



September 1, 2017

Randy Bayliss
New Mexico Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

Sent electronically to: Randolph.bayliss@state.nm.us

**Re: Remedial Activities Update Report
Benson-Montin-Greer
Highway 537 Llaves Pipeline 2008 Release
Rio Arriba County, New Mexico
NMOCD #: 3RP-447; Order #860429**

Dear Mr. Bayliss:

In accordance with the updated Remediation Plan submitted to the New Mexico Oil Conservation Division (NMOCD) on July 31, 2017, for the Benson-Montin-Greer (BMG) Highway 537 Llaves Pipeline 2008 Release on behalf on BMG, Animas Environmental Services LLC (AES) has prepared a status report detailing: 1) the plugging and abandonment of a several of the monitor wells at the site; 2) the scheduled monitoring activities during the period; 3) the progress of the pilot studies for non-aqueous phase liquids (NAPL) recovery; and 4) the resulting proposed implementation and schedule for remediation. A topographic site location map is presented as Figure 1, and a site plan is included as Figure 2.

1.0 Monitor Well Plugging and Abandonment

On August 7, 2017, AES, with approval from NMOCD and with approved Well Plugging Plans from the New Mexico Office of the State Engineer (NMOSE), oversaw the plugging and abandonment (P&A) of six of the existing monitor wells, including MW-1, MW-3, MW-4, MW-5, MW-6 and MW-8. These monitor wells all had at least eight consecutive quarters of concentrations below laboratory detection limits or below applicable New Mexico Water Quality Control Commission (WQCC) standards. Monitor well P&A was completed by GeoMat Engineering and was conducted in accordance with specifications outlined in the NMOSE permits. Locations of the wells that were P&A'd are included on Figure 2. A photo log of the P&A activities is attached along with the P&A reports from the drilling subcontractor.

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505-564-2281

1911 Main, Ste 206
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970-403-3084

After P&A activities, eight monitor and remediation wells remain in service within the fenced area of the site and are available for remediation purposes. Two additional wells, MW-7 (upgradient) and MW-2 (downgradient) remain open to measure depth to groundwater and to assist in calculating hydraulic gradient.

2.0 Groundwater Monitoring and Gauging

AES conducted groundwater monitoring and NAPL measurement at the site on April 14, June 21, 2017 and again on August 9, 2017, as a part of the pilot testing. Depth to groundwater measurements were recorded and are presented in Table 1. Note that multi-phase extraction (MPE) well MPE-7 contained no NAPL on any of the dates measured.

3.0 Free Product Recovery - Pilot Testing

AES is in the process of conducting a free product recovery pilot study as discussed in the July 31, 2017, Remediation Plan Update submitted to NMOCD. The purpose of the pilot study is to evaluate the effectiveness of applying low vacuum (5 to 15 inches H₂O) to the MPE remediation wells in order to increase NAPL recovery rates. AES is working with the assistance of Xitech Instruments (www.xitechinc.com), a manufacturer of passive and vacuum enhanced skimmers.

As discussed in the July 2017 Remediation Plan Update, the technique of vacuum enhancement (VE) for active skimming has been shown to be effective in accelerating remediation of residual mass. To evaluate VE, two separate tests were planned: 1) Phase I establishes a baseline recovery curve (NAPL thickness vs. time) for the recharge of NAPL into the wells under normal conditions (i.e. no vacuum); and 2) Phase II evaluates application of low vacuum to the same well(s), in the same or similar recharge conditions. The results of Phase I and Phase II will be compared to evaluate VE effectiveness on NAPL recovery for this site.

AES initiated the baseline phase (Phase I) of the pilot study on August 9, 2017. At the time of this report, the pilot study remains in progress, with Phase I being complete. However, due to the length of time required for NAPL recharge into the MPE wells, Phase II has not yet been initiated. It was originally anticipated that it would take less than two days to recover to initial measured NAPL thickness, but at two weeks, NAPL recovery into the wells was still not back to original measured thicknesses. AES elected to conclude Phase I of the pilot study upon one of the MPE wells reaching approximately 85 percent NAPL thickness recovery. Phase II of the pilot study is expected to begin in early September 2017.

3.1 Pilot Study Assumptions

The following assumptions were made with respect to the site and the pilot study:

- Based on previous data, MPE-4 and MPE-5 were selected as wells having the thickest NAPL measurements and therefore were included in the pilot study;
- Groundwater is present and is to be considered in NAPL recovery efforts and vacuum application;
- NAPL recovery is a function of several site factors, including:
 - NAPL viscosity and specific gravity;
 - Soil porosity, saturation and capillary pressure;
 - Groundwater – seasonal/meteorological fluctuations; and
 - Seasonal temperature.

It is assumed that none of these varied during the study, although all will have impact upon the final remediation selection and implementation.

3.2 Phase 1: NAPL Recovery without Vacuum Enhancement.

3.2.1 Procedures

- Initial baseline depth to water and depth to NAPL for the study wells (MPE-4 and MPE-5) were measured and recorded;
- MPE-4 and MPE-5 were then cleared of NAPL by hand-bailing;
- Repeated NAPL thickness measurements were taken over time and recorded as the NAPL recharged in the well. Target recovery was the initial NAPL thickness;
- NAPL thickness measurements were made using a Geotech Oil/Water Interface Meter in accordance with AES established operating procedures.
- Field personnel recorded:
 - Well ID;
 - Date and time of measurement;
 - Depth to NAPL (ft);
 - Depth to water (ft); and
 - Resulting difference (NAPL thickness, ft).

The data collected was used to determine each well's characteristic curve for NAPL recharge over time.

3.2.2 Phase I Results

Phase I of the pilot study covered approximately two weeks and was determined to be complete on August 22, 2017. At that time, MPE-4 had recovered to approximately 44 percent of its initial measured NAPL thickness, and MPE-5 reached approximately 85 percent of the initial measured NAPL thickness. Based on these results, it was determined that MPE-5 will be the subject well for Phase II of the pilot study. NAPL recovery data and a graph showing Phase I NAPL recovery are attached as Table 2 and Figure 3, respectively.

3.3 Phase II: NAPL Recovery with Vacuum Enhancement

3.3.1 Procedures

- The Phase I procedures will be repeated in MPE-5, supplemented by the application of a low vacuum to assist in NAPL recovery, without mounding the groundwater surface and potentially truncating the flow of NAPL to the well;
- AES will install PVC valving components at MPE-5 to meter vacuum from a small blower to the well during recovery;
- Vacuum will be monitored to maintain levels suitable to increase the NAPL flow to the well but not induce groundwater mounding; and
- Vacuum levels will range from 5 to 15 inches of H₂O and will be stepped up (i.e. increased) in even increments during the pilot study.

3.3.2 Equipment

The following equipment will be utilized in Phase II:

- A PVC wellhead fixture, constructed by Xitech, that allows for the application of vacuum to the well while allowing for measurement of NAPL thickness during the pilot study;
- A Republic ½ HP regenerative blower to supply vacuum;
- A small 2500W generator to supply on-site power during the study;
- Associated 1" hose for vacuum application (intake and exhaust); and
- A granulated activated carbon (GAC) unit for exhaust emissions, if required.

Equipment is currently being modified by AES to allow as long of a continuous run of the vacuum enhancement application as possible, which will assist in baseline comparison. It is anticipated that a minimum of 72 hours duration for the Phase II pilot study can be achieved.

4.0 Conclusions and Recommendations

As outlined in the July 2017 Remediation Plan Update, the following activities have been completed to date:

- Monitor Well P&A of six monitor wells, including MW-1, MW-3, MW-4, MW-5, MW-6 and MW-8;
- Groundwater and NAPL measurements were made in remaining monitor wells and MPE wells on August 9 as part of initiating Phase I of the pilot study; and
- Completion of Phase I of the NAPL recovery pilot study in MPE-4 and MPE-5, in which it was found that NAPL recovery to initial measured NAPL thicknesses was completed to only 44 percent and 85 percent, respectively, after a two-week period. Based on the Phase I results, Phase II will be conducted in MPE-5 and included stepped vacuum increases to facilitate NAPL flow to the MPE well.

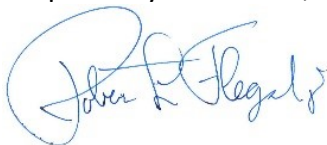
5.0 Scheduled Site Activities

The following site activities have been tentatively scheduled for the balance of 2017:

- Completion of the Phase II pilot study, which consists of stepped vacuum enhancement as part of NAPL recovery, in early September 2017;
- Implementation of remediation utilizing the results of the pilot study to be initiated in October 2017;
- Quarterly gauging events scheduled will continue throughout 2017;
- Continued periodic hand bailing of select MPE wells; and
- Submission of a Site Status Update report on November 1, 2017. The report will include the results of the Phase II portion of the pilot study and recommendations for continuing implementing improved NAPL recovery at the site.

If you have any questions regarding this report or site conditions, please do not hesitate to contact me or Elizabeth McNally at (505) 564-2281.

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read "Robert Flegal".

Robert "Bob" Flegal, P.E.
Sr. Project Manager



Elizabeth McNally, P.E.
Principal

Attachments:

Table 1. Summary of Groundwater Measurement and Water Quality Data
Table 2. Summary of NAPL Recharge Measurements
Figure 1. Topographic Site Location Map
Figure 2. Site Plan with Monitor Well Locations
Figure 3. Phase I Pilot Study - NAPL Thickness Recovery vs Time
Photolog – Well P&A, August 2017
Well Plugging Report (NMOSE)

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Tables

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	Date Sampled	Surveyed TOC (ft)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	GW Elev. (ft)	pH	Conductivity (mS)	DO (mg/L)	Temperature (C)	ORP (mV)
MW-1	14-Jan-14	7082.57		33.51		7049.06	NM	NM	NM	NM	NM
MW-1	04-Apr-14	7082.57		33.50		7049.07	NM	NM	NM	NM	NM
MW-1	10-Sep-14	7082.57		33.75		7048.82	NM	NM	NM	NM	NM
MW-1	03-Dec-14	7082.57		33.83		7048.74	NM	NM	NM	NM	NM
MW-1	27-Mar-15	7082.57		33.64		7048.93	NM	NM	NM	NM	NM
MW-1	08-Dec-15	7082.57		33.84		7048.73	NM	NM	NM	NM	NM
MW-1	17-Jun-16	7082.57		33.91		7048.66	NM	NM	NM	NM	NM
MW-1	20-Oct-16	7082.57		34.20		7048.37	NM	NM	NM	NM	NM
MW-1	27-Jan-17	7082.57		34.12		7048.45	NM	NM	NM	NM	NM
MW-1	07-Aug-17	7082.57	Plugged and Abandoned								
MW-2	14-Jan-14	7079.94		31.28		7048.66	NM	NM	NM	NM	NM
MW-2	04-Apr-14	7079.94		31.15		7048.79	NM	NM	NM	NM	NM
MW-2	10-Sep-14	7079.94		Dry		NA	NM - WELL DRY				
MW-2	03-Dec-14	7079.94		Dry		NA	NM - WELL DRY				
MW-2	27-Mar-15	7079.94		Dry		NA	NM - WELL DRY				
MW-2	08-Dec-15	7079.94		Dry		NA	NM - WELL DRY				
MW-2	17-Jun-16	7079.94		Dry		NA	NM - WELL DRY				
MW-2	20-Oct-16	7079.94		Dry		NA	NM - WELL DRY				
MW-2	27-Jan-17	7079.94		Dry		NA	NM - WELL DRY				
MW-2	14-Apr-17	7079.94		Dry		NA	NM - WELL DRY				
MW-3	14-Jan-14	7081.10		31.77		7049.33	NM	NM	NM	NM	NM
MW-3	04-Apr-14	7081.10		31.66		7049.44	NM	NM	NM	NM	NM
MW-3	10-Sep-14	7081.10		32.19		7048.91	NM	NM	NM	NM	NM
MW-3	03-Dec-14	7081.10		32.18		7048.92	NM	NM	NM	NM	NM

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MW-3	27-Mar-15	7081.10		31.78		7049.32	NM	NM	NM	NM	NM
MW-3	08-Dec-15	7081.10		32.12		7048.98	NM	NM	NM	NM	NM
MW-3	17-Jun-16	7081.10		32.21		7048.89	NM	NM	NM	NM	NM
MW-3	20-Oct-16	7081.10		32.47		7048.63	NM	NM	NM	NM	NM
MW-3	27-Jan-17	7081.10		32.36		7048.74	NM	NM	NM	NM	NM
MW-3	07-Aug-17	7081.10	Plugged and Abandoned								
MW-4	14-Jan-14	7084.79		34.85		7049.94	NM	NM	NM	NM	NM
MW-4	04-Apr-14	7084.79		34.84		7049.95	NM	NM	NM	NM	NM
MW-4	10-Sep-14	7084.79		35.14		7049.65	NM	NM	NM	NM	NM
MW-4	03-Dec-14	7084.79		35.21		7049.58	NM	NM	NM	NM	NM
MW-4	27-Mar-15	7084.79		35.04		7049.75	NM	NM	NM	NM	NM
MW-4	08-Dec-15	7084.79		35.28		7049.51	NM	NM	NM	NM	NM
MW-4	17-Jun-16	7084.79		35.31		7049.48	NM	NM	NM	NM	NM
MW-4	20-Oct-16	7084.79		35.54		7049.25	NM	NM	NM	NM	NM
MW-4	27-Jan-17	7084.79		35.52		7049.27	NM	NM	NM	NM	NM
MW-4	07-Aug-17	7084.79	Plugged and Abandoned								
MW-5	14-Jan-14	7087.98		Dry		NA	NM - WELL DRY				
MW-5	04-Apr-14	7087.98		Dry		NA	NM - WELL DRY				
MW-5	10-Sep-14	7088.98		Dry		NA	NM - WELL DRY				
MW-5	03-Dec-14	7088.98		Dry		NA	NM - WELL DRY				
MW-5	27-Mar-15	7088.98		Dry		NA	NM - WELL DRY				
MW-5	08-Dec-15	7088.98		Dry		NA	NM - WELL DRY				
MW-5	17-Jun-16	7088.98		Dry		NA	NM - WELL DRY				
MW-5	20-Oct-16	7088.98		Dry		NA	NM - WELL DRY				
MW-5	27-Jan-17	7088.98		Dry		NA	NM - WELL DRY				

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MW-5	07-Aug-17	7088.98	Plugged and Abandoned								
MW-6	14-Jan-14	7088.43		38.14		7050.29	NM	NM	NM	NM	NM
MW-6	04-Apr-14	7088.43		38.14		7050.29	NM	NM	NM	NM	NM
MW-6	10-Sep-14	7088.43		38.37		7050.06	NM	NM	NM	NM	NM
MW-6	03-Dec-14	7088.43		38.55		7049.88	NM	NM	NM	NM	NM
MW-6	27-Mar-15	7088.43		38.28		7050.15	NM	NM	NM	NM	NM
MW-6	08-Dec-15	7088.43		38.55		7049.88	NM	NM	NM	NM	NM
MW-6	17-Jun-16	7088.43		38.57		7049.86	NM	NM	NM	NM	NM
MW-6	20-Oct-16	7088.43		38.79		7049.64	NM	NM	NM	NM	NM
MW-6	27-Jan-17	7088.43		38.81		7049.62	NM	NM	NM	NM	NM
MW-6	07-Aug-17	7088.43	Plugged and Abandoned								
MW-7	14-Jan-14	7090.15		39.85		7050.30	NM	NM	NM	NM	NM
MW-7	04-Apr-14	7090.15		39.89		7050.26	NM	NM	NM	NM	NM
MW-7	10-Sep-14	7090.15		40.07		7050.08	NM	NM	NM	NM	NM
MW-7	03-Dec-14	7090.15		40.24		7049.91	NM	NM	NM	NM	NM
MW-7	27-Mar-15	7090.15		39.94		7050.21	NM	NM	NM	NM	NM
MW-7	08-Dec-15	7090.15		40.27		7049.88	NM	NM	NM	NM	NM
MW-7	17-Jun-16	7090.15		40.30		7049.85	NM	NM	NM	NM	NM
MW-7	20-Oct-16	7090.15		40.51		7049.64	NM	NM	NM	NM	NM
MW-7	27-Jan-17	7090.15		40.49		7049.66	NM	NM	NM	NM	NM
MW-7	14-Apr-17	7090.15		40.23		7049.92	NM	NM	NM	NM	NM
MW-8	14-Jan-14	7085.20		35.87		7049.33	NM	NM	NM	NM	NM
MW-8	04-Apr-14	7085.20		35.79		7049.41	NM	NM	NM	NM	NM
MW-8	10-Sep-14	7085.20		36.04		7049.16	NM	NM	NM	NM	NM

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MW-8	03-Dec-14	7085.20		36.15		7049.05	NM	NM	NM	NM	NM
MW-8	27-Mar-15	7085.20		35.94		7049.26	NM	NM	NM	NM	NM
MW-8	08-Dec-15	7085.20		36.19		7049.01	NM	NM	NM	NM	NM
MW-8	17-Jun-16	7085.20		36.28		7048.92	NM	NM	NM	NM	NM
MW-8	20-Oct-16	7085.20		36.54		7048.66	NM	NM	NM	NM	NM
MW-8	27-Jan-17	7085.20		36.49		7048.71	NM	NM	NM	NM	NM
MW-8	07-Aug-17	7085.20	Plugged and Abandoned								
MW-9	14-Jan-14	7083.64	33.95	34.31	0.36	7049.61	NM - 0.36 feet NAPL				
MW-9	04-Apr-14	7083.64	33.94	34.01	0.07	7049.68	NM - 0.07 feet NAPL				
MW-9	10-Sep-14	7083.64	34.15	34.27	0.12	7049.46	NM - 0.12 feet NAPL				
MW-9	03-Dec-14	7083.64	34.25	34.31	0.06	7049.38	NM - 0.06 feet NAPL				
MW-9	27-Mar-15	7083.64	33.96	34.03	0.07	7049.66	NM - 0.07 feet NAPL				
MW-9	08-Dec-15	7083.64	34.30	34.36	0.06	7049.33	NM - 0.01 feet NAPL				
MW-9	17-Jun-16	7083.64	34.50	34.51	0.01	7049.14	NM - 0.01 feet NAPL				
MW-9	20-Oct-16	7083.64	34.63	34.90	0.27	7048.95	NM - 0.27 feet NAPL				
MW-9	27-Jan-17	7083.64	34.62	35.12	0.50	7048.91	NM - 0.50 feet NAPL				
MW-9	14-Apr-17	7083.64	34.32	34.87	0.55	7049.20	NM - 0.55 feet NAPL				
MW-9	21-Jun-17	7083.64	34.25	35.81	1.56	7049.04	NM - 1.56 feet NAPL				
MW-9	09-Aug-17	7083.64	34.32	36.68	2.36	7048.80	NM - 2.36 feet NAPL				
MPE-1	14-Jan-14	TBS	35.12	37.44	2.32	NA	NM - 2.32 feet NAPL				
MPE-1	04-Apr-14	TBS	35.10	37.40	2.30	NA	NM - 2.30 feet NAPL				
MPE-1	10-Sep-14	TBS	35.36	37.70	2.34	NA	NM - 2.34 feet NAPL				
MPE-1	03-Dec-14	TBS	35.44	37.77	2.33	NA	NM - 2.33 feet NAPL				
MPE-1	09-Oct-15	TBS	35.48	37.37	1.89	NA	NM - 1.89 feet NAPL				
MPE-1	27-Mar-15	TBS	35.22	37.29	2.07	NA	NM - 2.07 feet NAPL				

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MPE-1	09-Oct-15	TBS	35.48	37.37	1.89	NA	NM - 1.89 feet NAPL				
MPE-1	08-Dec-15	TBS	35.58	37.60	2.02	NA	NM - 2.02 feet NAPL				
MPE-1	17-Jun-16	TBS	35.62	37.72	2.10	NA	NM - 2.10 feet NAPL				
MPE-1	20-Oct-16	TBS	35.84	38.05	2.21	NA	NM - 2.21 feet NAPL				
MPE-1	27-Jan-17	TBS	35.80	37.88	2.08	NA	NM - 2.08 feet NAPL				
MPE-1	14-Apr-17	TBS	35.58	37.37	1.79	NA	NM - 1.79 feet NAPL				
MPE-1	21-Jun-17	TBS	35.74	37.65	1.91	NA	NM - 1.91 feet NAPL				
MPE-1	09-Aug-17	TBS	35.96	37.50	1.54	NA	NM - 1.54 feet NAPL				
MPE-2	14-Jan-14	TBS	33.80	34.13	0.33	NA	NM - 0.33 feet NAPL				
MPE-2	04-Apr-14	TBS	33.74	34.03	0.29	NA	NM - 0.29 feet NAPL				
MPE-2	10-Sep-14	TBS	34.03	34.44	0.41	NA	NM - 0.41 feet NAPL				
MPE-2	03-Dec-14	TBS	34.10	34.55	0.45	NA	NM - 0.45 feet NAPL				
MPE-2	09-Oct-15	TBS	34.07	34.43	0.36	NA	NM - 0.36 feet NAPL				
MPE-2	27-Mar-15	TBS	33.85	34.20	0.35	NA	NM - 0.35 feet NAPL				
MPE-2	09-Oct-15	TBS	34.07	34.43	0.36	NA	NM - 0.36 feet NAPL				
MPE-2	08-Dec-15	TBS	34.20	34.38	0.18	NA	NM - 0.18 feet NAPL				
MPE-2	17-Jun-16	TBS	34.31	34.43	0.12	NA	NM - 0.12 feet NAPL				
MPE-2	20-Oct-16	TBS	34.52	34.77	0.25	NA	NM - 0.75 feet NAPL				
MPE-2	27-Jan-17	TBS	34.48	34.73	0.25	NA	NM - 0.25 feet NAPL				
MPE-2	14-Apr-17	TBS	34.22	34.36	0.14	NA	NM - 0.14 feet NAPL				
MPE-2	21-Jun-17	TBS	34.36	34.62	0.26	NA	NM - 0.26 feet NAPL				
MPE-2	09-Aug-17	TBS	34.57	34.74	0.17	NA	NM - 0.17 feet NAPL				
MPE-3	14-Jan-14	TBS	33.86	34.32	0.46	NA	NM - 0.46 feet NAPL				
MPE-3	04-Apr-14	TBS	33.83	34.18	0.35	NA	NM - 0.35 feet NAPL				
MPE-3	10-Sep-14	TBS	34.15	34.55	0.40	NA	NM - 0.40 feet NAPL				

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Well ID	Date Sampled	Surveyed TOC (ft)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	GW Elev. (ft)	pH	Conductivity (mS)	DO (mg/L)	Temperature (C)	ORP (mV)
MPE-3	03-Dec-14	TBS	34.20	34.57	0.37	NA	NM - 0.37 feet NAPL				
MPE-3	09-Oct-15	TBS	34.10	34.47	0.37	NA	NM - 0.37 feet NAPL				
MPE-3	27-Mar-15	TBS	33.96	34.20	0.24	NA	NM - 0.24 feet NAPL				
MPE-3	09-Oct-15	TBS	34.10	34.47	0.37	NA	NM - 0.37 feet NAPL				
MPE-3	08-Dec-15	TBS	34.28	34.56	0.28	NA	NM - 0.28 feet NAPL				
MPE-3	17-Jun-16	TBS	34.18	36.01	1.83	NA	NM - 1.83 feet NAPL				
MPE-3	20-Oct-16	TBS	34.35	36.53	2.18	NA	NM - 2.18 feet NAPL				
MPE-3	27-Jan-17	TBS	34.29	36.48	2.19	NA	NM - 2.19 feet NAPL				
MPE-3	14-Apr-17	TBS	34.05	35.85	1.80	NA	NM - 1.80 feet NAPL				
MPE-3	21-Jun-17	TBS	34.24	35.89	1.65	NA	NM - 1.65 feet NAPL				
MPE-3	09-Aug-17	TBS	34.39	36.39	2.00	NA	NM - 2.00 feet NAPL				
MPE-4	14-Jan-14	TBS	34.62	37.00	2.38	NA	NM - 2.38 feet NAPL				
MPE-4	04-Apr-14	TBS	34.59	36.91	2.32	NA	NM - 2.32 feet NAPL				
MPE-4	10-Sep-14	TBS	34.89	37.22	2.33	NA	NM - 2.33 feet NAPL				
MPE-4	03-Dec-14	TBS	34.95	37.30	2.35	NA	NM - 2.35 feet NAPL				
MPE-4	09-Oct-15	TBS	34.90	36.86	1.96	NA	NM - 1.96 feet NAPL				
MPE-4	27-Mar-15	TBS	34.73	36.82	2.09	NA	NM - 2.09 feet NAPL				
MPE-4	09-Oct-15	TBS	34.90	36.86	1.96	NA	NM - 1.96 feet NAPL				
MPE-4	08-Dec-15	TBS	35.09	37.17	2.08	NA	NM - 2.08 feet NAPL				
MPE-4	17-Jun-16	TBS	35.13	37.51	2.38	NA	NM - 2.38 feet NAPL				
MPE-4	20-Oct-16	TBS	35.38	37.83	2.45	NA	NM - 2.45 feet NAPL				
MPE-4	27-Jan-17	TBS	35.31	37.83	2.52	NA	NM - 2.52 feet NAPL				
MPE-4	14-Apr-17	TBS	35.06	37.16	2.10	NA	NM - 2.10 feet NAPL				
MPE-4	21-Jun-17	TBS	35.21	37.53	2.32	NA	NM - 2.32 feet NAPL				
MPE-4	09-Aug-17	TBS	35.42	37.65	2.23	NA	NM - 2.23 feet NAPL				

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	Date Sampled	Surveyed TOC (ft)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	GW Elev. (ft)	pH	Conductivity (mS)	DO (mg/L)	Temperature (C)	ORP (mV)
MPE-5	14-Jan-14	TBS	36.15	38.50	2.35	NA	NM - 2.35 feet NAPL				
MPE-5	04-Apr-14	TBS	36.15	38.32	2.17	NA	NM - 2.17 feet NAPL				
MPE-5	10-Sep-14	TBS	36.38	38.86	2.48	NA	NM - 2.48 feet NAPL				
MPE-5	03-Dec-14	TBS	36.49	38.91	2.42	NA	NM - 2.42 feet NAPL				
MPE-5	09-Oct-15	TBS	36.45	38.57	2.12	NA	NM - 2.12 feet NAPL				
MPE-5	27-Mar-15	TBS	36.27	38.28	2.01	NA	NM - 2.01 feet NAPL				
MPE-5	09-Oct-15	TBS	36.45	38.57	2.12	NA	NM - 2.12 feet NAPL				
MPE-5	08-Dec-15	TBS	36.58	38.92	2.34	NA	NM - 2.34 feet NAPL				
MPE-5	17-Jun-16	TBS	36.66	38.90	2.24	NA	NM - 2.24 feet NAPL				
MPE-5	20-Oct-16	TBS	36.88	39.31	2.43	NA	NM - 2.43 feet NAPL				
MPE-5	27-Jan-17	TBS	36.84	39.20	2.36	NA	NM - 2.36 feet NAPL				
MPE-5	14-Apr-17	TBS	36.61	38.55	1.94	NA	NM - 1.94 feet NAPL				
MPE-5	21-Jun-17	TBS	36.75	38.82	2.07	NA	NM - 2.07 feet NAPL				
MPE-5	09-Aug-17	TBS	36.91	39.22	2.31	NA	NM - 2.31 feet NAPL				
MPE-6	14-Jan-14	TBS	33.88	36.14	2.26	NA	NM - 2.26 feet NAPL				
MPE-6	04-Apr-14	TBS	33.82	36.10	2.28	NA	NM - 2.28 feet NAPL				
MPE-6	10-Sep-14	TBS	34.12	36.42	2.30	NA	NM - 2.30 feet NAPL				
MPE-6	03-Dec-14	TBS	34.20	36.50	2.30	NA	NM - 2.30 feet NAPL				
MPE-6	09-Oct-15	TBS	34.16	36.21	2.05	NA	NM - 2.05 feet NAPL				
MPE-6	27-Mar-15	TBS	33.97	35.95	1.98	NA	NM - 1.98 feet NAPL				
MPE-6	09-Oct-15	TBS	34.16	36.21	2.05	NA	NM - 2.05 feet NAPL				
MPE-6	08-Dec-15	TBS	34.63	36.68	2.05	NA	NM - 2.05 feet NAPL				
MPE-6	17-Jun-16	TBS	34.36	36.65	2.29	NA	NM - 2.29 feet NAPL				
MPE-6	20-Oct-16	TBS	34.62	36.80	2.18	NA	NM - 2.18 feet NAPL				
MPE-6	27-Jan-17	TBS	34.55	36.76	2.21	NA	NM - 2.21 feet NAPL				
MPE-6	14-Apr-17	TBS	34.30	36.20	1.90	NA	NM - 1.90 feet NAPL				

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	Date Sampled	Surveyed TOC (ft)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	GW Elev. (ft)	pH	Conductivity (mS)	DO (mg/L)	Temperature (C)	ORP (mV)
MPE-6	21-Jun-17	TBS	34.45	36.60	2.15	NA	NM - 2.15 feet NAPL				
MPE-6	09-Aug-17	TBS	34.71	36.44	1.73	NA	NM - 1.73 feet NAPL				
MPE-7	14-Jan-14	TBS		NM		NA	NM	NM	NM	NM	NM
MPE-7	04-Apr-14	TBS	32.00	32.01	0.01	NA	NM - 0.01 feet NAPL				
MPE-7	10-Sep-14	TBS		32.34		NA	NM	NM	NM	NM	NM
MPE-7	03-Dec-14	TBS		32.41		NA	NM	NM	NM	NM	NM
MPE-7	09-Oct-15	TBS		32.29		NA	NM	NM	NM	NM	NM
MPE-7	27-Mar-15	TBS		32.14		NA	NM	NM	NM	NM	NM
MPE-7	09-Oct-15	TBS		32.29		NA	NM	NM	NM	NM	NM
MPE-7	08-Dec-15	TBS		32.47		NA	NM	NM	NM	NM	NM
MPE-7	17-Jun-16	TBS		32.56		NA	NM	NM	NM	NM	NM
MPE-7	20-Oct-16	TBS		32.79		NA	NM	NM	NM	NM	NM
MPE-7	27-Jan-17	TBS		32.76		NA	NM	NM	NM	NM	NM
MPE-7	14-Apr-17	TBS		Dry		NA	NM - WELL DRY				
MPE-7	21-Jun-17	TBS		Dry		NA	NM - WELL DRY				

NOTE: **table includes only data from 2014 through present; comprehensive table available upon request.

NS = NOT SAMPLED
NM = NOT MEASURED
NA = NOT AVAILABLE
TBS = TO BE SURVEYED

TABLE 2
SUMMARY OF NAPL RECHARGE MEASUREMENTS
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

MPE-4

Elapsed Time from 00:00 09 AUG 2017	Date and Time	Depth to Water (ft)	Depth to NAPL (ft)	NAPL Thickness (ft)
10:02	8/9/2017 10:02	35.42	37.65	2.23
10:15	8/9/2017 10:15	36.09	36.13	0.04
10:30	8/9/2017 10:30	35.73	35.84	0.11
10:45	8/9/2017 10:45	35.73	35.86	0.13
11:02	8/9/2017 11:02	35.72	35.88	0.16
11:17	8/9/2017 11:17	35.72	35.89	0.17
11:32	8/9/2017 11:32	35.72	35.90	0.18
12:02	8/9/2017 12:02	35.72	35.92	0.20
12:30	8/9/2017 12:30	35.72	35.93	0.21
14:30	8/9/2017 14:30	35.70	35.95	0.25
15:30	8/9/2017 15:30	35.70	35.95	0.25
16:30	8/9/2017 16:30	35.69	35.95	0.26
34:16	8/10/2017 10:16	35.71	36.07	0.36
38:01	8/10/2017 14:01	35.70	36.06	0.36
132:22	8/14/2017 12:22	35.62	36.24	0.62
320:49	8/22/2017 8:49	35.65	36.64	0.99

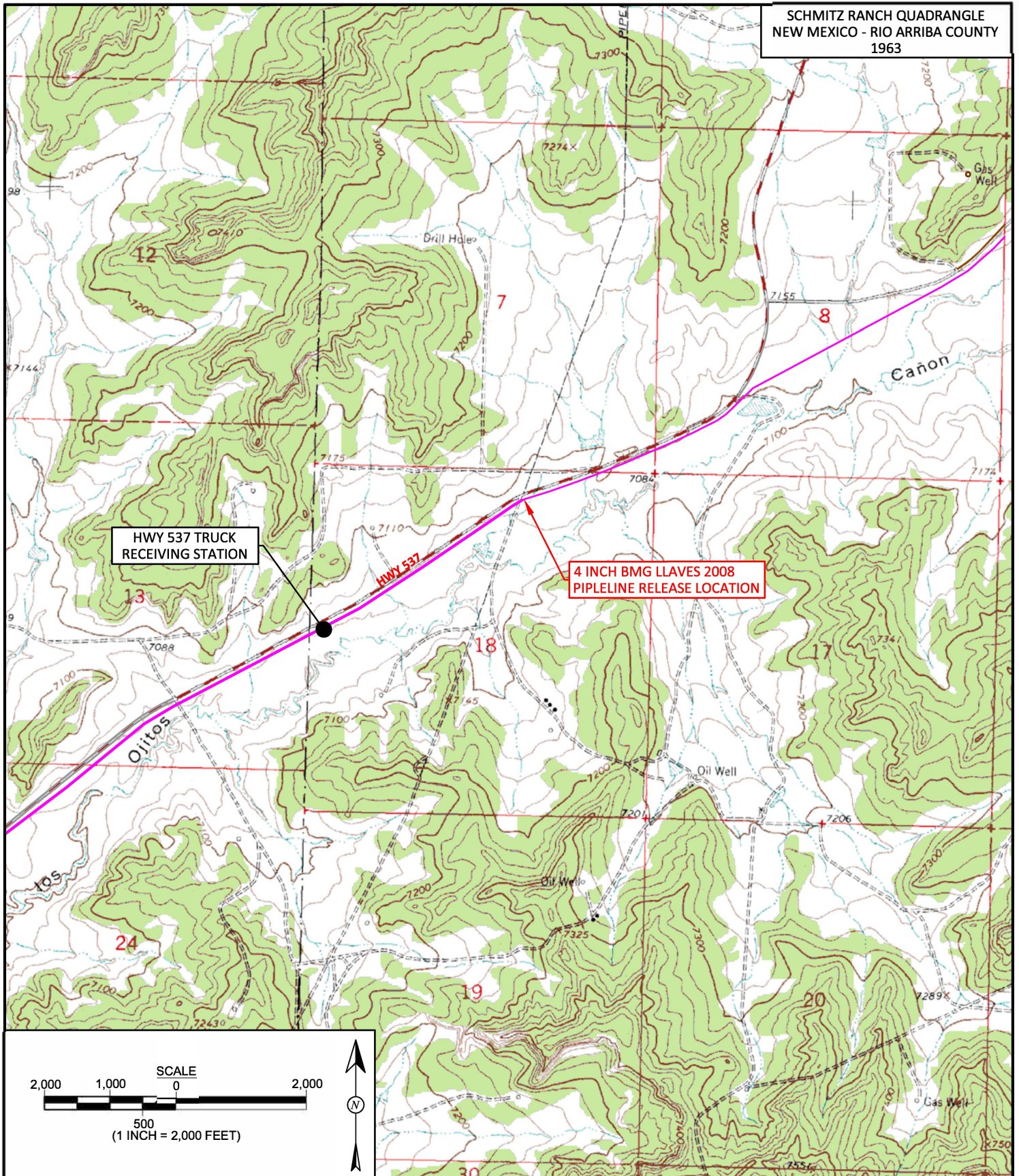
Recovery Level = 0.99ft /2.23ft 44.4%

MPE-05

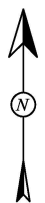
Elapsed Time from 00:00 09 AUG 2017	Date and Time	Depth to Water (ft)	Depth to NAPL (ft)	NAPL Thickness (ft)
10:24	8/9/2017 10:24	36.91	39.22	2.31
10:39	8/9/2017 10:39	37.31	37.38	0.07
10:55	8/9/2017 10:55	37.22	37.48	0.26
11:10	8/9/2017 11:10	37.2	37.57	0.37
11:25	8/9/2017 11:25	37.19	37.62	0.43
11:40	8/9/2017 11:40	37.19	37.63	0.44
11:55	8/9/2017 11:55	37.19	37.64	0.45
12:10	8/9/2017 12:10	37.19	37.64	0.45
12:33	8/9/2017 12:33	37.19	37.67	0.48
14:33	8/9/2017 14:33	37.17	37.71	0.54
15:34	8/9/2017 15:34	37.16	37.73	0.57
16:32	8/9/2017 16:32	37.16	37.74	0.58
34:24	8/10/2017 10:24	37.15	37.90	0.75
38:06	8/10/2017 14:06	37.14	37.93	0.79
132:22	8/14/2017 12:22	37.01	38.43	1.42
320:53	8/22/2017 8:53	37.01	38.97	1.96

Recovery Level = 1.96ft /2.31ft 84.8%

Figures



2,000 1,000 SCALE 0 2,000
500
(1 INCH = 2,000 FEET)



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DRAWN BY:
S. Glasses

DATE DRAWN:
March 3, 2017

REVISIONS BY:
S. Glasses

DATE REVISED:
March 6, 2017

CHECKED BY:
E. McNally

DATE CHECKED:
March 6, 2017

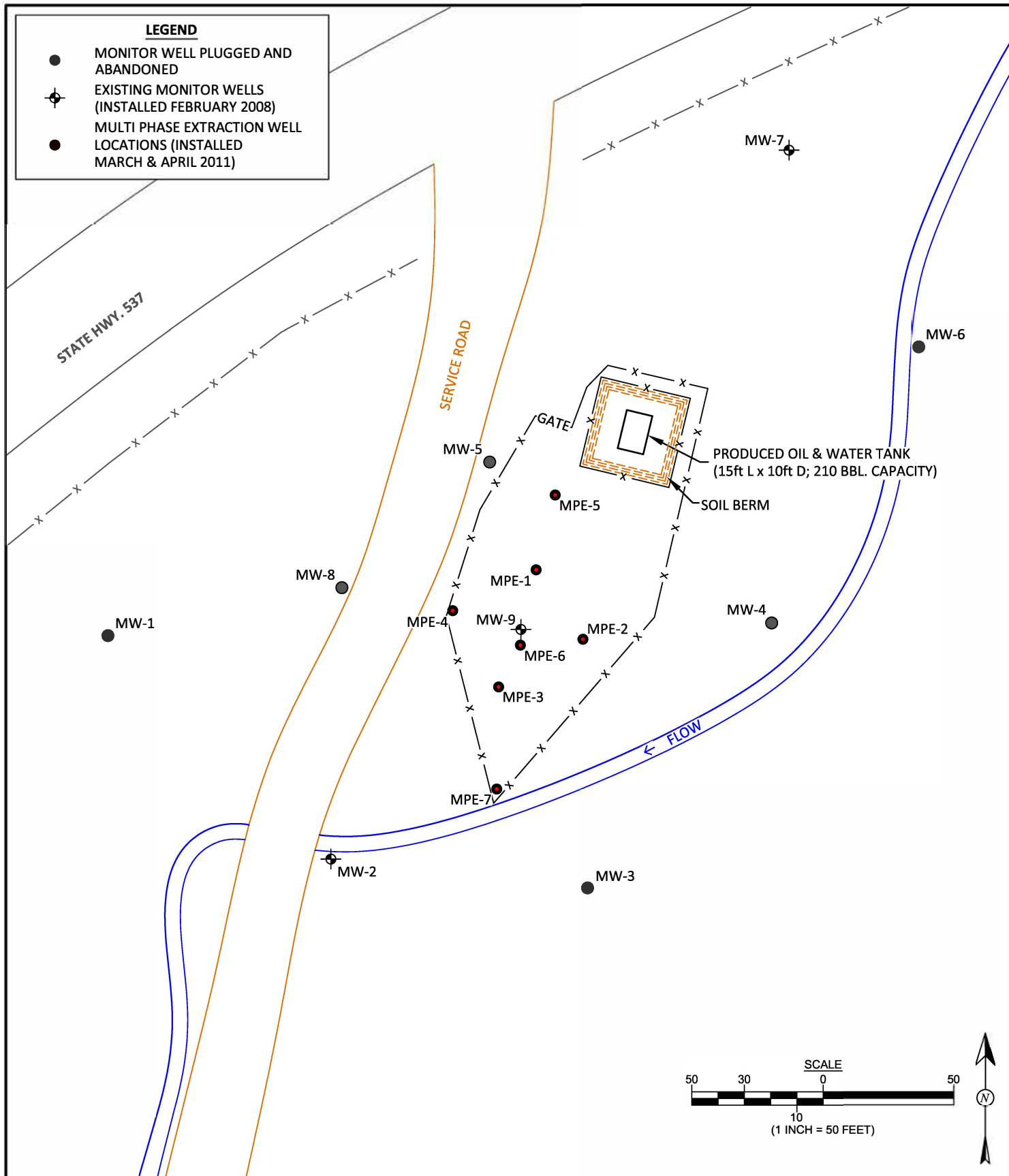
APPROVED BY:
E. McNally

DATE APPROVED:
March 6, 2017

FIGURE 1

TOPOGRAPHIC SITE LOCATION MAP

BMG HIGHWAY 537
LLAVES 2008 PIPELINE OIL RELEASE
NW¼ NE¼, SECTION 18, T25N, R3W
RIO ARriba COUNTY, NEW MEXICO
N36.40357, W107.18422



DRAWN BY:
C. Lameman

DATE DRAWN:
July 6, 2017

REVISIONS BY:
C. Lameman

DATE REVISED:
August 29, 2017

CHECKED BY:
R. Flegal

DATE CHECKED:
August 29, 2017

APPROVED BY:
E. McNally

DATE APPROVED:
August 29, 2017

FIGURE 2

SITE PLAN WITH MONITOR WELL LOCATIONS

BMG HIGHWAY 537
LLAVES 2008 PIPELINE OIL RELEASE
NW $\frac{1}{4}$ NE $\frac{1}{4}$, SECTION 18, T25N, R3W
RIO ARRIBA COUNTY, NEW MEXICO
N36.40357, W107.18422



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Graphs

Figure 3.
BMG HWY 537: 2008 Release
NAPL Recovery Pilot Study Phase I

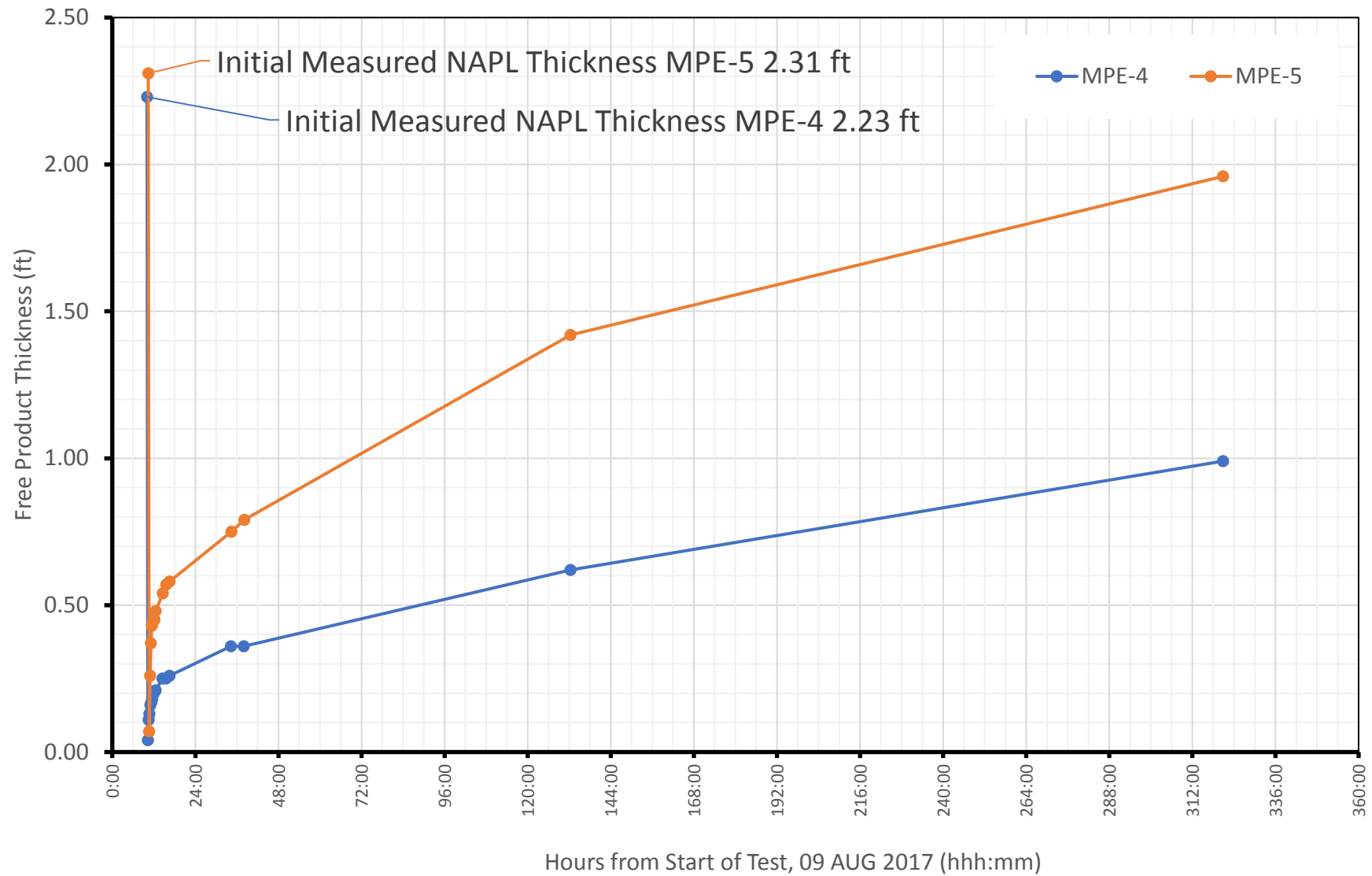


Photo Log

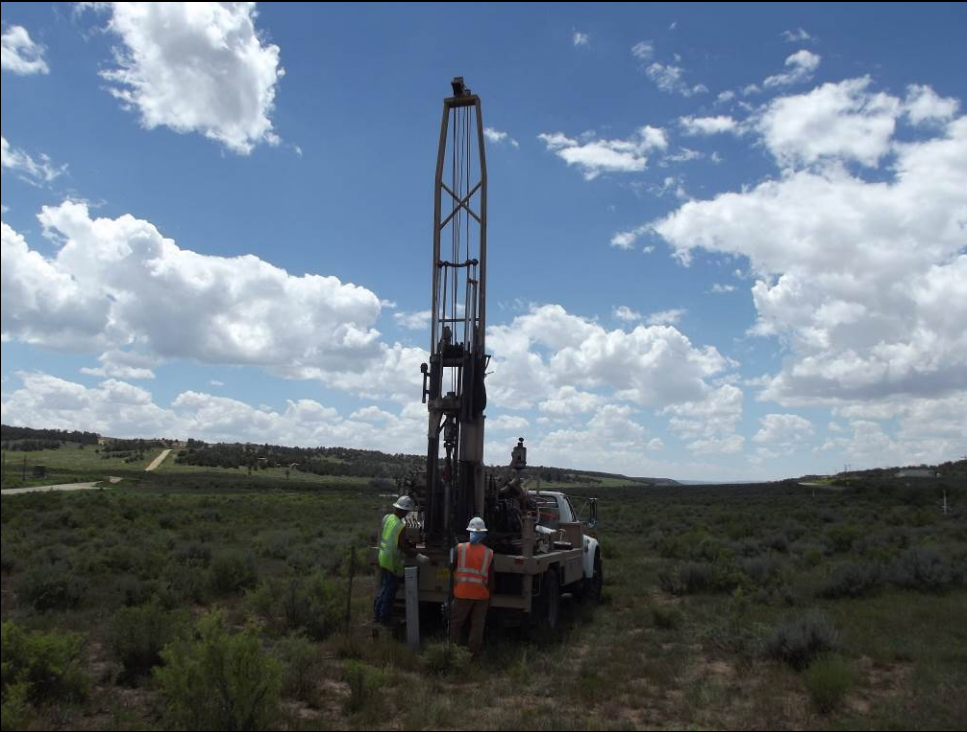
Photo #1	
Client: Benson Montin Greer	
Project Name: HWY 537 2008 Release	
Rio Arriba County, NM	
Date Photo Taken: August 7, 2017	
GPS and Location: 36.40336, -107.18478	
NW¼ NE¼, Section 18, T25N, R3W	
Taken by: Corwin Lameman, AES	Subject: Auger Drill Rig
	Description: View of Drill Rig setup by MW-1.


Photo #2	
Client: Benson Montin Greer	
Project Name: HWY 537 2008 Release	
Rio Arriba County, NM	
Date Photo Taken: August 7, 2017	
GPS and Location: 36.40336, -107.18478	
NW¼ NE¼, Section 18, T25N, R3W	
Taken by: Corwin Lameman, AES	Subject: MW-1 P&A
	Description: Removal of MW-1 elevated well vault (same for each well plugged).


Photo #3	
Client: Benson Montin Greer	
Project Name: HWY 537 2008 Release	
Rio Arriba County, NM	
Date Photo Taken: August 7, 2017	
GPS and Location: 36.40336, -107.18478	
NW¼ NE¼, Section 18, T25N, R3W	
Taken by: Corwin Lameman, AES	Subject: MW-1 (same for each well plugged).
	Description: Grout filling process of well casing.



Photo #4	
Client: Benson Montin Greer	
Project Name: HWY 537 2008 Release	
Rio Arriba County, NM	
Date Photo Taken: August 7, 2017	
GPS and Location: 36.40336, -107.18478	
NW¼ NE¼, Section 18, T25N, R3W	
Taken by: Corwin Lameman, AES	Subject: Former MW-1 (similar for each well plugged).
	Description: View of former MW-1 filled with bentonite chips.

Photo #5	
Client: Benson Montin Greer	
Project Name: HWY 537 2008 Release Rio Arriba County, NM	
Date Photo Taken: August 7, 2017	
GPS and Location: 36.40336, -107.18478 NW¼ NE¼, Section 18, T25N, R3W	
Taken by: Corwin Lameman, AES	
Subject: Former MW-1 – restore area to match surroundings (similar for each well).	
Description: View of MW-1 P&A	



915 Malta Avenue
Farmington, New Mexico 87401

LETTER OF TRANSMITTAL

Tel (505) 327-7928
Fax (505) 326-5721

To: State Engineer Date: August 14, 2017
NMOSE District V Office Project: BMG 537 P&A's
100 Gossett Drive, Suite A Project No.: GEOMAT Project 175-2801
Aztec, New Mexico 87410
Attn: _____

We are:

☐ Transmitting
☐ Returning
☒ Submitting

For your:

☐ Review
☒ Files
☐ Approval
☐ Signature

The following:

☐ Correspondence
☐ Engineering Report
☒ Plugging Records

Copies	Date	Description
1		Plugging Record for 1 inch Wells; MW-1, 3, 4, 5, 6 and 8
1		Plugging Record for 2 inch Wells; MW-6, 7, 8, 9, 10 and 11

Delivery By:

☐ Hand Delivery
☐ First Class Mail
☒ Regular Mail

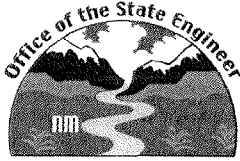
☐ Express Mail
☐ Courier Service
☐ Other _____

☐ Return Receipt

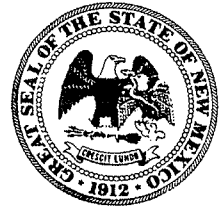
GEOMAT Inc.

By: *R. O. Medel*

Distribution: Addressee (1), ~~Robert Flegal~~, AES (1)



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) M W1

Well owner: Benso n-M tin-Greer Drilling Co rpo ratin

Phone No.: (505) 325-8874

Mailing address: 4900 Co dge Blvd

City: Farmingto n

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762

Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla

4) Date well plugging began: 8/7/17

Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 24 min, 12.06 sec

Longitude: -107 deg, 11 min, 05.10 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 35 ft below ground level (bgl),
by the following manner: Water Indicator

7) Static water level measured at initiation of plugging: 31 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 4/25/17

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- 10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

[illegible]

MULTIPLY		BY	AND OBTAIN	
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

An. Med. 11

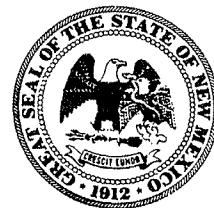
Signature of Well Driller

8/14/17

Date _____



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-3

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State:

NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762

Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):

Kalvin Padilla

4) Date well plugging began: 8/7/17

Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 24 min, 11.34 sec

Longitude: -107 deg, 11 min, 03.42 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 36 ft below ground level (bgl),
by the following manner: Water Indicator

7) Static water level measured at initiation of plugging: No Water ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 4/25/17

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Date _____



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-4

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla

4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 24 min, 12.30 sec
Longitude: -107 deg, 11 min, 02.76 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 35 ft below ground level (bgl),
by the following manner: Water Level Indicator

7) Static water level measured at initiation of plugging: 31 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 4/25/17

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- 10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

[illegible]

MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

III. SIGNATURE:

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

An. a. Madrid

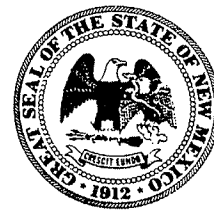
Signature of Well Driller

8/14/17

Date _____



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-5

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla

4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 24 min, 12.84 sec
Longitude: -107 deg, 11 min, 03.42 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 31.08 ft below ground level (bgl),
by the following manner: Water Level Indicator

7) Static water level measured at initiation of plugging: No Water ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 4/25/17

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

Date _____



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-6

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla

4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 24 min, 13.22 sec
Longitude: -107 deg, 11 min, 01.44 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 36.09 ft below ground level (bgl),
by the following manner: Water Level Indicator

7) Static water level measured at initiation of plugging: 36 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 4/25/17

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- 10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

[illegible]

MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

III. SIGNATURE:

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Ans. Machin

Signature of Well Driller

8/14/17

Date _____



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-8

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

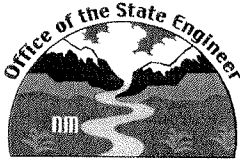
- 1) Name of well drilling company that plugged well: GEOMAT Inc.
- 2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla
- 4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17
- 5) GPS Well Location: Latitude: 36 deg, 24 min, 12.36 sec
Longitude: -107 deg, 11 min, 04.08 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 35.02 ft below ground level (bgl),
by the following manner: Water Level Indicator
- 7) Static water level measured at initiation of plugging: 35.01 ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 4/25/17
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Date _____



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-6

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: GEOMAT Inc.
- 2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla
- 4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17
- 5) GPS Well Location: Latitude: 36 deg, 23 min, 52.57 sec
Longitude: -107 deg, 11 min, 36.00 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 19.08 ft below ground level (bgl),
by the following manner: Water Level Indicator
- 7) Static water level measured at initiation of plugging: 11.05 ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 3/23/17
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- 10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

[illegible]

MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

III. SIGNATURE:

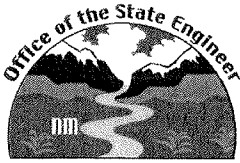
I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

In a credit

Signature of Well Driller

8/14/17

Date _____



PLUGGING RECORD



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NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-7

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla

4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 23 min, 53.03 sec
Longitude: -107 deg, 11 min, 37.10 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 40 ft below ground level (bgl),
by the following manner: Water Level Indicator

7) Static water level measured at initiation of plugging: 25 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 3/23/17

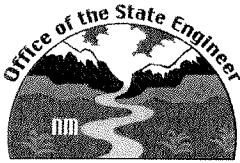
9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

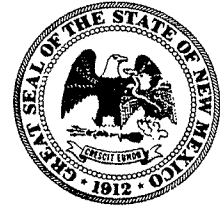
MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Date _____



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-8

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Kalvin Padilla

4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 23 min, 53.45 sec
Longitude: -107 deg, 11 min, 37.83 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 40 ft below ground level (bgl),
by the following manner: Water Level Indicator

7) Static water level measured at initiation of plugging: 19 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 3/23/17

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

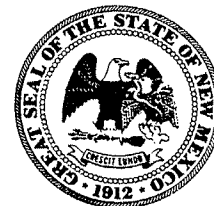
MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Date _____



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-9

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla

4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 23 min, 52.92 sec
Longitude: -107 deg, 11 min, 38.44 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 35 ft below ground level (bgl),
by the following manner: Water Level Indicator

7) Static water level measured at initiation of plugging: 26 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 3/23/17

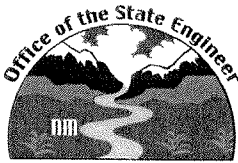
9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

MULTIPLY		BY	AND OBTAIN	
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Date _____



PLUGGING RECORD



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NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-10

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla

4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 23 min, 53.76 sec
Longitude: -107 deg, 11 min, 35.45 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 35 ft below ground level (bgl),
by the following manner: Water Level Indicator

7) Static water level measured at initiation of plugging: 25 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 3/23/17

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- 10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.


For each interval plugged, describe within the following columns:

<u>Depth</u> (ft bgl)	<u>Plugging Material Used</u> (include any additives used)	<u>Volume of Material Placed</u> (gallons)	<u>Theoretical Volume of Borehole/ Casing</u> (gallons)	<u>Placement Method</u> (tremie pipe, other)	<u>Comments</u> ("casing perforated first", "open annular space also plugged", etc.)
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="width: 100%; height: 100%; border-left: 1px solid black; border-right: 1px solid black; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; height: 2px; background-color: black;"></div> <div style="position: absolute; top: 10%; left: 0; right: 0; height: 2px; background-color: black;"></div> <div style="position: absolute; top: 20%; left: 0; right: 0; height: 2px; background-color: black;"></div> <div style="position: absolute; top: 30%; left: 0; right: 0; height: 2px; background-color: black;"></div> <div style="position: absolute; top: 40%; left: 0; right: 0; height: 2px; background-color: black;"></div> <div style="position: absolute; top: 50%; left: 0; right: 0; height: 2px; background-color: black;"></div> <div style="position: absolute; top: 60%; left: 0; right: 0; height: 2px; background-color: black;"></div> <div style="position: absolute; top: 70%; left: 0; right: 0; height: 2px; background-color: black;"></div> <div style="position: absolute; top: 80%; left: 0; right: 0; height: 2px; background-color: black;"></div> <div style="position: absolute; top: 90%; left: 0; right: 0; height: 2px; background-color: black;"></div> </div> </div>	Type I/II Cement Pure Bentonite Powder	5.7	5.7	Tremie Pipe	Surface

MULTIPLY	BY	AND OBTAIN
cubic feet x	7.4805	= gallons
cubic yards x	201.97	= gallons

III. SIGNATURE:

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.



Signature of Well Driller

8/14/17

Date



PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: (No OSE File Number) MW-11

Well owner: Benson-Montin-Greer Drilling Corporation

Phone No.: (505) 325-8874

Mailing address: 4900 College Blvd

City: Farmington

State: NM

Zip code: 87401

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: GEOMAT Inc.

2) New Mexico Well Driller License No.: WD-1762 Expiration Date: 8/30/18

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s):
Kalvin Padilla

4) Date well plugging began: 8/7/17 Date well plugging concluded: 8/7/17

5) GPS Well Location: Latitude: 36 deg, 23 min, 54.16 sec
Longitude: -107 deg, 11 min, 38.2 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 40 ft below ground level (bgl),
by the following manner: Water Level Indicator

7) Static water level measured at initiation of plugging: 27 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 3/23/17

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- 10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

[illegible]

MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

III. SIGNATURE:

I, George A. Madrid, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

8/14/17
Date