428-65 1R -

REPORTS

DATE:

3-31-08

Hobbs Jct E-32-1

1R428-65





RICE OPERATING COMPANY

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JUNCTION BOX CLOSURE REPORT

BOX LOCATION

	SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS	- FEET	
	Hobbs	jct. E-32-1		30	189	385		Length , 🕌 Width	Depth	~
	10005	(#1R0428-65)			103	562	Lea	no boxSystem aba	ndoned	
	LAND TYPE: E	BLM ST/	ATE	FEE LANDO	C DWNER	occidental P (Oxy	'etroleum ')	OTHER		
	Depth to Grour	ndwater	43	feet	NMOCD	SITE ASSE	SSMENT R	ANKING SCORE:	20	
	Date Started	5/4/20	06	Date Cor	mpleted	8/20/2007		D Witness) \\ no	
4	Soil Excavated	0	cubic yai	rds Exc	cavation Ler	ngth <u>a a</u> n/a	Width		<mark>n/a</mark> ∷f	eet 🐪
- <u></u>	Soil Disposed		cubic yai	rds Off	fsite Facility	<u> </u>	<u>/a. 11 in</u> a	Location	<u>n/aius</u>	<u>177</u> 73341
	General Descriptio	on of Remedial	Action:	This junction	box site was de	elineated using	g a soil boring a	concerned of a content of a	li⊈re engeneeue n and	[.]
	Characterization Plan s	ubmitted by R.T. H	icks Consulta	nts. One mon	itoring well was	installed at th	ne site on 5/4/2	006. A Corrective Action Pla	an (CAP) was	
	verbally approved by NI	MOCD on 7/18/200	7 and confirm	ed via email o	n 8/8/2007. A	site visit on 8/2	20/2007 reveale	ed that healthy vegetation su	rrounds the	
	site; additional seed wa	s added. The encl	osed Hicks re	port (Decembe	er 2007) docum	ents the fulfill	ment of the app	proved CAP and requests clo	osure of this	
	site. The monitoring we	ell will remain for po	ssible future u	use for other s	ites in the Hob	os abandonme	ent investigation	٦.		
								enc	losures as stat	ted
	I HEREB	Y CERTIFY TH	IAT THE IN	FORMATIC KNOW	DN ABOVE I /LEDGE AN	S TRUE AN D BELIEF.	ND COMPLE	ETE TO THE BEST OF	МY	
	REPORT ASSEMBLEI	D BY Kr	istin Farrís Po	pe	SIGNATURE_	Kni	2410 C	tarris Pope		
	D	ATE	11/28/2007		TITLE		Pr	oject Scientist		

R. T. HICKS CONSULTANTS, LTD.

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

December 4, 2007

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

RE: NMOCD Case # 1R0428-65, E-32-1 Junction Box Hobbs SWD System Abandonment Closure Report

Dear Mr. Hansen:

This letter and Appendices are the final Closure Report for the E-32-1 Junction Box. The NMOCD approved Corrective Action Plan (Section 7.0, page 9) included creating an infiltration barrier by re-vegetation of the ground surface at the E-32-1 site as well as two additional sampling events showing chloride levels below the standard without an provides a photograph of the re-vegetation at the site and ground water sample data confirming these conditions were met. Appendix C includes copies of previous submissions and the NMOCD approval email.

We respectfully request NMOCD approve site closure in writing. Thank you for your attention to this matter.

Sincerely, R.T. Hicks Consultants, Ltd.

Katie Lee

Katie Lee Staff Scientist

Copy: Rice Operating Company Hobbs NMOCD Office



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RICE OPERATING COMPANY

JUNCTION BOX CLOSURE REPORT

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BOX LOCATION

	SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS	FEET			
	Habbe	jct. E-32-1	F	32	185	38F	Lea	Length Width	Depth			
	1,0005	(#1R0428-65)						no box-System abar	doned			
					c	ccidental F	etroleum					
	LAND TYPE:	BLM STA	ATE	FEE LANDO	OWNER	(Ox)	/)	OTHER	<u></u>			
	Depth to Groundwater 43 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20											
	Date Started	5/4/20	06	Date Cor	npleted	8/20/2007	NMOC	D Witness	no			
		and a second	alle againstan						an An Antara an An			
en ester Or steate	Soil Excavated	0	cubic ya	irds Exc	avation Le	ngth n/a	Width	n/a Depth	n/a feet			
Harse Grayer		and a star of the second start of the			anga sa	na ch Chanair		in a second s				
	Soil Disposed		cubic ya	irds Of	fsite Facility	<u></u>	Va (************************************	Location	n/a			
	n selen an transmissioner an	सुन्द्रान्त्र अन्युक्तानुस्तः तः नेत्राः अत्य व्यक्तानुष्टानुस्तः तः				e na signer Silet dese			an a			
	General Description	on of Remedial	Action:		have give young of	of control up in		according to the Investigation	n and			
	Chamatarization Disp.	submitted by P.T. h	dieke Concult		pox sile was o	s installed at t	the site on 5/4/	2006. A Corrective Action Pl	an (CAP) was			
-	erbally approved by NMOCD on 7/18/2007 and confirmed via email on 8/8/2007. A site visit on 8/20/2007 revealed that healthy vegetation surrounds the											
•	site; additional seed was added. The enclosed Hicks report (December 2007) documents the fulfillment of the approved CAP and requests closure of this											
	site. The monitoring w	rell will remain for p	ossible future	use for other :	sites in the Hob	bs abandonm	ient investigatio					
								er	closures as stated			
		27.58766			-			(P				
	I HERE!	BY CERTIFY TI	HAT THE I	NFORMATI KNOV	ON ABOVE VLEDGE AN	IS TRUE A ID BELIEF.	ND COMPL	LETE TO THE BEST O	FMY			
	-								x			
								A. Da	7			
	REPORT ASSEMBL	ED BY K	Kristin Farris F	ope	SIGNATURE	A.N.	(71/1) (Vanie ropy				
	ĩ	DATE	11/28/2007	7	TITLE]	Project Scientist				

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December 4, 2007 Page 2



Appendix B – Photograph Documenting Re-Vegetation at E-32-1



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Analytical Report

Prepared for: Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Location: T18S-R38E-Sec. 32E Lea Co., NM

Lab Order Number: 7B22012

Report Date: 03/08/07

Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	7B22012-01	Water	02/22/07 10:10	02-22-2007 15:12
	7		-,	





Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Organics by GC Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7B22012-01) Water									
Carbon Ranges C6-C12	ND	3.00	mg/L	0.1	EB72214	02/22/07	02/25/07	EPA 8015M	
Carbon Ranges C12-C28	ND	3.00		n	"	"	н	11	
Carbon Ranges C28-C35	ND	3.00	11	"	"	"	"	"	
Total Hydrocarbons	ND	3.00	н	"		"	"	n	
Surrogate: 1-Chlorooctane		112 %	70	130	n	n	"	11	
Surrogate: 1-Chlorooctadecane		115 %	70	130	"	"	"	"	

Environmental Lab of Texas

A Xenco Laboratories Company

Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7B22012-01) Water									
Total Alkalinity	256	2.00	mg/L	1	EB72805	02/28/07	02/28/07	EPA 310.1M	
Chloride	119	5.00	"	10	EB72801	02/28/07	02/28/07	EPA 300.0	
Total Dissolved Solids	494	10.0	"	1	EB72702	02/23/07	02/27/07	EPA 160.1	
Sulfate	93.2	5.00		10	EB72801	02/28/07	02/28/07	EPA 300.0	

Environmental Lab of Texas

A Xenco Laboratories Company

Rice Operating Co.				
122 W. Taylor				
Hobbs NM, 88240				

а. С. Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope Fax: (505) 397-1471

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7B22012-01) Water									
Calcium	86.0	4.05	mg/L	50	EB72310	02/23/07	02/23/07	EPA 6010B	
Magnesium	21.4	0.360		10	"	"	н	"	
Potassium	2.43	0.600	"	"	"	"	"	**	
Sodium	46.9	0.430	•7	n	"	"	"	"	

Environmental Lab of Texas

A Xenco Laboratories Company

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope Fax: (505) 397-1471

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7B22012-01) Water	- <u></u>								
Benzene	ND	0.00100	mg/L	1	EB72704	02/27/07	02/27/07	EPA 8260B	
Toluene	ND	0.00100	21	"	н	"	п	"	
Ethylbenzene	ND	0.00100	n	"	**	"	0	"	
Xylene (p/m)	ND	0.00100	u		"	"	"	"	
Xylene (o)	ND	0.00100	9	"		"		п	
Naphthalene	ND	0.00100	u	н	II.	"	n		
Surrogate: Dibromofluoromethane		109 %	68-12	9	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		88.0 %	72-13	2	"	"	"	"	
Surrogate: Toluene-d8		90.2 %	74-11	8	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		85.8 %	65-14	0	11	"	."	"	

Environmental Lab of Texas

A Xenco Laboratories Company

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC - Quality Control

Environmental Lab of Texas

	Decult	Reporting	T 1=:+-	Spike	Source	0/ DEC	%REC	DDD	RPD	Natas
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	KPD	Limit	Notes
Batch EB72214 - Solvent Extraction (GC)										
Blank (EB72214-BLK1)				Prepared: (02/22/07 A	nalyzed: 02	2/26/07			
Carbon Ranges C6-C12	ND	3.00	mg/L							
Carbon Ranges C12-C28	ND	3.00	11							
Carbon Ranges C28-C35	ND	3.00	*1							
Total Hydrocarbons	ND	3.00	"							
Surrogate: 1-Chlorooctane	52.2		"	50.0		104	70-130		•	
Surrogate: 1-Chlorooctadecane	63.5		"	50.0		127	70-130			
LCS (EB72214-BS1)				Prepared: (02/22/07 A	nalyzed: 02	2/26/07		·	
Carbon Ranges C6-C12	56.0	30.0	mg/L	50.0		112	75-125			
Carbon Ranges C12-C28	42.3	30.0	11	50.0		84.6	75-125			
Carbon Ranges C28-C35	ND	30.0	"	0.00			75-125			
Total Hydrocarbons	98.3	30.0	"	100		98.3	75-125			
Surrogate: 1-Chlorooctane	54.4		"	50.0		109	70-130			,
Surrogate: 1-Chlorooctadecane	55.3		"	50.0		111	<i>70-130</i> 、			2
Calibration Check (EB72214-CCV1)				Prepared: 0)2/22/07: Ai	nalyzed: 02	2/26/0 7 2/87.	All well and a	Ný, j	
Carbon Ranges C6-C12	21.7		mg/L	25.0	`Car	au. :86:8:au	80-120		•	:1 '
Carbon Ranges C12-C28	21.6		"	25.0	. Card	094.) 86:4 %5.5	80-120			
Carbon Ranges C28-C35	0.00		"	0.00	(, att	en kangina	80-120			def.d
Total Hydrocarbons	43.3		"	50.0	1 1 A.	3 - 19 86:6 - 14				45
Surrogate: 1-Chlorooctane	60.9		H	50.0			. 70-130		· · ·	
Surrogate: 1-Chlorooctadecanc	61.2		"	50.0	• •	122	70-130			
Matrix Spike (EB72214-MS1)	Sou	ırce: 7B22008-	-20	Prepared: (02/22/07 A	nalyzed: 02	2/25/07			
Carbon Ranges C6-C12	60.0	30.0	mg/L	50.0	ND	120	75-125			
Carbon Ranges C12-C28	48.9	30.0	ч	50.0	ND	97.8	75-125			
Carbon Ranges C28-C35	ND	30.0		0.00	ND		75-125			
Total Hydrocarbons	109	30.0	и	100	ND	109	75-125			
Surrogate: 1-Chlorooctane	59.6		11	50.0		119	70-130			, i., i.i.
Surrogate: 1-Chlorooctadecane	55.7		"	50.0		111	70-130			

Environmental Lab of Texas

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The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

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Rice Operating Co.	
122 W. Taylor	
Hobbs NM, 88240	

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Organics by GC - Quality Control

Environmental Lab of Texas

and the second se					- 11				5 m	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
		Reporting		Spike	Source		%REC		RPD	
······										

Batch EB72214 - Solvent Extraction (GC)

Matrix Spike Dup (EB72214-MSD1)	Sourc	Prepared: 02/22/07 Analyzed: 02			/25/07					
Carbon Ranges C6-C12	59.5	30.0	mg/L	50.0	ND	119	75-125	0.837	20	
Carbon Ranges C12-C28	49.1	30.0	н	50.0	ND	98.2	75-125	0.408	20	
Carbon Ranges C28-C35	ND	30.0	"	0.00	ND		75-125		20	
Total Hydrocarbons	109	30.0	"	100	ND	109	75-125	0.00	20	
Surrogate: 1-Chlorooctane	60.4		"	50.0		121	70-130			
Surrogate: 1-Chlorooctadecane	54.9		"	50.0		110	70-130			

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nd -			1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 -
••	 Carrier States C. 100 2000 	. t.	
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Environmental Lab of Texas

A Xenco Laboratories Company

Rice Operating Co.	Project: Hobbs Jct. E-32-1 Fax: (505										
122 W. Taylor	Project Number: None Given										
Hobbs NM, 88240		Project Mar	nager: K	ristin Farris-P	ope						
General Chem	listry Para	meters by	EPA /	Standard	Method	ls - Qua	lity Cont	rol			
		Environm	nental l	Lab of Te	xas						
		Reporting		Spike	Source		%REC		RPD		
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes	
Batch EB72702 - General Preparation (Wet	Chem)										
Blank (EB72702-BLK1)				Prepared: ()2/23/07 A	nalyzed: 02	2/24/07				
Total Dissolved Solids	ND	10.0	mg/L								
Duplicate (EB72702-DUP1)	Sou	rce: 7B22009-	01	Prepared: ()2/23/07 A:	nalyzed: 02	2/24/07				
Total Dissolved Solids	364	10.0	mg/L		356		·	2.22	20		
Duplicate (EB72702-DUP2)	Sou	rce: 7B22012-	01	Prepared: ()2/23/07 A						
Total Dissolved Solids	518	10.0	mg/L		494			4.74	20		
Batch EB72801 - General Preparation (Wet	Chem)										
Blank (EB72801-BLK1)				Prepared &	Analyzed:	02/28/07					
Sulfate	ND	0.500	mg/L								
Chloride	ND	0.500	н								
LCS (EB72801-BS1)				Prepared &	Analyzed:	02/28/07					
Chloride	10.2	0.500	mg/L	10.0	· · · · · · ·	102	80-120				
Sulfate	10.6	0.500	"	10.0	. : `	. 106	80-120				
Calibration Check (EB72801-CCV1)	را رد بیشر بیش در	·····. · · · · · ·	· • •	Prepared &	Analyzed:	02/28/07	ulan sata ik	ر از از از از از ۲۰۱۰ (بریکی) از از	an a	 	
Sulfate	11.1		mg/L	10.0	Charles	Wer 111 -	80-120	ta att.			
$\label{eq:charge} Chloride \to \{\sigma_{1}, \dots, \sigma_{n}\} \in \{0, \dots, n, n,$	10.4		."	10.0	Cito.	v	80-120			: u,	
Duplicate (EB72801-DUP1)	Sou	rce: 7B22009-	01	Prepared &	Analyzed;	02/28/07	no ser	· · ·	·		
Sulfate	64.9	5.00	mg/L		64.3:	de la	····	0.929	20		
Chloride	21.6	5.00	"		22.2			2.74	20		
Duplicate (EB72801-DUP2)	Sou	rce: 7B22012-	01	Prepared &	Analyzed:	02/28/07					
Chloride	117	5.00	mg/L	•	119			1.69	20		
Sulfate	92.3	5.00	"		93.2			0.970	20		

A Xenco Laboratories Company

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

Rice Operating Co.	
122 W. Taylor	
Hobbs NM, 88240	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyza	Raeult	Reporting	Unite	Spike	Source	%REC	%REC	RPD	RPD Limit	Notes
Analyte		Linn	QIIIG		Result			E C D		
Batch EB72801 - General Preparation	(WetChem)									
Matrix Spike (EB72801-MS1)	Sour	ce: 7B22009-	01	Prepared &	Analyzed:	02/28/07				
Chloride	134	5.00	mg/L	100	22.2	112	80-120			
Sulfate	172	5.00	м	100	64.3	108	80-120			
Matrix Spike (EB72801-MS2)	Sour	ce: 7B22012-	01	Prepared &	Analyzed:	02/28/07				
Chloride	231	5.00	mg/L	100	119	112	80-120			
Sulfate	204	5.00	"	100	93.2	111	80-120			
Batch EB72805 - General Preparation	(WetChem)									
Blank (EB72805-BLK1)				Prepared &	Analyzed:	02/28/07				
Total Alkalinity	ND	2.00	mg/L							
Carbonate Alkalinity	ND	0.100	39							
Bicarbonate Alkalinity	ND	2.00	17							
Hydroxide Alkalinity	ND	0.100	n			25.57				
LCS (EB72805-BS1)				Prepared &	Analyzed:	02/28/07				,
Bicarbonate Alkalinity	. 172-	2.00	mg/L	200	lice	a.i86.0		A		
Duplicate (EB72805-DUP1)	Sour	ce: 7B22004-	01	Prepared &	Analyzed	02/28/07	د وارداد وموالود. و دینه درمور الرود دینه در موجود معمود در دینه در			· • ··· ·
Total Alkalinity	240	2.00	mg/L	· 3 •	240	i sharay		0.00	20	· · · · ·
Carbonate Alkalinity	0.00	0.100	"		0.00	izante kulta	i me	519, .	20	
Bicarbonate Alkalinity	240	2.00	, . [.]	· • · ·	240	aterna Al	akterie –	0.00	20	· •
Hydroxide Alkalinity	÷ 0.00	. 0.100	и	• .	0.00-)- d	romacture	Raas		20	4.24
Reference (EB72805-SRM1)				Prepared &	Analyzed:	02/28/07		-		
Total Alkalinity	246		mg/L	250		98.4	90-110			

Total Alkalinity

Environmental Lab of Texas

A Xenco Laboratories Company

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Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EB72310 - 6010B/No Digestion									· ·	
Blank (EB72310-BLK1)				Prepared &	Analyzed: ()2/23/07				
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430								
Calibration Check (EB72310-CCV1)				Prepared &	Analyzed: (02/23/07				
Calcium	1.93		mg/L	2.00		96.5	85-115		· · · ·	
Magnesium	1.88		"	2.00		94.0	85-115			
Potassium	1.82		n	2.00		91.0	85-115			
Sodium	1.75		"	2.00		87.5	85-115			
Duplicate (EB72310-DUP1)	So	ource: 7B22004-	01	Prepared &	Analyzed: (02/23/07				
Calcium	84.4	4.05	mg/L		84.2			0.237	20	
Magnesium	142	1.80			147	er. 431.	1	3.46	20	
Potassium	22.3	0.600	н		22.8 0441	914	· · · ·	2.22	20	
Sodium	200	2.15	."		206		n in the second se	2.96	20	
Batch EC70707 - 6010B/No Digestion	n in the second	 	, 19 NGA	 £	j Jane.	6.4777	franciska star of Star		19600	س م ال
Blank (EC70707-BLK1)				Prepared &	Analyzed: (3/07/07	on Sold o		140	2
Calcium	ND	0.0810	mg/L		l'atoli	Ats.				
Magnesium ¹⁰	ND	0.0360	n i i i i				1 A	19 A.		
Potassium	ND	0.0600	n```		11 A.	1.11	1993 and 1			4 T
Sodium	ND	0.0430	11							
LCS (EC70707-BS1)				Prepared &	Analyzed: (3/07/07				
Calcium	1.00		mg/L	1.00		100	85-115			
Magnesium	1.04		н	1.00		104	85-115			
Potassium	9.88		"	10.0		98.8	85-115			
Sodium	9.92		"	11.0		90.2	85-115			

Environmental Lab of Texas

A Xenco Laboratories Company

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

		Reporting	Spike	Source		%REC		RPD	
Analyte	Result	Limit Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EC70707 - 6010B/No Digestion		. **							·
LCS Dup (EC70707-BSD1)			Prepared &	k Analyzed:	03/07/07				
Calcium	1.01	mg/L	1.00		101	85-115	0.995	20	
Magnesium	1.05	и	1.00		105	85-115	0.957	20	
Potassium	9.97	"	10.0		99.7	85-115	0.907	20	
Sodium	10.0		11.0		90.9	85-115	0.803	20	
Matrix Spike (EC70707-MS1)	Sou	rce: 7C01014-01RE1	Prepared &	Analyzed:	03/07/07				
Calcium	118	mg/L	2.00	116	100	75-125			
Magnesium	50.7	"	2.00	47.1	180	75-125			М
Potassium	42.8	"	20.0	14.3	142	75-125			М
Sodium	317	"	22.0	235	373	75-125			М
Matrix Spike Dup (EC70707-MSD1)	Sou	rce: 7C01014-01RE1	Prepared &	k Analyzed:	03/07/07				
Calcium	123	mg/L	2.00	116	350	75-125	4.15	20	М
Magnesium	51.9		2.00	47.1		75-125	2.34	20	М
Potassium	42.9	n	20.0	14 .3 * ta	143	75-125	0.233	20	М
Södium . No Side	322	"	22.0	235	ant 395	75-125	1.56	20	М
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Environmental Lab of Texas

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Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EB72704 - EPA 5030C (GCMS)										
Blank (EB72704-BLK1)				Prepared &	& Analyzed	: 02/27/07				
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	н							
Xylene (p/m)	ND	0.00100	H							
Xylene (o)	ND .	0.00100	н							
Naphthalene	ND	0.00100	"							
Surrogate: Dibromofluoromethane	46.4		ug/l	50.0		92.8	68-129			
Surrogate: 1,2-Dichloroethane-d4	36.6		"	50.0		73.2	72-132			
Surrogate: Toluene-d8	44.6		"	50.0		89.2	74-118			
Surrogate: 4-Bromofluorobenzene	48.3		"	50.0		96.6	65-140			
LCS (EB72704-BS1)				Prepared 8	& Analyzed:	: 02/27/07				
Benzene	0.0286	0.00100	mg/L	0.0250		114	70-130			
Toluene	0.0260	0.00100	"	0.0250		104 -	70-130			
Ethylbenzene	0.0250	0.00100	"	0.0250		100	70-130			· .
Xylene (p/m)	0.0495	0.00100	"	0.0500	NV:	ent (99:0	70-130			с. н. С. н.
Xylene (o)	.0:0259	0.00100	н.	0.0250		sac 6 104	70-130	1997 - Ser 19		$\{0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1$
Naphthalene	0.0204	0.00100	н	0.0250	2.6	81.6	70-130	enne e conserve en Service de la service	and a state of the	i da de la composición de la composición Internación de la composición de la comp
Surrogate: Dibromofluoromethane	50.1	· · · · · · · · · · · · · · · · · · ·	ug/l	50.0	Su.	10 <u>0100 100 100</u>	68-129	Sur 2	,,,,,_	
Surrogate: 1,2-Dichloroethane-d4	43.1		"	50.0	- Syn	223- 86.2	72-132	e e		• •
Surrogate: Toluene-d8	47.6		_ "	. 50.0	- : 1	95.2	74-118			200
Surrogate: 4-Bromofluorobenzene	51.9		"	50.0		104	65-140			
Calibration Check (EB72704-CCV1)				Prepared &	k Analyzed:	: 02/27/07				
Toluene	46.4		ug/l	50.0		92.8	70-130			
Ethylbenzene	45.3		n	50.0		90.6	70-130			
Surrogate: Dibromofluoromethane	50.6		"	50.0		101	68-129			
Surrogate: 1,2-Dichloroethane-d4	38.5		"	50.0		77.0	72-132			
Surrogate: Toluene-d8	43.7		"	50.0		87.4	74-118			
Surrogate: 4-Bromofluorobenzene	48.9		п	50.0		97.8	65-140			

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The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB72704 - EPA 5030C (GCMS)					<u> </u>					
Matrix Spike (EB72704-MS1)	So	urce: 7B22012-	01	Prepared:	02/27/07 A	nalyzed:	02/28/07			
Benzene	0.0215	0.00100	mg/L	0.0250	ND	86.0	70-130			
Toluene	0.0233	0.00100	*1	0.0250	ND	93.2	70-130			
Ethylbenzene	0.0260	0.00100	н	0.0250	ND	104	70-130			
Xylene (p/m)	0.0502	0.00100	н	0.0500	ND	100	70-130			
Xylene (o)	0.0250	0.00100	Ħ	0.0250	ND	100	70-130			
Naphthalene	0.0187	0.00100	н	0.0250	ND	74.8	70-130			
Surrogate: Dibromofluoromethane	51.1		ug/l	50.0		102	68-129		<u>_</u>	
Surrogate: 1,2-Dichloroethane-d4	41.8		"	50.0		83.6	72-132			
Surrogate: Toluene-d8	42.1		п	50.0		84.2	74-118			
Surrogate: 4-Bromofluorobenzene	46.9		"	50.0		93.8	65-140			
Matrix Spike Dup (EB72704-MSD1)	So	urce: 7B22012-	01	Prepared:	02/27/07 A	nalyzed:	02/28/07			
Benzene	0.0180	0.00100	mg/L	0.0250	ND	72.0	70-130	17.7	20	
Toluene	0.0182	0.00100	"	0.0250	ND	72.8	70-130	24.6	20	
Ethylbenzene	0.0245	0.00100	"	0.0250	ND	98.0	70-130	5.94 ·	20	
Xylene (p/m)	0.0484	0.00100	, " -	0.0500	ND	96.8	70-130	3.65	20	-
Xylene (o) Art for the second second	0.0263	.0:00100	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	0.0250	ND	118 (105	70-130	5.07	20	1.02 k
Naphthalene	0.0231	0.00100		0.0250	ND	hdaa 92.4	70-130	21.1	20	
Surrogate: Dibromofluoromethane	53.5		ug/l	50.0		107)	¹ 7 68-1-29	Vaga an an	1	
Surrogate: 1,2-Dichloroethane-d4	40.3		"	50.0	75	80.6		e fak i see		
Surrogate: Toluene-d8	35.7		"	50.0	, el construction de la construcción de la construc	- 71.4	74-118			S-0
Surrogate: 4-Bromofluorobenzene	40.5		"	50.0	,	81.0	65-140			

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Rice Ope 122 W. 7 Hobbs N	erating Co. Project: Hobbs Jct. E-32-1 Fax: (505) 397-1471 Taylor Project Number: None Given JM 88240 Project Manager: Kristin Farris-Pope
	Notes and Definitions
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
R	The RPD exceeded the method control limit. The individual analyte QA/QC recoveries, however, were within acceptance limits.
MI	The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate
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	and the second	ta ya a san At	s e la sur	· ·		1.1		dyte stre	0.000	to a sub-starts Part og	·	· .
5 (C)	and the second second second						si a	1. 1. 1. A.	ere e prove a pre			

Report Approved By:

Date: <u>3/8/2007</u>

Brent Barron, Laboratory Director/Corp. Technical Director Celey D. Keene, Org. Tech Director Raland K. Tuttle, Laboratory Consultant James Mathis, QA/QC Officer Jeanne Mc Murrey, Inorg. Tech Director

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If you have received this material in error, please notify us immediately at 432-563-1800.

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Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client:	Pile Op.	
Date/ Time:	2/22/07/ 15:12	
_a <u>b_I</u> D # :	<u>1B220/2</u>	
nitials:	UK-	

Sample Receipt Checklist

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45.0

				0	Client Initials	5
¥1	Temperature of container/ cooler?	Yes	No	,S °C		
#2	Shipping container in good condition?	(Yes)	No	*		
#3	Custody Seals intact on shipping container/ cooler?	(FBS)	No	Not Present		
#4	Custody Seals intact on sample bottles/ container?	7495	No	Not Present		
#5	Chain of Custody present?	Čes	No			
#6	Sample instructions complete of Chain of Custody?	(Alter	No			
#7	Chain of Custody signed when relinquished/ received?	des	No			
#8	Chain of Custody agrees with sample label(s)?	Xes	No	ID written on Cont./ Lid		
#9	Container label(s) legible and intact?	Yes	No	Not Applicable		
#10	Sample matrix/ properties agree with Chain of Custody?	Jes	No		· :.	terret ve 191
#11	Containers supplied by ELOT?	Ares	No		1	n man manana a an
#12	Samples in proper container/ bottle?	(TES	No	See Below	ng di capita	
#13	Samples properly preserved?	Ces	No .	See Below	Vedi?	arrenter and the barrent and
#14	Sample bottles intact?	(AES)	No	Sanne philes mach	was being an an	
#15	Preservations documented on Chain of Custody?	Yes	: Nó ∰	experience cocemen	isd on Cha	nicit Oi, nobr
#16	Containers documented on Chain of Custody?	Xes	No	Conshee deconserve	CO Chien	Rebellen (
#17	Sufficient sample amount for indicated test(s)?	Tes	No	See Below	n ha fra y Longadaha - Lan Safri - Langadaha -	
² #18	All samples received within sufficient hold time?	(Hes)	No	See Below	the second to	
#19	Subcontract of sample(s)?	Yes	No	Not Applicable	1	1
#20	VOC samples have zero headspace?	YES	No	Not Applicable		

Variance Documentation

Contact:		Contacted by:	Date/ Time:	
Regarding:				
Corrective Action Taken:	·····			
Check all that Apply:		See attached e-mail/ fax Client understands and would like to proceed with analy Cooling process had begun shortly after sampling even	ysis ht	

and the second



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Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs; NM 88240

a la construction A Star Bar

Project: Hobbs Jct. E-32-1 Project Number: None Given Location: T18S R38E Sec32 E ~ Lea County New Mexico

Lab Order Number: 7D26010

Report Date: 05/07/07

Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

4

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

ANALYTICAL REPORT FOR SAMPLES

Sample ID		Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well # 1		7D26010-01	Water	04/25/07 09:45	04-26-2007 16:25
(t, t)	24			۰ ۲۰۰۰ ^۵	

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General Chemistry Parameters by EPA / Standard Methods

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Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
				<u> </u>	,				
Total Alkalinity	242	2.00	mg/L	1	ED73002	04/30/07	04/30/07	EPA 310.1M	
Chloride	94.3	5.00		10	EE70307	05/03/07	05/03/07	EPA 300.0	
Total Dissolved Solids	528	10.0	"	1	EE70209	04/27/07	05/02/07	EPA 160.1	
Sulfate	75.5	5.00	11	10	EE70307	05/03/07	05/03/07	EPA 300.0	

Environmental Lab of Texas

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Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	 Notes
Monitor Well # 1 (7D26010-01) Water									
Calcium	111	4.05	mg/L	50	ED72704	04/27/07	04/27/07	EPA 6010B	
Magnesium	24.2	0.360	"	10	11		"	"	
Potassium	2.65	0.600		u	**	и	н	п	
Sodium	62.0	2.15	и	50	"	н	"	u	

Environmental Lab of Texas

A Xenco Laboratories Company

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well # 1 (7D26010-01) Water									
Benzene	ND	0.00100	mg/L	1	ED73009	04/30/07	04/30/07	EPA 8260B	
Toluene	ND	0.00100	11	"	"	"	и	n	
Ethylbenzene	ND	0.00100	"	"	"	11	"	"	
Xylene (p/m)	ND	0.00100	11	**	"	"	"	n	
Xylene (0)	ND	0.00100	11	"	"		ч	n	
Naphthalene	ND	0.00100	4	н	н	11	0	n	
Surrogate: Dibromofluoromethane		103 %	68-12	9	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		84.4 %	72-13	2	"	n	н	u	
Surrogate: Toluene-d8		97.8 %	74-11	8	"	n	"	И	
Surrogate: 4-Bromofluorobenzene		93.2 %	65-14	0	"	"	п	**	

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Rice Operating Co.	Pro	ect: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Num	per: None Given	
Hobbs NM, 88240	Project Mana	er: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch ED73002 - General Preparati	on (WetChem)									
Blank (ED73002-BLK1)				Prepared &	& Analyzed	: 04/30/07				
Total Alkalinity	ND	2.00	mg/L							
LCS (ED73002-BS1)				Prepared &	& Analyzed:	: 04/30/07				
Total Alkalinity	0.00	2.00	mg/L				85-115			
Bicarbonate Alkalinity	180	2.00	n	200		90.0	85-115			
Duplicate (ED73002-DUP1)	Sou	rce: 7D26006-	-01	Prepared &	k Analyzed:	: 04/30/07				
Total Alkalinity	214	2.00	mg/L		218			1.85	20	
Bicarbonate Alkalinity	0.00	2.00	н		0.00				20	
Reference (ED73002-SRM1)				Prepared &	k Analyzed:	: 04/30/07				
Total Alkalinity	256		mg/L	250		102	90-110			
Batch EE70209 - General Preparati	on (WetChem)						.×ī	lati Luci	i gantara	1 2
Blank (EE70209-BLK1)				Prepared: 04/27/07 Analyzed: 05/02/07 (5.2)						
Total Dissolved Solids	ND	10.0	mg/L		·	om avita	i sinda			
Duplicate (EE70209-DUP1)	Sou	rce: 7D26007-	-01	Prepared: (04/27/07 A	nälyzed: 05	5/02/07- 001	93 h		
Total Dissolved Solids	1500	10.0	mg/L	, ·, ·	1470	al basedend	Saikis	2.02	20	•
Duplicate (EE70209-DUP2)	Sou	rce: 7D26009-	-01	Prepared: (04/27/07⊝A	nälyzed: 05	5/02/07	82)		
Total Dissolved Solids	712	10.0	mg/L		684		· .	4.01	20	
Batch EE70307 - General Preparati	on (WetChem)									
Blank (EE70307-BLK1)				Prepared &	k Analyzed:	: 05/03/07				
Sulfate	ND	0.500	mg/L			• •				
Chloride	ND	0.500	"							

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Rice Operating Co.	Project:	Hobbs Jct. E-32-1
122 W. Taylor	Project Number:	None Given
Hobbs NM, 88240	Project Manager:	Kristin Farris-Pope

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

······································		Reporting		Spike	Source		%REC	- <u>-</u>	RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EE70307 - General Preparation (Wet	Chem)	_	ney	*		. •				
LCS (EE70307-BS1)				Prepared &	Analyzed:	05/03/07				
Chloride	9.62	. 0.500	mg/L	10.0		96.2	80-120			
Sulfate	10.0	0.500	"	10.0		100	80-120			
Calibration Check (EE70307-CCV1)				Prepared &	Analyzed:	05/03/07				
Chloride	8.93		mg/L	10.0		89.3	80-120			
Sulfate	11.6			10.0		116	80-120			
Duplicate (EE70307-DUP1)	Source	e: 7D26006-	-01	Prepared &	Analyzed:	05/03/07				
Sulfate	342	12.5	mg/L		339			0.881	20	
Chloride	941	50.0	"		917			2.58	20	
Duplicate (EE70307-DUP2)	Source	e: 7D26010-	-01	Prepared &	Analyzed:	05/03/07				
Chloride	93.1	5.00	mg/L		94.3			1.28	20	
Sulfate .	. 74.1	5.00	"		75.5			1.87	20	tili tili Dan a talan a talan
Matrix Spike (EE70307-MS1)	Sourc	e: 7D26006-	-01	Prepared &	z Analyzed:	05/03/07	4 1 . 14	e e gatel	· . · ·	
Sulfate setting the setting of the s	728	12.5	mg/L	250	339 :	156	80-120	(,		MI
Matrix Spike (EE70307-MS2)	Sourc	e: 7D26010-	-01 ¹⁹⁶ 048	Prepared &	Analyzed:	05/03/07	is pressed	$S(p)_{i}(r)$	54 M2	·
Chloride Maria Marao Carta Carta	278	5.00	mg/L	100	94.3	184	80-120	44. ¹ .		- M1
Sulfate	204	5.00	11 	100	75.5		80-120	- 		• M1
Matrix Spike (EE70307-MS3)	Source	e: 7D26006-	-01	Prepared &	Analyzed:	05/03/07				
Chloride	1800	50.0	mg/L	1000	917	88.3	80-120	·		

Environmental Lab of Texas

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Sodium

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch ED72704 - 6010B/No Digestion				200.7						

Blank (ED72704-BLK1)				Prepared &	Analyzed: 04/2	7/07				
Calcium	ND	0.0810	mg/L	·						
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	*1							
Sodium	ND	0.0430	"							
Calibration Check (ED72704-CCV1)		Prepared &	Analyzed: 04/2	7/07						
Calcium	2.13		mg/L	2.00	1	06 85-1	15			
Magnesium	2.15		**	2.00	1	08 85-1	15			
Potassium	2.14		"	2.00	1	07 85-1	15			
Sodium	1.98		"	2.00	99	9.0 85-1	15			
Duplicate (ED72704-DUP1)	Source: 7D23010-01		Prepared & Analyzed: 04/27/07		7/07					
Calcium	44.1	0.810	mg/L		42.4			3.93	20	
Magnesium	43.0	0.360	· "		42.4			1.41	20	.
Potassium	22.7	0.600	н -		22.1		5	2.68	20	· ·
Sodium	41.9	0.430		· · ·	40.8	· · · ·		2.66	20	-

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Rice Operating Co. 122 W. Taylor Hobbs NM, 88240 Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Recult	Reporting Limit	Unite	Spike	Source Result	%PEC	%REC	רופס	RPD Limit	Noter
/ mary to				LC 401					Lullit	110105
Batch ED73009 - EPA 5030C (GCMS)				<u> </u>					<u></u>	<u> </u>
Blank (ED73009-BLK1)				Prepared &	Analyzed:	04/30/07				
Benzene	ND	0.00100	mg/L		····					
Toluene	ND	0.00100	17							
Ethylbenzene	ND	0.00100								
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Naphthalene	ND	0.00100	11							
Surrogate: Dibromofluoromethane	50.3	ang again a barran Marahan	ug/l	50.0		101	68-129	<u> </u>		
Surrogate: 1,2-Dichloroethane-d4	42.3		"	50.0		84.6	72-132			
Surrogate: Toluene-d8	48.2		"	50.0		96.4	74-118			
Surrogate: 4-Bromofluorobenzene	47.4		"	50.0		94.8	65-140			
LCS (ED73009-BS1)				Prepared & A	Analyzed:	04/30/07				
Benzene	0.0249	0.00100	mg/L	0.0250		99.6	70-130			
Toluene	0.0265	0.00100	н н х т. х	0.0250		106	70-130			
Ethylbenzene	0.0282	0.00100	н	0.0250	1990 A	113	70-130			· · ·
Xylene (p/m)	0.0570	0.00100		0.0500	1.29	114	70-130	• ·	•	
Xylene (o) $\sum_{i=1,2,3,3,4} \sum_{i=1,2,3,3,4} \sum_{i=1,2,3,3,4} \sum_{i=1,2,3,4} \sum_{i=1,2,3,4} \sum_{i=1,2,3,4,4} \sum_{i=$	0.0289	0.00100	и	0.0250	94 - 1958 1	397 i 1 :16	70-130		يد وينسخ و	合語業
Naphthalene :	0.0190	0.00100	'n, '	0.0250		- no 76.0	70-130	···· · · ·		n het.
Surrogate: Dibromofluoromethane	48.3		ug/l	50.0		96.6	68-129	n de la contrance. La del contra	<u> </u>	
Surrogate: 1,2-Dichloroethane-d4	43.7		"	50.0	, South	87.4	¹ 72-132	12	· · · · ·	· · · ·
Surrogate: Toluene-d8	48.1		".	50.0	324 ·	96.2	74-118			
Surrogate: 4-Bromofluorobenzene	44.1		"	50.0		88.2	65-140			
Calibration Check (ED73009-CCV1)				Prepared & A	Analyzed:	04/30/07				
Toluene	48.2		ug/l	50.0		96.4	70-130			
Ethylbenzene	49.8		"	50.0		99.6	70-130			
Surrogate: Dibromofluoromethane	47.3	······	<i>"</i>	50.0		94.6	68-129			
Surrogate: 1,2-Dichloroethane-d4	39.4		и	50.0		78.8	72-132			
Surrogate: Toluene-d8	46.5		"	50.0		93.0	74-118			
Surrogate: 4-Bromofluorobenzene	42.9		"	50.0		85.8	65-140			

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Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lad of Texas											
Analyte	Result	Reporting Limit	Units	Spike	Source Result	%REC	%REC	RBD	RPD Limit	Notes	
									Linin		
Batch ED73009 - EPA 5030C (GCMS)					• ••.						
Matrix Spike (ED73009-MS1)	S	Source: 7D26010-	-01	Prepared &	Analyzed:	04/30/07	7				
Benzene	0.0247	0.00100	mg/L	0.0250	ND	98.8	70-130				
Toluene	0.0260	0.00100	"	0.0250	ND	104	70-130				
Ethylbenzene	0.0256	0.00100	"	0.0250	ND	102	70-130				
Xylene (p/m)	0.0514	0.00100	"	0.0500	ND	103	70-130				
Xylene (o)	0.0262	0.00100	"	0.0250	ND	105	70-130				
Naphthalene	0.0148	0.00100	"	0.0250	ND	59.2	70-130			M	
Surrogate: Dibromofluoromethane	48.6		ug/l	50.0	•	97.2	68-129		<u> </u>		
Surrogate: 1,2-Dichloroethane-d4	42.8		"	50.0		85.6	72-132				
Surrogate: Toluene-d8	47.8		"	50.0		95.6	74-118				
Surrogate: 4-Bromofluorobenzene	43.0		n	50.0		86.0	65-140				
Matrix Spike Dup (ED73009-MSD1)	S	ource: 7D26010-	-01	Prepared &	Analyzed:	04/30/01	7				
Benzene	0.0250	0.00100	mg/L	0.0250	ND	100	70-130	1.21	20	,	
Toluene	0.0264	0.00100	ч,	0.0250	ND ·	106	70-130	1.90	20		
Ethylbenzene	0.0262	0.00100	n	0.0250	ND	105	70-130	2.90	20		
Xylene (p/m)	0.0528	0.00100	$H^{1,1,1} = 0$	0.0500	ND C	106	70-130	2.87	20	2007-11 10	
Xylene (o) - NAMER (Concernent Concernent)	0.0270	0.00100	$W_{2} \simeq \sqrt{2} t$	0.0250	ND		70-130	2:82	20	A line	
Naphthalene which which the set	0.0169	0.00100	n (5. 181	0.0250	ND	67.6	70-130	13.2	20	^{11 (11} M8	
Surrogate: Dibromofluoromethane	50.1		ug/l	50.0	1 18.2	- 100 ·	68-129	dana di kara		- 111 -	
Surrogate: 1,2-Dichloroethane-d4	42.9		"	50.0	1999	85.8	72-132	2632 - 1 -			
Surrogate: Toluene-d8	48.5		"	50.0	•./ •	97.0	^{51,997} 74-118	:			
Surrogate: 4-Bromofluorobenzene	43.9		"	50.0		87.8	65-140				

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Rice Oper 122 W. Ta Hobbs NM	rating Co. Project: Hobbs Jct. E-32-1 aylor Project Number: None Given M, 88240 Project Manager: Kristin Farris-Pope		Fax: (505) 397-1471
	Notes and Definitions		
M8	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).		
M1	The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank S	Spike (LCS).	
DET	Analyte DETECTED	, * α γ ₁ , κ αι,	· v _{a.}
ND	Analyte NOT DETECTED at or above the reporting limit		
NR	Not Reported		
dry	Sample results reported on a dry weight basis		
RPD	Relative Percent Difference		

LCS Laboratory Control Spike

MS Matrix Spike

Dup Duplicate

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Report Approved By:

Birron Date:

5/7/2007

Brent Barron, Laboratory Director/Corp. Technical Director Celey D. Keene, Org. Tech Director Raland K. Tuttle, Laboratory Consultant

James Mathis, QA/QC Officer Jeanne Mc Murrey, Inorg. Tech Director

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If you have received this material in error, please notify us immediately at 432-563-1800.

Environmental Lab of Texas

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Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

ent	Rice	
te/ Time:	4-26-07 4:25	
5 ID # :	71726010	
ials:	OL	

Sample Receipt Checklist

ing his

Client Initials °C Temperature of container/ cooler? res No 1.0 Shipping container in good condition? (eg No Custody Seals intact on shipping container/ cooler? Yea Not Present No Custody Seals intact on sample bottles/ container? Yes) No Not Present Chain of Custody present? Yes No Sample instructions complete of Chain of Custody? des No Chain of Custody signed when relinquished/ received? No res Chain of Custody agrees with sample label(s)? (Yes No ID written on Cont./ Lid Container label(s) legible and intact? No Not Applicable res 0 Sample matrix/ properties agree with Chain of Custody? dres No 1 Containers supplied by ELOT? Yes No ation of the sector of 2 Samples in proper container/ bottle? Yes No See Below 3 Samples properly preserved? ja. YES. Nó See Below 4 Sample bottles intact? Ves' No New Strate (Sector) а, 15 Preservations documented on Chain of Custody? Nes No REPORTE LINE ' **,** • 16 Containers documented on Chain of Custody? (Yes) No Yes 17 Sufficient sample amount for indicated test(s)? No See Below (Yes 18 All samples received within sufficient hold time? No See Below 19 Subcontract of sample(s)? Not Applicable, Yes No 20 VOC samples have zero headspace? Not Applicable No (Yes

Variance Documentation

ontact:	 Contacted by:	Date/ Time:	
egarding:			
orrective Action Taken:			
heck all that Apply:	See attached e-mail/ fax Client understands and would like to proceed with an Cooling process had begun shortly after sampling ev	alysis ent	

Analytical Report 287157

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Rice Operating Co.

Project Manager: Kristin Pope

Hobbs Junction E-32-1

13-AUG-07

12600 West I-20 East Odessa, Texas 79765

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NELAC certification numbers: Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675

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13-AUG-07



Project Manager: Kristin Pope Rice Operating Co. 122 West Taylor Hobbs, NM 88240

Reference: XENCO Report No: 287157 Hobbs Junction E-32-1 Project Address: T18S R38E Sec32 E ~ Lea County New Mexico

Kristin Pope:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 287157. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfi

Brent Barron Odessa Laboratory Director

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Certificate of Analysis Summary 287157 Rice Operating Co., Hobbs, NM



Habbs Investige E 22.1 Project No

	P	roject Nan	ne: H	obds Junction E	-32-1			
Project Id:				Date Rece	ived in Lab	Aug-02-	07 12:50 pm	
Contact: Kristin Pope				Re	port Date:	13-AUC	-07	
Project Location: T18S R38E Sec32 F	E ~ Lea Coun	ity New M		Project	Manager:	Brent B	arron, II	
	Lab Id:	287157-0	01					
Analysis Requested	Field Id:	Monitor Wel	11 # 1					
	Depth:							
4	Matrix:	WATE	R.::					
	Sampled:	Jul-30-07 0	07:55					
Alkalinity by EPA 310.1	Extracted:							
	Analyzed:	Aug-07-07	13:00					
	Units/RL:	mg/L	RL					
Alkalinity, Total (as CaCO3)		290	4.00					
Inorganic Anions by EPA 300	Extracted:							
g	Analyzed:	Aug-07-07	11:48					
	Units/RL:	mg/L	RL					
Chloride	·····	87.5	5.00					
Sulfate		69.3	5.00					
Metals per ICP by SW846 6010B	Extracted:							
	Analyzed:	Aug-03-07	14:39					
· · · · · · · · · · · · · · · · · · ·	Units/RL:	mg/L	RL			•	,	· ·
Calcium	i na su	132	0.100			·	1	4.9
Magnesium	N. A.	25.8	0.010	5	· · · · · · · · · · · ·	1		See. S.
Potassium	8. 19 B.	3.38	0.500			<u></u>	a a a a a a a a a a a a a a a a a a a	
Sodium			:0.500	1 Sodiú):	1		and a second	
Residue, Filterable (TDS) by EPA	Extracted:	The second second	t to pay to	n energi etne	(se, Sas		Martin Carl	
160:1 A. C. C. Manuelle and L. M.	Analyzed:	, Aug-06-07	16:20	(1997) TE (1998)			Barby and	6 - 2 - 7 - 24) - 2 - 2 - 2
an a	Units/RL:	mg/L	RL		1	1		· · · ·
Total dissolved solids	• • • • • • •	672	5.00	"声····································	t the plan is the		3 - · · ·	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997
VOAs by SW-846 8260B	Extracted:	Aug-04-07	17:00					
	Analyzed:	Aug-05-07	19:56					
	Units/RL:	ug/L	RL					
Benzene		ND	1.00					
Ethylbenzene		ND	1.00					
Naphthalene		ND	1.00					
Toluene		ND	1.00					
o-Xylene		ND	1.00					
m,p-Xylenes		ND	1.00					

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Brent Barron

Odessa Laboratory Director



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC

Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid a state of the second data of

K Sample analyzed outside of recommended hold time.

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(210) 509-3334	(201) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
	(281) 589-0692 (214) 902 0300 (210) 509-3334 (813) 620-2000 (305) 823-8500



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Form 2 - Surrogate Recoveries



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Project Name: Hobbs Junction E-32-1

Vork Order #: 287157		Project II	D:			
Lab Batch #: 701795 Sample: 286528-001 S / M	IS Bat	ch: 1 Matri	x: Water			
Units: mg/L	SU	RROGATE RI	ECOVERY	STUDY		
VOAs by SW-846 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery % R [D]	Control Limits % R	Flags	
4-Bromofluorobenzene	0.0436	0.0500	87	86-115		
Dibromofluoromethane	0.0480	0.0500	96	86-118		
1,2-Dichloroethane-D4	0.0409	0.0500	82	80-120		
Toluene-D8	0.0468	0.0500	94	88-110		
Lab Batch #: 701795 Sample: 286528-001 SD /	MSD Bat	ch: ¹ Matri	x: Water	-		
Units: mg/L	SU	RROGATE RI	ECOVERY	STUDY		
VOAs by SW-846 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery % R [D]	Control Limits %R	Flags	
4-Bromofluorobenzene	0.0423	0.0500	85	86-115	*	
	0.0501	0.0500	100	86-118	<u> </u>	
Dibromofluoromethane						
Dibromofluoromethane 1,2-Dichloroethane-D4	0.0412	0.0500	82	80-120		
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 287157-001 / SMI	0.0412 0.0481 P. Bat	0.0500 0.0500 ch: 1 Matri	82 96 x: Water	80-120 88-110		
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Units: ug/L VOAs by SW-846 8260B	0.0412 0.0481 P Bat SU Amount Found [A]	0.0500 0.0500 ch: 1 Matri RROGATE RI True Amount [B]	82 96 x: Water ECOVERY Recovery % R	80-120 88-110 STUDY Control Limits % R	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 287157-001 / SM Units: ug/L VOAs by SW-846 8260B Analytes 4.Bromofluorohenzene	0.0412 0.0481 Pr Bat SU Amount Found [A]	0.0500 0.0500 ch: 1 Matri RROGATE RI True Amount [B]	82 96 x: Water ECOVERY Recovery %R [D]	80-120 88-110 STUDY Limits %R	Flags	
Dibromofluoromethane I,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 287157-001 / SMI Units: ug/L VOAs by SW-846 8260B 4-Bromofluorobenzene Dibromofluoromethane	0.0412 0.0481 Pr Bat SU Amount Found [A] 45.98	0.0500 0.0500 ch: 1 Matri RROGATE RI Amount [B] 50.00	82 96 x: Water ECOVERY % R [D] 92	80-120 88-110 STUDY Limits %R 86-115	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 287157-001 / SM Units: ug/L VOAs by SW-846 8260B Analytes 4-Bromofluorobenzene Dibromofluoromethane 1 2-Dichloroethane-D4	0.0412 0.0481 Pr Bat SU Amount Found [A] 45.98 53.79	0.0500 0.0500 ch: 1 Matri RROGATE RI True Amount [B] 50.00 50.00	82 96 x: Water ECOVERY % R [D] 92 108	80-120 88-110 STUDY Limits % R 86-115 86-118 80-120	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 287157-001 / SMI Units: ug/L VOAs by SW-846 8260B 4-Bromofluorobenzene Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8	0.0412 0.0481 Pr Bat SU Amount Found [A] 45.98 53.79 41.05 47.37	0.0500 0.0500 ch: 1 Matri RROGATE RI Amount [B] 50.00 50.00 50.00	82 96 x: Water ECOVERY % R [D] 92 108 82 95	80-120 88-110 STUDY Control Limits % R 86-115 86-115 86-118 80-120 88-110	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 287,157-001 / SMI Units: ug/L VOAs by SW-846 8260B 4-Bromofluorobenzene Dibromofluorobenzene Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 497846-1-BKS / F	0.0412 0.0481 Pr Bat SU Amount Found [A] 45.98 53.79 41.05 47.37 BKS Bat	0.0500 0.0500 ch: 1 Matri RROGATE RI Amount [B] 50.00 50.00 50.00 50.00	82 96 x: Water Recovery % R [D] 92 108 82 95 x: Water	80-120 88-110 STUDY Limits % R 86-115 86-118 80-120 88-110	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 287157-001 / SMI Units: ug/L VOAs by SW-846 8260B 4-Bromofluorobenzene Dibromofluorobenzene Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 497846-1-BKS / E Units: ug/L	0.0412 0.0481 Pr Bat SU Amount Found [A] 45.98 53.79 41.05 47.37 BKS Bat SU	0.0500 0.0500 ch: 1 Matri RROGATE RI Amount [B] 50.00 50.00 50.00 ch: 1 Matri RROGATE RI	82 96 x: Water. 4 Recovery % R [D] 92 108 82 95 x: Water ECOVERY	80-120 88-110 STUDY Control Limits %R 86-115 86-115 86-118 80-120 88-110 STUDY	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 VOAs by SW-846 8260B VOAs by SW-846 8260B 4-Bromofluorobenzene Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 497846-1-BKS / E Units: ug/L VOAs by SW-846 8260B	0.0412 0.0481 Pr Bat SU Amount Found [A] 45.98 53.79 41.05 47.37 BKS Bat SU Amount Found [A]	0.0500 0.0500 ch: 1 Matri RROGATE RI Amount [B] 50.00 50.00 50.00 50.00 ch: 1 Matri RROGATE RI True Amount [B]	82 96 x: Water. ECOVERY % R [D] 92 108 82 95 x: Water ECOVERY % R	80-120 88-110 STUDY Control Limits % R 86-115 86-118 80-120 88-110 STUDY Control Limits % R	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 VOAs by SW-846 8260B VOAs by SW-846 8260B 4-Bromofluorobenzene Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 497846-1-BKS / E Units: ug/L VOAs by SW-846 8260B Analytes	0.0412 0.0481 Pr Bat SU Amount Found [A] 45.98 53.79 41.05 47.37 BKS Bat SU Amount Found [A]	0.0500 0.0500 ch: 1 Matri RROGATE RI Amount [B] 50.00 50.00 50.00 ch: 1 Matri RROGATE RI True Amount [B]	82 96 x: Water ECOVERY %R [D] 92 108 82 95 x: Water ECOVERY %R [D]	80-120 88-110 STUDY Control Limits %R 86-115 86-115 86-118 80-120 88-110 STUDY Control Limits %R	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 287,157-001 / SMI Units: ug/L VOAs by SW-846 8260B 4-Bromofluorobenzene Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 497846-1-BKS / E Units: ug/L VOAs by SW-846 8260B Analytes 4-Bromofluorobenzene	0.0412 0.0481 Pr Bat SU Amount Found [A] 45.98 53.79 41.05 47.37 BKS Bat SU Amount Found [A] 43.28	0.0500 0.0500 ch: 1 Matri RROGATE RI Amount [B] 50.00 50.00 50.00 ch: 1 Matri RROGATE RI True Amount [B] 50.00	82 96 x: Water. ECOVERY %R [D] 92 108 82 95 x: Water ECOVERY %R [D] 87	80-120 88-110 STUDY Control 86-115 86-115 86-118 80-120 88-110 STUDY Control Limits % R 86-115	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 287157-001 / SM Units: ug/L VOAs by SW-846 8260B 4-Bromofluorobenzene Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 497846-1-BKS / F Units: ug/L VOAs by SW-846 8260B Analytes 4-Bromofluorobenzene Dibromofluoroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 497846-1-BKS / F Units: ug/L VOAs by SW-846 8260B Analytes 4-Bromofluorobenzene Dibromofluorobenzene	0.0412 0.0481 Pr Bat SU Amount Found [A] 45.98 53.79 41.05 47.37 BKS Bat SU Amount Found [A] 43.28 45.30	0.0500 0.0500 ch: 1 Matri: RROGATE RI Amount [B] 50.00 50.00 50.00 ch: 1 Matri: RROGATE RI True Amount [B] 50.00 50.00 50.00	82 96 x: Water ECOVERY % R [D] 92 108 82 95 x: Water ECOVERY % R [D] 87 91	80-120 88-110 STUDY Control Limits % R 86-115 86-118 80-120 88-110 STUDY Control Limits % R 86-115 86-115 86-115 86-118	Flags	
Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #:: 701795 VOAs by SW-846 8260B 4-Bromofluorobenzene Dibromofluoromethane 1,2-Dichloroethane-D4 Toluene-D8 Lab Batch #: 701795 Sample: 497846-1-BKS / E Units: ug/L VOAs by SW-846 8260B Analytes 4-Bromofluorobenzene Dibromofluoromethane 1,2-Dichloroethane-D4	0.0412 0.0481 Prime Bat SU Amount Found [A] 45.98 53.79 41.05 47.37 BKS Bat SU Amount Found [A] 43.28 45.30 37.94	0.0500 0.0500 ch: 1 Matri RROGATE RI Amount [B] 50.00 50.00 50.00 ch: 1 Matri RROGATE RI True Amount [B] 50.00 50.00 50.00 50.00	82 96 x: Water ECOVERY % R [D] 92 108 82 95 x: Water ECOVERY % R [D] 87 91 76	80-120 88-110 STUDY Control Limits % R 86-115 86-118 80-120 88-110 STUDY Control Limits % R 86-115 86-118 80-120	Flags	

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / BAll results are based on MDL and validated for QC purposes.



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Form 2 - Surrogate Recoveries



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Project Name: Hobbs Junction E-32-1

Work Order #: 287157		Р	roject ID:		
Lab Batch #: 701795 Sa	ample: 497846-1-BLK / BLK	Batch: 1	Matrix: Water		
Units: ug/L		SURROGA	ATE RECOVERY	STUDY	
VOAs by SW-846 8	260B Amo Foi [4	ount Tr and Am A []	ue ount Recovery 3] %R	Control Limits %R	Flags
Analytes			(D)		
4-Bromofluorobenzene	47.5	54 50	.00 95	86-115	
Dibromofluoromethane	48.1	1 50	.00 96	86-118	
1,2-Dichloroethane-D4	38.0	00 50	.00 76	80-120	*
Toluene-D8	46.2	20 50	.00 92	88-110	

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** Surrogates outside limits; data and surrogates confirmed by reanalysis *** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.





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Project Name: Hobbs Junction E-32-1

Work Order #: 28	37157		P	roject ID:			
Lab Batch #:	701789	Sample: 7017	'89-1-BKS	Matr	ix: Water		
Date Analyzed:	08/07/2007	Date Prepared: 08/0	7/2007	Analy	st: WRU		
Reporting Units:	mg/L	Batch #: 1	BLANK /	BLANK SP	IKE RE	COVERY	STUDY
Alkı	alinity by EPA 310.1 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike % R [D]	Control Limits % R	Flags
Alkalinity, Total (as Ca	CO3)	ND	200	194	97	80-120	
Lab Batch #:	701864	Sample: 7018	64-1-BKS	Matr	ix: Water		
Date Analyzed:	08/07/2007	Date Prepared: 08/0'	7/2007	Analy	st: IRO		
Reporting Units:	mg/L	Batch #: 1	BLANK /	BLANK SP	IKE REG	COVERY	STUDY
Inorga	nic Anions by EPA 300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits % R	Flags
Chloride		ND	10.0	9.03	90	90-110	
. Sulfate		ND	10.0	9.63	96	90-110	
Lab Batch #: Date Analyzed: Reporting Units:	701571 08/03/2007 mg/L	Sample: 7015 Date Prepared: 08/03 Batch #: 1	71-1-BKS 3/2007, BLANK /	Matr Analy BLANK SP	ix: Water st: LATC IKE RE(OR C OVERY	STUDY
Lab Batch #: Date Analyzed: Reporting Units: Metals p	701571 08/03/2007 mg/L Der ICP by SW846 6010B	Sample: 7015 Date Prepared: 08/03 Batch #: 1 Blank Result [A]	71-1-BKS 3/2007, BLANK / Spike Added [B]	Matr Analy BLANK'SP Blank Spike Result [C]	ix: Water st: LATC IKE RE(Blank Spike % R (D)	OR COVERY Control Limits % R	STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p	701571 08/03/2007 mg/L 9er ICP by SW846 6010B Analytes	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A]	71-1-BKS 3/2007, BLANK / Spike Added [B]	Matr Analy BLANK SP Blank Spike Result [C]	ix: Water st: LATC IKE REC Blank Spike % R [D]	OR COVERY Limits % R	STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium	701571 08/03/2007 mg/L Der ICP by SW846 6010B Analytes	Sample: 7015 Date Prepared: 08/03 Batch #: 1 Blank Result [A] ND ND	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00	Matr Analy BLANK SP Blank Spike Result [C] 1.83	ix: Water st: LATCO IKE RE(Blank Spike % R [D] 92	OR COVERY Limits % R 75-125	STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium	701571 08/03/2007 mg/L Der ICP by SW846 6010B Analytes	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A] ND ND ND	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00	Matr Analy BLANK SP Blank Spike Result [C] 1.83 2.08	ix: Water st: LATC Blank Spike % R [D] 92 104	OR COVERY Limits % R 75-125 75-125	STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium	701571 08/03/2007 mg/I Der ICP by SW846 6010B Analytes	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A] ND ND ND ND ND	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00	Matr Analy BLANK SP Blank Spike Result [C] 1.83 2.08 2.28	ix: Water st: LATCO IKE REC Blank Spike % R [D] 92 104 114	OR COVERY Limits % R 75-125 75-125 75-125 75-125	STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium Sodium	701571 08/03/2007 mg/L Der ICP by SW846 6010B Analytes	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A] ND ND ND ND ND ND	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00	Matr Analy BLANK SP Blank Spike Result [C] 1.83 2.08 2.28 1.94	ix: Water st: LATC IKE REC Spike % R [D] 92 104 114 97	OR Control Limits % R 75-125 75-125 75-125 75-125	STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium Sodium Lab Batch #:	701571 08/03/2007 mg/L Der ICP by SW846 6010B Analytes 701795	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A] ND ND ND Sample: 4978 Date Batch	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00 46-1-BKS	Matr Analy BLANK SP Blank Spike Result [C] 1.83 2.08 2.28 1.94 Matr	ix: Water st: LATCO IKE REC Blank Spike %R [D] 92 104 114 97 ix: Water	OR Control Limits % R 75-125 75-125 75-125 75-125	Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium Sodium Lab Batch #: Date Analyzed:	701571 08/03/2007 mg/L Analytes 701795 08/05/2007	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A] ND ND ND Sample: 4978 Date Prepared: 08/04	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00 46-1-BKS 4/2007	Matr Analy BLANK SP Blank Spike Result [C] 1.83 2.08 2.28 1.94 Matr Analy	ix: Water st: LATC Blank Spike % R [D] 92 104 114 97 ix: Water st: CELK	OR Control Limits % R 75-125 75-125 75-125 75-125 EE	Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium Sodium Lab Batch #: Date Analyzed: Reporting Units:	701571 08/03/2007 mg/L Analytes 701795 08/05/2007 ug/L	Sample: 7015 Date Prepared: 08/02 Batch #: 1 Batch #: 1 Blank Result [A] ND ND ND ND ND Sample: 4978 Date Prepared: 08/02 Batch #: 1	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00 46-1-BKS 4/2007 BLANK /	Matr Analy BLANK SP Blank Spike Result [C] 1.83 2.08 2.28 1.94 Matr Analy BLANK SP	ix: Water st: LATCO IKE REC Blank Spike % R [D] 92 104 114 97 ix: Water st: CELKI IKE REC	OR Covery Limits % R 75-125 75-125 75-125 75-125 EE Covery	STUDY
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium Sodium Lab Batch #: Date Analyzed: Reporting Units: VO2	701571 08/03/2007 mg/L Analytes 701795 08/05/2007 ug/L As by SW-846 8260B	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A] ND ND ND Sample: 4978 Date Prepared: 08/0 Batch #: 1 Blank Result [A]	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00 46-1-BKS 4/2007 BLANK / Spike Added [B]	Matr Analy BLANK'SP Blank Spike Result [C] 1.83 2.08 2.28 1.94 Matr Analy BLANK SP BLANK SP Blank Spike Result	ix: Water st: LATCO IKE REC % Blank % R [D] 92 104 114 97 ix: Water st: CELK IKE REC Blank Spike % R	OR Control Limits % R 75-125 75-125 75-125 75-125 75-125 EE COVERY Control Limits % R	STUDY Flags STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium Sodium Lab Batch #: Date Analyzed: Reporting Units: VO2	701571 08/03/2007 mg/L Analytes 701795 08/05/2007 ug/L As by SW-846 8260B Analytes	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A] ND ND ND Sample: 4978 Date Prepared: 08/0 Batch #: 1 Blank Result [A]	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00 46-1-BKS 4/2007 BLANK / Spike Added [B]	Matr Analy BLANK SP Blank Spike Result [C] 1.83 2.08 2.28 1.94 Matr Analy BLANK SP Blank Spike Result [C]	ix: Water st: LATCO IKE REC Spike % R [D] 92 104 114 97 ix: Water st: CELKI IKE REC Blank Spike % R [D]	OR Covery Limits % R 75-125 75-125 75-125 75-125 75-125 EE COVERY Control Limits % R	STUDY Flags STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium Sodium Lab Batch #: Date Analyzed: Reporting Units: VO2 Benzene	701571 08/03/2007 mg/L Analytes 701795 08/05/2007 ug/L As by SW-846 8260B Analytes	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A] ND ND ND Sample: 4978 Date Prepared: 08/04 Batch #: 1 Blank Result [A] ND	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00 2.00 46-1-BKS 4/2007 BLANK / Spike Added [B] 25.0	Matr Analy BLANK'SP Blank Spike Result [C] 1.83 2.08 2.28 1.94 Matr Analy BLANK SP Blank Spike Result [C] 24.0	ix: Water st: LATC IKE REC Blank Spike % R [D] 92 104 114 97 ix: Water st: CELK IKE REC Blank Spike % R [D] 92 104 114 97 ix: Water st: CELK Blank Spike % R [D] 92 92 104 114 97 104 104 104 104 104 104 104 104	OR Covery Limits % R 75-125 75-125 75-125 75-125 75-125 EE Covery Control Limits % R 66-142	STUDY Flags STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium Sodium Lab Batch #: Date Analyzed: Reporting Units: VO2 Benzene Ethylbenzene	701571 08/03/2007 mg/L Der ICP by SW846 6010B Analytes 701795 08/05/2007 ug/L As by SW-846 8260B Analytes	Sample: 7015 Date Prepared: 08/0 Batch #: 1 Blank Result [A] ND ND ND Sample: 4978 Date Prepared: 08/04 Batch #: 1 Blank Result [A] ND	71-1-BKS 3/2007, 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00 2.00 46-1-BKS 4/2007 BLANK / Spike Added [B] 25.0 25.0	Matr Analy BLANK SP Blank Spike Result [C] 1.83 2.08 2.28 1.94 Matr Analy BLANK SP Blank Spike Result [C] 24.0 26.4	ix: Water st: LATCO IKE REC % Blank % R [D] 92 104 114 97 ix: Water ix: CELKI IKE REC Blank Spike % R [D] 96 106	OR Covery Limits % R 75-125 75-125 75-125 75-125 75-125 EE Covery Control Limits % R 66-142 75-125	STUDY Flags STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Metals p Calcium Magnesium Potassium Sodium Lab Batch #: Date Analyzed: Reporting Units: VO2 Benzene Ethylbenzene Toluene	701571 08/03/2007 mg/L Analytes 701795 08/05/2007 ug/L As by SW-846 8260B Analytes	Sample: 7015 Date Prepared: 08/02 Batch #: 1 Batch #: 1 Blank Result [A] ND ND ND ND ND Sample: 4978 Date Prepared: 08/02 Batch #: 1 Batch #: 1 Batch #: 1 Batch #: 1 ND ND ND ND	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00 2.00 46-1-BKS 4/2007 BLANK / Spike Added [B] 25.0 25.0 25.0	Matr Analy BLANK SP Blank Spike Result [C] 1.83 2.08 2.28 1.94 Matr Analy BLANK SP Blank Spike Result [C] 24.0 26.4 24.3	ix: Water st: LATC Blank Spike % R [D] 92 104 114 97 ix: Water st: CELK IKE REC Blank Spike % R [D] 96 106 97	OR Control Limits % R 75-125 75-125 75-125 75-125 75-125 EE COVERY S Control Limits % R 66-142 75-125 59-139	STUDY Flags STUDY Flags
Lab Batch #: Date Analyzed: Reporting Units: Metals p Calcium Magnesium Potassium Sodium Lab Batch #: Date Analyzed: Reporting Units: VO2 Benzene Ethylbenzene Toluene o-Xylene	701571 08/03/2007 mg/L Der ICP by SW846 6010B Analytes 701795 08/05/2007 ug/L As by SW-846 8260B Analytes	Sample: 7015 Date Prepared: 08/02 Batch #: 1 Batch #: 1 Blank Result [A] ND ND ND ND ND Sample: 4978 Date Prepared: 08/02 Batch #: 1 Blank Result [A] ND ND ND Date Prepared: 08/02 Batch #: 1 ND ND ND ND ND ND ND ND ND ND	71-1-BKS 3/2007, BLANK / Spike Added [B] 2.00 2.00 2.00 2.00 46-1-BKS 4/2007 BLANK / Spike Added [B] 25.0 25.0 25.0 25.0	Matr Analy BLANK'SP Blank Spike Result [C] 1.83 2.08 2.28 1.94 Matr Analy BLANK SP BLANK SP Blank Spike Result [C] 24.0 26.4 24.3 26.7	ix: Water st: LATC IKE REC % Blank % R [D] 92 104 114 97 ix: Water st: CELKI IKE REC Blank Spike % R [D] 96 106 97 107	OR Control Limits % R 75-125 75-125 75-125 75-125 75-125 EE COVERY S Control Limits % R 66-142 75-125 59-139 75-125	STUDY Flags STUDY Flags

Blank Spike Recovery [D] = 100*[C]/[B] All results are based on MDL and validated for QC purposes.



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Form 3 - MS Recoveries

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Project Name: Hobbs Junction E-32-1

		Pr	oject ID:		
Date Prepared:	08/07/2007	7	Analyst:	IRO	
Batch #:	1		Matrix:	Water	
MAT	RIX / MA	TRIX SPIKE	RECO	VERY STU	JDY
Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	., Flag
548	250	862	126	90-110	X
	Date Prepared: Batch #: MAT Parent Sample Result [A] 548	Date Prepared: 08/07/2007 Batch #: 1 MATRIX / MA Parent Sample Result [A] [B] 548 250	Pr Date Prepared: 08/07/2007 Batch #: 1 MATRIX / MATRIX SPIKE Parent Sample Result [A] [B] 548 250 862	Project ID: Date Prepared: 08/07/2007 Analyst: Batch #: 1 Matrix: MATRIX / MATRIX SPIKE RECO Parent Spike Result % R Sample Spike Result [D] [A] [B] 250 862 126	Project ID: Date Prepared: 08/07/2007 Analyst: IRO Batch #: 1 Matrix: Water MATRIX / MATRIX SPIKE RECOVERY STU Parent Spike Spike Added % R Control Limits - % R Image: Result Added [B] Spike Added 90-110 548 250 862 126 90-110

Matrix Spike Percent Recovery [D] = 100*(C-A)/BRelative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes



Form 3 - MS / MSD Recoveries



Project Name: Hobbs Junction E-32-1

QC- Sample ID: 286528-001. S

Project ID:

1 Matrix: Water CELKEE Batch #:

MATRIX SPIKE / MATRIX SPIKE DUPLICATE, RECOVERY STUDY Analyst: 08/04/2007 Date Prepared:

Date Analyzed: 08/05/2007 Lab Batch ID: 701795 Work Order # 287157

Reporting Units: mg/L		M	VTRIX SPIKE	C/MATR	AIAS XI	E DUPLICAT	E RECO	VERY S	STUDY		
VOAs by SW-846 8260B	Parent Sample	Snike	Spiked Sample Result ⁸	Spiked Sample	Snike	Duplicate Sniked Samnle	Spiked Dun.	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added	C	%R [0]	Added	Result [F]	%R [G]	%	%R	%RPD	0
Benzene	DN	0.025	0.024	96	0.025	0.025	100	4	66-142	21	
Ethylbenzene	QN	0.025	0.027	. 108	0.025	0.026	104	4	75-125	20	
Toluene	ND	0.025	0.025	100	0.025	0.026	104	4	59-139	21	
o-Xylene	ND	0.025	0.027	108	0.025	0.027	108	0	75-125	20	
m,p-Xylenes	ND	0.050	0.053	. 106	0.050	0.052	104	2	75-125	20	

Relative Percent Difference RPD = 200*(D-G)/(D+G)Matrix Spike Percent Recovery [D] = 100*(C-A)/B

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

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Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

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Project Name: Hobbs Junction E-32-1

Work Order #: 287157

	701780				Drainat	ID ,			
Lab Batch #:	01789	Date Pre	nared: 08/0	7/2007	Analy	iD.			
OC- Sample ID:	287122-001 D	Butterie	atch #: 1		Matr	i v : Water			
Reporting Units:	mg/L:	. –	SAMPLE	SAMPLE	DUPLIC	TATE REC	OVERY	1	
Alk	alinity by EPA 310.1 Analyte	U. 4, 2	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag		βatis.
Alkalinity, Total (as (CaCO3)	·····	216	216	0	20			
Lab Batch #: Date Analyzed:	701571 08/03/2007	Date Pre	pared: 08/0	3/2007	Analy	st: LATCOI	۲	I	
QC- Sample ID:	287179-001 D	В	atch #: 1		Matr	ix: Water		_	
Reporting Units:	mg/L		SAMPLE	/ SAMPLE	DUPLIC	CATE REC	OVERY		
Metals	per ICP by SW846 60 Analyte	10B	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag		
Calcium			301	285	5	25			
Magnesium			120	134	11	25			
Potassium		_,	20.1	15.8	24	25			
Sodium		· · · · · · · · · · · · · · · · · · ·	284	265	7	25			
Lab Batch #: Date Analyzed: QC- Sample ID: Reporting Units:	701790 08/06/2007 287122-001 D mg/L	Date Pre	pared: 08/0 atch #: 1 SAMPLE	6/2007 / SAMPLE	Analy Mat DUPLIC	st: IRO IX: Water ATE REC	 7,03190 (d) 05/09/2 (d) 2/07/22 (d) 2/07/22 (d) 2/07/222 (d) 2/07/222 (d) 2/07/222 		
Residue, Fi	lterable (TDS) by EPA Analyte	A 160.1	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag	an a	ga por en en el conserva de la conse la conserva de la cons la conserva de la cons la conserva de la conserva
Total dissolved solid:	S		754	784	4	30		1	
Lab Batch #: Date Analyzed: QC- Sample ID: Reporting Units:	701790 08/06/2007 287348-002 D mg/L	Date Pre B	pared: 08/0 atch #: 1 SAMPLE /	6/2007 / SAMPLE	Analy Matr DUPLIC	st: IRO ix: Water	OVERY]	
Residue, Fi	lterable (TDS) by EPA Analyte	A 160.1	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag		
Total dissolved solids	s		6250	6290	1	30		1	

Spike Relative Difference RPD 200 * |(B-A)/(B+A)|All Results are based on MDL and validated for QC purposes.



Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

.....

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Client:	file	
Date/ Time:	8.2.07	12:50
Lab ID # :	28715	7
initials:	GL.	

Sample Receipt Checklist

			"	u	lient initiale
#1	Temperature of container/ cooler?	(Fes)	No	1,5 °C	
#2	Shipping container in good condition?	Yes	No		
#3	Custody Seals intact on shipping container/ cooler?	des	_No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
#5	Chain of Custody present?	Ves)	No		
#6	Sample instructions complete of Chain of Custody?	Yes	No		
#7	Chain of Custody signed when relinquished/ received?	Yes	No		
#8	Chain of Custody agrees with sample label(s)?	Yes-)	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	Ves	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#11	Containers supplied by ELOT?	Yes	No		
#12	Samples in proper container/ bottle?	Yes	No	See Below	
#13	Samples properly preserved?	XES>	No	See Below	
#14	Sample bottles intact?	Xes	No		
#15	Preservations documented on Chain of Custody?	Yes	No		
#16	Containers documented on Chain of Custody?	Yes	No		
#17	Sufficient sample amount for indicated test(s)?	Yes	No	See Below	1
#18	All samples received within sufficient hold time?	Yes	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	Not Applicable)	
#20	VOC samples have zero headspace?	Yes	No	Not Applicable	t
-					

Variance Documentation

	Contact:		Contacted by:		Date/ Time:	· · · · · · · · · · · · · · · · · · ·	a de la constante de la constan Esta de la constante de la const
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	Corrective	Action Taken			المربعة المربع المربعة المربعة		
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Check all that Apply:

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See attached e-mail/ fax

Client understands and would like to proceed with analysis Cooling process had begun shortly after sampling event



Katie Lee

From:	Kristin Pope [kpope@riceswd.com]
Sent:	Wednesday, October 31, 2007 3:30 PM
To:	Katie Lee
Subject	Fw: Summary of July 18 meeting
Origina	al Message
From: <u>Har</u>	Isen, Edward J., EMNRD
To: <u>Kristin</u>	<u>Pope</u>
Cc: <u>Caroly</u>	n Haynes ; Scott Curtis ; Sanchez, Daniel J., EMNRD ; Price, Wayne, EMNRD
Sent: Wed	nesday, August 08, 2007 11:26 AM
Subject: F	E: Summary of July 18 meeting
Kristin, Your sumn Attached is I'll be send Also, I will	nary appears to be accurate and complete. The summary that you sent with comments from me [OCD case #s and formal (email) approval dates]. Ing more formal (via email) approvals for the closures and some of the CAPs soon. review and comment on the other CAPs and the APs a.s.a.p.
Thanks for	the summary.
Let me kno	w if you have any questions regarding my comments.
Edward J.	Hansen
Hydrologis	t
Environme	ntal Bureau
505-476-34	189

From: Kristin Pope [mailto:kpope@riceswd.com] **Sent:** Wednesday, August 08, 2007 10:34 AM **To:** Sanchez, Daniel J., EMNRD; Price, Wayne, EMNRD; Hansen, Edward J., EMNRD **Cc:** Carolyn Haynes; Scott Curtis **Subject:** Summary of July 18 meeting

Gentlemen,

.....

Please review the attached summary of our July 18 meeting. Please let me know if anything needs to be changed. OCD and ROC have already moved forward with several of the projects listed but I would like written confirmation for our files. Thanks again for your time.

Kristin Farris Pope Project Scientist RICE Operating Company Hobbs, New Mexico (505) 393-9174

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OCD/ROC MEETING SUMMARY July 18, 2007

CLOSURES

- Abatement Completion Report for <u>BD Zachary Hinton EOL</u> submitted by R.T. Hicks Consultants on 3/15/2007. AP-50
- Abatement Completion Report for <u>EME Marathon Barber (jct. E-5)</u> submitted by R.T. Hicks Consultants on 5/16/2007. 1R0427-91 *Approved soil work completed Dec. 2006*
- 3. Closure Report for <u>Hobbs I-29 EOL boot</u> submitted by R.T. Hicks Consultants on 5/23/2007. Approved soil work completed in 2006. 1R428-42
- 4. Closure Request for <u>BD jct. N-29</u> submitted by R.T. Hicks Consultants on 2/10/2007. #1R0426-37

APPROVALS

 Stage 1&2 Abatement Plan for <u>Vacuum F/G-35 SWD</u> submitted by R.T. Hicks Consultants; proof of public notice submitted Feb. 2006; AP-59 *Vadose zone remedy complete; reclaiming surface; groundwater treatment ongoing at F-35; evaluating treatment potential at G-35*

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- 2. INVESTIGATION & CHARACTERIZATION PLANS (ICP) NMOCD Approved (1 – 14) via email August 6, 2007
 - 1. Hobbs O-5 Historical Release by Hicks on 4/11/2007 #1R428-69
 - 2. <u>EME State 'H' EOL</u> by P. Galusky on 5/1/2007 #1R427-15
 - 3. <u>Justis E-1 vent</u> by Highlander on 11/29/2006. #1R0432-06
 - 4. Vacuum State 'P' EOL by Galusky on 4/20/07 #1R425-26
 - 5. <u>Vacuum jct. F-31-1</u> by Hicks on 4/17/07. #1R425-27
 - 6. <u>BD P-26-1 vent</u> by Trident on 2/12/2007. #1R0426-106
 - 7. <u>BD jct. P-26-2</u> by Trident on 2/12/2007. #1R0426-107
 - 8. <u>Hobbs jct. E-4, M-4 vent, & N-4 vent</u> (1 plan) by Hicks on 4/17/07 #1R428-71, #1R428-76, #1R428-68, respectively
 - 9. <u>EME L-6 boot</u> by Trident on 12/1/2006. #1R0427-09
 - 10. EME B-8 leak by Trident on 12/1/2006. #1R0480
 - 11. EME jct. F-18 by Arcadis on 7/6/2007 #1R427-16
 - 12. BD jct. F-25-1 by Arcadis on 7/12/2007 #1R426-10
 - 13. <u>EME L-15-1 vent</u> by Galusky on 7/16/2007 #1R427-173
 - 14. EME State 'Q' EOL boot by Galusky on 7/16/2007 #1R427-174
- 3. Corrective Action Plan (CAP) for <u>Hobbs E-15 SWD</u> submitted on 11/28/2006 by Arcadis G&M. *Approved with clay or GCL condition* #1R428-40 NMOCD Approved with conditions via email July 27, 2007

- 4. CAP for Hobbs F-29-1b boot submitted by R.T. Hicks Consultants on 4/2/2007. #1R428-45
- CAP for Hobbs O-29 vent submitted by R.T. Hicks Consultants on 4/2/2007. 5. #1R428-43
- CAP for Hobbs I-29 vent submitted by R.T. Hicks Consultants on 4/13/2007. 6. #1R428-41
- CAP for Hobbs jct. E-33-1 submitted by R.T. Hicks Consultants on 1/2/2007. 7. #1R428-67
- 8. CAP for Hobbs B-32 boot submitted by R.T. Hicks Consultants on 1/22/2007. #1R428-57
- 9. CAP for Hobbs jct. E-32-1 submitted by R.T. Hicks Consultants on 1/22/2007. #1R428-65
- CAP for Hobbs F-33 vent submitted by R.T. Hicks Consultants on 1/22/2007. 10. #1R428-58

CAP for EME A-2 leak submitted by Highlander on 5/23/2007. # 1R0427-62 condition: install clay at 4 ft instead of 3 ft as proposed el tres as to strate and

- CAP for jct. A-2-1 submitted by Highlander on 5/23/2007. # 1R0427-177 12. condition: install clay at 4 ft instead of 3 ft as proposed
 - CAP for EME I-1 off-site encroachment submitted by Trident on 2/27/07. 13. #1R0464

Rule 19 ABATEMENT PLANS

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OCD granted approval to install monitoring wells as proposed while reviewing plans for administrative completeness:

- 1. Stage 1 & 2 Abatement Plan for Hobbs F-29 SWD submitted on 10/27/2006 by R.T. Hicks Consultants. Public notice ready to submit upon approval. AP-64
- 2. Stage 1 Abatement Plan for EME C-16(1) leak submitted on 5/25/2007 by L. Peter Galusky; #1R0476 Public notice ready to submit upon approval.
- 3. Stage 1 Abatement Plan for EME C-16(2) leak submitted on 5/25/2007 by L. Peter Galusky; #1R0477 Public notice ready to submit upon approval.
- Stage 1&2 Abatement Plan for BD Santa Rita release site submitted on 4. 12/11/2006 by Trident. AP-58 *want to drill more MWs*

- 5. Stage 1&2 Abatement Plan for <u>EME jct. M-16-1</u> submitted on 1/29/2007 by Arcadis G&M. AP-42
- Stage 1&2 Abatement Plan for <u>EME jct. A-20</u> submitted on 1/29/2007 by Arcadis G&M. AP-43
- Stage 1 Abatement Plan for <u>BD H-35 pit</u> submitted by Arcadis G&M on 3/23/2007. #1R0216
- 8. Stage 1 & 2 Abatement Plan for <u>Justis jct. L-1 boot</u> submitted by Highlander on 1/17/07. AP-48

OCD WILL REVIEW

2.

- Stage 1 Final Report & Closure Request for <u>EME jct. K-33-1</u> submitted by Whole Earth on 12/28/2006. AP-60 OCD requests confirmation of regional gradient/impact
 - CAP for EME M-5 SWD submitted by Hicks on 9/10/2004. #1R424

Rule 19 Release and CAP for soil for <u>BD jct. F-17</u> submitted by Highlander on 8/30/06. Additional information requested by OCD was submitted on 12/29/06 and presented at meeting on 2/21/2007. AP-47

- 4. Request for Release from Rule 19 for <u>EME H-13 release</u> submitted on 8/30/2006 by Highlander Environmental. AP-44 *Additional information requested by OCD was submitted on 12/29/06 and presented at meeting on 2/21/2007. Showed current site photos.*
- 5. Final Investigation Report & CAP for <u>EME jct. K-6</u> submitted by Trident on 3/7/2007. AP-46.

OTHER

- 1. CAP for <u>BD K-4 leak</u> submitted by Highlander on 4/23/2007. #1R0459 *APPROVAL to begin pumping from MW-1 as proposed; OCD will evaluate CAP (soil work)*
- 2. CAP for <u>BD O-17-1</u> vent submitted by Highlander on 5/11/2007. #1R426-12 No groundwater impact; soil work only ROC WILL REVISE AND RE-SUBMIT FOR CLARIFICATION

 GEOSYNTHETIC CLAY LINER (GCL) option for Junction Box Upgrade Program Modification request required; can be emailed. NMOCD Approved with conditions via email July 27, 2007

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Concetive Action Plan for E-32-1 Junction Box Site

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R.T. HICKS CONSULTANTS, LTD 901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104

Corrective Action Plan for E-32-1

Junction Box Site Hobbs Salt Water Disposal System NMOCD CASE #: 1R0428-66

R.T. Hicks Consultants, LTD

January 15, 2007

901 RIO GRANDE BLVD. NW, SUITE F-142, ALBUQUERQUE, NM 87104

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	Conclusions
	Recommendations
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4.0	Characteristics of the Vadose Zone
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8.0	Criteria for Closure 12

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- Appendix B Lithologic Logs with Field Measurements
- Appendix C Analytic Reports
- Appendix D Model Explanation



V 1.0 EXECUTIVE SUMMARY

This Corrective Action Plan presents the results of the characterization activities performed by R.T. Hicks Consultants (Hicks Consultants) and Rice Operating Company (ROC) at the E-32-1 site located in the Hobbs Salt Water Disposal System (SWD). Hydrocarbon constituents are not present in the vadose zone. HYDRUS-1D simulation modeling predicts that the placement of a vegetative cap over the site mitigates any threat to fresh water posed by chloride in the vadose zone. After re-vegetation of the site and two additional quarterly ground water monitoring events, ROC will submit a final closure report.

Data Summary

- 1. Hicks Consultants and ROC conducted field activities at the E-32-1 Junction Box site in May 2004. This involved general reconnaissance as well as supervision of borehole sampling of the vadose zone from ground surface to ground water.
- 2. Chloride concentration data from vadose zone samples show that the chloride center of mass resides from near ground surface to 10 feet below ground surface. The maximum chloride concentration is at 10 feet bgs (3,180 mg/kg - laboratory) and the chloride concentration at 5 feet bgs is 1,200 mg/kg (field analysis).
- 3. Chloride concentrations below the center of mass ranged from 689 mg/kg (field result for 16 feet bgs) to 414 mg/kg (field result at 35 feet bgs).
- 4. Neither field PID analyses nor observed characteristics of samples (e.g. odor, color) suggest that hydrocarbons are present in the vadose zone. All field PID analyses were 2 ppm. Because of this finding, samples were not submitted to the laboratory for analysis for hydrocarbons.
- 5. The chloride concentrations in the vadose zone exceeded the delineation limit established by the Investigation Characterization Plan (ICP). Therefore a monitoring well was installed in the soil boring.
- 6. Three ground water sampling events provided additional data for this Corrective Action Plan.
- 7. Although the initial ground water sampling event showed that TDS and chloride exceeded WQCC Standards (1,350 and 393 mg/L respectively), this result could not be replicated. The two subse-

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quent quarterly monitoring events show that ground water is below WQCC Standards. The most recent sampling result from this well (9/19/06) was 189 mg/L chloride and 740 mg/L TDS.

Conclusions

- 1. Initial samples from monitoring wells often return anomalous results due to construction issues such as the transport of up-hole constituents to the ground water table. The fact that two consecutive sampling events show results that are 50% of the original finding allows us to conclude that the first analysis is anomalous and is not representative of ground water quality beneath the site.
 - 2. HYDRUS-1D simulations predict that subsurface chloride mass will migrate downward over decades, disperse in the soil column and enter ground water at a very slow rate and that ground water will not exceed WQCC standards.

Recommendations

- 1. Restore and re-vegetate the ground surface at the E-32-1 Junction Box Site.
 - 2. Continue ground water monitoring for two additional quarters.
 - 3. Upon documentation of surface restoration and verification that ground water quality remains below WQCC Standards and does not show an increasing concentration trend over time, ROC will submit a closure report for the E-32-1 Junction Box site.

The selected remedy is the creation of an infiltration barrier through surface restoration and re-vegetation of the site. This remedy is protective of ground water quality, human health and the environment.



Corrective Action Plan E-32-1 Junction Box Site NMOCD CASE #: 1R0428-66

V 2.0 BACKGROUND

The Hobbs Salt Water Disposal System (SWD), which managed produced water from the late 1950s to the present, is now closed. Future releases from the system infrastructure are not possible. Closure of facilities like the E-32-1 Junction Box within Hobbs SWD, followed the August 6, 2004 NMOCDapproved junction box investigation plan. This plan calls for delineation of any impact from these sites during the closure process and states:

If 12 feet vertical delineation at the source reveals Target Concentrations for TPH or BTEX will not meet NMOCD guidelines or TPH and BTEX will meet guidelines but there is not a significant decline vs. depth in chloride concentration, the site-impact is judged to be outside the scope of this work plan and will become a risk-based corrective action (RBCA) project-site.

The E-32-1 Junction Box site met these criteria. With the abandonment of the system in 2002, Rice Operating Company (ROC) excavated and removed the E-32-1 Junction Box and the uppermost four feet of the vadose zone. At the time of investigation, the excavation was filled with a mixture of silty loam with some caliche.

2.1 Location

Plate I is an aerial photograph of the site when it was active, taken between the second and a second and a second 1996 and 1998, with the location of the boring and nearby roads noted.

The site is within unit letter E, Section 32, Township 18S Range 38E. To access the site from the intersection of West County Road and Sanger proceed south on West County Road 1/2 mile and turn left onto the unpaved lease road. Continue east about 100 feet and turn left again off the road. Proceed approximately 200 feet north and then 50 feet east to the site which is situated along the north side of a fenced gas well location.

2.2 Characterization Activities

In May 2006, Hicks Consultants, ROC, and Atkins Drilling mobilized to conduct a series of exploratory drillings at five sites within the Hobbs SWD System. The investigation and characterization used the same protocols as described in the NMOCD-approved work plan for the Section 29 sites and was consistent with the NMOCD-approved ICP submitted for the site (see Appendix A). In order to permit comparison of the results from the boring with the ambient chloride concentrations in the vadose zone, collection of



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samples from a background soil boring was a critical element of the ICP. Appendix B shows the results of field chloride measurements from the background soil boring, located in Section 32, Unit A.

At the E-32-1 site, one soil boring was advanced immediately adjacent to the former junction box on May 4, 2006. In the field, ROC evaluated samples from each depth for chloride and used the heated headspace method to measure total organic vapors by PID. Two samples were submitted to the laboratory from depths showing the highest field chloride measurements (9-10 feet bgs) and from (39-40 feet bgs). The boring was completed as a monitoring well due to chloride field tests indicating levels above the threshold specified in the ICP (250 mg/kg). The total depth of the boring is 62 feet bgs and the depth to water is about 43 feet.



Corrective Action Plan E-32-1 Junction Box Site NMOCD CASE #: 1R0428-66 page

W 3.0 CHARACTERISTICS OF THE VADOSE ZONE

The upper 4 feet of the 43 foot thick vadose zone at the site is composed of a silty loam that is underlain by 16 feet of caliche and sand. Below these two layers, a fine-grained sand silt composes the vadose zone profile. The lithologic log of the boring/monitoring well is included in Appendix B.

ROC staff performed field chloride measurements and PID measurements every five feet starting at 6 feet bgs. The peak chloride concentration of 2,196 mg/kg, is at 10 feet bgs (Figure 1). Laboratory analyses confirm the results of the field tests (3,180 mg/kg at 9-10 feet bgs and 284 mg/kg at 39-40 feet bgs. Below this center of mass, chloride concentrations declined to 299 mg/kg at 41 feet bgs. Background chloride concentrations in the area, as determined from the background boring located in Section 32, Unit A (Appendix B), are approximately 80 mg/kg.

Neither hydrocarbon odors nor PID measurements above 2 ppm were detected in the boring (Appendix B). Therefore, no laboratory analyses for petroleum hydrocarbons were necessary.



Figure 1: Chloride Concentrations with Depth

Corrective Action Plan E-32-1 Junction Box Sile NMOCD CASE #: 1R0428-66

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$oldsymbol{ abla}$ 4.0 Characteristics of the saturated zone

At the E-32-1 Junction Box site, moist soil was observed at 41 feet bgs and depth to water is at 43 feet bgs.

Ground water sampling showed that chloride and TDS concentrations slightly exceeded WQCC standards for the initial ground water sampling event, however all constituents of concern were below WQCC standards for the subsequent sampling events. Field data and lab data are summarized in the table below. Analytical Reports for the site are included in Appendix C.

et bgs)	Chloride	TDS	BTEX	
29	202	1.250	0.001	1
<i>L</i> /	393	1,350	< 0.001	
63	134	682	< 0.001	
63	189	740	< 0.001	1950 - 1970 1
6 (53 53 v of data for 1	53 134 53 189 x of data for the site 189	53 134 682 53 189 740 <i>x</i> of data for the site	53 134 682 <0.001

Ground water quality data obtained from recently drilled monitoring wells crosses and the data often show "false positives" due to conditions that can cause downward when show that positransportation of up-hole sediments and entrained constituents during drilling. The two most recent sampling events show that ground water quality at this site is within the range of values observed in the general area and are 50% less than the initial sampling. Chloride concentrations in domestic supply wells range from 60 mg/L to more than 300 mg/L. From these data we conclude that the initial sampling event returned anomalous results and the subsequent sampling results are representative of ground water quality.



Corrective Action Plan E-32-1 Junction Box Site NMOGB GASE #: 1R0428-65

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♥ 5.0 EVALUATION OF VERTICAL CHLORIDE FLUX

Data from the boring shows chloride concentrations above background levels throughout the vadose zone. However, the center of chloride mass is at 10 feet bgs, is 30 feet above the water table. Below 10 feet bgs chloride concentrations decline with depth.

The fact that the center of chloride mass resides at 10 feet bgs and concentrations decrease below that depth allow the following conclusions:

- 1. Operation of the site did not cause saturated flow conditions, and
- 2. The deep percolation rate beneath the fine-grained uppermost vadose zone (0-9 feet bgs) was not sufficient to evenly distribute the chloride load throughout the vadose zone.

Where the deep percolation rate is relatively high due to releases of produced water, chloride concentrations are generally higher than 1,000 mg/kg throughout the vadose zone and a distinct center of mass is not observed. This is not the case at the E-32-1 junction box site.

Hicks Consultants believes the following release/transport scenario is con-fourse to a statistic between the second statistic betwee

- At the E-32-1 site, periodic releases created sufficient soil moisture to allow chloride transport to a depth of 10 feet, perhaps under saturated or near-saturated flow.
- After the release, evaporation of soil moisture and drying of the upper vadose zone reduced soil moisture and hydraulic conductivity temporarily "stranding" the chloride mass at 10 feet bgs. Unsaturated flow caused downward chloride transport through the entire vadose zone, albeit at a very slow rate/flux.

The fact that ground water is not impaired (i.e. ground water quality does not exceed WQCC standards) by chloride flux from the vadose zone to the aquifer also supports a conclusion that chloride in the vadose zone cannot and will not migrate to ground water and exceed the WQCC Standards because releases are no longer possible and the proposed remedy will limit additional deep percolation.



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Corrective Action Plan 1-32-1 Junction Box Site NWOCD CASE #: 1R0428-66

Nevertheless, Hicks Consultants elected to run a HYDRUS-1D model to provide additional confirmation of our conclusion that the residual chloride mass poses no threat to fresh water. A HYDRUS 1-D model was constructed with site specific data as detailed in Appendix E. The predicted vadose zone solute flux to ground water was used as an input to a simple ground water mixing model. Predicted chloride concentration in a hypothetical monitoring well at the down-gradient edge of the site is shown in Figure 2. The model assumes vegetation within the upper three feet of silt loam at the site and that the initial ground water chloride concentration is 161 mg/L.



As can be seen in Figure 2, chloride in the lower vadose zone enters ground water raising chloride concentration to 163 mg/L about two years after revegetation of the site. With establishment of vegetation at the site, infiltration is reduced. With "drying" out of the vadose zone soil materials, hydraulic conductivities are reduced. The resultant vadose zone chloride flux to ground water is lowered such that ground water chloride concentration does not rise above 162 mg/L after approximately 20 years (see Appendix D).



Corrective Action Plan E-32-1 Junction Box Site NMOCD CASE #: 1R0428-66 page

V 7.0 PROPOSED REMEDY

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Experience at similar sites and HYDRUS-1D simulations of the conditions similar to those observed at this site support simple re-vegetation of the surface as an effective corrective action.

This Corrective Action Plan calls for two additional ground water monitoring events (to be completed in March 2007). If chloride concentrations in ground water remain below WQCC standards and show no increasing concentration trend, ROC will submit evidence of re-vegetation in a final closure report and request closure of the regulatory file.



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Corrective Action Plan E-32-1 Junction Box Site NMOCE CASE #: 1R0428-66

W 8.0 CRITERIA FOR CLOSURE

Ground water beneath the site is below WQCC standards for the constitu-

The data and HYDRUS-1D modeling shows that water contaminants in the vadose zone will not, with reasonable probability contaminate ground water or surface water in excess of the WQCC standards through leaching, percolation, or other transport mechanisms, or as the water table elevation fluctuates.

After re-vegetation of the site and two additional quarters of ground water monitoring (until March 2007) that confirm no impairment of ground water, ROC will submit a final closure report and request closure of the regulatory file for the site.



Corrective Action Plan E-32-1 Junction Box Site NMOCD CASE #: 1R0428-66




R. T. HICKS CONSULTANTS, LTD.

1909 Brunson Ave 🛦 Midland TX 79701 🛦 432.638.8740 🛦 Fax: 413.403.9968

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CERTIFIED MAIL - RETURN RECIEPT NO. 7099 3400 0017 1737 2367

January 20, 2006

Mr. Wayne Price New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505

RE: Investigation Characterization Plan: T18S R38E: E-33-1 Junction Box, B-32 Boot, E-32-1 Junction Box, E-32-2 Junction Box, F-33 Vent

Hobbs Salt Water Disposal System

Dear Mr. Price:

On behalf of Rice Operating Company, please accept this submission as our Initial Characterization Plan (ICP) for the five (5) sites referenced above within the Hobbs Salt Water Disposal System (Plate 1)

Rice Operating Company (ROC) is the service provider (operator) for the Hobbs Saltwater Disposal System and has no ownership of any portion of pipeline, well, or facility. A consortium of oil producers who own the Hobbs System (System Partners); provide all operating capital on a percentage ownership/usage basis. Major projects require System Partner authorization for expenditures (AFE) approval and work begins as funds are received. We will implement the work outlined herein after NMOCD approval and subsequent authorization from the System Partners.

For all environmental projects, ROC will choose a path forward that:

1. protects public health,

and analysis and and the set

- 2. provides the greatest net environmental benefit,
- 3. complies with NMOCD Rules, and
- 4. is supported by good science.

The last criteria employed when evaluating any proposed remedy or investigative work is confirming that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

Each site shall have three submissions or a combination of:

- 1. This <u>Investigation and Characterization Plan</u> (ICP) is a proposal for data gathering and site characterization and assessment.
- 2. Upon evaluation of the data and results from the ICP, a recommended remedy will be submitted in a <u>Corrective Action Plan</u> (CAP).
- 3. Finally, after implementing the remedy, a <u>closure report</u> with final documentation will be submitted.

January 20, 2006 Page 2

Task 1Evaluate Chloride and BTEXN Concentrations in Soil at Five Sites,
Evaluate Ground Water Quality if Necessary

We will follow the same protocol for characterization of the unsaturated zone at the five new ROC sites listed below.

- E-33-1 Junction Box
- o B-32 Boot
- o E-32-1 Junction Box
- o E-32-2 Junction Box
- o F-33 Vent

At each of the above-referenced sites, we will locate the sampling borehole as close as practical to the suspected release source. Earlier, we inspected each of the five sites nominated in this ICP and identified the boring location before the sites were backfilled and re-graded. Due to our recent experience with difficulties encountered in the installation of well clusters in this area, we plan to employ hollow-stem auger drilling techniques for sampling.

We will screen each sample in the field for chlorides and volatile organic compounds using the methods described in QP-03 and QP-07 (attached), respectively. Soil lithology and the presence of any observed staining or odor will be recorded. For any site, if we detect evidence of leakage within 15 feet of the water table (e.g. field chloride greater than 250 ppm in soil samples) we will complete the boring as a monitoring well in accordance with NMOCD Guidance. If three soil samples taken at 5-foot intervals test below 250 ppm chloride and below 100 ppm total volatile organic compounds, we will terminate the boring. However, all borings will penetrate at least 30 feet of the vadose zone.

Task 2 Evaluate Chloride and Hydrocarbon Flux from the Vadose Zone to Ground Water

We anticipate that one or all of the five sites selected for borehole investigation will show evidence of seepage from the source to a depth of more than 15-feet. For these sites, excavation and disposal of released material can cause more environmental damage than it cures. For such sites, we propose to employ HYDRUS-1D and a simple ground water mixing model to evaluate the potential of any residual chloride and hydrocarbon mass in the vadose zone to impair ground water quality above WQCC Standards. We have selected these two constituents for simulation modeling because each of these constituents is typically found in produced water and each is specifically regulated by New Mexico ground water regulations (WQCC). We will also employ vadose zone hydrocarbon migration predictive tools commonly employed by NMED in their PST program.

Task 3 Provide Investigative Results and/or Corrective Action Plan

Because the Hobbs SWD System no longer carries produced water, additional releases of produced water to ground water are highly unlikely. If modeling shows that the residual chloride and hydrocarbon mass in the vadose zone poses a no threat to ground water quality, we will prepare a report that makes this demonstration and request site closure.

sr., :

January 20, 2006 Page 3

If simulation experiments suggest that residual constituents pose a threat to ground water quality or if the field program demonstrates impairment, we will expand upon the HYDRUS-1D model predictions described above to develop a remedy for the vadose zone. If necessary, we will simulate:

- 1. Excavation, disposal and replacement of clean soil to remove the chloride and hydrocarbon mass,
- 2. Installation of a low permeability barrier to minimize natural infiltration,
- 3. Surface grading and seeding to eliminate any ponding of precipitation and promote evapotranspiration, thereby minimizing natural infiltration, and
- 4. A combination of the above potential remedies.

We will select the vadose zone remedy that offers the greatest environmental benefit while causing the least environmental damage. If data suggest that the site has contributed chloride or hydrocarbons to ground water and caused ground water impairment, we will notify NMOCD and work collaboratively to determine the appropriate path forward.

Proposed Schedule

With NMOCD's approval of this work plan, we can perform the field activities at these sites in February or March. In late April or May, we plan to deliver any individual Correction Action Plans to address residual constituents in the vadose zone and any reports requesting site closure. If data suggest ground water impairment we plan to conduct two quarters of ground water monitoring to confirm any initial result then meet with NMOCD to develop an appropriate path forward. Your approval to move forward with this work plan will facilitate approval of expenditures by the System Partners.

Sincerely, R.T. Hicks Consultants, Ltd.

but J. Van Devates

Gilbert Van Deventer Project Manager

cc: Chris Williams, NMOCD Hobbs District Office Carolyn Haynes, Rice Operating Company - Hobbs Kristin Pope, Rice Operating Company – Hobbs Randy Hicks, R. T. Hicks Consultants, Ltd. - Albuguerque



Rice Operating Company

QUALITY PROCEDURE - 03

Sampling and Testing Protocol - Chloride Titration Using .282 Normal Silver Nitrate Solution

1.0 Purpose

This procedure is to be used to determine the concentration of chloride in soil.

2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride concentrations.

3.0 Sample Collection and Preparation

3.1 Collect at least 80 grams of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. Ifnecessary, prepare a composite san1ple for soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

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3.2 The soil sample(s) shall be immediately inserted into a one-quart or large polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools of sample. processing equipment.

3.3 The sealed sample bag should be massaged to break up any clods.

4.0 Sample Preparation

4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.

4.2 Add at least 10 grams of reverse osmosis water to the soil sample and shake for 20 seconds.

4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.

4.4 Carefully pour the free liquid extract from the sample through a paper filter into a clean plastic cup if necessary.

5.0 Titration Procedure

5.1 Using a graduated pipette, remove 10 m1 extract and dispense into a clean plastic cup.

5.2 Add 2-3 drops potassium chromate (K:zcrO4) to mixture.

5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide (HZO2) to mixture.

5.4 Using a 10 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.

5.5 Record the ml of silver nitrate used.

6.0 Calculation

20.00

To obtain the chloride concentration, insert measured data into the following formula:

0.282 x 35,450 x ml AgNO3xgrams of water in mixtureml water extractgrams of soil in mixture

Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on the delineation form

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QP-03

Rice Operating Company

QUALITY PROCEDURE -07

Sampling and Testing Protocol for VOC in Soil

1.0 Purpose

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This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

3.0 Procedure

3.1 Sample Collection and Preparation

3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points

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in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.1.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Analytical Report Form.

3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15 Celsius, (59-77° F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.

3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

3.2 Sampling Procedure

3.2.1 The instrument to be used in conducting VOC concentration testing shall be an Environmental Instruments 13471 OVM / Datalogger or a similar pro-type instrument. (Device will be identified on VOC Field

Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.

3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the sidewalls of the bag.

3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Test Report Form.

3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with QP-O2 and QP-O6. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing fur BTEX is necessary. File the Field Test Report Form in the project file.

4.0 Clean-up

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After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal, IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE A MUST BE DISCARDED AFTER EACH USE 化晶晶 医小脑 医内脑脑炎 经投资 化结合 化结合 医白色素 化化合金 化化合金 化化合金 化化合金 化化合金 化合金 化合金 and a second second

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		一個的					DI	RILLING ME	THOD:	Hollov	v Stem Auger STATE: <u>New Mexico</u>	
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BORING NO .:	A-32	TOTAL DEPTH	: 30 Feet
SITE ID:	Hobbs SWD System	CLIENT:	RICE Operating Company
CONTRACTOR:	Atkins Engineering	COUNTY:	Lea
DRILLING METHOD:	Hollow Stem Auger	STATE:	New Mexico
START DATE:	05/03/06	LOCATION:	T18S-R38E-Sec 32-Unit A
COMPLETION DATE:	05/03/06	FIELD REP .:	G. Van Deventer / M. Franks / J. Hendrickx
COMMENTS	Located in area with no expected impact from	oil and das act	ivities (background conditions)

 Located in area with no expected mpa anu yas

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			Sampi	e	Blowcounts	Chloride	ΡID	LITHOLOGIC DESCRIPTION:
	6565	Depth	Time	Type	(blows - in)	(ppm)	(ppm)	LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
	S M	1	1421	S plit S poon	50 - 12"	58		Silly (gam. pale vellowish brown (10YR-6/2) and call the livery pale (gap of (10 YR-8/2)) (dr.
		2	1426	S plit S poon	100 - 6"	27		
		3	1440	S plit S poon	50 - 12"	58		Fine-grained sandy caliche pale yellowish brown (10Y R 6/2), dry
	SM/CAL	4	1443	S plit S poon	50 - 12"	58		Fine-grained sandy caliche pale yellowish brown (10YR 6/2), dry .
		5	1450	S plit S poon	50 - 12"	58		Eine-grained sandy caliche pale yellowish brown (10YR 6/2); dry, very'hard, some.consolidated sand nodules. (cemented)
		6	1500	S plit S poon	30 - 12"	84		Color from the design of (and the design of
		7	1508	S plit S poon	23 - 12"	179		Sand grains are subangular, moderately well sorted, dry.
		8	1512	S plit S poon	38 - 12"	151		
. • • • •		9	1520	S plit S poon	50 - 9"	340		As above
		10	1524	S plit S poon	50 - 4*	365		As above
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سابي المراجع المراجع الم		12		Status Providence				
and the second second		13.)	1536	S plit S poon	50 - 9"	295		Calcic fine-grained sand (very pale orange (10 Y R 8/2), hard, consolidated with calcium carbonate in matrix. Sand grains are subangular, moderately well sorted, dry.
The Article And Article And Article Art		14.		ې د د د د د د د د د د د د د د د د د د د				
		,15	1545	S plit S poon	50 - 4"	228		Calcic fine-grained sand (very pale orange (10 YK 8/2), hard, consolidated with calcium carbonate in matrix, a Sand grains are subangular, moderately well sorted, dry.
		10		1	1		· .	Color for considered (see all procession of the second s
		17	1555	S plit S poon	50 - 1"	85		Sand grains are subangular, moderately well sorted, dry
	CAL/SM	19						Calcic fine-grained sand (very pale orange (10 YR 8/2), hard, consolidated with calcium carbonate in matrix.
		20						Sand grains are subangular, moderately well sorted, dry
		21						
		22	1605	S plit S poon	50 - 2"	57		Calcic fine-grained sand (very pale orange (10 Y.R. 8/2), hard, consolidated with calcium carbonate in matrix.
		23	1620	S plit S poon	50 - 2"	89		Sand grains are subangular, moderately well sorted, dry
		24						
		25						
		26						
		27	1630	S plit S poon	50 - 1"	58		Calcic fine-grained sand (very pale orange (10 YR 8/2), hard, consolidated with calcium carbonate in matrix. S Sand grains are subangular, moderately well sorted, dry.
		28						
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	Wanaji anjia	30						Bottom of boring at 30 feet below ground surface
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Background Boring





Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co. 122 W. Taylor Hobbs, NM 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Location: Lea County

Lab Order Number: 6H18008

Report Date: 08/28/06

Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6H18008-01	Water	08/14/06 09:20	08-18-2006 10:20
	• *			



Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope Fax: (505) 397-1471

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H18008-01) Water		<u> </u>					· · · ·		J
Benzene	ND	0.00100	mg/L	1	EH62121	08/21/06	08/21/06	EPA 8021B	
Toluene	ND	0.00100	11	"	"	"	н		
Ethylbenzene	ND	0.00100	**	11	"	n	н	a	
Xylene (p/m)	ND	0.00100	"	n	u	11	н	"	
Xylene (o)	ND	0.00100	0		"	'n		11	
Surrogate: a,a,a-Trifluorotoluene		86.8 %	80-12	0	ıı	"	"	"	
Surrogate: 4-Bromofluorobenzene		82.5 %	80-12	0	n	n	"	"	

Environmental Lab of Texas

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H18008-01) Water									
Total Alkalinity	250	2.00	mg/L	1	EH62128	08/21/06	08/21/06	EPA 310.1M	_
Chloride	134	5.00		10	EH62101	08/21/06	08/21/06	EPA 300.0	
Total Dissolved Solids	682	10.0	н	1	EH62303	08/18/06	08/22/06	EPA 160.1	
Sulfate	101	5.00	н	10	EH62101	08/21/06	08/21/06	EPA 300.0	

Environmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

: .

Fax: (505) 397-1471

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte Monitor Well #1 (6H18008-01) Water	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	95.0	0.810	mg/L	10	EH62313	08/23/06	08/23/06	EPA 6010B	
Magnesium	27.4	0.360	"	14	"	n	"	11	
Potassium	3.62	0.600	8	"	"		н	"	
Sodium	89.2	0.430	"	17	"	*	"	11	

Environmental Lab of Texas

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Organics by GC - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EH62121 - EPA 5030C (GC)										
Blank (EH62121-BLK1)				Prepared: ()8/21/06 A	nalyzed: 08	8/22/06			
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	11							
Ethylbenzene	ND	0.00100	11							
Xylene (p/m)	ND	0.00100	11							
Xylene (o)	ND	0.00100	ч							
Surrogate: a,a,a-Trifluorotoluene	40.3		ug/l	40.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	36.7		"	40.0		91.8	80-120			
LCS (EH62121-BS1)				Prepared &	Analyzed:	08/21/06				
Benzene	0.0460	0.00100	mg/L	0.0500		92.0	80-120			
Toluene	0.0503	0.00100		0.0500		101	80-120			
Ethylbenzene	0.0463	0.00100	н	0.0500		92.6	80-120			
Xylene (p/m)	0.113	0.00100	ч	0.100	23	an 113	80-120			
Xylene (o)	0.0565	0.00100	*1	0.0500	5. <i>v</i> :	ec. 113	80-120			
Surrogate: a,a,a-Trifluorotoluene	39.7		ug/l	40.0	525	99.2 °	80-120	.'		
Surrogate: 4-Bromofluorobenzene	45.0		u	40.0	5.97.	rages 112 👘	80-120	14 - 14 1 16 - 14 1		18 A. C.
Calibration Check (EH62121-CCV1)				Prepared: ()8/21/06 A	nalyzed: 08	8/22/06	129-CAN	9	
Benzene	48.7		ug/l	50.0	ेल	ere 97.4	80-120			··· .
Toluene	52.3		u	50.0	. (n.	antial 105	80-120			12.4
Ethylbenzene	57.3		и	50.0	· · · ·	115	80-120			
Xylene (p/m)	114		н	100		114	80-120			
Xylene (0)	57.6		"	50.0		115	80-120			
Surrogate: a,a,a-Trifluorotoluene	44.7		"	40.0		112	80-120		- ru	
Surrogate: 4-Bromofluorobenzene	38.3		"	40.0		95.8	80-120			
Matrix Spike (EH62121-MS1)	Sou	urce: 6H18007-	-01	Prepared: ()8/21/06 A	nalyzed: 08	3/22/06			
Benzene	0.0464	0.00100	mg/L	0.0500	ND	92.8	80-120			
Toluene	0.0550	0.00100	Ir	0.0500	ND	110	80-120			
Ethylbenzene	0.0554	0.00100	11	0.0500	ND	111	80-120			
Xylene (p/m)	0.117	0.00100	**	0.100	ND	117	80-120			
Xylene (o)	0.0575	0.00100	11	0.0500	ND	115	80-120			
Surrogate: a,a,a-Trifluorotoluene	41.8	······	ug/l	40.0		104	80-120			
Surrogate: 4-Bromofluorobenzene	46.5		"	40.0		116	80-120			

Environmental Lab of Texas

Organics by GC - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch EH62121 - EPA 5030C (GC)

Chapter and the second

Matrix Spike Dup (EH62121-MSD1)	pike Dup (EH62121-MSD1) Source: 6H18007-01 Prepared: 08/21/06 Analyzed: 08/22/06								
Benzene	0.0473	0.00100	mg/L	0.0500	ND	94.6	80-120	1.92	20
Toluene	0.0535	0.00100	"	0.0500	ND	107	80-120	2.76	20
Ethylbenzene	0.0549	0.00100	н	0.0500	ND	110	80-120	0.905	20
Xylene (p/m)	0.120	0.00100	11	0.100	ND	120	80-120	2.53	20
Xylene (o)	0.0583	0.00100	11	0.0500	ND	117	80-120	1.72	20
Surrogate: a,a,a-Trifluorotoluene	42.9		ug/l	40.0		107	80-120		
Surrogate: 4-Bromofluorobenzene	46.4		"	40.0		116	80-120		



Environmental Lab of Texas

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH62101 - General Preparation (WetChem)									
Blank (EH62101-BLK1)				Prepared &	Analyzed:	08/21/06				
Sulfate	ND	0.500	mg/L					·		
Chloride	ND	0.500	н							
LCS (EH62101-BS1)				Prepared &	Analyzed:	08/21/06				
Sulfate	8.51	0.500	mg/L	10.0		85.1	80-120			
Chloride	10.0	0.500	u	10.0		100	80-120			
Calibration Check (EH62101-CCV1)				Prepared &	Analyzed:	08/21/06				
Sulfate	8.34	·····	mg/L	10.0		83.4	80-120			
Chloride	10.2		н	10.0		102	80-120			
Duplicate (EH62101-DUP1)	Sou	rce: 6H18007-	•01	Prepared &	Analyzed:	08/21/06				
Sulfate	76.3	5.00	mg/L		65.9			14.6	20	
Chloride ,	105	5.00	и		98.9			5.98	20	
Duplicate (EH62101-DUP2)	Sou	rce: 6H18013-	•04	Prepared &	Analyzed:	08/21/06				
Sulfate	331	5.00	mg/L		336 ^{141.17}			1.50	20	
Chloride	138	5.00	"		136 ⁻¹ .0	, rida		1.46	20	
Matrix Spike (EH62101-MS1)	Sou	rce: 6H18007-	-01	Prepared &	z Analyzed:	08/21/06	- Maria Maria	la de la composición de la com		'7
Sulfate	172	5.00	mg/L	100	65.9	^{bue} 106	80-120			
Chloride	210	5.00	Ψ	100	98.9 ^{.1.1}	ang M	80-120	· .		÷
Matrix Spike (EH62101-MS2)	Sou	rce: 6H18013-	04	Prepared &	Analyzed:	08/21/06				
Sulfate	422	5.00	mg/L	100	336	86.0	80-120	······································		
Chloride	224	5.00	н	100	136	88.0	80-120			

Environmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

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Rice Operating Co.
122 W. Taylor
Hobbs NM, 88240

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD			
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes		
Batch EH62128 - General Preparation (WetChem)	1952 T 5										
Blank (EH62128-BLK1)				Prepared &	: Analyzed:	08/21/06						
Total Alkalinity	ND	2.00	mg/L									
LCS (EH62128-BS1)				Prepared &	Analyzed:	08/21/06						
Total Alkalinity	178		mg/L	200		89.0	85-115					
Duplicate (EH62128-DUP1)	Sou	Source: 6H18007-01				Prepared & Analyzed: 08/21/06						
Total Alkalinity	186	2.00	mg/L		186			0.00	20			
Reference (EH62128-SRM1)				Prepared &								
Total Alkalinity	248		mg/L	250		99.2	90-110					
Batch EH62303 - Filtration Preparation												
Blank (EH62303-BLK1)				Prepared: 0	8/18/06 A	nalyzed: 08	/22/06					
Total Dissolved Solids	ND	10.0	mg/L				··					
Duplicate (EH62303-DUP1)	Sou	rce: 6H18007	-01	Prepared: 0	8/18/06 A	nalyzed: 08	/22/06	ίn.	•			
Total Dissolved Solids	. 556	10.0	mg/L	1	526	Constanta		5.55	5	· F		
Duplicate (EH62303-DUP2)	Sou	rce: 6H18013	-04	Prepared &	: Analyzed:	08/18/06			· · · · ·	,		
Total Dissolved Solids	808	10.0	mg/L	9. 99 L	-930 Tar	1640. vrá	in in the second	14.0	5			

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Environmental Lab of Texas

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyze	Result	Reporting	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
			entis	Level	Result					
Batch EH62313 - 6010B/No Digestion										
Blank (EH62313-BLK1)				Prepared &	z Analyzed:	08/23/06				
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	n							
Calibration Check (EH62313-CCV1)				Prepared &	Analyzed:	08/23/06				
Calcium	1.96		mg/L	2.00		98.0	85-115			
Magnesium	2.01		и	2.00		100	85-115			
Potassium	1.76		11	2.00		88.0	85-115			
Sodium	1.96		u	2.00		98.0	85-115			
Duplicate (EH62313-DUP1)	Soi	ırce: 6H15005-	-04	Prepared &	Analyzed:	08/23/06				
Calcium	44.4	0.810	mg/L	,	45.9			3.32	20	
Magnesium	48.1	0.360	**		49.3			2.46	20	
Potassium	42.9	0.600	47		42.6			0.702	20	7
Sodium	44.4	0.430	11		43.5			2.05	20	1.1

Environmental Lab of Texas

Rice Ope 122 W. T Hobbs N	erating Co. °aylor M, 88240	Project: Project Number: Project Manager:	Hobbs Jct. E-32-1 None Given Kristin Farris-Pope	Fax:	(505) 397-1471
		Notes and De	finitions		
R5	RPD is outside of historic values				
DET	Analyte DETECTED				
ND	Analyte NOT DETECTED at or above the reporting limit		1992 - 1		
NR	Not Reported				
dry	Sample results reported on a dry weight basis				
RPD	Relative Percent Difference				
LCS	Laboratory Control Spike				
MS	Matrix Spike				
Dup	Duplicate				
		,			
-	na an a	••• •			• • • • • • • • • •

Report Approved By:

Raland K Jul

8/28/2006

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

Date:

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If you have received this material in error, please notify us immediately at 432-563-1800.

Environmental Lab of Texas

∜ ANALYSIS REQUEST	me: Hobbs Junction E-32-1	it #:	.oc: Lea County	#C			Analyze For: TCLP: Analyze For: TOTAL: X		(a) (a) (a) (a) (a) (a) (a) (b) (b) (b) (b) (b) (b) (b) (b) (b) (b	- Зсреди на с С Р на 03, нооз	, 504, C 2 / CEC Ag Ba C les les Dived Sol Dived Sol	Anions (Cl SAR / ESP Metals: As Semivolatiles Semivolatiles (Cl A.O.R.M. TA Pisso Standard Standard							Sample Containers Intact?	Custody Seals: Pontament Cooler Temperature Upon Receipt		Laboratory Comments: $\mathcal{M}_{\mathcal{O}}$		
DY RECORD AND	Project Na	Proje	Project	Ľ.		ļ		Matrix	Matrix 1006	9' K) 1 1002 1	scify): 8 6015/	Sludge Soil Cîher (spi FPH: 418. C) arions (C			 			 	com			S-Ob S:31	000000000000000000000000000000000000	
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·,					(505) 397-14			Pres	Pres	2) SIBIN S	ontainen ontainen	Ио. о† С Эсе НИО ₃	3 X 2						com; mfrank		t activity a straight of the	raen	\mathbf{x}	41
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	e@riceswd.c					-9310	AL.				pəjdun	Date Sa	8/14/2006		-				TS TO: kpop	L.com		Received by: Jauge Stends	Reserved by EL	
F EXAS : 432-563-1713 432-563-1713	ope kpop	g Company	Street	exico 88240		son (505) 631	net.com					Ш							imail RESUL	zanne@ <u>valorne</u> t		ate Time Stolo 5:3(ate Time 106 (色、 ス)	
Phone: Fax:	ristin Farris Po	ICE Operating	22 W. Taylor \$	obbs, New Me	05) 393-9174	ozanne Johns	<u>szanne@valor</u>					Elet D CO	Vell #1						PLEASE E			3/10	Tul and	
MMCDÉ 20 East 5 79765	vject Manager: <u>K</u>	ompany Name R	any Address: <u>1</u>	City/State/Zip: H	Tetephone No: (5	ver Signature: R	Email: <u>rC</u>					only)	Monitor V						tions:			after	A Pond	
Envirc 12600 West 1-2 Odessa, Texa	Prc	ŭ	Com	-	~	Samp			時間に、シアルなどの変形があり		FO .	LAB # (lah use					のないないない		Special Instruc			Relinquished by: Rozanne Johnso	Relinquished by:	

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Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

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ite/ Time:		
b ID # :	ie HI 8000F	
tials:	UL	_
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Sample Receipt Checklist

ac+ ;

				Client Initials
Temperature of container/ cooler?	Yes	No	4.0 °C	
Shipping container in good condition?	Xes	No		
Custody Seals intact on shipping container/ cooler?	X BS	No	Not Present	
Custody Seals intact on sample bottles/ container?	XOS	No	Not Present	
Chain of Custody present?	Yes	No		
Sample instructions complete of Chain of Custody?	Yes	No		
Chain of Custody signed when relinquished/ received?	Xes	No		
Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
Container label(s) legible and intact?	Yes	No	Not Applicable	
Sample matrix/ properties agree with Chain of Custody?	Xes	No		
1 Containers supplied by ELOT?	. Kes	No	· · · · · · · · · · · · · · · · · · ·	
2 Samples in proper container/ bottle?	Yes	No.	See Below	
3 Samples properly preserved?	Yes	No	See Below	1 . Same altera
4 Sample bottles intact?	¥es.	No	ا این مربوب پریمان می از این	الم
5 Preservations documented on Chain of Custody?	Yes	No.		
5 Containers documented on Chain of Custody?	Yes	No	Some of the second second	
7 Sufficient sample amount for indicated test(s)?	Xes	No	See Below	ALL COLLING STR
3 All samples received within sufficient hold time?	Fes	No	See Below	nur surge
9 VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

ntact:	 Contacted by:	Date/ Time:
garding:	 	
rrective Action Taken:	· · · · · · · · · · · · · · · · · · ·	
eck all that Apply:	See attached e-mail/ fax Client understands and would like to proceed with ana Cooling process had begun shortly after sampling eve	alysis



Analytical Report

Prepared for:

Kristin Farris-Pope Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Location: T18S-R38E-Sec32E, Lea County, NM

Lab Order Number: 6I20006

Report Date: 10/02/06

Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

45

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6I20006-01	Water	09/19/06 09:15	09-20-2006 13:22
• •			,	

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6120006-01) Water									
Benzene	ND	0.00100	mg/L	1	EI62012	09/20/06	09/22/06	EPA 8021B	
Toluene	ND	0.00100	•		"	n	"	n	
Ethylbenzene	ND	0.00100	"		"	н	n	11	
Xylene (p/m)	ND	0.00100	н	н	a	"	11		
Xylene (o)	ND	0.00100	"	n	"	"	11		
Surrogate: a,a,a-Trifluorotoluene		100 %	80-12	0	"	"	"	и	
Surrogate: 4-Bromofluorobenzene		82.5 %	80-12	0	"	п	"	"	

Environmental Lab of Texas

Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6120006-01) Water									
Total Alkalinity	240	2.00	mg/L	1	EI62707	09/27/06	09/27/06	EPA 310.1M	
Chloride	189	5.00	н	10	EI62105	09/22/06	09/25/06	EPA 300.0	
Total Dissolved Solids	740	10.0	"	1	EI62118	09/20/06	09/21/06	EPA 160.1	
Sulfate	151	5.00	"	10	EI62105	09/22/06	09/25/06	EPA 300.0	

Environmental Lab of Texas

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte Monitor Well #1 (6120006-01) Water	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	91.9	0.810	mg/L	10	EI62111	09/21/06	09/21/06	EPA 6010B	
Magnesium	23.1	0.360		"	17	"	"	"	
Potassium	3.79	0.600	n		н	"		n	
Sodium	98.2	0.430	"	**		"		н	

Environmental Lab of Texas

Organics by GC - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch E162012 - EPA 5030C (GC)										
Blank (E162012-BLK1)				Prepared &	Analyzed	: 09/20/06				
Benzene	ND	0.00100	mg/L							LTAT
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100								
Xylene (o)	ND	0.00100	и							
Surrogate: a,a,a-Trifluorotoluene	39.2	· · · ·	ug/l	40.0		98.0	80-120			
Surrogate: 4-Bromofluorobenzene	32.5		"	40.0		81.2	80-120			
LCS (EI62012-BS1)				Prepared: ()9/20/06 A	.nalyzed: 09	9/21/06			
Benzene	0.0589	0.00100	mg/L	0.0500		118	80-120			
Toluene	0.0466	0.00100	11	0.0500		93.2	80-120			
Ethylbenzene	0.0423	0.00100	11	0.0500		84.6	80-120			
Xylene (p/m)	0.0902	0.00100	11	0.100		90.2	80-120			4 T.
Xylene (o)	0.0442	0.00100	n	0.0500		88.4	80-120			· .•
Surrogate: a,a,a-Trifluorotoluene	42.1		ug/l	40.0		; = 105,	80-120			
Surrogate: 4-Bromofluorobenzene	43.2		"	40.0	Per-			500L		
Calibration Check (EI62012-CCV1)				Prepared &	Analyzed	109/20/06	henn (EASD	11340/0743	, ,	
Benzene	0.0540		mg/L	0.0500	.das	a	80-120			1 16.1
Toluene	0.0482		"	0.0500	. .	96.4	80-120			·
Ethylbenzene	0.0489		"	0.0500			80-120			
Xylene (p/m)	0.0966		"	0.100		96.6	80-120			
Xylene (0)	0.0480		"	0.0500		96.0	80-120			
Surrogate: a,a,a-Trifluorotoluene	40.1	di y	ug/l	40.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	43.3		n	40.0		108	80-120			
Matrix Spike (EI62012-MS1)	Soi	arce: 6118004-0	03	Prepared: ()9/20/06 A	nalyzed: 09	9/21/06			
Benzene	0.0597	0.00100	mg/L	0.0500	ND	119	80-120			
Toluene	0.0492	0.00100	"	0.0500	ND	98.4	80-120			
Ethylbenzene	0.0474	0.00100		0.0500	ND	94.8	80-120			
Xylene (p/m)	0.0937	0.00100		0.100	ND	93.7	80-120			
Xylene (o)	0.0461	0.00100	"	0.0500	ND	92.2	80-120			
Surrogate: a,a,a-Trifluorotoluene	45.3		ug/l	40.0		113	80-120			
Surrogate: 4-Bromofluorobenzene	44.4		"	40.0		111	80-120			

Organics by GC - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch EI62012 - EPA 5030C (GC)

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Matrix Spike Dup (EI62012-MSD1)	Source: 6118004-03			Prepared: 09/20/06 Analyzed: 09/21/06					
Benzene	0.0592	0.00100	mg/L	0.0500	ND	118	80-120	0.844	20
Toluene	0.0502	0.00100		0.0500	ND	100	80-120	1.61	20
Ethylbenzene	0.0488	0.00100		0.0500	ND	97.6	80-120	2.91	20
Xylene (p/m)	0.0932	0.00100	11	0.100	ND	93.2	80-120	0.535	20
Xylene (o)	0.0458	0.00100	u	0.0500	ND	91.6	80-120	0.653	20
Surrogate: a,a,a-Trifluorotoluene	43.3		ug/l	40.0		108	80-120		
Surrogate: 4-Bromofluorobenzene	46.0		"	40.0		115	80-120		

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Rice Operating Co.	
122 W. Taylor	
Hobbs NM, 88240	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch El62105 - General Preparation (WetChe	em)				645.**			4		
Blank (El62105-BLK1)				Prepared: (09/22/06 Ai	nalyzed: 0	9/25/06			
Chloride	ND	0.500	mg/L							
Sulfate	ND	0.500	"							
LCS (EI62105-BS1)				Prepared: (09/22/06 Ai	nalyzed: 0	9/25/06			
Chloride	11.8	0.500	mg/L	10.0		118	80-120			
Sulfate	11.2	0.500	"	10.0		112	80-120			
Calibration Check (EI62105-CCV1)				Prepared: (09/22/06 Ar	nalyzed: 0	9/25/06			
Chloride	11.7		mg/L	10.0		117	80-120			
Sulfate	11.1		"	10.0		111	80-120			
Duplicate (E162105-DUP1)	Sou	rce: 6120004-()1	Prepared: (09/22/06 An	nalyzed: 0	9/25/06			
Sulfate	118	5.00	mg/L		119			0.844	20	
Chloride	43.6	5.00	"		45.0			3.16	20	
Matrix Spike (EI62105-MS1)	Sou	rce: 6120004-()1	Prepared: (09/22/06 Ar	nalyzed: 0	9/25/06			
Chloride	174	5.00	mg/L	100	45.0.	129	80-120			MI
Sulfate	236	5.00	° н	100	119:55	··· 117	80-120	•*	1.2	ni Lie
Batch E162118 - Filtration Preparation					24	ch LIGH	38 - 1984).	in de la Gran Perior	elens .	<u>.</u>
Blank (EI62118-BLK1)			. •	Prepared: (09/20/06 Ar	nalyzed: 0	9/2-1/06		•	
Total Dissolved Solids	ND	10.0	mg/L			al provide de	• •			· · · ·
Duplicate (E162118-DUP1)	Sou	rce: 6120004-0)1RE1	Prepared: (09/20/06 Ar	alyzed: 09	9/21/06			
Total Dissolved Solids	428	10.0	mg/L		416			2.84	5	

Environmental Lab of Texas

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Rice Operating Co.	Project:	Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number:	None Given	
Hobbs NM, 88240	Project Manager:	Kristin Farris-Pope	
110005 [111], 00240	Project Manager:	Kilsun Partis-Lopo	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch E162707 - General Preparation	ı (WetChem)					2 0 . 1,			·•• ·	
Blank (EI62707-BLK1)				Prepared &	Analyzed:	09/27/06				
Total Alkalinity	ND	2.00	mg/L						1	
LCS (EI62707-BS1)				Prepared &	Analyzed:	09/27/06				
Bicarbonate Alkalinity	192	2.00	mg/L	200		96.0	85-115			
Duplicate (EI62707-DUP1)	Sour	-ce: 6120004-0)1	Prepared &	Analyzed:	09/27/06				
Total Alkalinity	284	2.00	mg/L		286			0.702	20	
Reference (EI62707-SRM1)				Prepared &	Analyzed:	09/27/06				
Total Alkalinity	242		mg/L	250		96.8	90-110			

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Environmental Lab of Texas

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

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		Reporting		Spike	Source		%REC		RPD	
	Analyte Resu	alt Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch EI62111 - 6010B/No Digestion

Blank (EI62111-BLK1)				Prepared & Analyzed: 09/21/0	6			
Calcium	ND	0.0810	mg/L		····			
Magnesium	ND	0.0360	н					
Potassium	ND	0.0600	н					
Sodium	ND	0.0430	n					
Calibration Check (EI62111-CCV1)				Prepared & Analyzed: 09/21/0	6			
Calcium	2.08		mg/L	2.00 104	85-115			
Magnesium	2.15		11	2.00 108	85-115			
Potassium	1,85			2.00 92.5	85-115			
Sodium	1.73		n	2.00 86.5	85-115			
Duplicate (El62111-DUP1)	Sour	-ce: 6120004-0)1	Prepared & Analyzed: 09/21/0	6			
Calcium	64.8	0.810	mg/L	67.3		3.79	20	H
Magnesium	24.6	0.360	**	25.1		2.01	20	
Potassium	3.22	0.600	н	3.37		4.55	20	
Sodium	67.8	0.430		69.6		2.62	20	÷
4							14 A.	

Environmental Lab of Texas

Rice Opera 122 W. Tay Hobbs NM	ting Co. /lor I , 88240 P	Project: Project Number: Project Manager:	Hobbs Jct. E-32-1 None Given Kristin Farris-Pope	Fax: (505) 397-1471
	Ι	Notes and De	finitions	
Ml	The MS and/or MSD were above the acceptance limits	due to sample m	atrix interference. See Blank Spike (LCS).	
DET	Analyte DETECTED			
ND	Analyte NOT DETECTED at or above the reporting limit			ion the
NR	Not Reported			
dry	Sample results reported on a dry weight basis			
RPD	Relative Percent Difference			
LCS	Laboratory Control Spike			
MS	Matrix Spike			
Dup	Duplicate			
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Report Approved By:

Raland K Iwins Date:

: 10/2/2006

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

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If you have received this material in error, please notify us immediately at 432-563-1800.

Environmental Lab of Texas
			NM			[(eiubento2-erq) TAT H2UЯ TAT H2UA	×						N			
) ANAL YSIS REQUEST	lobbs Junction E-32-1		18S-R38E-Sec32E, Lea County		28 7. 1	4 ⁻ .	TOLP! Analyze For; TOLP! X		Total Dissolved Solids Sets (ESP (CEC Sets (ESP (CEC Setter Supplements) Setter Supplements Setter Setter							Sample Containers Intact? Labels on container Custody Seals: Containers (Cooler) Temperature Upon Receipt:	2,0,2	Laboratory Commenta:	
ODY RECORD AND	ame:	umber:		er:	ľ			Matrix II	egbadi 1701 2001 2001 101 101 101 1001 2001 2001							Com		Date Time	Date Time 그 ^ ^ ^ 13.2.2
CHAIN OF CUST	Project M	Project N	Project L	РО ИШШР	171			iervative	Weiter Dohnen (Scheidig) Hysco, Maider Maider	X V						(s@rlceswd.			
					(505) 397-14			Pres	No. of Containers ice ନାପା ମୁମ୍ଚ ଏପି ଜଣ ଶ୍ରାରରେ ଏହିଥିବି	3 X 2				a tariya na mana a tariya na		.com; mfrank	in jok z z		Den 1
	mo				Fax No:	0	X) V	belqms2 emiT	9:15		· .		-	 	pe@riceswd	ĝ,≾>,		
	pe@riceswd.c					1-9310	() N	CAL C	Date Sampled	9/19/2006			 			.TS TO: kpol et.com		Received by:	Received by EL
e: 432=563=1800 : 432-663-1713	ope kpor	ig Company	Street	1exico 88240	4	1son (505) 63	ornet.com		20							Emall RESUL ozanne@valome		Date Time	Date Time
Phon Fax	Kristin Farris F	RICE Operatir	122 W. Taylor	Hobbs, New N	(505) 393-917	Rozanne John	rozanna@valc			r Well #1						L I I I I I I I I I I I I I I I I I I I		6	
st =20 East `ехва 79766	Project Manager.	Company Name	company Address:	City/State/Zip: _	Telephone No: _	ampler Signature:	Email, _		J. (J. Use only)	(Monitor						atructione:	1.0	d by	d By:
12600 We: Odessa, T			υ			æ			CONTRACTION OF THE CONTRACT.							Spectat Ins		Rejuguaner	Relingulaher

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Environmental Lab of Texas

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

:lient:	Ride DP-	
iate/ Time:	9120106	
ab ID # :	6T20006	
nitials:	C/L-	
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Sample Receipt Checklist

a.a.

				Client Initial	5
1 Temperature of container/ cooler?	Yes	No	2.0 °C	;	
2 Shipping container in good condition?	(TES	No			
3 Custody Seals intact on shipping container/ cooler?	Hes	No	Not Present	1	
4 Custody Seals intact on sample bottles/ container?	Tes	No	Not Present	1	-
5 Chain of Custody present?	(Xes	No			
3 Sample instructions complete of Chain of Custody?	Æes	No			ļ
7 Chain of Custody signed when relinquished/ received?	\∕~€s	No		1	
3 Chain of Custody agrees with sample label(s)?	Xes	No	ID written on Cont./ Lid		
Container label(s) legible and intact?	Yes	No	Not Applicable		1
10 Sample matrix/ properties agree with Chain of Custody?	Tes	No			
11 Containers supplied by ELOT?	¥ e s	No	a a an	1	{
12 Samples in proper container/ bottle?	Xes	Norm	See Below	· · · · · · · · · · · · · · · · · · ·	4
13 Samples properly preserved?	Yes	No	See Below		
14 Sample bottles intact?	Yes	No		and a start a s	a an an incernant and a second
-15 Preservations documented on Ghain of Custody?	Xes	Nö	e ne filoso, glava vez e ne en e		
-16 Containers documented on Chain of Custody?	Xes	Nŏ	 A set of the set of		
t7-Sufficient sample amount for indicated test(s)?	Yes	No	See Below		
18 All samples received within sufficient hold time?	Tes	No	See Below		
19 VOC samples have zero headspace?	Yes	No	Not Applicable		

Variance Documentation

ontact:	Contacted by:	Date/ Time:
agarding:		
prrective Action Taken:		
neck all that Apply:	 See attached e-mail/ fax Client understands and would like Cooling process had begun shown 	e to proceed with analysis tly after sampling event
	-	



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Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Location: T18S, R38E, Sec.32 E- Lea County, NM

Lab Order Number: 6K03010

Report Date: 11/22/06

Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

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ine of th

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6K03010-01	Water	10/31/06 10:40	11-03-2006 11:45
	<i></i>			

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Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K03010-01) Water									
Total Alkalinity	270	2.00	mg/L	1	EK60711	11/07/06	11/07/06	EPA 310.1M	
Chloride	197	5.00	u	10	EK60602	11/06/06	11/06/06	EPA 300.0	
Total Dissolved Solids	746	10.0	"	1	EK60209	11/03/06	11/06/06	EPA 160.1	
Sulfate	120	5.00	"	10	EK60602	11/06/06	11/06/06	EPA 300.0	

Environmental Lab of Texas

Rice Operating Co.
122 W. Taylor
Hobbs NM, 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K03010-01) Water									
Calcium	133	4.05	mg/L	50	EK60712	11/07/06	11/07/06	EPA 6010B	
Magnesium	26.6	0.360	**	10	"	n	n	"	
Potassium	3.45	0.600	**	**			"	"	
Sodium	105	2.15		50	н	"	н	"	



Environmental Lab of Texas

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K03010-01) Water		·							ł
Benzene	ND	1.00	ug/l	1	EK61308	11/13/06	11/14/06	EPA 8260B	
Toluene	ND	1.00	*	"	"	IJ		н	
Ethylbenzene	ND	1.00	11	"	"	11	"	"	
Xylene (p/m)	ND	1.00	"		n	ti	"		
Xylene (o)	ND	1.00	"	*	0	.,		**	
Naphthalene	ND	1.00			n	**	"		
Surrogate: Dibromofluoromethane		102 %	68-12	9	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		87.2 %	72-13	2	"	"	"	11	
Surrogate: Toluene-d8		91.2 %	74-11	8	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.6 %	65-14	0	n	п	"	"	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

		Reporting		Snike	Source		%REC		RBD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EK60209 - Filtration Preparation		<u> </u>								
Blank (EK60209-BLK1)				Prepared:	11/02/06 Ai	nalyzed: 11	1/03/06			
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EK60209-DUP1)	Sour	ce: 6K01015-	-01	Prepared: 1	1/02/06 A	nalyzed: 11	1/03/06			
Total Dissolved Solids	696	10.0	mg/L		702		400 geo.	0.858	5	
Duplicate (EK60209-DUP2)	Sour	ce: 6K03008-	-04	Prepared: 1	1/03/06 Ai	nalyzed: 11	1/06/06			
Total Dissolved Solids	500	10.0	mg/L		492			1.61	5	
Batch EK60602 - General Preparation (V	VetChem)									
Blank (EK60602-BLK1)				Prepared &	Analyzed:	11/06/06				
Chloride	ND	0.500	mg/Ĺ				******			
Sulfate	ND	0.500	и							
LCS (EK60602-BS1)				Prepared &	Analyzed:	11/06/06				
Sulfate	9.30	0.500	mg/L	10.0	51	93.0	80-120			
Chloride	10.2	0.500		10.0	 	102	80-120			
Calibration Check (EK60602-CCV1)				Prepared &	Analyzed.	11/06/06	あいた(営権を	602-6 620	6	
Sulfate	10.9		mg/L	10.0	1. arts	109	80-120			11
Chloride	10.0		. н	10.0	Tuř.	nia 100	80-120			· · · ?
Duplicate (EK60602-DUP1)	Sour	ce: 6K03002-	-01	Prepared &	Analyzed.	11/06/06	• .			
Chloride	45.8	5.00	mg/L		45.4	1.1	v	0.877	20	,
Sulfate	508	5.00	и		511			0.589	20	
Duplicate (EK60602-DUP2)	Sour	ce: 6K03008-	-04	Prepared &	Analyzed:	11/06/06				
Chloride	44.5	5.00	mg/L		44.2			0.676	20	
Sulfate	116	5.00	"		115			0.866	20	

Rice Operating Co.	Project: Hobbs Jct. E-32-	-1 Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Po	ре

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK60602 - General Preparation (Wet	Chem)									
Matrix Spike (EK60602-MS1)	Sou	rce: 6K03002-	01	Prepared &	Analyzed:	11/06/06				
Sulfate	613	5.00	mg/L	100	511	102	80-120			
Chloride	148	5.00	"	100	45.4	103	80-120			
Matrix Spike (EK60602-MS2)	Sou	rce: 6K03008-	04	Prepared &	Analyzed:	11/06/06				
Chloride	150	5.00	mg/L	100	44.2	106	80-120			
ulfate	214	5.00	"	100	115	99.0	80-120			
Batch EK60711 - General Preparation (Wet	Chem)			D	- A	11/02/07				
Batch EK60711 - General Preparation (Wet Blank (EK60711-BLK1)	Chem)			Prepared &	Analyzed:	11/07/06		<u>,</u>		
Batch EK60711 - General Preparation (Wet Blank (EK60711-BLK1) Total Alkalinity	Chem) ND	2.00	mg/L	Prepared &	c Analyzed:	11/07/06				
Batch EK60711 - General Preparation (Wet6 Blank (EK60711-BLK1) Total Alkalinity LCS (EK60711-BS1)	Chem) ND	2.00	mg/L	Prepared & Prepared &	α Analyzed: α Analyzed:	11/07/06 11/07/06				
Batch EK60711 - General Preparation (Wet Blank (EK60711-BLK1) Total Alkalinity LCS (EK60711-BS1) Total Alkalinity	202	2.00	mg/L mg/L	Prepared & Prepared & 200	z Analyzed: z Analyzed:	11/07/06 11/07/06 101	85-115			
Batch EK60711 - General Preparation (Wet6 Blank (EK60711-BLK1) Fotal Alkalinity LCS (EK60711-BS1) Fotal Alkalinity Duplicate (EK60711-DUP1)	Chem) ND 202 Sour	2.00 2.00 rce: 6K03008-	mg/L mg/L 01	Prepared & Prepared & 200 Prepared &	c Analyzed: c Analyzed: c Analyzed:	11/07/06 11/07/06 101 11/07/06	85-115			
Batch EK60711 - General Preparation (Wet6 Blank (EK60711-BLK1) Total Alkalinity LCS (EK60711-BS1) Total Alkalinity Duplicate (EK60711-DUP1) Total Alkalinity	Chem) ND 202 Sour 236	2.00 2.00 rce: 6K03008- 2.00	mg/L mg/L 01 mg/L	Prepared & Prepared & 200 Prepared &	c Analyzed: c Analyzed: c Analyzed: 240	11/07/06 11/07/06 101 11/07/06	85-115	1.68	20	
Batch EK60711 - General Preparation (Wet6 Blank (EK60711-BLK1) Fotal Alkalinity LCS (EK60711-BS1) Fotal Alkalinity Duplicate (EK60711-DUP1) Fotal Alkalinity Reference (EK60711-SRM1)	Chem) ND 202 Sour 236	2.00 2.00 rce: 6K03008- 2.00	mg/L mg/L 01 mg/L	Prepared & 200 Prepared & Prepared &	c Analyzed: c Analyzed: c Analyzed: 240 c Analyzed:	11/07/06 11/07/06 101 11/07/06 11/07/06	85-115	1.68	20	
Batch EK60711 - General Preparation (Weto Blank (EK60711-BLK1) Total Alkalinity CCS (EK60711-BS1) Total Alkalinity Duplicate (EK60711-DUP1) Total Alkalinity Reference (EK60711-SRM1)	Chem) ND 202 Sour 236 254	2.00 2.00 rce: 6K03008- 2.00	mg/L mg/L 01 mg/L	Prepared & 200 Prepared & Prepared & 250	c Analyzed: c Analyzed: c Analyzed: 240 c Analyzed: c Analyzed:	11/07/06 11/07/06 101 11/07/06 11/07/06 11/07/06	85-115 	1.68	20	

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Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

			Reporting		Spike	Source		%REC		RPD	
Analyte	and the second sec	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch EK60712 - 6010B/No Digestion

Blank (EK60712-BLK1)				Prepared &	: Analyzed: 11/07/06			
Calcium	ND	0.0810	mg/L					
Magnesium	ND	0.0360	"					
Potassium	ND	0.0600	**					
Sodium	ND	0.0430	н					
Calibration Check (EK60712-CCV1)				Prepared &	Analyzed: 11/07/06			
Calcium	2.26		mg/L	2.00	113 85-11	5		
Magnesium	2.12		"	2.00	106 85-11	5		
Potassium	1.73		0	2.00	86.5 85-11	5		
Sodium	2.13		11	2.00	106 85-11	5		
Duplicate (EK60712-DUP1)	Sourc	e: 6K03002-	01	Prepared &	Analyzed: 11/07/06			
Calcium	84.4	0.810	mg/L		83.8	0.713	20	
Magnesium	40.5	0.360	"		38.9	4.03	20	
Potassium	7.74	.0.600	` "		8.13 /* today co	4.91	20	
Sodium	110	2.15			117 (Salar - 1	6.17	20	

Environmental Lab of Texas

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

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		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch EK61308 - EPA 5030C (GCMS)

Blank (EK61308-BLK1)				Prepared: 11/	13/06 Analyzed: 1	1/14/06		
Benzene	ND	1.00	ug/l			to drive the		
Toluene	ND	1.00	"					
Ethylbenzene	ND	1.00	"					
Xylene (p/m)	ND	1.00	11					
Xylene (o)	ND	1.00	"					
Naphthalene	ND	1.00	"					
Surrogate: Dibromofluoromethane	48.7		н	50.0	97.4	68-129		,
Surrogate: 1,2-Dichloroethane-d4	42.2		"	50.0	84.4	72-132		
Surrogate: Toluene-d8	45.6		"	50.0	91.2	74-118		
Surrogate: 4-Bromofluorobenzene	44.2		"	50.0	88.4	65-140		
LCS (EK61308-BS1)				Prepared: 11/	13/06 Analyzed: 1	1/15/06		
Benzene	24.0	1.00	ug/l	25.0	96.0	70-130		
Toluene	24.6	1.00	*	25.0	v. es. (5. 98.4	70-130		
Ethylbenzene	27.1	1.00	н	25.0	135 y H + + 108 +	70-130		
Xylene (p/m)	52.0	1.00	н	50.0		70-130		
Xylene (o)	. 27.1	. 1.00	. ".	25.0	21. Sec 108	70-130		· •
Naphthalene	27.3	1.00	н ,	25.0	that in 109	70-130	· · · ·	512 A
Surrogate: Dibromofluoromethane	48.6		n	50.0	Surveys 97.2 49.	68-129:		· · ·
Surrogate: 1,2-Dichloroethane-d4	44.0		"	50.0	88.0	72-132		•
Surrogate: Toluene-d8	45.1		. п	50.0		74-118		÷
Surrogate: 4-Bromofluorobenzene	50.2		n	50.0	100	65-140		
Calibration Check (EK61308-CCV1)				Prepared: 11/	(13/06 Analyzed: 11	1/15/06		
Toluene	52.0		ug/l	50.0	104	70-130		
Ethylbenzene	54.9		"	50.0	110	70-130		
Surrogate: Dibromofluoromethane	50.6		"	50.0	101	68-129		
Surrogate: 1,2-Dichloroethane-d4	48.9		n	50.0	97.8	72-132		
Surrogate: Toluene-d8	47.2		"	50.0	94.4	74-118		
Surrogate: 4-Bromofluorobenzene	44.4		. н	50.0	88.8	65-140		

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Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Matuin Sailes (EV(1200 MS1)	£		01	Dronanod, 1	1/12/06 4	nalugadi 11	116106			
Batch EK61308 - EPA 5030C (GCMS)				· · · · · · · · · · · · · · · · · · ·						
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
		Reporting		Spike	Source		%REC		RPD	

				-		2					
Benzene	23.0	1.00	ug/l	25.0	ND	92.0	70-130				
Toluene	24.7	1.00	н	25.0	ND	98.8	70-130				
Ethylbenzene	27.0	1.00	н	25.0	ND	108	70-130				
Xylene (p/m)	53.3	1.00		50.0	ND	107	70-130				
Xylene (o)	27.0	1.00	"	25.0	ND	108	70-130				
Naphthalene	24.5	1.00	н	25.0	ND	98.0	70-130				
Surrogate: Dibromofluoromethane	49.5		"	50.0		99.0	68-129				
Surrogate: 1,2-Dichloroethane-d4	48.1		"	50.0		96.2	72-132				
Surrogate: Toluene-d8	47.3		"	50.0		94.6	74-118				
Surrogate: 4-Bromofluorobenzene	48.2		"	50.0		96.4	65-140				
Matrix Spike Dup (EK61308-MSD1)	So	arce: 6K09001-	-01	Prepared: 1	1/13/06 An	alyzed: 11/	/15/06				
Benzene	23.2	1.00	ug/l	25.0	ND	92.8	.70-130	0.866	20		
Toluene	23.6	1.00		25.0	ND	94.4	70-130	4.55	20		
Ethylbenzene	24.6	1.00	"	25.0	NDEtay	98.4	70-130	· 9.30	20		
Xylene (p/m)	47.6	1.00	и	50.0	ND	95.2	70-130	~ 11.3	20		
Xylene (o)	24.8	1.00	•	-25.0	$\sim ND^{1/2}$	e r :99.2 .	70-130	8.49	20	. • .	
Naphthalene	26.0	<u>1.00</u>	n	25.0	ND	::: 104	70-130	5,94	20	."	
Surrogate: Dibromofluoromethane	52.7		<u>с</u> и.	50.0	514.2	105 A.C.	68-129		a alian a la composición de la	·····	
Surrogate: 1,2-Dichloroethane-d4	54.4		"	50.0		109	; 72-132 ··	- 11			
Surrogate: Toluene-d8	44.8		n	50.0		89.6	74-118			2	
Surrogate: 4-Bromofluorobenzene	47.1		"	50.0		94.2	65-140				

Environmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

Rice Operating Co.	Project:	Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number:	None Given	
Hobbs NM, 88240	Project Manager:	Kristin Farris-Pope	

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

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Raland K Juli Report Approved By: 11/22/2006 Date:

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

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Environmental Lab of Texas

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Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

ient:	Rive Op.	
ite/ Time:	1/3/de 11:45	
.b ID # ;	<u>4K0310</u>	
tials:	<u> </u>	

2.24

Sample Receipt Checklist

				Client Initial
Temperature of container/ cooler?	Yes	No	0.5 °C	
Shipping container in good condition?	Yes	No		
Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
Chain of Custody present?	Yes	No		<u> </u>
Sample instructions complete of Chain of Custody?	Ves	No		1
Chain of Custody signed when relinquished/ received?	Ves	No		1
Chain of Custody agrees with sample label(s)?	Yeş	No	ID written on Cont./ Lid	
Container label(s) legible and intact?	Yeş	No	Not Applicable	
Sample matrix/ properties agree with Chain of Custody?	Ves	No	· · · · · · · · · · · · · · · · · · ·	
1 Containers supplied by ELOT?	Yes	No		1
2 Samples in proper container/ bottle?	Xes	No	See Below	
3 Samples properly preserved?	Pes	No	See Below	and the second
4 Sample bottles intact?	Yes	Nö		a particular and
5 Preservations documented on Chain of Custody?	Xes,	No	Contractor Contractor Contractor Contractor	
5 Containers documented on Chain of Custody?	Yes	No.	Milediated Structure processor	
7 Sufficient sample amount for indicated test(s)?	(Fes	No	See Below	e Carlandiae e mitere
8 All samples received within sufficient hold time?	Yes	No	See Below	
9 VOC samples have zero headspace?	Y/es)	No	Not Applicable	

Variance Documentation

ontact:	Contacted by:	Date/ Time;			
arding:					
prrective Action Taken:					

teck all that Apply:

See attached e-mail/ fax

Client understands and would like to proceed with analysis Cooling process had begun shortly after sampling event

.....



Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor Hobbs, NM 88240

Project: Hobbs Jct. E-32-1 Project Number: None Given Location: Lea County

Lab Order Number: 6E18018

Report Date: 05/25/06

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris-Pop	05/25/06 16:22

ANALYTICAL REPORT FOR SAMPLES

• * • <u>;</u> :

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6E18018-01	Water	05/17/06 13:15	05/18/06 12:00
1			ege t	

Page 1 of 10

Rice Operating Co.	Project: H	Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: M	None Given	Reported:
Hobbs NM, 88240	Project Manager: H	Kristin Farris-Pope	05/25/06 16:22

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18018-01) Water				<u></u>			. Au 17		
Benzene	ND	0.00100	mg/L	1	EE62101	05/21/06	05/22/06	EPA 8021B	
Toluene	ND	0.00100	n	11	11	18	11	"	
Ethylbenzene	ND	0.00100		u	"	"	n	"	
Xylene (p/m)	ND	0.00100		"	v	"	"	"	
Xylene (o)	ND	0.00100	"	u.	**	н	11	**	
Surrogate: a.a.a-Trifluorotoluene		114 %	80-12	0	#	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.2 %	80-12	0	51	**	**	55	

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Environmental Lab of Texas

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18018-01) V	Vater								
Total Alkalinity	250	2.00	mg/L	1	EE62220	05/22/06	05/22/06	EPA 310.1M	
Chloride	393	10.0		20	EE62205	05/22/06	05/22/06	EPA 300.0	
Total Dissolved Solids	1350	5.00	11	1	EE61919	05/18/06	05/18/06	EPA 160.1	
Sulfate	161	10.0	**	20	EE62205	05/22/06	05/22/06	EPA 300.0	

Environmental Lab of Texas

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
 Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18018-01) Water	·. · · · · · · · · · · · · · · · · · ·						,		
Calcium	192	0.500	mg/L	50	EE61926	05/19/06	05/19/06	EPA 6010B	
Magnesium	44.2	0.0100		10	u	"	n	**	
Potassium	5.38	0.500	**	"	"	"	n	11	
Sodium	135	0.500	11	50	"	"		"	

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Rice Operating Co.	Project:	Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number:	None Given	Reported:
Hobbs NM, 88240	Project Manager:	Kristin Farris-Pope	05/25/06 16:22

Organics by GC - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	. Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EE62101 - EPA 5030C (GC)		•								
Blank (EE62101-BLK1)				Prepared &	z Analyzec	l: 05/21/06				
Benzene	ND	0.00100	mg/L		·			· · · · · · · ·		
oluene	ND	0.00100	11							
thylbenzene	ND	0.00100	"							
Lylene (p/m)	ND	0.00100	н							
(vlene (o)	ND	0.00100	"							
urrogate: a,a,a-Trifluorotoluene	42.9		ug/l	40.0		107	80-120			
urrogate: 4-Bromofluorobenzene	32.2		"	40.0		80.5	80-120			
CS (EE62101-BS1)				Prepared &	z Analyzec	1: 05/21/06				
enzene	0.0415	0.00100	mg/L	0.0500		83.0	80-120			
oluene	0.0421	0.00100	"	0.0500		84.2	80-120			
thylbenzene	0.0463	0.00100	"	0.0500		92.6	80-120			
ylene (p/m)	0.102	0.00100	n	0.100		102	80-120			
ylene (o)	0.0504	0.00100	"	0.0500	7.5	101	80-120			
urrogate: a,a,a-Trifluorotoluene	42.7		ug/l	40.0	ju	21 C \$ 107				
urrogate: 4-Bromofluorobenzene	36.2		"	40.0	14	90.5	:::54 80-1/20 :::55	et i		÷ :
Calibration Check (EE62101-CCV1)				Prepared &	: Analyzed	1:05/21/06	land a leasa	gur en t		
enzene	44.3		ug/l	50.0	. 87	320588.6	80-120			2.8-1
oluene	44.3		"	50.0		88.6	80-120			
hylbenzene	55.3		"	50.0		111	80-120			,
ylene (p/m)	99.1		"	100		99.1	80-120			
ylene (o)	49.1		"	50.0		98.2	80-120			
urrogate: a,a,a-Trifluorotoluene	44.6		"	40.0		112	80-120			
urrogate: 4-Bromofluorobenzene	34.8		"	40.0		87.0	80-120			
1atrix Spike (EE62101-MS1)	Sou	rce: 6E17005-	01	Prepared: ()5/21/06 A	Analyzed: 05	5/22/06			
enzene	0.0444	0.00100	mg/L	0.0500	ND	88.8	80-120			
oluene	0.0454	0.00100	"	0.0500	ND	90.8	80-120			
thylbenzene	0.0488	0.00100	"	0.0500	ND	97.6	80-120			
ylene (p/m)	0.108	0.00100	"	0.100	ND	108	80-120			
Tylene (o)	0.0531	0.00100	11	0.0500	ND	106	80-120			
urrogate: a,a,a-Trifluorotoluene	45.5		ug/l	40.0		114	80-120			
Surrogate: 4-Bromofluorobenzene	36.9		"	40.0		92.2	80-120			

	Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
1	122 W. Taylor	Project Number: None Given	Reported:
	Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

Organics by GC - Quality Control

Environmental Lab of Texas

		Reporting	Spike	Source	%REC		RPD	
Analyte	Result	Limit Units	Level	Result %REC	Limits	RPD	Limit	Notes

Batch EE62101 - EPA 5030C (GC)

Matrix Spike Dup (EE62101-MSD1)	Sou	rce: 6E17005-	01	Prepared: 0	5/22/06				
Benzene	0.0439	0.00100	mg/L	0.0500	ND	87.8	80-120	1.13	20
Toluene	0.0447	0.00100		0.0500	ND	89.4	80-120	1.55	20
Ethylbenzene	0.0481	0.00100		0.0500	ND	96.2	80-120	1.44	20
Xylene (p/m)	0.107	0.00100		0.100	ND	107	80-120	0.930	20
Xylene (o)	0.0521	0.00100	"	0.0500	ND	104	80-120	1.90	20
Surrogate: a,a,a-Trifluorotoluene	46.4		ug/l	40.0		116	80-120		· · · · ·
Surrogate: 4-Bromofluorobenzene	33.4		н	40.0		83.5	80-120		

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Environmental Lab of Texas

Rice Operating Co.		Pi	roject: H	obbs Jct. E-32	-1				Fax: (505)	397-1471
122 W. Taylor		Project Nu	mber: N	one Given					Repo	rted:
Hobbs NM, 88240		Project Ma	nager: Ki	ristin Farris-P	ope				05/25/00	5 16:22
General Chem	istry Para	meters by	EPA /	Standard	Method	ls - Qua	lity Co	ntrol		
		Environn	nental l	Lab of Tex	kas					
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch EE61919 - Filtration Preparation							·			s.,
Blank (EE61919-BLK1)				Prepared &	Analyzed:	05/18/06				
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EE61919-DUP1)	Sour	-ce: 6E18012-	01	Prepared &	Analyzed:	05/18/06				
Total Dissolved Solids	1420	5.00	mg/L		1470			3.46	5	
Batch EE62205 - General Preparation (Wet	Chem)									
Blank (EE62205-BLK1)				Prepared &	Analyzed:	05/22/06				
Sulfate	ND	0.500	mg/L	·					·	
Chloride	ND	0.500	"							
LCS (EE62205-BS1)				Prepared &	Analyzed:	05/22/06				
Sulfate	8.20		mg/L	10.0		82.0	80-120			
Chloride	10.1		u	10.0		101	80-120		•	
Calibration Check (EE62205-CCV1)				Prepared &	Analyzed:	05/22/06			r .	
Chloride	10.1		mg/L	10.0		101	80-120		•	
Sulfate	9.63		"	10.0	·	96.3	80-120	an sa s]. .	
Duplicate (EE62205-DUP1)	Sour	ce: 6E18012-	01	Prepared &	Analyzed:	05/22/06	14.2.205- AR	برو می دوران کار		· · · · ·
Sulfate	307	10.0	mg/L		304 30.23	ίŵ.		0.982	20	
Chloride	343	10.0	"		344			0.291	20	. 1
Duplicate (EE62205-DUP2)	Sour	-ce: 6E18015-	01	Prepared &	: Analyzed:	:05/22/06	61 - 1 3.	11-a 2-1-4		
Chloride	415	10.0	mg/L		412			0.726	20	·····
Sulfate	50.3	10.0	4		50.6			0.595	20	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD				
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes			
Batch EE62205 - General Preparation (WetCh	em)												
Matrix Spike (EE62205-MS1)	Sou	irce: 6E18012-	01	Prepared &	& Analyzed:	05/22/06							
Chloride	565	10.0	mg/L	200	344	110	80-120						
Sulfate	465	10.0	17	200	304	80.5	80-120						
Matrix Spike (EE62205-MS2)	Sou	irce: 6E18015-	01	Prepared &	2 Analyzed:	05/22/06							
Chloride	654	10.0	mg/L	200	412	121	80-120			S-07			
Sulfate	200	10.0	и	200	50.6	74.7	80-120			S-07			
Batch EE62220 - General Preparation (WetCh	em)												
Blank (EE62220-BLK1)				Prepared & Analyzed: 05/22/06									
Total Alkalinity	ND	2.00	mg/L										
LCS (EE62220-BS1)				Prepared &									
Bicarbonate Alkalinity	214	2.00	mg/L	200		107	85-115						
Duplicate (EE62220-DUP1)	. Sou	irce: 6E18012-	01	Prepared &	analyzed:	05/22/06							
Total Alkalinity	279	2.00	mg/L		280	•	, `	0.358	20				
Reference (EE62220-SRM1)	•	·	. • •	Prepared &	k Analyzed:	05/22/06	FENR SEN REALIZED		<u>.</u>				
Total Alkalinity	96.0		mg/L	100	1. T. 199	96.0	90-110	s a ta mitis da	1 4.2 F. Cişt	an a			
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Environmental Lab of Texas

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

				a						
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch EE61926 - 6010B/No Digestion

. DBC BOOK

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Blank (EE61926-BLK1)				Prepared & Ar	nalyzed: 05/19/06				
Calcium	ND	0.0100	mg/L						
Magnesium	ND	0.00100	"						
Potassium	ND	0.0500							
Sodium	ND	0.0100							
Calibration Check (EE61926-CCV1)	Prepared & Ar	nalyzed: 05/19/06							
Calcium	2.30		mg/L	2.00	115	85-115			
Magnesium	2.21		"	2.00	110	85-115			
Potassium	1.80		"	2.00	90.0	85-115			
Sodium	1.81		н	2.00	90.5	85-115			
Duplicate (EE61926-DUP1)	Source	e: 6E18012-	-01	Prepared & Ar	nalyzed: 05/19/06				
Calcium	111	0.500	mg/L		111		0.00	20	
Magnesium	58.3	0.0100	"		56.5 ·		3.14	20	
Potassium	12.2	0.500	# .		12.9.*		5.58	20	
Sodium	266	0.500	# 113		271 act (1.86	20	1.00

Environmental Lab of Texas

Rice Operating Co.	Project: H	Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: N	None Given	Reported:
Hobbs NM, 88240	Project Manager: K	Kristin Farris-Pope	05/25/06 16:22

Notes and Definitions

S-07	Recovery outside Laboratory historical or method prescribed limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Kaland Kituts Report Approved By:

Date: 5/25/2006

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

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If you have received this material in error, please notify us immediately at 432-563-1800.

Environmental Lab of Texas

Lab of Texas	Phone: 432-563-1800
Environmental	12600 West I-20 East

NALYSIS REQUEST
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Environmental Lab of Texas Variance / Corrective Action Report – Sample Log-In

t <u>Rice Operating Co.</u>
Mime: 05-18-04 @ 1200
er#: 6E18018
Is: JMM

Sample Receipt Checklist

perature of container/cooler?	(res) No 10 CI
ping container/cooler in good condition?	Tes No
ady Seals intact on shipping container/cooler?	(Tes) No Not present
ody Seals intact on sample bottles?	Tes No Not present
t of custody present?	(TES) NO
ple Instructions complete on Chain of Custody?	Tes, No 1
h of Custody signed when relinquished and received?	(Tes) NO
n of custody agrees with sample label(s)	res) No
aineritabels legible and intact?	(Tes) No
ple Matrix and properties same as on chain of custody?	(Pes) No
oles in proper container/bottle?	Ves No
ples properly preserved?	TES NO 1
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cient sample amount for indicated test?	No. No.
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Variance Documentation:

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Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

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Project: Hobbs Jct. E-32-1 Project Number: None Given Location: T18S-R38E-Sec.32E, Lea County, NM

Lab Order Number: 6J10004

Report Date: 10/23/06

Rice Operating Co. 122 W. Taylor Hobbs NM, 88240

.

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

25

ANALYTICAL REPORT FOR SAMPLES

Sample ID		Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1		6J10004-01	Water	10/05/06 15:05	10-09-2006 17:20
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Page 1 of 5

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11

Project: Hobbs Jct. E-32-1 Project Number: None Given Project Manager: Kristin Farris-Pope

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

		Reporting							
Analyte	Result	Limit.	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6J10004-01) Water									
Benzene	ND	1.00	ug/l	1	EJ61913	10/18/06	10/18/06	EPA 8260B	
Toluene	ND	1.00	"	"	II.	n	н	#1	
Ethylbenzene	ND	1.00		11	11	"	в	н	
Xylene (p/m)	ND	1.00	**	u	н	H	n	11	
Xylene (o)	ND	1.00	н	п	11	"	P	**	
Naphthalene	ND	1.00		n	"	"	"	**	
Surrogate: Dibromofluoromethane		101 %	68-1	29	"	"	n	"	
Surrogate: 1,2-Dichloroethane-d4		90.2 %	72-1	32	"	"	"	"	
Surrogate: Toluene-d8		89.6 %	74-1	18	"	n	"	"	
Surrogate: 4-Bromofluorobenzene		80.8 %	65-1	40	"	"	"	"	

Environmental Lab of Texas

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ61913 - EPA 5030C (GCMS	5)									
Blank (EJ61913-BLK1)				Prepared &	& Analyzed	: 10/18/06				

				• • • • • • • • • • • • • • • • • • • •					
Benzene	ND	1.00	ug/l						
Toluene	ND	1.00							
Ethylbenzene	ND	1.00	"						
Xylenc (p/m)	ND	1.00	n						
Xylene (o)	ND	1.00	н						
Naphthalene	ND	1.00	"						
Surrogate: Dibromofluoromethane	47.2		"	50.0	94.4	68-129			
Surrogate: 1,2-Dichloroethane-d4	42.8		"	50.0	85.6	72-132			
Surrogate: Toluene-d8	40.3		"	50.0	80.6	74-118			
Surrogate: 4-Bromofluorobenzene	37.0		"	50.0	74.0	65-140			
LCS (EJ61913-BS1)				Prepared & A	nalyzed: 10/18/06				
Benzene	20.2	1.00	ug/l	25.0	80.8	70-130			
Toluene	22.1	1.00	"	25.0	88.4	70-130			
Ethylbenzene	22.7	1.00	"	25.0	90.8	70-130			· ·
Xylene (p/m)	42.0	· 1.00	"	50.0	84.0	70-130	te e de la composición de la c		17 h.
Xylene (o)	23.0	1.00	H.	25.0	92.0	70-130	1.	•	114
Naphthalene	24.2	1.00	n	25.0	96:8 et al. 196:8	70-130	. '		23.2
Surrogate: Dibromofluoromethane	49.6		"	50.0		68-129	1. j. e.t.	/!	
Surrogate: 1,2-Dichloroethane-d4	51.5		n	50.0	103	72-132	1.		,
Surrogate: Toluene-d8	43.6		"	50.0	5 1999 - T 87.2 0 - 20	- 74-118			
Surrogate: 4-Bromofluorobenzene	40.2		"	50.0	80.4	65-140			
Calibration Check (EJ61913-CCV1)				Prepared & A	analyzed: 10/18/06				
Toluene	41.3		ug/l	50.0	82.6	70-130			
Ethylbenzene	41.1		n	50.0	82.2	70-130			
Surrogate: Dibromofluoromethane	46.9		н	50.0	93.8	68-129			
Surrogate: 1,2-Dichloroethane-d4	44.9		"	50.0	89.8	72-132			
Surrogate: Toluene-d8	44.2		"	50.0	88.4	74-118			
Surrogate: 4-Bromofluorobenzene	38.7		"	50.0	77.4	65-140			

Environmental Lab of Texas

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch EJ61913 - EPA 5030C (GCMS)

Matrix Spike (EJ61913-MS1)	S	ource: 6J10005-0)1	Prepared &	Analyzed:	: 10/18/06				
Benzene	23.6	1.00	ug/l	25.0	3.66	79.8	70-130			
Toluene	22.8	1.00	"	25.0	ND	91.2	70-130			
Ethylbenzene	26.0	1.00	н	25.0	2.22	95.1	70-130			
Xylene (p/m)	45.4	1.00	н	50.0	1.88	87.0	70-130			
Xylene (o)	24.6	1.00	и	25.0	ND	98.4	70-130			
Naphthalene	28.7	1.00	"	25.0	1.33	109	70-130			
Surrogate: Dibromofluoromethane	51.6		"	50.0		103	68-129			
Surrogate: 1,2-Dichloroethane-d4.	48.0		"	50.0		96.0	72-132			
Surrogate: Toluene-d8	44.6		n	50.0		89.2	74-118			
Surrogate: 4-Bromofluorobenzene	40.2		"	50.0		80.4	65-140			
Matrix Spike Dup (EJ61913-MSD1)	S	ource: 6J10005-0	1	Prepared &	Analyzed:	10/18/06				
Benzene	23.3	1.00	ug/l	25.0	3.66	78.6	70-130	1.28	20	
Toluene	22.6	1.00		25.0	ND	90.4	70-130	0.881	20	
Ethylbenzene	25.7	1.00	11	25.0	2.22	93.9	70-130	1.16	20	
Xylene (p/m)	44.8	1.00		50.0	1.88	·· 85.8 (,70 , 130	-1.33	20	¹
Xylene (o)	23.9	1.00	57	25.0	ND	⊶r≎ (95.6	70-130	- 2.89	20	5 A.
Naphthalene	30.2	1.00	. <mark>н</mark>	25.0	1.33 ∿∩	Vilie 145	70-130	5.09	20	• •
Surrogate: Dibromofluoromethane	49.0	· · · ·	"	50.0	1. m	98. 0	68-129	n en se		
Surrogate: 1,2-Dichloroethane-d4	46.4		"	50.0	140	• 92.8 -	72-132	1.15		,
Surrogate: Toluene-d8	44.0		"	50.0	$= 10^{10}$	**** 88.0 _*;	74-118			
Surrogate: 4-Bromofluorobenzene	39.8		n	50.0		79.6	65-140			

Rice Operating Co.	Project:	Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number:	None Given	
Hobbs NM, 88240	Project Manager:	Kristin Farris-Pope	

Notes and Definitions

DET	Analyte DETECTED			
ND	Analyte NOT DETECTED at or above the reporting limit			
NR	Not Reported	vê vê	· ••·	
dry	Sample results reported on a dry weight basis			
RPD	Relative Percent Difference			
LCS	Laboratory Control Spike			
MS	Matrix Spike			• .
Dup	Duplicate			

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Raland K Jutits Report Approved By: Date: 10/23/2006

Raland K. Tuttle, Lab Manager Celey D. Keene, Lab Director, Org. Tech Director Peggy Allen, QA Officer Jeanne Mc Murrey, Inorg. Tech Director LaTasha Cornish, Chemist Sandra Sanchez, Lab Tech.

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-563-1800.

Environmental Lab of Texas

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AND ANAL YSIS REQUEST	Hobbs Junction E-32-1		T18S-R38E-Sec32E, Lea County NM						(əinbs	۲ ۲ ۲ ۲ ۲ 1	۲ ۲۹۵٫۱ ۵ ۲۰ ۲۰ ۲۰ ۲۰ ۲۰ ۲۰ ۲۰ ۲۰ ۲۰ ۲۰ ۲۰ ۲۰ ۲۰	##T ###7 ###2 ##2 </th <th>×</th> <th></th> <th></th> <th></th> <th></th> <th>Sample Containere Intact? (V) N Labels on container?</th> <th>Cutatody Seals/ Contanteres/ Couler) Temperature Upon Recease:</th> <th>me Leboratory Comments:</th> <th>db </th> <th>me 35 C 20 </th> <th></th>	×					Sample Containere Intact? (V) N Labels on container?	Cutatody Seals/ Contanteres/ Couler) Temperature Upon Recease:	me Leboratory Comments:	db	me 35 C 20	
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XaS 3-1600 3-1713	kpope@riceswd.com	pany		38240		05) 631-9310	THE AND	ndent		pəj	qma2 eta	20	10/5/2006					RESULTS TO: kpope@	NValocuer com	Time Received by:	12:45 Hom	12'2 Refer by ELOT	month 1
NTAI LAD OF TO Phone: 432-56 Fex: 432-56	er: Kristin Farris Pope	me RICE Operating Com	ss: 122 W. Taylor Street	Ip: Hobbs, New Mexico E	ło: <u>(505)</u> 393-9174	re: Rozanne Johnson (5	ali: rozanne@valornet.co		an a la chuir an			FIELD CODE	ittor Weil 쌹1					PLEASE Email F		Date	20/401 J	Data 10 00136	1 No 11 1 North
ETIVITOTIMO 12600 West I-20 East Odesse, Texes 79766	Project Manag	Company Nat	Company Addres	Clty/State/Z	Talephone A	Sampler Bignatu	9 22 8			Å	TUNC I	LAB # (Bb use only)	Mor					Special instructions:			Razenne Johnesen	Relinquished by:	And a when

Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

nt:	fre op.	
e/ Time:	10/9/02	17:20
ID # :	GJ10004	
als:		

Sample Receipt Checklist

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			1	Client Initials	5
Temperature of container/ cooler?	Yes	No	3.5 °C		
Shipping container in good condition?	Yes	No			
Custody Seals intact on shipping container/ cooler?		No	Not Present		
Custody Seals intact on sample bottles/ container?	Yes	No	Not Present		
Chain of Custody present?		No			
Sample instructions complete of Chain of Custody?		No			i I
Chain of Custody signed when relinquished/ received?		No			
Chain of Custody agrees with sample label(s)?		No	ID written on Cont./ Lid		
Container label(s) legible and intact?	Yeş	No	Not Applicable		
Sample matrix/ properties agree with Chain of Custody?	Yes	No			
Containers supplied by ELOT?	Yes	No	A GARAN		
Samples in proper container/ bottle?	Yes	No	See Below	·	
Samples properly preserved?	Yes	No	See Below		
Sample bottles intact?	···¥es.··	No	Garable, books in table		
Preservations documented on Chain of Custody?	Yes	No	Treasurations domain in	2002	<u>h 05 l</u>
Containers documented on Chain of Custody?	Yes	No	Contellines, oncomention	de Cearce	1
Sufficient sample amount for indicated test(s)?	Yes	No	See Below	1000 2000	EST:
All samples received within sufficient hold time?		No_	See Below		
VOC samples have zero headspace?	Xes	No	Not Applicable		1 m. 1

Variance Documentation

itact:		Contacted by:	Date/ Time:
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eck all that Apply:		See attached e-mail/ fax Client understands and would like to proceed with analy Cooling process had begun shortly after sampling even	ysis


R. T. HICKS CONSULTANTS, LTD.

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

To model the effect of the vadose zone remedy's impact on ground water at the E-32-1 site, output from HYDRUS-1D is used as input to a ground water mixing model.

HYDRUS-1D numerically solves the Richard's equation for water flow and the Fickian-based advection-dispersion equation for heat and solute transportation. The HYDRUS-1D flow equation includes a sink term (a term used to specify water leaving the system) to account for transpiration by plants. The solute transport equation considers advective, dispersive transport in the liquid phase, diffusion in the gaseous phase, nonlinear and non-equilibrium sorption, linear equilibrium reactions between the liquid and gaseous phases, zero-order production, and first-order degradation.

The ground water mixing model uses the chloride flux from the vadose zone to ground water provided by HYDRUS-1D and instantaneously mixes this chloride and water with the ground water flux of chloride plus water that enters the mixing cell beneath the subject site. We refer the reader to API Publication 4734, Modeling Study of Produced Water Release Scenarios (Hendrickx and others, 2005) for a general description of the techniques employed for this simulation experiment.

A description of the model input parameters are listed below. A description of the model input parameters are listed below. HYDRUS 1-D INPUTS:

Soil Profile - Information for the soil profile (or vadose zone thickness and texture) is based upon the boring log obtained from installation of the monitoring well at the constant of the second vadose zone thickness of 45 feet at the site.

10 P

Dispersion lengths - Conservative dispersion lengths were employed. Standard practice calls for employing a dispersion length that is 10% of the model length. Based upon experience with similar soils in this area, dispersion lengths of 6% of the model length were used. This choice is conservative of ground water quality.

Climate - Weather data used in the predictive modeling was from the Pearl Weather Station (46 years of data), approximately 13.25 miles southwest of the E-32-1 site.

HYDRUS-1D can also employ a uniform yearly infiltration rate that will obviously smooth the temporal variations. Because the atmospheric data are of high quality and nearby to the site, we have elected to allow HYDRUS-1D to predict the deep percolation rate and the resultant variable flux to ground water. This choice results in higher peak chloride concentrations in ground water due to temporally variable high fluxes from the vadose zone. As such, this choice is conservative and will not underpredict impairment to ground water quality.

Soil Moisture - Because soils are relatively dry in this climate and vadose zone hydraulic conductivity varies with moisture content, it is important that simulation experiments of different remedial strategies begin with an initial "steady state" soil moisture content. The calculation of soil moisture content begins with using professional judgment as an initial input and then running sufficient years of weather data through the model to establish a "steady state" moisture content.

January 15, 2007 Page 2

Because only minimal changes in the HYDRUS-1D soil moisture content profile occurred after year 35 of the initial condition calculation, 46 years was considered more than sufficient to establish the initial moisture condition. All simulations of chloride movement used soil profiles hydrated in this manner.

Initial Chloride Profile – Field chloride soil concentrations (mg/kg) at depth were obtained from the samples collected from the monitoring well boring.

Integration of the chloride contained within the profile yielded a chloride load of 18.2 kg/m^2 . The averaged soil concentration values (mg/kg) were linearly interpolated to correspond to the HYDRUS 1-D soil profile nodes. Using the volumetric moisture content from the HYDRUS 1-D initial condition and a default dry bulk soil density of 1390 kg/m³, soil water moisture concentrations (mg/L) were calculated for the HYDRUS 1-D soil profile nodes. These chloride concentrations were installed in the HYDRUS-1D model.

As described in API Publication 4734, the ground water mixing model takes the background chloride concentration in ground water multiplied by the ground water flux to calculate the total mass of ground water chloride entering the ground water mixing cell, which lies below the area of interest. The chloride and water flux from HYDRUS-1D is added to the ground water chloride mass and flux to create a final the second chloride concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well located at concentration in ground water at an imaginary monitoring well loca MIXING MODEL INPUTS:

Influence Distance - The influence distance is defined as the maximal length of the release area parallel to groundwater flow direction. As this direction is not exactly known, a maximum diameter of 20 feet for the site was used.

Background Chloride Concentration – From monitoring well data from the site, a value of 161 mg/L chloride for ground water was used at this location.

Hydraulic Conductivity - R.T. Hicks Consultants believes that the hydraulic conductivity of the saturated zone at the release site is similar to that observed for the Ogallala Aquifer throughout the general area. McAda (1984) simulated water level declines using a two-dimensional digital model and employed hydraulic conductivity values of 51-75 feet/day (1.9 E-4 to 2.8 E-4 m/s) in the area. More recently, Musharrafieh and Chudnoff (1999) employed values for hydraulic conductivity within this area of interest between 81 and 100 ft/day, for their simulation. According to Freeze and Cherry (1979), these values correspond to clean sand, which agrees with nearby lithologic descriptions of the saturated zone. For the E-32-1 site, the saturated hydraulic conductivity of the uppermost saturated zone is assumed as 75 feet/day.

Groundwater Gradient - From USGS well data (1996), ground water flows southeast in the area under a hydraulic gradient of approximately 0.0036 ft/ft. The resulting ground water flux is 8.2 cm/day.

Aquifer Thickness - A restricted aquifer thickness of 10 feet was employed in the mixing model as a conservative measure although aquifer thickness penetrated by the monitoring well is approximately 15 feet.

January 15, 2007 Page 3

1. Northern MA

For all variables for which field data did not exist, assumptions conservative of ground water quality were made. A summary of the input parameters and a description of the source information used in the HYDRUS-1D model for this application are provided in Table 1 below.

Table 1: Modeling Inpu	ts for the E-32-1 Site			
Input Parameter	Source			
Vadose Zone Thickness - 45 feet	From Monitoring Well on the Site			
Vadose Zone Texture	Boring Log and professional judgment			
Dispersion Length - 6% of model length	Professional judgment			
Climate	Pearl, N.M. Weather Station Data			
Soil Moisture	HYDRUS-1D initial condition simulation			
Initial soil chloride concentration profile	From E-32-1 monitoring well boring samples			
Length of release parallel to ground water flow - 20 feet	Maximum Dimension of Site			
Background Chloride in Ground Water - 161 ppm	Regional and Site Data			
Ground Water Flux - 8.2 cm/day	From regional data ward Waters			
Aquifer Thickness - 10-feet	Conservative value			

Vegetation was allowed at the site within the upper 3.0 feet of silt loam.

Model of the E-32-1 Site with Revegetation of the Site

The proposed remedy of the E-32-1 site was modeled with a site specific HYDRUS-1D model. The model was begun with a 45 foot thick soil profile constructed and hydrated as discussed above. The initial chloride profile was also installed as described above.

The remedy modeled featured vegetation acting as an evapotranspiration (ET) barrier in 3.0 feet of silt loam above eight inches of sand to reduce upwards wicking of chloride. With vegetation established, vadose zone flux to ground water declines. The resultant chloride concentration in ground water peaks about two years after installation of the ET barrier at less than 165 mg/L and declines there after (see Figure 1).



Figure 1: Chloride Concentration in the Aquifer with Vegetation, E-32-1 Site

Figure 2 is a graph of predicted soil water chloride concentration profiles at times in the future with the remedy installed. Between year 0 and year 92, peak chloride concentration moves about 1.0 foot downwards, a migration rate of 0.011 feet per year. This rate implies that peak chloride concentration will enter ground water about 2700 years from now.

Rather than run the model for the large time necessary for the peak chloride concentration to enter ground water, an upper bound was calculated for chloride concentration in the aquifer through time.

This bound is calculated by identifying maximum chloride concentration in the vadose zone and a maximum vadose zone water flux in time. These values are entered as constants through time in the limit calculation and represent a maximum chloride flux from the vadose zone. This flux is used in the calculation as a steady state condition. Then, the limit calculation of the chloride concentration in ground water as time approaches infinity is a simple algebraic evaluation.



Figure 2: Chloride Profiles at Time, E-32-1 Site

The maximum chloride concentration value is 42,300 mg/L in the vadose zone at 10.5 feet bgs (Time = 92 Years, Figure 2). Examination of the HYDRUS 1-d output

January 15, 2007 Page 6

files reveals no vadose zone water flux to ground water exceeding 0.00166 mm/day after year 42. Neither of these values will be equaled or exceeded in the future. Due to dispersion, peak vadose zone chloride concentration will decrease. As can be seen in Figure 3, with vegetation at the site, predicted vadose zone water flux will be less than or equal to this maximum value after year 50.

The calculation demonstrates that although peak chloride concentration has not yet migrated to the ground water interface, predicted chloride concentration in the aquifer is bounded by 166 mg/L through all time after year 92.

R. T. HICKS CONSULTANTS, LTD.

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

December 21, 2006

Wayne Price Environmental Bureau Chief New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505

RE: E-32-1 Junction Box Site (NMOCD CASE #: 1R0428-65) Request to Reconsider Regulation under Rule 19

Dear Wayne:

On behalf of Rice Operating Company (ROC), R.T. Hicks Consultants, Ltd. is submitting this request to exclude the above-referenced site from regulation under Rule 19 (see NMOCD letter to ROC dated December 8, 2006. Reproduced below is a portion of the Corrective Action Plan prepared for this site that supports this request.

Ground water sampling showed that chloride and TDS concentrations slightly exceeded WQCC standards for the initial groundwater sampling event, however all constituents of the water and laboratory data are summarized in the table below.

Date Sampled	Depth to Groundwater (Feet bgs)	Concentrations in mg/L				
		Chloride	TDS	BTEX		
5/17/06	45.29	393	1,350	< 0.001		
8/14/06	45.63	134	682	< 0.001		
9/19/06	45.63	189	740	< 0.001		

Ground water quality data obtained from recently drilled monitoring wells often show "false positives" due to conditions that can cause downward transportation of up-hole sediments and entrained constituents during drilling. Conversely, when drilling requires the introduction of fresh water for borehole stabilization, the laboratory can return "false negative" results for the initial sampling. At this site, fresh water was not introduced into the boring. The ground water sampling data strongly suggest that the initial sampling event did not provide representative ground water samples. The most recent two sampling events show that ground water quality at this site is less than WQCC Standards.

For you reference, the boring log and well completion diagram is attached to this letter. The last two quarterly ground water analyses show concentrations that are 50% less than the initial result. These findings allow us to conclude that the initial December 21, 2006 Page 2

sampling of this well produced a "false positive" analysis. Therefore, we suggest that regulation of this site under Rule 19 may not be appropriate.

In addition to re-vegetation of the ground surface, the Corrective Action Plan for this site provides the following:

This corrective action plan calls for two additional ground water monitoring events. If chloride concentrations in ground water remain below WQCC standards and show no increasing concentration trend that suggests WQCC standards will be exceeded, ROC will submit evidence of re-vegetation in a final closure report and request closure of the regulatory file.

The monitoring well at this site will remain available for sampling and collection of other field data to support future investigations of other Hobbs SWD sites. When the well is of no value for characterization of other Hobbs SWD sites it will be plugged and abandoned.

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If NMOCD agrees to this request, we will submit the final CAP to NMOCD on or before January 15, 2007 on behalf of ROC. Please contact Kristin Pope of ROC if you have any questions concerning this submission.

R.T.Hicks Consultants, Ltd.

Sincerely,

Randall T. Hicks Principal

Copy: Kristin Pope, ROC NMOCD Hobbs Ed Hanson, NMOCD Santa Fe

	LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM										
		TO PA	10NITOR WELL NO.:			LL NO.:	MW-1		TOTAL DEPTH: 58 Feet		
		SITE ID:			ITE ID:	Hobbs	E-32-1 Junction Box	CLIENT:	RICE Operating Company		
		i daa		D	RILLING ME	ETHOD:	Hollov	v Stem Auger	STATE:	New Mexico	
2024 C		START DATE:			DATE:	5/4/2006		LOCATION:	T18S-R38E-Sec 32-Unit E		
	MRS!			C		I DATE:	5/4/2(006 ed. immediately adiacent to former junc	FIELD REP.; tion box locatio	G. Van Deventer / M. Franks	5
					0011		Local				
			Sar	nnie	Blowcounts	Chloride	PID				ride.
		USCS	Depth Tir	ne Type	(blows - in)	(ppm)	(ppm)	LITHOLOGY, COLOR, GRAIN SIZE, SORT	ING, ROUNDING	G, CONSOLIDATION, DISTING	JISHING FEATURES
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		I. M									
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		CÂĿ									
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	C Blar										
	40 PV		25 88	27 9/ Picks	50 - 10			Light brown (5 YR 5/6) fine sand, subangula	r, well sorted, wi	th intermittent streaks of sandsto	one.
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			57					Groundwater encountered at approximately	43 ft below grou	nd surface	
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	← 5" —	*	60					Bottom of bor	ring at 58 feet be	low ground surface.	

R. T. HICKS CONSULTANTS, LTD.

1909 Brunson Ave 🔺 Midland TX 79701 🔺 432.638.8740 🔺 Fax: 413.403.9968

CERTIFIED MAIL - RETURN RECIEPT NO. 7099 3400 0017 1737 2367

January 20, 2006

Mr. Wayne Price New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505

RE: Investigation Characterization Plan: T18S R38E: E-33-1 Junction Box, B-32 Boot, E-32-1 Junction Box, E-32-2 Junction Box, F-33 Vent

Hobbs Salt Water Disposal System

Dear Mr. Price:

On behalf of Rice Operating Company, please accept this submission as our Initial Characterization Plan (ICP) for the five (5) sites referenced above within the Hobbs Salt Water Disposal System (Plate 1).

Rice Operating Company (ROC) is the service provider (operator) for the Hobbs Saltwater Disposal Company (ROC) is the service provider (operator) for the Hobbs Saltwater Disposal Company (ROC) is the service provider (operator) for the Hobbs Saltwater Disposal Company (ROC) is the service provide all operating capital on a percentage decision of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the System Partners and the set of the Hobbs System (System Partners); provide all operating capital on a percentage decision of the System Partners); provide all operating capital on a percentage decision of the System Partners (System Partners); provide all operating capital on a percentage decision of the System Partners (System Partners); provide all operating capital on the System Partners.

For all environmental projects, ROC will choose a path forward that:

- 1. protects public health,
- 2. provides the greatest net environmental benefit,
- 3. complies with NMOCD Rules, and
- 4. is supported by good science.

The last criteria employed when evaluating any proposed remedy or investigative work is confirming that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

Each site shall have three submissions or a combination of:

- 1. This <u>Investigation and Characterization Plan</u> (ICP) is a proposal for data gathering and site characterization and assessment.
- 2. Upon evaluation of the data and results from the ICP, a recommended remedy will be submitted in a <u>Corrective Action Plan</u> (CAP).
- 3. Finally, after implementing the remedy, a <u>closure report</u> with final documentation will be submitted.

January 20, 2006 Page 2

Task 1 Evaluate Chloride and BTEXN Concentrations in Soil at Five Sites, Evaluate Ground Water Quality if Necessary

We will follow the same protocol for characterization of the unsaturated zone at the five new ROC sites listed below.

- E-33-1 Junction Box
- o B-32 Boot
- o E-32-1 Junction Box
- E-32-2 Junction Box
- o F-33 Vent

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At each of the above-referenced sites, we will locate the sampling borehole as close as practical to the suspected release source. Earlier, we inspected each of the five sites nominated in this ICP and identified the boring location before the sites were backfilled and re-graded. Due to our recent experience with difficulties encountered in the installation of well clusters in this area, we plan to employ hollow-stem auger drilling techniques for sampling.

We will screen each sample in the field for chlorides and volatile organic compounds using the methods described in QP-03 and QP-07 (attached), respectively. Soil lithology and the presence of any observed staining or odor will be recorded. For any site, if we detect evidence of leakage within 15 feet of the water table (e.g. field chloride greater than 250 ppm in soil samples) we will complete the boring as a monitoring well in accordance with NMOCD Guidance. If three soil samples taken at 5-foot intervals test below 250 ppm chloride and below 100 ppm total volatile organic compounds, we will terminate the boring. However, all borings will penetrate at least 30 feet of the vadose zone.

Task 2 Evaluate Chloride and Hydrocarbon Flux from the Vadose Zone to Ground Water

We anticipate that one or all of the five sites selected for borehole investigation will show evidence of seepage from the source to a depth of more than 15-feet. For these sites, excavation and disposal of released material can cause more environmental damage than it cures. For such sites, we propose to employ HYDRUS-1D and a simple ground water mixing model to evaluate the potential of any residual chloride and hydrocarbon mass in the vadose zone to impair ground water quality above WQCC Standards. We have selected these two constituents for simulation modeling because each of these constituents is typically found in produced water and each is specifically regulated by New Mexico ground water regulations (WQCC). We will also employ vadose zone hydrocarbon migration predictive tools commonly employed by NMED in their PST program.

Task 3 Provide Investigative Results and/or Corrective Action Plan

Because the Hobbs SWD System no longer carries produced water, additional releases of produced water to ground water are highly unlikely. If modeling shows that the residual chloride and hydrocarbon mass in the vadose zone poses a no threat to ground water quality, we will prepare a report that makes this demonstration and request site closure.

January 20, 2006 Page 3

If simulation experiments suggest that residual constituents pose a threat to ground water quality or if the field program demonstrates impairment, we will expand upon the HYDRUS-1D model predictions described above to develop a remedy for the vadose zone. If necessary, we will simulate:

- 1. Excavation, disposal and replacement of clean soil to remove the chloride and hydrocarbon mass,
- 2. Installation of a low permeability barrier to minimize natural infiltration,
- 3. Surface grading and seeding to eliminate any ponding of precipitation and promote evapotranspiration, thereby minimizing natural infiltration, and
- 4. A combination of the above potential remedies.

We will select the vadose zone remedy that offers the greatest environmental benefit while causing the least environmental damage. If data suggest that the site has contributed chloride or hydrocarbons to ground water and caused ground water impairment, we will notify NMOCD and work collaboratively to determine the appropriate path forward.

Proposed Schedule

With NMOCD's approval of this work plan, we can perform the field activities at these sites in February or March. In late April or May, we plan to deliver any individual Correction Action Plans to address residual constituents in the vadose zone and any reports requesting site closure. If data suggest ground water impairment we plan to conduct two quarters of ground water monitoring to confirm any initial result then meet with NMOCD to develop an appropriate path forward. Your approval to move forward with this work plan will facilitate approval of expenditures by the System Partners.

Sincerely, R.T. Hicks Consultants, Ltd.

Gilbert Van Deventer Project Manager

cc: Chris Williams, NMOCD Hobbs District Office Carolyn Haynes, Rice Operating Company - Hobbs Kristin Pope, Rice Operating Company - Hobbs Randy Hicks, R. T. Hicks Consultants, Ltd. - Albuguergue



Rice Operating Company

QUALITY PROCEDURE

Sampling and Testing Protocol Chloride Titration Using 282 Normal Silver Nitrate Solution

1.0 Purpose

This procedure is to be used to determine the concentration of chloride in soil.

2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride

3.0 Sample Collection and Preparation

3.1 Collect at least 80 grams of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample for soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the

3.2. The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag. Care should be taken to insure that no crosscontamination occurs between the soil sample and the collection tools or sample processing equipment.

3.3 The scaled sample bag should be massaged to break up any clods.

4.0 Sample Preparation

- 4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.
- 4.2 Add at least 10 grams of reverse osmosis water to the soil sample and shake for
- 4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil
- 4.4 Carefully pour the free liquid extract from the sample through a paper filter into a clean plastic cup if necessary.

5.0 Titration Procedure

- 5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.
- 5.2 Add 2-3 drops potassium chromate (K2CrO4) to mixture.
- 5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide (H2O2) to mixture.
- 5.4 Using a 1 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.
- 5.5 Record the ml of silver nitrate used.

6.0 Calculation

To obtain the chloride concentration, insert measured data into the following formula: المراجع المواجعة والمتحية وتتجير والمراجع - - - - -

282 X-35 450 X ml AgNO3 \mathbf{X}

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ml water extract

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grams of water in mixture grams of soil in mixture يباجن د

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Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on the delineation form.

Rice Operating Company

QUALITY PROCEDURE Sampling and Testing Protocol for VOC in Soil

1.0 Purpose

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

3.0 Procedure

3.1 Sample Collection and Preparation

3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained, at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.1.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Analytical Report Form.

3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15 Celsius, $(59-77^{\circ}F)$. The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.

3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

3.2 Sampling Procedure

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3.2.1 The instrument to be used in conducting VOC concentration testing shall be an Environmental Instruments 13471 OVM / Datalogger or a similar PID-type instrument. (Device will be identified on VOC Field Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.

3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the sidewalls of the bag.

3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Test Report Form.

3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with OP-02 and OP-06. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing for BTEX is necessary. File the Field Test Report Form in the project file

4.0 Clean-up After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal. IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE. and a state of the second s

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