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April 1st, 2020

Bradford Billings
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

Re: **2019 Annual Report**
Rice Operating Company – Vacuum SWD System
Vacuum L-26 Vent (1R425-66) T17S, R35E, Section 26 (L)

Sent via E-mail

Mr. Billings:

This letter summarizes progress made over the past calendar year pursuant to the NMOCD approved Corrective Action Plan and Addendum of April 4th, 2011 for this site, which is operated by Rice Operating Company (ROC). The site is located approximately 2.5 miles east of Buckeye, New Mexico at R35E, Section 26 (L) as shown on the Site Location Map (Appendix - Figure 1). The depth to groundwater (water table) is approximately 56 ft below ground surface (bgs).

Background and Previous Work

In 2008, ROC conducted field investigation on the former junction box. Soil samples were collected at regular intervals, creating a 30 x 30 x 12 ft deep excavation. Based on this investigation, a 30x30-ft geo-synthetic liner was installed at approximately 4.5 to 5 ft bgs. The liner was padded with a six inches of blow sand both above and below. The excavation was backfilled with blended, excavated soil and contoured to the surrounding area. NMOCD was notified of potential groundwater impact on December 1st, 2008, and a disclosure report was submitted with all the 2008 Junction Box Closures and Disclosures.

Deeper soil sampling was initiated in 2010 which indicated elevated levels of soil chlorides throughout the vadose zone. This was summarized in the September 4th, 2011 Initial Characterization Report and Corrective Action Plan submitted to NMCOD and which recommended the installation of a near-source monitor well. A subsequent Corrective Action Plan and Addendum of April 4th, 2011 was submitted to NMOCD which proposed the installation of a sub-surface synthetic liner to isolate and prevent the downward migration of elevated soil chlorides (Appendix – Figure 2), and the installation additional monitor wells to further delineate groundwater quality. This was approved by NMOCD on April 4th, 2011 and two additional monitoring wells were installed on April 4th, 2011. The liner installation was completed in the summer 2011. A report detailing this work was submitted on August 2nd, 2011 and NMOCD granted soil closure on October 13th, 2011. According to the Additional Groundwater Monitoring and CAP for Groundwater, MW-1 was plugged and replaced with a 4 inch well (MW-1R). Groundwater removal began in July 2012 and has continued through 2019.

Results of Groundwater Monitoring

Results of groundwater sampling from 2009 through 2019 are given in the Appendix (Appendix - Figure 3, Tables 1 & 2). Average annual groundwater chloride concentrations in the up-gradient monitor well (MW-2) have remained below 60 mg/l since sampling began in 2011, averaging 58 mg/l in 2019. Groundwater chloride concentrations in the down-gradient monitor well (MW-3) averaged 268 mg/l in 2019, up slightly from 229 mg/l in 2018. Groundwater chloride concentrations in the near-source pumping well (MW-1R) averaged 136 mg/l in 2019, down slightly from 145 mg/l in 2018. Water-soluble petroleum hydrocarbons (BTEX) were not detected in any of the groundwater samples taken in 2019 nor in any prior years. **Given BTEX concentrations have been below detectable limits since installation, ROC requests to suspend BTEX sampling in all the wells (MW-1, MW-2, and MW-3) in 2020.**

A total of 23,717 bbls of groundwater have been withdrawn from MW-1R since pumping began in 2013 resulting in the removal of approximately 439 kg of groundwater chloride. The removed groundwater was hauled to an off-site location and utilized for a beneficial use.

Path Forward

It is clear at this point that groundwater chloride concentrations are attenuating near the source due to groundwater withdrawal and natural dilution. Groundwater chloride concentrations in the near-source pumping well (MW-1R) have declined steadily and remained below 250 mg/l since 2015. Although there was a slight bump in groundwater chloride concentrations in the

down-gradient monitor well (MW-3) in 2019 this reflective of chloride movement from upgradient, which is what we anticipate. The decline in groundwater chloride concentrations in the near-source monitor well (MW-1R) are indicative of a diminishing chloride mass at the source which will have negligible effects further down-gradient away from the site.

Due to the current climate, and in the interest of safety, ROC proposes to reduce groundwater monitoring from quarterly to semi-annually for the remainder of this year. In addition, ROC proposes to suspend groundwater recovery for this year. These proposals are only temporary, and regularly scheduled groundwater monitoring and recovery will commence as soon as possible.

ROC is the service provider (agent) for the Vacuum Saltwater Disposal (SWD) System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis. The Vacuum SWD system is now abandoned. We thus submit this report for your review and consideration.

Please contact either myself or Katie Jones Davis at Rice Operating Company if you have any questions or need additional information.

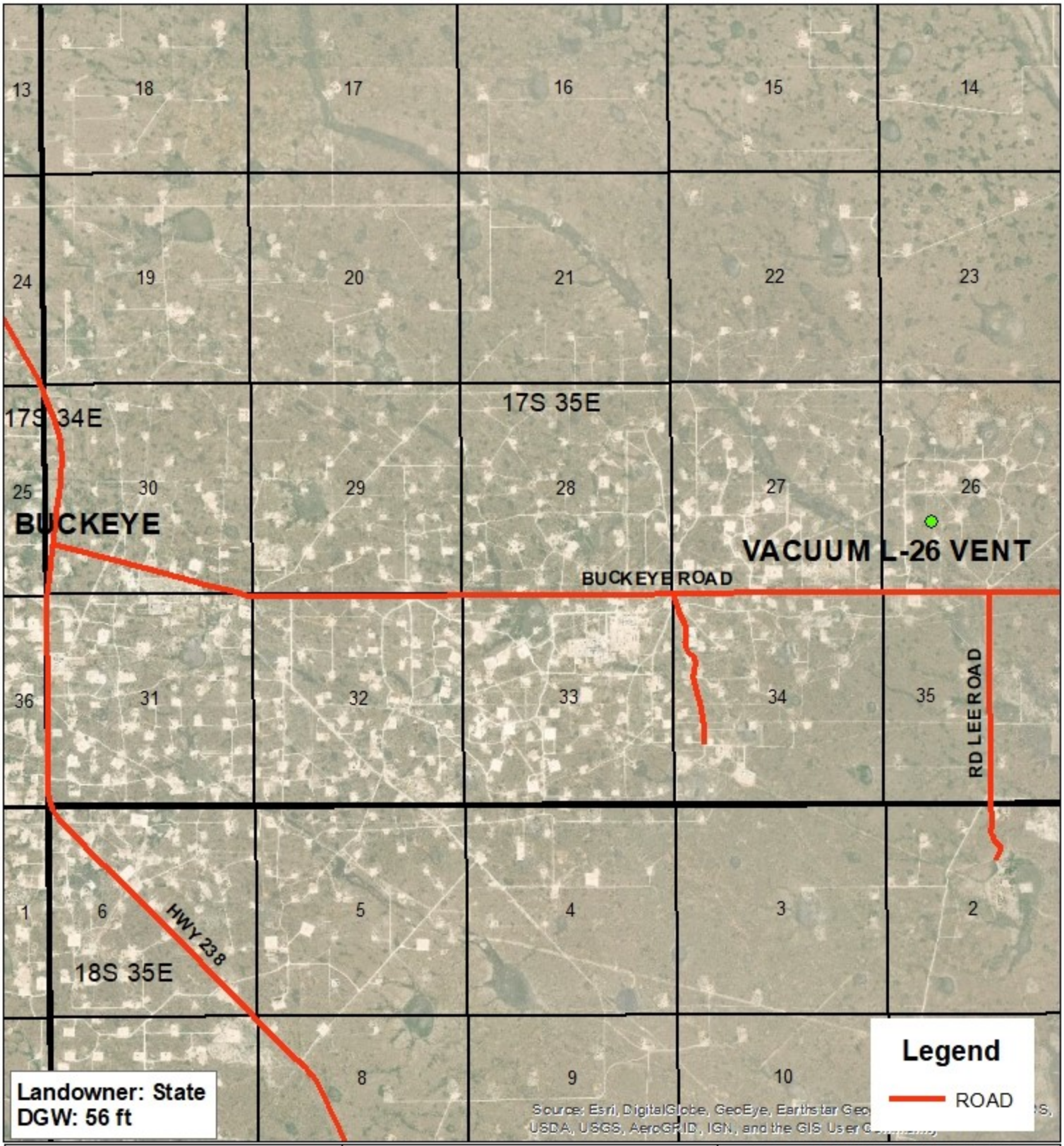
Thank you.

Sincerely,

L. Peter (Pete) Galusky, Jr PE

Copy: Rice Operating Company
Attachments: … as noted in text

Geographic Location



RICE OPERATING COMPANY
ROC
SINCE 1955

VACUUM L-26 VENT

1R425-66

UL L SECTION 26
T17S R35E
LEA COUNTY, NM

GPS: 32.803423 -103.432869
NAD83 STATE PLANE PROJ
NM EAST ZONE

0 0.5 1 Miles

N
W E
S

Drawing date: 2/5/20
Drafted by: T. Grieco

Site Map

RICE OPERATING COMPANY
ROC
SINCE 1955

VACUUM L-26 VENT

1R425-66

UL L SECTION 26
T-17-S R-35-E
LEA COUNTY, NM

GPS: 32.803423 -103.432869
NAD83 STATE PLANE PROJ
NM EAST ZONE

0 10 20
Feet

Drawing date: 2/5/20
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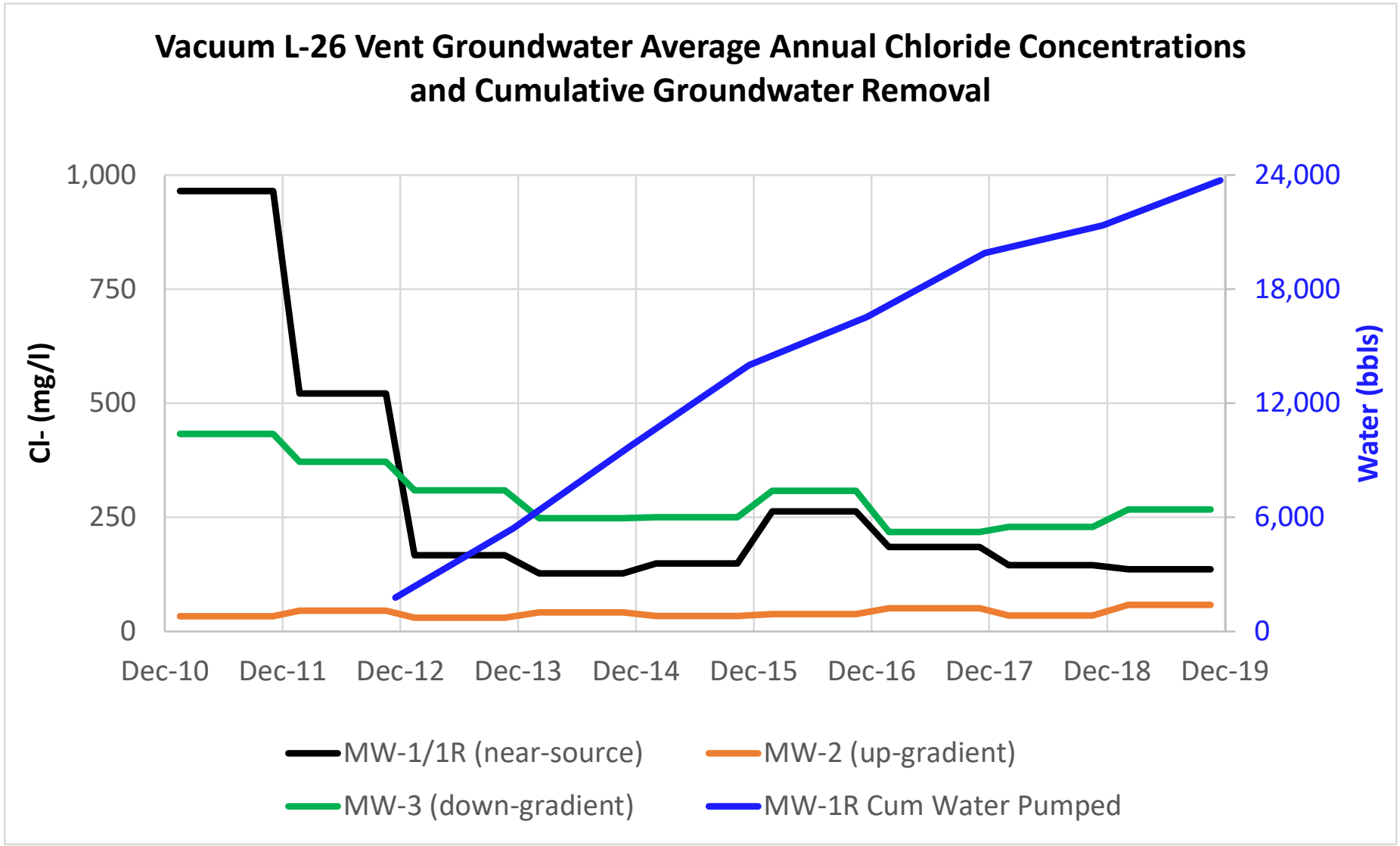
Vacuum L-26 Vent Groundwater Average Annual Chloride Concentrations and Cumulative Groundwater Removal
Cl- (mg/l)
Water (bbls)
1,000
750
500
250
0
24,000
18,000
12,000
6,000
0
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
MW-1/1R (near-source)
MW-2 (up-gradient)
MW-3 (down-gradient)
MW-1R Cum Water Pumped

APPENDIX

Table 1 - Groundwater Summary

Date	MW-1/1R (near-source)	MW-1 (near-source) ann avg	MW-2 (up-gradient)	MW-2 (up-gradient) ann avg	MW-3 (down-gradient)	MW-3 (down-gradient) ann avg
11/22/2010	940					
2/16/2011	960	965		33		433
6/4/2011	1,040	965	32	33	432	433
8/31/2011	940	965	32	33	416	433
12/2/2011	920	965	36	33	450	433
2/22/2012	970	521	92	45	332	372
5/29/2012	710	521	28	45	380	372
8/24/2012	116	521	28	45	400	372
11/15/2012	288	521	32	45	376	372
2/12/2013	300	167	28	30	352	309
5/30/2013	140	167	32	30	320	309
9/6/2013	148	167	32	30	292	309
11/19/2013	80	167	28	30	272	309
3/5/2014	256	127	32	42	256	248
5/29/2014	88	127	72	42	248	248
8/20/2014	80	127	32	42	236	248
11/20/2014	84	127	32	42	252	248
3/2/2015	140	149	32	34	252	250
6/2/2015	44	149	32	34	268	250
8/20/2015	196	149	36	34	164	250
11/10/2015	216	149	36	34	316	250
2/25/2016	200	263	52	38	320	308
5/18/2016	408	263	28	38	324	308
9/12/2016	88	263	40	38	296	308
11/11/2016	356	263	32	38	292	308
2/21/2017	264	185	40	51	200	218
5/23/2017	208	185	96	51	220	218
9/8/2017	108	185	36	51	204	218
11/29/2017	160	185	32	51	248	218
2/27/2018	188	145	40	35	208	229
5/16/2018	240	145	32	35	248	229
9/6/2018	108	145	32	35	224	229
11/14/2018	44	145	36	35	236	229
3/5/2019	160	136	32	58	268	268
5/28/2019	140	136	28	58	260	268
8/29/2019	144	136	144	58	256	268
11/15/2019	100	136	28	58	286	268

APPENDIX

Table 2a- MW 1/1R Groundwater Data

MW	Depth to Water	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)	Comments
1	56.5	72.5	2.6	10	11/22/2010	940	2,120	<0.001	<0.001	<0.001	<0.003	79.6	Clear No odor
1	56.6	72.6	2.6	10	2/16/2011	960	2,130	<0.001	<0.001	<0.001	<0.003	64.0	Clear No odor
1	56.7	72.6	2.5	10	6/4/2011	1,040	2,710	<0.001	<0.001	<0.001	<0.003	64.7	Clear No odor
1	56.8	72.6	2.5	10	8/31/2011	940	2,440	<0.001	<0.001	<0.001	<0.003	67.0	Clear No odor
1	56.9	72.6	2.5	10	12/2/2011	920	2,230	<0.001	<0.001	<0.001	<0.003	73.7	Clear No odor
1	57.0	72.6	2.5	10	2/22/2012	970	1,930	<0.001	<0.001	<0.001	<0.003	66.3	Clear No odor
1	57.1	72.6	2.5	10	5/29/2012	710	1,910	<0.001	<0.001	<0.001	<0.003	66.4	Clear No odor
1	XXX	XXX	0.0	Pumping	8/24/2012	116	551	<0.001	<0.001	<0.001	<0.003	63.6	Clear No odor
1	XXX	XXX	0.0	Pumping	11/15/2012	288	960	<0.001	<0.001	<0.001	<0.003	59.5	Clear No odor
1	XXX	XXX	0.0	Pumping	2/12/2013	300	958	<0.001	<0.001	<0.001	<0.003	55.1	Clear No odor
1R	XXX	XXX	0.0	Pumping	5/30/2013	140	651	<0.001	<0.001	<0.001	<0.003	60.0	Clear No odor
1R	XXX	XXX	0.0	Pumping	9/6/2013	148	692	<0.001	<0.001	<0.001	<0.003	50.2	Clear No odor
1R	XXX	XXX	0.0	Pumping	11/19/2013	80	446	<0.001	<0.001	<0.001	<0.003	58.7	Clear No odor
1R	XXX	XXX	0.0	90	3/5/2014	256	806	<0.001	<0.001	<0.001	<0.003	58.6	Clear No odor
1R	XXX	XXX	0.0	Pumping	5/29/2014	88	490	<0.001	<0.001	<0.001	<0.003	59.3	Clear No odor
1R	XXX	XXX	0.0	Pumping	8/20/2014	80	468	<0.001	<0.001	<0.001	<0.003	56.4	Clear No odor
1R	XXX	XXX	0.0	90	11/20/2014	84	498	<0.001	<0.001	<0.001	<0.003	53.7	Clear No odor
1R	XXX	XXX	0.0	90	3/2/2015	140	644	<0.001	<0.001	<0.001	<0.003	46.9	Clear No odor
1R	XXX	XXX	0.0	Pumping	6/2/2015	44	590	<0.001	<0.001	<0.001	<0.003	37.2	Clear No odor
1R	XXX	XXX	0.0	Pumping	8/20/2015	196	676	<0.001	<0.001	<0.001	<0.003	42.0	Clear No odor
1R	XXX	XXX	0.0	Pumping	11/10/2015	216	654	<0.001	<0.001	<0.001	<0.003	47.0	Clear No odor
1R	XXX	XXX	XXX	100	2/25/2016	200	640	<0.001	<0.001	<0.001	<0.003	60.0	Clear No odor
1R	XXX	XXX	XXX	100	5/18/2016	408	1,270	<0.001	<0.001	<0.001	<0.003	112.0	Clear No odor
1R	XXX	XXX	XXX	Running	9/12/2016	88	442	<0.001	<0.001	<0.001	<0.003	61.0	Clear No odor
1R	XXX	XXX	XXX	100	11/11/2016	356	1,140	<0.001	<0.001	<0.001	<0.003	56.0	Clear No odor
1R	XXX	XXX	XXX	100	2/21/2017	264	998	<0.001	<0.001	<0.001	<0.003	58.0	Clear No odor
1R	XXX	XXX	XXX	Running	5/23/2017	208	944	<0.001	<0.001	<0.001	<0.003	55.0	Clear No odor
1R	XXX	XXX	XXX	Running	9/8/2017	108	684	<0.001	<0.001	<0.001	<0.003	58.0	Clear No odor
1R	XXX	XXX	XXX	100	11/29/2017	160	796	<0.001	<0.001	<0.001	<0.003	56.0	Clear No odor
1R	XXX	XXX	XXX	100	2/27/2018	188	810	<0.001	<0.001	<0.001	<0.003	54.4	Clear No odor
1R	XXX	XXX	XXX	100	5/16/2018	240	960	<0.001	<0.001	<0.001	<0.003	58.5	Clear No odor
1R	XXX	XXX	XXX	100	9/6/2018	108	460	<0.001	<0.001	<0.001	<0.003	53.4	Clear No odor
1R	XXX	XXX	XXX	100	11/14/2018	44	520	<0.001	<0.001	<0.001	<0.003	54.3	Clear No odor
1R	XXX	XXX	XXX	100	3/5/2019	160	754	<0.001	<0.001	<0.001	<0.003	54.0	Clear No odor
1R	XXX	XXX	XXX	Running	5/28/2019	140	583	<0.001	<0.001	<0.001	<0.003	55.0	Clear No odor
1R	XXX	XXX	XXX	Running	8/29/2019	144	650	<0.001	<0.001	<0.001	<0.003	54.0	Clear No odor
1R	XXX	XXX	XXX	100	11/15/2019	100	765	<0.001	<0.001	<0.001	<0.003	46.0	Clear No odor

Table 2b - MW 2 Groundwater Data

MW	Depth to Water	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)	Comments
2	56.8	62.8	1.0	10	6/4/2011	32	457	<0.001	<0.001	<0.001	<0.003	37.0	Clear No odor
2	56.9	62.8	0.9	10	8/31/2011	32	374	<0.001	<0.001	<0.001	<0.003	33.5	Clear No odor
2	57.0	62.8	0.9	10	12/2/2011	36	405	<0.001	<0.001	<0.001	<0.003	40.8	Clear No odor
2	57.1	62.8	0.9	10	2/22/2012	92	408	<0.001	<0.001	<0.001	<0.003	41.6	Clear No odor
2	57.2	62.8	0.9	10	5/29/2012	28	411	<0.001	<0.001	<0.001	<0.003	41.4	Clear No odor
2	57.4	62.8	0.9	10	8/24/2012	28	490	<0.001	<0.001	<0.001	<0.003	27.7	Clear No odor
2	54.5	62.8	1.3	10	11/15/2012	32	518	<0.001	<0.001	<0.001	<0.003	20.3	Clear No odor
2	57.5	62.8	0.8	10	2/12/2013	28	573	<0.001	<0.001	<0.001	<0.003	28.7	Clear No odor
2	57.6	62.8	0.8	10	5/30/2013	32	611	<0.001	<0.001	<0.001	<0.003	28.7	Clear No odor
2	57.8	62.8	0.8	10	9/6/2013	32	646	<0.001	<0.001	<0.001	<0.003	31.0	Clear No odor
2	57.8	62.8	0.8	10	11/19/2013	28	587	<0.001	<0.001	<0.001	<0.003	32.2	Clear No odor
2	57.9	62.8	0.8	10	3/5/2014	32	308	<0.001	<0.001	<0.001	<0.003	61.2	Clear No odor
2	58.0	62.8	0.8	10	5/29/2014	72	454	<0.001	<0.001	<0.001	<0.003	51.9	Clear No odor
2	58.0	62.8	0.8	10	8/19/2014	32	558	<0.001	<0.001	<0.001	<0.003	32.9	Clear No odor
2	57.2	62.8	0.9	10	11/20/2014	32	526	<0.001	<0.001	<0.001	<0.003	31.3	Clear No odor
2	57.1	62.8	0.9	10	3/2/2015	32	546	<0.001	<0.001	<0.001	<0.003	28.2	Clear No odor
2	54.4	62.8	1.3	10	6/2/2015	32	586	<0.001	<0.001	<0.001	<0.003	40.7	Clear No odor
2	57.6	62.8	0.8	10	8/20/2015	36	546	<0.001	<0.001	<0.001	<0.003	35.4	Clear No odor
2	57.8	62.8	0.8	8	11/10/2015	36	510	<0.001	<0.001	<0.001	<0.003	38.6	Clear No odor
2	58.0	62.8	0.8	8	2/25/2016	52	496	<0.001	<0.001	<0.001	<0.003	49.0	Clear No odor
2	58.1	62.8	0.8	6	5/18/2016	28	564	<0.001	<0.001	<0.001	<0.003	48.0	Clear No odor
2	58.2	62.8	0.7	6	9/12/2016	40	432	<0.001	<0.001	<0.001	<0.003	44.0	Clear No odor
2	58.2	62.8	0.7	8	11/11/2016	32	444	<0.001	<0.001	<0.001	<0.003	41.0	Clear No odor
2	58.3	62.8	0.7	10	2/21/2017	40	490	<0.001	<0.001	<0.001	<0.003	44.0	Clear No odor
2	57.6	62.8	0.7	10	5/23/2017	96	512	<0.001	<0.001	<0.001	<0.003	56.0	Clear No odor
2	58.5	62.8	0.7	10	9/8/2017	36	628	<0.001	<0.001	<0.001	<0.003	51.0	Clear No odor
2	58.5	62.8	0.7	10	11/29/2017	32	638	<0.001	<0.001	<0.001	<0.003	47.0	Clear No odor
2	58.6	62.8	0.7	6	2/27/2018	40	622	<0.001	<0.001	<0.001	<0.003	46.9	Clear No odor
2	58.6	62.8	0.7	6	5/16/2018	32	606	<0.001	<0.001	<0.001	<0.003	50.3	Clear No odor
2	58.7	62.8	0.6	6	9/6/2018	32	532	<0.001	<0.001	<0.001	<0.003	50.1	Clear No odor
2	58.8	62.8	0.6	6	11/14/2018	36	664	<0.001	<0.001	<0.001	<0.003	52.2	Clear No odor
2	58.9	62.8	0.6	6	3/5/2019	32	512	<0.001	<0.001	<0.001	<0.003	48.0	Clear No odor
2	59.0	62.8	0.6	6	5/28/2019	28	673	<0.001	<0.001	<0.001	<0.003	48.0	Clear No odor
2	59.2	62.8	0.6	6	8/29/2019	144	622	<0.001	<0.001	<0.001	<0.003	53.0	Clear No odor
2	59.2	62.8	0.6	6	11/15/2019	28	606	<0.001	<0.001	<0.001	<0.003	47.0	Clear No odor

Table 2c - MW 3 Groundwater Data

MW	Depth to Water	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)	Comments
3	56.1	68.9	2.0	10	6/4/2011	432	1,210	<0.001	<0.001	<0.001	<0.003	69.1	Clear No odor
3	52.2	68.9	2.7	10	8/31/2011	416	1,250	<0.001	<0.001	<0.001	<0.003	47.3	Clear No odor
3	56.3	68.9	2.0	10	12/2/2011	450	1,330	<0.001	<0.001	<0.001	<0.003	56.8	Clear No odor
3	56.4	68.9	2.0	10	2/22/2012	332	1,330	<0.001	<0.001	<0.001	<0.003	54.9	Clear No odor
3	56.6	68.9	2.0	10	5/29/2012	380	1,220	<0.001	<0.001	<0.001	<0.003	57.4	Clear No odor
3	56.7	68.9	1.9	10	8/24/2012	400	1,220	<0.001	<0.001	<0.001	<0.003	48.9	Clear No odor
3	56.8	68.9	1.9	10	11/15/2012	376	1,240	<0.001	<0.001	<0.001	<0.003	48.7	Clear No odor
3	56.8	68.9	1.9	10	2/12/2013	352	1,260	<0.001	<0.001	<0.001	<0.003	52.6	Clear No odor
3	56.9	68.9	1.9	10	5/30/2013	320	1,220	<0.001	<0.001	<0.001	<0.003	49.0	Clear No odor
3	56.9	68.9	1.9	10	9/6/2013	292	1,170	<0.001	<0.001	<0.001	<0.003	46.2	Clear No odor
3	57.1	69.9	1.9	10	11/19/2013	272	1,150	<0.001	<0.001	<0.001	<0.003	45.1	Clear No odor
3	57.2	68.9	1.9	10	3/5/2014	256	984	<0.001	<0.001	<0.001	<0.003	47.0	Clear No odor
3	57.3	68.9	1.9	10	5/29/2014	248	826	<0.001	<0.001	<0.001	<0.003	86.2	Clear No odor
3	57.3	68.9	1.9	10	08.19.14	236	1,090	<0.001	<0.001	<0.001	<0.003	38.7	Clear No odor
3	56.5	68.9	2.0	10	11/20/2014	252	1,030	<0.001	<0.001	<0.001	<0.003	32.4	Clear No odor
3	56.4	68.9	2.0	10	03.02.15	252	1,030	<0.001	<0.001	<0.001	<0.003	42.0	Clear No odor
3	56.8	68.9	1.9	10	6/2/2015	268	1,060	<0.001	<0.001	<0.001	<0.003	45.3	Clear No odor
3	57.0	68.9	1.9	10	8/20/2015	164	1,100	<0.001	<0.001	<0.001	<0.003	47.5	Clear No odor
3	57.2	68.9	1.9	10	11/10/2015	316	1,090	<0.001	<0.001	<0.001	<0.003	50.5	Clear No odor
3	57.3	68.9	1.9	10	2/25/2016	320	1,160	<0.001	<0.001	<0.001	<0.003	49.0	Clear No odor
3	57.4	68.9	1.8	8	5/18/2016	324	1,180	<0.001	<0.001	<0.001	<0.003	62.2	Clear No odor
3	57.5	68.9	1.8	10	9/12/2016	296	1,150	<0.001	<0.001	<0.001	<0.003	53.0	Clear No odor
3	57.5	68.9	1.8	10	11/11/2016	292	1,050	<0.001	<0.001	<0.001	<0.003	44.0	Clear No odor
3	57.6	68.9	1.8	10	2/21/2017	200	1,380	<0.001	<0.001	<0.001	<0.003	43.0	Clear No odor
3	57.6	68.9	1.8	10	5/23/2017	220	980	<0.001	<0.001	<0.001	<0.003	59.0	Clear No odor
3	57.9	68.9	1.8	10	9/8/2017	204	942	<0.001	<0.001	<0.001	<0.003	59.0	Clear No odor
3	57.9	68.9	1.8	10	11/29/2017	248	930	<0.001	<0.001	<0.001	<0.003	55.0	Clear No odor
3	57.9	68.9	1.8	10	2/27/2018	208	766	<0.001	<0.001	<0.001	<0.003	51.3	Clear No odor
3	57.9	68.9	1.8	10	5/16/2018	248	962	<0.001	<0.001	<0.001	<0.003	57.7	Clear No odor
3	58.1	68.9	1.7	10	9/6/2018	224	916	<0.001	<0.001	<0.001	<0.003	53.4	Clear No odor
3	58.1	68.9	1.7	10	11/14/2018	236	856	<0.001	<0.001	<0.001	<0.003	57.4	Clear No odor
3	58.2	68.9	1.7	10	3/5/2019	268	968	<0.001	<0.001	<0.001	<0.003	57.0	Clear No odor
3	58.4	68.9	1.7	10	5/28/2019	260	1010	<0.001	<0.001	<0.001	<0.003	60.0	Clear No odor
3	58.2	68.9	1.7	10	8/29/2019	256	938	<0.001	<0.001	<0.001	<0.003	54.0	Clear No odor
3	58.6	68.9	1.7	10	11/15/2019	286	1020	<0.001	<0.001	<0.001	<0.003	56.0	Clear No odor

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

March 18, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM L-26 VENT

Enclosed are the results of analyses for samples received by the laboratory on 03/11/19 13:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	03/11/2019	Sampling Date:	03/05/2019
Reported:	03/18/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #1R (H900961-01)

BTEX 8021B mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	03/15/2019	ND	0.020	100	0.0200	2.37	
Toluene*	<0.001	0.001	03/15/2019	ND	0.019	97.1	0.0200	0.723	
Ethylbenzene*	<0.001	0.001	03/15/2019	ND	0.019	93.8	0.0200	2.54	
Total Xylenes*	<0.003	0.003	03/15/2019	ND	0.062	103	0.0600	0.149	
Total BTEX	<0.006	0.006	03/15/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *92.1 %* *81.3-128*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**160**	4.00	03/18/2019	ND	100	100	100	0.00	

Sulfate 375.4 mg/L Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**54.2**	10.0	03/14/2019	ND	21.3	106	20.0	6.80	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**754**	5.00	03/14/2019	ND	542	103	527	7.32	

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	03/11/2019	Sampling Date:	03/05/2019
Reported:	03/18/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H900961-02)

BTEX 8021B mg/L **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	03/15/2019	ND	0.020	100	0.0200	2.37	
Toluene*	<0.001	0.001	03/15/2019	ND	0.019	97.1	0.0200	0.723	
Ethylbenzene*	<0.001	0.001	03/15/2019	ND	0.019	93.8	0.0200	2.54	
Total Xylenes*	<0.003	0.003	03/15/2019	ND	0.062	103	0.0600	0.149	
Total BTEX	<0.006	0.006	03/15/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *81.3-128*

Chloride, SM4500Cl-B mg/L **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**32.0**	4.00	03/18/2019	ND	100	100	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: JH**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**48.3**	10.0	03/14/2019	ND	21.3	106	20.0	6.80	

TDS 160.1 mg/L **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**512**	5.00	03/14/2019	ND	542	103	527	7.32	

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	03/11/2019	Sampling Date:	03/05/2019
Reported:	03/18/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H900961-03)

BTEX 8021B mg/L **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	03/15/2019	ND	0.020	100	0.0200	2.37	
Toluene*	<0.001	0.001	03/15/2019	ND	0.019	97.1	0.0200	0.723	
Ethylbenzene*	<0.001	0.001	03/15/2019	ND	0.019	93.8	0.0200	2.54	
Total Xylenes*	<0.003	0.003	03/15/2019	ND	0.062	103	0.0600	0.149	
Total BTEX	<0.006	0.006	03/15/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *81.3-128*

Chloride, SM4500Cl-B mg/L **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**268**	4.00	03/18/2019	ND	100	100	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: JH**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**57.7**	10.0	03/14/2019	ND	21.3	106	20.0	6.80	

TDS 160.1 mg/L **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**968**	5.00	03/14/2019	ND	542	103	527	7.32	

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, NM 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company PO#
Project Manager: Katie Jones	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: Vacuum L-26 Vent
Project Location: T17S-R35E-Sec26 L ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310

LAB # (LAB USE ONLY) H900961	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE		PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2019)	TIME	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
1	Monitor Well #1R	G	3	X					2				1		3/5	15:25		X																X	X	X	
2	Monitor Well #2	G	3	X					2				1		3/5	11:05		X																X	X	X	
3	Monitor Well #3	G	3	X					2				1		3/5	12:40		X																X	X	X	

Relinquished by: Rozanne Johnson	Date: 3/11/2019	Time: 13:25	Received by: Tamara Oldaker
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)

Date: 3-11-19 Time: 13:25

Phone Results		Yes		No	
Fax Results		Yes		No	Additional Fax Number:

REMARKS:

Email Results: kjones@riceswd.com
rozanne11@windstream.net

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool: Yes ✓ / No ; Intact: Yes ✓ / No

CHECKED BY: (Initials) T.O.

ANALYSIS REQUEST
(Circle or Specify Method No.)

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

June 06, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM L-26 VENT

Enclosed are the results of analyses for samples received by the laboratory on 06/03/19 10:12.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	06/03/2019	Sampling Date:	05/28/2019
Reported:	06/06/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #1R (H901927-01)

BTEX 8021B mg/L Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	06/04/2019	ND	0.021	106	0.0200	2.52	
Toluene*	<0.001	0.001	06/04/2019	ND	0.022	110	0.0200	1.67	
Ethylbenzene*	<0.001	0.001	06/04/2019	ND	0.020	101	0.0200	2.26	
Total Xylenes*	<0.003	0.003	06/04/2019	ND	0.063	105	0.0600	2.19	
Total BTEX	<0.006	0.006	06/04/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *81.3-128*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**140**	4.00	06/04/2019	ND	100	100	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**55.1**	10.0	06/04/2019	ND	21.1	105	20.0	4.96	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**583**	5.00	06/06/2019	ND	520	98.7	527	2.05	

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	06/03/2019	Sampling Date:	05/28/2019
Reported:	06/06/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H901927-02)

BTEX 8021B mg/L Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	06/04/2019	ND	0.021	106	0.0200	2.52	
Toluene*	<0.001	0.001	06/04/2019	ND	0.022	110	0.0200	1.67	
Ethylbenzene*	<0.001	0.001	06/04/2019	ND	0.020	101	0.0200	2.26	
Total Xylenes*	<0.003	0.003	06/04/2019	ND	0.063	105	0.0600	2.19	
Total BTEX	<0.006	0.006	06/04/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *81.3-128*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**28.0**	4.00	06/04/2019	ND	100	100	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**48.7**	10.0	06/04/2019	ND	21.1	105	20.0	4.96	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**673**	5.00	06/06/2019	ND	520	98.7	527	2.05	

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	06/03/2019	Sampling Date:	05/28/2019
Reported:	06/06/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H901927-03)

BTEX 8021B mg/L Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	06/04/2019	ND	0.021	106	0.0200	2.52	
Toluene*	<0.001	0.001	06/04/2019	ND	0.022	110	0.0200	1.67	
Ethylbenzene*	<0.001	0.001	06/04/2019	ND	0.020	101	0.0200	2.26	
Total Xylenes*	<0.003	0.003	06/04/2019	ND	0.063	105	0.0600	2.19	
Total BTEX	<0.006	0.006	06/04/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *81.3-128*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**260**	4.00	06/04/2019	ND	100	100	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**60.2**	10.0	06/04/2019	ND	21.1	105	20.0	4.96	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**1010**	5.00	06/06/2019	ND	520	98.7	527	2.05	

Cardinal Laboratories *=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, NM 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company PO#
Project Manager: Katie Jones	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: Vacuum L-26 Vent
Project Location: T17S-R35E-Sec26 L ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310

H901527

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2019)	TIME
1	Monitor Well #1R	G	3	X				2				1		5/28	11:30
2	Monitor Well #2	G	3	X				2				1		5/28	9:15
3	Monitor Well #3	G	3	X				2				1		5/28	10:45

ANALYSIS REQUEST
(Circle or Specify Method No.)

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
	X																	X	X	X	
	X																	X	X	X	
	X																	X	X	X	

Relinquished by: Rozanne Johnson	Date: 6/3/2019	Time: 8:00	Received by:	Date: 6/3/2019	Time: 8:01
Relinquished by:	Date: 6/3/2019	Time: 10:12	Received By: (Laboratory Staff) Tamara Oldaker	Date: 6-3-19	Time: 10:12

Phone Results		Yes		No
Fax Results		Yes		No Additional Fax Number:

REMARKS:

Email Results: kjones@riceswd.com
rozanne11@windstream.net

Delivered By: (Circle One)	Sample Condition		CHECKED BY:
Sampler - UPS - Bus - Other:	Cool: Yes ✓ / No	Intact: Yes ✓ / No	(Initials) TO.

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

September 12, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM L-26 VENT

Enclosed are the results of analyses for samples received by the laboratory on 09/04/19 14:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/04/2019	Sampling Date:	08/29/2019
Reported:	09/12/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #1R (H903056-01)

BTEX 8021B mg/L Analyzed By: BF

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	09/12/2019	ND	0.021	104	0.0200	1.81	
Toluene*	<0.001	0.001	09/12/2019	ND	0.021	104	0.0200	0.145	
Ethylbenzene*	<0.001	0.001	09/12/2019	ND	0.021	107	0.0200	0.975	
Total Xylenes*	<0.003	0.003	09/12/2019	ND	0.065	108	0.0600	1.24	
Total BTEX	<0.006	0.006	09/12/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *88.0 %* *81.3-128*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**144**	4.00	09/06/2019	ND	100	100	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**54.4**	10.0	09/06/2019	ND	18.3	91.6	20.0	9.85	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**650**	5.00	09/06/2019	ND	544	103	527	2.98	

Cardinal Laboratories *=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/04/2019	Sampling Date:	08/29/2019
Reported:	09/12/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H903056-02)

BTEX 8021B mg/L Analyzed By: BF

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	09/12/2019	ND	0.021	104	0.0200	1.81	
Toluene*	<0.001	0.001	09/12/2019	ND	0.021	104	0.0200	0.145	
Ethylbenzene*	<0.001	0.001	09/12/2019	ND	0.021	107	0.0200	0.975	
Total Xylenes*	<0.003	0.003	09/12/2019	ND	0.065	108	0.0600	1.24	
Total BTEX	<0.006	0.006	09/12/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *87.4 %* *81.3-128*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**144**	4.00	09/06/2019	ND	100	100	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**53.4**	10.0	09/06/2019	ND	18.3	91.6	20.0	9.85	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**622**	5.00	09/06/2019	ND	544	103	527	2.98	

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/04/2019	Sampling Date:	08/29/2019
Reported:	09/12/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H903056-03)

BTEX 8021B mg/L Analyzed By: BF

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	09/12/2019	ND	0.021	104	0.0200	1.81	
Toluene*	<0.001	0.001	09/12/2019	ND	0.021	104	0.0200	0.145	
Ethylbenzene*	<0.001	0.001	09/12/2019	ND	0.021	107	0.0200	0.975	
Total Xylenes*	<0.003	0.003	09/12/2019	ND	0.065	108	0.0600	1.24	
Total BTEX	<0.006	0.006	09/12/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *94.5 %* *81.3-128*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**256**	4.00	09/06/2019	ND	100	100	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**54.6**	10.0	09/06/2019	ND	18.3	91.6	20.0	9.85	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**938**	5.00	09/06/2019	ND	544	103	527	2.98	

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, NM 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company PO#
Project Manager: Katie Jones	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: Vacuum L-26 Vent
Project Location: T17S-R35E-Sec26 L ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310

H903056 LAB # (LAB USE ONLY)

	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE		PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2019)	TIME
1	Monitor Well #1R	G	3	X					2				1		8/29	12:40
2	Monitor Well #2	G	3	X					2				1		8/29	10:45
3	Monitor Well #3	G	3	X					2				1		8/29	12:20

ANALYSIS REQUEST
(Circle or Specify Method No.)

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
	X																	X	X	X	
	X																	X	X	X	
	X																	X	X	X	

Relinquished by: Rozanne Johnson	Date: 9/4/2019	Time: 14:25	Received by: Tamara Oldaker 9-4-19 14:25
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff) Date: Time:

Phone Results		Yes	No
Fax Results		Yes	No Additional Fax Number:

REMARKS:

Email Results: kjones@riceswd.com
rozanne11@windstream.net

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool: Yes ✓ / No ; Intact: Yes ✓ / No

CHECKED BY: (Initials) T.O.

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

November 26, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM L-26 VENT

Enclosed are the results of analyses for samples received by the laboratory on 11/21/19 12:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	11/21/2019	Sampling Date:	11/15/2019
Reported:	11/26/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #1R (H903951-01)

BTEX 8021B mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	11/24/2019	ND	0.019	96.8	0.0200	0.956	
Toluene*	<0.001	0.001	11/24/2019	ND	0.019	93.7	0.0200	0.628	
Ethylbenzene*	<0.001	0.001	11/24/2019	ND	0.019	95.4	0.0200	0.648	
Total Xylenes*	<0.003	0.003	11/24/2019	ND	0.058	95.9	0.0600	0.741	
Total BTEX	<0.006	0.006	11/24/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.5 %* *58.2-133*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**100**	4.00	11/22/2019	ND	104	104	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**46.4**	10.0	11/24/2019	ND	22.9	114	20.0	1.41	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**765**	5.00	11/26/2019	ND	523	99.2	527	2.39	

Cardinal Laboratories *=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	11/21/2019	Sampling Date:	11/15/2019
Reported:	11/26/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H903951-02)

BTEX 8021B mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	11/24/2019	ND	0.019	96.8	0.0200	0.956	
Toluene*	<0.001	0.001	11/24/2019	ND	0.019	93.7	0.0200	0.628	
Ethylbenzene*	<0.001	0.001	11/24/2019	ND	0.019	95.4	0.0200	0.648	
Total Xylenes*	<0.003	0.003	11/24/2019	ND	0.058	95.9	0.0600	0.741	
Total BTEX	<0.006	0.006	11/24/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.3 %* *58.2-133*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**28.0**	4.00	11/22/2019	ND	104	104	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**47.1**	10.0	11/24/2019	ND	22.9	114	20.0	1.41	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**606**	5.00	11/26/2019	ND	523	99.2	527	2.39	

Cardinal Laboratories *=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	11/21/2019	Sampling Date:	11/15/2019
Reported:	11/26/2019	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H903951-03)

BTEX 8021B mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	11/24/2019	ND	0.019	96.8	0.0200	0.956	
Toluene*	<0.001	0.001	11/24/2019	ND	0.019	93.7	0.0200	0.628	
Ethylbenzene*	<0.001	0.001	11/24/2019	ND	0.019	95.4	0.0200	0.648	
Total Xylenes*	<0.003	0.003	11/24/2019	ND	0.058	95.9	0.0600	0.741	
Total BTEX	<0.006	0.006	11/24/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.9 %* *58.2-133*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**280**	4.00	11/22/2019	ND	104	104	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**55.6**	10.0	11/24/2019	ND	22.9	114	20.0	1.41	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**1020**	5.00	11/26/2019	ND	523	99.2	527	2.39	

Cardinal Laboratories *=Accredited Analyte

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Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company PO#
Project Manager: Katie Jones	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: Vacuum L-26 Vent
Project Location: T17S-R35E-Sec26 L ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310

H903951 LAB # (LAB USE ONLY)

	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE		PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2019)	TIME
1	Monitor Well #1R	G	3	X					2				1		11/15	14:55
2	Monitor Well #2	G	3	X					2				1		11/15	10:20
3	Monitor Well #3	G	3	X					2				1		11/15	11:40

ANALYSIS REQUEST

(Circle or Specify Method No.)

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
	X																	X	X	X	
	X																	X	X	X	
	X																	X	X	X	

Relinquished by: Rozanne Johnson	Date: 11/21/2019	Time: 12:55	Received by: Tamara Oldaker	Date: 11-21-19	Time: 12:55
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:

Phone Results		Yes		No	
Fax Results		Yes		No	Additional Fax Number:

REMARKS:

Email Results: kjones@riceswd.com
rozanne11@windstream.net

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool: Yes ✓ / No ; Intact: Yes ✓ / No

CHECKED BY: (Initials) T.O.