1R - 426-296

REPORTS

DATE:

3-29-11

IR426-296

BD Jct. D-18

2010

CLOSURE

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
Blinebry-Drinkard (BD)	Jct. D-18	D	18	21S	38E	Lea	Moved 275' South		

LAND TYPE: BLM ___ STATE ___ FEE LANDOWNER N. B. Bunin, Trust OTHER ___

Depth to Groundwater None feet NMOCD SITE ASSESSMENT RANKING SCORE: 0

Date Started 2/25/2010 Date Completed 3/25/2010 OCD Witness no

Soil Excavated 133.3 cubic yards Excavation Length 20 Width 15 Depth 12 feet

Soil Disposed 180 cubic yards Offsite Facility Sundance Services Location Eunice, NM

FINAL ANALYTICAL RESULTS:

Sample Date 3/5/2010, 3/9/2010, 7/29/2010 **Sample Depth** 12 ft, 27 ft., 33 ft.

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.	0	<10.0	<10.0	2,800
BOTTOM COMP.	2.3	<10.0	<10.0	3,120
BACKFILL COMP.	1.5	<10.0	<10.0	1,330
SB #1 @ 27 ft.	0.0	<10.0	<10.0	1,840
SB #1 @ 33 ft.	0.0	<10.0	<10.0	304

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
4-wall comp.	n/a	2761
bottom comp.	12'	1340
backfill comp.	n/a	1257
soil bore 31' east of the junction (source)	3'	634
	6'	685
	9'	664
	12'	469
	15'	739
	18'	404
	21'	431
	24'	225
	27'	1,277
	30'	810
	33'	123

General Description of Remedial Action: This junction was addressed during the pipeline replacement/upgrade program. A new water tight junction box was built 275 ft. south of the former box. After the former junction box was removed, an investigation was conducted using a backhoe to collect samples at regular intervals creating a 20X15X12-ft. deep excavation. Chloride field tests performed on each sample yielded concentrations that did not relent with depth. Organic vapors were measured using a PID, which yielded low concentrations. The blended backfill was blended on site and representative samples were collected from the blended backfill, the bottom of the excavation, and excavation walls. The representative samples were sent to a commercial laboratory for analysis of chloride and TPH. The excavation was backfilled with the blended backfill to 5 ft. below ground surface (BGS). At 5-4 ft. BGS, a 1-ft. thick clay barrier was installed with a compaction test performed on 3/10/2010. The remaining excavation was backfilled with clean imported soil to ground surface and contoured to the surrounding area. On 3/25/2010, the site was seeded with a blend of native vegetation and is expected to return to a productive capacity at a normal rate. An identification marker was placed on the surface at the former junction box to mark the presence of clay below. On 7/29/2010, a soil bore was initiated to further investigate the depth of chloride presence. Due to an overhead power line directly above the former junction box the soil bore was drilled 31 ft. east of the former junction box. The boring was advanced to 80 ft. BGS with soil samples collected every 3 ft. to a depth of 33 ft. Chloride field tests performed on each sample yielded chloride concentrations that did relent with depth. Organic vapors were measured using a PID, which yielded low concentrations. Since the hydrology of the area is limited and estimated groundwater was 43 ft., the bore was advanced to 80 ft. BGS. The bore hole was left open for 48 hours and hole was gauged with a solinist level meter which indicated no water was present. The bore hole was plugged with bentonite to ground surface.

Enclosed: photos, boring log, lab results, PID (field) screening, cross-section, compaction test, hydraulic conductivity, proctor, bore hole condition report, chloride curve.

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

SITE SUPERVISOR Robert Egans SIGNATURE Robert Egans COMPANY RICE OPERATING COMPANY

REPORT ASSEMBLED BY Larry Bruce Baker Jr. INITIAL LBB

PROJECT LEADER Larry Bruce Baker Jr. SIGNATURE Larry Bruce Baker Jr. DATE 3-29-11

BD Jct. D-18

UL/ D, SEC 18, T21S, R38E

site prior to excavation 2/25/2010

collecting soil samples 3/2/2010

clay compaction test 3/10/2010

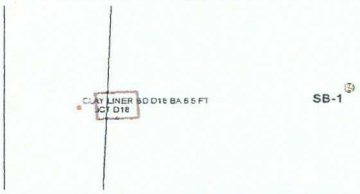
seeding the backfilled site 3/25/2010

new, water-tight junction box 5/14/2010

drilling SB-1 31 ft east of the former junction box 7/29/2010

plugging SB-1 with bentonite to the ground surface 8/3/2010

Logger:	Lara Weinheimer
Driller:	Harrison & Cooper
Consultant:	RECS
Drilling Method	Air Rotary
Start Date:	7/29/2010
End Date:	7/29/2010



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC — RECS

Project Name: BD jct. D-18 **Well ID:** SB-1

Location: UL D sec. 18 T21S R38E
Lat: N 32°28'57.637" **County:** Lea
Long: W 103°6'18.026" **State:** NM

Comments: All samples from cuttings. Located 31 feet east of the former junction box site.
Drafted by: Lara Weinheimer
TD = 80 ft Depth to groundwater = None

Depth (feet)	chloride field tests	LAB	PID	Description
				Light brown very fine sand with caliche. Dry. No odor.
3 ft	634		0.4	
				Orangey brown very fine sand with caliche. Dry. No odor.
6 ft	685		0.4	
9 ft	664		0.1	
				Yellowish brown very fine sand with caliche. Dry. No odor.
12 ft	469		0.1	
15 ft	739		0.5	
				Tan very fine sand. Dry. No odor.
18 ft	404		0.2	
				Light brown very fine sand. Dry. No odor.
21 ft	431		0.2	
				Tan very fine sand. Dry. No odor.
24 ft	225		0.3	

Lithology

Well Construction

bentonite seal

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Yellowish brown very fine sand with sandstone. Dry. No odor.		
27 ft	1277	Cl-1840	0			
		GRO <10		Yellowish orange very fine sand with sandstone. Dry. No odor.		
		DRO <10				
30 ft	810		0			
				Red bed clay. Dry. No odor.		
33 ft	123	Cl - 304	0			
		GRO <10				
		DRO <10				

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:	07/30/2010	Sampling Date:	07/29/2010
Reported:	08/06/2010	Sampling Type:	Soil
Project Name:	BD JCT. D-18	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	BD JCT. D-18		

Sample ID: SB-1 @ 27' (H020465-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1840**	16.0	08/02/2010	ND	448	112	400	3.64	QM-05

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	08/04/2010	ND	167	83.5	200	1.23	
DRO >C10-C28	<10.0	10.0	08/04/2010	ND	160	80.2	200	0.545	

Surrogate: 1-Chlorooctane	*81.7 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*103 %*	*70-130*

Sample ID: SB-1 @ 33' (H020465-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**304**	16.0	08/06/2010	ND	448	112	400	3.64	QM-05

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	08/04/2010	ND	167	83.5	200	1.23	
DRO >C10-C28	<10.0	10.0	08/04/2010	ND	160	80.2	200	0.545	

Surrogate: 1-Chlorooctane	*77.8 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*103 %*	*70-130*

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: Hack Conder	P.O. #:
Address: 122 West Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: 393-9174 Fax #: 397-1471	Address:
Project #: Project Owner:	City:
Project Name: BD jct. D-18	State: Zip:
Project Location: BD jct. D-18	Phone #:
Sampler Name: L. Weinheimer	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	TDS				
H20465-1	SB-1 @ 27'	G	1			✓					✓		9/29/10	03:49	✓	✓								
2	SB-1 @ 33'	G	1			✓					✓		9/29/10	04:10	✓	✓								

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Relinquished By: L. Weinheimer	Date: Time:	Received By:	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: 9.30.10 Time: 9:00	Received By: Jodi Henson	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; kjones@riceswd.com Lweinheimer@rice-ecs.com

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

#26

RICE OPERATING COMPANY

122 West Taylor ~ Hobbs, NM 88240
PHONE: (575) 393-9174 FAX: (575) 397-1471

PID METER CALIBRATION & FIELD REPORT FORM

CK		MODEL: PGM 7300	SERIAL NO: 590-000183
MODEL	✓	MODEL: PGM 7300	SERIAL NO: 590-000504 8
NO.		MODEL: PGM 7600	SERIAL NO: 110-12383
		MODEL: PGM 7600	SERIAL NO: 110-02920

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO:	930132	EXPIRATION DATE:	4-28-13
FILL DATE:		METER READING ACCURACY:	100.0

ACCURACY: +/- 2%

SYSTEM	SITE	UNIT	SECTION	TOWNSHIP	RANGE
BD	jct D-18	D	18	T21S	R 38E

SAMPLE ID: SB-1

DEPTH	PID	DEPTH	PID	DEPTH	PID	DEPTH	PID
3'	0.4	33'	0				
6'	0.4						
9'	0.1						
12'	0.1						
15'	0.5						
18'	0.2						
21'	0.2						
24'	0.3						
27'	0						
30'	0						

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

Signature _____ Date 7-28-10

SITE MAP

N

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: BRUCE BAKER
122 W. TAYLOR
HOBBS, NM 88240

Receiving Date: 03/05/10
Reporting Date: 03/09/10
Project Number: NOT GIVEN
Project Name: BD JCT. D-18 (21/38)
Project Location: BD JCT. D-18 (21/38)

Sampling Date: 03/05/10
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: AB/HM

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/kg)	DRO (>C_{10}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		03/08/10	03/08/10	03/08/10
H19397-1	5PT BOTTOM COMPOSITE	<10.0	<10.0	3,120
H19397-2	4-WALL COMPOSITE	<10.0	<10.0	2,800
Quality Control		458	544	500
True Value QC		500	500	500
% Recovery		91.6	109	100
Relative Percent Difference		4.6	4.5	< 0.1

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl^-: Std. Methods 4500-Cl^-B
*Analyses performed on 1:4 w:v aqueous extracts.
Reported on wet weight.

COPY

Chemist

03/10/10
Date

H19397 TCL RICE

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:	Bruce Baker	P.O. #:	
Address:	122 W 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. D-18 (21138)	State: Zip:	
Project Location:		Phone #:	
Sampler Name:	Robert	Fax #:	

ANALYSIS REQUEST

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	TIME	Cl	TPH 8015M
H19397-1	5pt Bottom Composite	C	1			✓					✓		3-5-2010	1:13pm	✓	✓
-2	4-Wall Composite	C	1			✓					✓		3-5-2010	1:32pm	✓	✓

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Relinquished By:	Date: / Time:	Received By:	
Relinquished By: Robert Byrd	Date: 3/5/10 Time: 4:35	Received By: Jodie Henson	
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:

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

#26

RICE OPERATING COMPANY

122 West Tayor Hobbs, NM 88240
PHONE: (575) 393-9174 FAX: (575) 397-1471

PID METER CALIBRATION & FIELD REPORT FORM

Check Model Number:

Check	Model	Serial No	Check	Model	Serial No
	Model: PGM 7300	Serial No: 590-000183		Model: PGM 7600	Serial No: 110-023920
✓	Model: PGM 7300	Serial No: 590-000508		Model: PGM 7600	Serial No: 110-013744
	Model: PGM 7300	Serial No: 590-000504		Model: PGM 7600	Serial No: 110-013676

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : 928167	EXPIRATION DATE: 1-17-2013
FILL DATE:	METER READING ACCURACY: 100 ppm

ACCURACY : +/- 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	D-18	D	18	21	38

SAMPLE ID	PID	SAMPLE ID	PID
5pt Bottom Composite	2.3		
4-Wall Composite	0		

COPY

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

SIGNATUE: [signature] DATE: 3-5-2010

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: BRUCE BAKER
122 W. TAYLOR
HOBBS, NM 88240

Receiving Date: 03/09/10
Reporting Date: 03/12/10
Project Number: NOT GIVEN
Project Name: BD JCT. D-18 (21/38)
Project Location: BD JCT. D-18 (21/38)

Sampling Date: 03/09/10
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: AB/HM

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/kg)	DRO (>C_{10}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		03/11/10	03/11/10	03/10/10
H19408-1	BLENDED BACKFILL	<10.0	<10.0	1,330
Quality Control		415	470	500
True Value QC		500	500	500
% Recovery		83.0	94.0	100
Relative Percent Difference		0.1	2.6	< 0.1

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl^-: Std. Methods 4500-Cl^-B
*Analysis performed on a 1:4 w:v aqueous extract.
Reported on wet weight.

COPY

Chemist

03/12/10
Date

H19408 TCL RICE

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:	Bruce Baker	P.O. #:	
Address:	122 W. 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. D-18 21138		State: Zip:
Project Location:			Phone #:
Sampler Name:	Robert		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			Cl	TPH 8015M								
H19408-1	Blended BackFill	C	1			✓					✓		3-9-10	11:48am			✓	✓								

Relinquished By:	Date:	Received By:	Phone Result: ☐ Yes ☐ No	Add'l Phone #:
	Time:		Fax Result: ☐ Yes ☐ No	Add'l Fax #:
Relinquished By: Robert Egans	Date: 3/9/10 Time: 4:20	Received By: Jodi Henson	REMARKS: E-Mail Results TO: Jpervis@RiceSWD.com Bbaker " " R Egans " "	
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

RICE OPERATING COMPANY

122 West Tayor Hobbs, NM 88240
PHONE: (575) 393-9174 FAX: (575) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

Check Model Number:

	Model: PGM 7300	Serial No: 590-000183			Model: PGM 7600	Serial No: 110-023920
V	Model: PGM 7300	Serial No: 590-000508			Model: PGM 7600	Serial No: 110-013744
	Model: PGM 7300	Serial No: 590-000504			Model: PGM 7600	Serial No: 110-013676

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : 928167	EXPIRATION DATE: 1-17-2013
FILL DATE:	METER READING ACCURACY: 100 ppm

ACCURACY : +/- 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	D-18	D	18	21	38

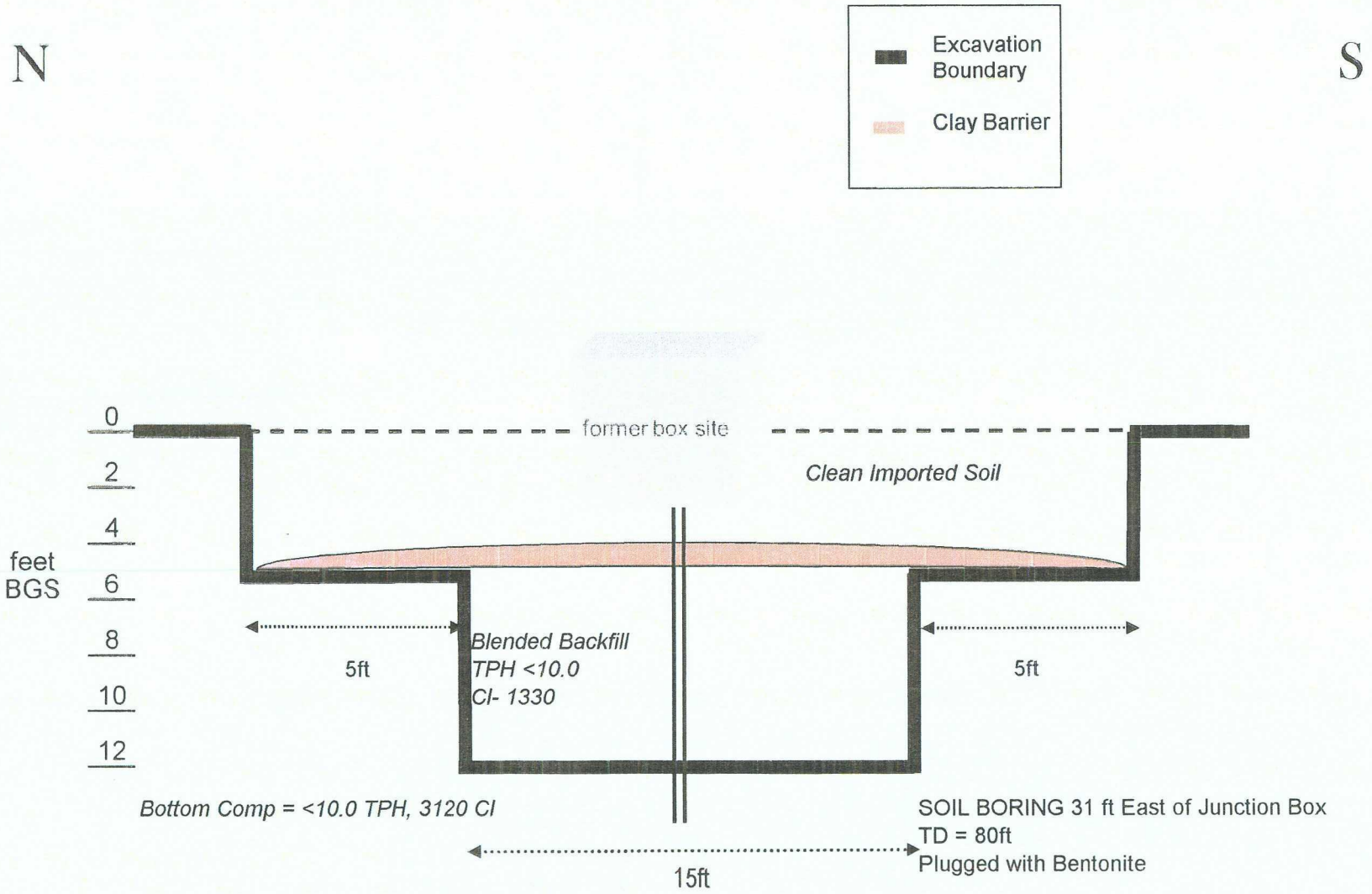
SAMPLE ID	PID	SAMPLE ID	PID
Blended Backfill	1.5		
		COPY	

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

SIGNATUE: Robert Tarin DATE: 3-9-2010

BD Jct D-18
Unit 'D', Sec. 18, T21S, 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 JCT D-18 (22/38)
Project No. 2010.1068

Date of Test: March 10, 2010

Depth: See Below

Depth of Probe: 12"

Test No.	Location	*Dry Density % Max	% Moisture	Depth
SG 1	Pit - 10' S. & 15' W. of NE Corner	92.6	14.9	FSG

Control Density: 102.3
ASTM: D 698

Optimum Moisture: 20.3%

Required Compaction: 90-95%

Densometer ID: 5572

Lab No.: 10 2641-2642

Copies To: Rice Operating

PETTIGREW & ASSOCIATES

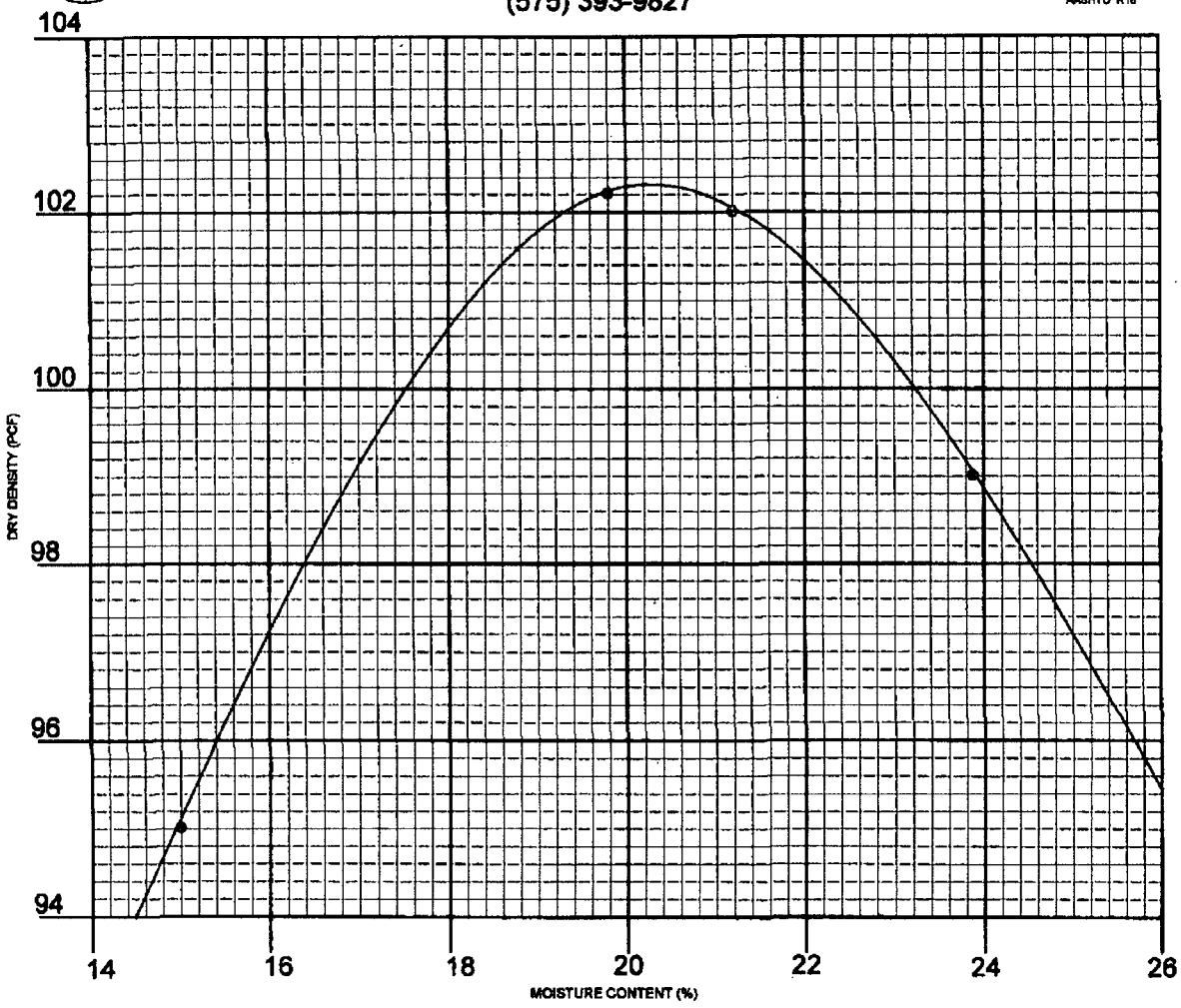
BY: Erica Hart

BY: _____ P.E.

*Corrected Copy 2/17/10

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

AASHTO R18



General Information

CLIENT: Rice Operating PROJECT: Project No. 2010.1026

SAMPLE LOCATION: Eunice Wallach Plant

SOIL DESCRIPTION: Wallach Red Clay

SOIL CLASSIFICATION: _____ TEST METHOD: ASTM: D 698

ATTERBERG: LL ____ PI ____ Sampled & Delivered 2/8/10

DATE: 2/12/10 LAB NO. 10 1422-1424

DRY WEIGHT LB/CU. FT. 102.3 MOISTURE CONTENT % 20.3

SIEVE ANALYSIS - % PASSING									

COPY

PETTIGREW & ASSOCIATES

BY: Erica M Hart

COPIES: Rice Operating

BY: _____ P.E

ETTL Engineers & Consultants Inc.

GEOTECHNICAL * MATERIALS * ENVIRONMENTAL * DRILLING * LANDFILLS

HYDRAULIC CONDUCTIVITY DETERMINATION
FLEXIBLE WALL PERMEAMETER - CONSTANT VOLUME
(Mercury Permometer Test)

Project : Pettigrew & Associates, P.A., Hobbs, NM - Project #2010.1026 — Report No: 1-1201-000003

Date: 2/5/2010 — Panel Number : P 3 ; ASTM D 5084

Project No. : C 4635-101 — Permometer Data

Boring No.:		ap =	0.031416 cm2	Set Mercury to Pinal Rp at		Equilibrium	1.8	cm3
Sample:	9540	aa =	0.767120 cm2			Pipet Rp	6.7	cm3
Depth (ft):		M1 =	0.030180	C =	0.000434704	Annulus Ra	1.5	cm3
Other Location:	Wallach Plant Eunice	M2 =	1.040953	T =	0.203790626			

Material Description : Red Clay (Your Sample No 10 1422-1424) Compacted D 698 at 95% of your M/D curve (wet side)

SAMPLE DATA

Wet Wt. sample + ring or tare :			561.37	g					
Tare or ring Wt. :			0.0	g		Before Test		After Test	
Wet Wt. of Sample :			561.37	g	Tare No.:	T 5	Tare No.:	T 3
Diameter :	2.77	in	7.05	cm2	Wet Wt.+tare:	731.90	Wet Wt.+tare:	800.51
Length :	2.79	in	7.08	cm	Dry Wt.+tare:	641.75	Dry Wt.+tare:	690.35
Area:	6.04	in^2	38.99	cm2	Tare Wt:	218.78	Tare Wt:	220.69
Volume :	16.84	in^3	276.92	cm3	Dry Wt.:	422.97	Dry Wt.:	469.66
Unit Wt.(wet):	126.85	pcf	2.03	g/cm^3	Water Wt.:	90.15	Water Wt.:	110.16
Unit Wt.(dry):	104.65	pcf	1.68	g/cm^3	% moist.:	21.3	% moist.:	23.5

Specific Gravity:	2.77	Max Dry Density(pcf) =	104.6946	OMC =	21.3135683
		% of max =	100.0	+/- OMC =	0.00
Calculated % saturation:	99.58	Void ratio (e) =	0.65	Porosity (n) =	0.39

TEST READINGS

Z1(Mercury Height Difference @ t1): 5.1 cm — Hydraulic Gradient = 9.10

Date	elapsed t (seconds)	Z (pipet @ t)	ΔZπ (cm)	temp (deg C)	α (temp corr)	k (cm/sec)	k (ft./day)	Reset = *
2/5/2010	4740	6	0.656997	25	0.889	1.17E-08	3.32E-05	
2/5/2010	5940	5.9	0.756997	25	0.889	1.09E-08	3.09E-05	
2/5/2010	6900	5.8	0.856997	25	0.889	1.08E-08	3.05E-05	
2/5/2010	7600	5.7	0.956997	25	0.889	1.08E-08	3.05E-05	

SUMMARY

ka = 1.10E-08 cm/sec — Acceptance criteria = 25 %

ki			Vm	
k1 =	1.17E-08	cm/sec	6.3	%
k2 =	1.09E-08	cm/sec	1.2	%
k3 =	1.08E-08	cm/sec	2.5	%
k4 =	1.08E-08	cm/sec	2.5	%

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

Hydraulic conductivity	k =	1.10E-08	cm/sec	3.13E-05	ft/day
Void Ratio	e =	0.65			
Porosity	n =	0.39			
Bulk Density	γ =	2.03	g/cm3	127.0	pcf
Water Content	W =	0.36	cm3/cm3	(at 20 deg C)	
Intrinsic Permeability	kint =	1.13E-13	cm2	(at 20 deg C)	

Liquid Limit LL		
Plastic Limit PL		
Plasticity Index PI		
- 200 Sieve		%
+ No 40 Sieve		%
+ No 4 Sieve		%

COPY

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Arc Environmental
P. O. Box 1772
Lovington, New Mexico 88260
(575) 631-9310
Rozanne Johnson ~ rozanne@valornet.com

August 2, 2010

Mr. Hack Conder
RICE Operating Company
122 West Taylor
Hobbs, New Mexico 88240

Re: BD Junction D-18

Mr. Conder,

On Monday August 2, 2010 soil bore #1 that was drilled on July 29, 2010, at the BD Junction D-18, Lea County T21S, R38E, Sec 18 Unit Letter D was checked with a Solinist Water Level Meter for water accumulation within the borehole. The meter indicated no water within the borehole to the total depth of 80.05 feet.

Sincerely,
Arc Environmental

Rozanne Johnson
Rozanne Johnson

Electronic Copy: Katie Jones
Jordan Woodfin

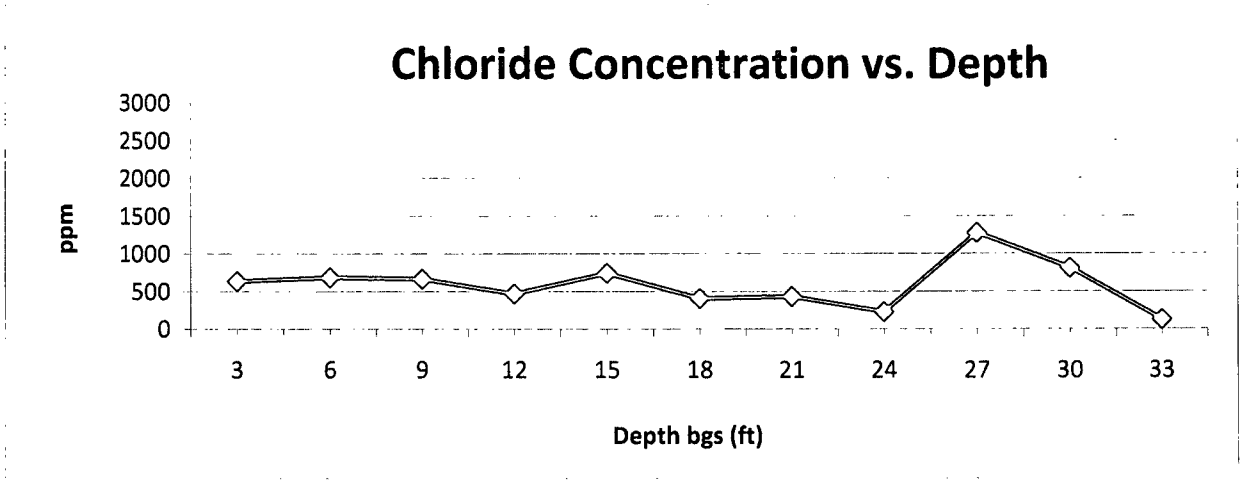
COPY

BD Jct D-18

Unit 'D', Sec. 18, T21S, R38E

Field tests of Soil Bore 31 ft east of the juction box

Depth bgs (ft)	[Cl^-] ppm
3	634
6	685
9	664
12	469
15	739
18	404
21	431
24	225
27	1277
30	810
33	123



Groundwater = none