3R – 317

2014 AGWMR

04 / 10 / 2015

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One Williams Center
P.O. Box 645
Tulsa, OK 74101-0645

April 10, 2014

Glenn Von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Online Submission of 2014 Annual Groundwater Reports

Dear Mr. Von Gonten,

Williams Field Services (Williams) is electronically submitting the attached 2014 annual groundwater monitoring reports covering the period from January 1, 2014 to December 31, 2014 for the following sites:

- Davis #1 (3RP-311-0);
- Dogie East Pit (3RP-312-0);
- Florance #40 (3RP-315-0);
- Florance #47X (3RP-317-0);
- Ice Canyon Drip (3RP-322-0);
- Jicarilla Contract #147-6 (3RP-325-0); and
- Pritchard #2A (3RP-339-0).

If you have any questions regarding these reports please contact me at 918-573-4371 or Danny.Reutlinger@Williams.com or Ashley Ager with LT Environmental at 970-385-1096 or aager@ltenv.com.

Sincerely,
Williams Field Services

Danny L. Reutlinger

Danny Reutlinger
Senior Project Manager

cc:
Attachments (7)

2014 ANNUAL GROUNDWATER REPORT

FLORANCE #47X
ADMINISTRATIVE/ENVIRONMENTAL ORDER NUMBER 3RP-317-0

APRIL 2015

Prepared for:

WILLIAMS FIELD SERVICES, LLC
Tulsa, Oklahoma

2014 ANNUAL GROUNDWATER REPORT

FLORANCE #47X
ADMINISTRATIVE/ENVIRONMENTAL ORDER NUMBER 3RP-317-0

APRIL 2015

Prepared for:

WILLIAMS FIELD SERVICES, LLC
PO Box 3483, MD 48-6
Tulsa, Oklahoma 74101

Prepared by:

LT ENVIRONMENTAL, INC.
2243 Main Avenue, Suite 3
Durango, Colorado 81301
(970) 385-1096

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TABLES

APPENDICES

EXECUTIVE SUMMARY

Groundwater at the Florance #47X (Administrative/Environmental Order Number 3RP-317-0) (Site) is impacted by petroleum hydrocarbons due to a release from a former dehydrator pit.

Between January 2014 and December 2014, LT Environmental Inc., (LTE) on behalf of Williams Field Services, LLC (Williams) conducted four groundwater monitoring events (March 2014, June 2014, September 2014, and December 2014).

Groundwater monitoring wells MW-1 and MW-4 were not sampled in 2014 as concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX) have been compliant with New Mexico Water Quality Control Commission (NMWQCC) groundwater standards since 2000 and 2003, respectively. Concentrations of benzene and total xylenes exceeded NMWQCC groundwater standards in samples collected from groundwater monitoring wells MW-2 and MW-5 during all four quarters of 2014.

Measurable phase-separated hydrocarbons (PSH) were observed in groundwater monitoring well MW-3 during the four quarterly monitoring events in 2014. LTE recovered PSH from MW-3 during 2014 using oil absorbent socks and manual recovery.

Williams will continue to monitor groundwater elevations and the presence of PSH in groundwater monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5 annually. Groundwater samples will be collected annually from groundwater monitoring wells MW-2. MW-3, and MW-5 if measurable PSH is not detected. Additionally, Williams will manually recover PSH from groundwater monitoring well MW-3 and install oil absorbent socks for passive PSH recovery between site visits.

Williams intends to replace monitoring wells MW-2 and MW-5 and install a new monitoring well (MW-6) downgradient to delineate impacted groundwater once a surface agreement can be negotiated with the Bureau of Land Management. New groundwater monitoring wells will be immediately developed, sampled, and placed on a monitoring schedule based on the initial sampling results.

1.0 INTRODUCTION

LT Environmental, Inc. (LTE) on behalf of Williams Field Services, LLC (Williams) has prepared this report detailing quarterly groundwater monitoring activities completed from January 2014 through December 2014 at the Florance #47X (Administrative/Environmental Order Number 3RP-317-0) (Site). The scope of work for this project includes quarterly monitoring of petroleum hydrocarbon impacts to groundwater resulting from the operation of a former earthen dehydrator pit, including groundwater sampling and recovery of phase-separated hydrocarbons (PSH).

1.1 LOCATION

The Site is located at latitude 36.843316 and longitude -108.800667 in Unit G, Section 5, Township 30 North, Range 9 West as depicted on Figure 1. The Site is in Crow Canyon, a tributary of Pump Canyon, in the San Juan Basin in San Juan County, New Mexico.

1.2 HISTORY

In June 1996, approximately 399 cubic yards of impacted soil were excavated from what was believed to be the former dehydrator pit. Hand-written notes indicated the dimensions of the pit were 27 feet by 21 feet by 19 feet deep. A composite soil sample from the pit excavation contained 97 milligrams per kilogram (mg/kg) of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and 277 mg/kg of total petroleum hydrocarbons (TPH)-diesel range organics (DRO). A test hole was drilled in the location of the excavation to a depth of 115 feet below ground surface (bgs); groundwater was encountered at 96.95 feet in this test hole. A soil sample from this test hole at 56 feet bgs contained 6,318 mg/kg of TPH-gasoline range organics (GRO) and 88.2 mg/kg of TPH-DRO. A groundwater sample from this test hole, renamed groundwater monitoring well MW-2, contained 18,650 micrograms per liter (µg/L) of BTEX.

Between September 1999 and December 2012, Williams monitored groundwater in five groundwater monitoring wells at the Site (Figure 2). Groundwater monitoring wells MW-2, MW-3, and MW-5 contained PSH at some time between 1999 and 2013. Records regarding these activities can be found in previous groundwater reports submitted to the New Mexico Oil Conservation Division (NMOCD).

Laboratory analytical results for groundwater samples collected in groundwater monitoring wells MW-1 and MW-4 indicated benzene, toluene, ethylbenzene, and total xylenes (BTEX) concentrations were compliant with the New Mexico Water Quality Control Commission (NMWQCC) standards for more than eight consecutive quarters and sampling of these wells ceased after the March 2013 monitoring event.

On September 12, 2013, LTE collected a sample of PSH from groundwater monitoring well MW-3 for paraffins, isoparaffins, aromatics, naphthenes, and olefins (PIANO) analysis to determine the chemical composition of the PSH and identify the potential source at the Site.

2.0 METHODOLOGY

During 2014, LTE conducted quarterly groundwater monitoring activities at the Site. These activities included measuring depth to groundwater and investigating presence of PSH in monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5. Groundwater samples were collected from MW-2 and MW-5.

2.1 WATER AND PRODUCT LEVEL MEASUREMENTS

Groundwater level monitoring activities included recording depth to groundwater measurements with a Keck oil/water interface probe. The presence of any PSH was investigated using the interface probe. The interface probe was decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement. These data are summarized in Table 1.

2.2 GROUNDWATER SAMPLING

Prior to sampling groundwater, depth to groundwater and total depth of monitoring wells were measured with a Keck oil/water interface probe. Groundwater monitoring wells containing measurable PSH were not sampled. The volume of water in each monitoring well was calculated, and a minimum of three well casing volumes of water was purged from each well using a dedicated polyvinyl chloride (PVC) bailer. As water was removed from the monitoring well, pH, electric conductivity, and temperature were monitored. Monitoring wells were purged until these properties stabilized, indicating the purge water was representative of aquifer conditions, or until the well was purged dry. Stabilization was defined as three consecutive stable readings for each water property (plus or minus (±) 0.4 units for pH, ±10 percent for electric conductivity, and ±2º Celsius for temperature). All purge water was contained and disposed of at a facility designated by Williams. A copy of the 2014 quarterly field notes are presented in Appendix A.

Once each monitoring well was properly purged, groundwater samples were collected by filling three 40-milliliter (ml) glass vials. The laboratory-supplied vials were filled and capped with no air inside to prevent degradation of the sample. Samples were labeled with the date and time of collection, monitoring well designation, project name, collector's name, and parameters to be analyzed. Samples were immediately sealed, packed on ice, and transferred to Hall Environmental Analysis Laboratory (HEAL) for analysis. HEAL analyzed the samples for BTEX using United States Environmental Protection Agency Method 8021.

2.3 GROUNDWATER CONTOUR MAPS

LTE used existing top-of-casing well elevations and groundwater elevations obtained from monitoring wells during the June 2013 re-survey of top-of-casing well elevations. The updated top-of-casing elevations were used for drafting groundwater contours and determining groundwater flow direction for the March, June, September, and December 2014 quarterly monitoring events (Figures 2 through 5). Contours were inferred based on groundwater elevations obtained and observations of physical characteristics at the Site (topography, proximity to irrigation ditches, etc.).

2.4 PSH RECOVERY

Oil absorbent socks were used to passively recover PSH in monitoring well MW-3. Oil absorbent socks were removed from the well at least seven days prior to sampling to allow groundwater to equilibrate. After sampling, new oil absorbent socks were installed. LTE estimated the volume of recovered PSH based on percent saturation observed in the socks.

3.0 RESULTS

Depth to groundwater data collected during the 2014 quarterly monitoring events are summarized on Table 1. Groundwater flow direction was determined to be to the southeast (Figures 2 through 5).

During the 2014 quarterly monitoring events, laboratory analytical results indicated BTEX concentrations exceeded the New Mexico Water Quality Control Commission (NMWQCC) groundwater standards in groundwater monitoring wells MW-2 and MW-5. Laboratory analytical results for groundwater are summarized in Table 2. Copies of the laboratory analytical results are presented in Appendix B.

Groundwater was not sampled from MW-3 during 2014 due to the presence of PSH. Monitoring well MW-3 contained measurable PSH ranging in thickness from 0.27 feet to 0.56 feet during 2014. A total of approximately 194.6 ounces of PSH was removed from MW-3 during 2014 through passive product recovery socks and manual bailing.

4.0 CONCLUSIONS

In 2014, PSH was measured in monitoring well MW-3 downgradient of the original source area. Additionally, elevated concentrations of BTEX exceeding NMWQCC standards were detected in groundwater sampled from monitoring wells MW-2 and MW-5 located within and downgradient of the source area. Monitoring wells MW-2 and MW-5 are damaged, restricting data gathering and remediation options in those locations.

5.0 RECOMMENDATIONS

Williams will continue to monitor groundwater elevations and presence of PSH from MW-1, MW-2, MW-3, MW-4, and MW-5 annually. Groundwater samples will be collected annually from MW-2, MW-3, and MW-5, if measurable PSH is not detected. Additionally, Williams will manually recover PSH from groundwater monitoring well MW-3 during each site visit and install oil absorbent socks for passive PSH recovery between site visits.

Williams intends to replace damaged monitoring wells MW-2 and MW-5 and install a new monitoring well, MW-6, downgradient for delineation of impacted groundwater once a surface agreement can be negotiated with the Bureau of Land Management. The new groundwater monitoring wells will be immediately developed, sampled, and placed on a monitoring schedule based on the initial sampling results.

FIGURES

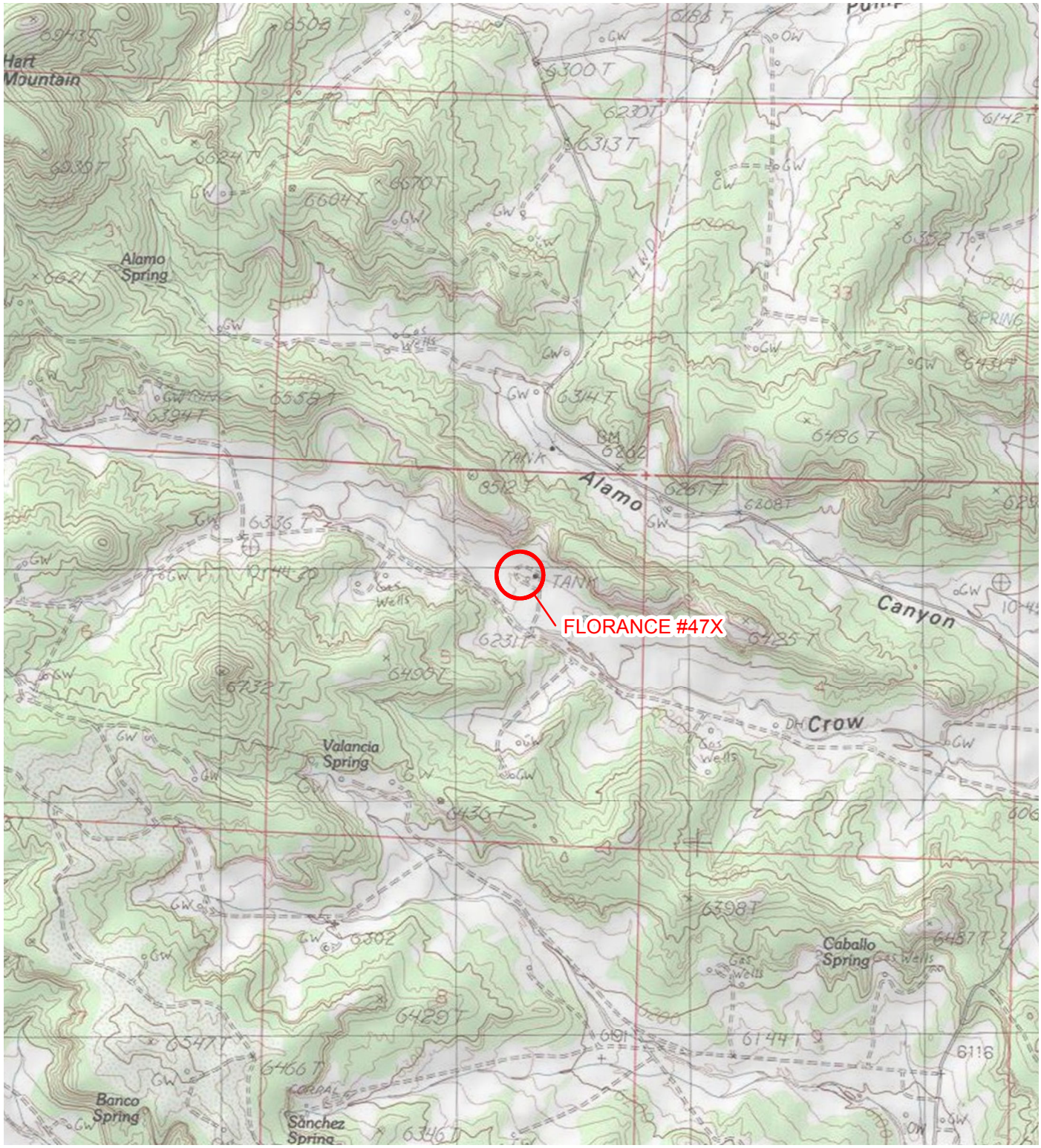

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

FIGURE 1
SITE LOCATION MAP
FLORANCE #47X
SAN JUAN COUNTY, NEW MEXICO

WILLIAMS FIELD SERVICES, LLC

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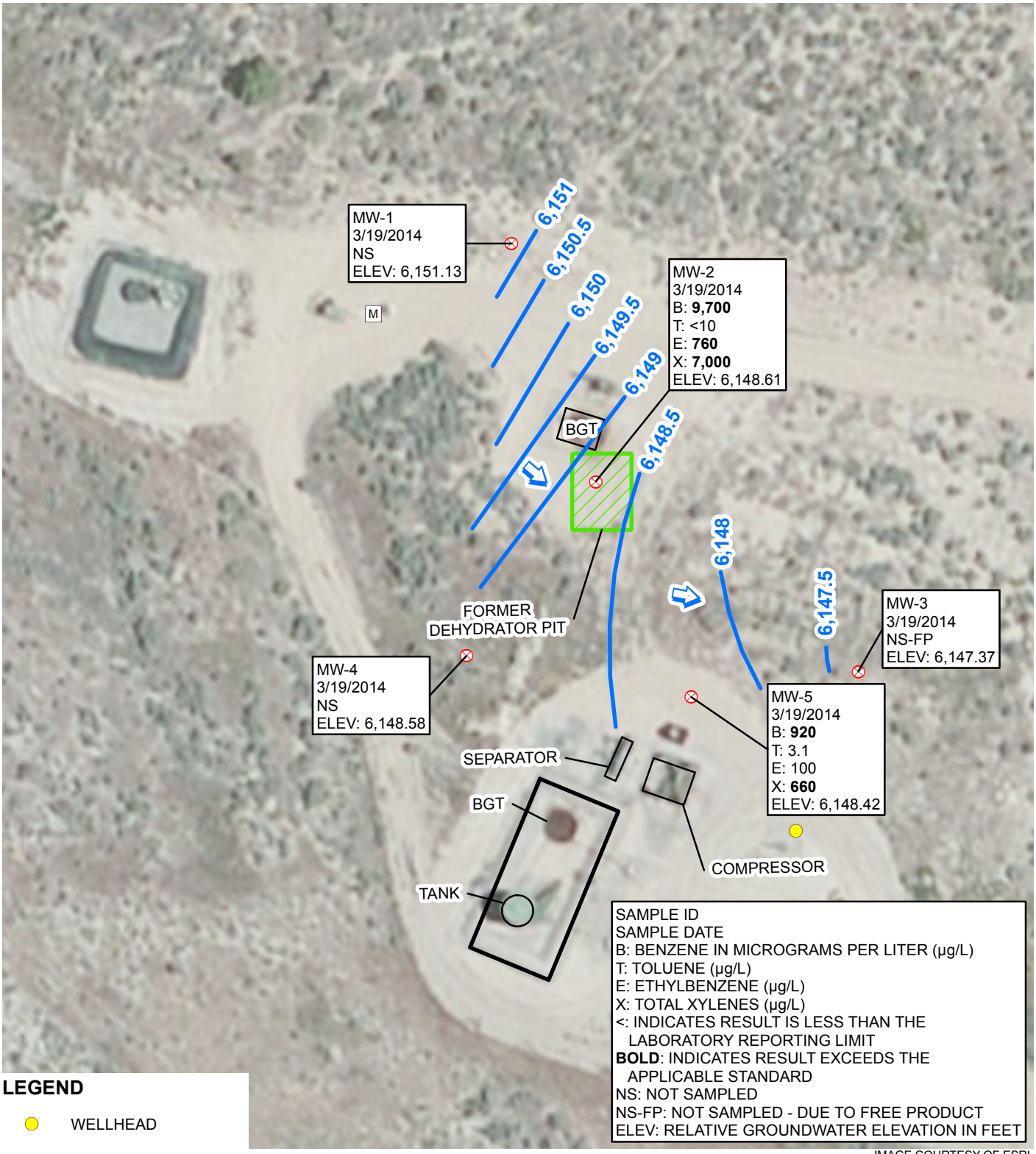

LEGEND

- WELLHEAD
- MONITORING WELL
- METER HOUSE
- ESTIMATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
- CONTOUR INTERVAL = 0.5 FEET
- BERM

BGT: BELOW GRADE TANK

FIGURE 2
GROUNDWATER ELEVATION & ANALYTICAL RESULTS (MARCH 2014)
FLORANCE #47X
SAN JUAN COUNTY, NEW MEXICO
WILLIAMS FIELD SERVICES, LLC

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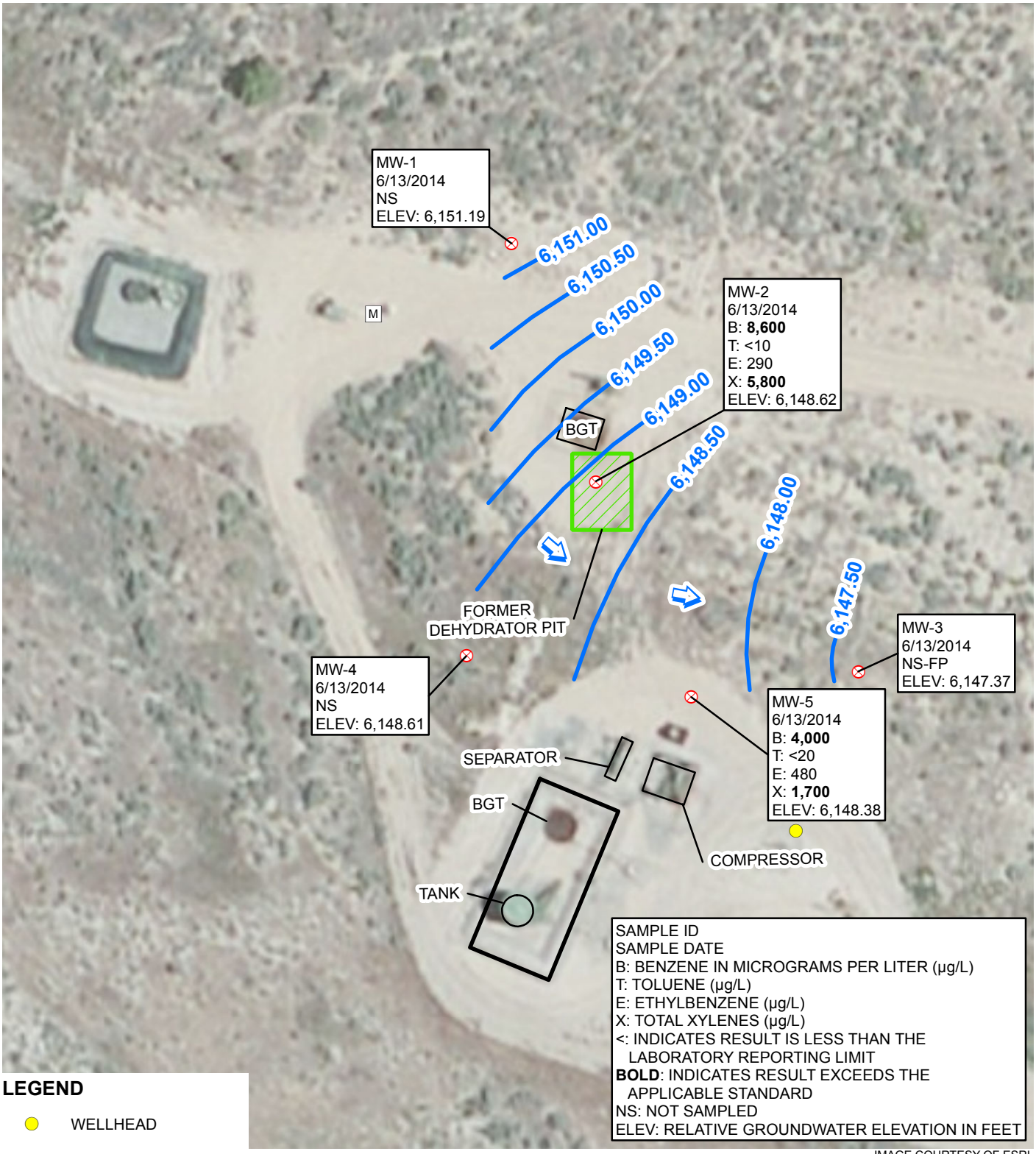

FIGURE 3
GROUNDWATER ELEVATION & ANALYTICAL RESULTS (JUNE 2014)
FLORANCE #47X
SAN JUAN COUNTY, NEW MEXICO
WILLIAMS FIELD SERVICES, LLC

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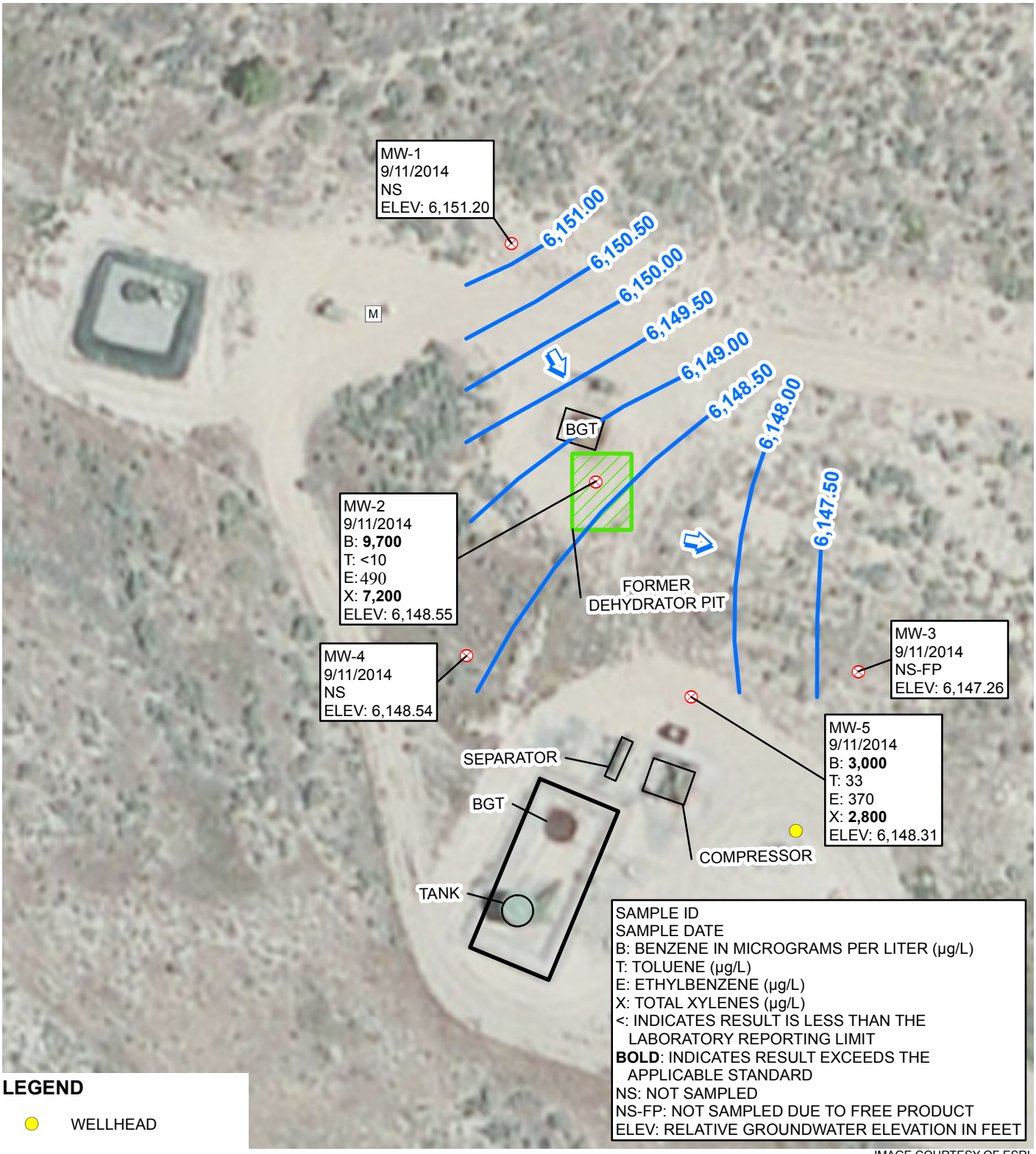

LEGEND

- WELLHEAD
- MONITORING WELL
- M METER HOUSE
- ESTIMATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 0.5 FEET
- BERM

BGT: BELOW GRADE TANK

FIGURE 4
GROUNDWATER ELEVATION &
ANALYTICAL RESULTS (SEPTEMBER 2014)
FLORANCE #47X
SAN JUAN COUNTY, NEW MEXICO
WILLIAMS FIELD SERVICES, LLC

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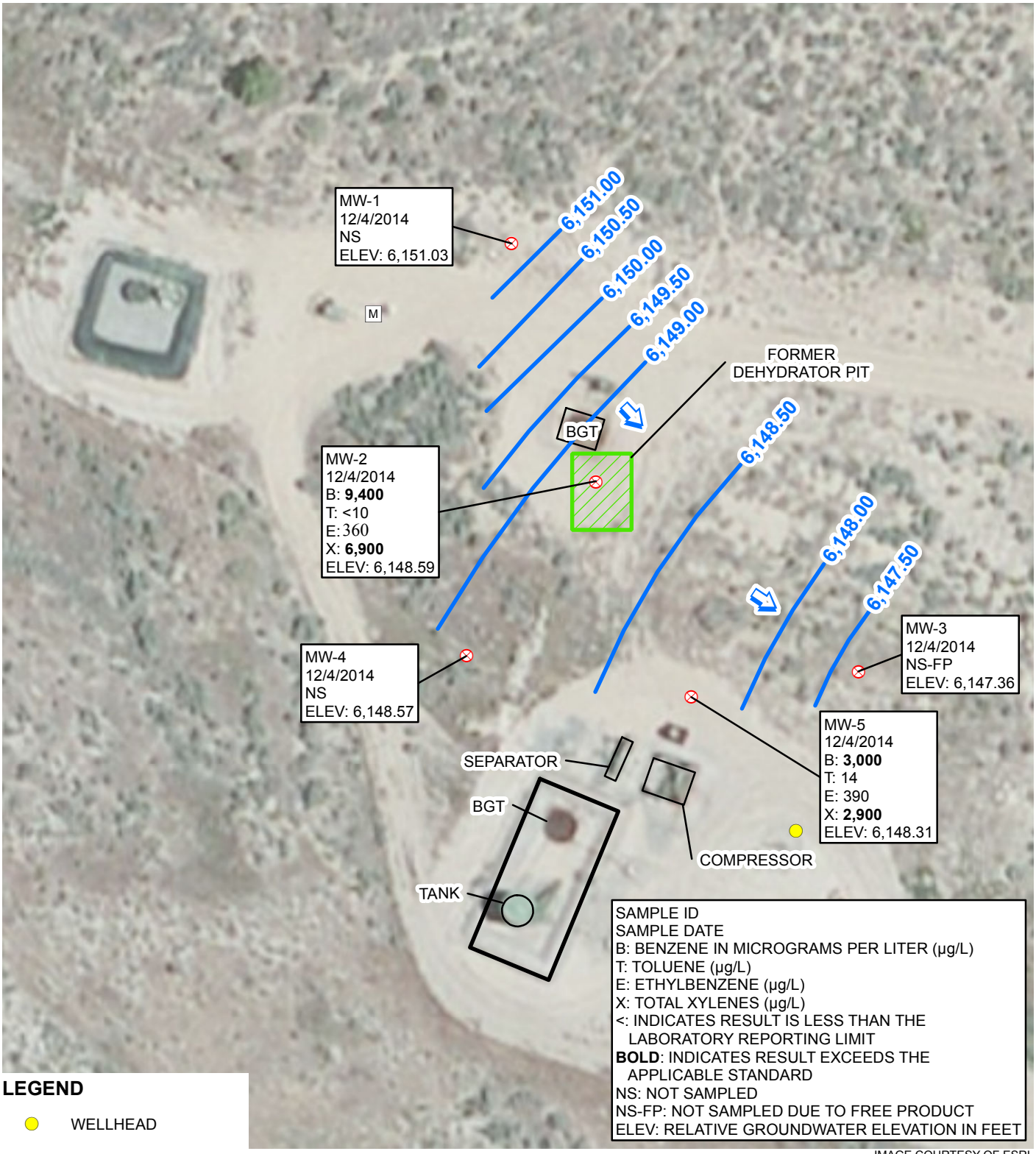

LEGEND

- WELLHEAD
- MONITORING WELL
- M METER HOUSE
- ESTIMATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
  CONTOUR INTERVAL = 0.5 FEET
- BERM

BGT: BELOW GRADE TANK

FIGURE 5
GROUNDWATER ELEVATION &
ANALYTICAL RESULTS (DECEMBER 2014)
FLORANCE #47X
SAN JUAN COUNTY, NEW MEXICO
WILLIAMS FIELD SERVICES, LLC

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TABLES

TABLE 1

GROUNDWATER ELEVATIONS SUMMARY
FLORANCE #47X
WILLIAMS FIELD SERVICES, LLC

Well Name	Date	Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet BTOC)	Depth to Product (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW-1	4/2/2012	6,229.61	UNK	UNK	UNK	UNK
MW-1	6/13/2012	6,229.61	UNK	UNK	UNK	UNK
MW-1	10/2/2012	6,229.61	UNK	UNK	UNK	UNK
MW-1	12/6/2012	6,229.61	UNK	UNK	UNK	UNK
MW-1	3/1/2013	6,229.61	99.52	NP	NP	6,130.09
MW-1	6/24/2013**	6,250.21	99.41	NP	NP	6,150.80
MW-1	9/12/2013	6,250.21	98.90	NP	NP	6,151.31
MW-1	12/4/2013	6,250.21	98.79	NP	NP	6,151.42
MW-1	3/19/2014	6,250.21	99.08	NP	NP	6,151.13
MW-1	6/13/2014	6,250.21	99.02	NP	NP	6,151.19
MW-1	9/11/2014	6,250.21	99.01	NP	NP	6,151.20
MW-1	12/4/2014	6,250.21	99.18	NP	NP	6,151.03
MW-2	4/2/2012	6,226.30	UNK	UNK	UNK	UNK
MW-2	6/13/2012	6,226.30	UNK	UNK	UNK	UNK
MW-2	10/2/2012	6,226.30	UNK	UNK	UNK	UNK
MW-2	12/6/2012	6,226.30	UNK	UNK	UNK	UNK
MW-2	3/1/2013	6,226.30	98.47	NP	NP	6,127.83
MW-2	6/24/2013**	6,247.15	98.45	NP	NP	6,148.70
MW-2	9/12/2013	6,247.15	98.60	NP	NP	6,148.55
MW-2	12/4/2013	6,247.15	98.41	NP	NP	6,148.74
MW-2	3/19/2014	6,247.15	98.54	NP	NP	6,148.61
MW-2	6/13/2014	6,247.15	98.53	NP	NP	6,148.62
MW-2	9/11/2014	6,247.15	98.60	NP	NP	6,148.55
MW-2	12/4/2014	6,247.15	98.56	NP	NP	6,148.59
MW-3	4/2/2012	6,217.53	UNK	UNK	UNK	UNK
MW-3	6/13/2012	6,217.53	UNK	UNK	UNK	UNK
MW-3	10/2/2012	6,217.53	UNK	UNK	UNK	UNK
MW-3	12/6/2012	6,217.53	UNK	UNK	UNK	UNK
MW-3*	3/1/2013	6,217.53	92.48	91.51	0.97	6,125.83
MW-3*	6/24/2013**	6,238.51	91.71	90.86	0.85	6,147.48
MW-3	9/12/2013	6,238.51	91.69	90.89	0.80	6,147.46
MW-3	12/4/2013	6,238.51	91.23	90.83	0.40	6,147.60
MW-3	3/19/2014	6,238.51	91.59	91.03	0.56	6,147.37
MW-3	6/13/2014	6,238.51	91.38	91.08	0.30	6,147.37
MW-3	9/11/2014	6,238.51	91.47	91.20	0.27	6,147.26
MW-3	12/4/2014	6,238.51	91.15	91.15†	<0.01	6,147.36
MW-4	4/2/2012	6,219.93	UNK	UNK	UNK	UNK
MW-4	6/13/2012	6,219.93	UNK	UNK	UNK	UNK
MW-4	10/2/2012	6,219.93	UNK	UNK	UNK	UNK
MW-4	12/6/2012	6,219.93	UNK	UNK	UNK	UNK
MW-4	3/1/2013	6,219.93	92.02	NP	NP	6,127.91
MW-4	6/24/2013**	6,240.67	91.98	NP	NP	6,148.69
MW-4	9/12/2013	6,240.67	92.00	NP	NP	6,148.67
MW-4	12/4/2013	6,240.67	91.96	NP	NP	6,148.71

TABLE 1

GROUNDWATER ELEVATIONS SUMMARY
FLORANCE #47X
WILLIAMS FIELD SERVICES, LLC

Well Name	Date	Top of Casing Elevation (feet AMSL)	Depth to Groundwater (feet BTOC)	Depth to Product (feet BTOC)	Product Thickness (feet)	Groundwater Elevation (feet AMSL)
MW-4	3/19/2014	6,240.67	92.09	NP	NP	6,148.58
MW-4	6/13/2014	6,240.67	92.06	NP	NP	6,148.61
MW-4	9/11/2014	6,240.67	92.13	NP	NP	6,148.54
MW-4	12/4/2014	6,240.67	92.10	NP	NP	6,148.57
MW-5	4/2/2012	6,216.97	UNK	UNK	UNK	UNK
MW-5	6/13/2012	6,216.97	UNK	UNK	UNK	UNK
MW-5	10/2/2012	6,216.97	UNK	UNK	UNK	UNK
MW-5	12/6/2012	6,216.97	UNK	UNK	UNK	UNK
MW-5	3/1/2013	6,216.97	90.48	90.46	0.02	6,126.51
MW-5	6/24/2013**	6,238.33	89.78	NP	NP	6,148.55
MW-5	9/12/2013	6,238.33	89.98	NP	NP	6,148.35
MW-5	12/4/2013	6,238.33	89.86	NP	NP	6,148.47
MW-5	3/19/2014	6,238.33	89.91	NP	NP	6,148.42
MW-5	6/13/2014	6,238.33	89.95	NP	NP	6,148.38
MW-5	9/11/2014	6,238.33	90.02	NP	NP	6,148.31
MW-5	12/4/2014	6,238.33	90.02	NP	NP	6,148.31

Notes:
* Due to presence of product recovery device, this is not a static water level
** Top of casing elevation was resurveyed on 6/20/13
†Oil-water interface probe did not detect phase separated hydrocarbons. LTE visually observed phase separated hydrocarbons using a bailer.
Groundwater elevation calculation in wells with product: (Top of Casing Elevation - Depth to Water) + (Product Thickness * 0.8)
AMSL - Above Mean Sea Level
BTOC - Below Top of Casing
NP - no free-phase hydrocarbons are present the well
UNK - data is not known

TABLE 2

GROUNDWATER LABORATORY ANALYTICAL RESULTS
FLORANCE #47X
WILLIAMS FIELD SERVICES, LLC

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standard (µg/L)		**10**	**750**	**750**	**620**
MW-1	1/8/1997	**3,380**	**7,150**	**917**	**7,200**
MW-1	7/13/1997	**367**	241	35	191
MW-1	10/1/1997	**171**	54	27	65
MW-1	1/6/1998	**147**	70	20	73.6
MW-1	3/9/1998	**140**	1.4	17	36
MW-1	6/11/1998	**94**	19	11	16.3
MW-1	8/12/1998	**49**	4.7	8.8	5.7
MW-1	12/15/1998	**46**	11	5.8	4.7
MW-1	2/9/1999	**33**	6.6	5.6	4.7
MW-1	4/21/1999	**40**	15	6.4	10.4
MW-1	7/28/1999	**34**	7.8	3	3.0
MW-1	11/3/1933	2.9	<0.5	<0.5	<1.5
MW-1	3/23/2000	**10**	1.1	<0.5	<1.5
MW-1	6/14/2000	4.1	1.4	0.6	<1.5
MW-1	11/17/2000	4.64	<1.0	<1.0	<1.0
MW-1	1/31/2001	3.67	1.44	<1.0	<1.0
MW-1	4/30/2001	5.44	1.90	<1.0	1.78
MW-1	10/10/2001	1.1	<2.0	<2.0	<2.0
MW-1	12/2/2003	<2.0	<2.0	<2.0	<5.0
MW-1	9/20/2004	3.4	<2.0	<2.0	<5.0
MW-1	12/3/2004	<2.0	<2.0	<2.0	<5.0
MW-1	3/10/2005	<2.0	<2.0	<2.0	<5.0
MW-1	6/18/2005	<2.0	<2.0	<2.0	<5.0
MW-1	7/13/2006	2.2	<1.0	<1.0	<3.0
MW-1	9/21/2006	4.9	<1.0	<1.0	<3.0
MW-1	3/29/2010	<1.0	<1.0	<1.0	<3.0
MW-1	6/18/2010	<1.0	<1.0	<1.0	<3.0
MW-1	9/10/2010	1.2	<1.0	<1.0	<3.0
MW-1	12/4/2010	<1.0	<1.0	<1.0	<3.0
MW-1	3/2/2011	<1.0	<1.0	<1.0	<3.0
MW-1	6/14/2011	3.6	<1.0	<1.0	<3.0
MW-1	9/12/2011	<1.0	<1.0	<1.0	<3.0
MW-1	1/3/2012	<1.0	<1.0	<1.0	<3.0
MW-1	4/2/2012	<1.0	<1.0	<1.0	<3.0
MW-1	6/13/2012	<1.0	<1.0	<1.0	<3.0
MW-1	10/2/2012	1.1	<1.0	<1.0	<3.0
MW-1	12/6/2012	<1.0	<1.0	<1.0	<3.0
MW-1	3/1/2013	<1.0	<1.0	<1.0	<2.0
MW-2	8/12/1998	**9,800**	**14,000**	**920**	**9,200**
MW-2	12/15/1998	**12,000**	**17,000**	**870**	**8,700**
MW-2	2/9/1999	**11,000**	**16,000**	720	**7,300**

TABLE 2

GROUNDWATER LABORATORY ANALYTICAL RESULTS
FLORANCE #47X
WILLIAMS FIELD SERVICES, LLC

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standard (µg/L)		**10**	**750**	**750**	**620**
MW-2	4/21/1999	**14,000**	**20,000**	**850**	**8,500**
MW-2	7/28/1999	**11,000**	**15,000**	740	**6,800**
MW-2	11/3/1999	**11,000**	**14,000**	**770**	**8,100**
MW-2	3/23/2000	**12,000**	**15,000**	**810**	**8,200**
MW-2	6/14/2000	**6,400**	**7,000**	570	**5,800**
MW-2	11/17/2000	**5,980**	**3,240**	600	**4,780**
MW-2	1/31/2001	**6,300**	**2,790**	458	**5,490**
MW-2	4/30/2001	**7,160**	**2,200**	404	**7,060**
MW-2	10/10/2001	**4,500**	**1,000**	390	**3,800**
MW-2	12/2/2003	**11,000**	<100	540	**6,400**
MW-2	9/20/2004	**11,000**	<200	600	**5,800**
MW-2	12/3/2004	**11,000**	<200	630	**6,300**
MW-2	3/10/2005	**10,000**	38	490	**5,700**
MW-2	6/18/2005	**9,700**	<100	640	**6,000**
MW-2	9/16/2005	**8,900**	31	370	**4,800**
MW-2	11/30/2005	<2.0	2.9	<2.0	12.2
MW-2	7/18/2006	**16,900**	<10.0	**753**	**4,370**
MW-2	3/29/2010	**9,460**	67	521	**6,210**
MW-2	6/18/2010	**3,270**	<1.0	260	**3,530**
MW-2	12/4/2010	**1,470**	26.3	599	**2,720**
MW-2	3/2/2011	**2,530**	1.4	**764**	**3,700**
MW-2	6/14/2011	**8,500**	<20.0	537	**4,490**
MW-2	1/3/2012	**9,400**	<50.0	710	**6,340**
MW-2	4/2/2012	**10,000**	710	<100	**6,390**
MW-2	6/13/2012	**11,200**	716	<50.0	**6,790**
MW-2	10/2/2012	**10,200**	**765**	<100	**7,260**
MW-2	12/6/2012	**8,280**	722	<50.0	**5,610**
MW-2	3/4/2013	**8,600**	<10	<10	**6,500**
MW-2	6/24/2013	**6,300**	<10	600	**5,800**
MW-2	9/12/2013	NSO	NSO	NSO	NSO
MW-2	12/4/2013	**39**	72	<5.0	150
MW-2	3/19/2014	**9,700**	<10	**760**	**7,000**
MW-2	6/13/2014	**8,600**	<10	290	**5,800**
MW-2	9/11/2014	**9,700**	<10	490	**7,200**
MW-2	12/8/2014	**9,400**	<10	360	**6,900**
MW-3	4/2/2012	NS	NS	NS	NS
MW-3	6/13/2012	NS	NS	NS	NS
MW-3	10/2/2012	NS	NS	NS	NS
MW-3	12/6/2012	NS	NS	NS	NS
MW-3	3/1/2013	NS-FP	NS-FP	NS-FP	NS-FP
MW-3	6/24/2013	NS-FP	NS-FP	NS-FP	NS-FP

TABLE 2

GROUNDWATER LABORATORY ANALYTICAL RESULTS
FLORANCE #47X
WILLIAMS FIELD SERVICES, LLC

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standard (µg/L)		**10**	**750**	**750**	**620**
MW-3	9/12/2013	NS-FP	NS-FP	NS-FP	NS-FP
MW-3	12/4/2013	NS-FP	NS-FP	NS-FP	NS-FP
MW-3	3/19/2014	NS-FP	NS-FP	NS-FP	NS-FP
MW-3	6/13/2014	NS-FP	NS-FP	NS-FP	NS-FP
MW-3	9/11/2014	NS-FP	NS-FP	NS-FP	NS-FP
MW-3	12/4/2014	NS-FP	NS-FP	NS-FP	NS-FP
MW-4	12/15/1998	**44**	11	5.8	4.8
MW-4	2/9/1999	**11,000**	**16,000**	730	**7,300**
MW-4	4/21/1999	**68**	25	9.3	13
MW-4	7/2/1999	**11,000**	**14,000**	700	**6,700**
MW-4	3/23/2000	**11,000**	**13,000**	**770**	**7,800**
MW-4	6/14/2000	**28**	42	7	135
MW-4	11/17/2000	**59.9**	104	2.94	98.3
MW-4	1/31/2001	**30.3**	81.0	5.20	156
MW-4	4/30/2001	**36.1**	56.1	1.32	73
MW-4	10/10/2001	**24**	28	<2.0	47
MW-4	12/2/2003	2.3	2.7	<2.0	6.5
MW-4	9/20/2004	3.6	3.2	<2.0	9.8
MW-4	12/3/2004	2.5	2.3	<2.0	8
MW-4	3/10/2005	3.0	3.5	<2.0	11
MW-4	6/18/2005	<2.0	3	<2.0	8.6
MW-4	9/16/2005	<2.0	2.3	<2.0	9.4
MW-4	11/30/2005	<2.0	<2.0	<2.0	10.4
MW-4	7/13/2006	2.9	<1.0	1.0	9.9
MW-4	9/21/2006	1.2	<1.0	<1.0	9.6
MW-4	3/29/2010	1.3	<1.0	<1.0	8.7
MW-4	6/18/2010	<1.0	<1.0	<1.0	6.8
MW-4	9/10/2010	<1.0	<1.0	<1.0	3.9
MW-4	12/4/2010	<1.0	<1.0	<1.0	5.6
MW-4	3/2/2011	<1.0	<1.0	<1.0	3
MW-4	6/14/2011	<1.0	<1.0	<1.0	6
MW-4	9/12/2011	<1.0	<1.0	<1.0	4.7
MW-4	1/3/2012	<1.0	<1.0	<1.0	5.4
MW-4	4/2/2012	<1.0	<1.0	<1.0	6.1
MW-4	6/13/2012	<1.0	<1.0	<1.0	3.7
MW-4	10/2/2012	<1.0	<1.0	<1.0	4.5
MW-4	12/6/2012	<1.0	<1.0	<1.0	6
MW-4	3/1/2013	<1.0	<1.0	<1.0	<2.0
MW-5	6/14/2000	**1,100**	710	100	**1,100**
MW-5	6/14/2000	**890**	570	80	**900**

TABLE 2

GROUNDWATER LABORATORY ANALYTICAL RESULTS
FLORANCE #47X
WILLIAMS FIELD SERVICES, LLC

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Standard (µg/L)		**10**	**750**	**750**	**620**
MW-5	11/17/2000	**161**	110	8.09	60.8
MW-5	4/30/2001	**15.7**	21.6	2.01	17.9
MW-5	10/10/2001	**380**	120	19	220
MW-5	12/2/2003	**41**	7.9	3.1	10
MW-5	9/20/2004	**17**	3.7	<2.0	9.9
MW-5	12/9/2004	**13**	3.3	<2.0	14
MW-5	3/10/2005	5.5	<2.0	<2.0	6.3
MW-5	7/13/2006	**920**	74	34.7	**1,980**
MW-5	9/21/2006	**135**	19.2	17.0	409
MW-5	4/2/2012	NS	NS	NS	NS
MW-5	6/13/2012	NS	NS	NS	NS
MW-5	10/2/2012	NS	NS	NS	NS
MW-5	12/6/2012	NS	NS	NS	NS
MW-5	3/1/2013	NS-FP	NS-FP	NS-FP	NS-FP
MW-5	6/24/2013	**930**	<50	98	**1,100**
MW-5	9/12/2013	**2,400**	40	250	**3,800**
MW-5	12/4/2013	**410**	46	51	**1,000**
MW-5	3/19/2014	**920**	3.1	100	**660**
MW-5	6/13/2014	**4,000**	<20	480	**1,700**
MW-5	9/11/2014	**3,000**	33	370	**2,800**
MW-5	12/4/2014	**3,000**	14	390	**2,900**

Notes:
Bold - indicates sample exceeds NMWQCC standard
< - indicates result is less than laboratory reporting detection limit
µg/L - micrograms per liter
NMWQCC - New Mexico Water Quality Control Commission
NS - not sampled
NSC - not sampled due to eight quarters below NMWQCC standards
NS -FP - not sampled due to the presence of free-phase hydrocarbons in the well
NSO - not sampled due to obstruction

APPENDIX A

2014 QUARTERLY FIELD NOTES

Water Sample Collection Form

Sample Location	Florance 47	Client	Williams Field Services
Sample Date	3/9/14	Project Name	San Juan Basin Remediation
Sample Time	1548	Project #	034013010
Sample ID	MW-2	Sampler	Daniel Newman
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	98.54	TD of Well	101.84
Time	1522	Depth to Product	N/A
Vol. of H2O to purge	101.84 - 98.54 = 3.3 x 0.163) = 0.538 x 3 = 1.61		

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: PVC Bailer

Method of Sampling: PVC Bailer

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. (C)F	Conductivity (µs or ms)	Comments
1522	0.25	0.25	7.12	63.0	1197	clear w Black specs,
	0.20	0.45	7.10	63.0	1204	clear/gray w Black specs
	0.20	0.65	7.16	61.0	1282	clear/Black, slight sheen
	0.20	0.85	7.13	62.1	1269	No change
1543	0.10	0.95	7.14	62.0	1264	No change

Comments: Bailing Down sample @ 1548 3/VOA

Describe Deviations from SOP: Pd not purge Full 3 casings GRAB Sample obtained when well started to bail dry

Signature: _____ **Date:** 3/19/14

Water Sample Collection Form

Sample Location	Florance 47	Client	Williams Field Services
Sample Date	3/19/14	Project Name	San Juan Basin Remediation
Sample Time	N/A	Project #	034013010
Sample ID	MW-3	Sampler	Daniel Neuman
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	91.03	TD of Well	100.11
Time	1646	Depth to Product	91.59
~~Vol. of H2O to purge~~ Heigh of product	91.59 - 91.03 = 0.56		

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: PVC Bailer

Method of Sampling: ~~PVC Bailer~~ DN

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	Product in Bailer inches ~~pH (std. units)~~	Temp. (C)	Conductivity (us or ms)	Comments
1646	0.25	0.25	3inch			
	0.25	0.50	3inch			
	0.25	0.75	2inch			
	0.25	1.00	2inch			
	0.25	1.25	2inch			
	0.25	.50	1inch			
	0.25	.75	1inch			
	0.25	2.00	0.5inch			
			14.5"			

Comments: 0.56 inch of product on water table

NO SAMPLE FREE PRODUCT

14.5 = 19.6 oz Product removed

INSTALL 2 NEW PR SOCKS IN well

Describe Deviations from SOP: N/A

Signature: [signature] **Date:** 3/19/14

LTE

Water Sample Collection Form

Sample Location	Florance 47	Client	Williams Field Services
Sample Date	3/19/14	Project Name	San Juan Basin Remediation
Sample Time	1628	Project #	034013010
Sample ID	MW-5	Sampler	Daniel Neuman
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	89.91	TD of Well	99.79
Time	1603	Depth to Product	N/A

Vol. of H2O to purge: 99.79 - 89.91 = 9.88 x 0.1631 = 1.61 x 3 = 4.83

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: PVC Bailer

Method of Sampling: PVC Bailer

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. (C)	Conductivity (us or ms)	Comments
1603		3oz				
1628						GRAB Sample

Comments: Was unable to obtain water Quality Peramaters Bailer would not make it up the well with water in it

Describe Deviations from SOP: was unable to purge well collected GRAB sample. IN 3 VOA's

Signature: _____ **Date:** 3/19/14

LTE

Water Sample Collection Form

Sample Location	Florance #47x	Client	Williams Field Services
Sample Date	6/13/14	Project Name	San Juan Basin Remediation
Sample Time	~~1525~~ BH 1350	Project #	034013010
Sample ID	MW-2	Sampler	BHerb
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	98.53	TD of Well	101.81
Time	1130	Depth to Product	NA

Vol. of H2O to purge: 3.28 x .1631 = 0.53 x 3 = 1.60
*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: PVC Bailer

Method of Sampling: PVC Bailer

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. (C)~~F~~	Conductivity (us or ~~ms~~)	Comments
1145	0.25	0.25	~~7.15~~ BH 7.15	70.3	2.11	lt. gray clear slight HC odor
						Bailed Dry.

Comments: Bailer would not fill after initial drop. GRABS Sample had to be collected from decanted pitcher in 3 non-preserved VOAs due to reaction with HCL.
Return to well to sample recharge @ 1350. Was able to fill up 3 new non-pres. VOAs from Bailer

Describe Deviations from SOP: See Above. Bailed dry before 3 casing volumes were purged

Signature: BH **Date:** 6/13/14

LTE

Water Sample Collection Form

Sample Location	Florance #47X	Client	Williams Field Services
Sample Date	6/13/14	Project Name	San Juan Basin Remediation
Sample Time	1255	Project #	034013010
Sample ID	MW-5	Sampler	BHerb
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	89.95	TD of Well	99.79
Time	12:15	Depth to Product	NA

Vol. of H2O to purge: NA - Grab Sample

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: BH ~~PVC Bailer~~ Grab Sample

Method of Sampling: PVC Bailer

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. (C)	Conductivity (us or ms)	Comments
1215		GRAB Sample				Clear slight HC odor

Comments: Had to collect Grab Sample. Well is damaged. Top of PVC not connected inside steel protector, which is bent. TOC/DTW measurments not completly accurate. Hard to get piezometer sized bailer down the well. Bailer comes up 1/4 full. Filled 3 HCL VOAs

Describe Deviations from SOP: See Above

Signature: BH **Date:** 6/13/14

Water Sample Collection Form

Sample Location	Florance #47	Client	Williams Field Services
Sample Date	9/11/14	Project Name	San Juan Basin Remediation
Sample Time	1015	Project #	034013010
Sample ID	MW-2	Sampler	Alex Crooks
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	98.60	TD of Well	101.84
Time	958	Depth to Product	N/A

Vol. of H2O to purge: 101.84-98.60 = 3.24 x .1631 = .52 x 3 = 1.59

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: PVC Bailer

Method of Sampling: PVC Bailer

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. ~~(C)~~ F	Conductivity (us or ~~ms~~)	Comments
1000	.25	.25	7.13	65.5	.41	Clear, Odor
1015						Took grab Sample

Comments: Purged .25 gal before well ~~Stro~~ went almost dry. Took grab Sample. Used no preservative

Describe Deviations from SOP: Took grab sample before well went dry

Signature: Alex Crooks **Date:** 9/11/14

Water Sample Collection Form

Sample Location	Florance #47	Client	Williams Field Services
Sample Date	9/11/14	Project Name	San Juan Basin Remediation
Sample Time	N/A	Project #	034013010
Sample ID	MW-3	Sampler	Alex Crooks
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	91.47	TD of Well	100.11
Time	0908	Depth to Product	91.20

~~Vol. of H2O to purge~~ Product: 91.47 - 91.20 = 0.27

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: PVC Bailer

Method of Sampling: ~~PVC Bailer~~

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. (C)	Conductivity (us or ms)	Comments
	.25	.25				~1 oz
	.25	.50				6 oz
	.25	.75				2 oz
	.25	1.00				1 oz

Comments: 0.27' of product = about 20oz of product Removed
Added new sock to well

Describe Deviations from SOP: N/A

Signature: Alex Crooks **Date:** 9/11/14

Water Sample Collection Form

Sample Location	Florance #47	Client	Williams Field Services
Sample Date	9/11/14	Project Name	San Juan Basin Remediation
Sample Time	0935	Project #	034013010
Sample ID	MW-5	Sampler	Alex Crooks
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	90.02	TD of Well	99.79
Time	0905	Depth to Product	N/A

Vol. of H2O to purge

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: PVC Bailer

Method of Sampling: PVC Bailer

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. (C)	Conductivity (us or ms)	Comments
0935						Clear, Slight odor
						Toole Sample

Comments: Toole grab Sample

Describe Deviations from SOP: ~~N/A~~, collected grab sample

Signature: Alex Crooks **Date:** 09/11/14

Water Sample Collection Form

Sample Location	Florance #147	Client	Williams Field Services
Sample Date	12/8/14	Project Name	San Juan Basin Remediation
Sample Time	1510	Project #	034013010
Sample ID	MW-2	Sampler	Daniel Newman
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Christine
Trip Blank	Yes	Other QA/QC	Standard
Depth to Water	98.56	TD of Well	101.24
Time	1510	Depth to Product	N/A

Vol. of H2O to purge - GRAB Sample

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging

Method of Sampling

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. (C)	Conductivity (us or ms)	Comments
						GRAB Sample NO Parameter taken

12/8/14

Comments: GRAB sample obtained no parameters taken

Describe Deviations from SOP: - N/A

Signature: _____ **Date:** 12/8/14

Water Sample Collection Form

Sample Location	Florance 47	Client	Williams Field Services
Sample Date	12/4/14	Project Name	San Juan Basin Remediation
Sample Time	NA	Project #	034013010
Sample ID	MW-3	Sampler	Alex Cooks
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	91.15	TD of Well	160.11
Time	1000	Depth to Product	unable to determine
Vol. of H2O to purge	HAS Product		

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: PVC Bailer

Method of Sampling: PVC Bailer

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. (C)	Conductivity (us or ms)	Comments
1000	.25	.25				5 oz of product
	↓	.50				3 oz of product
		.75				1 oz of product
		1.00				1 oz of product
		1.25				gray / strong odor / cloudy
		1.50				No change
		1.75				No change
		2.00				No change

Comments: well contained product. unable to sample

Describe Deviations from SOP: No sample

Signature: Alex Cooks **Date:** 12/4/14

Water Sample Collection Form

Sample Location	Florance 47	Client	Williams Field Services
Sample Date	12/4/14	Project Name	San Juan Basin Remediation
Sample Time	1025	Project #	034013010
Sample ID	MW-5	Sampler	AlexCrooks
Analyses	BTEX 8021		
Matrix	Groundwater	Laboratory	Hall Environmental
Turn Around Time	Standard	Shipping Method	Hand delivery
Depth to Water	90.02	TD of Well	99.79
Time	1015	Depth to Product	NA

Vol. of H2O to purge: 99.79 - 90.02 = 9.77 x .1631 = 1.59 x 3 = 4.78

*(height of water column * 0.1631 for 2" well or 0.6524 for 4" well) * 3 well vols*

Method of Purging: PVC Bailer

Method of Sampling: PVC Bailer

Time	Vol. Removed (gal.)	Total Vol H2O removed (gal.)	pH (std. units)	Temp. (C or F)	Conductivity (us or ms)	Comments
1015			6.40	55	1226	Clear / odor / Slightly cloudy
				#C		
				12/4/14		

Comments: Took Grab Sample @ 1015

Describe Deviations from SOP: Due to obstruction in MW-5 took a grab Sample w/ piezometer bailer

Signature: _____ **Date:** _____

APPENDIX B

LABORATORY ANALYTICAL REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 11, 2014

Ashley Ager
LTE
2243 Main Ave Suite 3
Durango, CO 81301
TEL: (970) 946-1093
FAX

RE: Florance 47X OrderNo.: 1412301

Dear Ashley Ager:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/5/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1412301**
Date Reported: **12/11/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: LTE
Project: Florance 47X
Lab Order: 1412301

Lab ID: 1412301-001 **Collection Date:** 12/4/2014 10:25:00 AM
Client Sample ID: MW-5 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	3000	100		µg/L	100	12/9/2014 3:14:42 PM	R23036
Toluene	14	10		µg/L	10	12/9/2014 3:41:40 PM	R23036
Ethylbenzene	390	10		µg/L	10	12/9/2014 3:41:40 PM	R23036
Xylenes, Total	2900	200		µg/L	100	12/9/2014 3:14:42 PM	R23036
Surr: 4-Bromofluorobenzene	129	66.6-167		%REC	10	12/9/2014 3:41:40 PM	R23036

Lab ID: 1412301-002 **Collection Date:**
Client Sample ID: Trip Blank **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	12/9/2014 5:30:40 PM	R23036
Toluene	ND	1.0		µg/L	1	12/9/2014 5:30:40 PM	R23036
Ethylbenzene	ND	1.0		µg/L	1	12/9/2014 5:30:40 PM	R23036
Xylenes, Total	ND	2.0		µg/L	1	12/9/2014 5:30:40 PM	R23036
Surr: 4-Bromofluorobenzene	110	66.6-167		%REC	1	12/9/2014 5:30:40 PM	R23036

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1412301**

11-Dec-14

Client: LTE

Project: Florance 47X

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R23036**	RunNo: **23036**
Prep Date:	Analysis Date: **12/9/2014**	SeqNo: **680522** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	2.5								
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Surr: 4-Bromofluorobenzene	21		20.00		107	66.6	167			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R23036**	RunNo: **23036**
Prep Date:	Analysis Date: **12/9/2014**	SeqNo: **680523** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	19	2.5	20.00	0	96.7	67.4	147			
Benzene	20	1.0	20.00	0	99.4	80	120			
Toluene	20	1.0	20.00	0	101	80	120			
Ethylbenzene	21	1.0	20.00	0	103	80	120			
Xylenes, Total	63	2.0	60.00	0	105	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	102	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	102	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		110	66.6	167			

Sample ID **1412301-001AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-5**	Batch ID: **R23036**	RunNo: **23036**
Prep Date:	Analysis Date: **12/9/2014**	SeqNo: **680529** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	190	25	200.0	0	92.9	45.4	143			
Benzene	3100	10	200.0	2996	71.2	80	120			ES
Toluene	230	10	200.0	13.76	107	80	120			
Ethylbenzene	590	10	200.0	386.1	101	79.7	126			
Xylenes, Total	3400	20	600.0	2936	73.1	80	120			ES
1,2,4-Trimethylbenzene	420	10	200.0	215.0	103	80.3	122			
1,3,5-Trimethylbenzene	330	10	200.0	118.1	107	80	120			
Surr: 4-Bromofluorobenzene	250		200.0		125	66.6	167			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1412301**

11-Dec-14

Client: LTE

Project: Florance 47X

Sample ID	**1412301-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**MW-5**	Batch ID:	**R23036**	RunNo:	**23036**
Prep Date:		Analysis Date:	**12/9/2014**	SeqNo:	**680530** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	190	25	200.0	0	92.8	45.4	143	0.0754	20	
Benzene	3100	10	200.0	2996	36.6	80	120	2.23	20	ES
Toluene	220	10	200.0	13.76	104	80	120	3.00	20	
Ethylbenzene	570	10	200.0	386.1	91.9	79.7	126	3.13	20	
Xylenes, Total	3300	20	600.0	2936	63.4	80	120	1.74	20	ES
1,2,4-Trimethylbenzene	410	10	200.0	215.0	96.9	80.3	122	3.16	20	
1,3,5-Trimethylbenzene	320	10	200.0	118.1	103	80	120	2.39	20	
Surr: 4-Bromofluorobenzene	250		200.0		125	66.6	167	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: LTE | Work Order Number: 1412301 | RcptNo: 1

Received by/date: LM 12/05/14

Logged By: **Celina Sessa** 12/5/2014 7:45:00 AM Celina Sessa

Completed By: **Celina Sessa** 12/5/2014 10:53:36 AM Celina Sessa

Reviewed By: JO 12/05/2014

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.7	Good	Not Present			

Chain-of-Custody Record

Client: LT Environmental

Mailing Address: 2243 main Ave #3

Phone #: 970-385-1096

email or Fax#: aager@Henv.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: Florance 47X

Project #: 034013001

Project Manager: Ashley Ager

Sampler: Daniel Newman

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1412301	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
12/4	1025	GW	MW-5	3 VOA	HCl	-001	X															
			Trip Blank	1 VOA	HCl	-002	X															
			12/05/14																			

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/4	1285			12/4/14	1235
12/4/14	1849			12/05/14	0745

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.