1R - 425-66

REPORTS

DATE:

8-2-11

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

August 2, 2011

Mr. Edward J. Hansen
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Via E-mail

RE: Initial CAP Report – Liner Installation
NMOCD Case #: 1R425-66
Vacuum L-26 Vent Site, T17S, R35E, Section 26 (L)

Mr. Hansen,

R.T. Hicks Consultants, Ltd. is submitting this Initial CAP Report that describes the activities associated with the liner installation, on behalf of Rice Operating Company (ROC) for the above-referenced site. Information from the investigations conducted to date was presented in the Initial Characterization Plan (ICP) and Corrective Action Plan (CAP), submitted to your office on September 14, 2010. That report included recommendations to: (1) install a monitoring well 50 feet down gradient from the site to evaluate possible ground water impact due to historic, intermittent releases from the former junction box; and (2) surface restoration, including the removal of large rocks and seeding the area to encourage re-vegetation. On April 1, 2011 an addendum to the CAP was submitted to your office. It indicated that a single monitoring well had been installed and sampled; based on the initial results further delineation was proposed. In addition, ROC proposed the installation of a 4,032 ft^2 20-mil reinforced polyethylene liner to further protect the ground water. The CAP (without appendices), Addendum, and NMOCD approval documents are provided in Attachment A.

Corrective Actions
Ground water assessment and delineation has been initiated and monitoring will be performed through the end of 2011. Further recommendations will be provided following the evaluation of the monitoring data.

Beginning on May 23, 2011 a 64-foot by 63-foot area was excavated to a depth of five feet below the surface (bgs), covering the existing 30-foot by 30-foot geosynthetic liner that was installed in December 2008. Upon completion, the bottom of the excavation was padded with 6-inches of clean blow sand and a 20-mil reinforced polyethylene liner was installed at 4.5 feet bgs. A 6-inch pad of clean blow sand was placed above to protect the integrity of the seal. Pond bottom soil was used to backfill the excavation and blow sand was used to contour the site to the surrounding area. On July 15, 2011, 20 bags of "RestoreNhance" was tilled into the surface soil. The area was then reseeded with 32 lbs of Black Grama seed.

Attachment B includes field analyses, laboratory analyses, re-vegetation data, and photos documenting that the surface restoration and re-vegetation efforts at the site conform to the CAP and Addendum. The data provided in Attachment B demonstrates:

- The site was excavated and backfilled to grade from May 23 to June 7, 2011. A total of 740 yd^3 of soil was transported to Sundance Disposal and 804 yd^3 of soil was imported.
- The liner was installed at 4.5-feet below existing grade on May 31, 2011
- Seeding of the area occurred on July 15, 2011
- Imported soil met the concentration requirements of the CAP Addendum
    - Imported Pond Bottom Soil: Cl^- 48.0 mg/kg and PID 4.2 ppm

ROC is the service provider (agent) for the Vacuum Saltwater Disposal System and has no ownership of any portion of pipeline, well, or facility. A consortium of oil producers that own the Vacuum System (System Parties) provides all operating capital on a percentage ownership/usage basis. The Vacuum SWD system is in abandonment.

Please contact Hack Conder of ROC at 575-393-9174 if you have any questions concerning this submission. Thank you for your time and consideration.

Sincerely,
R.T. Hicks Consultants, Ltd.

Dale Littlejohn PG
Geologist

Dale T. Littlejohn

Copy: Hack Conder, Rice Operating Company

Attachment A

April 4, 2011 CAP/Addendum Approval

April 1, 2011 Addendum to CAP

September 14, 2010 CAP (text & maps)

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

Dale Littlejohn

From: Katie Jones [kjones@riceswd.com]
Sent: Monday, August 01, 2011 1:40 PM
To: Dale Littlejohn
Subject: FW: Corrective Action Plan (1R425-66) Approval - ROC Vacuum L-26 Vent Site

From: Hansen, Edward J., EMNRD [mailto:edwardj.hansen@state.nm.us]
Sent: Monday, April 04, 2011 6:29 PM
To: Hack Conder
Cc: Leking, Geoffrey R, EMNRD; Katie Jones; Katie Lee
Subject: Corrective Action Plan (1R425-66) Approval - ROC Vacuum L-26 Vent Site

RE: Corrective Action Plan for the Rice Operating Company's
Vacuum L-26 Vent Site
Unit Letter L, Section 26, T17S, R35E, NMPM, Lea County, New Mexico
Corrective Action Plan (1R425-66) Approval

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received the Corrective Action Plan for the Vacuum L-26 Vent Site, dated September 14, 2010 (and addendum, dated April 1, 2011) and has conducted a review of the Plan. The Plan indicates that Rice Operating Company (ROC) has met the requirements of 19.15.29 NMAC (Part 29; formerly, Rule 116) for a remediation plan. Therefore, the OCD hereby conditionally approves the Corrective Action Plan as proposed for above-referenced site in accordance with 19.15.29 NMAC:

ROC must submit to the OCD an initial report of the corrective actions within 120 days.

Please be advised that OCD approval of this Plan does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

Dale Littlejohn

From: Katie Jones [kjones@riceswd.com]
Sent: Monday, August 01, 2011 1:39 PM
To: Dale Littlejohn
Subject: FW: Vacuum L-26 vent (1R425-66) CAP Addendum
Attachments: Vacuum L-26 vent (1R425-66) Proposed Liner.jpg; Vacuum L-26 vent (1R425-66) IC Report and CAP 9.14.10.pdf

From: Katie Jones
Sent: Friday, April 01, 2011 3:07 PM
To: Hansen, Edward J., EMNRD
Cc: Hack Conder; 'Katie Lee'
Subject: Vacuum L-26 vent (1R425-66) CAP Addendum

Mr. Hansen,

This email is an Addendum to the Vacuum L-26 vent site (1R425-66) Initial Characterization Report and Corrective Action Plan (CAP), submitted to the NMOCD on September 14, 2010. Page 3, section: Recommendations, paragraphs 1-3: text in blue lettering, below, will replace text in red lettering, below. A new plat showing the proposed liner dimensions and the previously submitted Initial Characterization Report and CAP are attached. If you need any further information, please let me or Hack know.

"A monitoring well (MW-1) was installed approximately 50 feet down gradient of this site on November 15, 2010. Groundwater samples collected from this monitoring well tested 940 mg/L and 960 mg/L Cl^- on November 22, 2010 and February 16, 2011, respectively. ROC proposes to install additional monitoring wells to further delineate groundwater quality at this site.

To further protect groundwater from potential chloride migration, ROC proposes to excavate soil with a 64x63-ft area to a depth of approximately 5 to 4-ft below ground surface (bgs) and properly seat a 20 mil, reinforced polyethylene liner in the base of the excavation. Backfill soils will not exceed a chloride concentration of 500 mg/kg and a PID (field) ready of 100 ppm. Excavated soil will be evaluated for use as backfill and any soil requiring disposal will be properly disposed of at a NMOCD approved facility. The site will then be seeded with native seed mixes and soil amendments will be added as necessary to encourage re-vegetation. As plants capture water through their roots, they reduce the volume of water infiltrating below the root zone and create a natural "infiltration barrier" that will remain in place after the buried synthetic liner degrades. Both the synthetic liner and vegetation help protect ground water as the decreased flux of water through the subsurface slows the transportation rate of residual chloride in the subsurface, allowing dilution and dispersion to decrease possible adverse impact to ground water.

Once these activities are completed and ROC has obtained three quarters of monitoring well sampling data on the additional wells, we will submit a CAP Report on the findings regarding groundwater quality and a summary of the corrective actions."

"We propose installing a monitoring well approximately 50 feet down gradient from the site to evaluate possible ground water impact due to historic, intermittent releases from the former junction box.

We recommend surface restoration at the site, including removal of large rocks and seeding the area with native seed mixes and soil amendments as necessary to encourage re-vegetation. As plants capture water through their roots, they reduce the volume of water infiltrating below the root zone and create a natural "infiltration barrier" that will remain in place after the buried geosynthetic liner degrades. Both the

synthetic liner already in place and vegetation help protect ground water as the decreased flux of water through the subsurface slows the transportation rate of residual chloride in the subsurface, allowing dilution and dispersion to decrease possible adverse impact to ground water.

Once these activities are completed and documented, we will submit a report on findings regarding ground water quality down gradient from the site."

Thank you.

Katie Jones
Environmental Project Coordinator
RICE *Operating Company*

Proposed liner

SB-1

Depth	Cl-	PID	LAB Cl-	GRO	DRO	B	T	E	X
15	442	52.7							
20	2168	6.8							
25	2279	0.7							
30	3541	7.7	4320	<10	<50.4	<0.05	<0.05	<0.05	<0.3
35	2695	3							
40	2487	1.4							
45	2351	1.6							
50	2399	1.2							
55	1214	1.6							
60	534	0.8	528	<10	<10	<0.05	<0.05	<0.05	<0.3

SB-2

Depth	Cl-	PID	LAB Cl-	GRO	DRO	B	T	E	X
5	3301	0.7	3400	<10	<10	<0.05	<0.05	<0.05	<0.3
10	1614	0.7							
15	311	1							
20	229	1.6	192	<10	<10	<0.05	<0.05	<0.05	<0.3

SB-3

Depth	Cl-	PID	LAB Cl-	GRO	DRO	B	T	E	X
5	243	1.2							
10	399	0.7							
15	564	0.6	320	<10	<10	<0.05	<0.05	<0.05	<0.3
20	662	2.5	704	<10	<10	<0.05	<0.05	<0.05	<0.3

SB-4

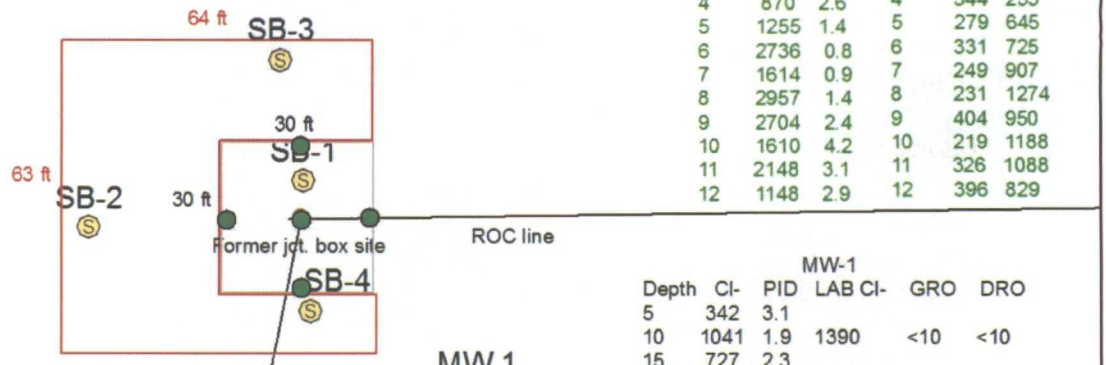
Depth	Cl-	PID	LAB Cl-	GRO	DRO	B	T	E	X
5	373	4.6							
10	845	1.4							
15	909	1.4							
20	2583	0.9							
25	2999	0.9	2880	<10	<10	<0.05	<0.05	<0.05	<0.3
30	2970	0.5							
35	1554	0.3							
40	1461	0.4	1540	<10	<10	<0.05	<0.05	<0.05	<0.3

15' North

Depth	Cl-	PID
1	200	4.2
2	663	7.1
3	751	2.9
4	870	2.6
5	1255	1.4
6	2736	0.8
7	1614	0.9
8	2957	1.4
9	2704	2.4
10	1610	4.2
11	2148	3.1
12	1148	2.9

15' East

Depth	Cl-	PID
1	253	47
2	331	68.4
3	302	65
4	344	253
5	279	645
6	331	725
7	249	907
8	231	1274
9	404	950
10	219	1188
11	326	1088
12	396	829



Source Trench

Depth	Cl-	PID
2	989	0.6
3	483	38.6
4	366	238
5	432	349
6	466	449
7	1211	203
8	2634	37.3
9	1779	295
10	845	662
11	2814	360
12	4089	210

MW-1

Depth	Cl-	PID	LAB Cl-	GRO	DRO
5	342	3.1			
10	1041	1.9	1390	<10	<10
15	727	2.3			
20	523	2.1			
25	909	2.3			
30	645	4			
35	346	2.9			
40	313	3.1			
45	262	2.5			
50	141	3.1			
55	120	2.5	80	<10	<10

15' West

Depth	Cl-	PID
1	3656	7.5
2	3738	11.2
4	3437	33.2
5	2986	25.9
6	3804	2.6
7	3524	0
8	4211	0
9	4291	0
10	5690	0
11	4592	0
12	5297	0.2

15' South

Depth	Cl-	PID
1	1005	1.7
3	2926	0.2
4	2474	0
5	1656	0
6	1950	0
7	2967	125
8	996	191
9	847	355
10	1009	278

4 wall composite

Cl-	GRO	DRO
3000	88.5	869

Bottom composite

Cl-	GRO	DRO
1140	<10	214

Backhoe delineation trenches

Geo-synthetic liner

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

Vacuum L-26 vent

Legals: UL/L sec. 26
T17S R35E

Case #: 1R425-66

N W E S

0 15 30 60 Feet

Drawing date: 2-16-11
Drafted by: L. Weinheimer

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266.0745

September 14, 2010

Mr. Edward J. Hansen
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: **Vacuum L-26 Vent Site: T-17-S, R-35-E, Section 26, Unit L,**
Initial Characterization Report and Corrective Action Plan
NMOCD Case #: 1R425-66

Mr. Hansen:

On behalf of Rice Operating Company (ROC), R.T. Hicks Consultants, Ltd. is submitting this Initial Characterization Report (ICR) and Corrective Action Plan (CAP) for the Vacuum SWD L-26 Vent Site regulatory file. The investigation conducted followed our September 30, 2009 Investigation Characterization Plan.

Background
The Vacuum L-26 Vent site is located east of Buckeye in Lea County at T-17-S, R-35-E, Section 26, in Unit L. The pipeline and original equipment were abandoned prior to 2002. The September 2009 Investigation Characterization Plan (ICP), approved by the NMOCD on January 28, 2010 is provided as Attachment A to this letter. The ICP includes background information and a site vicinity map for this and one other nearby ROC site.

Field Program
ROC conducted an excavation and sampling program in 2008. As shown on the December 2, 2008 Junction Box Disclosure Report (included in Attachment A), soil samples were collected at regular intervals within a 30x30x12-ft deep excavation. Plate 1A presents the results of soil samples field tested for chloride and hydrocarbons, as well as the results for confirmation samples sent to the laboratory. Evidence of chloride levels above 1,000 mg/kg in soil was found at the source and to the north, south, and west of the source. Field screening for hydrocarbons showed photo-ionic detector (PID) readings above 100 ppm at the source, 5-feet north, 15-feet east, and 15-feet south of the source. Excavated soil was blended on-site and returned to the excavation up to 4 feet below ground surface (bgs). At 4 feet bgs a geosynthetic liner was installed across the 30x30-foot excavation with 6" of blow sand above and below it. The excavation was backfilled with remaining soil on site and contoured to match the surrounding area.

In May of 2010, Hicks Consultants supervised a deep soil sampling program to characterize possible hydrocarbon and chloride impact due to past activities. Plate 1B presents soil boring locations as well as the results of field tests for chloride and hydrocarbons and laboratory verification results. Soil boring No. 1 (SB-1) was drilled

adjacent to the north side of the former junction box to evaluate the deep soil directly below the former ROC equipment and reached a total depth of 60 feet bgs. Soil borings 2 and 3 reached 20 feet bgs and were located to the west and north of the source, respectively. Soil boring 4 was located to the south of the source and extended to 40 feet bgs.

In SB-1 chloride over 1,000 mg/kg was observed from 20-55 feet bgs. The highest chloride reading was 4,320 mg/kg (by laboratory verification) at 30 feet bgs, chloride declined from 50-60 feet bgs, with a chloride level of 528 mg/kg at 60 feet bgs. The depth to water at the site is estimated to be 68 feet bgs. SB-2, located 45 feet west of the former junction box, showed chloride above 1,000 mg/kg at 5 and 10 feet, but chloride declined to 192 mg/kg at 20 feet bgs. SB-3 was located 25' north of the former junction box, showed chloride levels from 243 – 704 mg/kg. SB-4, located 25' south of the former junction box showed chloride levels above 1,000 mg/kg from 20-40 feet bgs, with decline to 1,540 mg/kg at 40 feet bgs. The results of this investigation show evidence of a release of chloride that may have reached ground water, with the majority of chloride mass observed at the former junction box location and to the south of it. The 30x30 foot geosynthetic liner installed 4 feet bgs over the former junction box will slow the transport of chloride through the vadose zone toward ground water.

The highest photo-ionic detector (PID) reading encountered in the soil boring investigation was 52.7 at 15 feet bgs in SB-1. All other PID readings in soil boring samples were below 10. Laboratory verification found Benzene, Toluene, Ethyl benzene and Xylenes below detection limits in every soil sample submitted. Attachment B provides a soil lithology log including the field hydrocarbon and chloride screening data. Attachment C provides the laboratory report and chain of custody for verification of the May 10, 2010 field data.

Recommendations

We propose installing a monitoring well approximately 50 feet down gradient from the site to evaluate possible ground water impact due to historic, intermittent releases from the former junction box.

We recommend surface restoration at the site, including removal of large rocks and seeding the area with native seed mixes and soil amendments as necessary to encourage re-vegetation. As plants capture water through their roots, they reduce the volume of water infiltrating below the root zone and create a natural "infiltration barrier" that will remain in place after the buried geosynthetic liner degrades. Both the synthetic liner already in place and vegetation help protect ground water as the decreased flux of water through the subsurface slows the transportation rate of residual chloride in the subsurface, allowing dilution and dispersion to decrease possible adverse impact to ground water.

Once these activities are completed and documented, we will submit a report on findings regarding ground water quality down gradient from the site.

ROC is the service provider (agent) for the Vacuum Salt Water Disposal System and has no ownership of any portion of pipeline, well or facility. The Vacuum SWD System is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Please contact Hack Conder of ROC at 575-393-9174 if you have any questions concerning this submission. Thank you for your time and consideration.

Sincerely,
R.T Hicks Consultants, Ltd.

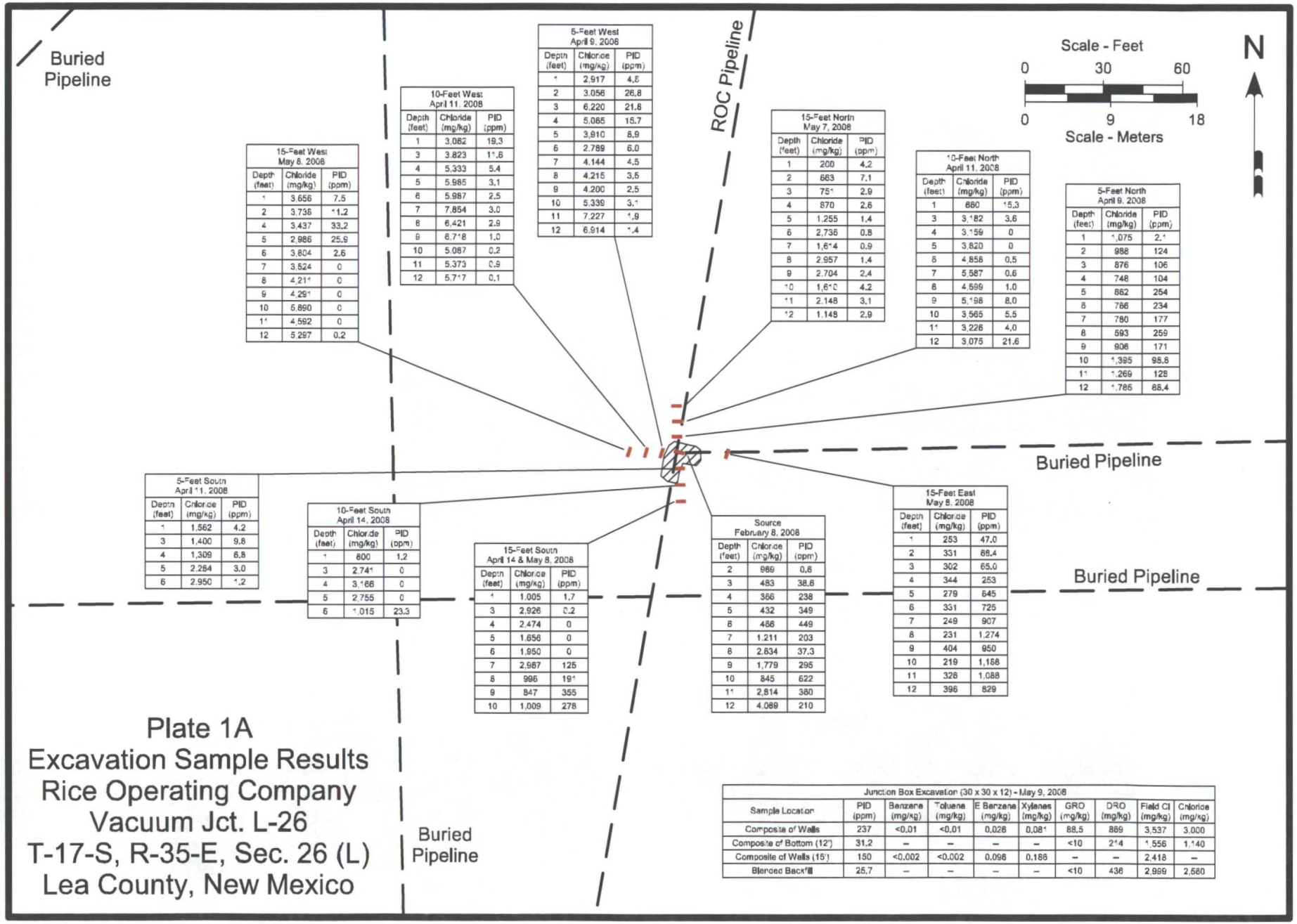
Katie Lee

Katie Lee
Project Scientist

Copy: Hack Conder, ROC

Plates

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104



15-Feet West May 8, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	3,656	7.5
2	3,736	11.2
4	3,437	33.2
5	2,986	25.9
6	3,804	2.6
7	3,524	0
8	4,211	0
9	4,291	0
10	5,890	0
11	4,592	0
12	5,297	0.2

10-Feet West April 11, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	3,082	19.3
3	3,823	11.6
4	5,333	5.4
5	5,985	3.1
6	5,987	2.5
7	7,854	3.0
8	6,421	2.9
9	6,718	1.0
10	5,087	0.2
11	5,373	0.9
12	5,717	0.1

5-Feet West April 9, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	2,917	4.8
2	3,056	26.8
3	6,220	21.8
4	5,065	15.7
5	3,910	8.9
6	2,789	6.0
7	4,144	4.5
8	4,215	3.5
9	4,200	2.5
10	5,339	3.1
11	7,227	1.9
12	6,914	1.4

15-Feet North May 7, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	200	4.2
2	663	7.1
3	751	2.9
4	870	2.6
5	1,255	1.4
6	2,736	0.8
7	1,674	0.9
8	2,957	1.4
9	2,704	2.4
10	1,670	4.2
11	2,148	3.1
12	1,148	2.9

10-Feet North April 11, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	660	15.3
3	3,182	3.6
4	3,159	0
5	3,820	0
6	4,858	0.5
7	5,587	0.6
8	4,599	1.0
9	5,198	8.0
10	3,565	5.5
11	3,226	4.0
12	3,075	21.6

5-Feet North April 9, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	1,075	2.1
2	988	124
3	876	106
4	748	104
5	862	254
6	786	234
7	780	177
8	593	259
9	906	171
10	1,395	98.6
11	1,269	128
12	1,785	88.4

5-Feet South April 11, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	1,562	4.2
3	1,400	9.8
4	1,309	6.8
5	2,264	3.0
6	2,950	1.2

10-Feet South April 14, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	800	1.2
3	2,741	0
4	3,166	0
5	2,755	0
6	1,015	23.3

15-Feet South April 14 & May 8, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	1,005	1.7
3	2,926	0.2
4	2,474	0
5	1,656	0
6	1,950	0
7	2,967	125
8	996	191
9	847	355
10	1,009	278

Source February 8, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
2	969	0.8
3	483	38.6
4	366	238
5	432	349
6	486	449
7	1,211	203
8	2,634	37.3
9	1,779	295
10	845	622
11	2,814	380
12	4,089	210

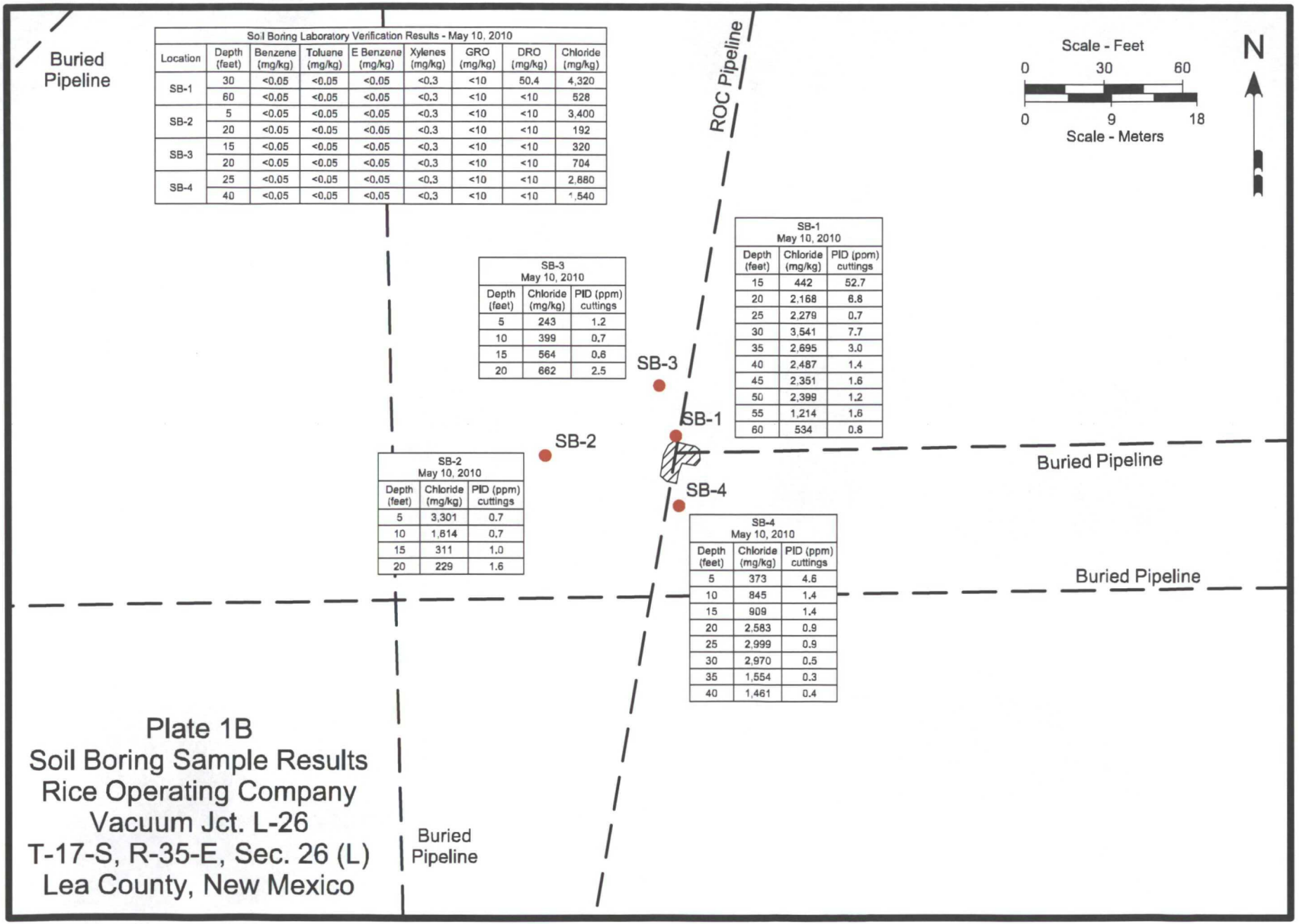
15-Feet East May 8, 2008

Depth (feet)	Chloride (mg/kg)	PID (ppm)
1	253	47.0
2	331	68.4
3	302	65.0
4	344	253
5	279	645
6	331	725
7	249	907
8	231	1,274
9	404	950
10	219	1,188
11	326	1,088
12	396	829

Plate 1A
Excavation Sample Results
Rice Operating Company
Vacuum Jct. L-26
T-17-S, R-35-E, Sec. 26 (L)
Lea County, New Mexico

Junction Box Excavation (30 x 30 x 12) - May 9, 2008

Sample Location	PID (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	E Benzene (mg/kg)	Xylenes (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	Field Cl (mg/kg)	Chloride (mg/kg)
Composite of Walls	237	<0.01	<0.01	0.026	0.081	88.5	869	3,537	3,000
Composite of Bottom (12')	31.2	–	–	–	–	<10	214	1,556	1,140
Composite of Walls (15')	150	<0.002	<0.002	0.096	0.186	–	–	2,418	–
Blended Backfill	25.7	–	–	–	–	<10	436	2,999	2,580



Soil Boring Laboratory Verification Results - May 10, 2010

Location	Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	E Benzene (mg/kg)	Xylenes (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	Chloride (mg/kg)
SB-1	30	<0.05	<0.05	<0.05	<0.3	<10	50.4	4,320
	60	<0.05	<0.05	<0.05	<0.3	<10	<10	528
SB-2	5	<0.05	<0.05	<0.05	<0.3	<10	<10	3,400
	20	<0.05	<0.05	<0.05	<0.3	<10	<10	192
SB-3	15	<0.05	<0.05	<0.05	<0.3	<10	<10	320
	20	<0.05	<0.05	<0.05	<0.3	<10	<10	704
SB-4	25	<0.05	<0.05	<0.05	<0.3	<10	<10	2,880
	40	<0.05	<0.05	<0.05	<0.3	<10	<10	1,540

SB-1
May 10, 2010

Depth (feet)	Chloride (mg/kg)	PID (ppm) cuttings
15	442	52.7
20	2,168	6.8
25	2,279	0.7
30	3,541	7.7
35	2,695	3.0
40	2,487	1.4
45	2,351	1.6
50	2,399	1.2
55	1,214	1.6
60	534	0.8

SB-3
May 10, 2010

Depth (feet)	Chloride (mg/kg)	PID (ppm) cuttings
5	243	1.2
10	399	0.7
15	564	0.6
20	662	2.5

SB-2
May 10, 2010

Depth (feet)	Chloride (mg/kg)	PID (ppm) cuttings
5	3,301	0.7
10	1,614	0.7
15	311	1.0
20	229	1.6

SB-4
May 10, 2010

Depth (feet)	Chloride (mg/kg)	PID (ppm) cuttings
5	373	4.6
10	845	1.4
15	909	1.4
20	2,583	0.9
25	2,999	0.9
30	2,970	0.5
35	1,554	0.3
40	1,461	0.4

Attachment B

Corrective Actions: Liner Installation

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

PO Box 5630
Hobbs, NM 88241
Phone: (575) 393-4411
Fax: (575) 393-0293

VEGETATION FORM

1. General Information

Site name: Vacuum L-26 Vent						
U/L L	Section 26	Township 17S	Range 35E	County Lea	Latitude 32°48'12.329" N	Longitude 103°25'58.331" W
Contact Name: Zach Conder						
Email: zconder@rice-ecs.com						
Site size: 32,292 square feet			Map detail of site attached ☐			
Additional information:						

2. Soils **Do not rip caliche subsoils; caliche rocks brought to the surface by ripping shall be removed.*

Salvaged from site ☒	Bioremediated ☐	Imported ☒	Blended ☐	Depth (in): 3.5 ft.-1ft. salvaged, 1ft.-groundsurface blow sand with amendments
Texture: Sandy	Describe soil & subsoil: Blow sand and subsoil caliche			
Soil prep methods:	Rip ☐ Depth(in):	Disc ☒ Depth (in): 6"	Rollerpack ☐	
Date completed: 7-16-11				

3. Bioremediation

Fertilizer ☐	Hay ☐	Other ☒
Type:		Describe: RestoreNhance
Lbs/acre:		20 bags

4. Seeding **Attach seed bag tags to this form. Seed bag tags shall contain the site name and S-T-R.*

Custom seed mix ☒	Prescribed mix ☐	Seed mix name: Black Grama	Seeding date: 7-16-11
Broadcast ☒ Method: Portable seeder			
Soil conditions during seeding: Dry ☒ Damp ☐ Wet ☐			
Photos attached ☐ Number of photos:	Observations: 32 lbs. of Black Grama		

5. Certification I hereby certify that the information in this form and attachments is true and complete to the best of my knowledge and belief.

Name: Zach Conder	Title: Field Foreman	Date: 7-22-11
Signature:		

Vacuum L-26 vent (1R425-66)
Unit Letter L, Section 26, T17S, R35E

Site prior to excavation, facing east 4/16/2011

Excavating the site, facing west 5/23/2011

Exporting excavated soil, facing northwest 5/25/2011

Padding the base of the excavation with 6" of blow sand, facing west 5/27/2011

64x63 ft, 20-mil reinforced liner installed at 4.5 ft bgs, facing west 5/31/2011

Importing blow sand, facing northeast 6/1/2011

Padding above the liner with 6" of blow sand, facing northwest 6/1/2011

Contouring the backfilled site with imported soil, facing north 6/7/2011

Spreading RestoreNhance on the backfilled site, facing southeast 7/15/2011

Seeding the backfilled site, facing southwest 7/15/2011

Tilling in seed and RestoreNhance, facing southwest 7/15/2011

Site Completed 7/28/2011

CARDINAL Laboratories

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

June 08, 2011

Bruce Baker

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 06/06/11 16:00.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

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 (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
Bruce Baker
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	06/06/2011	Sampling Date:	06/06/2011
Reported:	06/08/2011	Sampling Type:	Soil
Project Name:	VACUUM L-26 VENT	Sampling Condition:	** (See Notes)
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

Sample ID: PAWN BOTTOM (H101167-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	06/07/2011	ND	464	116	400	3.51	

Cardinal Laboratories

*=Accredited Analyte

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

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: ~~Apache~~ Rice Operating	BILL TO		ANALYSIS REQUEST
Project Manager: ~~Billy Stockton~~ Bruce Baker	P.O. #:		
Address:	Company:		
City: State: NM Zip:	Attn:		
Phone #: Fax #:	Address:		
Project #: Project Owner:	City:		
Project Name: Vaccum L-26 vent	State: Zip:		
Project Location:	Phone #:		
Sampler Name: Gerald Price	Fax #:		

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME						
H11107 -1	Rice Battery	G	1			✓							6-6-11	9:46	✓					

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 the client for the 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 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental 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 services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 6/6/11	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
	Time: 4:00		Fax Result: ☐ Yes ☑ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: email results ~~billystockton@apache.com~~ Zconder@rice-ecs.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com
	Time:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 24°C	Sample Condition Cool ☐ Yes ☐ No Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

CK.		MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL		MODEL: PGM 7300	SERIAL NO: 590-000504
NO.		MODEL: PGM 7320	SERIAL NO: 592-903318
	X	MODEL: PGM 7600	SERIAL NO: 110-013744

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : 930060	EXPIRATION DATE: 5-24-2013
METER READING ACCURACY: 100 ppm	

ACCURACY : +/- 2%

COMPANY
Rice Operating Company

SITE	UNIT	SECTION	TOWN SHIP	RANGE
Vacuum L-26 vent	L	26	17S	35E

SAMPLE ID	PID	SAMPLE ID	PID
PAWN BOTTOM	4.2		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: 

DATE: 6-6-11