1R - 500

REPORTS

DATE:

3-6-12

Texerra

627 Forest View Way Monument, Colorado 80132
Tel: 719-339-6791 E-mail: lpg@texerra.com

March 6th, 2012

Mr. Edward Hansen
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

Re: **Rice Operating Company**
Corrective Action Plan Progress Report
BD N-18 Below Grade Tanks
NMOCD Case No. 1R-500 UL-N, Sec 18, T22S, R37E

Sent via E-mail and U.S. Certified Mail w/ Return Receipt No. 7011 0110 0001 5863 4844

Mr. Hansen,

This letter summarizes progress made in implementing the OCD approved Corrective Action Plan (CAP) of July 1st, 2011 and CAP Addendum of January 23rd, 2012 for Rice Operating Company's BD N-18 Below Grade Tank (BGT) project (Figures 1&2).

ROC is the service provider (agent) for the BD 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 key elements of this CAP are summarized, below:

CAP Corrective Actions Planned

Vadose (unsaturated) Zone Remedy

The removal of chloride impacted soils and the installation of a synthetic double-liner system across the former tank area to preclude any possibility of potential future groundwater impacts (Figure 3). The bottom liner would be installed at an approximate depth of 30 ft bgs and encompass an area of approximately 98 ft by 98 ft. Excavated soil material having a chloride concentration less than 2,000 mg/kg chloride and 100 PID will be placed on top of the lower liner. The upper liner would be installed approximately 4 to 5 bgs and encompass an area of approximately 108 ft x 108 ft. Soil material having a chloride concentration of less than 500 mg/kg and 100 PID will be placed on top of the upper liner and contoured to ground surface. Excavated soil will be evaluated for use as backfill, and any soil requiring disposal will be properly disposed of at a NMOCD approved facility. Ground surface above the liner will be covered with caliche.

Saturated Zone (groundwater) Remedy

The removal of the estimated mass of chlorides (1,927 kg) from the near-source well (MW-1), or approximately 4,400 bbls of groundwater. NMOCD approved the chloride mass with the condition that the amount of groundwater to be recovered be recalculated on a bi-weekly basis based on the chloride concentration in the recovered groundwater. Also, a sufficient amount of groundwater must be recovered to remove the calculated chloride mass or to create a significant reduction in chloride concentration in the groundwater, whichever occurs later. (However, if the chloride concentration in the groundwater at the site is reduced to the background concentration, then no further groundwater recovery will be required.)

Corrective Action Progress

ROC removed the two below-grade tanks in 2010 and began excavating beneath them to install the double-liner system in November 2011. Although the initial design was to install the 98 ft by 98 ft lower synthetic liner at 30 ft bgs, rock was encountered at 27 ft bgs. An eight-point composite soil sample from that depth tested 1,060 mg/kg for chlorides (Appendix A-1) and 45.9 ppm for PID hydrocarbons (Appendix A-2). ROC subsequently submitted a CAP Addendum to install the liner at 27 ft bgs and this was approved by OCD on January 23rd, 2012.

The bottom of the excavation was padded with 6 inches of blow sand, and the 98 ft by 98 ft, 20 mil reinforced synthetic liner was properly seated. A 6 inch blow sand pad was then placed above the liner. The excavation was backfilled in 3 ft lifts with the previously excavated soil from Stockpile B, which had a laboratory chloride result of 608 mg/kg and a PID of 6.3 ppm, and from the 8 Pt Comp Spoil Pile, which had a laboratory chloride result of 464 mg/kg and a PID of 2.4 ppm (Appendix A-3, A-4). Once the excavation was backfilled up to 5 ft bgs, 6 inches of blow sand were used to pad the excavation. The second, near-surface 108 ft by 108 ft, 20 mil reinforced synthetic liner was installed and properly seated at 4.5 ft bgs with a 6-inch pad of clean blow sand carefully placed above it. The remaining excavation was backfilled with previously excavated soil from Stockpile A, which had a laboratory chloride reading of 304 mg/kg and a PID of 0.6 ppm, and from 8 Pt Comp Stockpile C, which had a laboratory chloride result of 352 mg/kg and a PID of 2.7 ppm, to within approximately 2 ft of the surface (Appendix A-3, A-4). The remaining volume was backfilled with clean, imported caliche, which tested 96 mg/kg and 144 mg/kg for chlorides (Appendix A-5) and 0.6 ppm and 1.6 ppm for PID hydrocarbons (Appendix A-6).

Over the course of this work, which was completed on February 15th, 2012, a total of 806 cu yards of chloride-impacted soil material was removed and taken to Sundance Services for proper disposal. A total of approximately 1,456 cu yards of clean caliche were brought to the site to complete backfill and prepare a pad so that the site could be returned to normal use. A photographic chronology of the course of this work is given in Figures 4a-4c. Laboratory reports for soil chloride analyses and field PID reports are given in the Appendix.

Conclusion

ROC has completed the vadose (unsaturated) zone remedy specified in the OCD-approved Corrective Action Plan for this location. ***We therefore request that OCD grant remedial closure status for the vadose zone for this project.***

ROC is presently planning work to address the saturated (groundwater) zone remedy specified in the Corrective Action Plan. We will report progress and results of these efforts to OCD upon their completion.

We appreciate your review of this report and your consideration of our request for remedial closure for the unsaturated zone. Please contact either myself or Rice Operating Company if you have any questions or need additional information.

Sincerely,

L. Peter Galusky, Jr. Ph.D.
Principal

Copy: Rice Operating Company

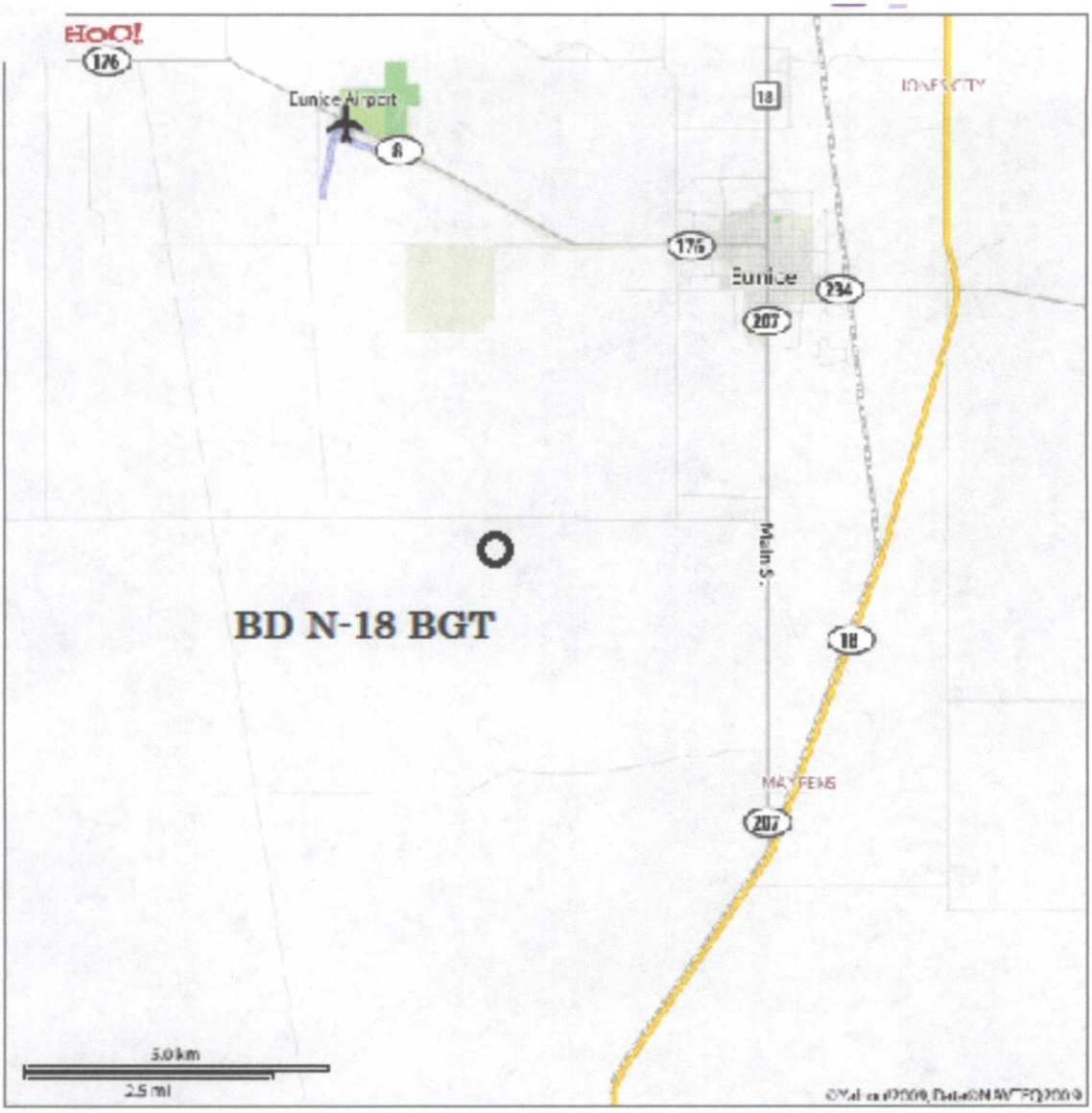

Figure 1 – BD N-18 BGT site location.

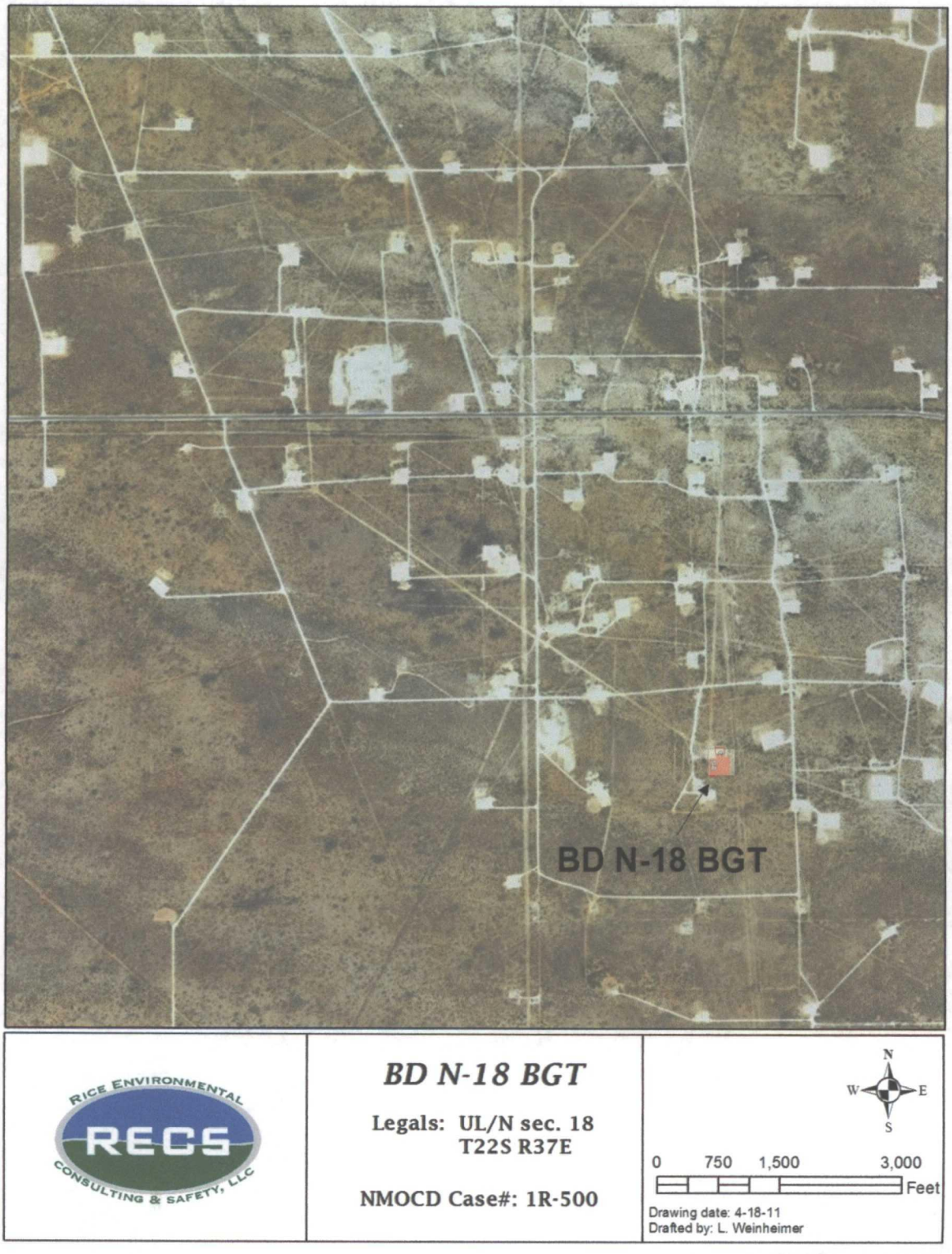

Figure 2 – BD N-18 BGT location relative to nearby and up-gradient oil-field operations.

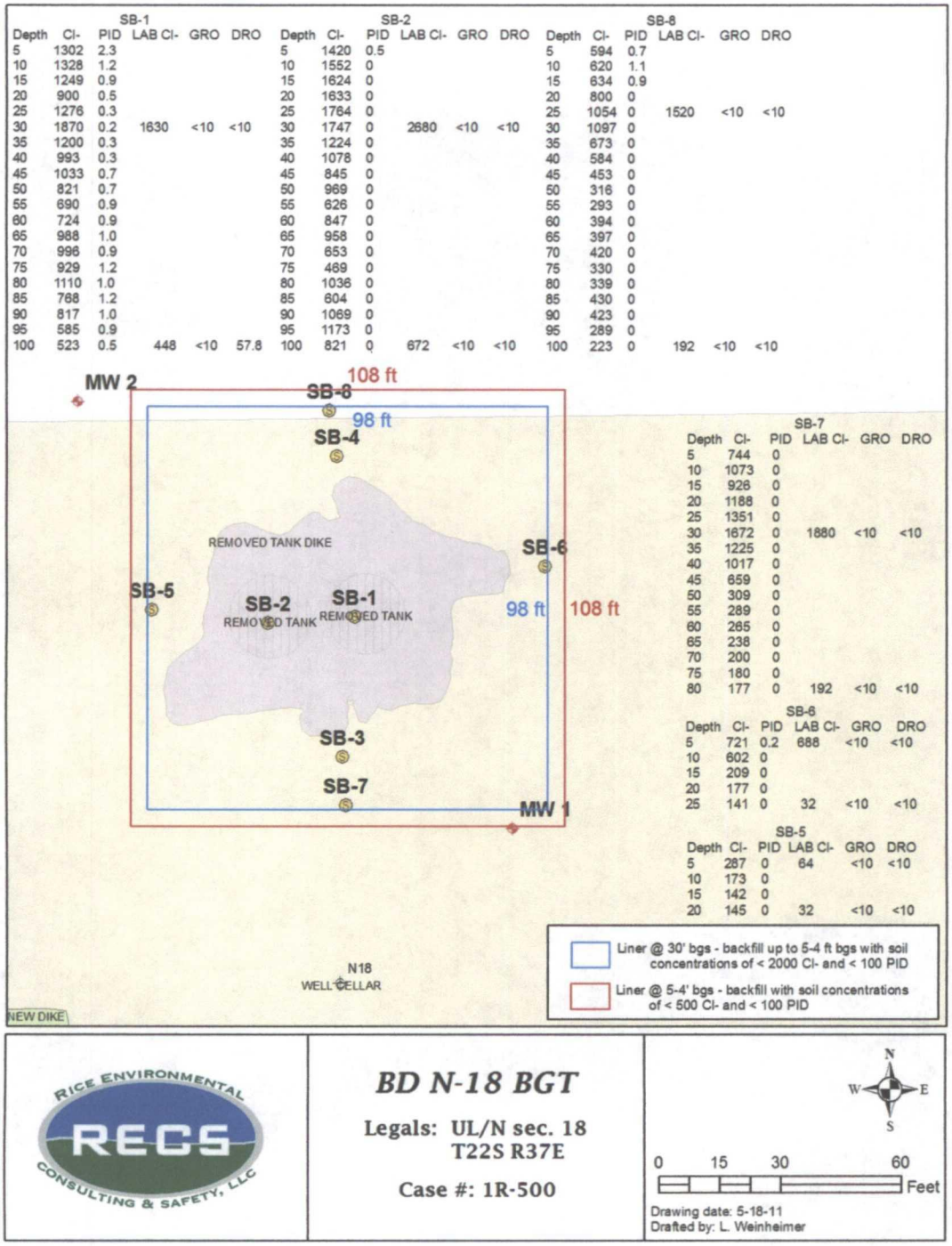

Figure 3 – BD N-18 BGT approved liners in relation to monitor wells and soil borings. Note that the deeper liner was installed at 27 ft bgs (rather than at 30 ft bgs as indicated here) due to the presence of impenetrable rock. This modification was approved by NMOCD on January 23rd, 2012.

BD N-18 BGT (1R-500)
Unit N, Section 18, T-22-S, R-37-E

excavating the site,
facing east 11/30/2011

exporting excavated soil,
facing south 12/21/2011

excavating the 98'x98' area to 30' bgs,
facing northwest 1/20/2012

excavation complete to 27' bgs with a 6" blow
sand pad installed, facing southeast 1/23/2012

98'x98' 20 mil reinforced liner installed at 26.5',
facing northeast 1/24/2012

installing a 6" blow sand pad above liner,
facing northeast 1/24/2012

Figure 4a – Photographic record of soil excavation and installation of double synthetic liner system.

backfilling the excavation,
facing northeast 1/26/2012

roller packing the backfilled site,
facing northwest 1/26/2012

6" blow sand pad installed at 5' bgs,
facing northeast 2/3/2012

108'x108' 20 mil reinforced liner at 4.5' bgs,
facing northeast 2/3/2012

installing a 6" blow sand pad above liner,
facing northwest 2/3/2012

backfilling the excavation,
facing northwest 2/6/2012

Figure 4b – Photographic record of soil excavation and installation of double synthetic liner system.

roller packing the backfilled excavation, facing northwest 2/6/2012

importing caliche, facing north 2/7/2012

roller packing the backfilled site, facing east 2/7/2012

importing base coarse caliche, facing southeast 2/9/2012

leveling the site using base coarse caliche, facing northwest 2/13/2012

site complete, facing east 2/15/2012

Figure 4c – Photographic record of soil excavation and installation of double synthetic liner system.

APPENDIX – Soil Chloride and Hydrocarbon Analytical Data

CARDINAL Laboratories

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

January 24, 2012

ZACH CONDER

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 01/23/12 17:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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

Page 1 of 4

Appendix A-1 – Soil chloride concentration from a composite sample at 27 ft bgs.

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	01/23/2012	Sampling Date:	01/23/2012
Reported:	01/24/2012	Sampling Type:	Soil
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: 8 PT COMP @ 27' (H200166-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1060**	16.0	01/24/2012	ND	432	108	400	3.77	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Appendix A-1 – Soil chloride concentration from a composite sample at 27 ft bgs.

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

Celey D. Keene, Lab Director/Quality Manager

Page 3 of 4

Appendix A-1 – Soil chloride concentration from a composite sample at 27 ft bgs.

BD N-18 BGT

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Rice Operating
Project Manager: Zach Conder
Address: 122 W. Taylor
City: Hobbs State: NM Zip: 88240
Phone #: 393-9174 Fax #:
Project #: Project Owner:
Project Name:
Project Location: BD N-18 BGT
Sampler Name: Robert

BILL TO
P.O. #:
Company:
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

ANALYSIS REQUEST

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	Cl⁻
H200166 -1	5pt composite @ 27'	C	1			✓					✓		1-23-12	5:40pm	✓

Relinquished By: Robert [signature] Date: 1/23/12 Time: 5:05 Received By: Jodi Henson

Relinquished By: Date: Time: Received By:

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

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

CHECKED BY: (Initials) JH

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:

REMARKS: Hescher, K Jones, B Baker, Z Conder, R Eggers

RUSH!!

† 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 NO.	X	MODEL: PGM 7300	SERIAL NO: 590-001413
		MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO :HAL-248-100-1	EXPIRATION DATE:7-1-2015
METER READING ACCURACY:100PPM	

ACCURACY : +/- 2%

COMPANY
RICE OPERATING CO.

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	N-18 BGT	N	18	T22S	R37E

SAMPLE ID	PID	SAMPLE ID	PID
8PT. COMPOSITE @ 27'	45.9		

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

SIGNATURE: Robert Jones DATE: 1-23-2012

Appendix A-2 – Soil PID hydrocarbon concentration from a composite sample at 27 ft bgs.

CARDINAL Laboratories

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

January 14, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 01/12/12 16:37.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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,

Hope S. Moreno

Hope Moreno

Inorganic Technical Director

Page 1 of 4

Appendix A-3 – Soil chloride concentrations from excavated soil material.

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	01/12/2012	Sampling Date:	01/12/2012
Reported:	01/14/2012	Sampling Type:	Soil
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	22/37	Sample Received By:	Celey D. Keene
Project Location:	NOT GIVEN		

Sample ID: 10 PT COMP STOCKPILE A (H200070-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**304**	16.0	01/13/2012	ND	416	104	400	0.00	

Sample ID: 8 PT COMP STOCKPILE B (H200070-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**608**	16.0	01/13/2012	ND	416	104	400	0.00	

Sample ID: 8 PT COMP STOCKPILE C (H200070-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**352**	16.0	01/13/2012	ND	416	104	400	0.00	

Sample ID: 8 PT COMP SPOIL PILE (H200070-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**464**	16.0	01/13/2012	ND	416	104	400	0.00	

Cardinal Laboratories *=Accredited Analyte

Hope S. Moreno

Hope Moreno, Inorganic Technical Director

Appendix A-3 – Soil chloride concentrations from excavated soil material.

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

Hope S. Moreno

Hope Moreno, Inorganic Technical Director

Appendix A-3 – Soil chloride concentrations from excavated soil material.

BD N-18 BGT

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(576) 393-2326 FAX (575) 393-2476

Company Name:	Rice Operating Co
Project Manager:	Hack Conder
Address:	122 W Taylor
City:	Hobbs
State:	NM
Zip:	88240
Phone #:	575-393-9174
Fax #:	
Project #:	
Project Owner:	
Project Name:	
Project Location:	BD N-18 BGT (22/37)
Sampler Name:	Robert Eggis

BILL TO

P.O. #:	
Company:	
Attn:	
Address:	
City:	
State:	Zip:
Phone #:	
Fax #:	

ANALYSIS REQUEST

Cl-

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING DATE	SAMPLING TIME	Cl-
H20070															
01	10pt. Composite Stock Pile A	C	1			✓					✓		1-12-12	9:40am	✓
02	8pt Composite Stock Pile B	C	1			✓					✓		1-12-12	9:50am	✓
03	8pt Composite Stock Pile C	C	1			✓					✓		1-12-12	10:00am	✓
04	8pt Composite Spoil Pile	C	1			✓					✓		1-12-12	12:30	✓

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 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 services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 1/12/12	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Robert Eggis	Time: 4:37p		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 1.5°C

Sample Condition: Cool: ☑ Yes ☐ No; Intact: ☑ Yes ☐ No

CHECKED BY: (Initials) CK

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

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 NO.	X	MODEL: PGM 7300	SERIAL NO: 590-001413
		MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO :HAL-248-100-1	EXPIRATION DATE:7-1-2015
METER READING ACCURACY:100	

ACCURACY : +/- 2%

COMPANY
RICE OPERATING

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	N-18 BGT	N	18	22S	37E

SAMPLE ID	PID	SAMPLE ID	PID
STOCK PILE A	0.6		
STOCK PILE B	6.3		
STOCK PILE C	2.7		

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

SIGNATURE: Robert Green DATE: 1-12-2012

Appendix A-4 – Soil PID hydrocarbon concentrations from excavated soil material.

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.	X	MODEL: PGM 7300	SERIAL NO: 590-001413
MODEL		MODEL: PGM 7300	SERIAL NO: 590-000504
NO.		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO :HAL-248-100-1	EXPIRATION DATE:7-1-2015
METER READING ACCURACY:100	

ACCURACY : +/- 2%

COMPANY
RICE OPERATING

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	N-18-BGT	N	18	22S	37E

SAMPLE ID	PID	SAMPLE ID	PID
SPOIL PILE	2.4		

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

SIGNATURE: Robert Evans DATE: 1-12-2012

Appendix A-4 – Soil PID hydrocarbon concentrations from excavated soil material.

CARDINAL Laboratories

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

February 15, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 02/10/12 16:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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

Page 1 of 4

Appendix A-5 – Soil chloride concentrations from imported caliche.

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	02/10/2012	Sampling Date:	02/10/2012
Reported:	02/15/2012	Sampling Type:	Soil
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: IMPORTED CALICHE W (H200351-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	02/13/2012	ND	432	108	400	7.69	

Sample ID: IMPORTED CALICHE (H200351-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	02/13/2012	ND	432	108	400	7.69	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Appendix A-5 – Soil chloride concentrations from imported caliche.

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

Celey D. Keene, Lab Director/Quality Manager

Appendix A-5 – Soil chloride concentrations from imported caliche.

BD N-18 BGT

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Rice Operating Co	**BILL TO**
Project Manager: Hack Conder	P.O. #:
Address: 122 W. Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: 575-393-9174 Fax #:	Address:
Project #: Project Owner:	City:
Project Name:	State: Zip:
Project Location: BD N-18 BGT	Phone #:
Sampler Name: Robert Evans	Fax #:

ANALYSIS REQUEST

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX	PRESERV.	SAMPLING DATE	TIME	Cl-
H20035								
1	Imported caliche w	C	1	Soil ✓	Ice/Cool ✓	2-10-12		✓
2	Imported caliche	C	1	Soil ✓	Ice/Cool ✓	2-10-12		✓

Relinquished By: Robert Evans	Date: 2/10/12 Time: 4:30	Received By: Jodi Henson
Relinquished By:	Date: Time:	Received By:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool ☒ Yes ☐ No Intact ☒ Yes ☐ No	CHECKED BY: (Initials)

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:

RUSH!!

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

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 NO.	X	MODEL: PGM 7300	SERIAL NO: 590-001413
		MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO :HAL-248-100-1	EXPIRATION DATE:7-1-2015
METER READING ACCURACY:100	

ACCURACY : +/- 2%

COMPANY
RICE OPERATING

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	N-18 BGT	N	18	22S	37E

SAMPLE ID	PID	SAMPLE ID	PID
IMPORTED CALICHE (W)	0.6		
IMPORTED CALICHE	1.6		

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

SIGNATURE: Robert Ford DATE: 2-10-2012

Appendix A-6 – Soil PID hydrocarbon concentrations from imported caliche.

BD N-18 BGT (1R-500)
Unit Letter N, Section 18, T22S, R37E

Site photo of old facility 5/26/2009

Site photo of new facility 10/17/2011