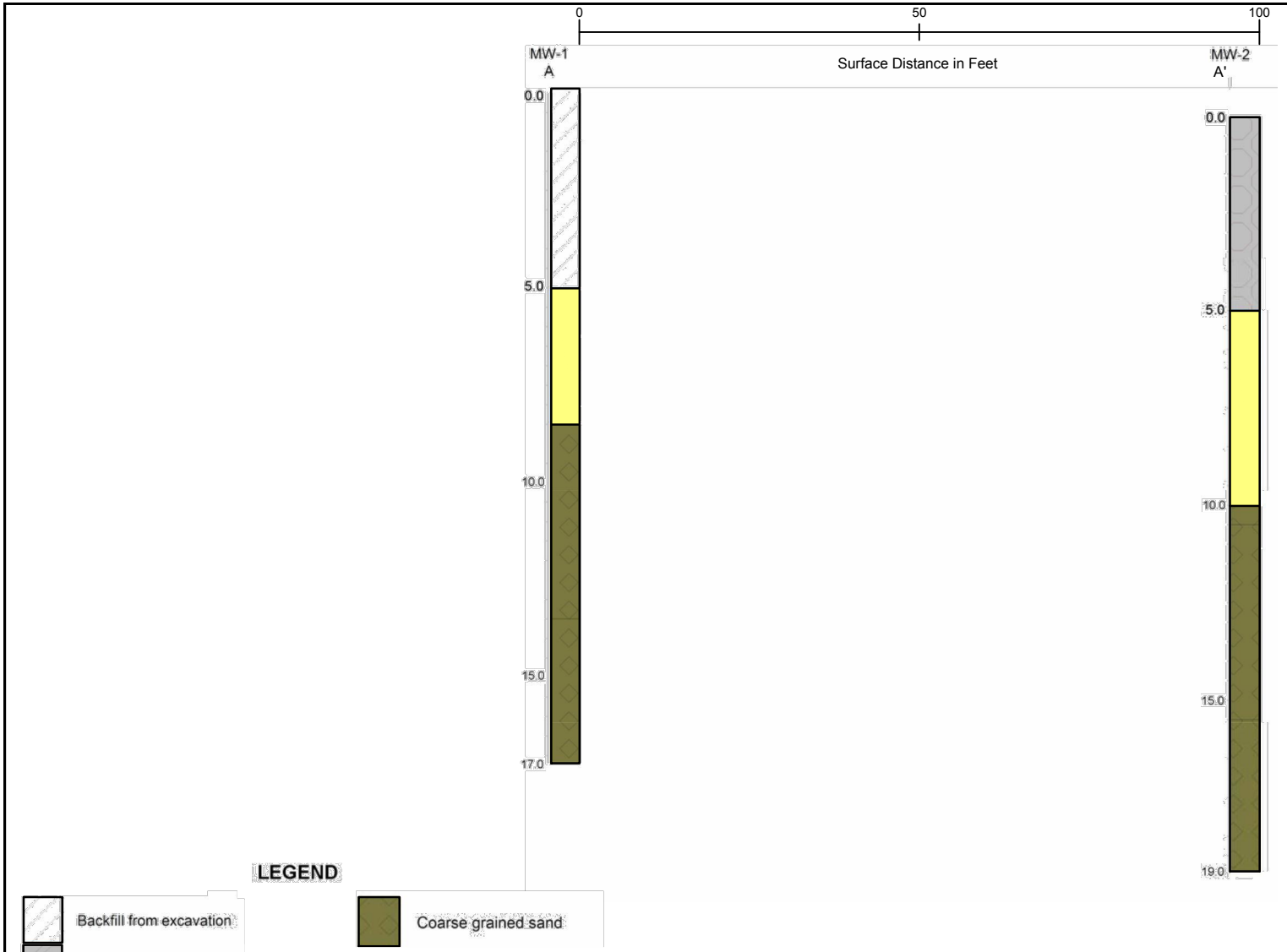


Figure 4

GEOLOGICAL CROSS SECTION
SATEGNA No. 2E NATURAL GAS WELL SITE
SECTION 21, T29N-R11W, BLOOMFIELD, NEW MEXICO
ConocoPhillips Company

074932-95(005)GN-DL003 DEC 17/2013

TABLES

TABLE 1

SITE HISTORY TIMELINE
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
SAN JUAN COUNTY, NM

Date/Time Period	*Event/Action*	*Description/Comments*
November 24, 2008	Release Discovered	Approximately eight 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. A C-141 form was filled out by ConocoPhillips staff and notice was given to Brandon Powell of the New Mexico Oil Conservation Division (NMOCD) via electronic mail. The C-141 form stated that the well was shut down and the production tank was emptied.
November 25, 2008	Initial Site Assessment	Envirotech Inc. of Farmington, NM (Envirotech) collected soil samples and analyzed them using the heated headspace soil method; results were 0.2 and 1.1 parts per million (ppm) from outside the excavated area. Depth of soil samples was not noted. Envirotech hand augered two soil borings to groundwater at a depth of approximately 8 feet below ground surface (bgs) and submitted groundwater samples for analysis. Results were below OCD action levels for benzene, toluene, ethylbenzene, and total xylenes (BTEX) in groundwater. Envirotech noted 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.
December 4, 2008	Site Assessment	Envirotech returned to the Site and obtained grab and composite soil samples from an excavation measuring approximately 30 feet by 18 feet by 5 feet deep (Figure 2). Heated headspace results show values ranging from 6.5 ppm in a grab soil sample obtained from the bottom of the excavation to 1,400 ppm from a composite soil sample taken from the former location of the AST. Total petroleum hydrocarbons (TPH), BTEX, and chloride samples were obtained for soils analysis. Results were 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.
December 5, 2008	Site Assessment	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.
Week of December 8, 2008	Removal of Groundwater Seepage	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 were present in the groundwater seepage. Each pumping event removed approximately 30-60 barrels of liquid from the Site.
January 20, 2009 & January 30, 2009	Site Assessment	Tetra Tech conducted a Site visit to determine proposed groundwater monitoring well locations.
March 4-5, 2009	Monitor Well Installation	Tetra Tech installed three groundwater monitor wells at the Site: MW-1, MW-2, and MW-3.
March 2009	Additional Contamination Discovered	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	Quarterly Groundwater Monitoring Initiated	Tetra Tech conducted the first quarterly groundwater monitoring event at the Site.
April 2, 2009	Site Assessment	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	Removal of Contaminated Soil	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. Excavation was backfilled.
June 17, 2009	Quarterly Groundwater Monitoring	Tetra Tech conducted the second quarterly groundwater monitoring event at the Site.
September 28, 2009	Quarterly Groundwater Monitoring	Tetra Tech conducted the third quarterly groundwater monitoring event at the Site.
December 14, 2009	Quarterly Groundwater Monitoring	Tetra Tech conducted the fourth quarterly groundwater monitoring event at the Site.
March 31, 2010	Quarterly Groundwater Monitoring	Tetra Tech conducted the fifth quarterly groundwater monitoring event at the Site.
June 7, 2010	Quarterly Groundwater Monitoring	Tetra Tech conducted the sixth quarterly groundwater monitoring event at the Site.
September 23, 2010	Quarterly Groundwater Monitoring	Tetra Tech conducted the seventh quarterly groundwater monitoring event at the Site.

TABLE 1

SITE HISTORY TIMELINE
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
SAN JUAN COUNTY, NM

Date/Time Period	*Event/Action*	*Description/Comments*
December 14, 2010	Quarterly Groundwater Monitoring	Tetra Tech conducted the eighth quarterly groundwater monitoring event at the Site.
March 14, 2011	Quarterly Groundwater Monitoring	Tetra Tech conducted the ninth quarterly groundwater monitoring event at the Site.
June 15, 2011	Transfer of Site Consulting Responsibilities	On June 15, 2011, Site consulting responsibilities were transferred from Tetra Tech of Albuquerque, NM to Conestoga-Rovers & Associates (CRA) of Albuquerque, NM.
June 24, 2011	Quarterly Groundwater Monitoring	CRA conducted the tenth quarterly groundwater monitoring event at the Site.
October 3, 2011	Quarterly Groundwater Monitoring	CRA conducted the 11th quarterly groundwater monitoring event at the Site.
September 17, 2012	Groundwater Monitoring	CRA conducted an annual groundwater monitoring event at the Site. Samples analyzed for dissolved Mn, Sulfate, and total dissolved solids.
September 16, 2013	Groundwater Monitoring	CRA conducted an annual groundwater monitoring event at the Site. Samples analyzed for dissolved Mn, Sulfate, and total dissolved solids.

TABLE 2

MONITORING WELL SPECIFICATIONS AND GROUNDWATER ELEVATIONS
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
SAN JUAN COUNTY, NM

Well ID	*Total Depth (ft below TOC)*	*Elevation**	*Screen Interval (bgs)*	*Date Measured*	*Depth to Groundwater (ft below TOC)*	*Relative Water Level*
MW-1	20.3	99.36	2.2 - 17.2	4/2/2009	5.15	94.21
				6/17/2009	5.43	93.93
				9/28/2009	5.45	93.91
				12/14/2009	5.06	94.30
				3/31/2010	5.03	94.33
				6/7/2010	5.41	93.95
				9/23/2010	5.25	94.11
				12/14/2010	5.07	94.29
				3/14/2011	5.09	94.27
				6/24/2011	5.56	93.80
				10/3/2011	5.90	93.46
				9/17/2012	6.83**	92.53**
				11/26/2012	5.51	93.85
				9/16/2013	5.73	93.63
MW-2	20.9	98.78	3.33 - 18.33	4/2/2009	5.96	92.82
				6/17/2009	6.21	92.57
				9/28/2009	6.23	92.55
				12/14/2009	5.92	92.86
				3/31/2010	5.90	92.88
				6/7/2010	6.21	92.57
				9/23/2010	6.06	92.72
				12/14/2010	5.91	92.87
				3/14/2011	5.94	92.84
				6/24/2011	6.32	92.46
				10/3/2011	6.60	92.18
				9/17/2012	7.42**	91.36**
				11/26/2012	6.14	92.64
				9/16/2013	6.31	92.47
MW-3	20.28	98.66	3 - 18	4/2/2009	5.70	92.96
				6/17/2009	5.97	92.69
				9/28/2009	5.96	92.70
				12/14/2009	5.63	93.03
				3/31/2010	5.61	93.05
				6/7/2010	5.95	92.71
				9/23/2010	5.77	92.89
				12/14/2010	5.61	93.05
				3/14/2011	5.63	93.03
				6/24/2011	6.06	92.60
				10/3/2011	6.27	92.39
				9/17/2012	6.11**	92.55**
				11/26/2012	6.00	92.66
				9/16/2013	6.05	92.61

Notes:

1. ft = feet
2. TOC = top of casing
3. bgs = below ground surface
4. * Elevation relative to wellhead, set at 100 feet.
5. ** Anomalous data

TABLE 3

GROUNDWATER ANALYTICAL RESULTS SUMMARY
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
SAN JUAN COUNTY, NM

Well ID	Sample ID	Date	Sample Type	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (total) (mg/L)	Iron (dissolved) (mg/L)	Manganese (dissolved) (mg/L)	Sulfate (mg/L)	Total dissolved solids (TDS) (mg/L)
MW-1	MW-1	4/2/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--	**1790**	--
	MW-1	6/17/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--	**1420**	--
	MW-1	9/28/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.02	**0.243**	**1770**	**2590**
	MW-1	12/14/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	0.152	--	**2470**
	MW-1	3/31/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	0.176	**1320**	**2470**
	MW-1	6/7/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**0.206**	**1330**	**2580**
	MW-1	9/23/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**0.238**	**1560**	**3210**
	MW-1	12/14/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**0.232**	**1600**	**2520**
	MW-1	3/14/2011	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**0.323**	**1820**	**2770**
	GW-74932-062411-CB-02	6/24/2011	(orig)	--	--	--	--	--	**0.574**	**1790**	**2450**
	GW-074932-100311-CM-005	10/3/2011	(orig)	--	--	--	--	--	**0.335**	**2030**	**2560**
	GW-074932-091712-CM-MW-1	9/17/2012	(orig)	--	--	--	--	--	**0.32**	**1790**	**2660**
	GW-074932-091712-CM-DUP	9/17/2012	(duplicate)	--	--	--	--	--	**--**	**--**	**2620**
	GW-074932-091613-CM-MW-1	9/16/2013	(orig)	--	--	--	--	--	**0.36**	**1580**	**2560**
	GW-074932-091613-CM-DUP	9/16/2013	(duplicate)	--	--	--	--	--	**0.33**	**--**	**--**
MW-2	MW-2	4/2/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--	**1850**	--
	MW-2	6/17/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--	**1610**	--
	MW-2	9/28/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	0.0217	0.168	**1840**	**2260**
	MW-2	12/14/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	0.158	--	**2470**
	MW-2	3/31/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	0.136	**1530**	**2620**
	MW-2	6/7/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	0.157	**1290**	**2590**
	MW-2	9/23/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	0.0981	**1510**	**2800**
	MW-2	12/14/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	0.128	**1610**	**3000**
	MW-2	3/14/2011	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	0.158	**1850**	**2680**
	GW-74932-062411-1B-01	6/24/2011	(orig)	--	--	--	--	--	0.174	**1860**	**2550**
	GW-074932-100311-CM-006	10/3/2011	(orig)	--	--	--	--	--	0.187	**1830**	**2590**
	GW-074932-091712-CM-MW-2	9/17/2012	(orig)	--	--	--	--	--	**0.22**	**1830**	**2710**
	GW-074932-091613-CM-MW-2	9/16/2013	(orig)	--	--	--	--	--	**0.21**	**1690**	**2570**

TABLE 3

GROUNDWATER ANALYTICAL RESULTS SUMMARY
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
SAN JUAN COUNTY, NM

Well ID	Sample ID	Date	Sample Type	**Benzene (mg/L)**	**Toluene (mg/L)**	**Ethylbenzene (mg/L)**	**Xylenes (total) (mg/L)**	**Iron (dissolved) (mg/L)**	**Manganese (dissolved) (mg/L)**	**Sulfate (mg/L)**	**Total dissolved solids (TDS) (mg/L)**
MW-3	MW-3	4/2/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--	**2110**	--
	MW-3	6/17/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--	**1650**	--
	MW-3	9/28/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.02	**2.68**	**2230**	**3340**
	MW-3	12/14/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**2.4**	--	**3060**
	MW-3	3/31/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**1.71**	**1660**	**3090**
	MW-3	6/7/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**0.968**	**1760**	**2650**
	MW-3	9/23/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**1.68**	**1910**	**3570**
	MW-3	12/14/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**1.13**	**1900**	**3000**
	MW-3	3/14/2011	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	--	**2.08**	**2090**	**3200**
	GW-74932-062411-CB-03	6/24/2011	(orig)	--	--	--	--	--	**1.7**	**2080**	**2860**
	GW-074932-100311-CM-007	10/3/2011	(orig)	--	--	--	--	--	**1.45**	**1770**	**2810**
	GW-074932-091712-CM-MW-3	9/17/2012	(orig)	--	--	--	--	--	**1.1**	**1910**	**2830**
	GW-074932-091613-CM-MW-3	9/16/2013	(orig)	--	--	--	--	--	**0.83**	**1750**	**2600**
NMWQCC Groundwater Quality Standards				**0.01**	**0.75**	**0.75**	**0.62**	**1.0**	**0.2**	**600**	**1000**

Notes:
1. MW = monitoring well
2. NMWQCC = New Mexico Water Quality Control Commission
3. Constituents in **BOLD** are in excess of NMWQCC groundwater quality standards
4. mg/L = milligrams per liter (parts per million)
5. -- = not analyzed
6. < 1.0 = Below laboratory detection limit of 1.0 mg/L

Appendix A

September 2013 Annual Groundwater Sampling Field Forms

WELL SAMPLING FIELD INFORMATION FORM

SITE/PROJECT NAME: Saegna 2E JOB# 074932

SAMPLE ID: GW-074932-091613-CM-MW-1 WELL# MW-1

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	SAMPLE TIME (24 HOUR)	WATER VOL IN CASING (GALLONS)	ACTUAL VOL PURGED (GALLONS)
9/16/13	9/16/13	1340	2.39	7.0

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT.....DEDICATED (Y) N (CIRCLE ONE)

SAMPLING EQUIPMENT.....DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE	G	A - SUBMERSIBLE PUMP	D - GAS LIFT PUMP	G - BAILER	X= PURGING DEVICE OTHER (SPECIFY)
		B - PERISTALTIC PUMP	E - PURGE PUMP	H - WATERRA®	
SAMPLING DEVICE	G	C - BLADDER PUMP	F - DIPPER BOTTLE	X - OTHER	X= SAMPLING DEVICE OTHER (SPECIFY)
PURGING MATERIAL	E	A - TEFLON	D - PVC		X= PURGING MATERIAL OTHER (SPECIFY)
		B - STAINLESS STEEL	E - POLYETHYLENE		
SAMPLING MATERIAL	E	C - POLYPROPYLENE	X - OTHER		X= SAMPLING MATERIAL OTHER (SPECIFY)
PURGE TUBING	C	A - TEFLON	D - POLYPROPYLENE	G - COMBINATION TEFLON/POLYPROPYLENE	X= PURGE TUBING OTHER (SPECIFY)
		B - TYGON	E - POLYETHYLENE		
SAMPLING TUBING	C	C - ROPE	F - SILICONE	X - OTHER	X= SAMPLING TUBING OTHER (SPECIFY)
FILTERING DEVICES 0.45	A	A - IN-LINE DISPOSABLE	B - PRESSURE	0.45 for metals only	

FIELD MEASUREMENTS

DEPTH TO WATER	5.73 (feet)	WELL ELEVATION	(feet)
WELL DEPTH	20.11 (feet)	GROUNDWATER ELEVATION	(feet)

TEMPERATURE	pH	TDS	SC	DO	ORP	VOLUME
15.26 (°C)	7.24 (std)	2.066 (g/L)	3180 (µS/cm)	3.30 (mg/L)	32.1 (mV)	6.0 (gal)
15.21 (°C)	7.13 (std)	2.064 (g/L)	3176 (µS/cm)	2.49 (mg/L)	32.3 (mV)	6.5 (gal)
14.67 (°C)	7.02 (std)	2.063 (g/L)	3173 (µS/cm)	1.94 (mg/L)	35.5 (mV)	7.0 (gal)
(°C)	(std)	(g/L)	(µS/cm)	(mg/L)	(mV)	(gal)
(°C)	(std)	(g/L)	(µS/cm)	(mg/L)	(mV)	(gal)

FIELD COMMENTS

SAMPLE APPEARANCE: CLOUDY ODOR: NONE COLOR: LIGHT BROWN SHEEN Y/N N

WEATHER CONDITIONS: TEMPERATURE 80S WINDY Y/N N PRECIPITATION Y/N (IF Y TYPE) N

SPECIFIC COMMENTS:

DUP COLLECTED @ 1345

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE CRA PROTOCOLS

DATE 9-16-13 PRINT CASE DOMRACH SIGNATURE

WELL SAMPLING FIELD INFORMATION FORM

SITE/PROJECT NAME: Sutronic 2E JOB# 074932

SAMPLE ID: GW-074932-091613-CM-MW-2 WELL# MW-2

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	SAMPLE TIME (24 HOUR)	WATER VOL IN CASING (GALLONS)	ACTUAL VOL. PURGED (GALLONS)
9/16/13	9/16/13	1320	2.299	7.0

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT.....DEDICATED (Y) N (CIRCLE ONE)

SAMPLING EQUIPMENT.....DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE	G	A - SUBMERSIBLE PUMP	D - GAS LIFT PUMP	G - BAILER	X= PURGING DEVICE OTHER (SPECIFY)
		B - PERISTALTIC PUMP	E - PURGE PUMP	H - WATERRA®	
SAMPLING DEVICE	G	C - BLADDER PUMP	F - DIPPER BOTTLE	X - OTHER	X= SAMPLING DEVICE OTHER (SPECIFY)
PURGING MATERIAL	B	A - TEFLON	D - PVC		X= PURGING MATERIAL OTHER (SPECIFY)
		B - STAINLESS STEEL	E - POLYETHYLENE		
SAMPLING MATERIAL	E	C - POLYPROPYLENE	X - OTHER		X= SAMPLING MATERIAL OTHER (SPECIFY)
PURGE TUBING	C	A - TEFLON	D - POLYPROPYLENE	G - COMBINATION TEFLON/POLYPROPYLENE	X= PURGE TUBING OTHER (SPECIFY)
		B - TYGON	E - POLYETHYLENE		
SAMPLING TUBING	C	C - ROPE	F - SILICONE	X - OTHER	X= SAMPLING TUBING OTHER (SPECIFY)
FILTERING DEVICES 0.45	A	A - IN-LINE DISPOSABLE	B - PRESSURE	0.45 for metals only	

FIELD MEASUREMENTS

DEPTH TO WATER 6.31 (feet) WELL ELEVATION (feet)

WELL DEPTH 20.62 (feet) GROUNDWATER ELEVATION (feet)

TEMPERATURE	pH	TDS	SC	DO	ORP	VOLUME
17.20 (°C)	7.17 (std)	2.104 (g/L)	3238 (µS/cm)	2.12 (mg/L)	14.3 (mV)	6.0 (gal)
16.68 (°C)	7.11 (std)	2.101 (g/L)	3231 (µS/cm)	2.11 (mg/L)	12.1 (mV)	6.5 (gal)
16.91 (°C)	7.19 (std)	2.103 (g/L)	3235 (µS/cm)	2.39 (mg/L)	12.2 (mV)	7.0 (gal)
(°C)	(std)	(g/L)	(µS/cm)	(mg/L)	(mV)	(gal)
(°C)	(std)	(g/L)	(µS/cm)	(mg/L)	(mV)	(gal)

FIELD COMMENTS

SAMPLE APPEARANCE: CLOUDY ODOR: NONE COLOR: LIGHT BROWN SHEEN Y/N N

WEATHER CONDITIONS: TEMPERATURE 80s WINDY Y/N N PRECIPITATION Y/N (IF Y TYPE) N

SPECIFIC COMMENTS:

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE CRA PROTOCOLS

DATE 9-16-13 PRINT CALE KAMACK SIGNATURE

WELL SAMPLING FIELD INFORMATION FORM

SITE/PROJECT NAME: Saltana 2E JOB# 074932

SAMPLE ID: GW-074932-091613-CM-MW-3 WELL# MW-3

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	SAMPLE TIME (24 HOUR)	WATER VOL. IN CASING (GALLONS)	ACTUAL VOL. PURGED (GALLONS)
9/16/13	9/16/13	1300	2.27	~~6.75~~ 7.00

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT.....DEDICATED (Y) N (CIRCLE ONE) SAMPLING EQUIPMENT.....DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE	G	A - SUBMERSIBLE PUMP	D - GAS LIFT PUMP	G - BAILER	X= PURGING DEVICE OTHER (SPECIFY)
		B - PERISTALTIC PUMP	E - PURGE PUMP	H - WATERRA®	
SAMPLING DEVICE	G	C - BLADDER PUMP	F - DIPPER BOTTLE	X - OTHER	X= SAMPLING DEVICE OTHER (SPECIFY)
PURGING MATERIAL	E	A - TEFLON	D - PVC		X= PURGING MATERIAL OTHER (SPECIFY)
		B - STAINLESS STEEL	E - POLYETHYLENE		
SAMPLING MATERIAL	E	C - POLYPROPYLENE	X - OTHER		X= SAMPLING MATERIAL OTHER (SPECIFY)
PURGE TUBING	C	A - TEFLON	D - POLYPROPYLENE	G - COMBINATION TEFLON/POLYPROPYLENE	X= PURGE TUBING OTHER (SPECIFY)
		B - TYGON	E - POLYETHYLENE		
SAMPLING TUBING	C	C - ROPE	F - SILICONE	X - OTHER	X= SAMPLING TUBING OTHER (SPECIFY)
FILTERING DEVICES 0.45	A	A - IN-LINE DISPOSABLE	B - PRESSURE	0.45 for metals only	

FIELD MEASUREMENTS

DEPTH TO WATER 6.05 (feet) WELL ELEVATION (feet)

WELL DEPTH 19.97 (feet) GROUNDWATER ELEVATION (feet)

TEMPERATURE	pH	TDS	SC	DO	ORP	VOLUME
14.52 (°C)	6.53 (std)	2.187 (g/L)	3365 (µS/cm)	6.12 (mg/L)	-9.8 (mV)	6.0 (gal)
14.54 (°C)	6.71 (std)	2.179 (g/L)	3352 (µS/cm)	3.87 (mg/L)	-12.8 (mV)	6.5 (gal)
14.55 (°C)	6.75 (std)	2.171 (g/L)	3340 (µS/cm)	3.71 (mg/L)	-9.9 (mV)	7.0 (gal)
(°C)	(std)	(g/L)	(µS/cm)	(mg/L)	(mV)	(gal)
(°C)	(std)	(g/L)	(µS/cm)	(mg/L)	(mV)	(gal)

FIELD COMMENTS

SAMPLE APPEARANCE: CLOUDY ODOR: NONE COLOR: ORANGE SHEEN Y/N N

WEATHER CONDITIONS: TEMPERATURE 80S WINDY Y/N N PRECIPITATION Y/N (IF Y TYPE) N

SPECIFIC COMMENTS:

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE CRA PROTOCOLS

DATE 9-16-13 PRINT CASE KRAMER SIGNATURE

Appendix B

September 2013 Annual Groundwater Laboratory Analytical Report

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

September 30, 2013

Christine Matthews
CRA
6121 Indian School Rd NE
Suite 200
Albuquerque, NM 87110

RE: Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Dear Christine Matthews:
Enclosed are the analytical results for sample(s) received by the laboratory on September 17, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Alice Flanagan

alice.flanagan@pacelabs.com
Project Manager

Enclosures

cc: Kelly Blanchard, COP Conestoga-Rovers & Associa
Angela Bown, COP Conestoga-Rovers & Associa
Jeff Walker, COP Conestoga-Rovers & Associa

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CERTIFICATIONS

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-13-4
Utah Certification #: KS000212013-3
Illinois Certification #: 003097

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60153253001	**GW-074932-091613-CM-MW-1**	Water	09/16/13 13:40	09/17/13 08:15
60153253002	**GW-074932-091613-CM-MW-2**	Water	09/16/13 13:20	09/17/13 08:15
60153253003	**GW-074932-091613-CM-MW-3**	Water	09/16/13 13:00	09/17/13 08:15
60153253004	**GW-074932-091613-CM-DUP**	Water	09/16/13 13:45	09/17/13 08:15

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SAMPLE ANALYTE COUNT

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60153253001	**GW-074932-091613-CM-MW-1**	EPA 6010	JGP	1
		SM 2540C	RAH	1
		EPA 300.0	JML	1
60153253002	**GW-074932-091613-CM-MW-2**	EPA 6010	JGP	1
		SM 2540C	RAH	1
		EPA 300.0	JML	1
60153253003	**GW-074932-091613-CM-MW-3**	EPA 6010	JGP	1
		SM 2540C	RAH	1
		EPA 300.0	JML	1
60153253004	**GW-074932-091613-CM-DUP**	EPA 6010	JGP	1

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PROJECT NARRATIVE

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Method: **EPA 6010**
Description: 6010 MET ICP, Dissolved
Client: COP Conestoga-Rovers & Associates, Inc. NM
Date: September 30, 2013

General Information:
4 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: COP Conestoga-Rovers & Associates, Inc. NM
Date: September 30, 2013

General Information:
3 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: COP Conestoga-Rovers & Associates, Inc. NM
Date: September 30, 2013

General Information:
3 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Sample: GW-074932-091613-CM-MW-1 **Lab ID: 60153253001** Collected: 09/16/13 13:40 Received: 09/17/13 08:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Manganese, Dissolved	**0.36**	mg/L	0.0050	0.00049	1	09/21/13 10:05	09/24/13 11:12	7439-96-5	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**2560**	mg/L	5.0	5.0	1		09/19/13 13:58		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**1580**	mg/L	200	32.0	200		09/30/13 01:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Sample: GW-074932-091613-CM-MW-2 **Lab ID: 60153253002** Collected: 09/16/13 13:20 Received: 09/17/13 08:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Manganese, Dissolved	**0.21**	mg/L	0.0050	0.00049	1	09/21/13 10:05	09/24/13 11:15	7439-96-5	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**2570**	mg/L	5.0	5.0	1		09/19/13 13:58		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**1690**	mg/L	200	32.0	200		09/30/13 01:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Sample: GW-074932-091613-CM-MW-3 **Lab ID: 60153253003** Collected: 09/16/13 13:00 Received: 09/17/13 08:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Manganese, Dissolved	**0.83**	mg/L	0.0050	0.00049	1	09/21/13 10:05	09/24/13 11:18	7439-96-5	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**2600**	mg/L	5.0	5.0	1		09/19/13 13:59		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**1750**	mg/L	200	32.0	200		09/30/13 02:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Sample: GW-074932-091613-CM-DUP **Lab ID: 60153253004** Collected: 09/16/13 13:45 Received: 09/17/13 08:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Manganese, Dissolved	**0.33**	mg/L	0.0050	0.00049	1	09/21/13 10:05	09/24/13 11:37	7439-96-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

QC Batch: MPRP/24369 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60153253001, 60153253002, 60153253003, 60153253004

METHOD BLANK: 1257907 Matrix: Water
Associated Lab Samples: 60153253001, 60153253002, 60153253003, 60153253004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Manganese, Dissolved	mg/L	ND	0.0050	09/24/13 10:50	

LABORATORY CONTROL SAMPLE: 1257908

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Manganese, Dissolved	mg/L	1	1.1	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1257909 1257910

Parameter	Units	60153253003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Manganese, Dissolved	mg/L	0.83	1	1	1.9	1.8	106	93	75-125	7	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

QC Batch: WET/43500 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60153253001, 60153253002, 60153253003

METHOD BLANK: 1256433 Matrix: Water
Associated Lab Samples: 60153253001, 60153253002, 60153253003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	09/19/13 13:56	

LABORATORY CONTROL SAMPLE: 1256434

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	943	94	80-120	

SAMPLE DUPLICATE: 1256435

Parameter	Units	60153136008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	320	327	2	17	

SAMPLE DUPLICATE: 1256436

Parameter	Units	60153253003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2600	2800	7	17	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

QC Batch: WETA/26382 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60153253001, 60153253002, 60153253003

METHOD BLANK: 1262906 Matrix: Water
Associated Lab Samples: 60153253001, 60153253002, 60153253003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	09/29/13 18:57	

LABORATORY CONTROL SAMPLE: 1262907

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1262138 1262139

Parameter	Units	5086932001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	48.0	25	25	73.6	73.3	102	101	80-120	0	15	

MATRIX SPIKE SAMPLE: 1262140

Parameter	Units	5086932002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	38.2	25	63.9	103	80-120	

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 074932 SATENGA NO 2 E
Pace Project No.: 60153253

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60153253001	**GW-074932-091613-CM-MW-1**	EPA 3010	MPRP/24369	EPA 6010	ICP/19003
60153253002	**GW-074932-091613-CM-MW-2**	EPA 3010	MPRP/24369	EPA 6010	ICP/19003
60153253003	**GW-074932-091613-CM-MW-3**	EPA 3010	MPRP/24369	EPA 6010	ICP/19003
60153253004	**GW-074932-091613-CM-DUP**	EPA 3010	MPRP/24369	EPA 6010	ICP/19003
60153253001	**GW-074932-091613-CM-MW-1**	SM 2540C	WET/43500		
60153253002	**GW-074932-091613-CM-MW-2**	SM 2540C	WET/43500		
60153253003	**GW-074932-091613-CM-MW-3**	SM 2540C	WET/43500		
60153253001	**GW-074932-091613-CM-MW-1**	EPA 300.0	WETA/26382		
60153253002	**GW-074932-091613-CM-MW-2**	EPA 300.0	WETA/26382		
60153253003	**GW-074932-091613-CM-MW-3**	EPA 300.0	WETA/26382		

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Sample Condition Upon Receipt
ESI Tech Spec Client

WO# : 60153253

60153253

Client Name: CoP CRA NM

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 802368279498 Pace Shipping Label Used? Yes ☒ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☒ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

Thermometer Used: T-192 / T-194 **Type of Ice:** (Wet) Blue None ☐ Samples received on ice, cooling process has begun
(circle one)

Cooler Temperature: 3.1

Date and initials of person examining contents: JMB 9/17/13 1015

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☑Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☒Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	6.
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☑N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	12.
Sample labels match COC: Includes date/time/ID/analyses Matrix: water	☑Yes ☐No ☐N/A	13.
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	☑Yes ☐No	Initial when completed: MA Lot # of added preservative:
Trip Blank present: Pace Trip Blank lot # (if purchased): MA	☐Yes ☐No ☑N/A	15.
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☐No ☑N/A	17. List State:

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: MMF Date: 9/17/13

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start:	1010	Start:	
End:	1015	End:	
Temp:		Temp:	

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A — **Required** Client Information:

Company:	COP CRA NM
Address:	6121 Indian School Rd NE, Ste 200
	Albequerque, NM 87110
Email To:	cmathews@craworld.com
Phone: (505)884-0672	Fax: (505)884-4932
Requested Due Date/TAT:	standard

Section B — **Required** Project Information:

Report To:	Christine Mathews
Copy To:	Jeff Walker, Angela Bown
Purchase Order No.:	
Project Name:	Sategna No. 2 E
Project Number:	74932

Section C — Invoice Information:

Attention:	COP epayables
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Alice Flanagan
Pace Profile #:	5514, 17

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NM

Section D — **Required** Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	300.0 Sulfate	6010 Dissolved Mn	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	GW-074932-091613-CM-MW-1	WT	G			9-16-13	1340		2	1		1						X	X	X		1(BP3F) 1(BP3U) 01
2	GW-074932-091613-CM-MW-2	WT	G			9-16-13	1320		2	1		1						X	X	X		02
3	GW-074932-091613-CM-MW-3	WT	G			9-16-13	1300		2	1		1						X	X	X		03
4	GW-074932-091613-CM-DUP	WT	G			9-16-13	1345		1			1							X				1(BP3F) 04
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

6015325 3

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Metals field filtered	[signature] / CRA	9/16/13	1445	[signature]	9/17/13	815	3-1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Christine Mathews

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 9/16/13

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.