R. T. HICKS CONSULTANTS, LTD.

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February 24, 2017

Mr. Mike Bratcher
New Mexico Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210

RE: **Final Closure Report**
ASAU 149 Trunk line Release Site, Lime Rock Resources
T18S R26E Section 14 Unit Letter O, Eddy County NM
2RP-3940

Dear Mr. Bratcher,

On behalf of Lime Rock Resources, R.T. Hicks Consultants (Hicks Consultants) is pleased to present the following **Final Closure Report** for the ASAU 149 Trunk line release site.

Incident History

The release associated with the ASAU 149 Trunk line was discovered on September 30, 2016. The source of the release was from below-grade fiber glass production line. The below-grade line was immediately taken out of service. The release volume is unknown.
The release is located on fee land owned by Chuck Morgan, located due west of Fanning Road (CR-44).

Site Characteristics: The Pecos River is located 1.5 miles due east of the ASAU 149 Trunk line release and the Penasco draw is located less than 1000-feet due north. The impacted area is located in pasture land bordered by lease roads and well locations. The OSE database reports the ground water to be an average depth of 56' below ground surface in the area of the release.

Actions Taken: On October 5, 2016 immediately following the discovery of the pipeline release and the placement of a one call, excavation of impacted material began. A hydro vacuum was brought to the site and the 8" low-pressure pipeline owned by DCP was delighted. The affected area is divided by this gas line which was measured to be 6-feet below ground surface (BGS). The impacted area is bordered on the north by a DCP high pressure gas line. A backhoe was utilized to excavate visible impacted material from the release to 10 feet BGS. Removed impacted material was transported to Lea Land LLC, an NMOCD-approved landfill for disposal.

On **10/6/2016** soil samples were collected from the bottom of the excavated area at 10-feet BGS and from a trench excavated below the bottom of the excavated area to 14-feet bgs.

Soil samples were also collected from the sidewalls of the excavation which were labeled **S-3 East wall 6' bgs**, **S-4 North Wall**, **S-5 West Wall**, and **S-6 South Wall**.
The soil samples were delivered to Cardinal laboratories in Hobbs and were tested for BTEX EPA 8021B, GRO/DRO 8015M, and Chloride SM 4500. Table 1 below presents lab results for samples collected on October 6, 2016. The complete lab reports are included in Appendix A.

Cardinal Lab analytical testing results dated 10/6/2016 reported the following results:

Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	Ext. DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	Lat/ Long
S-1 10' deep	448	1740	6700		174	4.36	10/6/2016	32.74267-104.34835
S-2 14' deep	592	<10.0	422		0.426	<0.050	10/6/2016	32.74267-104.34835
S-3 East. wall	32.0	<10.0	<10.0		<0.300	<0.050	10/6/2016	32.74268-104.34837
S-4 North wall	2640	<10.0	46.8		<0.300	<0.050	10/6/2016	32.74271-104.34043
S-5 West wall	64.0	217	4310		9.61	<0.050	10/6/2016	32.74266-104.34846
S-6 South wall	<16.0	<10.0	293		0.407	<0.050	10/6/2016	32.74266-104.34843

Table 1

As shown in Table 1, the extent of impact for GRO/DRO, BTEX on the north and east side walls were captured within the excavation.

On October 24, 2016 after completing further excavation and removal of impacted materials, soil samples were collected for analysis.

Cardinal Lab analytical testing results dated 10/24/2016 reported the following results:

Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	Ext. DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	
S-7 North wall	3520						10/24/2016	32.74278-104.34840
S-8 West wall		<10.0	26.7				10/24/2016	32.74268-104.84840
S-9 South wall		<10.0	<10.0				10/24/2016	32.74265-104.34843
S-10 Bottom -14' N. dcp PL	2440	<10.0	<10.0		<0.300	<0.050	10/24/2016	32.74269-104.34838
S-11 Bottom 15' S. dcp P.L.	320	<10.0	57.3		<0.300	<0.050	10/24/2016	32.74264-104.34841

Table 2

As shown in Table 2 the extent of impact on the west side wall and south side wall were captured within the excavation. Analysis reported the GRO/DRO to be 57 mg/kg to <10.0 mg/kg in soil samples collected from 14' to 15' (BGS).

On November 2, 2016 after completing additional excavation and removal of impacted material from the north side wall, soil samples were collected for analysis.

Cardinal Lab analytical testing results dated 11/2/2016 reported the following results:

Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	Ext. DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	
S-12 Bottom 15' S.dcp PL	320						11/2/2016	32.74280-104.34838
S-13 East wall 11' bgs	432	<10.0	<10.0		<0.300	<0.050	11/2/2016	32.74267--104.34833
S-14 Bottom 14' N. dcp PL	992						11/2/2016	32.74271-104.34836
S-15 Bottom 14' N. dcp P/L	1680						11/2/2016	32.74870-104.34838
S-16 Bottom 15' N. dcp PL	800						11/2/2016	32.74270-104.34845
S-17 North wall	48						11/2/2016	32.74274-104.34841

Table 3

As shown in Table 3, the extent of impact on the east wall, north side walls and bottom were captured within the excavation.

On **1/3/2017** a String-reinforced 20 Mil. Liner was placed into the bottom of the excavated area. A 10.75" pbc conduit was placed through the liner and then banded to the liner. The conduit was located on the north side of the dcp pipeline. The excavated area was backfilled to surface using clean material. On 1/24/2017 a split spoon auger rig was brought to the location. The split spoon auger rig entered through the conduit and started drilling at 15' below ground surface. A bore hole was drilled from 15' below ground surface to a total depth of 40' below ground surface. Soil samples were collected at 5-feet intervals starting at 15' to 40' below ground surface. Analytical testing results received from Cardinal laboratories reported the Chloride to be 224 ppm at 30' below ground surface, Chloride was reported to be 64 ppm at 40' below ground surface.

Cardinal Lab analytical testing results dated 1/31/2017 reported the following results:

Sampling Location and Depth	Depth	Chlorides mg/kg	Sampling date	Lat.-Long
BH-1	15'	320	1/31/2017	32.74270-104.34837
BH-1	20'	528	1/31/2017	
BH-1	25'	560	1/31/2017	
BH-1	30'	224	1/31/2017	
BH-1	35'	32	1/31/2017	
BH-1	40'	64	1/31/2017	

Table 4

As shown in Table 4, the extent of impact on chloride was vertically delineated to be below 250 mg/kg for at least 10' in the borehole drilled below the excavated bottom.

Photo for liner installed into bottom of excavated area.

Logger:	Kristin Pope	Client:	Well ID:
Driller:	Atkins Engineering	Lime Rock Resources	
Drilling Method:	Auger, split-spoon	Project Name:	SB-1
Start Date:	1/24/2017	ASAU #149 Trunk Line Release	
End Date:	1/24/2017	Location:	
		Unit O, Section 14, T18S, R26E	

Depth (feet)	Description	Lithology	Comments	Depth (feet)
0.0	CLEAN IMPORTED FILL TO 15 FT	CLEAN IMPORTED FILL		0.0
1.0				1.0
2.0				2.0
3.0				3.0
4.0				4.0
5.0				5.0
6.0				6.0
7.0				7.0
8.0				8.0
9.0				9.0
10.0				10.0
11.0				11.0
12.0				12.0
13.0				13.0
14.0				14.0
15.0	*20-mil liner at 15 ft*		Chloride = 320 mg/kg	15.0
16.0	Loamy sand, medium brown, 5% gravel (moderately-rounded, 0.25-2.00 in.); dry			16.0
17.0				17.0
18.0			Alluvial terrace fill (Rio Penasco)	18.0
19.0	Medium clay, reddish-tan; dry			19.0
20.0			Chloride = 528 mg/kg	20.0
21.0				21.0
22.0				22.0
23.0				23.0
24.0				24.0
25.0			Chloride = 560 mg/kg	25.0
26.0	Fine sand, tan, 10% massive dolomite; dry			26.0
27.0	Fine clay, red; dry			27.0
28.0				28.0
29.0				29.0
30.0	Evaporitic sand, coarse, pinkish-tan, 30% dolomite; dry		Chloride = 224 mg/kg	30.0
31.0				31.0
32.0	Fine clay, red; dry			32.0
33.0				33.0
34.0				34.0
35.0	"sugar" gravel, light tan; dry		Chloride = 32 mg/kg	35.0
36.0				36.0
37.0	Conglomerate, cemented, hard dolomite clasts (0.25-1.25 in.); dry		hard drilling	37.0
38.0				38.0
39.0				39.0
40.0			Chloride = 64 mg/kg	40.0

R.T. Hicks Consultants, Ltd. 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 505-266-5004	Lime Rock Resources	Plate 1
	SB-1 Drilling Log	February 2017

Table 5 presents the Lithology log for soil samples collected from the borehole drilled on January 24, 2017.

Hydrogeologic Data

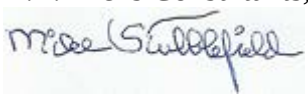
- A review of the New Mexico Office of State Engineer WATERS database found the nearest water well to be located in Sec. 14, Township 18S Range 26E. The depth to water was reported to be 1849’ (bgs). OSE date base reported a water well located in sec. 14 T-18S-R26E with a total depth to 150’and depth to water at 23’. The average depth to water in the area of the release was reported to be 56’.
- There are no water sources or water wells located with-in one-thousand feet of the release area.
- There is no surface water located within one thousand feet of the release area.

Remediation Actions Completed

- Impacted material in the release area was excavated to a depth of 14’ to 15’ (BGS) and then transported to Lea Land LLC.
- On October 6, October 24, November 2, 2016, and January 24, 2017 soil sample were collected from the excavated area of release and a borehole drilled below the excavated bottom and submitted to Cardinal Laboratories. (Tables 1, 2, 3, 4, Appendix A)
- Analytical testing results report chloride in the bottom of the excavation on north side of the DCP pipeline at 14’ (BGS) to be 800-1680 mg/kg. Chloride on the south side of the DCP pipeline at 15’ (BGS) was 320 mg/kg site. Analytical testing results from soil samples collected in the borehole drilled on the north side of the dcp pipeline reported Chloride to be 230 ppm at 30’ below ground surface. Chloride was reported to be 64 ppm at 40’ below ground surface.
- Analytical testing results received from Cardinal laboratories reported the combined GRO/DRO for total TPH in the excavated area to be 57.3 mg/kg or less. BTEX was reported <0.300 mg/kg (the method detection limit), benzene was reported to be <0.050 mg/kg.
- The excavated area was backfilled using like material from the surrounding area and seeded with a blend of vegetation approved by the surface owner.

Lime Rock Resources is submitting a Final C-141 form requesting closure for this release that occurred on September 30, 2016 at the ASAU 149 Trunk line. Please contact me if further information is required.

Sincerely,
R.T. Hicks Consultants, Ltd.



Mike Stubblefield
R.T. Hicks Consultants
575-365-5034

Copy: Mike Barrett, Lime Rock Resources

Appendix A