3R - 173

QUARTERLY GWMR

04/28/2011

3R173

TETRA TECH, INC.

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

April 29, 2011

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

RE: ConocoPhillips Company Flora Vista No. 1 Site, Flora Vista, New Mexico. December2010 Quarterly Groundwater Monitoring Reports

Dear Mr. von Gonten:

Enclosed please find a copy of the above-referenced document as compiled by Tetra Tech, Inc., for these Farmington area sites.

Please do not hesitate to contact me at (505) 237-8440 if you have any questions or require additional information.

Sincerely,

Kelly E. Blanchard

Kelly E. Blanchard
Project Manager/Geologist

Enclosures (1)

Cc: Brandon Powell, NMOCD, Aztec, NM
Terry Lauck, ConocoPhillips RM&R

DECEMBER 2010 QUARTERLY GROUNDWATER MONITORING REPORT

CONOCOPHILLIPS COMPANY

FLORA VISTA NO. 1
NATURAL GAS PRODUCTION SITE
FLORA VISTA, SAN JUAN COUNTY, NEW MEXICO

OCD # 3R173

API No. 30-045-20073

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. 114-690130

April 2011

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DECEMBER 2010 GROUNDWATER MONITORING REPORT FLORA VISTA NO. 1 GAS PRODUCTION SITE FLORA VISTA, SAN JUAN COUNTY, NEW MEXICO

1.0 INTRODUCTION

This report presents the results of the quarterly groundwater monitoring event conducted by Tetra Tech, Inc. (Tetra Tech) on December 14, 2010 at the Flora Vista No. 1 natural gas production well site (Site), operated by Burlington Resources Oil & Gas Company LP (Burlington), a wholly-owned subsidiary of ConocoPhillips Company (**Figure 1**). The Site is located on private property in Unit Letter F, Section 22, Township 30N, Range 12W, of San Juan County, New Mexico. The Site consists of a gas production well and associated equipment and installations. A detailed Site layout map is provided as **Figure 2**.

1.1 Site Background

A previous operator removed an earthen dehydrator pit from service in March 1994. A large volume of hydrocarbon-impacted soil was subsequently excavated in April 1994 and again in November 1995. A pit closure report was submitted to NMOCD in August 1996, by El Paso Field Services. NMOCD issued a letter to El Paso Field Services on January 24, 1997 approving pit closure and remediation.

Burlington encountered hydrocarbon-impacted soil at the during a production facility resetting activity in early 2003. Burlington subsequently directed the excavation of approximately 9,443 cubic yards of soil in an attempt to remove all of the hydrocarbon-impacted soil. Groundwater was observed in the bottom of the excavation at approximately 25 feet below the ground surface. Field screening was conducted during excavation to determine extent of impacted soil. To enhance the remediation of the remaining amounts of residual hydrocarbon contamination in the excavated area, approximately 80 barrels (bbls) of a potassium permanganate oxidizer solution was sprayed on the soil.

In September 2003, Envirotech installed a groundwater monitoring well (MW-1) slightly downgradient from the center of the excavation (**Figure 2**). Subsequent monitoring during September 2003 included analyses for benzene, toluene, ethylbenzene, and total xylenes (BTEX), as well as total petroleum hydrocarbons (TPH). Groundwater analyses indicated the presence of benzene and total xylenes above regulatory standards. Monitor Wells MW-2, MW-3, and MW-4 were installed at the site in August 2008 in response to an April 2008 request from the New Mexico Oil Conservation Division (NMOCD) for site characterization and enhanced laboratory

analyses. A generalized geologic cross section was prepared using boring logs from the August 2008 monitoring well installation and is presented as **Figure 3**. The Flora Vista No. 1 site history is summarized in **Table 1**.

2.0 METHODOLOGY AND RESULTS

2.1 Groundwater Sampling Methodology

Groundwater Elevation Measurements

On December 14, 2010, groundwater elevation measurements were collected from Monitor Wells MW-1, MW-3, and MW-4 using a dual interface probe. At the time of the site visit, the owner of the property was storing a large amount of fill dirt over MW-2. Tetra Tech did not collect a groundwater elevation measurement from Monitor Well MW-2 due to the fill dirt. Groundwater elevations are detailed in **Table 2**. A groundwater elevation contour map is presented as **Figure 4.** Based on December 2010 monitoring event data, groundwater flow is to the southwest and is consistent with historical records at this site.

Groundwater sampling

Approximately three well volumes were purged from Monitor Wells MW-1, MW-3, and MW-4 with a dedicated polyethylene 1.5-inch disposable bailer; or were bailed dry and allowed sufficient time to re-charge prior to sampling. Purge water was placed in the onsite produced water tank (**Figure 2**). Groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped under chain of custody documentation to Southern Petroleum Laboratories in Houston, Texas. The samples were analyzed for the presence of BTEX by Environmental Protection Agency (EPA) Method 8260B, dissolved iron and manganese by EPA Method 6010B, and sulfate by EPA method 300.0. The samples collected for analysis of dissolved metals were placed in unpreserved containers supplied by the laboratory. These samples were both filtered and preserved by laboratory personnel prior to analysis. Tetra Tech groundwater sampling field forms are included as **Appendix A**.

2.2 Groundwater Sampling Analytical Results

Groundwater samples collected from Monitor Well MW-3 did not exceed laboratory detection limits for any of the constituents sampled. Groundwater collected from Monitor Wells MW-1 and MW-4 exceeded the New Mexico Water Quality Control Commission (NMWQCC) standards for the following constituents:

- **Benzene** – The NMWQCC standard for benzene is 10 micrograms per liter (µg/L). The concentration of benzene found in the groundwater sample collected from MW-1 was 3,200 µg/L. The groundwater sample collected from MW-4, the down-gradient well, contained a concentration of benzene at 130 µg/L.

- **Xylenes** – The NMWQCC standard for total xylenes is 620 µg/L. The concentration of xylenes found in the groundwater sample collected from MW-1 was 5,301.6 µg/L. The groundwater sample collected from MW-4 contained a concentration of 899 µg/L.
- **Dissolved Iron** – The NMWQCC standard for dissolved iron is 1 µg/L. The concentration of dissolved iron found in the groundwater sample collected from MW-1 was 4.13 µg/L. The groundwater sample collected from MW-4 contained a concentration of 1.75 µg/L.
- **Dissolved Manganese** – The NMWQCC standard for dissolved manganese is 0.2 µg/L. The concentration of dissolved manganese found in the groundwater sample collected from MW-1 was 0.888 µg/L. The groundwater sample collected from MW-4 contained a concentration of 4.69 µg/L.

A summary of the historical groundwater laboratory analytical results is presented as **Table 3**. The December 2010 laboratory analytical report is included as **Appendix B**.

3.0 CONCLUSIONS

Groundwater samples collected from MW-1 and MW-4 have consistently exceeded NMWQCC groundwater quality standards for benzene, dissolved iron and dissolved manganese constituents from October 2008 through December 2010. Groundwater samples from MW-1 have also historically exceeded NMWQCC groundwater quality standards for xylenes. Based on the historical groundwater quality data, groundwater samples collected from MW-2 and MW-3 have never exceeded NMWQCC groundwater quality standards for BTEX constituents.

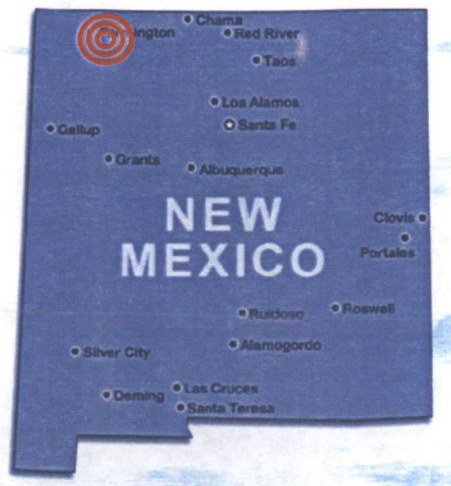
Tetra Tech recommends the continuation of quarterly sampling of MW-1, MW-2, MW-3, and MW-4 in order to monitor ongoing natural attenuation at the site. The next sampling event will take place in March 2010. Tetra Tech will collect samples for BTEX, dissolved iron, and dissolved manganese. Please contact 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
Flora Vista No. 1
Flora Vista, NM



Approximate ConocoPhillips
Flora Vista No. 1 Site location

Latitude = 36°47'54.37" N
Longitude = 108°05'17.60" W

N

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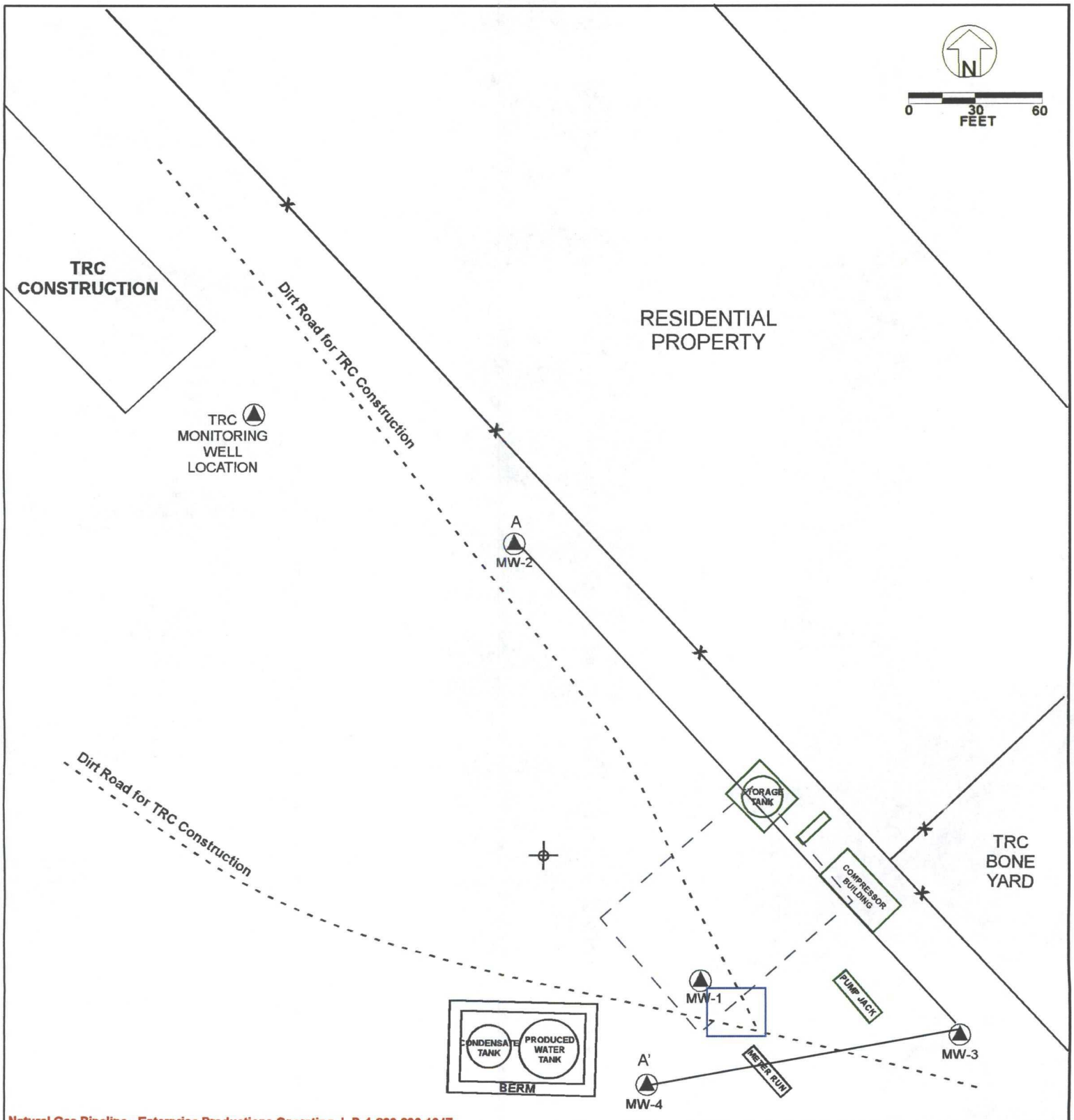

FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS
FLORA VISTA No. 1
Unit F, Sec 22, Twp 30N, Rng 12W
San Juan County, New Mexico

LEGEND

- FLORA VISTA NO.1 WELLHEAD
- MONITORING WELL
- MERRION OIL & GAS 2 OSBORN EQUIPMENT
- APPROXIMATE 2003 EXCAVATION LOCATION
- Approximate Location of Former Dehydrator Pit

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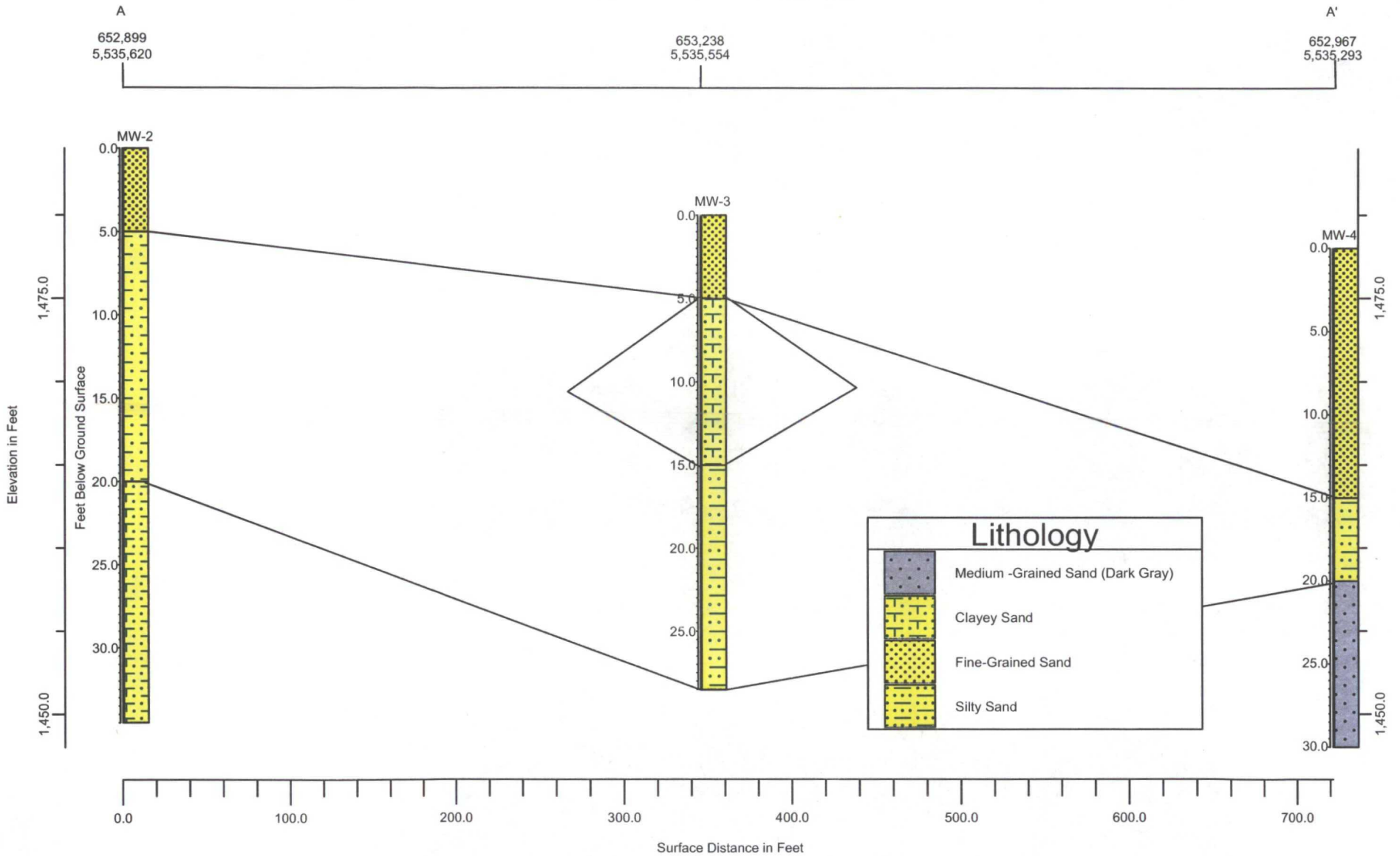
Figure 3.

Flora Vista No. 1 - Cross-Section A-A'



TETRA TECH

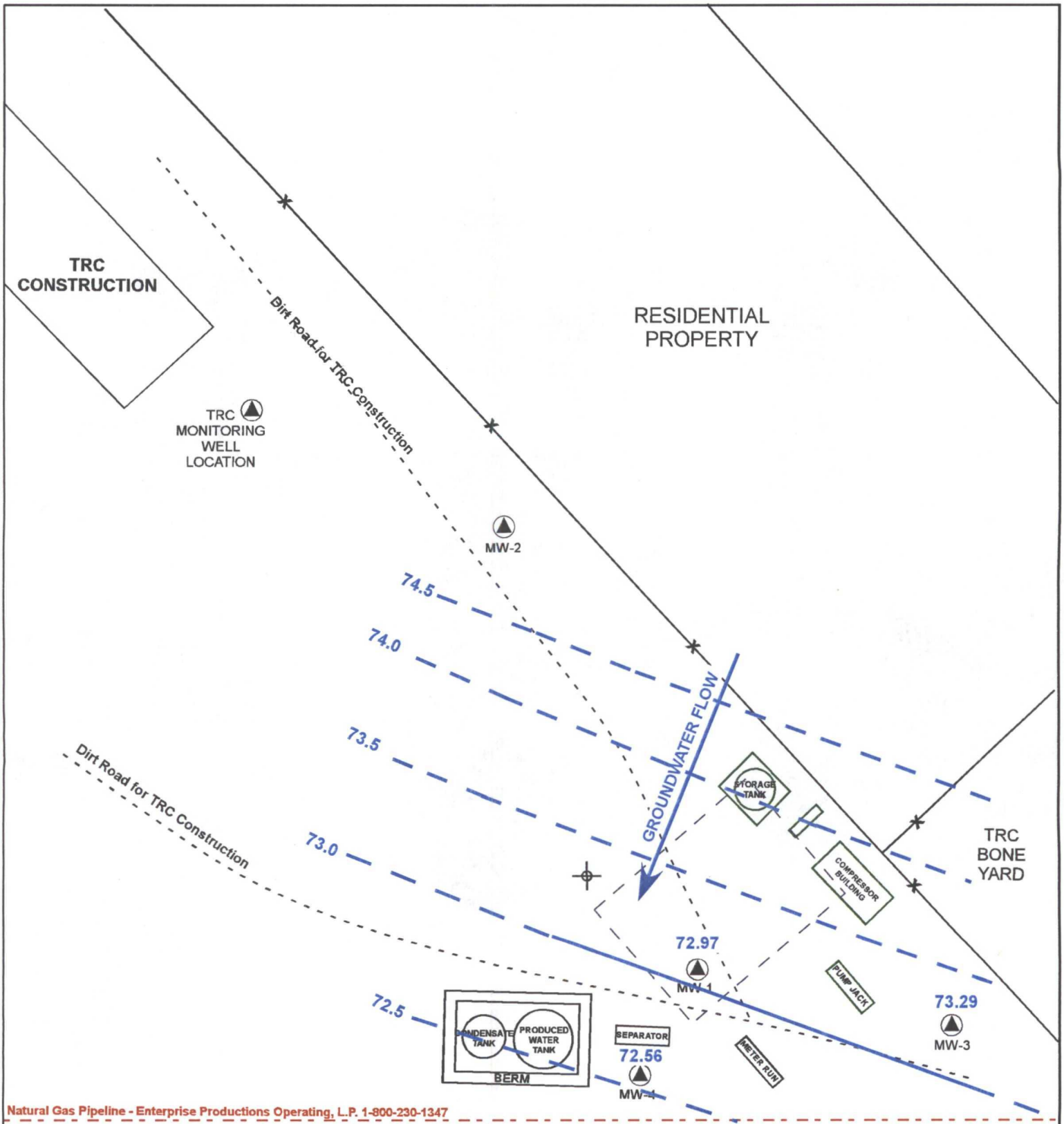


FIGURE 4:
GROUNDWATER ELEVATION CONTOUR MAP DECEMBER 2010
CONOCOPHILLIPS
FLORA VISTA No. 1
Unit F, Sec 22, Twp 30N, Rng 12W
San Juan County, New Mexico

- FLORA VISTA NO.1 WELLHEAD
- MONITORING WELL
- MERRION OIL & GAS 2 OSBORN EQUIPMENT
- APPROXIMATE EXCAVATION LOCATION
- GROUNDWATER CONTOUR (DASHED WHERE INFERRED)

N

0 30 60
FEET

TETRA TECH, INC.

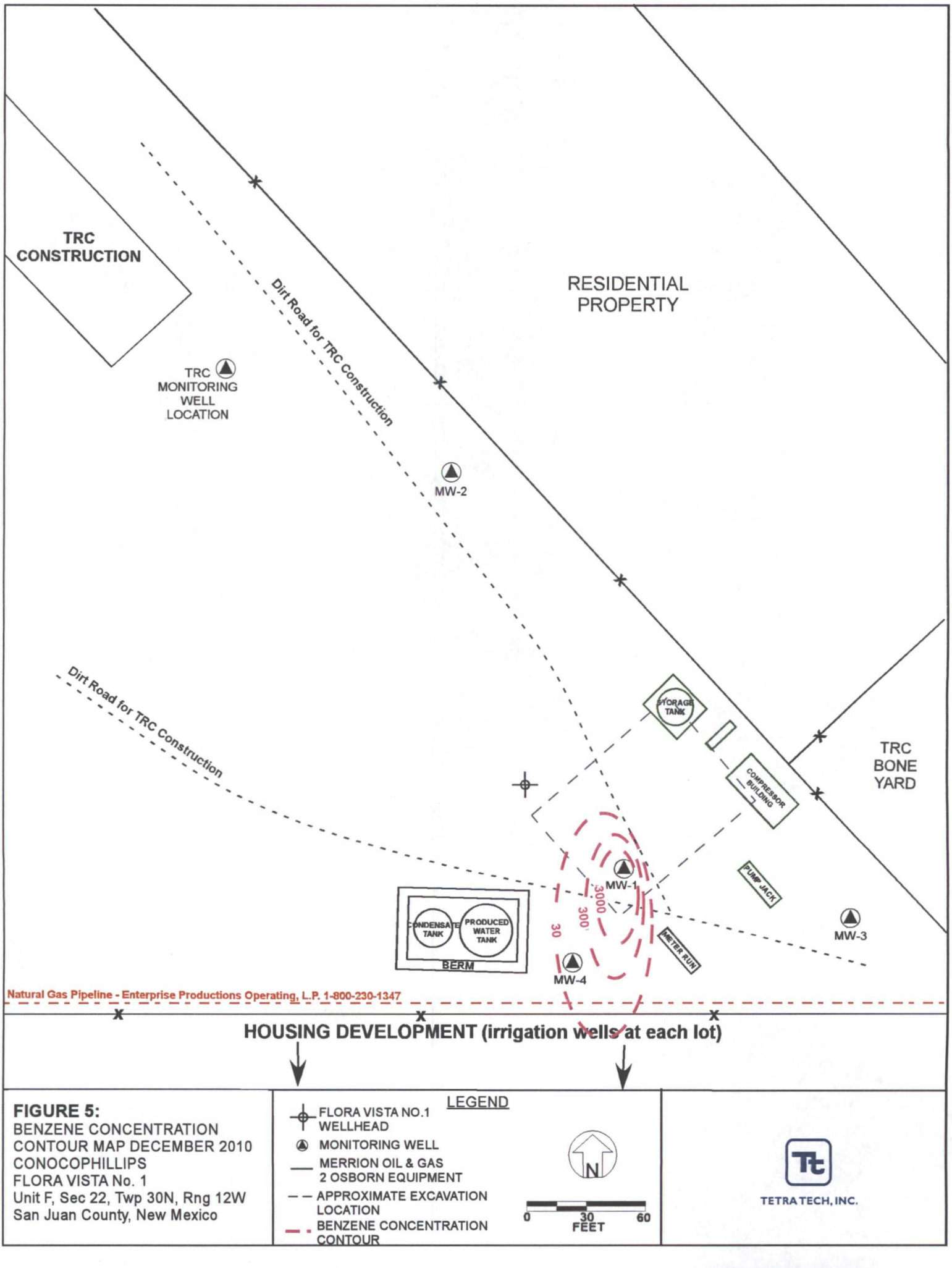


FIGURE 5:
BENZENE CONCENTRATION CONTOUR MAP DECEMBER 2010
CONOCOPHILLIPS
FLORA VISTA No. 1
Unit F, Sec 22, Twp 30N, Rng 12W
San Juan County, New Mexico

LEGEND

- FLORA VISTA NO.1 WELLHEAD
- MONITORING WELL
- MERRION OIL & GAS 2 OSBORN EQUIPMENT
- APPROXIMATE EXCAVATION LOCATION
- BENZENE CONCENTRATION CONTOUR

N

0 30 60
FEET

TETRA TECH, INC.

TABLES

Table 1. Site History Timeline - ConocoPhillips Flora Vista No. 1

Date/Time Period	Event/Action	Description/Comments
November 28, 1995	Pit Closure Activities	Philip Environmental excavated and removed approximatley 850 cubic yards of soil from the area where the Flora Vista No. 1 dehydrator pit was located. Excavation activities were stopped in the north and west directions due to the positions of the compressor and meter run equipment.
July and August 1996	Submital of Pit Closure	El Paso Field Services submits Pit Closure Reports to the New Mexico Oil Conservation Division outlining the excavation and clsoure of the dehydrator pit at the site.
January 24, 1997	Pit Closure Approval	El Paso Field Sservices receives approval of pit closure from the New Mexico Oil Conservation Division.
June and July 2003	Initial Site Assessment	Historical petroleum contaminated soil discovered during a production facility resetting activity. Environmental investigation began with the excavation of approximately 4,986 cubic yards of impacted soil and 4,446 cubic yards of clean soil. Groundwater was encountered at approximately 25 feet below the ground surface. The impacted soil was taken to a commercial landfill facility located on Crouch Mesa in Farmington, New Mexico. Approximately 80 bbls of potassium permanganate was sprayed on the soils to breakdown any minor amounts of residual petroleum contaminants. The excavation area was backfilled with clean soil.
September 2, 2003	Groundwater Monitoring Well Installation	One ground water Monitoring Well, MW-1, was installed slightly down-gradient from the center of the soil excavation by Envirotech. Total depth of well is 26 feet.
September of 2003 through December 13, 2006	Quarterly Groundwater Monitoring	Quarterly groundwater monitoring of MW-1 for analysis of BTEX constituents. MW-1 remained above standards for benzene, ethylbenzene, and total xylenes.
March 31, 2006	Site Transfer	ConocoPhillips Company completes acquisition of Burlington Resources.
March 2007 through January 2008	Consultant Change and Groundwater Monitoring	After the acquisition of Burlington Resources by ConocoPhillips, consulting responsibilities were transferred from Lode Star LLC of Farmington New Mexico to Tetra Tech of Albuquerque. Tetra Tech began sampling the Flora Vista site quarterly in March of 2007. Four consecutive quarters of goundwater sampling were conducted at the Flora Vista site. Groundwater was sampled from MW-1 and was analyzed for BTEX constituents during all sampling events. MW-1 remained above standards for benzen, ethylbenzene, and total xylenes.
March 28, 2008	Reporting	Annual report for 2007 is submitted to the Oil Conservation Division of NM Energy, Minerals, and Resources Department (OCD).
April 1, 2008	Additional Monitoring Requested by OCD	Oil Conservation Division of NM Energy, Minerals, and Resources Dept. indicates additional investigation and sampling is necessary for closure consideration during a meeting with Glenn Von Gonten.
July 23, 2008	Groundwater Monitoring	Groundwater monitoring of MW-1. One sample and a duplicate were collected. Benzene and Xylenes are above NMWQCC standards.
August 12 and 13, 2008	Groundwater Monitoring Well Installation and Groundwater Monitoring	Three additional groundwater Monitoring Wells, MW-2, MW-3 and MW-4 were installed by WDC and overseen by Tetra Tech. MW-2 was installed upgradient of MW-1. Both MW-3 and MW-4 were installed downgradient of MW-1. Soil samples were collected from just above the groundwater interface for each boring location and sent to Southern Petroleum Laboratory for a baseline soil analysis. All wells were developed by purging approximately 80 gallons of fluid using a surge block and hand bailer/purge pump.
October 21, 2008	Groundwater Monitoring	Third quarter 2008 groundwater monitoring was completed and was the first quarter of sampling to include all four monitoring wells on site. A baseline suite was completed including major ions, total metals, semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs) including BTEX, diesel range organics, and gasoline range organics. There were 3 constituents that returned results above NMWQCC limits, Benzene (MW-1 and MW-4), Total Xylenes (MW-1), and Sulfate (MW-1).
January 28, 2009	Groundwater Monitoring	Tetra Tech conducted fourth quarter 2008 groundwater monitoring at the site for BTEX constituents in all four monitoring wells. Benzene (MW-1 and MW-4), Ethylbenzene (MW-1) and Xylenes (MW-1) were above NMWQCC standards.
March 1, 2009	Initiate Annual Sampling	The Flora Vista No. 1 site is put on an annual monitoring schedule. The next sampling event is scheduled for September 2009.
September 30, 2009	Groundwater Monitoring	Tetra Tech conducted 2009 annual groundwater monitoring at the site for BTEX constituents, dissolved iron and manganese, and sulfate. Benzene (MW-1 and MW-4), xylenes (MW-1) and manganese (MW-1 and MW-4) were above NMWQCC standards.

Table 1. Site History Timeline - ConocoPhillips Flora Vista No. 1

Date/Time Period	Event/Action	Description/Comments
December 16, 2009	Private Irrigation Well Sampling	Tetra Tech collected a groundwater sample from a private domestic irrigation well located to the south of the site to be analyzed for BTEX. All constituents were found to be below laboratory detection limits and NMWQCC standards.
May 14, 2010	Initiate Quarterly Sampling	The Flora Vista No. 1 site is put on a semi-annual monitoring schedule. Private domestic irrigation well sampling is also to be included in semi-annual sampling events.
June 10, 2010	Private Irrigation Well Sampling	Tetra Tech collected a groundwater sample from a second private down-gradient domestic irrigation well to be sampled for BTEX. All constituents were found to be below laboratory detection limits and NMWQCC standards.
June 10 and 11, 2010	Groundwater Monitoring	Tetra Tech conducted groundwater monitoring at the site for BTEX constituents, dissolved iron and manganese, and sulfate. Benzene (MW-1 and MW-4), xylenes (MW-1) and manganese (MW-1 and MW-4) were above NMWQCC standards.
September 27, 2010	Groundwater Monitoring	Tetra Tech conducted groundwater monitoring at the site for BTEX constituents, dissolved iron and manganese, and sulfate. Benzene (MW-1 and MW-4), xylenes (MW-1), dissolved iron and manganese (MW-1 and MW-4) were above NMWQCC standards.
December 14, 2010	Groundwater Monitoring	Tetra Tech conducted groundwater monitoring at the site for BTEX constituents, dissolved iron and manganese, and sulfate. Benzene (MW-1 and MW-4), xylenes (MW-1), dissolved iron and manganese (MW-1 and MW-4) were above NMWQCC standards.

Table 2. Monitoring Well Specifications and Groundwater Elevations ConocoPhillips Flora Vista No.1

Well ID	Total Depth (ft bgs)	Surface Elevation, Top of Casing* (ft)	Screen Interval (ft)	Date Measured	Depth to Groundwater (ft below TOC)	Relative Water Level (ft BMP)
MW-1	26.02	94.38	11.02 - 26.02	6/20/2003	standing	94.38
				9/23/2003	17.03	77.35
				12/16/2003	20.11	74.27
				3/16/2004	23.69	70.69
				6/21/2004	19.92	74.46
				9/30/2004	16.82	77.56
				12/13/2004	20.40	73.98
				3/22/2005	24.32	70.06
				6/22/2005	--	--
				10/24/2005	--	--
				12/13/2005	21.24	73.14
				3/22/2006	24.75	69.63
				6/22/2006	20.48	73.9
				10/20/2006	19.13	75.25
				12/13/2006	21.24	73.14
				11/9/2007	19.71	74.67
				1/15/2008	NM	NA
				3/19/2008	24.35	70.03
				7/23/2008	19.89	74.49
				10/21/2008	19.48	74.9
				1/28/2009	23.96	70.42
				9/30/2009	18.16	76.22
				6/10/2010	21.64	72.74
				9/27/2010	19.31	75.07
				12/14/2010	21.41	72.97
MW-2	31.35	97.1	12.35 - 27.35	10/21/2008	20.71	76.39
				1/28/2009	22.75	74.35
				9/30/2009	18.83	78.27
				6/11/2010	22.09	75.01
				9/27/2010	20.12	76.98
				12/14/2010	NM	NM
MW-3	30.87	92.9	11.87 - 26.87	10/21/2008	17.92	74.98
				1/28/2009	21.53	71.37
				9/30/2009	16.43	76.47
				6/10/2010	19.71	73.19
				9/27/2010	17.81	75.09
				12/14/2010	19.61	73.29
MW-4	30.42	93.6	11.42-26.42	10/21/2008	18.06	75.54
				1/28/2009	24.55	69.05
				9/30/2009	17.89	75.71
				6/10/2010	21.02	72.58
				9/27/2010	18.93	74.67
				12/14/2010	21.04	72.56

*Casing elevations are based on an arbitrary 100 ft relative surface elevation set at the gas well head

ft = Feet

TOC = Top of casing

NM = Not measured

NA = Not applicable

bgs = below ground surface

BMP = below measuring point

Table 3. Groundwater Analytical Results Summary - ConocoPhillips Flora Vista No. 1

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Sulfate (µg/L)	Dissolved Iron (µg/L)	Dissolved Manganese (µg/L)
MW-1	6/20/2003	**1700**	300	490	**5090**	NA	NA	NA
	9/23/2003	**7500**	20	660	**9220**	NA	NA	NA
	12/16/2003	**7930**	10	**1180**	**864**	NA	NA	NA
	3/16/2004	**6860**	U	**1160**	**8470**	NA	NA	NA
	6/21/2004	**4140**	U	430	**3120**	NA	NA	NA
	9/30/2004	**9080**	30	**1410**	**9980**	NA	NA	NA
	12/13/2004	**8520**	U	**1340**	**9390**	NA	NA	NA
	3/22/2005	**4550**	U	**850**	**5950**	NA	NA	NA
	6/22/2005	--	21.88	--	--	NA	NA	NA
	10/24/2005	**6390**	U	**1010**	**7416**	NA	NA	NA
	12/13/2005	**6170**	U	**1010**	**7570**	NA	NA	NA
	3/22/2006	**3580**	U	**770**	**5840**	NA	NA	NA
	6/22/2006	**3100**	U	500	**3500**	NA	NA	NA
	10/20/2006	**6600**	10	**1220**	**8910**	NA	NA	NA
	12/13/2006	**4230**	10	**1090**	**8130**	NA	NA	NA
	3/27/2007	**2370**	7	504	**3749**	NA	NA	NA
	6/25/2007	**2870**	140	510	**3890**	NA	NA	NA
	11/9/2007	**5600**	< 0.7	**910**	**6800**	NA	NA	NA
	1/15/2008	**4200**	< 0.7	**890**	**5700**	NA	NA	NA
	3/19/2008	**2700**	< 5.0	590	**4700**	NA	NA	NA
	7/23/2008	**2000**	< 5.0	380	**1400**	NA	NA	NA
	10/21/2008	**4500**	< 5.0	630	**5300**	NA	NA	NA
	1/28/2009	**4000**	< 5.0	**880**	**8700**	NA	NA	NA
	9/30/2009	**4200**	1.6	530	**5100**	11.7	**2.08**	**1.09**
	6/10/2010	**1700**	1.2	330	**990**	27	0.126	**1.28**
	9/27/2010	**3200**	2	530	**4201.6**	1.8	**7.73**	**1.19**
	12/14/2010	**3200**	1.2	620	**5301.6**	1.03	**4.13**	**0.888**
NMWQCC Standards		**10 (µg/L)**	**750 (µg/L)**	**750 (µg/L)**	**620 (µg/L)**	**600 (µg/L)**	**1 (µg/L)**	**0.2 (µg/L)**

Explanation

NMWQCC = New Mexico Water Quality Control Commission
µg/L = micrograms per liter (parts per billion)
<0.5 = Below laboratory detection limit in ug/L
Bold = concentrations that exceed the NMWQCC limits
NA = Not analyzed

Table 3. Groundwater Analytical Results Summary - ConocoPhillips Flora Vista No. 1

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Sulfate (µg/L)	Dissolved Iron (µg/L)	Dissolved Manganese (µg/L)
MW-2	10/21/2008	< 0.5	< 0.5	< 0.5	< 0.5	115	0.656*	0.248*
	1/28/2009	< 0.5	< 0.5	< 0.5	< 0.5	ND	ND	ND
	9/30/2009	< 0.5	< 0.5	< 0.5	< 0.5	123	0.0223	< 0.00500
	6/11/2010	< 1.0	< 1.0	< 1.0	< 1.0	156	< 0.0200	< 0.00500
	9/27/2010	< 1.0	< 1.0	< 1.0	< 1.0	179	< 0.0200	< 0.00500
	12/14/2010	Not Measured - Well was covered by TRC Construction						
MW-3	10/21/2008	< 0.5	< 0.5	< 0.5	< 0.5	93	0.739*	0.0867*
	1/28/2009	< 0.5	< 0.5	< 0.5	< 0.5	ND	ND	ND
	9/30/2009	< 0.5	< 0.5	< 0.5	< 0.5	144	0.0543	< 0.00500
	6/10/2010	< 0.5	< 1.0	< 1.0	< 1.0	122	0.0425	< 0.00500
	9/27/2010	< 1.0	< 1.0	< 1.0	< 1.0	170	< 0.0200	< 0.00500
	12/14/2010	< 1.0	< 1.0	< 1.0	< 1.0	142	< 0.0200	< 0.00500
MW-4	10/21/2008	**39**	< 0.5	31	180	90.1	8.4*	4.16*
	1/28/2009	**660**	< 0.5	64	583	ND	ND	ND
	9/30/2009	**340**	< 0.5	54	572	48.9	0.148	**4.48**
	6/10/2010	**140**	< 1.0	27	252	53.3	0.0566	**4.65**
	9/27/2010	**33**	< 1.0	41	274	92.5	**1.22**	**4.34**
	12/14/2010	**130**	< 1.0	93	**899**	67.5	**1.75**	**4.69**
NMWQCC Standards		**10 (µg/L)**	**750 (µg/L)**	**750 (µg/L)**	**620 (µg/L)**	**600 (µg/L)**	**1 (µg/L)**	**0.2 (µg/L)**

Explanation

NMWQCC = New Mexico Water Quality Control Commission
µg/L = micrograms per liter (parts per billion)
<0.5 = Below laboratory detection limit in ug/L
Bold = concentrations that exceed the NMWQCC limits
NA = Not analyzed
* = Results reported for total metals analysis, results can not be compared to NMWQCC Standards for dissolved metals

APPENDIX A

GROUNDWATER SAMPLING FIELD FORMS

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Flora Vista No. 1 Page 1 of 4

Project No. 114690173

Site Location Flora Vista, NM

Site/Well No. MW-1 Coded/ Replicate No. Date 12/14/10

Weather Sunny, Cool Time Sampling Began 1400 Time Sampling Completed 1410

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 26.02 Water-Level Elevation

Held Depth to Water Below MP 21.41 Diameter of Casing 2"

Wet Water Column in Well 4.61 Gallons Pumped/Bailed Prior to Sampling Pumped/Bailed 3 4.75

Gallons per Foot 0.16

Gallons in Well 0.73 x 3 = 2.21 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)	DO %	ORP (mV)	Volume (gal.)
1403	16.67	6.80	649	0.502	1.51	15.4	-128.3	1.25
1404	16.65	6.81	650	0.503	1.60	16.6	-130.8	1.5

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
dissolved Fe/Mn	1L of Plastic	None
Sulfate	1L of Plastic	None

Remarks H2O is gray with hydrocarbon odor

Sampling Personnel Christine Mathews, Cassie Brown

Well Casing Volumes

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

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Flora Vista No. 1 Page 2 of 4

ect No. 114690173

Site Location Flora Vista, NM

Site/Well No. MW-2 Coded/ Replicate No. Date 12.14.10

Weather Sunny, cool 60° Time Sampling Began Time Sampling Completed

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation

Total Sounded Depth of Well Below MP 31.35 Water-Level Elevation

Held Depth to Water Below MP Diameter of Casing 2"

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

Gallons per Foot 0.16

Gallons in Well 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)	DO %	ORP (mV)	Volume (gal.)

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl

Remarks Well is ~~Grout~~ filled w/ fill dirt

Sampling Personnel Christine Mathews, Cassie Brown

Well Casing Volumes

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

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name: Flora Vista No. 1 — Page 3 of 4

Project No.: 114690173

Site Location: Flora Vista, NM

Site/Well No.: MW-3 — Coded/Replicate No.: — Date: 12/14/10

Weather: Sunny, cool 50° — Time Sampling Began: 1425 — Time Sampling Completed: 1450

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: 30.87 — Water-Level Elevation: —

Held: — Depth to Water Below MP: 19.61 — Diameter of Casing: 2"

Wet: — Water Column in Well: 11.26 — Gallons Pumped/Bailed Prior to Sampling: Pumped/Bailed 55

Gallons per Foot: 0.16

Gallons in Well: 1.80 x 3 = 5.4 — 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)	DO %	ORP (mV)	Volume (gal.)
1443	14.93	7.30	396	0.319	2.89	28.7	-107.7	4.25
1445	14.97	7.24	394	0.317	3.01	29.6	-89.9	5.25
1448	14.95	7.24	389	0.313	5.45	49.6	-76.4	5.5

Sampling Equipment: Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
dissolved Mn/Fe	1 1L 60g plastic	N/A
Sulfate	1 L 60g plastic	N/A

Remarks: H2O is white & murky, No odor or sheen detected

Sampling Personnel: Christine Mathews, Cassie Brown

Well Casing Volumes

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

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Flora Vista No. 1 Page 4 of 4

ect No. 114690173

Site Location Flora Vista, NM

Site/Well No. MW-4 Coded/ Replicate No. MW@ MW5 Date 12/14/10

Weather Sunny, cool 50° Time Sampling Began 1420 Time Sampling Completed 1440

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 30.42 Water-Level Elevation _____

Held _____ Depth to Water Below MP 21.04 Diameter of Casing 2"

Wet _____ Water Column in Well 9.38 Gallons Pumped/Bailed Prior to Sampling Pumped/Bailed

Gallons per Foot 0.16

Gallons in Well 1.5 x 3 = 4.5 Sampling Pump Intake Setting (feet below land surface) 4.5

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
	15.33	7.04	537	.428	1.49	14.7	-211.4	3.5
	15.41	7.01	530	.422	1.16	11.6	-210.0	3.75
	15.51	7.00	529	.420	1.24	12.4	-207.4	4.0

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
dissolved Fe/Mn	1L 0z Plastic	None
Cations	1L 0z Plastic	None

Remarks H2O is black, spotty green & strong hydrocarbon odor

Sampling Personnel ~~Christine Mathews~~, Cassie Brown

Well Casing Volumes

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

APPENDIX B

LABORATORY ANALYTICAL REPORT

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

Conoco Phillips

Certificate of Analysis Number:

10120585

Report To:		Project Name:	COP Flora Vista
Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110- ph (505) 237-8440 fax:		Site: Site Address: PO Number: State: State Cert. No.: Date Reported:	Flora Vista, NM New Mexico 12/27/2010

This Report Contains A Total Of 16 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

12/27/2010

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:
10120585

Report To:		Project Name:	COP Flora Vista
Tetra Tech, Inc.		Site:	Flora Vista, NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	12/27/2010
ph (505) 237-8440 fax:			

I. SAMPLE RECEIPT:

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

II: ANALYSES AND EXCEPTIONS:

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

III. GENERAL REPORTING COMMENTS:

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

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

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

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

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

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

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

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:

10120585

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 Flora Vista
Site: Flora Vista, NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 12/27/2010

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	10120585-01	Water	12/14/2010 14:10	12/17/2010 9:05:00 AM	303442	☐
MW-3	10120585-02	Water	12/14/2010 14:50	12/17/2010 9:05:00 AM	303442	☐
MW-4	10120585-03	Water	12/14/2010 14:40	12/17/2010 9:05:00 AM	303442	☐
Duplicate	10120585-04	Water	12/14/2010 0:00	12/17/2010 9:05:00 AM	303442	☐
Trip Blank	10120585-05	Water	12/15/2010 0:00	12/17/2010 9:05:00 AM	303442	☐

Erica Cardenas
Project Manager

12/27/2010
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:** 12/14/2010 14:10 **SPL Sample ID:** 10120585-01

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Sulfate	1.03		0.5	1	12/18/10 13:02	ESK	5677677
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Iron	4.13		0.02	1	12/22/10 0:02	EG	5680491
Manganese	0.888		0.005	1	12/22/10 0:02	EG	5680491

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/17/2010 12:45	M_W	1.00

VOLATILE ORGANICS BY METHOD 8260B					MCL	SW8260B	Units: ug/L	
Benzene	3200			50	50	12/23/10 19:27	LU_L	5683560
Ethylbenzene	620			50	50	12/23/10 19:27	LU_L	5683560
Toluene	1.2			1	1	12/22/10 20:25	LU_L	5683393
m,p-Xylene	5300			100	50	12/23/10 19:27	LU_L	5683560
o-Xylene	1.6			1	1	12/22/10 20:25	LU_L	5683393
Xylenes,Total	5301.6			50	50	12/23/10 19:27	LU_L	5683560
Surr: 1,2-Dichloroethane-d4	86.3		%	70-130	50	12/23/10 19:27	LU_L	5683560
Surr: 1,2-Dichloroethane-d4	77.8		%	70-130	1	12/22/10 20:25	LU_L	5683393
Surr: 4-Bromofluorobenzene	99.1		%	74-125	50	12/23/10 19:27	LU_L	5683560
Surr: 4-Bromofluorobenzene	94.9		%	74-125	1	12/22/10 20:25	LU_L	5683393
Surr: Toluene-d8	97.6		%	82-118	50	12/23/10 19:27	LU_L	5683560
Surr: Toluene-d8	95.5		%	82-118	1	12/22/10 20:25	LU_L	5683393

Qualifiers:

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

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

Client Sample ID MW-3 **Collected:** 12/14/2010 14:50 **SPL Sample ID:** 10120585-02

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Sulfate	142		5	10	12/18/10 7:23	ESK	5677668
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Iron	ND		0.02	1	12/22/10 0:08	EG	5680492
Manganese	ND		0.005	1	12/22/10 0:08	EG	5680492

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/17/2010 12:45	M_W	1.00

VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	12/22/10 19:56	LU_L	5683392
Ethylbenzene	ND		1	1	12/22/10 19:56	LU_L	5683392
Toluene	ND		1	1	12/22/10 19:56	LU_L	5683392
m,p-Xylene	ND		2	1	12/22/10 19:56	LU_L	5683392
o-Xylene	ND		1	1	12/22/10 19:56	LU_L	5683392
Xylenes,Total	ND		1	1	12/22/10 19:56	LU_L	5683392
Surr: 1,2-Dichloroethane-d4	78.0	%	70-130	1	12/22/10 19:56	LU_L	5683392
Surr: 4-Bromofluorobenzene	93.7	%	74-125	1	12/22/10 19:56	LU_L	5683392
Surr: Toluene-d8	95.7	%	82-118	1	12/22/10 19:56	LU_L	5683392

Qualifiers:

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

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

Client Sample ID MW-4 **Collected:** 12/14/2010 14:40 **SPL Sample ID:** 10120585-03

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY			**MCL**	**E300.0**	**Units: mg/L**		
Sulfate	67.6		5	10	12/18/10 7:39	ESK	5677669
METALS BY METHOD 6010B, DISSOLVED			**MCL**	**SW6010B**	**Units: mg/L**		
Iron	1.75		0.02	1	12/22/10 0:14	EG	5680493
Manganese	4.69		0.005	1	12/22/10 0:14	EG	5680493

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/17/2010 12:45	M_W	1.00

VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	130		1	1	12/23/10 17:14	LU_L	5683559
Ethylbenzene	93		1	1	12/23/10 17:14	LU_L	5683559
Toluene	ND		1	1	12/23/10 17:14	LU_L	5683559
m,p-Xylene	870		10	5	12/23/10 15:55	LU_L	5683556
o-Xylene	29		1	1	12/23/10 17:14	LU_L	5683559
Xylenes,Total	899		5	5	12/23/10 15:55	LU_L	5683556
Surr: 1,2-Dichloroethane-d4	84.1	%	70-130	5	12/23/10 15:55	LU_L	5683556
Surr: 1,2-Dichloroethane-d4	84.9	%	70-130	1	12/23/10 17:14	LU_L	5683559
Surr: 4-Bromofluorobenzene	105	%	74-125	5	12/23/10 15:55	LU_L	5683556
Surr: 4-Bromofluorobenzene	105	%	74-125	1	12/23/10 17:14	LU_L	5683559
Surr: Toluene-d8	103	%	82-118	5	12/23/10 15:55	LU_L	5683556
Surr: Toluene-d8	92.2	%	82-118	1	12/23/10 17:14	LU_L	5683559

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

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

Client Sample ID Duplicate **Collected:** 12/14/2010 0:00 **SPL Sample ID:** 10120585-04

Site: Flora Vista, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	130			1	1	12/23/10 16:48	LU_L	5683558
Ethylbenzene	87			1	1	12/23/10 16:48	LU_L	5683558
Toluene	ND			1	1	12/23/10 16:48	LU_L	5683558
m,p-Xylene	840			10	5	12/23/10 16:21	LU_L	5683557
o-Xylene	27			1	1	12/23/10 16:48	LU_L	5683558
Xylenes,Total	867			5	5	12/23/10 16:21	LU_L	5683557
Surr: 1,2-Dichloroethane-d4	77.6		%	70-130	5	12/23/10 16:21	LU_L	5683557
Surr: 1,2-Dichloroethane-d4	82.5		%	70-130	1	12/23/10 16:48	LU_L	5683558
Surr: 4-Bromofluorobenzene	109		%	74-125	5	12/23/10 16:21	LU_L	5683557
Surr: 4-Bromofluorobenzene	104		%	74-125	1	12/23/10 16:48	LU_L	5683558
Surr: Toluene-d8	105		%	82-118	5	12/23/10 16:21	LU_L	5683557
Surr: Toluene-d8	96.1		%	82-118	1	12/23/10 16:48	LU_L	5683558

Qualifiers:

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

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

Client Sample ID Trip Blank **Collected:** 12/15/2010 0:00 **SPL Sample ID:** 10120585-05

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		1	1	12/22/10 19:04	LU_L	5683391
Ethylbenzene	ND		1	1	12/22/10 19:04	LU_L	5683391
Toluene	ND		1	1	12/22/10 19:04	LU_L	5683391
m,p-Xylene	ND		2	1	12/22/10 19:04	LU_L	5683391
o-Xylene	ND		1	1	12/22/10 19:04	LU_L	5683391
Xylenes,Total	ND		1	1	12/22/10 19:04	LU_L	5683391
Surr: 1,2-Dichloroethane-d4	91.3		% 70-130	1	12/22/10 19:04	LU_L	5683391
Surr: 4-Bromofluorobenzene	91.9		% 74-125	1	12/22/10 19:04	LU_L	5683391
Surr: Toluene-d8	94.9		% 82-118	1	12/22/10 19:04	LU_L	5683391

Qualifiers:

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

Quality Control Documentation

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

Quality Control Report

Conoco Phillips

COP Flora Vista

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B
WorkOrder: 10120585
Lab Batch ID: 103991

Method Blank

RunID: ICP2_101221C-5680478 Units: mg/L
Analysis Date: 12/21/2010 22:43 Analyst: EG
Preparation Date: 12/17/2010 12:45 Prep By: M_ Method SW3005A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
10120585-01B	MW-1
10120585-02B	MW-3
10120585-03B	MW-4

Analyte	Result	Rep Limit
Iron	ND	0.02
Manganese	ND	0.005

Laboratory Control Sample (LCS)

RunID: ICP2_101221C-5680479 Units: mg/L
Analysis Date: 12/21/2010 22:49 Analyst: EG
Preparation Date: 12/17/2010 12:45 Prep By: M_ Method SW3005A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Iron	1.000	0.9892	98.92	80	120
Manganese	0.1000	0.09500	95.00	80	120

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

Sample Spiked: 10120587-03
RunID: ICP2_101221C-5680481 Units: mg/L
Analysis Date: 12/21/2010 23:01 Analyst: EG
Preparation Date: 12/17/2010 12:45 Prep By: M_ Method SW3005A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Iron	0.2229	1	1.129	90.61	1	1.163	94.01	2.967	20	75	125
Manganese	8.643	0.1	8.779	N/C	0.1	8.936	N/C	N/C	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 Flora Vista

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 10120585
Lab Batch ID: R313326

Method Blank

RunID: K_101222D-5683387 Units: ug/L
Analysis Date: 12/22/2010 11:54 Analyst: LU_L

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	89.2	70-130
Surr: 4-Bromofluorobenzene	90.4	74-125
Surr: Toluene-d8	96.3	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
10120585-01A	MW-1
10120585-02A	MW-3
10120585-05A	Trip Blank

Laboratory Control Sample (LCS)

RunID: K_101222D-5683386 Units: ug/L
Analysis Date: 12/22/2010 11:29 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.7	103	74	123
Ethylbenzene	20.0	21.0	105	72	127
Toluene	20.0	20.6	103	74	126
m,p-Xylene	40.0	42.6	106	71	129
o-Xylene	20.0	20.9	104	74	130
Xylenes,Total	60.0	63.5	106	71	130
Surr: 1,2-Dichloroethane-d4	50.0	47.6	95.1	70	130
Surr: 4-Bromofluorobenzene	50.0	48	96.1	74	125
Surr: Toluene-d8	50.0	48.6	97.3	82	118

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

Sample Spiked: 10120584-01
RunID: K_101222D-5683389 Units: ug/L
Analysis Date: 12/22/2010 15:56 Analyst: LU_L

Qualifiers:

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

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

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HOUSTON, TX 77054
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Quality Control Report

Conoco Phillips

COP Flora Vista

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 10120585
Method: SW8260B **Lab Batch ID:** R313326

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	20.5	103	20	20.2	101	1.75	22	70	124
Ethylbenzene	ND	20	20.8	104	20	21.3	107	2.47	20	76	122
Toluene	ND	20	20.1	101	20	20.7	104	2.92	24	80	117
m,p-Xylene	ND	40	40.4	101	40	41.1	103	1.51	20	69	127
o-Xylene	ND	20	20.4	102	20	20.3	102	0.221	20	84	114
Xylenes,Total	ND	60	60.8	101	60	61.4	102	0.931	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	40.6	81.2	50	41.1	82.1	1.15	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	48.6	97.1	50	48.1	96.3	0.887	30	74	125
Surr: Toluene-d8	ND	50	47.7	95.5	50	48.6	97.2	1.78	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

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Quality Control Report

Conoco Phillips

COP Flora Vista

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 10120585
Lab Batch ID: R313332

Method Blank

RunID: MSDVOA3_101223A-5683548 Units: ug/L
Analysis Date: 12/23/2010 11:55 Analyst: LU_L

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	86.4	70-130
Surr: 4-Bromofluorobenzene	99.1	74-125
Surr: Toluene-d8	104.5	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
10120585-01A	MW-1
10120585-03A	MW-4
10120585-04A	Duplicate

Laboratory Control Sample (LCS)

RunID: MSDVOA3_101223A-56835 Units: ug/L
Analysis Date: 12/23/2010 11:02 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.2	101	74	123
Ethylbenzene	20.0	20.1	101	72	127
Toluene	20.0	18.5	92.6	74	126
m,p-Xylene	40.0	40.7	102	71	129
o-Xylene	20.0	20.1	100	74	130
Xylenes,Total	60.0	60.8	101	71	130
Surr: 1,2-Dichloroethane-d4	50.0	42.6	85.2	70	130
Surr: 4-Bromofluorobenzene	50.0	51.5	103	74	125
Surr: Toluene-d8	50.0	46.7	93.5	82	118

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

Sample Spiked: 10120587-01
RunID: MSDVOA3_101223A-56835 Units: ug/L
Analysis Date: 12/23/2010 13:15 Analyst: LU_L

Qualifiers:

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

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

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Quality Control Report

Conoco Phillips

COP Flora Vista

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 10120585
Method: SW8260B **Lab Batch ID:** R313332

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	19.1	95.6	20	18.8	94.0	1.77	22	70	124
Ethylbenzene	ND	20	18.2	91.1	20	19.0	94.9	4.09	20	76	122
Toluene	ND	20	16.9	84.6	20	18.1	90.3	6.53	24	80	117
m,p-Xylene	ND	40	37.5	93.7	40	38.8	97.0	3.49	20	69	127
o-Xylene	ND	20	18.6	93.1	20	18.7	93.5	0.466	20	84	114
Xylenes,Total	ND	60	56.1	93.5	60	57.5	95.9	2.49	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	46.2	92.4	50	43.0	85.9	7.26	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	52.8	106	50	54.3	109	2.77	30	74	125
Surr: Toluene-d8	ND	50	47.7	95.5	50	49.8	99.7	4.31	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.

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Quality Control Report

Conoco Phillips

COP Flora Vista

Analysis: Ion Chromatography
Method: E300.0
WorkOrder: 10120585
Lab Batch ID: R313006

Method Blank

RunID: IC1_101217C-5677650 Units: mg/L
Analysis Date: 12/17/2010 22:31 Analyst: ESK

Analyte	Result	Rep Limit
Sulfate	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
10120585-01C	MW-1
10120585-02C	MW-3
10120585-03C	MW-4

Laboratory Control Sample (LCS)

RunID: IC1_101217C-5677651 Units: mg/L
Analysis Date: 12/17/2010 22:47 Analyst: ESK

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10.00	10.01	100.1	90	110

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

Sample Spiked: 10120585-01
RunID: IC1_101217C-5677678 Units: mg/L
Analysis Date: 12/18/2010 13:18 Analyst: ESK

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	1.034	5	6.318	105.7	5	6.137	102.1	2.906	15	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
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:	**10120585**	Received By:	**T_B**
Date and Time Received:	**12/17/2010 9:05:00 AM**	Carrier name:	**Fedex-Standard Overnight**
Temperature:	**3.5°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?** 2100/3.5, 1960/3.0, 1950/4.0, 2084/3.5, 2062/4.0, 2073/4.0	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.: 303442
101585
page 1 of 2

Client Name: Tetra Tech, Inc
Address: 6121 Indian School Rd #200
City: Albuquerque State: NM Zip: 87110
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.:
Site Name: Flora Vista #1
Site Location: Flora Vista, NM
Invoice To: Ph:

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

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	# Containers	Requested Analysis: BTEX	dissolved Fe, Mn & Hardness
MW-1	12.14.10	1410		X	W	V	40	1	3	X	
MW-1	12.14.10	1410		X	W	P	16	HNO3	1		X
MW-1	12.14.10	1410		X	W	P	16	HNO3	1		X
MW-2	12.14.10			X	W	V	40	1	3	X	
MW-2	12.14.10			X	W	P	16	HNO3	1		X
MW-2	12.14.10			X	W	P	16	HNO3	1		X
MW-3	12.14.10	1450		X	W	V	40	1	3	X	
MW-3	12.14.10	1450		X	W	P	16	HNO3	1		X
MW-3	12.14.10	1450		X	W	P	16	HNO3	1		X
MW-4	12.14.10	1440		X	W	V	40	1	3	X	

Client/Consultant Remarks: Please filter & preserve metals @ lab
Laboratory remarks:
Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp:

Requested TAT
☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☐ Standard
☐ 3 Business Days
☐ Other _____
Rush TAT requires prior notice

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

Special Detection Limits (specify):
PM review (initial):

	date	time	
1. Relinquished by Sampler:	0900	12.16.10	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 9:05	time 12/17	6. Received by Laboratory:

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

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

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

SPL, Inc.
Analysis Request & Chain of Custody Record

SPL Workorder No. 303443

1012058S

page 2 of 2

Client Name: Tetra Tech, INC
Address: 6121 Indian School Rd #200
City Albuquerque State NM Zip 87110
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Flora Vista No. 1
Site Name:
Site Location: Flora Vista, NM
Invoice To: 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 Fe, Mn	Sulfate
MW-4	12.14.10			X	W	P	PO	NA	1		X	
MW-4	12.14.10			X	W	P	16	NA	1			X
duplicate	12.14.10			X	W	V	40	HCl	3	X		
trip blank	12.15.10			X	W	V	40	HCl	2	X		

Client/Consultant Remarks: Please filter & preserve metals @ lab

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp:

Requested TAT
☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☐ Standard
☐ 3 Business Days
☐ Other
Rush TAT requires prior notice

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

Special Detection Limits (specify):

PM review (initial):

	date	time		
1. Relinquished by Sampler:	0800	12.16.10	2. Received by:	
3. Relinquished by:	date	time	4. Received by:	
5. Relinquished by:	date 9.05	time 12/17	6. Received by Laboratory:	

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Traverse City, MI 49686 (231) 947-5777