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MARCH 2010 QUARTERLY GROUNDWATER MONITORING REPORT

CONOCOPHILLIPS
HOWELL K No. 1
SAN JUAN COUNTY, NEW MEXICO

OCD # _____

API 300-045-09313

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. 114-690132

June 2010

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ANNUAL GROUNDWATER MONITORING
HOWELL K NO. 1, SAN JUAN COUNTY, NEW MEXICO

1.0 INTRODUCTION

This report presents the results of a quarterly groundwater monitoring event conducted by Tetra Tech, Inc. (Tetra Tech) in March of 2010, at the ConocoPhillips Howell K No. 1 site, located on BLM land, approximately ½ mile southeast of Navajo Lake State Park and 10 miles east of Aztec in Unit Letter K, Section 21, Township 30N, Range 8W of San Juan County, New Mexico (Site). The Site consists of a gas production well and associated equipment and installations. The location and general features of the Site are shown on **Figures 1** and **2**, respectively.

1.1 Site Background

The environmental investigation at the Site began in August 2005 with the excavation of approximately 4000 cubic yards of hydrocarbon impacted soil from an area southwest of the wellhead at the Howell K No. 1 site. The hydrocarbon impacted soils were discovered in the area during below grade tank removal activities. The final dimensions of the excavation were 70 feet by 50 feet by 36 feet deep (groundwater was encountered at a depth of approximately 34 feet below ground surface (bgs). Once this extent had been reached, the excavation was stopped due to the inability of the equipment to operate safely at this depth; however, the limits of the hydrocarbon impact had not been delineated. The excavation was backfilled with clean soil. In March 2006, one groundwater monitoring well (MW-1) was installed in the general area of the backfilled excavation by Envirotech. The location of this well is shown on **Figure 2**.

Due to the transition of Site consulting responsibilities from Lode Star LLC of Farmington, NM, to Tetra Tech following the acquisition of Burlington Resources by ConocoPhillips Company in March 2006, groundwater monitoring was not performed at the Site in March and June 2007. Tetra Tech began sampling groundwater at the Howell K No. 1 site in November of 2007 using MW-1 and continued to do so until August of 2008, when 3 additional monitoring wells were installed at the Site by WDC Exploration and Wells of Peralta, NM and under Tetra Tech supervision. Additional wells were installed 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 Von Gonten, OCD Environmental Bureau Hydrologist. Groundwater Monitoring Well MW-2 was installed upgradient of MW-1 and Monitoring Wells MW-3 and MW-4 were installed down-gradient of MW-1 (**Figure 2**). A generalized geologic cross-section was compiled using subsurface data collected from each boring location during installation of Monitoring Wells ; MW-2, MW-3 and MW-4. Monitoring Wells MW-2 and MW-4 are represented on the cross-section which can be seen as **Figure 3**. October 2008 marked the first quarterly groundwater monitoring event to

include all 4 monitoring wells for analysis at the Site. A summary of the Howell K No. 1 site history can be seen in **Table 1**.

2.0 MONITORING SUMMARY AND SAMPLING METHODOLOGY AND ANALYTICAL RESULTS

2.1 Monitoring Summary

Quarterly groundwater sampling was conducted by Tetra Tech on March 30, 2010. The groundwater sampling event included samples from Monitoring Wells; MW-1, MW-2, MW-3 and MW-4. Groundwater levels were measured in each site monitoring well prior to sampling and can be found in **Table 2**. Groundwater elevations for MW-1, however, can not be calculated or included on the groundwater contour map due to the gradual, continuous, upward shifting of the PVC well casing. The continual shifting of the PVC casing of MW-1 is likely due to the proximity of MW-1 to the 2005, underground tank removal excavation and the severe settling and shifting of the fill material in this area. Groundwater elevations are calculated from top of casing elevations which were derived from survey data collected from each site monitoring well by Tetra Tech on August 14, 2008. Survey data obtained from MW-1 is no longer valid due to the uplifting of the well casing which will continue to change over time, therefore; MW-1 will no longer be factored into future groundwater elevation contour maps. The groundwater flow direction is to the west based on groundwater elevation data collected on March 30, 2010 from MW-2, MW-3 and MW-4, and as seen on **Figure 4**.

2.2 Groundwater Sampling Methodology

During the sampling event, each monitoring well was purged either of three casing volumes of water or was purged until groundwater parameters had stabilized. Measured groundwater parameters included; temperature, pH, conductivity, total dissolved solids (TDS), oxidation-reduction potential (ORP) and dissolved oxygen (DO), and were collected using a YSI 556 multi-parameter sonde. A 1.5-inch clear, polyethylene, dedicated bailer was used to purge each well and to collect the groundwater samples. 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 to Southern Petroleum Laboratory (SPL) in Houston, Texas. All groundwater samples collected were analyzed for the presence of benzene, toluene, ethylbenezene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8260B, dissolved iron and manganese by EPA Method 6010B, and sulfate by EPA method 300.0. The dissolved metals samples were collected in unpreserved containers supplied by the laboratory, to be 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 from MW-1, MW-2, MW-3, MW-4 on March 30, 2010 indicate that groundwater concentrations for BTEX were below laboratory method detection limits (MDL).

Although BTEX constituents were found to be below NMWQCC standards during the March 2010 quarterly analysis, other constituents were found to be above standards. Analyses of samples collected from all 4 wells on Site were found to be above the NMWQCC standard for sulfate. MW-1, MW-3 and MW-4 were also above standard for dissolved manganese. **Table 3** lists the analytical results from groundwater sampling done during March 2010. Groundwater sampling field forms showing field parameters can be found in **Appendix A** and the corresponding laboratory analysis reports including quality control summaries can be found in **Appendix B**.

3.0 CONCLUSIONS

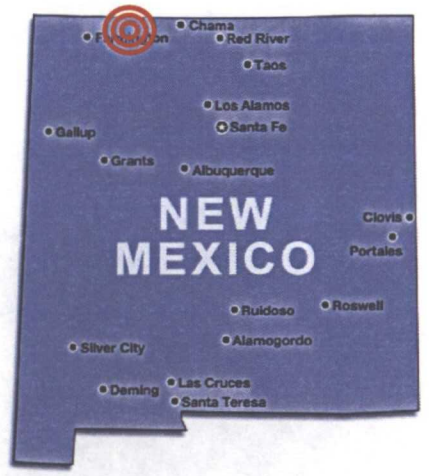
Based on the historical groundwater quality data, groundwater samples collected from MW-1 have never exceeded NMWQCC groundwater quality standards for BTEX constituents during sampling conducted from March 2006 to March 2010. BTEX concentrations were found to be below the minimum laboratory detection limits for these constituents consistently since October 2006. In addition, groundwater samples collected from MW-2, MW-3 and MW-4 have also not exceeded NMWQCC groundwater quality standards for BTEX constituents from October 2008 to March 2010. Since BTEX is below standards in all 4 monitoring wells but there are other constituents of concern above NMWQCC standard. Tetra Tech recommends the continuation of quarterly groundwater monitoring until sulfate, dissolved manganese, dissolved iron and fluoride concentrations are also below NMWQCC standards, appear stable or reach regional background levels. 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
Howell K No. 1
Aztec, NM



Approximate ConocoPhillips Howell K No. 1 Site location

Latitude = 36.79505 deg N
Longitude = -107.68474 deg W

N

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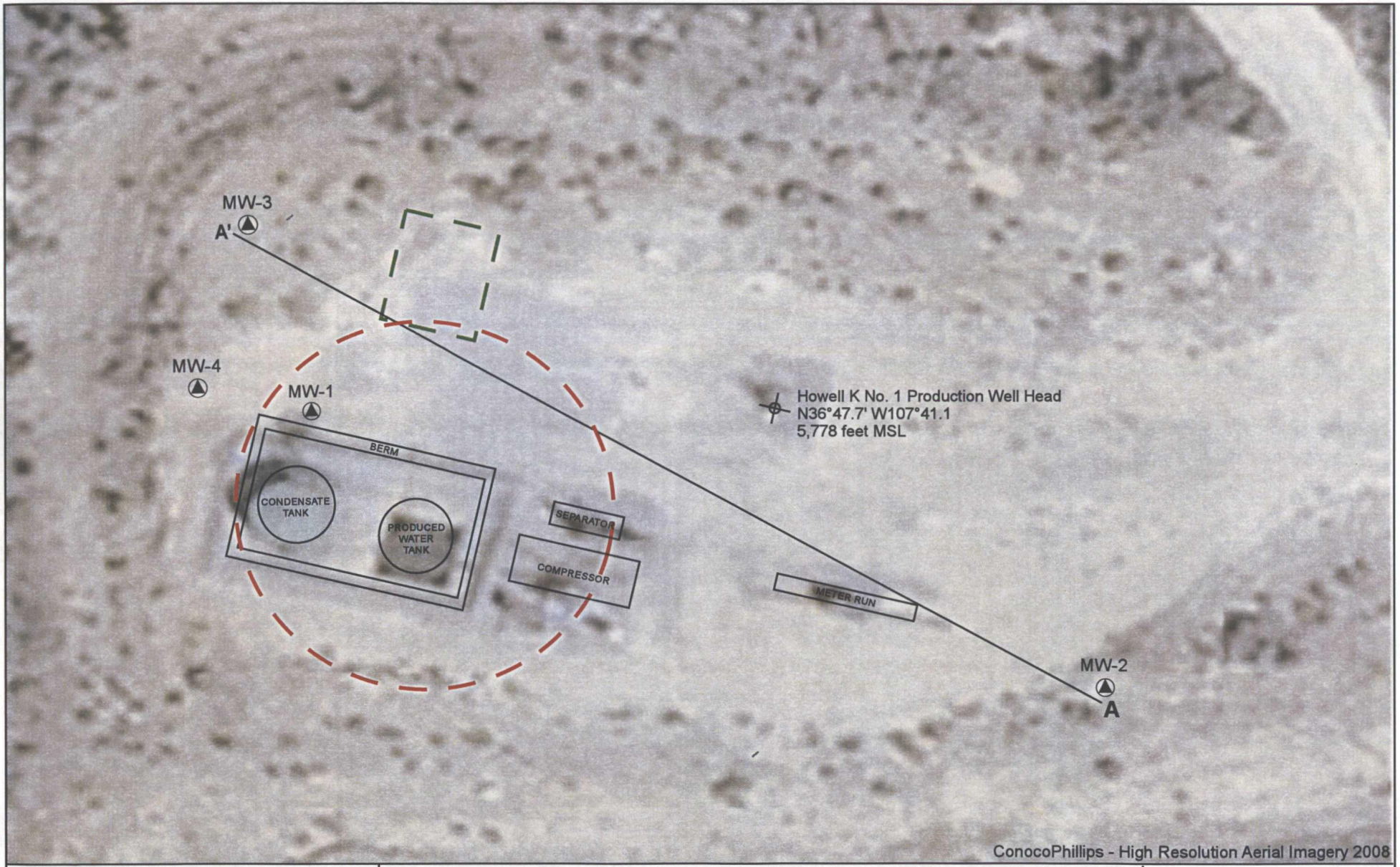

FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS
HOWELL K No. 1
Unit K, Sec 21, Twp 30N, Rng 8W
San Juan County, New Mexico
Revised by CFM 06/10

LEGEND

- WELLHEAD
- MONITORING WELL
- GENERAL AREA OF UNDERGROUND TANK REMOVAL EXCAVATION
- GENERAL AREA OF UNLINED EARTHEN PIT EXCAVATION

0 15 30
FEET

N

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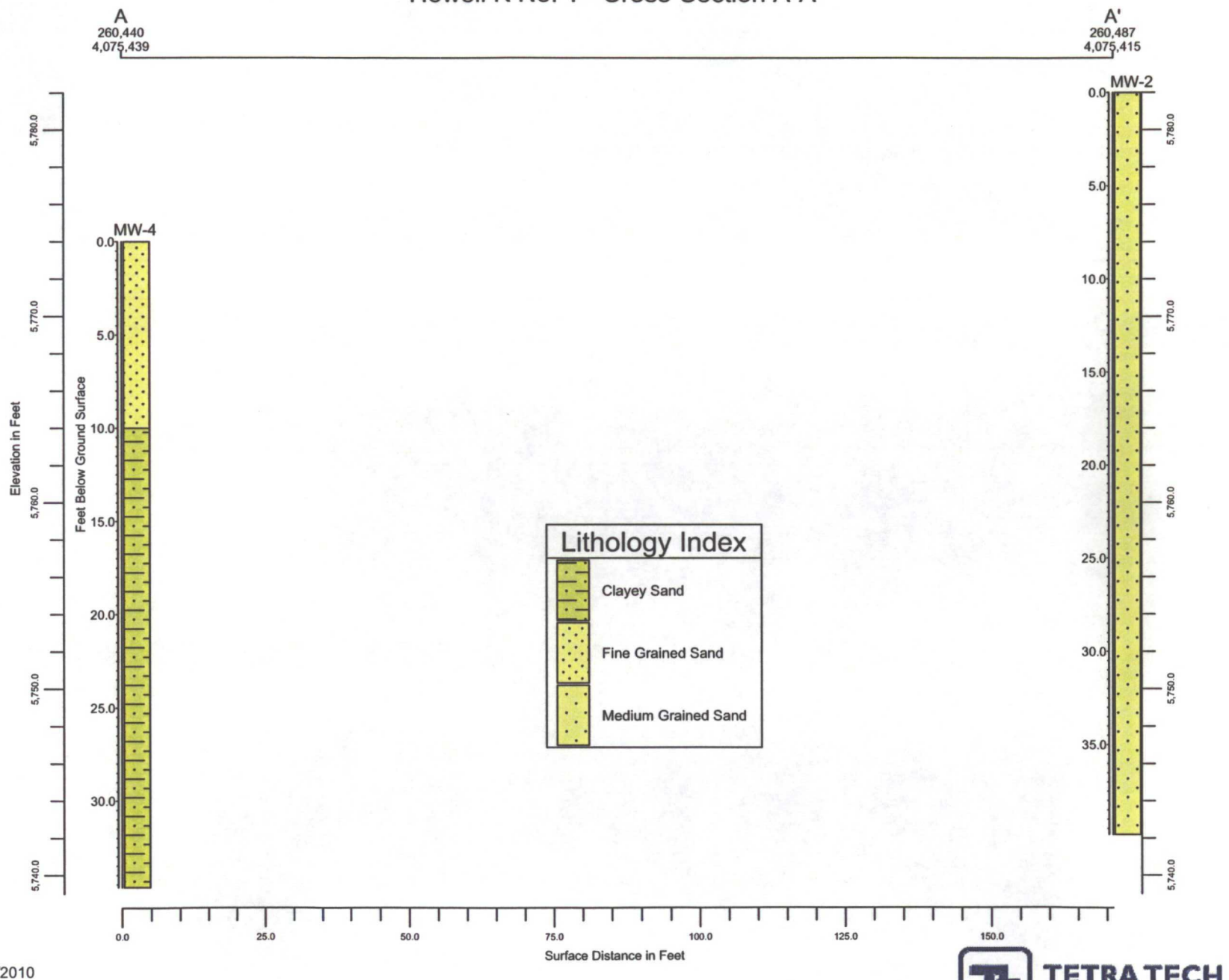
Howell K No. 1 - Cross-Section A-A'



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TETRA TECH

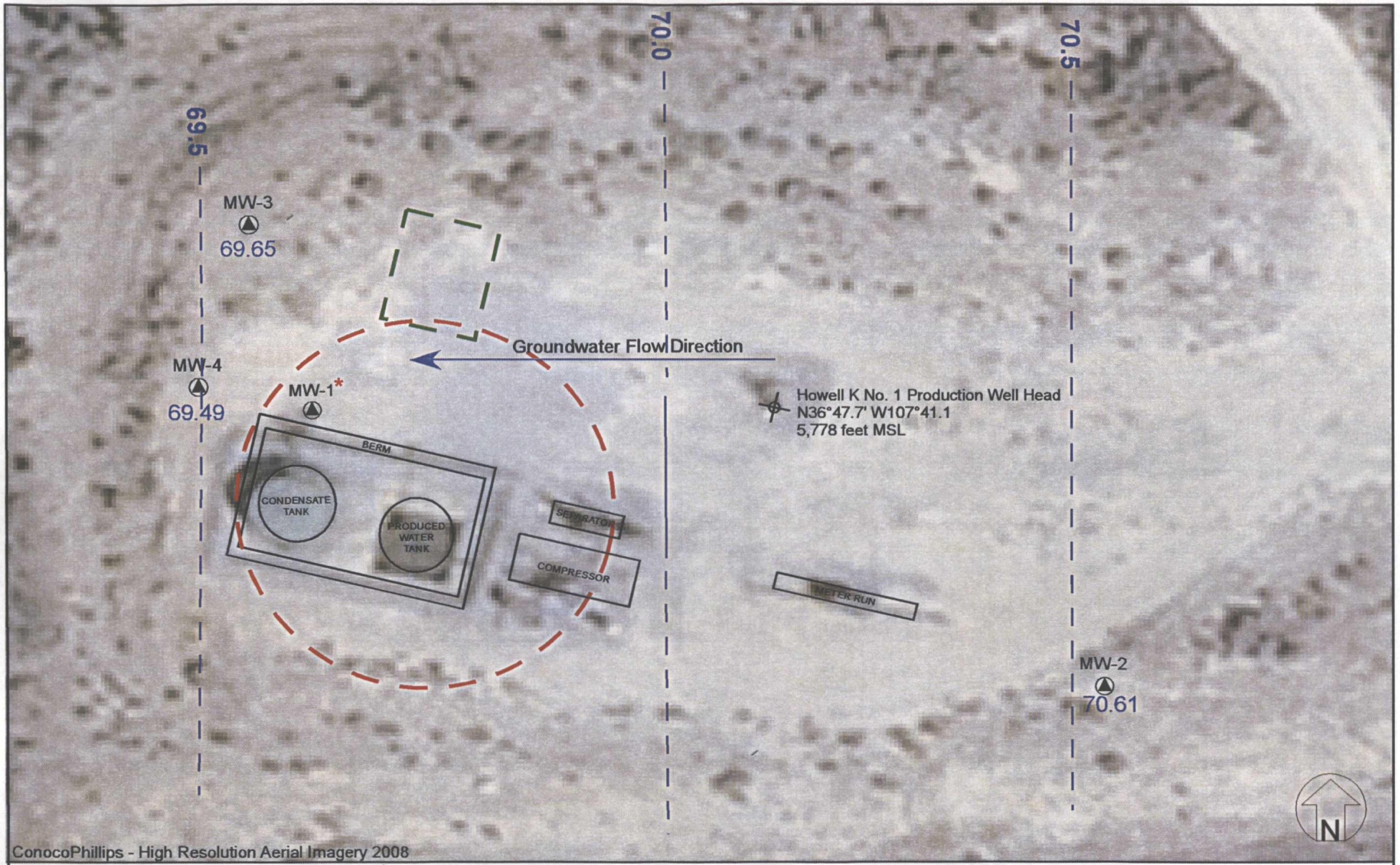

FIGURE 4:
MARCH 2010 GROUNDWATER ELEVATION CONTOUR MAP
CONOCOPHILLIPS COMPANY
HOWELL K No. 1
Unit K - T30N, R8W, Section 21
San Juan County, New Mexico
Revised by CFM 06/10

LEGEND

- WELLHEAD
- MONITORING WELL
- GENERAL AREA OF UNDERGROUND TANK REMOVAL EXCAVATION
- GENERAL AREA OF UNLINED EARTHEN PIT EXCAVATION
- GROUNDWATER ELEVATION (dashed where inferred)
- * Groundwater elevations can not be calculated accurately due to continual upward shifting of the PVC casing (see text of section 2.1, Monitoring Summary, for more information)

0 15 30
FEET

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TABLES

Table 1. Site History Timeline

Date/Time Period	Event/Action	Description/Comments
July 26, through August 18, 2005	Initial Site Assessment	Environmental investigation began with the excavation of approximately 4000 cubic yards of impacted soil from an area southwest of the Howell K No.1 well head. Impacted soils were discovered during the removal activities of a below grade tank. Dimensions of the excavation were approximately 70 feet long by 50 feet wide by 36 feet deep. Groundwater was encountered at approximately 34 feet and soils were still impacted at 36 feet deep, the point at which excavation machinery was stopped at the practical limit for safe operation. The total verticle extent of hydrocarbon impacts were not completely deliniated. Soil was treated with 600 total gallons of potassium permanganate solution. The excavation area was backfilled with clean soil.
March 10, 2006	Groundwater monitoring well installation	One ground water monitoring well, MW-1, was installed in the center of the backfilled excavation by Envirotech. Total depth of well was set at 35 feet.
March 31, 2006	Site Transfer	ConocoPhillips Company completed acquisition of Burlington Resources.
March and June 2007	Groundwater monitoring not performed	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. Due to the transition, first and second quarter sampling of 2007 was not performed.
November 9, 2007 through March 19, 2008	Groundwater monitoring	Tetra Tech began sampling the Howell K No. 1 site quarterly in November of 2007. Groundwater was sampled from MW-1 and was analyzed for BTEX constituents. No constituents were detected at levels that exceeded the NMWQCC standards at any point during this period.
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 postponed	Groundwater monitoring of MW-1 was postponed after it was found that there was an obstruction caused by settling and shifting of the MW-1 casing. It was determined that the obstruction could be avoided by using a smaller bailer to collect samples. Sampling was postponed and was set to follow upcoming monitoring well installation so that proper sampling materials could be used.
August 13 and 14, 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 up-gradient of MW-1. Both MW-3 and MW-4 were installed down-gradient of MW-1. All wells were developed by purging approximately 80 gallons of fluid using a surge block and a purge pump. A sample was collected from MW-1 on August 14th since sampling could not be done in July of 2008. A 3/4 inch disposable bailer was used to avoid obstruction in MW-1. Sample was analyzed for BTEX constituents. All constituents were below NMWQCC standards.
October 24, 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. All BTEX constituents were below NMWQCC standards. All four wells were above standard for sulfate, and showed elevated total iron and total manganese concentrations. MW-4 was also above the NMWWCC standard for Fluoride.
January 30, 2009	4th quarter 2008 groundwater monitoring	Tetra Tech conducted forth quarter 2008 groundwater monitoring at the site for BTEX constituents in all four monitoring wells. All wells are below NMWQCC standards for BTEX .
September 25,2009	2009 annual groundwater monitoring	Tetra Tech conducted 2009 annual groundwater monitoring of MW-2, MW-3 and MW-4 for BTEX, dissoved iron, dissolved manganese, sulfate, and fluoride. All three wells were below NMWQCC standards for BTEX. All three wells were above standard for sulfate. Dissolved manganese was above standard in MW-3 and MW-4 and flouride was above standard in MW-4. Dissolved metals analyses conducted for the first time since standards are based on dissolved metals testing. OCD concurred, allowing total metals testing to be discontinued.

Date/Time Period	Event/Action	Description/Comments
October 18, 2009	Groundwater monitoring	Tetra Tech conducted 2009 annual groundwater monitoring of MW-1 for BTEX, dissoved iron, dissolved manganese, sulfate, and fluoride. MW-1 was below NMWQCC standards for BTEX. Sulfate, dissolved manganese and dissolved iron were above standard in MW-1.
December 15, 2009	Groundwater monitoring	Tetra Tech conducted quarterly groundwater monitoring at the site for BTEX, dissolved iron, dissolved manganese, sulfate and flouride. All four monitoring wells are below NMWQCC standards for BTEX . All four monitoring wells were above standard for sulfate. MW-1, MW-3 and MW-4 were above standard for dissolved manganese and MW-3 and MW-1 were also above standard for dissolved iron.
March 30, 2010	Groundwater monitoring	Tetra Tech conducted quarterly groundwater monitoring at the site for BTEX, dissolved iron, dissolved manganese, sulfate and flouride. All four monitoring wells are below NMWQCC standards for BTEX . All four monitoring wells were above standard for sulfate. MW-1, MW-3 and MW-4 were also above standard for dissolved manganese .

Table 2. Groundwater Elevation Data Summary

Well ID	Total Depth (ft bgs)	Screen Interval (ft)	*Elevation (ft) (TOC)	Date Measured	Depth to Groundwater (ft below TOC)	Relative Groundwater Elevation
MW-1	37.47	21.0 - 36.0	97.84	3/22/2006	28.54	69.30
				6/21/2006	29.15	68.69
				10/19/2006	27.83	70.01
				12/12/2006	28.22	69.62
				March 2006	NS	--
				June 2006	NS	--
				11/9/2007	29.03	68.81
				1/15/2008	28.34	69.5
				3/19/2008	NM	NM
				7/23/2008	28.46	69.38
				10/24/2008	29.91	67.93
				1/30/2009	28.37	69.47
				9/25/2009	29.95	67.89
				10/18/2009	29.97	67.87
				12/15/2009	29.51	--(1)
				3/30/2010	28.18	--(1)
MW-2	39.81	21.0 - 36.0	95.28	10/24/2008	25.74	69.54
				1/30/2009	24.74	70.54
				9/25/2009	26.48	68.80
				12/15/2009	25.97	69.31
				3/30/2010	24.67	70.61
MW-3	37.47	19.0 - 34.0	95.44	10/24/2008	26.95	68.49
				1/30/2009	25.92	69.52
				9/25/2009	27.57	67.87
				12/15/2009	27.05	68.39
				3/30/2010	25.79	69.65
MW-4	34.66	17.0 - 32.0	95.36	10/24/2008	NM	NM
				1/30/2009	26.00	69.36
				9/25/2009	27.64	67.72
				12/15/2009	27.14	68.22
				3/30/2010	25.87	69.49

ft = Feet

TOC = Top of casing

bgs = below ground surface

* = Elevation relative to wellhead

(1) = Groundwater elevations can not be calculated accurately due to continual upward shifting of the PVC casing (see text of section 2.1, Monitoring Summary, of this report for more information)

NS = Not Sampled (quarters not sampled due to change in consulting responsibilities from Lodestar LLC to Tetra Tech Inc.)

Table 3. Groundwater Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Dissolved Iron (mg/L)	Dissolved Manganese (mg/L)
MW-1	3/22/2006	ND	ND	1.00	2.00	NA	NA	NA	NA
	6/21/2006	1.40	1.40	ND	10.60	NA	NA	NA	NA
	10/19/2006	ND	ND	ND	1.10	NA	NA	NA	NA
	12/12/2006	ND	0.50	0.40	2.10	NA	NA	NA	NA
	11/9/2007	<0.5 U	<0.7 U	<0.8 U	<0.9 J	NA	NA	NA	NA
	1/15/2008	<0.5 U	<0.7 U	<0.8 U	<0.8 U	NA	NA	NA	NA
	3/19/2008	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA
	8/14/2008	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA
	10/24/2008	<0.5	<0.5	<0.5	<0.5	< 2.0	**2390**	32.1*	13.4*
	1/30/2009	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	NA	NA	NA
	10/18/2009	<1.0	<1.0	<1.0	<1.0	0.88	**3840**	**2.24**	**17.40**
	12/15/2009	<1.0	<1.0	<1.0	<1.0	< 50	**3290**	**1.70**	**16.50**
	3/30/2010	<1.0	<1.0	<1.0	<1.0	NA	**2950**	0.87	**14.90**
MW-2	10/24/2008	<0.5 U	<0.5 U	<0.5 U	<0.5 U	< 2	**1480**	3.28*	0.231*
	1/30/2009	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	NA	NA	NA
	9/25/2009	<1.0	<1.0	<1.0	<1.0	1.09	**1700**	<0.02	<0.005
	12/15/2009	<1.0	<1.0	<1.0	<1.0	< 100	**1570**	<0.02	<0.005
	3/30/2010	<1.0	<1.0	<1.0	<1.0	NA	**1410**	<0.02	0.14
MW-3	10/24/2008	<0.5 U	<0.5 U	<0.5 U	<0.5 U	< 2	**1480**	3.38*	1.31*
	1/30/2009	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	NA	NA	NA
	9/25/2009	<1.0	<1.0	<1.0	<1.0	1.00	**1840**	<0.02	**0.38**
	12/15/2009	<1.0	<1.0	<1.0	<1.0	< 50	**2500**	**1.35**	**0.32**
	3/30/2010	<1.0	<1.0	<1.0	<1.0	NA	**1890**	<0.02	**0.43**

Explanation

ND = Not Detected
NMWQCC = New Mexico Water Quality Control Commission
mg/L = milligrams per liter (parts per million)
µg/L = micrograms per liter (parts per billion)
NA = Not Analyzed
<0.7 = Below laboratory detection limit of 0.7 ug/L
U = Analyte was analyzed for but not detected at the indicated MDL
Bold = concentrations that exceed the NMWQCC limits
* = Results recorded by total metals analysis, not comparable to NMWQCC standards which are based on dissolved metals concentrations

ConocoPhillips Howell K No. 1

MW-4	10/24/2008	<0.5 U	<0.5 U	<0.5 U	<0.5 U	**2.43**	**3400**	2.7*	7.79*
	1/30/2009	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	NA	NA	NA
	9/25/2009	<1.0	<1.0	<1.0	<1.0	**2.47**	**3860**	<0.02	**7.80**
	12/15/2009	<1.0	<1.0	<1.0	<1.0	< 50	**4540**	0.03	**7.40**
	3/30/2010	<1.0	<1.0	<1.0	<1.0	NA	**3970**	<0.02	**7.83**
NMWQCC Standards		**10 (µg/L)**	**750 (µg/L)**	**750 (µg/L)**	**620 (µg/L)**	**1.6 (mg/L)**	**600 (mg/L)**	**1 (mg/L)**	**0.2 (mg/L)**

Explanation

ND = Not Detected
NMWQCC = New Mexico Water Quality Control Commission
mg/L = milligrams per liter (parts per million)
µg/L = micrograms per liter (parts per billion)
NA = Not Analyzed
<0.7 = Below laboratory detection limit of 0.7 ug/L
U = Analyte was analyzed for but not detected at the indicated MDL
Bold = concentrations that exceed the NMWQCC limits
* = Results recorded by total metals analysis, not comparable to NMWQCC standards which are based on dissolved metals concentrations

APPENDIX A

GROUNDWATER SAMPLING FIELD FORMS

APPENDIX A

GROUNDWATER SAMPLING FIELD FORMS

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Howell K1 Page 2 of 4

Project No.

Site Location San Juan County, NM

Site/Well No. MW-2 Coded/ Replicate No. — Date 3-30-10

Weather Sunny, warm Time Sampling Began 1555 Time Sampling Completed 1610

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 39.81 Water-Level Elevation

Held Depth to Water Below MP 24.67 Diameter of Casing 2"

Wet Water Column in Well 15.14 Gallons Pumped/Bailed Prior to Sampling 7.5 gallons

Gallons per Foot 0.16

Gallons in Well 2.42 X3 = 7.267 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)	DO%
1607	14.30	6.57	2596	1.35	5.27	-32.7	50.3
6.5 1608	14.30	6.52	2596	1.35	4.42	-33.7	42.7
7.25 1609	14.31	6.51	2596	1.35	4.04	-34.3	39.6

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Sulfate	16 oz. Plastic	None
Dissolved Metals	16 oz. Plastic	None

Remarks Purge H_2O light orangish-brown, no sheen or odor observed

Sampling Personnel Christine Mathews & Kelly Blanchard

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 Howell K1 Page 3 of 4

Project No.

Site Location San Juan County, NM

Site/Well No. MW-3 Coded/ Replicate No. — Date 3-30-10

Weather windy, partly cloudy 55 Time Sampling Began 1615 Time Sampling Completed 1635

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 37.47 Water-Level Elevation

Held Depth to Water Below MP 25.79 Diameter of Casing 2"

Wet Water Column in Well 11.68 Gallons Pumped/Bailed Prior to Sampling 5.75

Gallons per Foot 0.16

Gallons in Well 1.86x3 =5.60 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)	
3.5 1624	15.12	6.60	2867	1.863	1.90	-46.7	19.1
4 1626	15.10	6.61	2861	1.859	1.85	-43.2	18.8
5 1628	15.09	6.63	2867	1.866	1.99	-43.6	20.6
5.5 1630	15.06	6.62	2879	1.871	1.85	-44.3	18.6

DO %

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Sulfate	16 oz. Plastic	None
Dissolved Metals	16 oz. Plastic	None

Remarks sediment in water, orangish brown

Sampling Personnel Kelly Blanchard, Christine Mathews

Well Casing Volumes

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

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name: Howell K1 — Page 4 of 4

Project No.:

Site Location: San Juan County, NM

Site/Well No.: MW-4 — Coded/Replicate No.: Dup@1645 — Date: 3-30-10

Weather: Sunny, warm — Time Sampling Began: 1638 — Time Sampling Completed: 1655

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: 34.66 — Water-Level Elevation: _____

Held _____ Depth to Water Below MP: 25.87 — Diameter of Casing: 2"

Wet _____ Water Column in Well: 8.79 — Gallons Pumped/Bailed Prior to Sampling: 4.5 gallons

Gallons per Foot: 0.16

Gallons in Well: 1.406 x 3 = 4.29

Sampling Pump Intake Setting (feet below land surface): _____

Purging Equipment: Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

	Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)	DO%
3.5	1648	15.38	6.61	6439	4.185	4.59	-31.0	45.0
4.0	1650	15.33	6.62	6479	4.211	4.37	-31.8	44.5
4.5	1652	15.37	6.64	6514	4.233	4.10	-32.5	41.9

Sampling Equipment: Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Sulfate	16 oz. Plastic	None
Dissolved Metals	16 oz. Plastic	None

Remarks: H2O started out light brown, cleared up to ~~fairly~~ nearly clear. no odor no sheen

Sampling Personnel: Christine Mathews, Kelly Blanchard

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 Howell K1 Page 1 of 4

Project No.

Site Location San Juan County, NM

Site/Well No. MW-1 Coded/ Replicate No. ~~FB~~ Date 3.30.10

Weather Sunny, warm Time Sampling Began ~~1555~~ 1638 Time Sampling Completed 1720

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 37.47 Water-Level Elevation

Held Depth to Water Below MP 28.18 Diameter of Casing 2"

Wet Water Column in Well 9.29 Gallons Pumped/Bailed Prior to Sampling 2.25 gallons

Gallons per Foot 0.16

Gallons in Well 1.486 x 3 = 4.459 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)

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Sulfate	16 oz. Plastic	None
Dissolved Metals	16 oz. Plastic	None

Remarks H_2O is light yellow-brown, no odor & no sheen observed.

Sampling Personnel Christine Matteus / Kelly Blanchard purge volume low due to wind and dayright.

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

Parameters could not be collected due to low volume in bailers. Small .5 in. bailer used.

APPENDIX B

GROUNDWATER LABORATORY ANALYSIS REPORT

APPENDIX B

GROUNDWATER LABORATORY ANALYSIS REPORT

SPL Inc.
8880 Interchange Drive
Houston, TX 77054
Phone: (713) 660-0901
Fax: (713) 660-8975

Certificate of Analysis

April 15, 2010

Workorder: H10040021

Kelly Blanchard
Tetra Tech
6121 Indian School Road NE
Suite 200
Albuquerque, NM 87110

Project: Howell K-1

Project Number: Howell K-1

Site: Albuquerque, New Mexico

PO Number: 4510016701

NELAC Cert. No.: T104704205-09-1

This Report Contains A Total Of 18 Pages

Excluding Any Attachments

SPL Inc.
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Certificate of Analysis

April 15, 2010

Workorder: H10040021

Kelly Blanchard
Tetra Tech
6121 Indian School Road NE
Suite 200
Albuquerque, NM 87110

Project: Howell K-1

Project Number: Howell K-1

Site: Albuquerque, New Mexico

PO Number: 4510016701

NELAC Cert. No.: T104704205-09-1

I. SAMPLE RECEIPT:

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

II: ANALYSES AND EXCEPTIONS:

There were no exceptions noted.

III. GENERAL REPORTING COMMENTS:

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

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

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

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

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

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

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Certificate of Analysis

April 15, 2010

Workorder: H10040021

Kelly Blanchard
Tetra Tech
6121 Indian School Road NE
Suite 200
Albuquerque, NM 87110

Project: Howell K-1

Project Number: Howell K-1

Site: Albuquerque, New Mexico

PO Number: 4510016701

NELAC Cert. No.: T104704205-09-1

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, Senior Project Manager

Enclosures

SPL Inc.
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Fax: (713) 660-8975

SAMPLE SUMMARY

Workorder: H10040021 : Howell K-1 Project Number: Howell K-1

Lab ID	Sample ID	Matrix	COC ID	Date/Time Collected	Date/Time Received
H10040021001	MW-1	Water		3/30/2010 17:20	4/1/2010 12:22
H10040021002	MW-2	Water		3/30/2010 16:10	4/1/2010 09:00
H10040021003	MW-3	Water		3/30/2010 16:35	4/1/2010 09:00
H10040021004	MW-4	Water		3/30/2010 16:55	4/1/2010 09:00
H10040021005	Duplicate	Water		3/30/2010 16:45	4/1/2010 09:00
H10040021006	Trip Blank	Water		3/30/2010 17:45	4/1/2010 09:00

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ANALYTICAL RESULTS

Workorder: H10040021 : Howell K-1 | Project Number: Howell K-1

Lab ID: **H10040021001** | Date/Time Received: 4/1/2010 12:22 | Matrix: Water

Sample ID: **MW-1** | Date/Time Collected: 3/30/2010 17:20

WET CHEMISTRY

Analysis Desc: EPA 300.0 | Analytical Batches: Batch: 1238 EPA 300.0 on 04/01/2010 19:31 by CFS

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Sulfate	2950		500	43.5	1000			1238

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B | Preparation Batches: Batch: 1638 SW-846 3010A on 04/05/2010 17:00 by R_V | Analytical Batches: Batch: 1334 SW-846 6010B on 04/11/2010 16:06 by EBG

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Iron	0.869		0.0200	0.00640	1		1638	1334
Manganese	14.9		0.00500	0.000300	1		1638	1334

VOLATILES

Analysis Desc: SW-846 8260B | SW-846 5030Analytical Batches: Batch: 1727 SW-846 8260B on 04/05/2010 18:29 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.10	1			1727
Ethylbenzene	ND		1.0	0.15	1			1727
Toluene	ND		1.0	0.29	1			1727
m,p-Xylene	ND		1.0	0.18	1			1727
o-Xylene	ND		1.0	0.13	1			1727
Xylenes, Total	ND		1.0	0.13	1			1727
4-Bromofluorobenzene (S)	106 %		74-125		1			1727
1,2-Dichloroethane-d4 (S)	93.9 %		70-130		1			1727
Toluene-d8 (S)	99.6 %		82-118		1			1727

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ANALYTICAL RESULTS

Workorder: H10040021 : Howell K-1 | Project Number: Howell K-1

Lab ID: **H10040021002** | Date/Time Received: 4/1/2010 09:00 | Matrix: Water

Sample ID: **MW-2** | Date/Time Collected: 3/30/2010 16:10

WET CHEMISTRY

Analysis Desc: EPA 300.0 | Analytical Batches:

Batch: 1238 EPA 300.0 on 04/01/2010 19:48 by CFS

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Sulfate	1410		500	43.5	1000			1238

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B | Preparation Batches:

Batch: 1638 SW-846 3010A on 04/05/2010 17:00 by R_V

Analytical Batches:

Batch: 1334 SW-846 6010B on 04/11/2010 16:12 by EBG

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Iron	ND		0.0200	0.00640	1		1638	1334
Manganese	0.140		0.00500	0.000300	1		1638	1334

VOLATILES

Analysis Desc: SW-846 8260B | SW-846 5030Analytical Batches:

Batch: 1727 SW-846 8260B on 04/05/2010 18:55 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.10	1			1727
Ethylbenzene	ND		1.0	0.15	1			1727
Toluene	ND		1.0	0.29	1			1727
m,p-Xylene	ND		1.0	0.18	1			1727
o-Xylene	ND		1.0	0.13	1			1727
Xylenes, Total	ND		1.0	0.13	1			1727
4-Bromofluorobenzene (S)	102 %		74-125		1			1727
1,2-Dichloroethane-d4 (S)	91.3 %		70-130		1			1727
Toluene-d8 (S)	103 %		82-118		1			1727

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ANALYTICAL RESULTS

Workorder: H10040021 : Howell K-1 | Project Number: Howell K-1

Lab ID: **H10040021003** | Date/Time Received: 4/1/2010 09:00 | Matrix: Water

Sample ID: **MW-3** | Date/Time Collected: 3/30/2010 16:35

WET CHEMISTRY

Analysis Desc: EPA 300.0 | Analytical Batches:

Batch: 1238 EPA 300.0 on 04/01/2010 20:04 by CFS

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Sulfate	1890		500	43.5	1000			1238

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B | Preparation Batches:

Batch: 1638 SW-846 3010A on 04/05/2010 17:00 by R_V

Analytical Batches:

Batch: 1334 SW-846 6010B on 04/11/2010 16:17 by EBG

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Iron	ND		0.0200	0.00640	1		1638	1334
Manganese	0.430		0.00500	0.000300	1		1638	1334

VOLATILES

Analysis Desc: SW-846 8260B | SW-846 5030Analytical Batches:

Batch: 1727 SW-846 8260B on 04/05/2010 19:21 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.10	1			1727
Ethylbenzene	ND		1.0	0.15	1			1727
Toluene	ND		1.0	0.29	1			1727
m,p-Xylene	ND		1.0	0.18	1			1727
o-Xylene	ND		1.0	0.13	1			1727
Xylenes, Total	ND		1.0	0.13	1			1727
4-Bromofluorobenzene (S)	98.2 %		74-125		1			1727
1,2-Dichloroethane-d4 (S)	95.9 %		70-130		1			1727
Toluene-d8 (S)	96.8 %		82-118		1			1727

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ANALYTICAL RESULTS

Workorder: H10040021 : Howell K-1 | Project Number: Howell K-1

Lab ID: **H10040021004** | Date/Time Received: 4/1/2010 09:00 | Matrix: Water

Sample ID: **MW-4** | Date/Time Collected: 3/30/2010 16:55

WET CHEMISTRY

Analysis Desc: EPA 300.0 | Analytical Batches: Batch: 1238 EPA 300.0 on 04/01/2010 20:21 by CFS

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Sulfate	3970		500	43.5	1000			1238

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B | Preparation Batches: Batch: 1638 SW-846 3010A on 04/05/2010 17:00 by R_V | Analytical Batches: Batch: 1334 SW-846 6010B on 04/11/2010 16:23 by EBG

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Iron	ND		0.0200	0.00640	1		1638	1334
Manganese	7.83		0.00500	0.000300	1		1638	1334

VOLATILES

Analysis Desc: SW-846 8260B | SW-846 5030Analytical Batches: Batch: 1727 SW-846 8260B on 04/05/2010 19:48 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.10	1			1727
Ethylbenzene	ND		1.0	0.15	1			1727
Toluene	ND		1.0	0.29	1			1727
m,p-Xylene	ND		1.0	0.18	1			1727
o-Xylene	ND		1.0	0.13	1			1727
Xylenes, Total	ND		1.0	0.13	1			1727
4-Bromofluorobenzene (S)	103 %		74-125		1			1727
1,2-Dichloroethane-d4 (S)	93.7 %		70-130		1			1727
Toluene-d8 (S)	100 %		82-118		1			1727

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ANALYTICAL RESULTS

Workorder: H10040021 : Howell K-1 | Project Number: Howell K-1

Lab ID: **H10040021005** | Date/Time Received: 4/1/2010 09:00 | Matrix: Water

Sample ID: **Duplicate** | Date/Time Collected: 3/30/2010 16:45

VOLATILES

Analysis Desc: SW-846 8260B | SW-846 5030Analytical Batches:

Batch: 1727 SW-846 8260B on 04/05/2010 14:03 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.10	1			1727
Ethylbenzene	ND		1.0	0.15	1			1727
Toluene	ND		1.0	0.29	1			1727
m,p-Xylene	ND		1.0	0.18	1			1727
o-Xylene	ND		1.0	0.13	1			1727
Xylenes, Total	ND		1.0	0.13	1			1727
4-Bromofluorobenzene (S)	102 %		74-125		1			1727
1,2-Dichloroethane-d4 (S)	94.8 %		70-130		1			1727
Toluene-d8 (S)	99.4 %		82-118		1			1727

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ANALYTICAL RESULTS

Workorder: H10040021 : Howell K-1 | Project Number: Howell K-1

Lab ID: **H10040021006** | Date/Time Received: 4/1/2010 09:00 | Matrix: Water

Sample ID: **Trip Blank** | Date/Time Collected: 3/30/2010 17:45

VOLATILES

Analysis Desc: SW-846 8260B | SW-846 5030Analytical Batches:

Batch: 1727 SW-846 8260B on 04/05/2010 16:16 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.10	1			1727
Ethylbenzene	ND		1.0	0.15	1			1727
Toluene	ND		1.0	0.29	1			1727
m,p-Xylene	ND		1.0	0.18	1			1727
o-Xylene	ND		1.0	0.13	1			1727
Xylenes, Total	ND		1.0	0.13	1			1727
4-Bromofluorobenzene (S)	101 %		74-125		1			1727
1,2-Dichloroethane-d4 (S)	91 %		70-130		1			1727
Toluene-d8 (S)	96.9 %		82-118		1			1727

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QUALITY CONTROL DATA

Workorder: H10040021 : Howell K-1 — Project Number: Howell K-1

QC Batch: IC/1238 — Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Associated Lab Samples: H10040013001, H10040017001, H10040017002, H10040021001, H10040021002, H10040021003, H10040021004, H10040022001, H10040025001, H10040025002, H10040025003

METHOD BLANK: 37213

Analysis Date/Time Analyst: 04/01/2010 10:36 CFS

Parameter	Units	Blank Result	Qualifiers	Reporting Limit
Sulfate	mg/l	ND		0.500

LABORATORY CONTROL SAMPLE & LCSD: 37214 37223

LCS Analysis Date/Time Analyst: 04/01/2010 10:53 CFS

LCSD Analysis Date/Time 04/01/2010 21:27 CFS

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD
Sulfate	mg/l	10	10.17	9.391	102	93.9	85-115	7.9	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 37221 37222 Original: H10040017001

MS Analysis Date/Time Analyst: 04/01/2010 14:13 CFS

MSD Analysis Date/Time Analyst: 04/01/2010 15:38 CFS

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Sulfate	mg/l	107	1000	1023	1006	91.7	89.9	80-120	1.8	20

QC results presented in the QC Control Data 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. Also, MS/MSD % recoveries are calculated by the SPL LIMS using any detected value greater than the MDL.

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QUALITY CONTROL DATA

Workorder: H10040021 : Howell K-1 Project Number: Howell K-1

QC Batch: DIGM/1638 Analysis Method: SW-846 6010B

QC Batch Method: SW-846 3010A Preparation: 04/05/2010 17:00 by R_V

Associated Lab Samples: H10040019001 H10040019002 H10040019003 H10040019004 H10040021001 H10040021002 H10040021003 H10040021004 H10040025001 H10040025002 H10040025003 H10040049001 H10040049002 H10040049003 H10040049004 H10040050001 H10040051001 H10040051002 H10040051003 H10040051004

METHOD BLANK: 37509

Analysis Date/Time Analyst: 04/11/2010 13:44 EBG

Parameter	Units	Blank Result	Qualifiers	Reporting Limit
Iron	mg/l	ND		0.0200
Manganese	mg/l	ND		0.00500

LABORATORY CONTROL SAMPLE: 37510

Analysis Date/Time Analyst: 04/11/2010 13:49 EBG

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits
Iron	mg/l	1.0	1.02	102	80-120
Manganese	mg/l	0.10	0.1052	105	80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 37507 37508 Original: H10040025002

MS Analysis Date/Time Analyst: 04/11/2010 14:00 EBG

MSD Analysis Date/Time Analyst: 04/11/2010 14:06 EBG

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Iron	mg/l	0.0072	1.0	1.091	1.003	109	100	75-125	8.4	20
Manganese	mg/l	0.136	0.10	0.2285	0.2325	92.9	96.9	75-125	1.7	20

QC results presented in the QC Control Data 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. Also, MS/MSD % recoveries are calculated by the SPL LIMS using any detected value greater than the MDL.

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QUALITY CONTROL DATA

Workorder: H10040021 : Howell K-1 Project Number: Howell K-1

QC Batch: MSV/1726 Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030 Preparation: 04/05/2010 00:00 by LKL

Associated Lab Samples: H10040021001 H10040021002 H10040021003 H10040021004 H10040021005 H10040021006 H10040025001 H10040025002 H10040025003 H10040025004 H10040025005

METHOD BLANK: 38400

Analysis Date/Time Analyst: 04/05/2010 13:36 LKL

Parameter	Units	Blank Result	Qualifiers	Reporting Limit
Benzene	ug/l	ND		1.0
Ethylbenzene	ug/l	ND		1.0
Toluene	ug/l	ND		1.0
m,p-Xylene	ug/l	ND		1.0
o-Xylene	ug/l	ND		1.0
Xylenes, Total	ug/l	ND		1.0
4-Bromofluorobenzene (S)	%	105		74-125
1,2-Dichloroethane-d4 (S)	%	97.8		70-130
Toluene-d8 (S)	%	102		82-118

LABORATORY CONTROL SAMPLE: 38401

Analysis Date/Time Analyst: 04/05/2010 12:43 LKL

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits
Benzene	ug/l	20	19.7	98.7	74-123
Ethylbenzene	ug/l	20	20.8	104	72-127
Toluene	ug/l	20	20.0	100	74-126
m,p-Xylene	ug/l	40	43.9	110	71-129
o-Xylene	ug/l	20	21.3	106	74-130
Xylenes, Total	ug/l	60	65.17	109	71-130
4-Bromofluorobenzene (S)	%			103	74-125
1,2-Dichloroethane-d4 (S)	%			93.7	70-130
Toluene-d8 (S)	%			100	82-118

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 38402 38403 Original: H10040021005

MS Analysis Date/Time Analyst: 04/05/2010 14:29 LKL

MSD Analysis Date/Time Analyst: 04/05/2010 14:57 LKL

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Benzene	ug/l	ND	20	19.5	19.1	97.4	95.5	70-124	2.0	20
Ethylbenzene	ug/l	ND	20	19.8	19.6	99.2	98.0	35-175	1.3	20
Toluene	ug/l	ND	20	19.1	19.9	95.3	99.5	70-131	4.3	20

QC results presented in the QC Control Data 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. Also, MS/MSD % recoveries are calculated by the SPL LIMS using any detected value greater than the MDL.

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QUALITY CONTROL DATA

Workorder: H10040021 : Howell K-1 Project Number: Howell K-1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 38402 38403 Original: H10040021005

MS Analysis Date/Time Analyst: 04/05/2010 14:29 LKL

MSD Analysis Date/Time Analyst: 04/05/2010 14:57 LKL

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
m,p-Xylene	ug/l	ND	40	39.2	40.4	98.1	101	35-175	3.1	20
o-Xylene	ug/l	ND	20	19.5	19.6	97.4	98.0	35-175	0.6	20
Xylenes, Total	ug/l	ND	60	58.72	60.06	97.9	100	35-175	2.3	20
4-Bromofluorobenzene (S)	%	102				99.4	103	74-125		30
1,2-Dichloroethane-d4 (S)	%	94.8				95.9	88.4	70-130		30
Toluene-d8 (S)	%	99.4				97.7	99.9	82-118		30

QC results presented in the QC Control Data 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. Also, MS/MSD % recoveries are calculated by the SPL LIMS using any detected value greater than the MDL.

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Legend

(S) - Indicates analyte is a surrogate

Qualifier	Qualifier Description
MI	Matrix Interference
I	Estimated value, between MDL and PQL (Florida)
JN	The analysis indicates the presence of an analyte
C	MTBE results were not confirmed by GCMS
NC	Not Calculated - Sample concentration > 4 times the spike
*	Recovery/RPD value outside QC limits
E	Results exceed calibration range
H	Exceeds holding time
J	Estimated value
Q	Received past holding time
B	Analyte detected in the Method Blank
N	Recovery outside of control limits
D	Recovery out of range due to dilution
NC	Not Calculable (Sample Duplicate)
P	Pesticide dual column results, greater then 25%

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: H10040021 : Howell K-1 Project Number: Howell K-1

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
H10040021001	**MW-1**	EPA 300.0	IC/1238		
H10040021002	**MW-2**	EPA 300.0	IC/1238		
H10040021003	**MW-3**	EPA 300.0	IC/1238		
H10040021004	**MW-4**	EPA 300.0	IC/1238		
H10040021001	**MW-1**	SW-846 3010A	DIGM/1638	SW-846 6010B	ICP/1334
H10040021002	**MW-2**	SW-846 3010A	DIGM/1638	SW-846 6010B	ICP/1334
H10040021003	**MW-3**	SW-846 3010A	DIGM/1638	SW-846 6010B	ICP/1334
H10040021004	**MW-4**	SW-846 3010A	DIGM/1638	SW-846 6010B	ICP/1334
H10040021001	**MW-1**	SW-846 5030	MSV/1726	SW-846 8260B	MSV/1727
H10040021002	**MW-2**	SW-846 5030	MSV/1726	SW-846 8260B	MSV/1727
H10040021003	**MW-3**	SW-846 5030	MSV/1726	SW-846 8260B	MSV/1727
H10040021004	**MW-4**	SW-846 5030	MSV/1726	SW-846 8260B	MSV/1727
H10040021005	**Duplicate**	SW-846 5030	MSV/1726	SW-846 8260B	MSV/1727
H10040021006	**Trip Blank**	SW-846 5030	MSV/1726	SW-846 8260B	MSV/1727

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Sample Receipt Checklist

WorkOrder:	H10040021	Received By	LOG
Date and Time	04/01/2010 12:22	Carrier Name:	FEDEXS
Temperature:	4.0°C	Chilled By:	Water Ice

1.	Shipping container/cooler in good condition?	YES
2.	Custody seals intact on shipping container/cooler?	YES
3.	Custody seals intact on sample bottles?	Not Present
4.	Chain of custody present?	YES
5.	Chain of custody signed when relinquished and received?	YES
6.	Chain of custody agrees with sample labels?	YES
7.	Samples in proper container/bottle?	YES
8.	Samples containers intact?	YES
9.	Sufficient sample volume for indicated test?	YES
10.	All samples received within holding time?	YES
11.	Container/Temp Blank temperature in compliance?	YES
12.	Water - VOA vials have zero headspace?	YES
13.	Water - Preservation checked upon receipt(except VOA*)?	Not Applicable

*VOA Preservation Checked After Sample Analysis

SPL Representative: Contact Date & Time:

Client Name Contacted:

Client Instructions:

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SPL, Inc.

Analysis Request & Chain of Custody Record

H10040021

290318

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Client Name: Tetra Tech / ConocoPhillips
Address: 6121 Indian School Rd NE #200
City: Albuquerque State: NM Zip: 87110
Phone/Fax: 505.237.8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Howell K-1
Site Name:
Site Location: Near Aztec
Invoice To: ConocoPhillips # 45100167O1 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 V=vial G=glass 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-1	3-30-10	1720		X	W	V	40	1	3	X		
MW-1	3-30-10	1720		X	W	P	16	Ø	2		X	X
MW-2	3-30-10	1610		X	W	V	40	1	3	X		
MW-2	3-30-10	1610		X	W	P	16	Ø	2		X	X
MW-3	3-30-10	1635		X	W	V	40	1	3	X		
MW-3	3-30-10	1635		X	W	P	16	Ø	2		X	X
MW-4	3-30-10	1655		X	W	V	40	1	3	X		
MW-4	3-30-10	1655		X	W	P	16	Ø	2		X	X
Duplicate	3-30-10	1645		X	W	V	40	1	3	X		
Trip Blank	3-30-10	1745			W	V	40	1	2	X		

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp: 4.8°C

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: Kelly Blanchard	3-31-10	800	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 4/1/10	time 0900	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