3R-173

Annual Monitor Report

DATE:
2009

TETRA TECH, INC.

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

July 2, 2010

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

RE: (1) ConocoPhillips Company, Flora Vista No. 1, Flora Vista, San Juan County, New Mexico, 2009 Annual Groundwater Monitoring Report
(2) ConocoPhillips Company, Sategna No. 2E, Bloomfield, San Juan County, New Mexico, September 2009 Quarterly Groundwater Monitoring Report
(3) ConocoPhillips Company, Sategna No. 2E, Bloomfield, San Juan County, New Mexico, December 2009 Quarterly Groundwater Monitoring Report

Dear Mr. von Gonten:

Enclosed please find one (1) copy of each of the above-referenced documents as compiled by Tetra Tech for these San Juan county 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 (3)

2009 ANNUAL GROUNDWATER MONITORING REPORT

CONOCOPHILLIPS COMPANY
FLORA VISTA NO. 1
FLORA VISTA, SAN JUAN COUNTY, NEW MEXICO

OCD # 3R173

API No. 30-045-20073

Prepared for:

ConocoPhillips

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. 115869008?

May 2010

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

2009 ANNUAL GROUNDWATER MONITORING REPORT FLORA VISTA NO. 1, FLORA VISTA, NEW MEXICO

1.0 INTRODUCTION

This report presents the results of the annual groundwater monitoring event conducted by Tetra Tech, Inc. (Tetra Tech) on September 30, 2009, at the ConocoPhillips Company Flora Vista No. 1 site near Flora Vista, New Mexico (**Figure 1**). The site is located in 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

Historic petroleum contaminated soil was discovered at the Flora Vista #1 location during a routine production resetting activity in 2003. Soil excavation activities were conducted to remove impacted soil. Ground water was observed in the bottom of the excavation at approximately 25 feet below the ground surface. During excavation, field screening was conducted by collecting samples 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.

A groundwater monitoring well (MW-1) was installed slightly down gradient 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. The existing monitor well network consists of monitor wells MW-1, MW-2, MW-3, and MW-4 which are sampled on a quarterly basis. Monitoring wells MW-2, MW-3, and MW-4 were installed at the site during August of 2008 in response to a request by the New Mexico Oil Conservation Division (OCD) for site characterization and enhanced laboratory analyses. This request was communicated to Tetra Tech during an April 2008 meeting conducted in Santa Fe, New Mexico with Glenn VonGonten, OCD Environmental Bureau Hydrologist. 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 MONITORING SUMMARY AND SAMPLING METHODOLOGY / RESULTS

2.1 Monitoring Summary

Annual groundwater sampling was conducted on September 30, 2009. Groundwater samples were collected from all site monitoring wells, MW-1, MW-2, MW-3 and MW-4. Depth to groundwater measurements were taken prior to sampling. Groundwater elevation and well completion data is provided in **Table 2**. Using the groundwater elevation data collected during the September sampling event, Tetra Tech produced a groundwater elevation contour map which is provided as **Figure 4**.

2.2 Groundwater Sampling Methodology

Each monitoring well was purged of three volumes of water and sampled. A 1.5-inch clear, polyehtylene, dedicated bailer was used to purge each well and to collect the groundwater sample. The purge water generated during the event was disposed of in the produced water tank located on site (**Figure 2**). The groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped with chain-of-custody documentation. All samples collected 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. This was the first quarter dissolved metals analysis was conducted.

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

2.3 Groundwater Sampling Analytical Results

Samples collected during the 2009 monitoring period indicate the following results:

- Groundwater concentrations exceeded the New Mexico Water Quality Control Commission (NMWQCC) standard for benzene (10 micrograms per liter [µg/L]) and total xylenes (620 µg/L) in MW-1;
- Groundwater concentrations in MW-4 exceeded the NMWQCC standard for benzene during the sampling event;

- BTEX concentrations in MW-2 and MW-3 were non-detect during the September 2009 sampling event;
- All monitoring wells had sulfate concentrations bellow NMWQCC standard (600 µg/L).

Table 3 summarizes the groundwater sample laboratory analytical results. Groundwater sampling field forms are presented in **Appendix A**. The corresponding laboratory analytical report including a quality control summary is included in **Appendix B**.

3.0 CONCLUSIONS

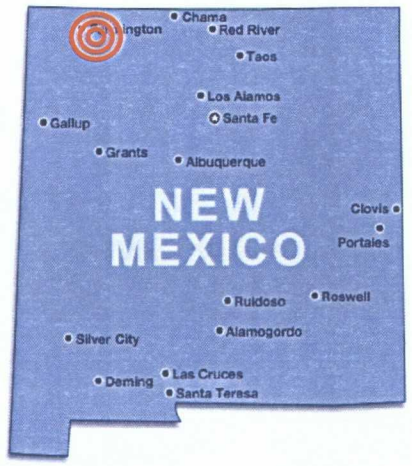
Tetra Tech recommends continued annual sampling of MW-1 through MW-4 in order to monitor ongoing natural attenuation at the site. The next annual sampling event will take place in September of 2010. Tetra Tech will collect samples for BTEX, dissolved iron, and dissolved manganese. Please contact Kelly 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

TETRA TECH, INC.

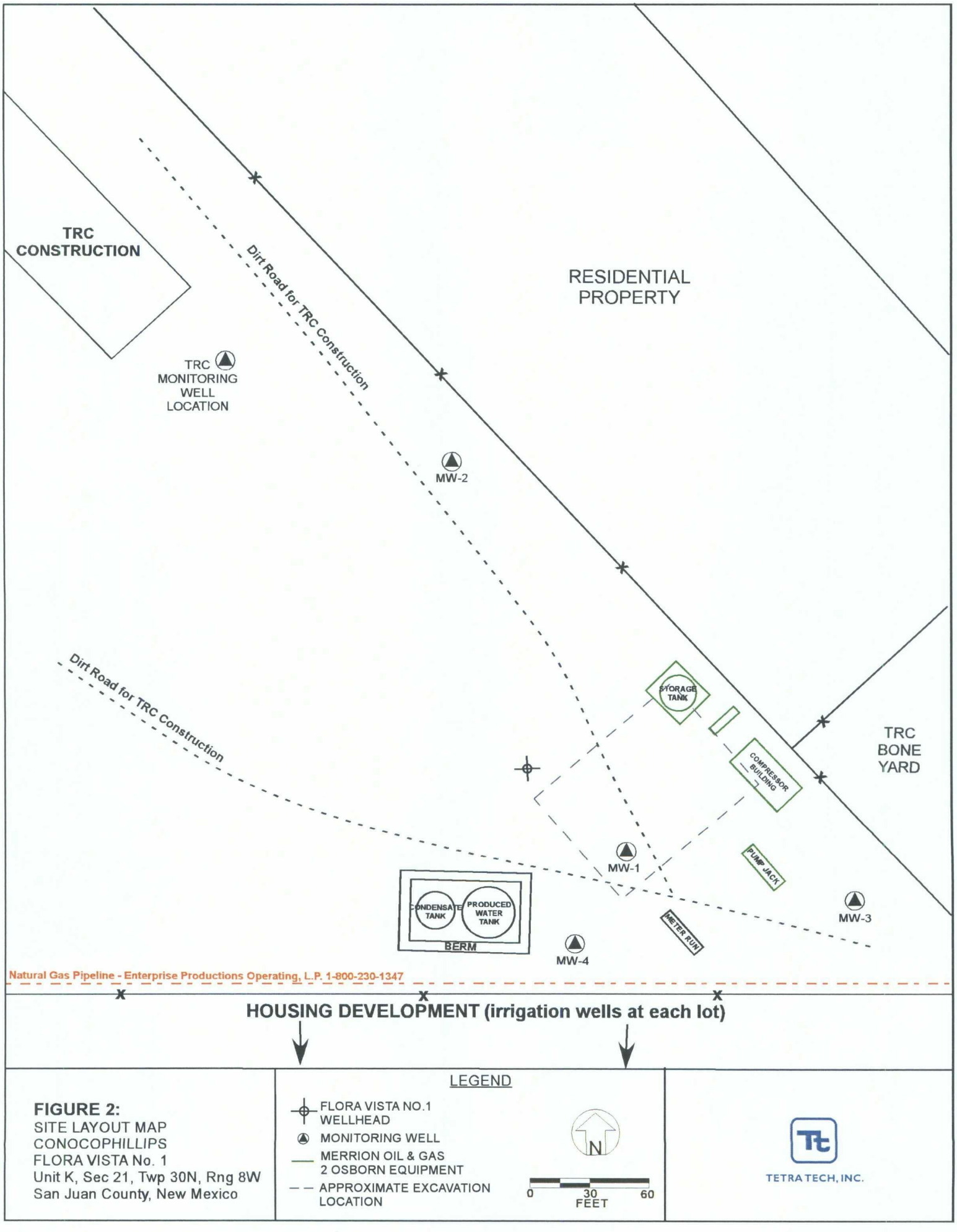


FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS
FLORA VISTA No. 1
Unit K, Sec 21, Twp 30N, Rng 8W
San Juan County, New Mexico

TETRA TECH, INC.

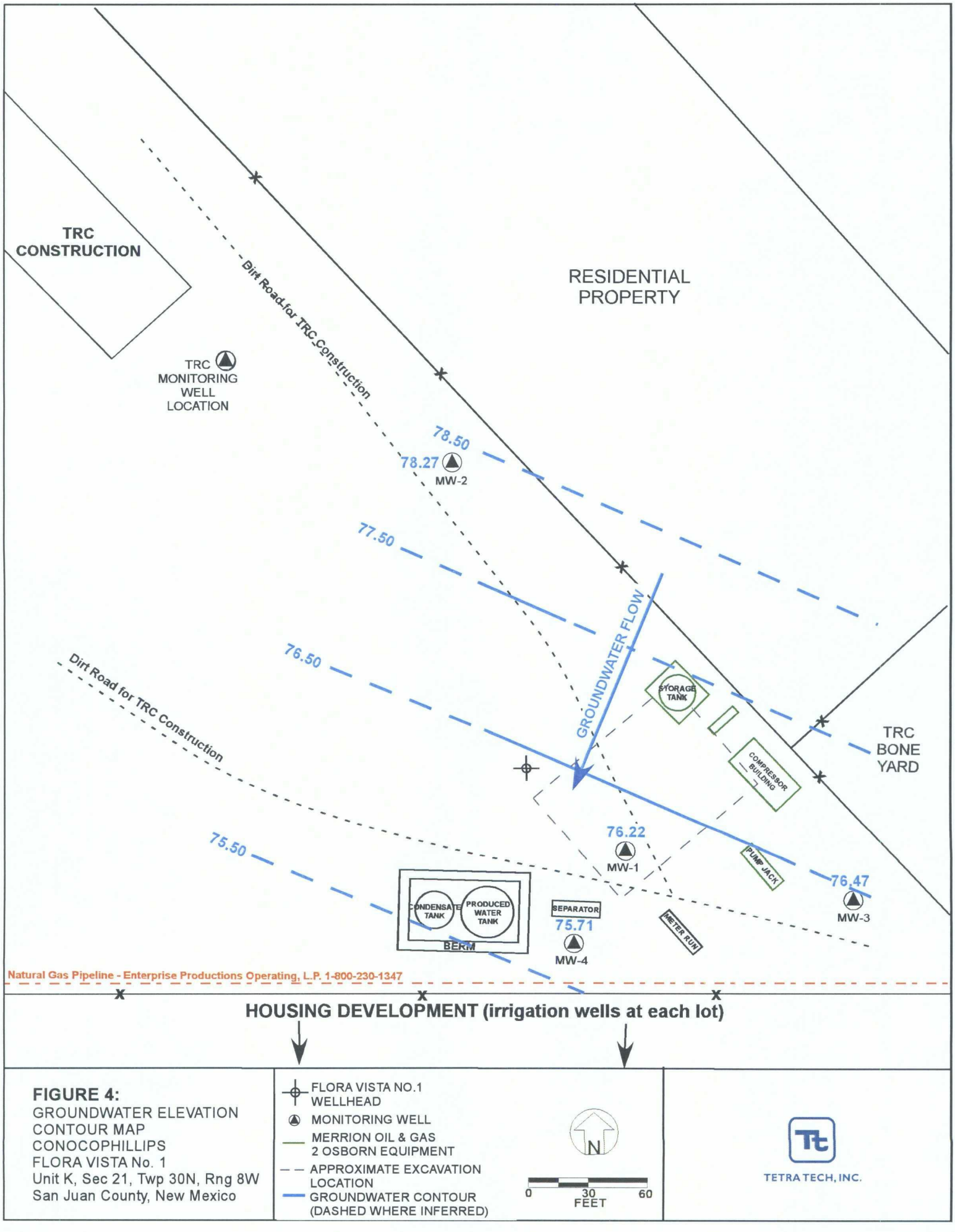


FIGURE 4:
GROUNDWATER ELEVATION CONTOUR MAP
CONOCOPHILLIPS
FLORA VISTA No. 1
Unit K, Sec 21, Twp 30N, Rng 8W
San Juan County, New Mexico

- 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.

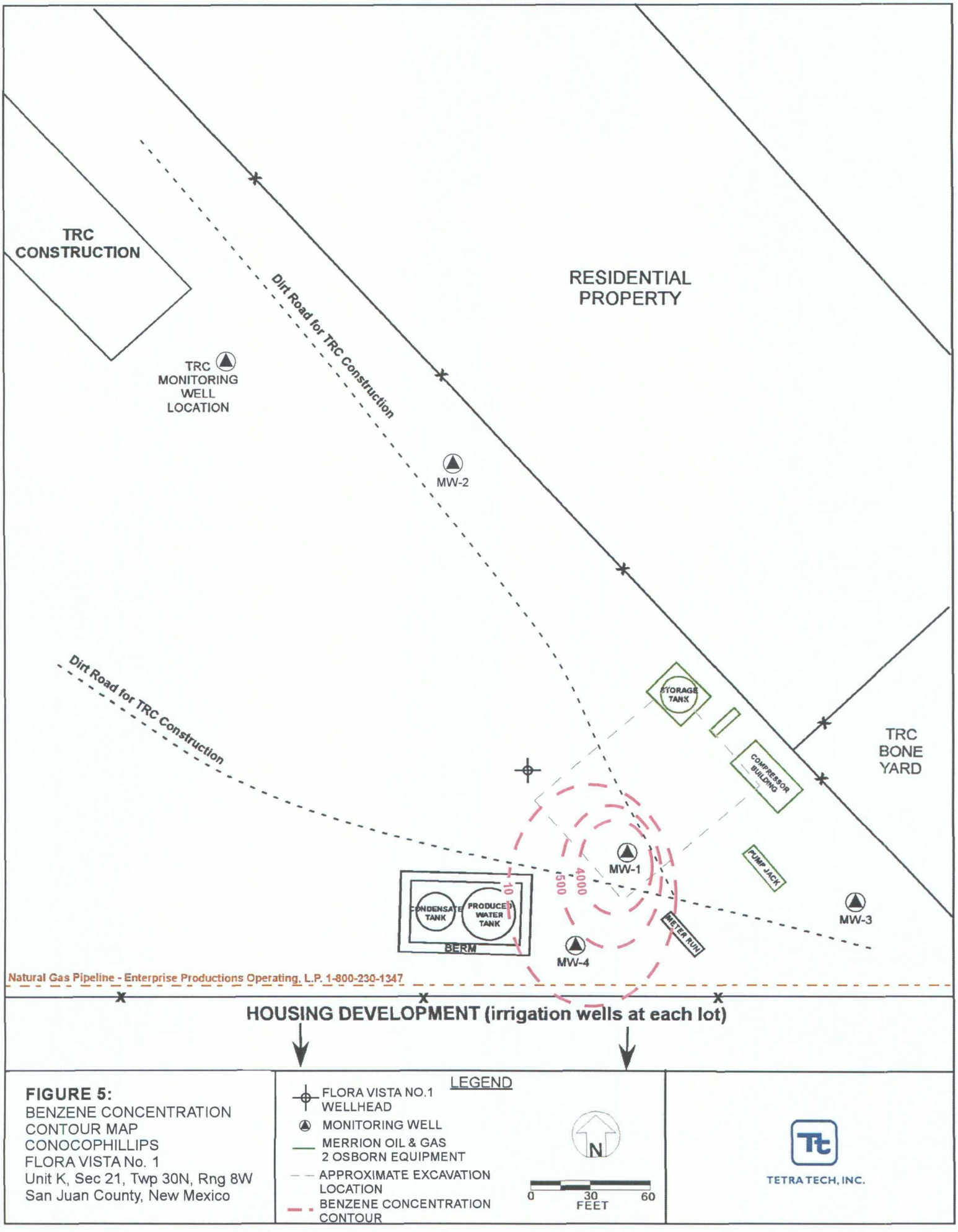


FIGURE 5:
BENZENE CONCENTRATION CONTOUR MAP
CONOCOPHILLIPS
FLORA VISTA No. 1
Unit K, Sec 21, Twp 30N, Rng 8W
San Juan County, New Mexico

TABLES

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

Date/Time Period	Event/Action	Description/Comments
June and July 2003	Initial Site Assessment	Historic petroleum contaminated soil discovered during a routine production resetting activity. Environmental investigation began with the excavation of approximately 49,986 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
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 4 constituents that returned results above NMWQCC limits, Benzene (MW-1 and MW-4), Total Xylenes (MW-1), Manganese (MW-2 and MW-4) 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	Flora Vista site is put on an annual monitoring schedule. Next sampling event will take place in September of 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 2. Monitoring Well Specifications and Groundwater Elevations
ConocoPhillps 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
MW-2	31.35	97.1	12.35 - 27.35	10/21/2008	20.71	76.39
				1/28/2009	22.75	-22.75
				9/30/2009	18.83	78.27
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
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

*Casing elevations are based on a 100 foot relative surface elevation of 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	<0.5	630	5300	NA	NA	NA
	1/28/2009	4000	<0.5	880	8700	NA	NA	NA
	9/30/2009	4200	1.6	530	5100	11.7	2.08	1.09
MW-2	10/21/2008	<5.0	<5.0	<5.0	<5.0	115	0.656*	0.248*
	1/28/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA
	9/30/2009	<1.0	<1.0	<1.0	<1.0	123	0.0223	<0.005

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-3	10/21/2008	<5.0	<5.0	<5.0	<5.0	93	0.739*	0.0867*
	1/28/2009	<5.0	<5.0	<5.0	<5.0	NA	NA	NA
	9/30/2009	<1.0	<1.0	<1.0	<1.0	144	0.0543	<0.005
MW-4	10/21/2008	**39**	<5.0	31	180	90.1	8.4*	4.16*
	1/28/2009	**660**	<5.0	64	583	NA	NA	NA
	9/30/2009	**340**	<1.0	54	572	48.9	0.148	**4.48**
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

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. 114-690130

Site Location Flora Vista, NM

Site/Well No. MW-1 Coded/ Replicate No. 0835 Date 9-30-09

Weather Cloudy, 60° Time Sampling Began 813 Time Sampling Completed 830

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~~ 25.85 Water-Level Elevation _____

Held _____ Depth to Water Below MP 18.16 Diameter of Casing 2"

Wet _____ Water Column in Well 7.69 Gallons Pumped/Bailed Prior to Sampling 4 gallons

Gallons per Foot X 0.16

Gallons in Well 1.2304 x 3 = 3.6912 Sampling Pump Intake Setting (feet below land surface) _____

Purging Equipment Purge pump/ Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)	Turbidity
821	16.07	6.55	1214	.789	6.44	-54.9	140.1
824	16.01	6.61	1220	.793	3.86	-59.4	210.8
826	16.05	6.66	1150	.747	3.71	-56.2	183.4

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe, Mn dissolved	16 oz plastic	None
sulfate	16 oz plastic	None

Remarks H_2O is gray in color, weathered hydrocarbon odor

Sampling Personnel CM, CB

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

Project No. 114-690130

Site Location Flora Vista, NM

Site/Well No. MW-2 Coded/ Replicate No. Date 9-30-09

Weather Cloudy, 65° Time Sampling Began 0837 Time Sampling Completed 0847

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~~ 31.61 Water-Level Elevation

Held Depth to Water Below MP 18.83 Diameter of Casing 2"

Wet Water Column in Well 12.78 Gallons Pumped/Bailed Prior to Sampling 6.5 gallons

Gallons per Foot X 0.16

Gallons in Well 2.0448 x 3 = 6.1344 Sampling Pump Intake (feet below land

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	ORP (mV)	turb.
0839	15.85	7.16	672	0.437	4.23	-5.0	235.3
0842	15.76	7.09	672	0.437	3.69	1.4	377.0
0844	15.76	7.07	672	0.437	3.41	6.4	209.11

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe, Mn dissolved	16 oz plastic	None
Sulfate	16 oz plastic	None

Remarks

Sampling Personnel CM, CB

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.: 114-690130

Site Location: Flora Vista, NM

Site/Well No.: MW-3 — Coded/Replicate No.: — Date: 9-30-09

Weather: Cloudy, 65° — Time Sampling Began: 858 — Time Sampling Completed: 930

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: 16.43 — Diameter of Casing: 2"

Wet: — Water Column in Well: 14.44 — Gallons Pumped/Bailed Prior to Sampling: 7 gallons

Gallons per Foot: 7 0.16

Gallons in Well: 2.3104 x 3 ~ 6.9312 — Sampling Pump Intake Setting (feet below land surface): —

Purging Equipment: Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
922	15.19	7.18	622	.405	7.60	54.2
925	15.14	7.15	623	.405	6.96	57.6
927	15.15	7.13	624	.405	6.82	59.8

Turbidity: 1089 (1100 max), 1100 max

Sampling Equipment: Purge Pump/Bailer

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

Remarks: —

Sampling Personnel: CM, CB

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

Project No. 114-690130

Site Location Flora Vista, NM

Site/Well No. MW-4 Coded/ Replicate No. Date 9-30-09

Weather Cloudy, 65° Time Sampling Began 0938 Time Sampling Completed 0948

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~~ 30.46 Water-Level Elevation

Held Depth to Water Below MP 17.89 Diameter of Casing 2"

Wet Water Column in Well 12.56 Gallons Pumped/Bailed Prior to Sampling ~6

Gallons per Foot 0.16

Gallons in Well 2.009 x 3 = 6.0288 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
0938	15.39	6.34	930	0.604	5.26	-90.3
0941	15.42	6.93	931	0.605	2.97	-98.1
0943	15.48	6.91	930	0.604	2.18	-104.7

Turb
497.9
151.1
254.8

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Fe, Mn Dissolved	16 oz Plastic	None
Sulfate	16 oz Plastic	None

Remarks Observed spotty sheen in first purge bucket. water is light gray with hydrocarbon odor

Sampling Personnel CM, CB

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:

09100103

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:	4509972379
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	10/11/2009
ph: (505) 237-8440	fax:		

This Report Contains A Total Of 17 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

10/12/2009

Date

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

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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:
09100103

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:	4509972379
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	10/11/2009
ph: (505) 237-8440	fax:		

I. SAMPLE RECEIPT:

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

II: ANALYSES AND EXCEPTIONS:

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:

09100103

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: 4509972379
State: New Mexico
State Cert. No.:
Date Reported: 10/11/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	09100103-01	Water	9/30/2009 8:30:00 AM	10/2/2009 9:15:00 AM	331735	☐
MW-2	09100103-02	Water	9/30/2009 8:47:00 AM	10/2/2009 9:15:00 AM	331735	☐
MW-3	09100103-03	Water	9/30/2009 9:30:00 AM	10/2/2009 9:15:00 AM	331735	☐
MW-4	09100103-04	Water	9/30/2009 9:48:00 AM	10/2/2009 9:15:00 AM	331735	☐
Duplicate	09100103-05	Water	9/30/2009 8:35:00 AM	10/2/2009 9:15:00 AM	331735	☐
Trip Blank	09100103-06	Water	10/1/2009 4:05:00 PM	10/2/2009 9:15:00 AM	331735	☐

10/12/2009

Erica Cardenas
Project Manager

Date

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

Ted Yen
Quality Assurance Officer

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

Client Sample ID: MW-1 **Collected:** 09/30/2009 8:30 **SPL Sample ID:** 09100103-01

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	11.7		2.5		5	10/03/09 13:41	BDG	5231048
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**		
Iron	2.08		0.02		1	10/10/09 17:07	EG	5240021
Manganese	1.09		0.005		1	10/10/09 17:07	EG	5240021

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

VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	4200		25	25		10/07/09 12:59	JC	5237051
Ethylbenzene	530		25	25		10/07/09 12:59	JC	5237051
Toluene	1.6		1	1		10/05/09 21:15	E_G	5232953
m,p-Xylene	5100		25	25		10/07/09 12:59	JC	5237051
o-Xylene	1.4		1	1		10/05/09 21:15	E_G	5232953
Xylenes,Total	5101.4		25	25		10/07/09 12:59	JC	5237051
Surr: 1,2-Dichloroethane-d4	104	%	78-116	1		10/05/09 21:15	E_G	5232953
Surr: 1,2-Dichloroethane-d4	94.7	%	78-116	25		10/07/09 12:59	JC	5237051
Surr: 4-Bromofluorobenzene	98.3	%	74-125	1		10/05/09 21:15	E_G	5232953
Surr: 4-Bromofluorobenzene	103	%	74-125	25		10/07/09 12:59	JC	5237051
Surr: Toluene-d8	109	%	82-118	1		10/05/09 21:15	E_G	5232953
Surr: Toluene-d8	99.8	%	82-118	25		10/07/09 12:59	JC	5237051

Qualifiers:

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

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

Client Sample ID: MW-2 **Collected:** 09/30/2009 8:47 **SPL Sample ID:** 09100103-02

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	123		5	10	10/03/09 14:31	BDG	5231049
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Iron	0.0223		0.02	1	10/10/09 17:12	EG	5240022
Manganese	ND		0.005	1	10/10/09 17:12	EG	5240022

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

VOLATILE ORGANICS BY METHOD 8260B					MCL	SW8260B	Units: ug/L	
Benzene	ND		1		1	10/05/09 18:05	E_G	5232946
Ethylbenzene	ND		1		1	10/05/09 18:05	E_G	5232946
Toluene	ND		1		1	10/05/09 18:05	E_G	5232946
m,p-Xylene	ND		1		1	10/05/09 18:05	E_G	5232946
o-Xylene	ND		1		1	10/05/09 18:05	E_G	5232946
Xylenes,Total	ND		1		1	10/05/09 18:05	E_G	5232946
Surr: 1,2-Dichloroethane-d4	101	%	78-116		1	10/05/09 18:05	E_G	5232946
Surr: 4-Bromofluorobenzene	116	%	74-125		1	10/05/09 18:05	E_G	5232946
Surr: Toluene-d8	107	%	82-118		1	10/05/09 18:05	E_G	5232946

Qualifiers:

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

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

Client Sample ID: MW-3 **Collected:** 09/30/2009 9:30 **SPL Sample ID:** 09100103-03

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	144		5		10	10/03/09 15:05	BDG	5231050
METALS BY METHOD 6010B, DISSOLVED				**MCL**		**SW6010B**	**Units: mg/L**	
Iron	0.0543		0.02		1	10/10/09 17:16	EG	5240023
Manganese	ND		0.005		1	10/10/09 17:16	EG	5240023

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

VOLATILE ORGANICS BY METHOD 8260B				**MCL**		**SW8260B**	**Units: ug/L**	
Benzene	ND		1		1	10/05/09 18:29	E_G	5232947
Ethylbenzene	ND		1		1	10/05/09 18:29	E_G	5232947
Toluene	ND		1		1	10/05/09 18:29	E_G	5232947
m,p-Xylene	ND		1		1	10/05/09 18:29	E_G	5232947
o-Xylene	ND		1		1	10/05/09 18:29	E_G	5232947
Xylenes,Total	ND		1		1	10/05/09 18:29	E_G	5232947
Surr: 1,2-Dichloroethane-d4	99.5	%	78-116		1	10/05/09 18:29	E_G	5232947
Surr: 4-Bromofluorobenzene	116	%	74-125		1	10/05/09 18:29	E_G	5232947
Surr: Toluene-d8	106	%	82-118		1	10/05/09 18:29	E_G	5232947

Qualifiers:

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

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

Client Sample ID: MW-4 **Collected:** 09/30/2009 9:48 **SPL Sample ID:** 09100103-04

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	48.9		2.5		5	10/03/09 15:21	BDG	5231051
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**		
Iron	0.148		0.02		1	10/10/09 17:20	EG	5240024
Manganese	4.48		0.005		1	10/10/09 17:20	EG	5240024

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

VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	340		5	5		10/07/09 12:31	JC	5237050
Ethylbenzene	54		1	1		10/05/09 18:53	E_G	5232948
Toluene	ND		1	1		10/05/09 18:53	E_G	5232948
m,p-Xylene	560		5	5		10/07/09 12:31	JC	5237050
o-Xylene	12		1	1		10/05/09 18:53	E_G	5232948
Xylenes,Total	572		5	5		10/07/09 12:31	JC	5237050
Surr: 1,2-Dichloroethane-d4	99.3		% 78-116	1		10/05/09 18:53	E_G	5232948
Surr: 1,2-Dichloroethane-d4	99.0		% 78-116	5		10/07/09 12:31	JC	5237050
Surr: 4-Bromofluorobenzene	107		% 74-125	1		10/05/09 18:53	E_G	5232948
Surr: 4-Bromofluorobenzene	104		% 74-125	5		10/07/09 12:31	JC	5237050
Surr: Toluene-d8	109		% 82-118	1		10/05/09 18:53	E_G	5232948
Surr: Toluene-d8	99.6		% 82-118	5		10/07/09 12:31	JC	5237050

Qualifiers:

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

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

Client Sample ID: Duplicate **Collected:** 09/30/2009 8:35 **SPL Sample ID:** 09100103-05

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	4200			25	25	10/07/09 13:26	JC	5237052
Ethylbenzene	530			25	25	10/07/09 13:26	JC	5237052
Toluene	1.6			1	1	10/05/09 21:39	E_G	5232954
m,p-Xylene	5000			25	25	10/07/09 13:26	JC	5237052
o-Xylene	1.4			1	1	10/05/09 21:39	E_G	5232954
Xylenes,Total	5001.4			25	25	10/07/09 13:26	JC	5237052
Surr: 1,2-Dichloroethane-d4	105		%	78-116	1	10/05/09 21:39	E_G	5232954
Surr: 1,2-Dichloroethane-d4	94.8		%	78-116	25	10/07/09 13:26	JC	5237052
Surr: 4-Bromofluorobenzene	94.9		%	74-125	1	10/05/09 21:39	E_G	5232954
Surr: 4-Bromofluorobenzene	104		%	74-125	25	10/07/09 13:26	JC	5237052
Surr: Toluene-d8	109		%	82-118	1	10/05/09 21:39	E_G	5232954
Surr: Toluene-d8	100		%	82-118	25	10/07/09 13:26	JC	5237052

Qualifiers:

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

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

Client Sample ID: Trip Blank **Collected:** 10/01/2009 16:05 **SPL Sample ID:** 09100103-06

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	10/05/09 13:43	E_G	5232978
Ethylbenzene	ND		1		1	10/05/09 13:43	E_G	5232978
Toluene	ND		1		1	10/05/09 13:43	E_G	5232978
m,p-Xylene	ND		1		1	10/05/09 13:43	E_G	5232978
o-Xylene	ND		1		1	10/05/09 13:43	E_G	5232978
Xylenes,Total	ND		1		1	10/05/09 13:43	E_G	5232978
Surr: 1,2-Dichloroethane-d4	101		%	78-116	1	10/05/09 13:43	E_G	5232978
Surr: 4-Bromofluorobenzene	111		%	74-125	1	10/05/09 13:43	E_G	5232978
Surr: Toluene-d8	107		%	82-118	1	10/05/09 13:43	E_G	5232978

Qualifiers:

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

Quality Control Documentation

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

Quality Control Report

Conoco Phillips

COP Flora Vista

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B
WorkOrder: 09100103
Lab Batch ID: 94319

Method Blank

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

Analyte	Result	Rep Limit
Iron	ND	0.02
Manganese	ND	0.005

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100103-01B	MW-1
09100103-02B	MW-2
09100103-03B	MW-3
09100103-04B	MW-4

Laboratory Control Sample (LCS)

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

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

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

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

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

Qualifiers:

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

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

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

Quality Control Report

Conoco Phillips

COP Flora Vista

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 09100103
Lab Batch ID: R285579

Method Blank

RunID: L_091005C-5232939 Units: ug/L
Analysis Date: 10/05/2009 12:55 Analyst: E_G

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	100.6	78-116
Surr: 4-Bromofluorobenzene	112.4	74-125
Surr: Toluene-d8	108.5	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100103-01A	MW-1
09100103-02A	MW-2
09100103-03A	MW-3
09100103-04A	MW-4
09100103-05A	Duplicate
09100103-06A	Trip Blank

Laboratory Control Sample (LCS)

RunID: L_091005C-5232938 Units: ug/L
Analysis Date: 10/05/2009 11:59 Analyst: E_G

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.8	104	74	123
Ethylbenzene	20.0	22.1	111	72	127
Toluene	20.0	21.4	107	74	126
m,p-Xylene	40.0	44.9	112	71	129
o-Xylene	20.0	22.0	110	74	130
Xylenes,Total	60.0	66.9	111	71	130
Surr: 1,2-Dichloroethane-d4	50.0	51.2	102	78	116
Surr: 4-Bromofluorobenzene	50.0	53.5	107	74	125
Surr: Toluene-d8	50.0	52.8	106	82	118

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

Sample Spiked: 09091284-04
RunID: L_091005C-5232941 Units: ug/L
Analysis Date: 10/05/2009 15:43 Analyst: E_G

Qualifiers:

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

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

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

Quality Control Report

Conoco Phillips

COP Flora Vista

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 09100103
Method: SW8260B **Lab Batch ID:** R285579

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	18.1	90.7	20	16.6	83.2	8.63	22	70	124
Ethylbenzene	ND	20	18.9	94.3	20	17.5	87.7	7.24	20	76	122
Toluene	ND	20	19.0	94.8	20	17.8	88.8	6.55	24	80	117
m,p-Xylene	ND	40	38.7	96.8	40	36.4	91.0	6.17	20	69	127
o-Xylene	ND	20	19.2	96.1	20	18.0	89.9	6.65	20	84	114
Xylenes,Total	ND	60	57.9	96.5	60	54.4	90.6	6.33	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	50.5	101	50	51.4	103	1.68	30	78	116
Surr: 4-Bromofluorobenzene	ND	50	53.6	107	50	53.6	107	0.0242	30	74	125
Surr: Toluene-d8	ND	50	53.9	108	50	53.8	108	0.202	30	82	118

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
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: 09100103
Lab Batch ID: R285823

Method Blank

RunID: Q_091007C-5237047 Units: ug/L
Analysis Date: 10/07/2009 10:13 Analyst: JC

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
m,p-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	97.0	78-116
Surr: 4-Bromofluorobenzene	97.1	74-125
Surr: Toluene-d8	97.3	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100103-01A	MW-1
09100103-04A	MW-4
09100103-05A	Duplicate

Laboratory Control Sample (LCS)

RunID: Q_091007C-5237046 Units: ug/L
Analysis Date: 10/07/2009 9:45 Analyst: JC

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	18.3	91.7	74	123
Ethylbenzene	20.0	17.8	88.8	72	127
m,p-Xylene	40.0	36.2	90.5	71	129
Xylenes,Total	60.0	54.9	91.5	71	130
Surr: 1,2-Dichloroethane-d4	50.0	48.5	97.0	78	116
Surr: 4-Bromofluorobenzene	50.0	50.3	101	74	125
Surr: Toluene-d8	50.0	49.5	99.0	82	118

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

Sample Spiked: 09100271-01
RunID: Q_091007C-5237054 Units: ug/L
Analysis Date: 10/07/2009 14:50 Analyst: JC

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	18.7	93.7	20	18.6	93.1	0.567	22	70	124

Qualifiers:

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

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

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

Quality Control Report

Conoco Phillips
COP Flora Vista

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 09100103
Lab Batch ID: R285823

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

Sample Spiked: 09100271-01
RunID: Q_091007C-5237054 Units: ug/L
Analysis Date: 10/07/2009 14:50 Analyst: JC

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Ethylbenzene	ND	20	18.6	93.2	20	18.4	91.8	1.52	20	76	122
m,p-Xylene	ND	40	37.5	93.8	40	36.3	90.7	3.39	20	69	127
Xylenes,Total	ND	60	56.6	94.3	60	55.0	91.6	2.86	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	46	92.0	50	45.2	90.3	1.80	30	78	116
Surr: 4-Bromofluorobenzene	ND	50	51.3	103	50	51.0	102	0.508	30	74	125
Surr: Toluene-d8	ND	50	49.5	99.1	50	48.9	97.7	1.37	30	82	118

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
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: Ion Chromatography
Method: E300.0

WorkOrder: 09100103
Lab Batch ID: R285458

Method Blank

RunID: IC2_091003A-5231032 Units: mg/L
Analysis Date: 10/03/2009 8:41 Analyst: BDG

Analyte	Result	Rep Limit
Sulfate	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100103-01C	MW-1
09100103-02C	MW-2
09100103-03C	MW-3
09100103-04C	MW-4

Laboratory Control Sample (LCS)

RunID: IC2_091003A-5231033 Units: mg/L
Analysis Date: 10/03/2009 8:57 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10.00	10.22	102.2	85	115

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

Sample Spiked: 09100103-04
RunID: IC2_091003A-5231052 Units: mg/L
Analysis Date: 10/03/2009 15:55 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	48.93	50	96.42	94.99	10	98.70	N/C	N/C	20	80	120

Qualifiers:

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

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

Sample Receipt Checklist

And

Chain of Custody

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

Sample Receipt Checklist

Workorder:	09100103	Received By:	T_B
Date and Time Received:	10/2/2009 9:15:00 AM	Carrier name:	Fedex-Priority
Temperature:	1.5°C	Chilled by:	Water Ice

1.	Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
2.	Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
3.	Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4.	Chain of custody present?	Yes ☑	No ☐	
5.	Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
6.	Chain of custody agrees with sample labels?	Yes ☑	No ☐	
7.	Samples in proper container/bottle?	Yes ☑	No ☐	
8.	Sample containers intact?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test?	Yes ☑	No ☐	
10.	All samples received within holding time?	Yes ☑	No ☐	
11.	Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
12.	Water - VOA vials have zero headspace?	Yes ☑	No ☐	VOA Vials Not Present ☐
13.	Water - Preservation checked upon receipt (except VOA*)?	Yes ☐	No ☐	Not Applicable ☑

*VOA Preservation Checked After Sample Analysis

SPL Representative: _____ Contact Date & Time: _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

SPL, Inc.
Analysis Request & Chain of Custody Record

SPL Workorder No.: 331735
09100103
page 1 of 1

Client Name: TetraTech / ConocoPhillips
Address: 6121 Indian School Rd Ste 200
City: Albuquerque State: NM Zip: 87110
Phone/Fax: 505.237.8440 505.237.8657
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: ConocoPhillips 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

Requested Analysis

SAMPLE ID	DATE	TIME	comp	grab	matrix	bottle	size	pres.	# Containers	BTEX ONLY	Dissolved Fe and Mn	Sulfate
MW-1	9-30-09	0830		X	W	V	40	1	3	X		
MW-1	9-30-09	0830		X	W	P	16	NONE	2		X	X
MW-2	9-30-09	0847		X	W	V	40	1	3	X		
MW-2	9-30-09	0847		X	W	P	16	NONE	2		X	X
MW-3	9-30-09	0930		X	W	V	40	1	3	X		
MW-3	9-30-09	0930		X	W	P	16	NONE	2		X	X
MW-4	9-30-09	0948		X	W	V	40	1	3	X		
MW-4	9-30-09	0948		X	W	P	16	NONE	2		X	X
Duplicate	9-30-09	0835		X	W	V	40	1	3	X		
Trip Blank	10-1-09	1605			W	V	40	1	2	X		

RUSH

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

Laboratory remarks:

Intact? Y N
Ice? Y N
Temp: 1.5

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

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

Special Detection Limits (specify):

PM review (initial):

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

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