18-4-1-1-1-1-1

Y / ,

EME Jct. I-9 2013

CLOSURE

RICE Operating Company

122 West Taylor • Hobbs, New Mexico 88240 Phone: (575) 393-9174 • Fax: (575) 397-1471

April 1, 2014

Mr. Leonard Lowe

New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87505

RE: Termination Request

EME Jct. I-9: UL/I, Sec. 9, T20S, R36E

RICE Operating Company - Eunice Monument Eumont SWD System

Mr. Lowe:

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

Background

In 2013, ROC initiated work on the former I-9 junction box. The site is located in UL/I, Sec. 9, T20S, R36E. NM OSE records indicate that groundwater would likely be encountered at a depth of approximately 32 +/- feet. The site was delineated using a backhoe to collect soil samples at regular intervals, creating a 7x3x7-ft deep excavation. A total of 12 yards was properly disposed of at a NMOCD approved facility. Each sample was field titrated for chlorides and field screened using a PID for hydrocarbons, resulting in low concentrations. The 7-ft sample was sent to a commercial laboratory for analysis of chloride and TPH, resulting in a chloride concentration of 96 mg/kg, a gasoline range organics (GRO) concentration and a diesel range organics (DRO) concentration below detectable limits. The excavation was backfilled with imported blow sand to ground surface and contoured to the surrounding area. The blow sand sample was sent a commercial laboratory for analysis of chloride and TPH, resulting in a chloride, GRO, and DRO concentration all below detectable limits. On 6/7/2013, the site was seeded with a blend of native vegetation and is expected to return to a productive capacity at a normal rate. The junction box site map, area map, final report, photo documentation, laboratory analysis, PID sheet, chloride graph, and revegetation form are attached.

Recommendations

Site investigation demonstrates that residual chloride and hydrocarbons in the vadose zone will not with reasonable probability contaminate groundwater in excess of NMOCD standards. This site meets the requirements of the NMOCD-approved Revised Junction Box Upgrade Work Plan (July 16, 2003). As such, ROC request termination of the regulatory file, or similar closure status.

Please contact me at (575)393-2967 if you have any questions or wish to discuss this site. Thank you for your time and consideration.

Sincerely,

RICE Operating Company

Hack Conder

Environmental Manager

enclosures

RICE OPERATING COMPANY JUNCTION BOX FINAL REPORT

_				•	BOX FOCA					
	SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY		MENSIONS - F	
	Eunice Monument	Jct. 1-9	1	9	20S	36E	Lea	Length	Width	Depth
	Eumont (EME)				<u> </u>				Eliminated	
	LAND TYPE: B	SLM	STATE	_ FEE LA	NDOWNER	Faye Klei	n Family Tr	ustOTHER		
	Depth to Groun	dwater	32	_feet	NMOCD	SITE ASSI	ESSMENT	RANKING S	CORE:	20
	Date Started	10/26	/2012	_ Date Co	mpleted	6/7/2013	OCE	Witness	No	
	Soil Excavated	5.4	cubic ya	rds Ex	cavation Le	ength7	Widt	h3	Depth	7feet
	Soil Disposed	12	cubic ya	rds Of	ffsite Facility	Sund	dance	_ Location	Eunice,	NM
FINA	L ANALYTI			oratory test	results comp	oleted by us	ing an app	Sample De	pthtesting	7'
	Sample	PID (fie	14) C	RO	DRO	Chloride		CHLOB	IDE FIELD T	ECTC
	Location		· 1	g/kg	mg/kg	mg/kg	J	LOCATION	DEPTH	
80	URCE 7' GRAB	ppm	_	:10	<10	96		LOCATION	2'	mg/kg 155
30								vertical	3'	
	Blowsand	2.1		:10	<10	<16		delineation		392
_							. 1	trench at the	4'	281
	al Description						<u> </u>	junction	5'	337
	he pipeline replac							(source)	6'	150
remove	ed, an investigatio	n was condu	cted using a	backhoe to	collect soil sar	mples at			7'	111
regular	intervals, creating	g a 7x3x7 ft.	deep excava	ation. Chloride	e field tests pe	erformed on				
each sa	ample yielded cor	centrations t	hat decreas	ed with depth	n. Organic vap	ors were me	asured usir	ig a PID, which	yielded low	
concen	trations. The deep	pest sample,	7 ft. below o	ground surfac	ce (BGS) was	sent to a co	mmercial la	boratory for ana	alysis of chloric	le and
TPH, w	hich confirmed lo	w concentrat	ions of each	. The excava	tion was back	filled with im	ported blow	sand to ground	surface and o	contoured
to the s	urrounding area.	The blow sar	nd was sent	to a commer	cial laborator	y for analysis	of chloride	and TPH, which	n confirmed lov	v
	trations of each. (•				
	y at a normal rate							+		
oupuon	, at a morniar rate									
			uclusiires, s	ite man area	a man inhotos	: Jah results	PID (field)	screenings, chlo	oride graph, re	vegetation form
IHE	REBY CERTIF				OVE IS TRU	JE AND CO				
					AND BEL	.11.				
	EPORT					. 1/1	10.)	Rice Environm	ental Consulting
ASS	SEMBLED BY	Laura Flore	esSIG	SNATURE	VIII T	USH	OUV	COMPANY	& 8	Safety
										ental Consulting
SITE SU	JPERVISOR	Dyllan Yarbro	ough SIG	SNATURE		Not available		COMPANY	8	Safety
PROJE	CT LEADER	Kido Norma	010	SNATURE	1/1/1	1			2-29	1-14

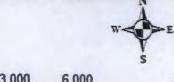
Site Map

				TTICAP			
16	15	14	13	18	17	16	15
21	22	23	24	™ 19	20	21	22
28	27	19\$ 36E 26	25	30	19\$ 37E 29	28 MONUMEN	27
33	34	35 Chirtess Rd.	36	31	32	33 Billy Walker Rd.	34
4	3	2		6	5	4	3
9 E	IE Jct. I-9 10	11 20\$ 36E	12 • peo	7	8 20\$ 37E	g- 1	10
16	15	14	13	18	17	16	15
21	22	23	24	19 ource, Estri, DigitalGlob _E lmapping ,£erogrid, IG	20 e GeoEye, Foutet, USD di, IGF, sylisticpo, and t	2 4, USGS, ABA, rp GIS User Communit	22



EME Jct. I-9

Unit Letter I, Section 9, T20S, R36E Lea County, NM



0 3,000 6,000 HHH Feet

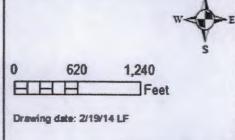
Drawing date: 2/19/14 LF

Area Map EME JC 1-9 20S 36E 16



EME Jct. I-9

Unit Letter I, Section 9, T20S, R36E Lea County, NM

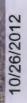


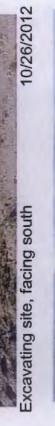
EME Jct. I-9



Site prior, facing east









Seeding site, facing south

10/26/2012

Backfilling excavation

6/7/2013



October 29, 2012

ZACH CONDER

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

112 W. TAYLOR

HOBBS, NM 88240

RE: EME I-9 JCT

Enclosed are the results of analyses for samples received by the laboratory on 10/26/12 10:57.

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.

Celeg & Keine

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

Lab Director/Quality Manager





Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY ZACH CONDER

112 W. TAYLOR HOBBS NM, 88240

Fax To: (575) 397-1471

Received:

10/26/2012

Sampling Date:

10/26/2012

Reported:

10/29/2012

Sampling Type:

Soil

Project Name:

EME I-9 JCT

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: 7' VERTICAL INITIAL (H202617-01)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					, .
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	10/29/2012	ND	400	100	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: M5					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/26/2012	ND	199	99.6	200	0.0954	
DRO >C10-C28	<10.0	10.0	10/26/2012	ND	218	109	200	2.13	
Surrogate: 1-Chlorooctane	74.7	% 65.2-14	0	****					
Surrogate: 1-Chlorooctadecane	78.7	% 63.6-15	4						

Cardinal Laboratories *=Accredited Analyte

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Celey D. Keine



Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

** Samples not received at proper temperature of 6°C or below.

*** Insufficient time to reach temperature.

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey & Keene

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

, NM 88240	FAX (575) 393-2476
and, Hobbs	FAX (575
101 East Marland, Hobbs,	575) 393-2326
Ť	9

Company Name:	\(\frac{1}{2}\)		BILL TO	ANALYSIS REQUEST
Project Manager:	Zinch (andri	ACCIDENT PROPERTY (ACCIDENT TO THE CONTRACT OF	P.O. #:	
Address:	4	AND THE PROPERTY AND PROPERTY OF THE PROPERTY	Company:	
City:	State:	Zip;	Attn:	
Phone #:	Fax#:	ACCOUNTS OF A STREET AND A STREET ASSESSMENT	Address:	TO THE MANAGEMENT AND ADDRESS OF THE PARTY O
Project #:	Project Owner:	***	City:	
Project Name:			State: Zip:	
Project Location:	Front I-9 JC		Phone #:	
Sampler Name:	,		Fax #:	
FOR LAB USE ONLY		MATRIX	PRESERV, SAMPLING	9)
Lab I.D.	Sample I.D.	G)RAB OR (C)OMP. CONTAINERS YASTEWATER JOIL JIC	OTHER: CE / COOL DTHER:	-HJ.
PLEASE NOTE: Liability and Damanylass, allowing the service. In no even y shall careful affiliates as successfor missing out of Relinquished By:	PLEASE NOTE: Liability and Damnyes: Cardinar's liability and stends exclusive cerredy los any chain arising whether bases in contact or lost, shall be lended to the annual paid by the client for the same and several by the client for the same and several by the client for the same and several by the client and by the client and several the same and several by the client and by the client and several the same and several by the client and several the several by the client and several the several by the several b	ry dann arsang whether buses it continued between the continued between the same in which whether a webout it infaulton, bankers infarcations, a rational regardless of whether such dain Roceived By:	sing whether beave is contact or fart, shall be finded to the account and by the client to the west unless make in which and received by Cardinal Wind but handers for completion of the all values to what the sanders of whether such chains is based upon any of the above stated resons or otherwise surfaces of whether such chain is based upon any of the above stated resons or otherwise INVOC By: Far Resoults: Far Resoults:	Yes □ No Add'l Fax#:
Relinquished By:	Date:	Received By:	1,000	ا د ا
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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 LOT NO: HAL-248-	100-1	SERIAL SERIAL SERIAL ON: ISOBUTY ER READING	NO: 590-000508 NO: 590-000504 NO: 592-903318 NO: 590-000183 LENE 100PPM / AIR: EXPIRATION DATE: ACCURACY: 100 CY:+/-2%	BALANCE	
			MPANY OPERATING		
SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
EME	Jct. I-9	I	9	208	36E
	MPLE ID urce @ 7'	PID	SA	MPLE ID	PID
I ve	rify that I have calibrated th	e above instrum	nent in accordance to th	e manufacture operation man	ual.

Not available

DATE: 10/26/2012

SIGNATURE:

CCL



June 11, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME I-9 JCT

Enclosed are the results of analyses for samples received by the laboratory on 06/05/13 16:55.

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/ga/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.

Celey & Keine

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

Lab Director/Quality Manager





Analytical Results For:

Rice Operating Company Hack Conder 112 W. Taylor Hobbs NM, 88240

Fax To:

(575) 397-1471

Received: Reported: 06/05/2013

06/11/2013

Project Name: Project Number: EME I-9 JCT NONE GIVEN

Project Location:

NOT GIVEN

Sampling Date:

06/05/2013

Sampling Type:

Soil

Sampling Condition:

Cool & Intact

Sample Received By:

Jodi Henson

Sample ID: BLOWSAND (H301314-01)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	06/11/2013	ND	432	108	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/07/2013	ND	199	99.6	200	2.79	
DRO >C10-C28	<10.0	10.0	06/07/2013	ND	209	104	200	5.01	
Surrogate: 1-Chlorooctane	103	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	111	% 63.6-15	4						

Cardinal Laboratories *=Accredited Analyte

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Celey D. Keene



ND

Notes and Definitions

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

Analyte NOT DETECTED at or above the reporting limit

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Celey D. Keine

CARDINAL Laboratories

101 East Marland, Hobbs, NM 88240

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Sample I.D. Sample I.D. Sample South Sale in the section of the	Company Name:	(575) 393-2326 FAX (575) 393-2476	9.				ANA! VSIC	PEOMENT		
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B. F. Fax E. Address: Company: Ct Name: Address: Address: Address: Address: Address: Ct Name: Address: Address: Address: Ct Name: Address: Address: Address: Ct Location: Ch Name: State: 2 pp. Phone 6: Phone 9: Phone 6: Phone 6: Phone 6: Phone 6: Phone 9: Phone 6: Phone 6: Phone 9: Phone 6: Phone 9:	Project Manager:	Hack Cander		P.O. #:	,					
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Time: Sample Condition Chephysical Time: Sample Condition Chephysical Cool Integrate Co	**	hosping negligence and any other cause whatboover shall be not by fairly for holdertal or consequents damages, including	deemed walved unless made in writing an yathout limitation, business interruptions,	rd received by Cardinal within 30 c	days after completion of the applicable stred by client, its subaldiaries,					
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RICE ENVIRONMENTAL CONSULTING & SAFETY

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

	TID METER	CALIBRATIO	N & FILLD REPORT I	ONV	7. E.
CK. NO. X	MODEL: PGM 7300 MODEL: PGM 7300 MODEL: PGM 7320 MODEL: PGM 7300	SERIAL SERIAL	NO: 590-000508 NO: 590-000504 NO: 592-903318 NO: 590-000183		
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OT NO: HAL-248-		TED DE ADDIC	EXPIRATION DATE:	: 7/1/2015	
W/W/W/W/W/W/W/W/W/W/W/W/W/W/W/W/W/W/W/	MEI		GACCURACY: 100 CY:+/-2%		
		CO	MPANY		
		RICE	OPERATING		
SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANG
ЕМЕ	Jct. 1-9	I	9	208	36E
SA	MPLE ID	PID	l SA	AMPLE ID	PID
	lowsand	2.1			1.2
D	lowsand	2.1			
			1		1

Not available DATE: 6/5/2013

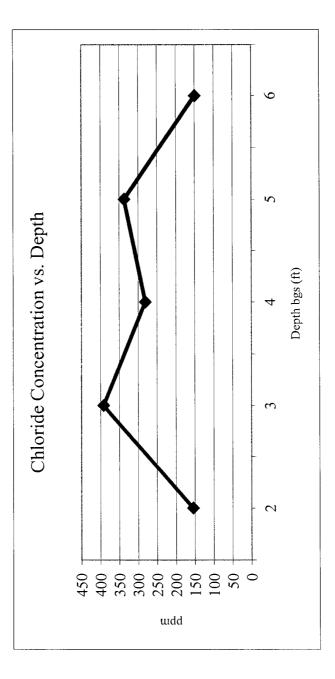
SIGNATURE:

EME Jct. I-9 Unit T, Sec. 9, T20S, R36E

Backhoe samples at junction (source)

ECT Towns	155	392	281	337	150	111
Depth bas (ft)	2	3	4	5	9	7

Groundwater = 32 ft





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



VEGETATION FORM

				VEGETA	TION FUR	CIVI		
1. General Infor								
Site name:	EME J		<i>m</i> 1		D	0 /	Latitude	Y
U/L	l	Section	Townshi	ıp	Range	County		Longitude
I		9	20S		36E	Lea	N-32'35.251	W-103'21.048
Contact Name:	Zach C							
Email:	1,	ler@rice-ecs.com						
Site size:	25x25			square f	eet 615 sq ft			<u>.</u>
2. Soils		*Do n	ot vin aglicha sub	regile: galicha rock	s brought to the surfa	ace by rinning st	all he removed	
Salvaged from si	ite	Bioremediated		ported	Blended	ice oy ripping si	Depth (in)	
Texture:				Describe soil	& subsoil:			
Soil prep method	ds:	Rip	De	epth (in)	Di	isc X	Depth (in)	Rollerpack
Date completed:								
3. Bioremediati Fertilizer	on		X Hay			Other		
Туре:						Desc		lestoreNhance, 1 bag
Lbs/acre:						of M	Ianure, 2 bags of potti	
4. Seeding		*Attach seed bag tags to the					bs of side oats Date:	6/7/2013
Custom Seed M		X Prescribed Mix	Se	ed Mix Name:	7.5 lbs of blue	gramma, 7.5 I	os of side oats Date:	0///2013
Broadcast	X	Method:	V D	Portable Seed Wet	ier			
Soil conditions of	during se	eed: Dry	X Damp	Wet				***************************************
Observations:								
5. Certificat	ion I	I hereby certify that the inform	nation in this form a	and attachments is true	e and complete to the bes	st of my knowledge	e and belief.	
Name: Edu	ardo Ga	rcia		Title: E	nvironmental Tech		Date:	6/7/2013
Signature:					Not av	ailable		

RICE Operating Company

122 West Taylor • Hobbs, New Mexico 88240011 MAR 32 A 10: 17 Phone: (575) 393-9174 • Fax: (575) 397-1471

April 1, 2014

Mr. Leonard Lowe New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87505

RE: JUNCTION BOX UPGRADE REPORT for 2013

EME SWD SYSTEM Lea County, New Mexico

Mr. Lowe:

Rice Operating Company (ROC) takes this opportunity to submit the Junction Box Upgrade results for the year 2013. Enclosed is a list of the completed junction boxes and their respective closure/disclosure dates. These boxes are located in the Eunice-Monument-Eumont (EME) Salt Water Disposal (SWD) System located in the vicinity of Eunice, New Mexico.

ROC completed 11 junction boxes in 2013.

Enclosed are the 2008 results (17 sites evaluated with 22 sampling locations) from the PID/BTEX study described in the NMOCD-approved Revised Junction Box Upgrade Work Plan (July 16, 2003). A third-party analysis, conducted by Peter Galusky, Jr. Ph.D. of Texerra, concluded from the data collected thus far that field-composited values tend to produce slightly higher BTEX numbers above the point at which BTEX concentrations become significant. This is likely due to the fact that BTEX is volatile and quickly biodegradable. This analysis was submitted to NMOCD on March 12, 2009. An appropriate number of sample sites could not be obtained to conduct a 2013 BTEX comparison analysis. Peter Galusky, Jr. Ph.D. of Texerra also compared ROC's 2013 chloride field tests to chloride laboratory analyses; the analysis is also enclosed. The study of this data continues to validate the accuracy of the chloride field tests employed by ROC.

ROC is the service provider (agent) for the EME 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.

Replacement/closure projects of this magnitude require System Party AFE approval and work begins as funds are received.

Thank you for your consideration of this Junction Box Upgrade Report for 2013.

RICE OPERATING COMPANY

Hack Conder

Environmental Manager

enclosures as stated

cc: SC, file, Mr. Geoffrey Leking

NMOCD, District I Office 1625 N. French Drive Hobbs, NM 88240

Rice Operating Company
EME SWD System Junction Box Upgrade Project
2013 Completed Boxes

		Leg	al De	scrip	lon	州 斯斯 1937年43年4	#書店		1111
	Jet Box Name	Unit	Sec	Т	R	Completion Date	OCD Assessment Score	Report Statue	Case Number
1	B-19 EOL	В	19	198	37E	6/28/2013	20	Closure	
2	E-21 EOL	Е	21	208	37E	1/8/2014	20	Closure	
3	JCT. D-19	D	19	198	37E	5/10/2013	20	Closure	
4	JCT. D-20	D	20	198	37E	6/10/2013	20	Closure	
5	JCT. F-26	F	26	20S	36E	11/7/2012	0	Closure	
6	JCT. H-4	Н	4	20S	36E	6/7/2013	20	Closure	
7	JCT. I-9		9	208	36E	6/7/2013	20	Closure	
8	JCT. K-19	K	19	198	37E	6/11/2013	20	Closure	
9	M-9 EOL	М	9	218	36E	6/24/2013	0	Closure	
10	O-28 EOL	0	28	20S	36E	n/a	0	Closure	
11	P-5 EOL	Р	5	215	36E	6/24/2013	0	Closure	

L. Peter Galusky, Jr. Ph.D., P.G.

Texerra

505 N Big Spring, Suite 404 Midland, Texas 79701 Tel: 432-634-9257 E-mail: lpg@texerra.com

March 10th, 2009

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

Re: Comparison of Field versus Lab Compositing of BTEX soil samples

Rice Operating Company, Junction Box Upgrade Work Plan

Sent via Certified Mail w/ Return Receipt No. 7006 0100 0001 2438 3944

Dear Mr. Jones:

On behalf of Rice Operating Company (ROC) I am submitting the attached comparison and analysis of field versus laboratory soil compositing for soil BTEX samples. This is to address the question of whether it is better to mix multiple samples in the field or to do so in the laboratory in order to produce a composite, representative sample for analysis. This work was undertaken in support of ROC's Junction Box Upgrade Work Plan to ensure the quality of their field analysis program.

In brief, this work indicates that field compositing of soil samples generally gives rise to *slightly* higher BTEX values than does laboratory compositing of multiple samples. This is presumably due to the likelihood that field compositing and packaging of soil samples better preserves sample integrity. It would therefore appear that field compositing would represent the better method of procuring soil samples for subsequent analysis of BTEX.

Please call me if you have any questions or wish to discuss any of the details of this study.

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

Sincerely,

L. Peter Galusky, Jr. Ph.D.

Principal

Copy: Rice Operating Company,

Edward Hansen (NMOCD) sent certified mail w/ return receipt

No. 7006 0100 0001 2438 3937

Attachment: As noted, above.

Rice Operating Company Comparison of Field Compositing versus Laboratory Compositing of Soil BTEX Samples¹

The careful mixing of multiple soil samples is critical in order to produce a representative, composite sample from a respective study area (such as a excavation face or bottom). Field technicians typically take four or five "grab" samples from excavation walls and/or bottom and send each of these to a laboratory for analysis of the composite, or mixed, sample. It would be far simpler, however, to composite such samples in the field. This study was undertaken to determine if field compositing produced results substantially different than laboratory compositing for the analysis of BTEX. Data were provided by Rice Operating Company encompassing 22 sampling locations over the period of 2004 through 2008.

A comparison of lab-composited soil samples versus field-composited soil samples revealed a close correspondence for total BTEX between the two methods (Figure 1).

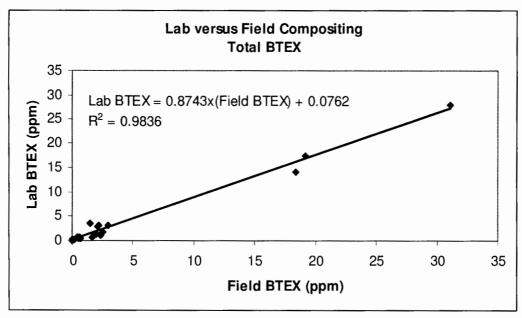


Figure 1 - Laboratory versus field-composited soil samples analyzed for BTEX.

The high R² value (0.9836) of the best-fit statistical regression line indicates a high degree of reliability in using the field-compositing method over the range of values observed. Below a "field-composited BTEX" value of 0.61 ppm the "lab-composited BTEX" values are slightly lower. However, above a field-composited BTEX value of 0.61 the lab-composited values run slightly lower. In other words, the field-composited values tended to produce slightly higher BTEX numbers above the point at which BTEX concentrations become significant.

There is a reason for this. BTEX is volatile and quickly biodegradable. The compositing and "packaging" of soil samples in the field minimize the handling and aeration that occur in the laboratory. Thus, field-composited soil samples lose less BTEX to evaporation and/or biodegradation prior to laboratory analysis. In other words, the field compositing and packaging of soil samples better preserves sample integrity, and for this reasons would appear to represent the better method of procuring soil samples for subsequent analysis of BTEX.

2

¹ Prepared 03-12-09 by L. Peter Galusky, Jr. of Texerra.

L. Peter Galusky, Jr. Ph.D., P.G.

Texerra LLC

20055 Laredo Lane Monument, CO 80132 Tel: 719-339-6791 E-mail: lpg@texerra.com

March 25th, 2014

Mr. Leonard Lowe New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87505

Re: Comparison of 2013 Laboratory versus Field Measured Soil Chloride Values Rice Operating Company, Junction Box Upgrade Work Plan

Mr. Lowe:

The attached comparison and analysis of 2013 laboratory versus field measured soil chloride values is submitted in support of Rice Operating Company's (ROC's) Junction Box Upgrade Work Plan to ensure the quality of their field analysis program.

In brief, this work indicates that Rice's 2013 field chloride measurement efforts provided a reasonable qualitative approximation of the laboratory-measured (and presumed true) values.

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

Please call me if you have any questions or wish to discuss this study.

Sincerely,

L. Peter Galusky, Jr. Ph.D.

Principal

Copy: Glenn VonGonten, NMOCD; Rice Operating Company

Attachment: As noted, above.

Rice Operating Company Comparison of Laboratory to Field Measured Soil Chloride Concentrations Based upon 2013 Field Data

A representative sample of 29 pairs of laboratory versus field measured soil chloride values was compared to determine how well field measurements matched laboratory measurements. It is assumed that laboratory measurements better represent the "true" values due to the controlled environment that a laboratory provides. A simple plot of the laboratory versus field measured soil chloride values is given below (Figure 1).

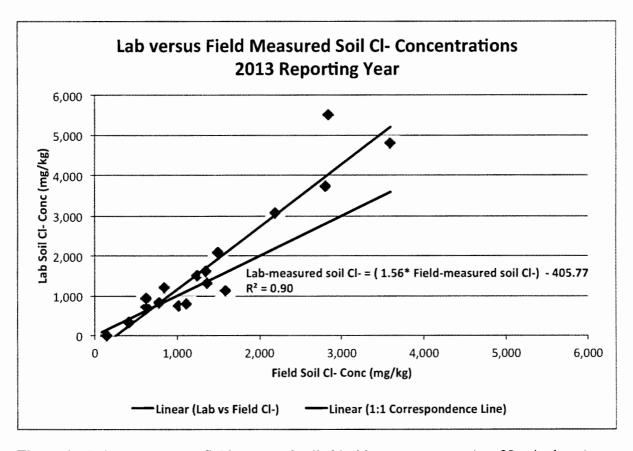


Figure 1 – Laboratory versus field measured soil chloride measurements (n = 29 paired sets).

A straight line fit to the data confirms a general linear trend over a wide range of soil chloride concentrations, and the R² value (0.90) indicates that field measurements provide a reliable approximation of laboratory-measured values. Based on the best-fit line of lab vs field measured values, field measured values overestimate lab measure values below a field measured value of 723 mg/kg and above this underestimate the lab-measured values. This is indicated in the graph where the (blue) best-fit line of lab vs field measured chlorides crosses the (black) line which would indicate a 1:1 correspondence.

Texerra LLC 2

	Junc	Junction Box Upg	x Upgra	ide Pr	ogam	Close	rre/Dis	closure	rade Progam Closure/Disclosure Submissions for 2013	sions fo	r 2013	
					7	Jodaled	8-33-14					
BD											Closures	Closures Disclosures
Closure	4										4	
Disclosure	8											8
EME												
Closure	11										11	
Disclosure	0											0
Total	23										15	8