1R - 426-300

REPORTS

DATE:

4-9-12

IR426-300

BD Jct. B-7
2011

DISCLOSURE

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE* REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length 5'	Width 4'	Depth 4'
Blinebry-Drinkard (BD)	Jct. B-7	B	7	22S	38E	Lea	Eliminated		

LAND TYPE: BLM ___ STATE ___ FEE LANDOWNER Walco Ranch, LLC. OTHER ___

Depth to Groundwater 55 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 9/21/2010 Date Completed 4/13/2011 OCD Witness No

Soil Excavated 266.7 cubic yards Excavation Length 30 Width 20 Depth 12 feet

Soil Disposed 60 cubic yards Offsite Facility Sundance Services, Inc. Location Eunice, NM

FINAL ANALYTICAL RESULTS:

Sample Date 11/8/2010, 4/13/2011 **Sample Depth** 12', 30', 55'

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	PID (field) ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
4-WALL COMP.	1.2	<10.0	<10.0	912
BOTTOM COMP.	1.9	<10.0	<10.0	1,630
BLENDED BACKFILL	3.3	<10.0	<10.0	256
SB 1 @ 30'	0.5	<10.0	<10.0	8,700
SB 1 @ 55'	0.4	<10.0	<10.0	6,800

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
4-wall comp.	N/A	911
bottom comp.	12'	1,445
blended backfill	N/A	619
background	6"	142
SB 1 at 8' southeast of junction (source)	15'	2,426
	20'	7,719
	25'	7,623
	30'	8,437
	35'	6,889
	40'	8,156
	45'	5,499
	50'	7,051
	55'	4,861

General Description of Remedial Action: This junction was eliminated during the pipeline replacement/upgrade program. After the former junction box was removed, an investigation was conducted using a backhoe to collect soil samples at regular intervals producing a 30x20x12-ft excavation. Chloride field tests performed on each sample yielded elevated concentrations that did not relent with depth. Organic vapors were measured using a PID which yielded low concentrations. The excavated soil was blended on site and composite samples of the blended backfill, the excavation walls, and the bottom of the excavation were collected. The composite samples were sent to a commercial laboratory for analysis of chloride and TPH. A 1-ft. thick clay liner was installed from 12-11-ft BGS with a compaction test performed on 11/29/10. A total of 60 cubic yards of impacted soil was hauled to a NMOCD approved facility for disposal. The excavation was backfilled with the blended soil to ground surface and was contoured to the surrounding area. The site was seeded with a blended of native vegetation and is expected to return to a productive capacity at a normal rate. To further investigate the depth of chloride, a soil bore was initiated on 4/13/2011. The boring was advanced to a total depth of 55-ft. BGS with soil samples collected at regular intervals. Chloride field tests were performed on each sample and organic vapors were measured using a PID. The 30-ft. and 55-ft. samples were taken to a commercial laboratory for analysis of chloride and TPH, which yielded low TPH and chloride concentrations that did not decrease with depth. The bore was plugged with bentonite to ground surface. On 1/6/2012, the site was seeded with a blend of native vegetation and is expected to return to a productive capacity at a normal rate. NMOCD was notified of potential groundwater impact on 3/12/2012.

ADDITIONAL EVALUATION IS HIGH PRIORITY

enclosures: photos, boring log, lab results, PID (field) screenings, cross-section, compaction test, hydraulic conductivity, proctor, chloride curve, revegetation form

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SITE SUPERVISOR REPORT ASSEMBLED BY John R. Harrison SIGNATURE signature not available

ASSEMBLED BY Laura Peña SIGNATURE Laura Peña COMPANY RICE OPERATING COMPANY

PROJECT LEADER Larry Bruce Baker, Jr. SIGNATURE Larry Bruce Baker Jr. DATE 4-9-12

*This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.

BD Jct. B-7

Unit B, Section 7, T22S, R38E

Site prior to excavation, facing west 9.21.10

Excavating source, facing north 9.21.10

Blending backfill, facing north 10.05.10

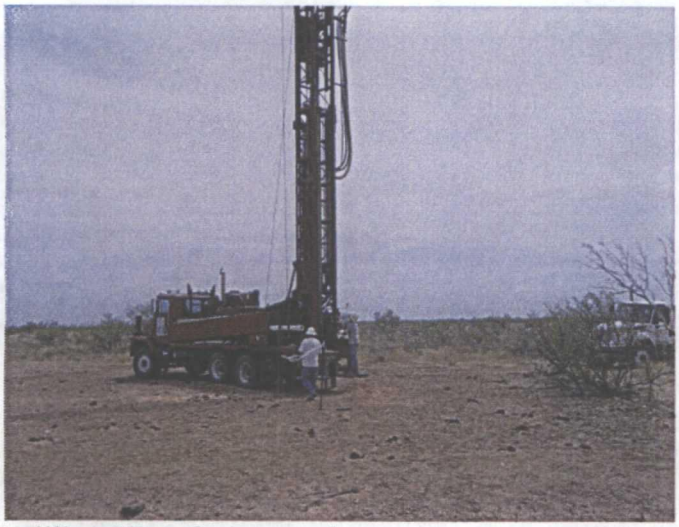
Collecting sample, facing east 11.08.10

Importing clay for liner, facing east 11.29.10

Performing clay compaction test, facing east11.29.10

Seeding site, facing west 12.1.10

Completed site, facing east 12. 1.10

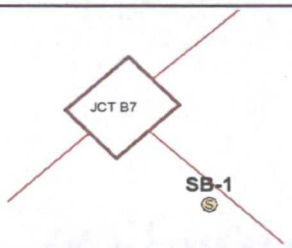


Drilling SB 1, facing south 4.13.11

Plugging the SB in total with bentonite, facing south 4.29.11

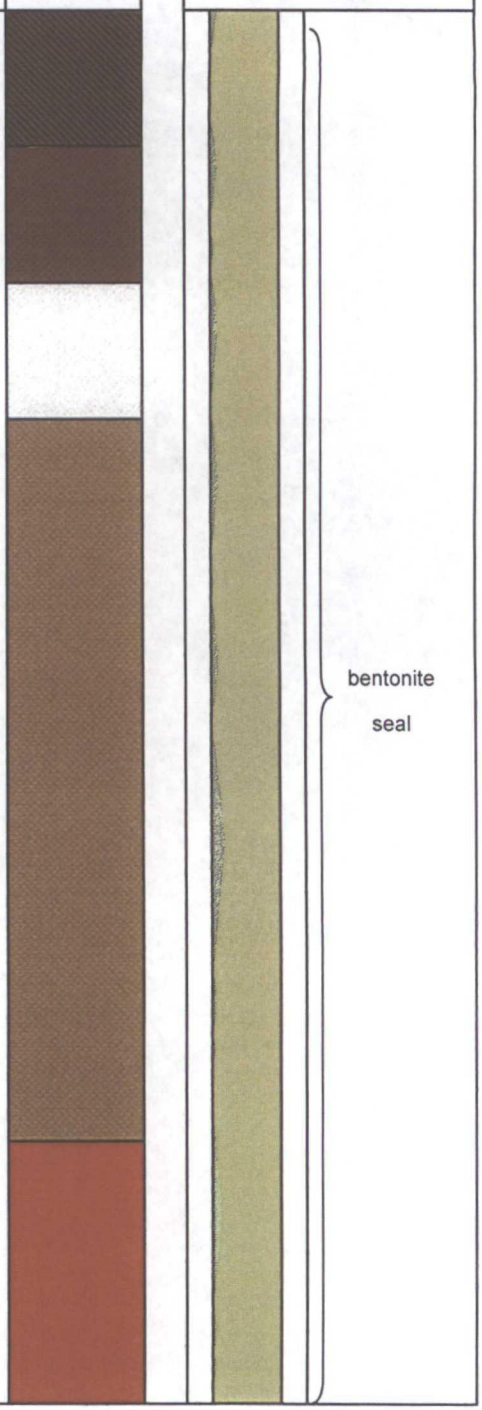
Reseeding site, facing north 1.6.12

Raking in seed, facing west 1.6.12

Logger:	Jordan Woodfin		**Project Name:** BD jct. B-7 **Well ID:** SB-1
Driller:	Harrison & Cooper, Inc.		**Project Consultant:** Junction box plan
Drilling Method:	Air rotary		**Location:** UL/B sec. 7 T22S R38E
Start Date:	4/13/2011		**Lat:** 32°24'48.546"N **County**: Lea
End Date:	4/13/2011		**Long:** 103°5'55.511"W **State**: NM

Comments: Located 8 ft south-east of the former junction box site.
All samples from cuttings.
DRAFTED BY: L. Weinheimer
TD = 55 ft GW = 55 ft

Depth (feet)	chloride field tests	LAB	PID	Description
				Brown fine sand with some clay
15 ft	2426		0.5	
				Brown fine silty sand
20 ft	7719		0.4	
				Tan very fine silty sand
25 ft	7623		0.5	
				Light brown very fine silty sand
30 ft	8437	Cl- 8700	0.5	
		GRO <10		
		DRO <10		
35 ft	6889		0.4	
40 ft	8165		0.4	
45 ft	5499		0.4	
50 ft	7051		0.4	
				Red clay
55 ft	4861	Cl- 6800	0.4	
		GRO <10		
		DRO <10		



CARDINAL Laboratories

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

April 18, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD JCT B-7

Enclosed are the results of analyses for samples received by the laboratory on 04/13/11 16:27.

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

Received:	04/13/2011	Sampling Date:	04/13/2011
Reported:	04/18/2011	Sampling Type:	Soil
Project Name:	BD JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	BD JCT B-7		

Sample ID: SB 1 @ 30' (H100749-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**8700**	16.0	04/14/2011	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/16/2011	ND	209	104	200	1.98	
DRO >C10-C28	<10.0	10.0	04/16/2011	ND	207	103	200	6.74	

Surrogate: 1-Chlorooctane	*96.1 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*95.9 %*	*70-130*

Sample ID: SB 1 @ 55' (H100749-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6800**	16.0	04/14/2011	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/16/2011	ND	209	104	200	1.98	
DRO >C10-C28	<10.0	10.0	04/16/2011	ND	207	103	200	6.74	

Surrogate: 1-Chlorooctane	*97.0 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*99.5 %*	*70-130*

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

Cardinal Laboratories

*=Accredited Analyte

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:	Rice Operating Company	BILL TO	
Project Manager:	Hack Conder	P.O. #:	
Address:	122 West Taylor	Company:	
City:	Hobbs	State: NM Zip: 88240	Attn:
Phone #:	575-393-9174	Fax #: 575-397-1471	Address:
Project #:		Project Owner:	City:
Project Name:	BD Jct B-7		State: Zip:
Project Location:	BD Jct B-7		Phone #:
Sampler Name:	Jordan Woodfin		Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		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	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TPH 8015 M Extended Thru C40						
H10749-1	SB 1 @ 30'		1			✓					✓		4/13/11	01:45	✓	✓									
2	SB 1 @ ~~50~~ 55		1			✓					✓		4/13/11	02:15	✓	✓									

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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: Jordan Woodfin	Date: 4/13/11 Time: 4:27	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool ☑ Yes ☐ No Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results Hconder@riceswd.com; jwoodfin@rice-ecs.com; Lweinheimer@rice-ecs.com kjones@riceswd.com

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

#26

NEED SAMPLES BACK, PLEASE

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.	x	MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : 927041	EXPIRATION DATE: 11-16-12
METER READING ACCURACY: 100	

ACCURACY : +/- 2%

COMPANY
Rice Operating Company

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	JCT B-7	B	7	22S	38E

SAMPLE ID	PID	SAMPLE ID	PID
SB#1 @ 15'	0.5		
20'	0.4		
25'	0.5		
30'	0.5		
35'	0.4		
40'	0.4		
45'	0.4		
50'	0.4		
55'	0.4		

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

SIGNATURE: Not Available

DATE: 4/13/2011

CARDINAL Laboratories

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

November 16, 2010

Bruce Baker

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD B-7 JCT (22/38)

Enclosed are the results of analyses for samples received by the laboratory on 11/08/10 16:10.

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

COPY

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:	11/08/2010	Sampling Date:	11/08/2010
Reported:	11/16/2010	Sampling Type:	Soil
Project Name:	BD B-7 JCT (22/38)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: 5 PT BOT COMP (H021251-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1630**	16.0	11/11/2010	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/13/2010	ND	153	76.6	200	1.93	
DRO >C10-C28	<10.0	10.0	11/13/2010	ND	179	89.5	200	2.64	

Surrogate: 1-Chlorooctane	*91.1 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*93.6 %*	*70-130*

Sample ID: 4 WALL COMP (H021251-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**912**	16.0	11/11/2010	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/13/2010	ND	153	76.6	200	1.93	
DRO >C10-C28	<10.0	10.0	11/13/2010	ND	179	89.5	200	2.64	

Surrogate: 1-Chlorooctane	*92.7 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*95.0 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

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:	11/08/2010	Sampling Date:	11/08/2010
Reported:	11/16/2010	Sampling Type:	Soil
Project Name:	BD B-7 JCT (22/38)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: BLENDED BACKFILL (H021251-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**256**	16.0	11/11/2010	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/13/2010	ND	153	76.6	200	1.93	
DRO >C10-C28	<10.0	10.0	11/13/2010	ND	179	89.5	200	2.64	

Surrogate: 1-Chlorooctane	*93.6 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*93.3 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

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

Celey D. Keene

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:	Rice Operating Company	**BILL TO**	
Project Manager:	~~Mack Conder~~ BRUCE BAKER	P.O. #:	
Address:	122 West Taylor	Company:	
City:	Hobbs	State: NM Zip: 88240	Attn:
Phone #:	575-393-9174	Fax #: 575-397-1471	Address:
Project #:		Project Owner:	City:
Project Name:	BD B-7 JCS 22.38		State: Zip:
Project Location:			Phone #:
Sampler Name:	Robert Harrison		Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV			SAMPLING		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	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions						
H21251-1	SPT BOT COMP	C	1			✓					✓		11/8/10	9:15	✓	✓									
2	4 WALL COMP	C	1			✓					✓		11/8/10	9:30	✓	✓									
3	BLENDED BACKFILL	C	1			✓					✓		11/8/10	9:45	✓	✓									

COPY

Relinquished By: Robert Harrison	Date: 11/8/10	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No	Add'l Phone #:	
	Time: 4:10		Fax Result: ☐ Yes ☑ No	Add'l Fax #:	
Relinquished By:	Date:	Received By:	REMARKS: email results		
	Time:		Bbaker@riceswd.com; Kjones@riceswd.com; ~~Regans@riceswd.com~~ Rharrison@riceswd.com		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)		

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

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NEED SAMPLES BACK, PLEASE

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.		MODEL: PGM 7300	SERIAL NO: 590-000508
		MODEL: PGM 7300	SERIAL NO: 590-000504
	x	MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : 927041	EXPIRATION DATE: 11-16-12
METER READING ACCURACY: 100.00	

ACCURACY : +/- 2%

COMPANY
Rice Operating Company

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	B-7 JCT	B	7	22S	38E

SAMPLE ID	PID	SAMPLE ID	PID
Bottom 5 Point Composite	1.9		
4 Wall Composite	1.2		
Blended Backfill	3.3		

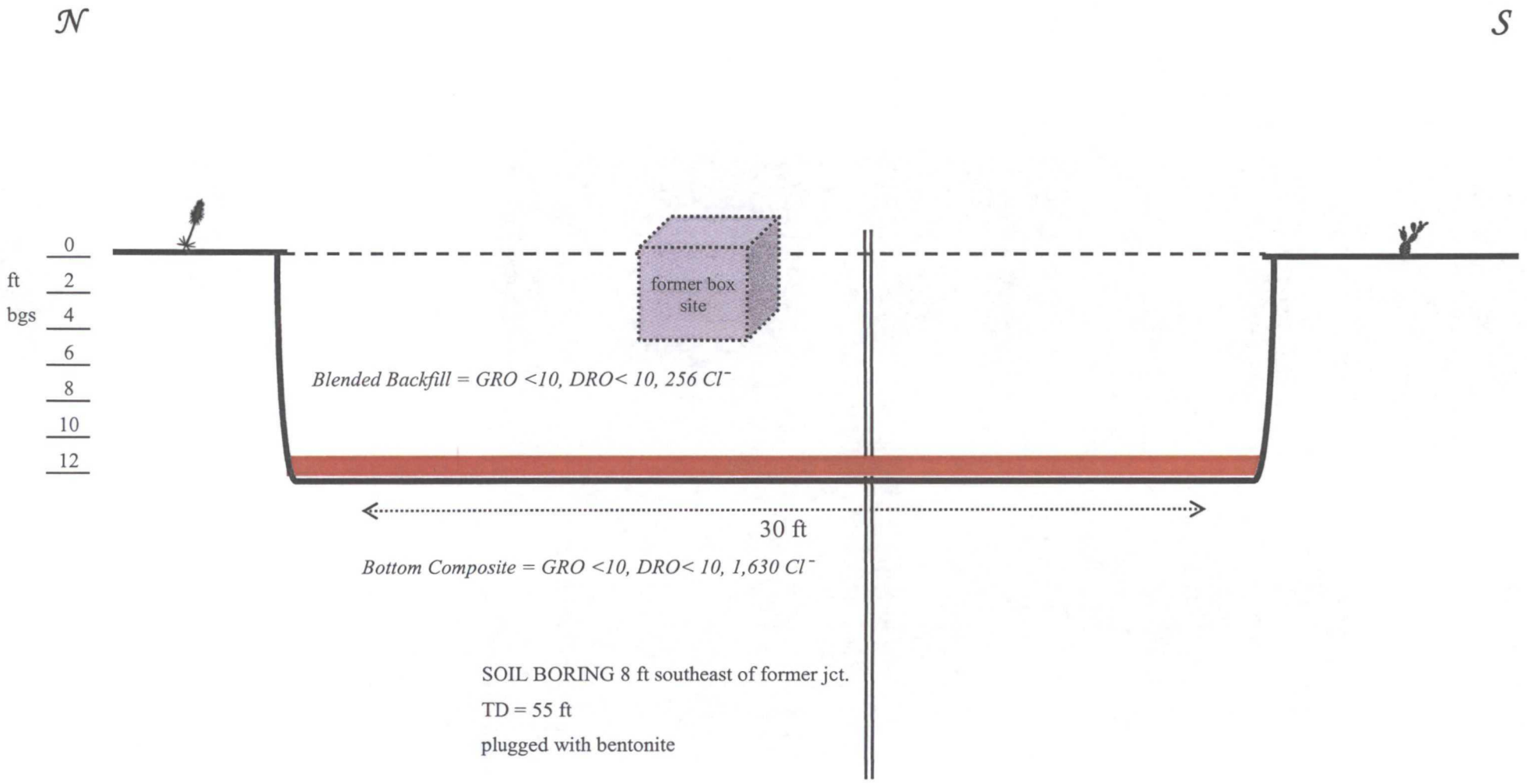
I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: Not Available DATE: 11/8/2010

BD Jct. B-7

Unit B, Section 7, T22S, R38E

Excavation Cross-Section



LABORATORY TEST REPORT

PETTIGREW & ASSOCIATES, P.A.

1110 N. GRIMES
HOBBS, NM 88240
(575) 393-9827

AASHTO R18

DEBRA P. HICKS, P.E./L.S.I.
WILLIAM M. HICKS, III, P.E./P.S.

To: Rice Operating Company
122 W. Taylor
Hobbs, NM 88240

Material: Wallach Red Clay

Test Method: ASTM: D 2922

Project: BD Junction B-7 (22/38)
Project No. 2010.1352

Date of Test: November 29, 2010

Depth: See Below

Depth of Probe: 6"

Test No.	Location	Dry Density % Max	% Moisture	Depth
SG 1	10' N. & 6' E. of SW Corner	90.8	13.2	FSG

RECEIVED
JAN 26 2011
RICE OPERATING
HOBBS, NM

COPY

Control Density: 101.1
ASTM: D 698

Optimum Moisture: 19.0%

Required Compaction: 90-95%

Densometer ID: 5071

Lab No.: 10 11582-11583

Copies To: Rice Operating

PETTIGREW & ASSOCIATES

BY: _____

BY: for Debra Hicks P.E.

Home Office - 1717 East Erwin Street
Tyler, Texas 75702-6398
Office: (903) 595-4421 Lab: (903) 595-6402 Fax: (903) 595-6113
Area Offices
210 Beech Street Texarkana, AR 71854 (870) 772-0013
707 West Cotton St. Longview, TX 75604 (903) 758-0402

Acct ID: PETTIGREW File ID: C4535-101 Date Sampled: 08/19/2010
Report Date: 08/27/2010 Sampled By: Client
Project: Pettigrew Associates - Project #2010.1026, Hobbs, NM By Order Of: Erica Hart
Location: Material Origin: Wallach Pit, Sample Location: N/G Order Number:
Client: Pettigrew & Associates, Hobbs, NM
Contractor: Not Given

REPORT: **FLEXIBLE WALL PERMEAMETER** LAB NO: 9881
Test Method: See Below

TEST RESULTS Report No: 1-1201-000005
Page 2 of 2

TEST READINGS

Z1(Mercury Height Difference @ t1): 5.1 cm Hydraulic Gradient = 9.20

Date	elapsed t (seconds)	Z (pipet @ t)	□□□ (cm)	temp (deg C)	□ (temp corr)	k (cm/sec)	k (ft./day)	Reset = *
8/23/2010	960	6.1	0.5571305	25	0.889	5.01E-08	1.42E-04	
8/23/2010	1200	6	0.6571305	25	0.889	4.78E-08	1.35E-04	
8/23/2010	1500	5.9	0.7571305	25	0.889	4.46E-08	1.26E-04	
8/23/2010	1800	5.8	0.8571305	25	0.889	4.25E-08	1.21E-04	

SUMMARY

ka = 4.62E-08 cm/sec Acceptance criteria = 25 %

ki		Vm	
k1 =	5.01E-08 cm/sec	8.3	%
k2 =	4.78E-08 cm/sec	3.3	%
k3 =	4.46E-08 cm/sec	3.6	%
k4 =	4.25E-08 cm/sec	8.0	%

$$Vm = \frac{|ka-ki|}{ka} \times 100$$

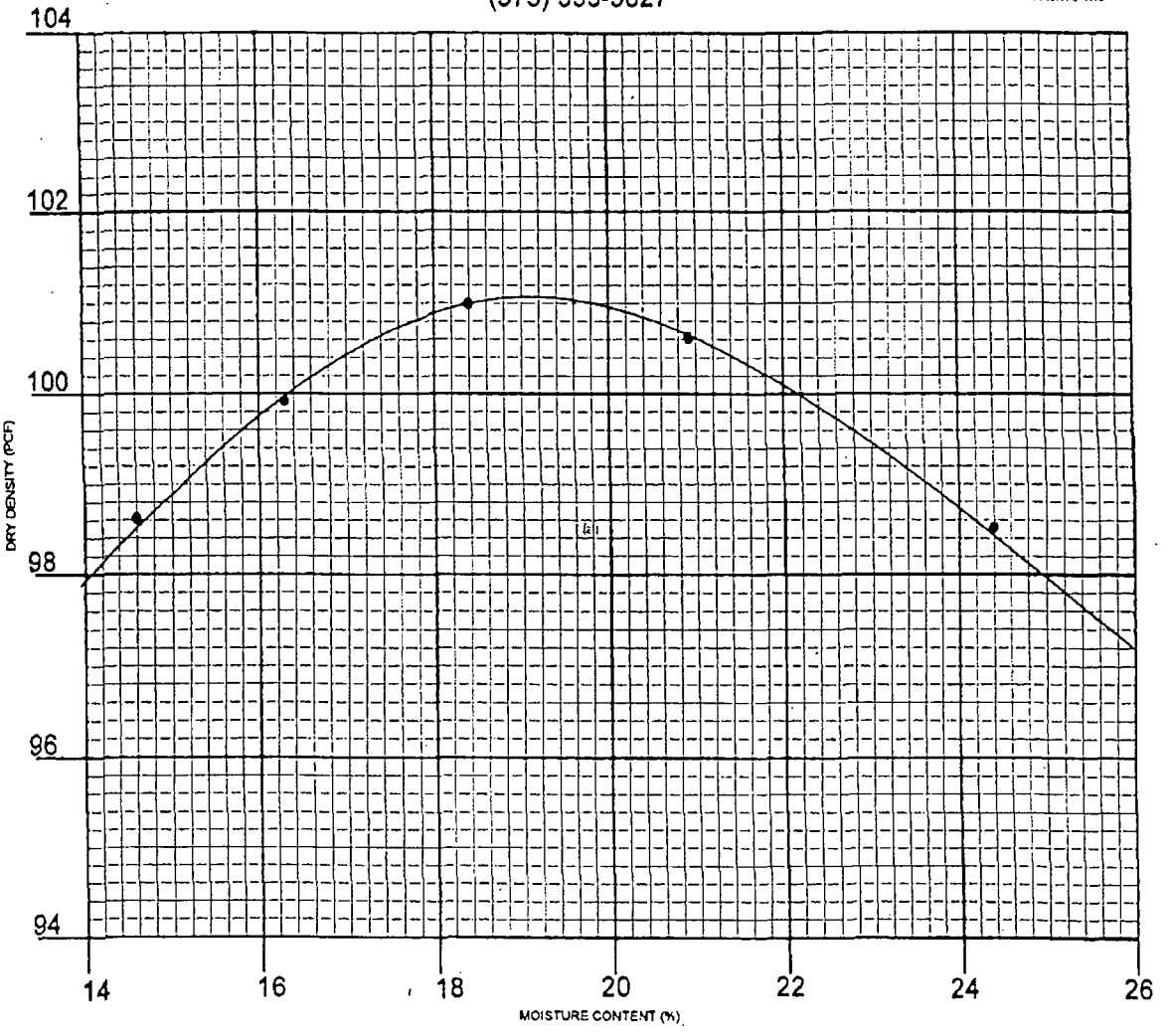
Hydraulic conductivity	k =	4.62E-08	cm/sec	1.31E-04	ft/day
Void Ratio	e =	0.73			
Porosity	n =	0.42			
Bulk Density	□□□	1.94	g/cm3	121.2	pcf
Water Content	W =	0.42	cm3/cm3	(at 20 deg C)	
Intrinsic Permeability	kint =	4.74E-13	cm2	(at 20 deg C)	

Remarks: **These tests were performed solely at the request of the Client for his own use. No warranties are expressed or implied regarding the suitability of the site for construction or whether or not the reported data represents all conditions of the site.**

Charge: Pettigrew & Associates Attn: Erica Hart
Orig: Pettigrew & Associates, Hobbs, NM Attn: Erica Hart
1-ec Pettigrew & Associates, Hobbs, NM Attn: Erica Hart
E-Mail: ehart@pettigrew.us

PETTIGREW & ASSOCIATES, P.
1110 N. GRIMES ST.
HOBBS, NM 88240
(575) 393-9827

AASHTO R18



General Information

CLIENT: Rice Operating PROJECT: Project No. 2010.1026

SAMPLE LOCATION: Wallach Pit

SOIL DESCRIPTION: Wallach Red Clay

SOIL CLASSIFICATION: _____ TEST METHOD: ASTM: D 698

ATTERBERG: LL ___ PI ___ Sampled & Delivered 8/13/10

DATE: 8/13/10 LAB NO. 10 5904-5906

DRY WEIGHT LB/CU. FT. 101.1 MOISTURE CONTENT % 19.0

SIEVE ANALYSIS - % PASSING									

PETTIGREW & ASSOCIATES

BY: Erica M Hart

BY: [signature] P.E

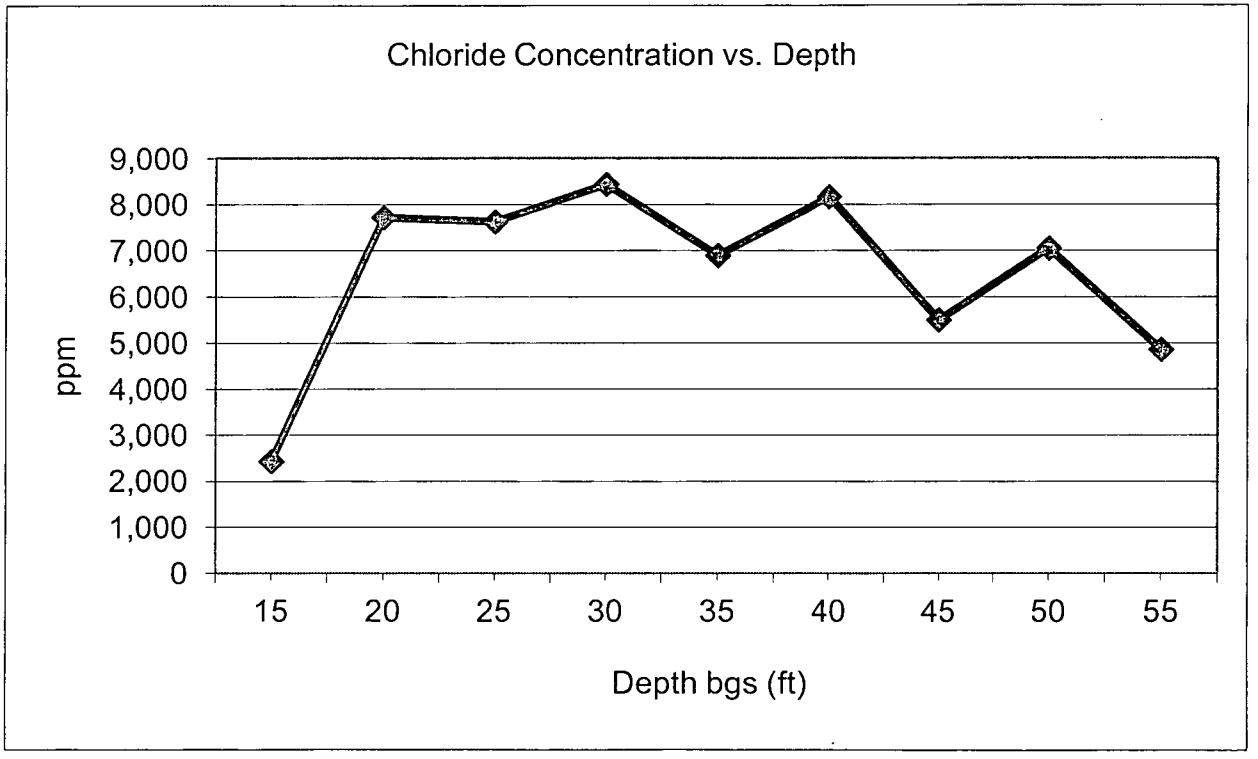
COPIES: Rice Operating

BD Jct. B-7

Unit 'B', Sec. 7, T22S, R38E

Soil Bore samples at 8 ft southeast of the junction (source)

Depth bgs (ft)	[Cl] ppm
15	2,426
20	7,719
25	7,623
30	8,437
35	6,889
40	8,165
45	5,499
50	7,051
55	4,861



Groundwater = 55 ft

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

VEGETATION FORM

1. General Information

Site name: BD B-7 JCT						
U/L B	Section 7	Township 22S	Range 38E	County Lea	Latitude N 32° 24.804'	Longitude W 103° 5.909'
Contact Name: Bruce Baker						
Email: bbaker@rice-ecs.com						
Site size: 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):
Texture: Sandy	Describe soil & subsoil: Blow sand and subsoil caliche			
Soil prep methods:	Rip ☐ Depth(in):	Disc ☐ Depth (in):	Rollerpack ☐	
Date completed: 12/1/2010				

3. Bioremediation

Fertilizer ☐	Hay ☐	Other ☐
Type:		Describe:
Lbs/acre:		

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: 11 lbs blue grama	Seeding date: 1/6/2012
Broadcast ☒ Method: Portable seeder			
Soil conditions during seeding: Dry ☒ Damp ☐ Wet ☐			
Photos attached ☒ Number of photos:	Observations:		

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: Oscar Frayre	Title: Environmental Tech.	Date:1/6/2012
Signature:		