



May 21, 2010

Remediation #4365

Mr. Mike Cox  
Environmental Coordinator  
Noble Energy, Inc.  
804 Grand Avenue  
Platteville, Colorado 80651

Mr. Cliff Cox  
Foundation Energy Management  
P.O. Box 17127  
Fort Worth, TX 76102

RE: First Quarter 2010 Remediation and Monitoring Report  
Becky #2-6 Natural Gas Wellhead Site  
Weld County, Colorado

Dear Mr. Cox:

LT Environmental, Inc. (LTE) was retained by Noble Energy, Inc. (Noble) and Foundation Energy Management (Foundation) to conduct corrective actions at the Becky #2-6 natural gas wellhead site (Site) located approximately 3.5 miles west of the intersection of Interstate 25 and Weld County Road (WCR) 52 in Weld County, Colorado. A Site Map is provided as Figure 1.

LTE, on behalf of Noble and Foundation, has completed system design, installation, and startup of the air sparging/soil vapor extraction (AS/SVE) remediation system. LTE is continuing to conduct groundwater monitoring at the Site to evaluate previously documented groundwater impact. This correspondence is provided as the first quarter 2010 remediation and monitoring report, and summarizes activities conducted at the Site from January 1, 2010 through March 3, 2010. Activities conducted during the reporting period and summarized in this report include operation and maintenance (O&M) of the remediation system and quarterly groundwater sampling conducted March 11, 2010.

### **Remediation System Description**

The AS system is designed to introduce ambient air into the subsurface water column to induce dissolved hydrocarbon volatilization and to promote aerobic microbial decomposition of petroleum constituents (Figure 2). The SVE system is designed to volatilize petroleum constituents adsorbed onto soil particles and to remove petroleum vapors released from the groundwater by the AS process (Figure 3). AS and SVE wells are connected to a remediation equipment trailer housing the equipment for the AS/SVE systems. The distribution and spacing of these wells are based on site-specific soil analytical data, groundwater quality data, contamination profiles, geological characteristics, experience with similar systems, and the location and influence area of remediation



wells (Figure 4). Additional details of the remediation system design and installation were presented in the previously submitted report titled *Remediation System Installation, Startup, and Groundwater Sampling Results* dated January 9, 2009. The remediation system began operation at the Site on November 17, 2008.

### **Remediation System Operation and Maintenance**

The AS/SVE remediation system operated at the Site during part of the current reporting period. The system operated at another Noble facility (Frick 18 – 2 & 8 natural gas wellhead site) until February 18, 2009. The system resumed operation at the Becky #2-6 site on February 22, 2010. During O&M event on the March 11, 2010, the system was shutdown upon arrival due to low oil pressure and high engine temp. Cummins Rocky Mountain LLC was called to the Site to repair the generator on March 15, 2010. It was determined that the thermostat had failed and needed to be replaced. The thermostat was replaced and the system was restarted that day.

Operation of the remediation system will continue to alternate between continuous operation for an approximate three month period and a three month static evaluation with no remediation system operation occurring. This program will allow for continued removal of hydrocarbon impact along with static evaluations to determine which areas of the Site require continued operations.

### **Groundwater Sampling Procedures**

Seven groundwater monitoring wells were sampled at the Site on March 11, 2010 to determine the current plume extent. Prior to sampling each well, the depth to groundwater was measured and recorded for calculating purge volumes (Table 1).

Each well was purged of three casing volumes prior to collection of groundwater samples. Groundwater samples were collected from the well points by advancing disposable 3/16-inch diameter polyethylene tubing below the groundwater table inside the 1-inch diameter polyvinyl chloride (PVC) well casing. A peristaltic pump was utilized to collect the groundwater samples prior to placement into laboratory prepared sample bottles. Groundwater samples were collected in 40-milliliter vials, placed on ice, and delivered under chain-of-custody (COC) protocol to Origins Laboratory located in Denver, Colorado. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by Environmental Protection Agency Method 8260B.

### **Hydrogeology / Field Measurements**

During the March 2010 sampling event, the depths to static groundwater level ranged from 7.81 feet below top of casing (BTOC) in MW-7 to 8.95 feet BTOC in MW-25 (Table 1). The groundwater flow direction was to the north with an average hydraulic gradient of approximately 0.0057 feet per foot, which is similar to historical values.



## **Groundwater Analytical Results**

The Colorado Department of Public Health and Environmental (CDPHE) Water Quality Control Commission (WQCC) has established Regulation 41 - The Basic Standards for Groundwater for BTEX of 5.0 micrograms per liter (ug/L) for benzene, 560 ug/L for toluene, 700 ug/L for ethylbenzene, and 1,400 ug/L for total xylenes, respectively. Table 1 summarizes groundwater analytical results for samples collected during all monitoring events. The laboratory analytical report, laboratory quality assurance/quality control data, and COC documentation are attached.

Seven groundwater samples were collected and submitted to Origins Laboratory for BTEX analysis during the March 11, 2010 sampling event. Free-phase petroleum hydrocarbons were not identified in any of the monitoring wells. Groundwater analytical results indicated that benzene was detected above the CDPHE-WQCC Regulation 41 standards in monitoring wells MW-9, MW-10, and MW-13, at concentrations of 61 ug/L, 139 ug/L, and 34.2 ug/L, respectively. BTEX compounds were not detected above the laboratory method detection limits or in compliance with CDPHE-WQCC Reg. 41 in the remaining samples. Groundwater analytical results for the March 11, 2010 sampling event are summarized in Table 1 and illustrated on Figure 4.

## **Summary and Conclusions**

As seen in Figure 5 and Table 1, the effectiveness of the AS/SVE system is evident by the 75% reduction in the hydrocarbon impacted area from June 2008 (pre-remediation) to March 2010. Isocontours presented on Figure 5 indicate the reduction of plume size as the result of system operation. As seen on Table 1, benzene concentrations remained below groundwater standards in all wells sampled that previously contained concentrations below standards. This includes the four monitoring wells where remediation system operation decreased the benzene concentrations to below the groundwater standards (MW-7, MW-25, MW-26, and MW-34), indicating cleanup has been achieved in those areas. In addition to the dramatic reduction in plume extent, the remaining impact identified in monitoring wells MW-9, MW-10, and MW-13 have all degraded by orders of magnitude when compared to pre-remediation data.

Free product was not present in any of the monitoring wells as previously observed (MW-10 and MW-16), indicating remediation progress and free-phase product abatement. System operations will be focused in the area that indicates remaining benzene concentrations above groundwater standards (MW-9, MW-10, and MW-13). Figure 5 provides benzene isocontours for the most recent sampling events (May, September, December 2009, and March 2010) as well as for conditions encountered during the initial site investigation (June 2008). As shown in the attached Table 1, benzene is still present at the Site and continued remediation system operation is recommended in the limited remaining areas to achieve cleanup goals.

The next groundwater sampling event will be conducted in June 2010. Groundwater monitoring will continue to be conducted at the Site on a quarterly basis until site closure status is received from the Colorado Oil and Gas Conservation Commission. Active remediation has been re-initiated at the Site and will continue until approximately June 2010.



LTE appreciates the opportunity to provide environmental services to Noble and Foundation. Please call us at 303-433-9788 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in black ink, appearing to read "Rob Rebel".

Rob Rebel, P.E.  
Project Manager

A handwritten signature in black ink, appearing to read "Steve D. Kahn".

Steve D. Kahn, P.E.  
Client Manager/Senior Engineer

Attachments

Table 1: Groundwater Quality Data

Figure 1: Site Map

Figure 2: Air Sparging System Layout

Figure 3: Soil Vapor Extraction System Layout

Figure 4: Groundwater Analytical Results – March 11, 2010

Figure 5: Groundwater Analytical Summary

Attachment: Laboratory Analytical Reports

**TABLE**



TABLE 1

## GROUNDWATER QUALITY DATA

BECKY #2-6

WELD COUNTY, COLORADO

NOBLE ENERGY, INC.

Well ID	Date	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
MW-1	6/24/2008		7.92		3.52	<1.00	55.05	25.16
	11/10/2008		7.66		<1.00	<1.00	<1.00	<3.00
	2/23/2009		7.46		<1.00	<1.00	<1.00	<3.00
	5/27/2009		6.74		<1.00	<1.00	<1.00	<3.00
	9/1/2009		7.78		<1.00	<1.00	<1.00	<3.00
	12/28/2009		6.89		<1.00	<1.00	<1.00	<3.00
MW-2	6/24/2008		8.01		<1.00	<1.00	<1.00	<3.00
MW-3	6/24/2008		8.09		<b>6.43</b>	<1.00	<1.00	5.15
	11/10/2008		7.83		1.26	<1.00	<1.00	<3.00
	2/23/2009		7.68		<1.00	<1.00	<1.00	<3.00
	5/27/2009		6.98		2.31	<1.00	<1.00	<3.00
	9/1/2009		8.03		<1.00	<1.00	<1.00	<3.00
	12/28/2009		7.21		<1.00	<1.00	<1.00	<3.00
MW-4	6/24/2008		7.88		<1.00	<1.00	<1.00	<3.00
	11/10/2008		7.73		<1.00	<1.00	<1.00	<3.00
	2/23/2009		7.59		<1.00	<1.00	<1.00	<3.00
	5/27/2009		6.82		<1.00	<1.00	<1.00	<3.00
	9/1/2009		8.07		<1.00	<1.00	<1.00	<3.00
	12/28/2009		7.01		<1.00	<1.00	<1.00	<3.00
MW-5	6/24/2008		8.08		<1.00	<1.00	<1.00	<3.00
MW-6	6/24/2008		7.85		<1.00	<1.00	<1.00	<3.00
MW-7	6/24/2008		8.10		<b>358.40</b>	1.02	277.60	<b>3,120.29</b>
	11/10/2008		7.98		<b>725</b>	<1.00	493	<b>6,008.8</b>
	2/23/1009		7.36		<b>5.03</b>	<1.00	9.04	141
	5/27/2009		7.09		<b>10.4</b>	1.16	362	498.2
	9/1/2009		8.14		<1.00	<1.00	<1.00	438
	12/28/2009		7.39		<1.00	<1.00	<1.00	19.1
	3/11/2010		7.81		<1.00	<1.00	2.71	35.1

**TABLE 1**  
**GROUNDWATER QUALITY DATA**  
**BECKY #2-6**  
**WELD COUNTY, COLORADO**  
**NOBLE ENERGY, INC.**

Well ID	Date	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
MW-8	6/24/2008		7.60		<1.00	<1.00	<1.00	<3.00
	11/10/2008		7.59		<1.00	<1.00	<1.00	<3.00
	2/23/2009		7.34		<1.00	<1.00	<1.00	<3.00
	5/27/2009		6.59		<1.00	<1.00	<1.00	<3.00
	9/1/2009		7.64		<1.00	<1.00	<1.00	<3.00
	12/28/2009		6.87		<1.00	<1.00	<1.00	<3.00
MW-9	6/24/2008		8.45		<b>430.20</b>	<1.00	35.57	396.80
	11/10/2008		8.32		<b>175</b>	<1.00	24.7	77.90
	2/23/2009		8.29		<b>12.8</b>	<1.00	1.56	3.70
	5/27/2009		7.46		<b>99.4</b>	<1.00	15.0	77.3
	9/1/2009		5.61		<b>243</b>	<1.00	15.8	38.0
	12/28/2009		7.85		<b>5.23</b>	<1.00	<1.00	6.95
MW-10	3/11/2010		8.35		<b>61.0</b>	<1.00	9.53	31.5
	6/24/2008		8.26		<b>1,254.2</b>	1.84	223.60	<b>2,373.80</b>
	11/10/2008	8.13	8.63	0.50	NA	NA	NA	NA
	11/13/2008	8.21	8.44	0.23	NA	NA	NA	NA
	2/23/2009	8.09	8.01	0.08	NA	NA	NA	NA
	5/27/2009		7.30		<b>145</b>	<1.00	86.6	1,145.8
MW-11	9/1/2009		8.38		<b>176</b>	<1.00	<1.00	542
	12/28/2009		7.71		<b>183</b>	<1.00	120	570.4
	3/11/2010		8.12		<b>139</b>	<1.00	135	969.2
	6/24/2008		7.52		<1.00	<1.00	1.35	14.70
	11/10/2008		7.48		<1.00	<1.00	<1.00	5.00
	2/23/2009		7.25		<1.00	<1.00	<1.00	<3.00
MW-12	5/28/2009		6.60		<1.00	<1.00	<1.00	<3.00
	9/1/2009		8.62		<1.00	<1.00	<1.00	<3.00
	12/28/2009		6.90		<1.00	<1.00	<1.00	<3.00
	6/24/2008		7.70		<1.00	<1.00	<1.00	<3.00



TABLE 1

## GROUNDWATER QUALITY DATA

BECKY #2-6

WELD COUNTY, COLORADO

NOBLE ENERGY, INC.

Well ID	Date	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
MW-13	6/24/2008		8.68		<b>1,616.2</b>	<1.00	249.20	<b>3,551.0</b>
	11/10/2008		8.85		<b>684</b>	<1.00	84.0	152.11
	2/23/2009		8.72		<b>390</b>	<1.00	26.7	86.5
	5/28/2009		8.75		<b>500</b>	<1.00	69.8	120
	9/1/2009		8.90		<b>329</b>	<1.00	21.8	1.05
	12/28/2009		8.43		<b>244</b>	<1.00	86.3	442.12
	3/11/2010		8.72		<b>34.2</b>	<1.00	14.4	44.2
MW-14	6/24/2008		9.35		3.66	1.26	1.69	21.65
	11/10/2008		9.56		<1.00	<1.00	<1.00	<3.00
	2/23/2009		9.48		<1.00	<1.00	<1.00	<3.00
	5/27/2009		8.65		<1.00	<1.00	<1.00	<3.00
	9/1/2009		8.84		<1.00	<1.00	<1.00	<3.00
	12/28/2009		9.19		<1.00	<1.00	<1.00	<3.00
MW-15	6/24/2008		9.34		<1.00	<1.00	<1.00	4.31
	11/10/2008		9.89		<1.00	<1.00	<1.00	<3.00
	2/23/2009		9.66		<1.00	<1.00	<1.00	<3.00
	5/28/2009		8.89		<1.00	<1.00	<1.00	<3.00
	9/1/2009		9.83		<1.00	<1.00	<1.00	<3.00
	12/28/2009		9.45		<1.00	<1.00	<1.00	<3.00
MW-16	6/24/2008		9.19		<b>6.28</b>	<1.00	170.65	<b>1,998.36</b>
	11/10/2008	9.83	9.84	0.01	NA	NA	NA	NA
	11/13/2008		9.88		<1.00	<1.00	<1.00	220.86
	2/23/2009		9.62		<1.00	<1.00	9.12	89.0
	5/27/2009		8.81		<1.00	<1.00	14.3	152
	9/1/2009		9.78		<1.00	<1.00	<1.00	88.9
	12/28/2009		9.49		<1.00	<1.00	12.9	73.6



TABLE 1

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BECKY #2-6

WELD COUNTY, COLORADO

NOBLE ENERGY, INC.

Well ID	Date	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
MW-17	6/24/2008		9.16		<1.00	<1.00	<1.00	13.46
	11/10/2008		10.27		<1.00	<1.00	<1.00	<3.00
	2/23/2009		9.98		<1.00	<1.00	<1.00	<3.00
	5/27/2009		10.95		NA			
	9/1/2009		9.87		<1.00	<1.00	<1.00	<3.00
MW-18	6/24/2008		9.37		<1.00	<1.00	<1.00	3.24
	11/10/2008		10.13		<1.00	<1.00	<1.00	3.36
	2/23/2009		9.92		<1.00	<1.00	<1.00	<3.00
	5/28/2009		9.14		<1.00	<1.00	<1.00	<3.00
	9/1/2009		10.05		<1.00	<1.00	<1.00	<3.00
	12/28/2009		9.61		<1.00	<1.00	<1.00	<3.00
MW-19	6/24/2008		8.73		<1.00	<1.00	<1.00	3.53
MW-20	6/24/2008		8.52		<1.00	<1.00	<1.00	<3.00
MW-21	6/24/2008		8.20		<1.00	<1.00	<1.00	<3.00
MW-22	6/24/2008		8.66		<1.00	<1.00	<1.00	<3.00
MW-23	6/24/2008		9.14		<b>83.13</b>	1.43	164.46	1,283
	11/10/2008		8.95		1.46	<1.00	1.54	<3.00
	2/23/2009				WELL DRY			
	9/1/2009				WELL DRY			
	12/28/2009				WELL DRY			
	3/11/2010				WELL DRY			
MW-24	6/24/2008		9.00		<1.00	<1.00	<1.00	<3.00
	11/10/2008		8.85		<1.00	<1.00	<1.00	6.27
	2/23/2009		8.84		<1.00	<1.00	<1.00	<3.00
	5/27/2009		8.00		<1.00	<1.00	<1.00	<3.00
	9/1/2009		9.09		<1.00	<1.00	<1.00	<3.00
	12/28/2009		8.52		<1.00	<1.00	<1.00	<3.00

TABLE 1

## GROUNDWATER QUALITY DATA

BECKY #2-6

WELD COUNTY, COLORADO

NOBLE ENERGY, INC.

Well ID	Date	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
MW-25	6/24/2008		8.86		<b>120.95</b>	<1.00	17.52	602.10
	11/10/2008		8.85		<b>47.5</b>	<1.00	7.73	28.8
	2/23/2009		8.71		<b>20.3</b>	<1.00	1.64	3.86
	5/27/2009		7.95		<b>29.9</b>	<1.00	7.40	7.13
	9/1/2009		9.05		<1.00	<1.00	<1.00	<3.00
	12/28/2009		8.49		<1.00	<1.00	<1.00	<3.00
	3/11/2010		8.95		1.23	<1.00	<1.00	<3.00
MW-26	6/24/2008		8.35		<b>75.72</b>	<1.00	71.24	598.70
	11/10/2008		8.47		<b>57.4</b>	<1.00	36.4	47.60
	2/23/2009		8.26		<1.00	<1.00	<1.00	<3.00
	5/27/2009		7.50		2.02	<1.00	1.97	<3.00
	9/1/2009		8.54		<1.00	<1.00	<1.00	<3.00
	12/28/2009		8.07		<1.00	<1.00	<1.00	<3.00
	3/11/2010		8.63		<1.00	<1.00	<1.00	<3.00
MW-27	6/24/2008		8.73		<1.00	<1.00	<1.00	<3.00
	11/10/2008		9.07		1.72	<1.00	<1.00	18.4
	2/23/2009		8.87		<1.00	<1.00	<1.00	<3.00
	5/27/2009		8.03		<1.00	<1.00	<1.00	<3.00
	9/1/2009		9.07		<1.00	<1.00	<1.00	<3.00
	12/28/2009		8.71		<1.00	<1.00	<1.00	<3.00
MW-28	6/24/2008		8.85		<1.00	<1.00	<1.00	2.97
MW-29	6/24/2008		8.89		<1.00	<1.00	<1.00	<3.00
	11/10/2008		9.69		<1.00	<1.00	<1.00	<3.00
	2/23/2009		9.46		<1.00	<1.00	4.18	5.23
	5/27/2009		8.65		<1.00	<1.00	<1.00	<3.00
	9/1/2009		9.61		<1.00	<1.00	<1.00	<3.00
	12/28/2009		10.36		<1.00	<1.00	<1.00	<3.00

TABLE 1

**GROUNDWATER QUALITY DATA**  
**BECKY #2-6**  
**WELD COUNTY, COLORADO**  
**NOBLE ENERGY, INC.**

Well ID	Date	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
MW-30	6/24/2008		8.57		<1.00	<1.00	<1.00	<3.00
	11/10/2008		8.56		<1.00	<1.00	<1.00	2.88
	2/23/2009		8.46		<1.00	<1.00	<1.00	<3.00
	5/27/2009		7.69		<1.00	<1.00	<1.00	<3.00
	9/1/2009		8.67		<1.00	<1.00	<1.00	<3.00
	12/28/2009		8.26		<1.00	<1.00	<1.00	<3.00
MW-31	6/24/2008		7.94		<1.00	<1.00	<1.00	<3.00
MW-32	7/7/2008				<1.0	<1.0	<1.0	<1.0
	11/10/2008		9.57		<1.00	<1.00	<1.00	<3.00
	2/23/2009		9.42		<1.00	<1.00	<1.00	<3.00
	5/27/2009		8.70		<1.00	<1.00	<1.00	<3.00
	9/1/2009		9.74		<1.00	<1.00	<1.00	<3.00
	12/28/2009		8.96		<1.00	<1.00	<1.00	<3.00
MW-33	7/7/2008				1.4	<1.0	10	5.9
	11/10/2008				WELL DESTROYED			

**TABLE 1**

**GROUNDWATER QUALITY DATA**

**BECKY #2-6**

**WELD COUNTY, COLORADO**

**NOBLE ENERGY, INC.**

Well ID	Date	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
MW-34	7/7/2008				160	<1.00	370	2,800
	11/10/2008		8.13		85.7	<1.00	89.4	108
	2/23/2009		7.98		<1.00	<1.00	<1.00	<3.00
	5/27/2009		7.26		<1.00	<1.00	<1.00	<3.00
	9/1/2009		9.58		<1.00	<1.00	<1.00	<3.00
	12/28/2009		7.57		<1.00	<1.00	<1.00	<3.00
	3/11/2010		8.02		<1.00	<1.00	<1.00	<3.00
<b>CDPHE-WQCC Regulation 41 Groundwater Standards</b>					<b>5.0</b>	<b>560</b>	<b>700</b>	<b>1,400</b>

**NOTES:**

CDPHE-WQCC - Colorado Department of Public Health and Environmental Water Quality Control Commission

Benzene, toluene, ethylbenzene, total xylenes analyzed by EPA Method 8260B

btoc - below top of casing

mg/L - milligrams per liter

ppm - parts per million

ug/L - micrograms per liter

DO - dissolved oxygen

PID - photoionization detector

< indicates result is less than the stated laboratory method detection limit

NA - not analyzed

NM - not measured

## FIGURES



**ATTACHMENT**  
**LABORATORY ANALYTICAL REPORT**





3/16/2010

LT Environmental, Inc.

Rob Rebel

4600 West 60th Avenue

Arvada

CO

80003

Project Name- Noble - Becky #2-6

Project Number- NEP0826.01

Attached are your analytical results for Noble - Becky #2-6 received by Origins Laboratory, Inc. March 11, 2010 3:08 pm. This project is associated with Origins project number X003090-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods specified in SW-846. The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.

303.433.1322

o-squad@oelabinc.com



LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
MW-34	X003090-01	Water	3/11/2010 12:40:00PM	03/11/2010 15:08
MW-7	X003090-02	Water	3/11/2010 1:00:00PM	03/11/2010 15:08
MW-9	X003090-03	Water	3/11/2010 1:35:00PM	03/11/2010 15:08
MW-10	X003090-04	Water	3/11/2010 1:45:00PM	03/11/2010 15:08
MW-25	X003090-05	Water	3/11/2010 2:20:00PM	03/11/2010 15:08
MW-13	X003090-06	Water	3/11/2010 1:55:00PM	03/11/2010 15:08
MW-26	X003090-07	Water	3/11/2010 2:10:00PM	03/11/2010 15:08

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Noelle E Doyle, Laboratory Manager



LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

www.originslaboratory.com

page 1 of 1

1003090

ORIGINS  
LABORATORY, INC

Client: LTE  
Address: 4600 W 60th Ave  
Telephone Number: 303-433-9788  
Email Address: rebel@lteenv.com

Project Manager: Rob Rebel  
Project Name: Becky 2-6  
Project Number: NEP0826  
Samples Collected By: Gavin Cassen

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #		
Mw34	3/11/10	12:40	3	X				X				1
Mw07	3/11/10	13:00	3	X				X				2
Mw09	3/11/10	13:35	3	X				X				3
Mw10	3/11/10	13:45	3	X				X				4
Mw25	3/11/10	14:26	3	X				X				5
Mw13	3/11/10	13:55	3	X				X				6
Mw26	3/11/10	14:10	3	X				X				7
												8
												9
												10

Relinquished By: [Signature] Date: 3/11/10 Time: 15:00  
Relinquished By: [Signature] Date: 3/11/10 Time: 15:00

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☒ 72 Hr ☐ Standard ☐

Date Results Needed

Origins Laboratory, Inc.

[Signature]

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

**MW-34****3/11/2010 12:40:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.  
X003090-01 (Water)

**BTEX by EPA 8260B**

Benzene	ND	1.00	ug/L	1	OC14001	03/14/2010	03/15/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
Xylenes, total	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	105 %	73.5-130	"	"	"
Surrogate: Toluene-d8	97.1 %	79.3-113	"	"	"
Surrogate: 4-Bromofluorobenzene	97.5 %	81.5-117	"	"	"

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

## MW-7

3/11/2010 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X003090-02 (Water)

### BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OC14001	03/14/2010	03/15/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	2.71	1.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	
m,p-Xylene	35.1	2.00	"	"	"	"	"	
Xylenes, total	35.1	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	105 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	99.3 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.3 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

## MW-9

3/11/2010 1:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X003090-03 (Water)

### BTEX by EPA 8260B

Benzene	61.0	1.00	ug/L	1	OC14001	03/14/2010	03/16/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	9.53	1.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	
m,p-Xylene	31.5	2.00	"	"	"	"	"	
Xylenes, total	31.5	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	107 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	97.5 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.5 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

## MW-10

3/11/2010 1:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X003090-04 (Water)

### BTEX by EPA 8260B

Benzene	139	1.00	ug/L	1	OC14001	03/14/2010	03/16/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	135	1.00	"	"	"	"	"	
o-Xylene	27.2	1.00	"	"	"	"	"	
m,p-Xylene	942	100	"	50	"	"	03/16/2010	
Xylenes, total	969	50.0	"	"	"	"	03/16/2010	

Surrogate: 1,2-Dichloroethane-d4	101 %	73.5-130			"	"	03/16/2010	
Surrogate: Toluene-d8	91.1 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.9 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



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Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

## MW-25

3/11/2010 2:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X003090-05 (Water)

### BTEX by EPA 8260B

Benzene	1.23	1.00	ug/L	1	OC14001	03/14/2010	03/16/2010	
Toluene	ND	1.00	"	"	"	"	03/16/2010	
Ethylbenzene	ND	1.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
Xylenes, total	ND	1.00	"	"	"	"	03/16/2010	

Surrogate: 1,2-Dichloroethane-d4	104 %	73.5-130			"	"	03/16/2010	
Surrogate: Toluene-d8	89.3 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	93.9 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

## MW-13

3/11/2010 1:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.  
X003090-06 (Water)

### BTEX by EPA 8260B

Benzene	34.2	1.00	ug/L	1	OC14001	03/14/2010	03/16/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	14.4	1.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	
m,p-Xylene	44.2	2.00	"	"	"	"	"	
Xylenes, total	44.2	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	107 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	95.0 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.4 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

## MW-26

3/11/2010 2:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X003090-07 (Water)

### BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OC14001	03/14/2010	03/16/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
Xylenes, total	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	107 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	98.6 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.5 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle E Doyle, Laboratory Manager



LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch OC14001 - EPA 5030B**

**Blank (OC14001-BLK1)**

Prepared: 03/14/2010 Analyzed: 03/14/2010

Benzene	ND	1.00	ug/L
Toluene	ND	1.00	"
Ethylbenzene	ND	1.00	"
o-Xylene	ND	1.00	"
m,p-Xylene	ND	2.00	"

Surrogate: 1,2-Dichloroethane-d4	61.8	"	62.5	99.0	73.5-130
Surrogate: Toluene-d8	63.9	"	62.5	102	79.3-113
Surrogate: 4-Bromofluorobenzene	63.0	"	62.5	101	81.5-117

**Blank (OC14001-BLK2)**

Prepared: 03/14/2010 Analyzed: 03/14/2010

Benzene	ND	1.00	ug/L
Toluene	ND	1.00	"
Ethylbenzene	ND	1.00	"
o-Xylene	ND	1.00	"
m,p-Xylene	ND	2.00	"

Surrogate: 1,2-Dichloroethane-d4	62.1	"	62.5	99.4	73.5-130
Surrogate: Toluene-d8	64.2	"	62.5	103	79.3-113
Surrogate: 4-Bromofluorobenzene	63.7	"	62.5	102	81.5-117

**LCS (OC14001-BS1)**

Prepared: 03/14/2010 Analyzed: 03/14/2010

Benzene	50.3	1.00	ug/L	50.0	101	77.3-128
Toluene	46.4	1.00	"	50.0	92.7	81.7-118

Surrogate: 1,2-Dichloroethane-d4	59.5	"	62.5	95.2	73.5-130
Surrogate: Toluene-d8	63.0	"	62.5	101	79.3-113
Surrogate: 4-Bromofluorobenzene	62.1	"	62.5	99.3	81.5-117

**LCS (OC14001-BS2)**

Prepared: 03/14/2010 Analyzed: 03/14/2010

Benzene	53.6	1.00	ug/L	50.0	107	77.3-128
Toluene	53.3	1.00	"	50.0	107	81.7-118

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

## Volatile Organic Compounds by EPA Method 8260B - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch OC14001 - EPA 5030B</b>										
<b>LCS (OC14001-BS2)</b>					Prepared: 03/14/2010 Analyzed: 03/14/2010					
Surrogate: 1,2-Dichloroethane-d4	60.3		ug/L	62.5		96.5	73.5-130			
Surrogate: Toluene-d8	64.5		"	62.5		103	79.3-113			
Surrogate: 4-Bromofluorobenzene	62.6		"	62.5		100	81.5-117			
<b>Matrix Spike (OC14001-MS1)</b>					Source: X003089-06	Prepared: 03/14/2010 Analyzed: 03/14/2010				
Benzene	52.2	1.00	ug/L	50.0	ND	104	74.5-132			
Toluene	51.7	1.00	"	50.0	ND	103	74.2-116			
Surrogate: 1,2-Dichloroethane-d4	59.8		"	62.5		95.7	73.5-130			
Surrogate: Toluene-d8	65.7		"	62.5		105	79.3-113			
Surrogate: 4-Bromofluorobenzene	62.3		"	62.5		99.7	81.5-117			
<b>Matrix Spike (OC14001-MS2)</b>					Source: X003089-07	Prepared: 03/14/2010 Analyzed: 03/14/2010				
Benzene	48.8	1.00	ug/L	50.0	ND	97.6	74.5-132			
Toluene	44.2	1.00	"	50.0	ND	88.4	74.2-116			
Surrogate: 1,2-Dichloroethane-d4	61.6		"	62.5		98.5	73.5-130			
Surrogate: Toluene-d8	63.7		"	62.5		102	79.3-113			
Surrogate: 4-Bromofluorobenzene	61.4		"	62.5		98.2	81.5-117			
<b>Matrix Spike Dup (OC14001-MSD1)</b>					Source: X003089-06	Prepared: 03/14/2010 Analyzed: 03/14/2010				
Benzene	53.6	1.00	ug/L	50.0	ND	107	74.5-132	2.78	13.1	
Toluene	51.0	1.00	"	50.0	ND	102	74.2-116	1.42	21.2	
Surrogate: 1,2-Dichloroethane-d4	61.7		"	62.5		98.7	73.5-130			
Surrogate: Toluene-d8	63.9		"	62.5		102	79.3-113			
Surrogate: 4-Bromofluorobenzene	63.3		"	62.5		101	81.5-117			
<b>Matrix Spike Dup (OC14001-MSD2)</b>					Source: X003089-07	Prepared: 03/14/2010 Analyzed: 03/14/2010				
Benzene	53.1	1.00	ug/L	50.0	ND	106	74.5-132	8.34	13.1	
Toluene	49.2	1.00	"	50.0	ND	98.4	74.2-116	10.7	21.2	
Surrogate: 1,2-Dichloroethane-d4	63.0		"	62.5		101	73.5-130			
Surrogate: Toluene-d8	63.9		"	62.5		102	79.3-113			
Surrogate: 4-Bromofluorobenzene	62.3		"	62.5		99.7	81.5-117			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch OC14001 - EPA 5030B

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Noelle E Doyle, Laboratory Manager

LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Rob Rebel  
Project Number: NEP0826.01  
Project: Noble - Becky #2-6

### Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit  
RPD Relative Percent Difference

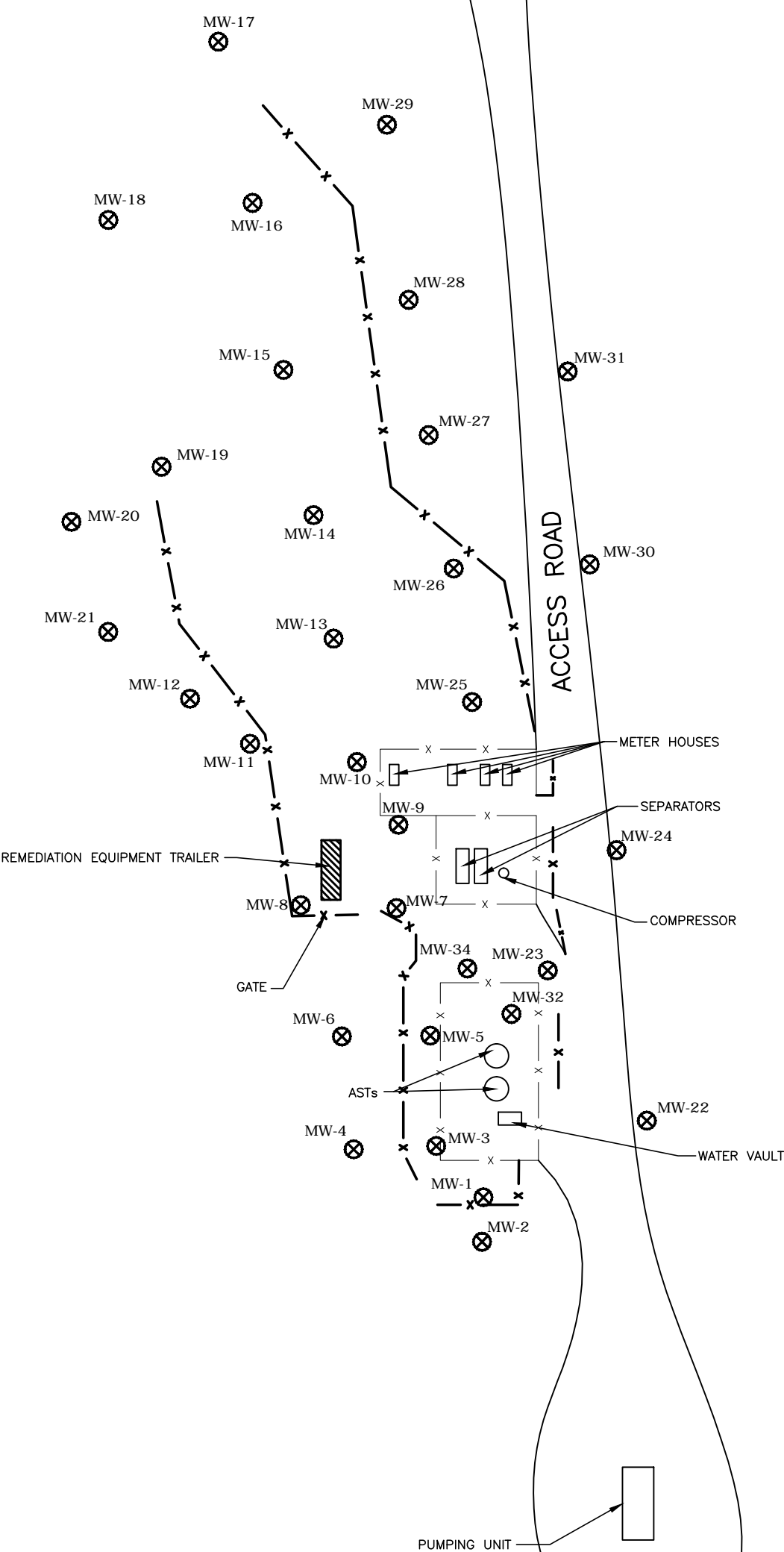
Origins Laboratory, Inc.





*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Noelle E Doyle, Laboratory Manager

COUNTY ROAD 52

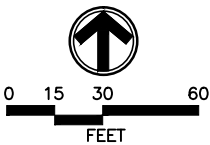


LEGEND

- MW-1  MONITORING WELL LOCATION (FORMERLY SOIL BORING LOCATION (SB-1))
- MW-33  DESTROYED MONITORING WELL LOCATION
- x — EXISTING FENCE
- x — NEW FENCE
- AST ABOVEGROUND STORAGE TANK

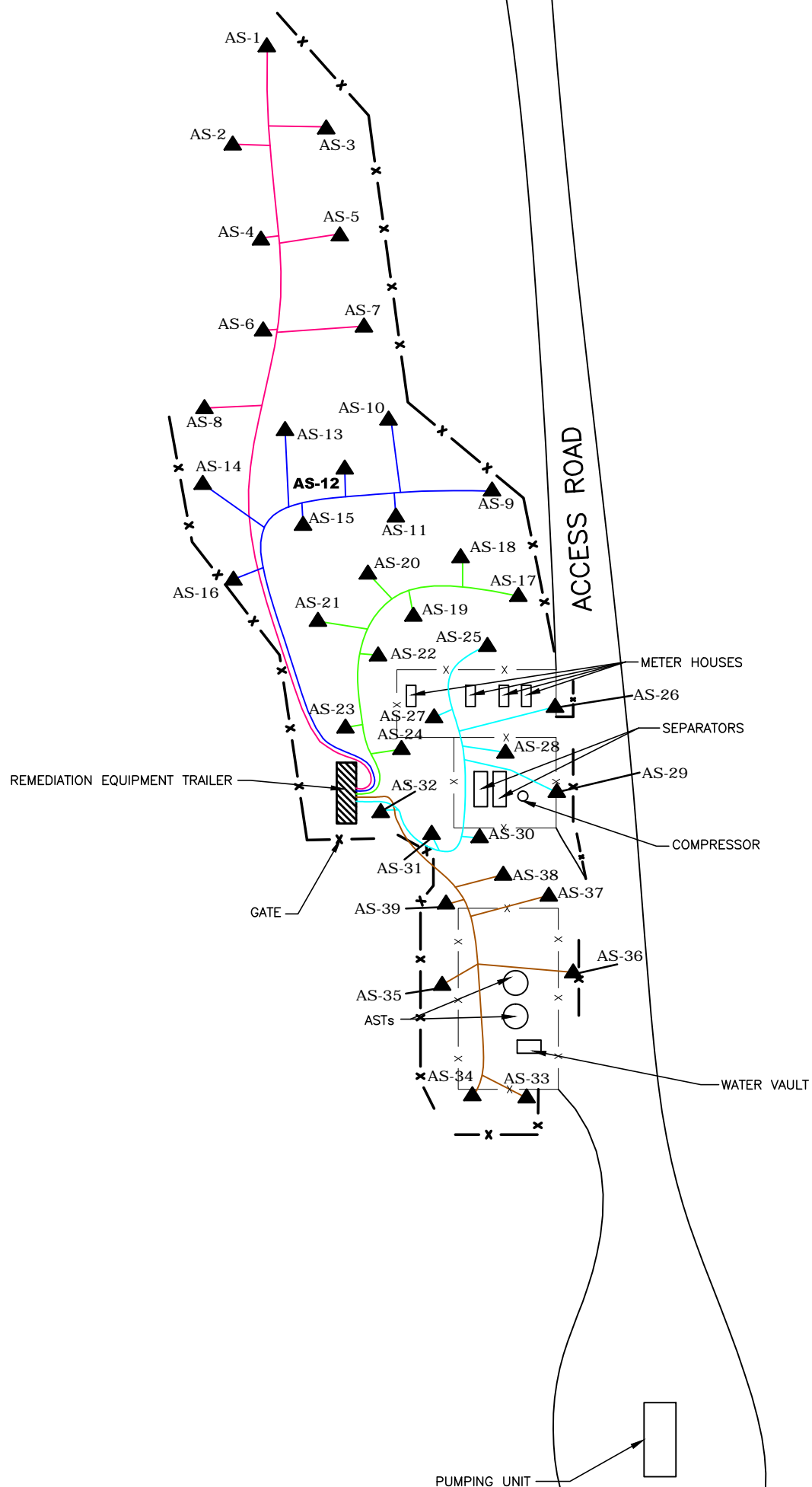
SOURCE:  
LTE SITE SKETCH

FIGURE 1  
SITE MAP  
BECKY #2-6  
WELD COUNTY, COLORADO  
NOBLE ENERGY, INC.



2/09\NEP082601

COUNTY ROAD 52

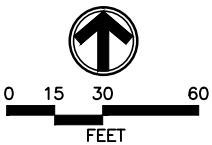


LEGEND

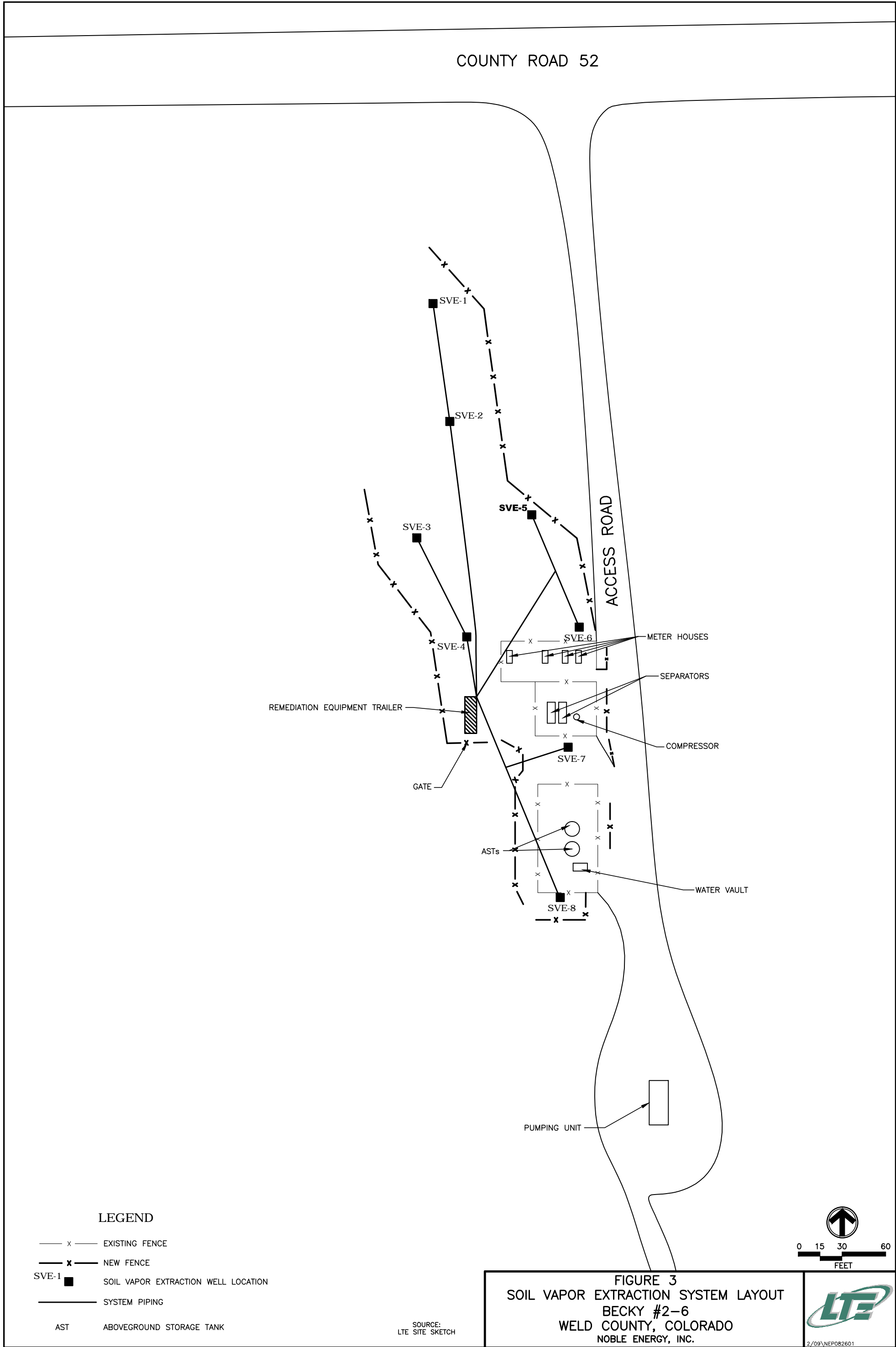
- x — EXISTING FENCE
- x — NEW FENCE
- AS-1 ▲ AIR SPARGING WELL LOCATION
- SYSTEM PIPING (ZONE 1)
- SYSTEM PIPING (ZONE 2)
- SYSTEM PIPING (ZONE 3)
- SYSTEM PIPING (ZONE 4)
- SYSTEM PIPING (ZONE 5)
- AST ABOVEGROUND STORAGE TANK

SOURCE:  
LTE SITE SKETCH

FIGURE 2  
AIR SPARGING SYSTEM LAYOUT  
BECKY #2-6  
WELD COUNTY, COLORADO  
NOBLE ENERGY, INC.



2/09\NEP082601



COUNTY ROAD 52

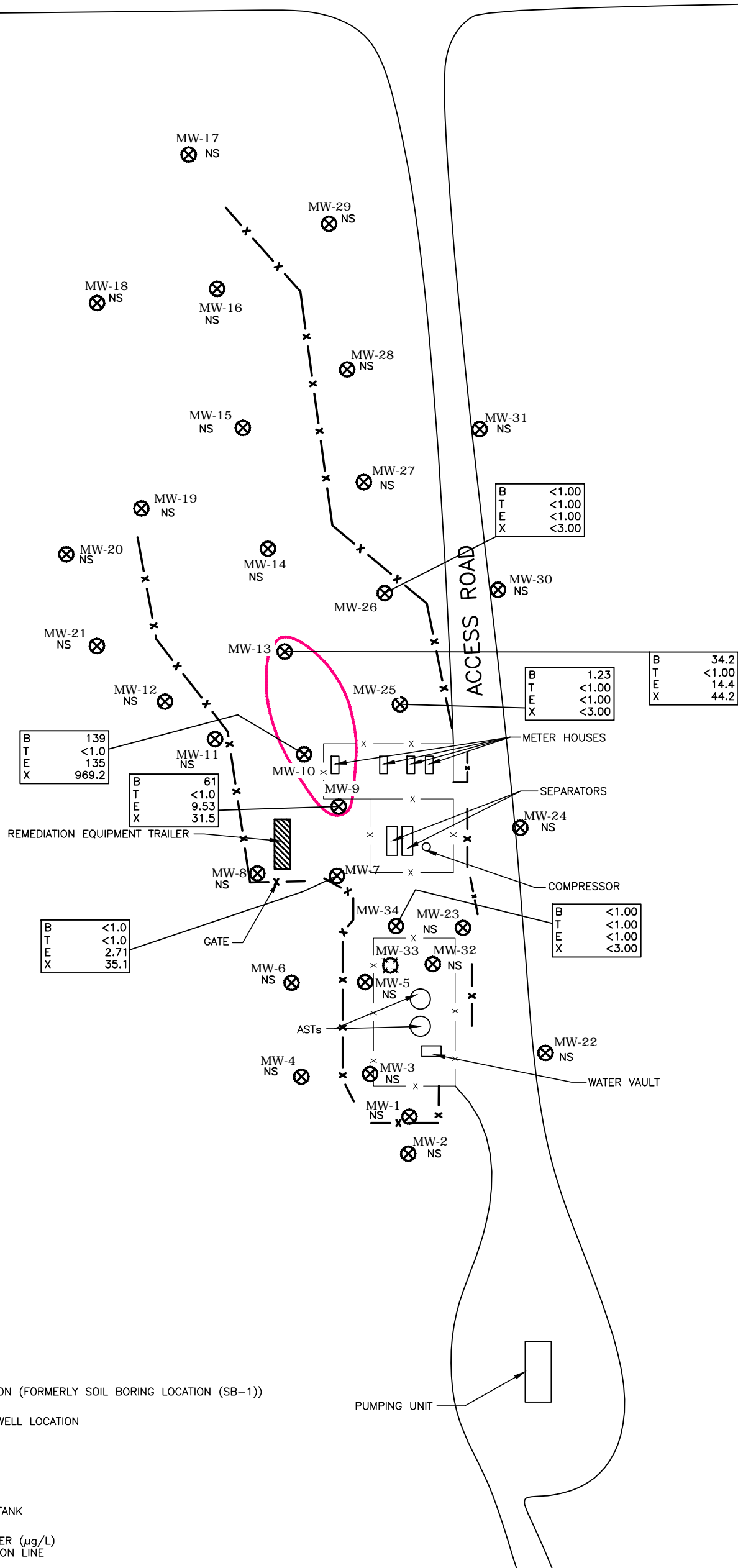
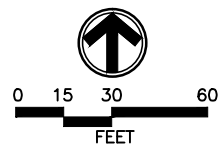
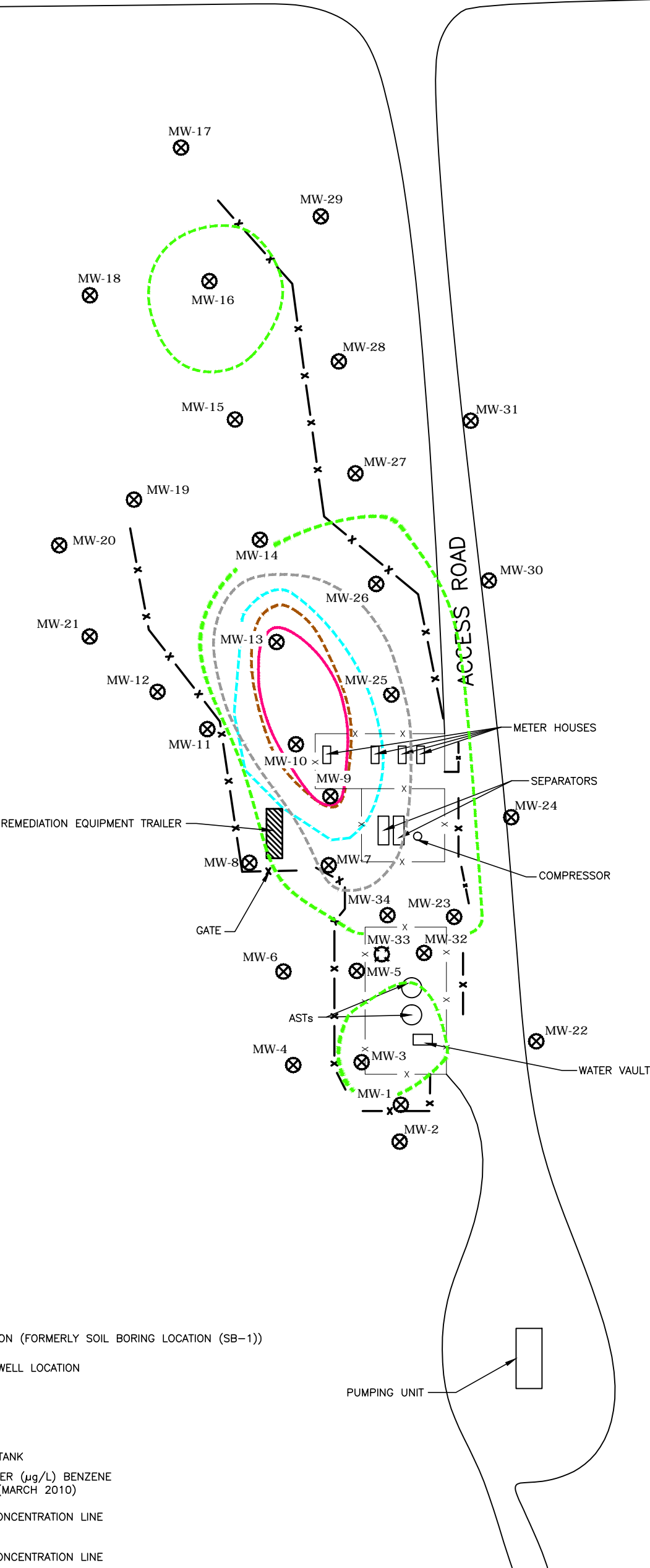


FIGURE 4  
GROUNDWATER ANALYTICAL RESULTS  
MARCH 11, 2010  
BECKY #2-6  
WELD COUNTY, COLORADO  
NOBLE ENERGY, INC.





COUNTY ROAD 52

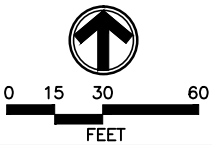


LEGEND

- MW-1 MONITORING WELL LOCATION (FORMERLY SOIL BORING LOCATION (SB-1))
- MW-33 DESTROYED MONITORING WELL LOCATION
- x — EXISTING FENCE
- x — NEW FENCE
- AST ABOVEGROUND STORAGE TANK
- 5.0 MICROGRAMS PER LITER (µg/L) BENZENE ISOCONCENTRATION LINE (MARCH 2010)
- 5.0 µg/L BENZENE ISOCONCENTRATION LINE (DECEMBER 2009)
- 5.0 µg/L BENZENE ISOCONCENTRATION LINE (SEPTEMBER 2009)
- 5.0 µg/L BENZENE ISOCONCENTRATION LINE (MAY 2009)
- 5.0 µg/L BENZENE ISOCONCENTRATION LINE (JUNE 2008)

SOURCE:  
LTE SITE SKETCH

FIGURE 5  
GROUNDWATER ANALYTICAL SUMMARY  
BECKY #2-6  
WELD COUNTY, COLORADO  
NOBLE ENERGY, INC.



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