RECEIVED: 08/08/201	8
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REVIEWER:

APP NO:
DMAM 18220 56380

ABOVE THIS TABLE FOR OCCD DIVISION USE ON Y



	INSERVATION DIVISION
- Geological & Engi 1220 South St. Francis Driv	e, Santa Fe, NM 87505
ADMINISTRATIVE AP	PLICATION CHECKLIST
THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRAT REGULATIONS WHICH REQUIRE PROCESS	VE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND SING AT THE DIVISION LEVEL IN SANTA FE
Applicant: Rice Operating Company	OGRID Number: 019174
Well Name: D-24-N	API:
Pool: San Andres	Pool Code: <u> </u>
SUBMIT ACCURATE AND COMPLETE INFORMATION INDICAT	N REQUIRED TO PROCESS THE TYPE OF APPLICATION ED BELOW
1) TYPE OF APPLICATION: Check those which app A. Location – Spacing Unit – Simultaneous De NSL NSP <sub>(PROJECT AREA)</sub>	ly for [A] $\leq \omega D - 1753$ edication $\Box NSP_{(PRORATION UNIT)}$ $\Box SD$
B. Check one only for [1] or [1]  [1] Commingling – Storage – Measuremer  DHC   CTB   PLC   PC  [11] Injection – Disposal – Pressure Increase   WFX   PMX   SWD   IPI  2) NOTIFICATION REQUIRED TO: Check those which A. Offset operators or lease holders B. Royalty, overriding royalty owners, reve C. Application requires published notice D. Notification and/or concurrent approve E. Notification and/or concurrent approve F. Surface owner G. For all of the above, proof of notification H. No notice required	OLS OLM e - Enhanced Oil Recovery EOR PPR  FOR OCD ONLY Notice Complete Application Content Complete Complete To all by SLO all by BLM  The or publication is attached, and/or,
administrative approval is <b>accurate</b> and <b>comple</b> understand that <b>no action</b> will be taken on this contifications are submitted to the Division.	ete to the best of my knowledge. Lako
Note: Statement must be completed by an indivi	dual with managerial and/or supervisory capacity.
	8-6-18
Hayden Holub	Date
Print or Type Name	
, ,	575-393-9174
4/1/	Phone Number
Signature	hholub@riceswd.com
Signature /	e-mail Address

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

### Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

FORM C-108 Revised June 10, 2003

### **APPLICATION FOR AUTHORIZATION TO INJECT**

I.	PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage Application qualifies for administrative approval? Yes No
II.	OPERATOR: Rice Operating Co.
	ADDRESS:112 W Taylor Hobbs, Nm 88240
	CONTACT PARTY: Hayden Holub PHONE: 575-393-9174
III.	WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.  Additional sheets may be attached if necessary.
IV.	Is this an expansion of an existing project?YesXNo  If yes, give the Division order number authorizing the project:
V.	Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
VI.	Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
VII.	Attach data on the proposed operation, including:
	<ol> <li>Proposed average and maximum daily rate and volume of fluids to be injected;</li> <li>Whether the system is open or closed;</li> <li>Proposed average and maximum injection pressure;</li> <li>Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,</li> <li>If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).</li> </ol>
*VIII	Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
IX.	Describe the proposed stimulation program, if any.
*X.	Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
*XI.	Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
XII.	Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
XIII.	Applicants must complete the "Proof of Notice" section on the reverse side of this form.
XIV.	Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
	NAME: Hayden Holub TITLE: Manager SIGNATURE: DATE: 08-06-2018
*	E-MAIL ADDRESS: hholub@riceswd.com  If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal:

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

I. Disposal

II. Operator: Rice Operating Co.

Address: 112 W Taylor, Hobbs, Nm 88240

Contact Party: Hayden Holub

Phone: 575-393-9174

III. Attached

IV. No

V. Attached

VI. No wells penetrate inj. interval within .5 mi AoR

VII.

- 1. Average rate is 1100 bbls/hr (26,400/day) Maximum rate 1875 bbls/hr (45K/day)
- 2. Closed
- 3. Average pressure 0, maximum pressure 1000 PSI or the max allowed by the OCD.
- 4. All fluid is oilfield produced water
- 5. No known disposal zone formation water available within the one mile of the proposed swd well. Attached is analysis of closest known formation water location approx. 4.3 mi NE of swd well. The Rice Operating SWD well State E 27, located approx. 1.25miles East in ul-E Sec 18 215–37E, has been disposing millions of barrels of produced water into the San Andres formation per year since the early 2000s without problems.
- VIII. Lithology record attached. Disposal zone is San Andres (Top @3938', next formation top is Glorieta @ 5170'). Ogallala no deeper that 250'.No known sources of drinking water underlying the injection zone
- IX. Acidize w/5,000 gal HCL 15% NEFE as needed
- X. New Drill
- XI. Analysis attached for two wells. Locations are H-23-T21S-R36E and G-23-T21S-R36E, both Samples taken on 7-27-2018.
- XII. I, Hayden Holub, have examined all available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zones and any underground source of drinking water pertaining to this well. Geologic study attached.

XIII. Attached

XIV. Name: Hayden Holub

Signature:

Title: Manager Date: 8-6-18

Email: hholub@riceswd.com

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (675) 393-9161 Fax: (675) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone (675) 748-1283 Fax: (675) 748-9720

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-102 Revised August 1, 2011

Submit one copy to appropriate District Office

### DISTRICT III 1000 Rio Brazos Rd., Aztec, NM 87410 Phone (505) 334-6178 Fax: (506) 334-6170 DISTRICT IV 1220 S. St. Francis Dr., Santa Fe, NM 87505 Phone (505) 476-3460 Fax: (505) 476-3462

### OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

□ AMENDED DEDODE

			WELL LO	CATION	AND ACREA	AGE DEDICATI	ON PLAT	LI AMENDEL	) REPORT			
API	Number	-	]	Pool Code		. 100	Pool Name		++-			
Property	Code		<u> </u>		Property Nan			Well No	umber			
OGRID N	0.		· · · · · · · · · · · · · · · · · · ·		Operator Nam	ne		Eleva				
		<u> </u>	10110-0010	RICE	OPERATING	COMPANY		353	8'			
					Surface Loc	ation						
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County			
D	24	21 S	36 E		263	NORTH	630	WEST	LEA			
Bottom Hole Location If Different From Surface												
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County			
Dedicated Acres	s Joint o	r Infill Co	nsolidation C	ode Oro	ler No.				<u> </u>			
NO ALLO	WABLE W	TILL BE AS OR A N	SSIGNED T	O THIS O	COMPLETION U	NTIL ALL INTER	ESTS HAVE BE	EN CONSOLIDA	ATED			
N.: 537084.4 E.: 882365.3				<del></del>			7					
(NAD83) 60 	į		į	N.: 537117.8 E.: 884995.6 (NAD83)	į		OPERAT	OR CERTIFICA				

N.: 537084.4	 		
SURFACE LOCATION Lat - N 32.470933* Long - W 103.225491* NMSPCE - S36829.9 E 882997.5 (NAD-83)	N.: 537117.8 E.: 884995.6 (NAD83)		OPERATOR CERTIFICATION  I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unLEssed mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.
	 	! !	Signature Date
	 	1	Printed Name
	! 	į į	Email Address
	 1 <del> </del>	¦	SURVEYOR CERTIFICATION
	; 	 	I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison and that the same is true and correct to the best-my belief.
	   		JULY 301.201
	]    -		Date Salveyon MEX Signature & Stern of Co Professional Surveyor
	 +   	+	
	 		Certificate 7977
N.: 531808.2 E.: 882416.5 (NAD83)	 		0' 500' 1000' 1500' 2000'N SCALE: 1" = 1000' WO Num.: 33962

## **INJECTION WELL DATA SHEET**

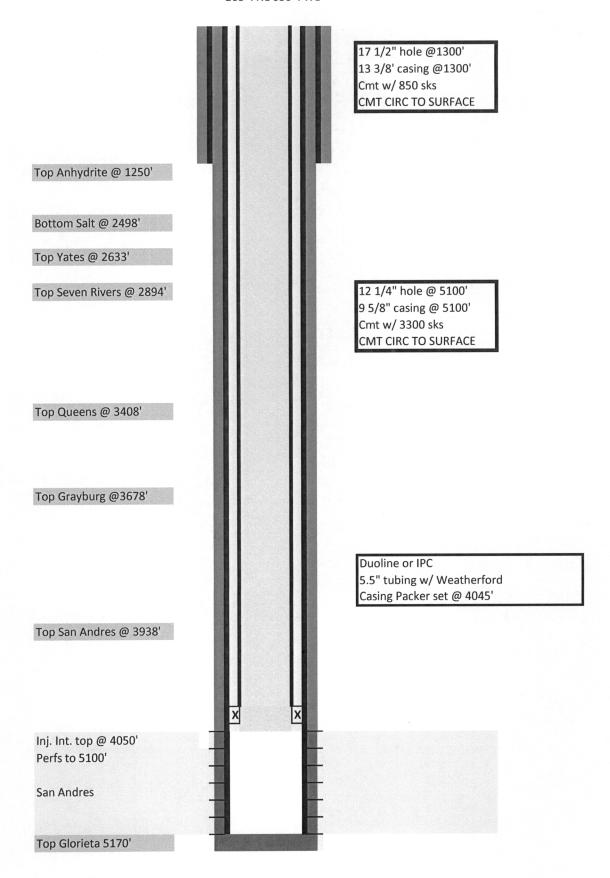
OPERATOR: RICE OPERATING COMPANY

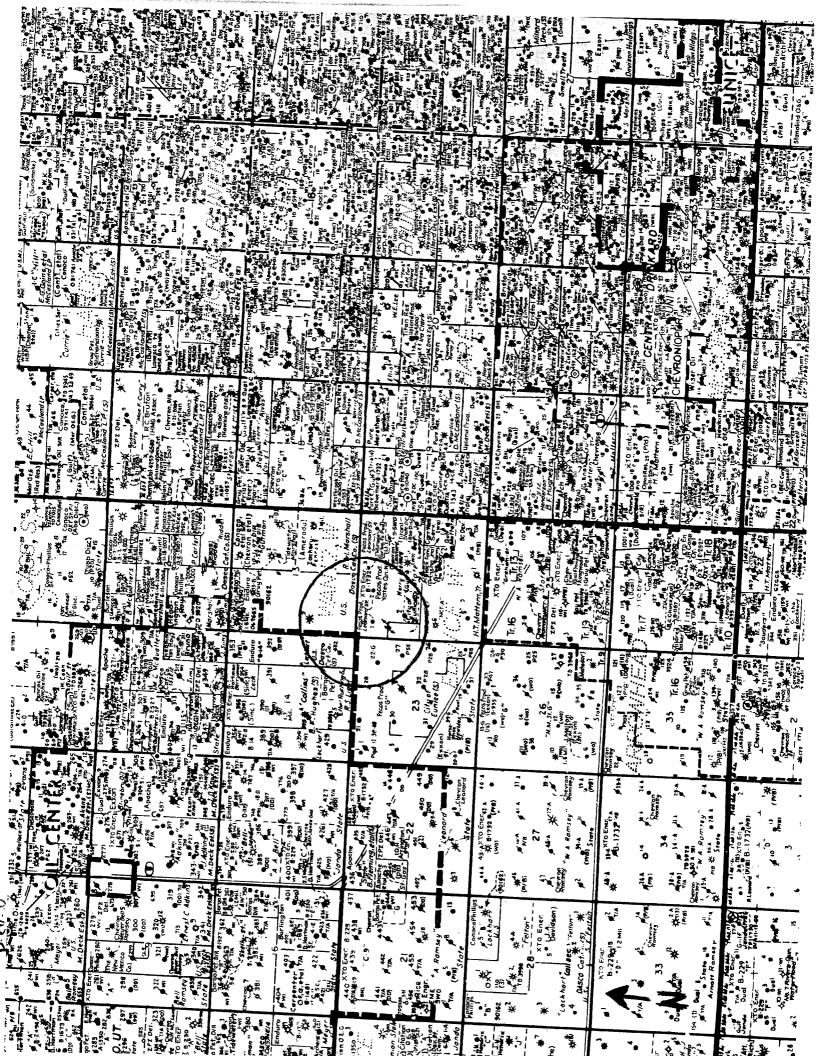
WELL NAME & NUMBER: <u>D-24-N</u>	ЛВЕR: <u>D-24-N</u>				
WELL LOCATION:	263' FNL 630' FWL	D	24	218	36E
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE
WELLBOR	WELLBORE SCHEMATIC	WEL	WELL CONSTRUCTION DATA	ION DATA	
		Hole Size: 17 ½"	SURFACE CASING  Casing Size:	ACE CASING Casing Size: 13 3/8"	
		Cemented with: 850	SX.	or	ft3
		Top of Cement: Surface		Method Determined: Sight/Circ.	ght/Circ
			Intermediate Casing	<b>B</b>	
		Hole Size:		Casing Size:	
		Cemented with:	_sx. or		_ft3
		Top of Cement:	_ Method	Method Determined:	1
			Production Casing	pro	
		Hole Size: 12 1/4"		Casing Size: 95/8"	
		Cemented with: 3300	SX.	Or_	ft3
		Top of Cement: <u>Circ</u>	_ Method	Method Determined: Sight	1
		Total Depth:5100′			
			Injection Interval		
		4050′	feet to	to 5100' perforated	1
		(Perfora	(Perforated or Open Hole;	Hole; indicate which)	

### **INJECTION WELL DATA SHEET**

Tubing Size: 5 ½"Lining Material: IPC or Duoline	
Type of Packer: Weatherford Casing Packer	
Packer Setting Depth: 4045'	
Other Type of Tubing/Casing Seal (if applicable): N/A	
Additional Data	
1. Is this a new well drilled for injection?  X Yes	No
2. Name of the Injection Formation: San Andres	
3. Name of Field or Pool (if applicable):	
l. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) usedN/A	rforated N/A
. Give the name and depths of any oil or gas zones underlying or overlying the proposed	
Injection zone in this area:	
Grayburg 3678'	
Glorieta 5170'	

Rice Operating Co.
Drilled for Injection/SWD D-24-N
UL-D Sec. 24 T21S R36E
263' FNL 630' FWL





Submit To App	ropriate D	istrict Office			-								
State Lease - 6 Fee Lease - 5 co	copies opies			Ener	State of Ne	w Mexic	0						Form C-10.
District I 1625 N. French	Dr., Hobb	s. NM 88240		rater	gy, Minerals and	l Natural	Resourc	es	WELL	A DY NO		Revised	June 10, 200
District II 1301 W. Grand			210		Oil Conservat	ion Divis	:		- 1	API NO. 5-37146			
District III 1000 Rio Brazos			210		1220 South St	Francis	10n			ate Type of	Lease		
District IV					Santa Fe, N				9	TATE IV		err (	
1220 S. St. Fran	CIS Dr., Sa	IDI ETIO	NOR DEC	0) 6					State Oil	& Gas Lea	ise No.	B11349	
				OMP	LETION REPO	RT AND	LOG						
OIL	WELL []	S GAS W	ELL D	RY 🗆	OTHER				7. Lease Na STATE 1	me or Unit Ap	reemen	t Name	
b. Type of Co	mpletion								SIAIE	U			
NEW ☒ WELL	OVER			UG □ ACK									
2. Name of Ope	erator			nck_	RESVR. O	THER			8. Well No				
LEWIS B. E	URLE	SON, INC	<b>)</b> .						j				
3. Address of O	perator				· · · · · · · · · · · · · · · · · · ·	<del></del>			4 9 Pagi = a	e or Wildcat			
P.O. BOX 2	479 M	IDLAND,	TEXAS 79	702					4		-0\ -		Ī
4. Well Location	n					·		·	TARE (S)	AN ANDRE	:S) E/	AST	
Unit Let	ter D	:_46	Feet F	rom Th	<sub>e</sub> N	T :-	ie and	467	7		1.	A /	
Section	10							707		Feet From Th	1eV	<u> </u>	Line
10. Date Spudde	d 11.	Date T.D. Re	Towns		Compl. (Ready to Prod		37E	<b>(D</b> )	NMPM	LE/			County
05/25/2005	06/	05/2005	10	/01/2	005	346	Elevation:	s (DF	& RKB, RT, C	R, etc.)	14. Ele	v. Casinghe	ad
15. Total Depth		16. Plug B	ack T.D.	17.	f Multiple Compl. Ho	w Many	18. Inter		Rotary Tool	s	Cable	Tools	
5510		4)	123	1	Zones?		Drilled I	By TΔ⊑	X				
19. Producing In	iterval(s),	of this comp	letion - Top, B	ottom, i	Vame C	- 1	<u> </u>	7.	4/	20. Was Dire	ectional	Survey Mac	ie
21. Type Electric	and Oth	er Logs Run		The state of the s		A Company				Σ/⊏¢		-	
GRN									22. Was We	Il Cored	31415	10 17 18	S.
23. CASING SI	7E /	WEIGH			SING RECO	RD (Rep	ort all	stri	ngs set in	well)	·		12
8-5/8		24#	HT LB./FT.	1284	ILLULI	HU	LE SIZE		CEMENTIN	G RECORD		AMOUNT F	ULLED
5-1/2		15.5#		5510		12-1/4 7-7/8			595 C	(5)	82	以当	23
						1-110			785 C	37.8	25	<b>5</b> 5 6	2
										\.			<del></del>
24.				1 17	VED BEGOD					TUBING REDEPTH SE			100
SIZE	TOP		воттом	LII	SACKS CEMENT	SCREEN		25.	7	TUBING RE	CORD:	05826	•
	<del> </del>					JORGERY		_SIZ _2-3	<u>r</u> 3/8	4150	<u>:T</u>	PACKE	R SET
26. Perforation	record (in	terval size	and 1 \							7130			
26. Perforation 4011-4113	21 HC	LES	and number)			27. ACII	O, SHOT,	FR	ACTURE, CE	MENT, SQU	JEEZE	ETC.	
						DEPTH IN 4011-41	ILEKVAL		<u>AMOUNT A</u>	ND KIND MA	TERIA	L USED	
							10	-	10,000 GA	AL ACID			
28		<del></del>	······										
Date First Product	ion		roduction Math	od (F)	PRO	DDUCT	ON						
10/01/2005			UMPING 2	_1/2¥	wing, gas lift, pumpir 2X16 RHBC	ng - Size and	type pump	)		(Prod. or Shul	(-in)		
Date of Test	Hours		Choke Size	- 1/2/			·		PROD				
10/01/2005	24		CHOKE SIZE		Prod'n For Test Period	Oil - Bbl	ı	Gas	- MCF	Water - Bbl	. 7	Gas - Oil	Ratio
Flow Tubing	l	Pressure	Calculated 2	$-\!\!\perp$	0.7	10		4	0	285		4000:1	
Press.			Hour Rate	<b>4</b> -	Oil - Bbl.	Gas - N	1CF	W	ater - Bbl.	Oil Gra	vity - A	P1 - (Corr.)	
N/A	65	_		1	10	40		2	85	20			
29. Disposition of SOLD	Gas (Sold	, used for fue	el, vented, etc.)							32 Test Witnessed	16.		
30. List Attachmen	ts									STEVEN L		I ESON	
31 .I hereby certif	fy that th	e informati	on shown on	both si	des of this form as	rue and coi	nplete to	the F	est of multi-	wladas = 1	<del>- 1:</del>		
	1	14	M_		rinted		,		-si oj iny kno	wieuge and l	/		
Signature	//	γ /.			Name STEVEN L	. BURLES	SONTitl	e V	CF-PRFS	DENT /	62	, 	1001000
E-mail Address	GE	OTTECH	@PRODIG	Y.NET	[			• '	I IVEQI	I.4.I		Date 10	/20/2005



June 26, 2018

HAYDEN HOLUB

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: O-34 SWD WELL

Enclosed are the results of analyses for samples received by the laboratory on 06/20/18 15:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited through Texas NELAP under certificate number T104704398-17-10. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a www.tceq.texas.gov/field/qa/lab accredited accredited analytes are denoted by an asterisk (\*).

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2

Total Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B

Total Coliform and E. coli (Colilert MMO-MUG)

Method EPA 524.2

Regulated VOCs and Total Trihalomethanes (TTHM)

Method EPA 552.2

Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

Celey D. Keine

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: O-34 SWD WELL

Project Number: SEC. 34, T20S, R37E Project Manager: HAYDEN HOLUB

Reported: 26-Jun-18 11:00

Fax To: (575) 397-1471

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	
SAN ANDRES FORMATION WATER	H801687-01	Wastewater	19-Jun-18 17:30	20-Jun-18 15:20	_

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's ilability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence at any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

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Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: O-34 SWD WELL

Project Number: SEC. 34, T20S, R37E

Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported:

26-Jun-18 11:00

### SAN ANDRES FORMATION WATER

### H801687-01 (Wastewater)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardii	ıal Laborat	ories					
Inorganic Compounds										
Alkalinity, Bicarbonate	2760		5.00	mg/L	1	8061805	AC	22 I 10	210.4	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	8061805	AC AC	22-Jun-18	310.1	
Chloride*	9200		4.00	mg/L	1	8062006		22-Jun-18	310.1	
Conductivity*	26900		1.00	uS/cm	1	8062108	AC	21-Jun-18	4500-CI-B	
pH*	7.96		0.100	pH Units	1		AC	21-Jun-18	120.1	
Resistivity	0.372		0.100	Ohms/m	1	8062108	AC	21-Jun-18	150.1	
Specific Gravity @ 60° F	1.012		0.000	[blank]		8062108	AC	21-Jun-18	120.1	
Sulfate*	55.0		25.0		1	8062110	AC	22-Jun-18	SM 2710F	
THE THE STATE OF T				mg/L	2.5	8062112	AC	22-Jun-18	375.4	
Alkalinity, Total*	2270		5.00	mg/L	1	8062115	AC	25-Jun-18	160.1	
, total	2270		4.00	mg/L	1	8061805	AC	22-Jun-18	310.1	
			Green Anal	ytical Labo	ratories					
Total Recoverable Metals by 1	ICP (E200.7)									
Barium*	4.91		2.50	mg/L	50	B806183	JDA	22.1.10		
Calcium*	561		5.00	mg/L	50			22-Jun-18	EPA200.7	
Iron*	<2.50		2.50	mg/L		B806183	JDA	22-Jun-18	EPA200.7	
Magnesium*	260		5.00	_	50	B806183	JDA –	22-Jun-18	EPA200.7	
Potassium*	271			mg/L	50	B806183	JDA	22-Jun-18	EPA200.7	
Sodium*	4950		50.0	mg/L	50	B806183	JDA	22-Jun-18	EPA200.7	
	4930		50.0	mg/L	50	B806183	JDA	22-Jun-18	EPA200.7	

### Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence at any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after competition of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

ally 2 stress



Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: O-34 SWD WELL

Project Number: SEC. 34, T20S, R37E

Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported:

26-Jun-18 11:00

### **Inorganic Compounds - Quality Control**

### **Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD	
Batch 8061805 - General Prep - Wet Chem							Limits	KPD	Limit	Notes
Blank (8061805-BLK1)				Propagad: 1	9 Jun 10 A		0.1			
Alkalinity, Carbonate	ND	1.00	mg/L	ricpared, i	8-Jun-18 A	naiyzed: 1	9-Jun-18			
Alkalinity, Bicarbonate	10.0	5.00	mg/L							
Alkalinity, Total	8.00	4.00	mg/L							
LCS (8061805-BS1)				Prepared: 1	9 Jun 10 A		0 F 10			
Alkalinity, Carbonate	ND -	2.50	mg/L	Prepared: 1	0-Juli-18 Al	naiyzed: I				
Alkalinity, Bicarbonate	318	12.5	mg/L				80-120			
Alkalinity, Total	260	10.0	mg/L	250		104	80-120 80-120			
LCS Dup (8061805-BSD1)				Prepared: 1	8-Tun-18 Ar	alumadi 10				
Alkalinity, Carbonate	ND	2.50	mg/L	rrepared. I	0-Juli-10 Al	laryzeu. 15				
Alkalinity, Bicarbonate	318	12.5	mg/L				80-120		20	
Alkalinity, Total	260	10.0	mg/L	250		104	80-120 80-120	0.00	20 20	
Batch 8062006 - General Prep - Wet Chem									20	
Blank (8062006-BLK1)										
Chloride	ND	4.00	ma/I	Prepared: 20	)-Jun-18 An	alyzed: 21	-Jun-18			
LCS (8062006-BS1)		4.00	mg/L							
Chloride				Prepared: 20	-Jun-18 An	alyzed: 21	-Jun-18			
emoride	100	4.00	mg/L	100		100	80-120			
LCS Dup (8062006-BSD1)				Prepared: 20	Lin-18 An	alazadi 21	T 10			
Chloride	100	4.00	mg/L	100	-3411-18 7411	100	80-120	0.00	20	
Batch 8062108 - General Prep - Wet Chem									20	
LCS (8062108-BS1)						<del>- ,</del>				
Conductivity	97300		~	Prepared & A	Analyzed: 2					
н	7.09		uS/cm pH Units	100000 7.00		97.3	80-120			
	,		pri Omis	7.00		101	90-110			

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Celeg T. Keine



Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: O-34 SWD WELL

Project Number: SEC. 34, T20S, R37E Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported:

26-Jun-18 11:00

### Inorganic Compounds - Quality Control

### **Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	#/BEG	%REC		RPD	
T			- Cints	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 8062108 - General Prep - Wet Chem										
Duplicate (8062108-DUP1)	Sou	rce: H801687	-01	Prepared &	Analyzadi	21 5 10				
pH	8.00	0.100	pH Units	Tropared a	7.96	21-Juii-16				
Conductivity	26800	1.00	uS/cm		26900			0.501	20	
Resistivity	0.373	1.00	Ohms/m					0.298	20	
	-10.72		Onns/m		0.372			0.298	20	
Batch 8062110 - General Prep - Wet Chem										
Duplicate (8062110-DUP1)	Sou	rce: H801687	-01	Prepared: 2	1_Iun_18 A	nalyzad: 20	) T 10			
Specific Gravity @ 60° F	1.011	0.000	[blank]	riopared. 2	1.012	naryzed. 22	2-Jun-18	0.121		
D. J. Doggang			[+ ·······]		1.012			0.131	20	
Batch 8062112 - General Prep - Wet Chem										
Blank (8062112-BLK1)				Prepared: 2	1 Jun 10 A	-1 - 1 22				
Sulfate	ND	10.0	mg/L	repared, 2	1-Juli-16 AI	iaryzed: 22	-Jun-18			
I CO (OO CAAAA TAA		10.0	mg/L							
LCS (8062112-BS1)			_	Prepared: 21	-Jun-18 An	alyzed: 22	-Jun-18			
Sulfate	19.0	10.0	mg/L	20.0		95.2	80-120			
LCS Dup (8062112-BSD1)										
Sulfate				Prepared: 21	-Jun-18 An	alyzed: 22	-Jun-18			
	19.4	10.0	mg/L	20.0		97.2	80-120	2.13	20	
Batch 8062115 - Filtration										
Blank (8062115-BLK1)				Prepared: 20	Jun 10 A	ala	<i>t</i> 10			
TDS	ND	5.00	mg/L	Prepared: 20	-Jun-18 An	aiyzed: 21-	-Jun-18			
		5.00	mg/L							

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Celey D. Kune



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

### Analytical Results For:

Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: O-34 SWD WELL

Project Number: SEC. 34, T20S, R37E Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported:

26-Jun-18 11:00

### **Inorganic Compounds - Quality Control**

### **Cardinal Laboratories**

Analyte  Batch 8062115 - Filtration	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (8062115-BS1)				Prepared: 2	0-Jun-18 A	nalyzed: 21	-Jun-18			
	456	5.00	mg/L	527		86.5	80-120			
Duplicate (8062115-DUP1) TDS		e: H801667-	03	Prepared: 2	0-Jun-18 Aı	nalyzed: 21	-Jun-18			
	938	5.00	mg/L		946			0.849	20	

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Celey Z. Kiene



Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: O-34 SWD WELL

Project Number: SEC. 34, T20S, R37E Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported:

26-Jun-18 11:00

### Total Recoverable Metals by ICP (E200.7) - Quality Control

### **Green Analytical Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B806183 - Total Rec. 200.7/200.8/200.2										
Blank (B806183-BLK1)	<u>-</u>			Prepared: 21	1- Jun-10 A	nalyza d. 22	3 Inc. 10			
Iron	ND ND	0.050	mg/L	. repared. Z	1-Juli-10 A	maryzea: 2.	2-Jun-18			
Barium	ND	0.050	mg/L							
Potassium	ND	1.00	mg/L							
Magnesium	ND	0.100	mg/L mg/L							
Calcium	ND	0.100	mg/L							
Sodium	ND	1.00	mg/L							
LCS (B806183-BS1)				Prepared: 21	-Inc 10 4	alves 4. AA	True 10			
Sodium	3.22	00.1	mg/L	3.24	1-7411-18 A1					
Potassium	7.83	1.00	mg/L mg/L	3.24 8.00		99.2	85-115			
Magnesium	19.1	0.100	mg/L	20.0		97.8	85-115			
ron	3.81	0.050	mg/L	4.00		95.6	85-115			
Calcium	3.83	0.100	mg/L	4.00		95.2	85-115			
Barium	2.01	0.050	mg/L mg/L	2.00		95.7 100	85-115 85-115			
CS Dup (B806183-BSD1)					Jun 19 Ac					
Magnesium	19.4	0.100	mg/L	Prepared: 21- 20.0	-Juil-18 Ah					
Sarium	2.02	0.100	mg/L mg/L			96.8	85-115	1.30	20	
otassium	7.85	1.00	mg/L mg/L	2.00 8.00		101	85-115	0.698	20	
alcium	3.89	0.100	mg/L mg/L	8.00 4.00		98.2	85-115	0.354	20	
odium	3.23	1.00	•			97.1	85-115	1.50	20	
n	3.82	0.050	mg/L	3.24		99.7	85-115	0.493	20	
	2.04	0.050	mg/L	4.00		95.6	85-115	0.400	20	

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### **Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit RPD Relative Percent Difference \*\* Samples not received at proper temperature of 6°C or below. Insufficient time to reach temperature. Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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aley & trune



### RUSH!

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Rice Osperation Comme	DII 1 110	
Project Manager:	Hayden Loub	P.O. #:	ANALYSIS REQUEST
Address:		Company:	is
City: Hob	0h288	Attn:	lys
Phone #: 575	Fax #: 575-393-1471	Address:	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
Project #:	Project Owner:		
Υ .	Sec. 34 , T 20 S . F 37E	State: Zip:	ter
Sampler Name:	Hayden Holvio	Fax #:	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
FOR LAB USE ONLY	MATRIX	PRESERV. SAMPLING	<u> </u>
Lab I.D.	DWATER WATER	SE: OL	ompleti Sca
H801687	# CONT. GROUN WASTEV SOIL OIL SLUDGE	ACID/BA ICE / CO OTHER:	Co
•	San Anicos	6/19	77:36
	formation water	100	
PLEASE NOTE: Liability and	PLEASE NOTE: Liability and Damages. Calding's liability and client's architage farmedy for any plant materials.		
analyses Ail claims, including those for negligence and a service in no event shall Cardmai be hable for incodental affiliates or successors arising out of or related to the per Refinguished By:	realizes all claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by claim all the service. In no even shall Cardinal be labelled for incomplication damages, including without immation, business interruptions, loss of use, or loss of profits included by cleim, its subsidiaries, affiliation or successors average out of or realized to the performance of services believeds to a claim a characteristic of which the subsidiaries.  Refination that have been desired to the performance of services believed to the decided in epidemia beared upon any of the above stated reasons or otherwise.	I viv., awar be writted to the amount paid by the client for to received by Cardinal within 30 days after completion of the loss of use, or loss of profits incurred by client, its subsidiars to the control of the based upon any of the above stated reasons or otherwise.	Dy the clerit for the populable from the populable from pilet on of the applicable from the populable from t
Relinguished By:	Date: Pocceived By:	Mendon	Findle Result:   Yes
	Time:		habibe rice swd. com
Sampler - UPS - Bus - Other	Sampler - UPS - Bus - Other: 20.16/50.05 Cool Intact  Sampler - UPS - Bus - Bu	CHECKED BY:	Scurts @ ricesudicom
	No. No.	74.5	Addition to the state of the st

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

### **CARDINAL LABORATORIES** SCALE INDEX WATER ANALYSIS REPORT

Company RICE OPERATING COMPANY Date Sampled : 06/19/18

Lease Name: O-34 SWD WELL Company Rep.: HAYDEN HOLUB

Well Number: SAN ANDRES FORMATION WATER (H801687-01)

Location SEC 34, T20S, R37E

### **ANALYSIS** 1. pH 7.96 2. Specific Gravity @ 60/60 F. 1.0120 3. CaCO3 Saturation Index @ 80 F. +1.142 'Calcium Carbonate Scale Possible' @ 140 F. +2.012 'Calcium Carbonate Scale Possible' **Dissolved Gasses** 4. Hydrogen Sulfide ND PPM Carbon Dioxide ND PPM 6. Dissolved Oxygen ND **PPM** Cations Eq. Wt. = MEQ/L 7. Calcium (Ca++) 561.00 20.1 27.91 8. Magnesium (Mg++) 260.00 12.2 = 21.31 9. Sodium (Na+) 4,950 1 23.0 = 256.23 10. Barium (Ba++) 4.910 / 68.7 0.07 **Anions** 11. Hydroxyl (OH-) 0 17.0 $\equiv$ 0.00 12. Carbonate (CO3=) 0 30.0 = 0.00 13. Bicarbonate (HCO3-) 2,760 61.1 45.17 14. Sulfate (SO4=) 55 / 48.8 1.13 15. Chloride (CI-) 9,200 35.5 259.15 Other 16. Total Iron (Fe) 0.000 18.2 0.00 17. 18. Total Hardness As CaCO3 2,471.0 19. Calcium Sulfate Solubility @ 90 F. 2,821 20. Resistivity (Measured)

Logarithmic Water Pattern

### S04 10,000 1,000 100 10 100 1,000 10.000 Š S β

### PROBABLE MINERAL COMPOSITION

@ 77

Degrees (F)

Ohm/Meters

יו וויסטר	ADEC MINICIPAL	4L (		UN	
COMPOUND	Eq. Wt.	X	MEQ/L	=	mg/L
Ca(HCO3)2	81.04	X	27.91	=	2,262
CaSO4	68.07	Х	0.00	=	0
CaCl2	55.50	Χ	0.00	=	Ő
Mg(HCO3)2	73.17	Χ	17.26	=	1,263
MgSO4	60.19	Χ	0.00	=	0
MgCl2	47.62	Χ	4.05	=	193
NaHCO3	84.00	Х	0.00	=	0
NaSO4	71.03	Χ	1.13	=	80
NaCl	58.46	Χ	255.10	=	14,913

ND = Not Determined

0.372

Attached for VIII on Application for Authorzation to inject; Well located 1.75 wiles NF of proposed well D-24-N instructions [well API 30.025-27529]
This form is to be filed with the open are District Office of the Commission not later to 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted to the later to the later to the conducted to the later to the conducted to the later to the conducted to the later to the later to the conducted to the later to the conducted to the later to the later

Southeastern New Mexico

ducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

### INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Northwestern New Mexico

T. Anhy   1250			1270	T. Canyon	T Oio Alamo	T. Penn. "B"
1. Salt					- 1) (1)	
T. Yates				· collaboration	Kirtlard Kanieland	<b>~</b> ~
T. Rivers   2894   1   Devention   T. Menefee   T. Lendville			2633 <del>7430</del>	1. A(0K)	T. Pictured Cliffs	T D ((D))
T. Queen   3408   T. Silurian   T. Pent Lookout   T. Hand son   T. Granburg   3678   T. Montaya   T. Mancos   T. MocCracken   T. Sun Andres   3938   T. Simpson   T. Gallup   T. Ignacia Quete   T.					T. Cliff House	T
T. Grayburg. 3678 T. Montoya T. Mancos T. Newtonia 3938 T. Simpson T. Glabar T. Galbar T. Glaverst 5170 T. McKee Disse Greenhare T. Galbar T. Glaverst 5170 T. McKee Disse Greenhare T. Galbar T. Granite T. Datora T. Granite T. Datora T. Granite T. Datora T. Granite T. Datora T. T. Datora G.				- Detonian	T. Menefee	T. Madasa
T. San Andress 3938 T. Simpson T. Catalup T. Imacio Quite 5170 T. McKee Dase Greenhorn T. Garante T. Garante Dase Greenhorn T. Garante T. Paddack T. Filtenburger T. Dakers T. Dakers T. T. Date Greenhorn T. Granite T. Granite T. Dakers T. Dakers T. T. Date Greenhorn T. T				- 1. Stiditan -	T. Point Lookout	T Fiberal
T. Glericta 5170 T. McKee   Task Greenhorn   T. Gallup   T. Hanasia Offste   T. Paddock   T. Ellenburger   T. Dakota   T. Granite   T. Hibrohry   5508 T. Gr. Wash   T. Morrison   T.   T. Hibrohry   5508 T. Granite   T. Toditio   T.   T. Delaware Sand   T. Entrada   T.   T. Abo   T. Delaware Sand   T. Entrada   T.   T. Abo   T. Delaware Sand   T. Entrada   T.   T. Abo   T. Delaware Sand   T. Entrada   T.   T. Welfcamp   T.   T.   Chinie   T.   T. Welfcamp   T.   T.   T.   T. Penni   T.   O. 1, from     O. 2, from     O. 3, from     O. 3, from     O. 3, from     O. 4, from     O. 4, from     O. 4, from     O. 1250   1250   Red Bed   1250   2633   1383   Salt & Anhy   1267   1250   Red Bed   1267   2638   31383   Salt & Anhy   1268   3678   6814   3136   Do1				r. aomoya	T. Mancos	T MarCanalina
T.   Paddack   T.   Ellenburger   T.   Dakota   T.				. simpson	T. Gallup	T. Language Ot to
T. Blinchry 5508 T. Gr. Wash T. A. Dokota T. T. Dokota T. T. Tubb 6220 T. Granite T. T. Tofilito T. T. T. Chinie T. T. T. Chinie T. T. T. T. Chinie T.				T. MCKCC	— Base Greenhorn	7° C
T. Tubb 6220 T. Granite T. Morrison T. T. Drinkard 6545 T. Delaware Sand T. Entrada T. T. Abo T. Bone Springs T. Wingate T. T. Wolfcamp T. T. T. Chinle T. T. Penn T. T. Penn T. T. Penn T. T. T. Penn T. T. Cisco (Bough C) T. T. T. T. T. T. T. T. T.  OIL OR GAS SAIDS OR ZONES  O. 1, from 6686 To No. 4, from To No. 5, from To No. 6, from To Televation to which water rose in hole.  O. 1, from To Thickness T.  FORMATION RECORD (Attach additional sheets if necessary)  From To Thickness T.  Formation Freet Formation From To Thickness To Formation  O 1250 1250 1250 Red Bed Sait & Anhy 2633 3678 1045 Im, Dol., Sand Dol  MAG. 343  Mag. 344  Mag. 345  Mag. 344  Mag. 344  Mag. 344  Mag. 345  Mag. 34			5508	1. Ettenburger	T. Dakota	T
T. Drinkint 6545 T. Delaware Sand T. T. Toditic T.  Abo T. Abo T. Bone Springs T. Wingste T.  T. Wolfeamp T. T. T. T. Pennian T.  T. Pennian T. T.  T. Clisco (Bough C) T. T. T. T. T. T. Pennian T.  OIL OR GAS SANDS OR ZONES  O. 1, from 6586 to SAGO No. 4, from to No. 5, from to No. 6, from to No. 7, from No.				1. Gr. wash	T M	
T. Abo			6545	r. Granite	T. Todilto	T
T. Wolfeamp T. T. Wingste T. T. T. Chinle T. T. Penn To Gisco (Bough C) T.				0	I Fritzada	
T. Penn. T. Chine T.	T. Wale			L. DODE Springs	T W:	
T   Cisco   Bough C   T   T   T   T   T   T   T					T Chill	
OIL OR GAS SANDS OR ZONES  OIL OR GAS SANDS OR ZONES  No. 4, from						
0. 1, from	• · CISCO	o (Bough	C)	1.	T. Penn. "A"	т
No. 5, from				חוו חוו	D CAS SAMPS OF TOMES	
No. 5, from	0. 1, 110	om	0000	6760	No. 4, from	
O. 1, from to feet.  D. 4, from to feet.  FORMATION RECORD (Attach additional sheets if necessory)  From To Thickness in Feet Formation  O. 1250 1250 Red Bed Salt & Anhy Lm, Dol, Sand Dol  Red Bed Salt & Anhy Lm, Dol, Sand Dol	o. 2, fro	m		10		
IMPORTANT MATER SANDS						
To   Thickness   Formation   From   To   Thickness   Formation	OL Clude di	See ata on ra	te of water	inflow and elevation to which was	ter rose in hole.	
0 1250 1250 Red Bed Salt & Anhy 1045 3678 6814 3136 Dol Formation From Dol Thickness in Feet Formation From Dol Thickness	oclude di o. 1, from o. 2, from o. 3, from	See ata on ra	te of water	inflow and elevation to which wat	feet.	
0 1250 1250 Red Bed 1250 2633 1383 Salt & Anhy 1m, Dol, Sand Dol	oclude di o. 1, from o. 2, from o. 3, from	See ata on ra	te of water	toto	feet.	
0 1250 2633 1383 Salt & Anhy Im, Dol, Sand Dol	oclude de control de c	Sec ata on ra	Thickness	toto	feet.  feet.  feet.  feet.  Attach additional sheets if necessary	)
1250 2633 1383 Salt & Anhy Lm, Dol, Sand Dol MAG 332	oclude de control de c	Sec ata on ra	Thickness in Feet	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	)
1250 2633 1383 1045 1045 1m, Dol, Sand Dol MAG 362	oclude de control de c	Sec ata on ra	Thickness in Feet	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	)
2633 3678 1045 Im, Do1, Sand Do1    Do1   Do2	OL 6. clude d: 0. 1, from 0. 2, from From	See ata on ra	Thickness in Feet	to	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	)
3678 6814 3136 Dol	OL clude d: 0. 1, from 0. 2, from From 0 1250	To 1250 2633	Thickness in Feet	to	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	)
MAS 1982	OL clude d: 0. 1, from 0. 2, from 1. 4, from 1250 2633	To 1250 2633 3678	Thickness in Feet  1250 1383 1045	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	)
MAG 1982	OL clude d: 0. 1, from 0. 2, from 1. 4, from 1250 2633	To 1250 2633 3678	Thickness in Feet  1250 1383 1045	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	)
M/AS TOBS	OL clude d: 0. 1, from 0. 2, from 1. 4, from 1250 2633	To 1250 2633 3678	Thickness in Feet  1250 1383 1045	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	)
	OL clude d: 0. 1, from 0. 2, from 1. 4, from 1250 2633	To 1250 2633 3678	Thickness in Feet  1250 1383 1045	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	Formation
	OL clude d: 0. 1, from 0. 2, from 1. 4, from 1250 2633	To 1250 2633 3678	Thickness in Feet  1250 1383 1045	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	Formation
	OL clude d: 0. 1, from 0. 2, from 1. 4, from 1250 2633	To 1250 2633 3678	Thickness in Feet  1250 1383 1045	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	Formation
Associate to the second	OL clude d: 0. 1, from 0. 2, from 1. 4, from 1250 2633	To 1250 2633 3678	Thickness in Feet  1250 1383 1045	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	Formation
	OL clude d: 0. 1, from 0. 2, from 1. 4, from 1250 2633	To 1250 2633 3678	Thickness in Feet  1250 1383 1045	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	Formation  MAG 382
	OL clude d: 0. 1, from 0. 2, from 1. 4, from 1250 2633	To 1250 2633 3678	Thickness in Feet  1250 1383 1045	toto	feet.  feet.  feet.  feet.  feet.  Attach additional sheets if necessary.  Thickness	Formation  MAG 382



August 06, 2018

HAYDEN HOLUB

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: D-24-N

Enclosed are the results of analyses for samples received by the laboratory on 07/27/18 16:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2 Total Haloacetic Acids (HAA-5)
Method EPA 524.2 Total Trihalomethanes (TTHM)
Method EPA 524.4 Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2 Regulated VOCs and Total Trihalomethanes (TTHM)

Method EPA 552.2 Total Haloacetic Acids (HAA-5)

Celey D. Keine

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



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

### Analytical Results For:

Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: D-24-N

Project Number: D-24-N

Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported: 06-Aug-18 12:29

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	
WATER WELL TEST - 1MILE FROM [	H802056-01	Water	27-Jul-18 15:10	27-Jul-18 16:55	

Cardinal Laboratories \*=Accredited Analyte

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Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: D-24-N

Project Number: D-24-N

lumber: D-24-N

Fax To: (575) 397-1471

Reported:

06-Aug-18 12:29

Project Manager: HAYDEN HOLUB

### .....

### WATER WELL TEST - 1MILE FROM D-24-N

### H802056-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardin	ıal Laborat	ories					
Inorganic Compounds										
Alkalinity, Bicarbonate	356		5.00	mg/L	1	8071613	AC	30-Jul-18	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	8071613	AC	30-Jul-18		
Chloride*	100		4.00	mg/L	1	8073008	AC	30-Jul-18	310.1 4500-Cl-B	
Conductivity	876		1.00	uS/cm	1	8073011	AC	30-Jul-18		
H*	7.54		0.100	pH Units	1	8073011	AC	30-Jul-18	120.1	
Sulfate*	74.8		10.0	mg/L	1	8073014	AC	31-Jul-18	9045	
DS*	502		5.00	mg/L	1	8073014	AC	-	375.4	
Alkalinity, Total*	292		4.00	mg/L	1	8071613	AC AC	01-Aug-18 30-Jul-18	160.1	
				Ü	-		ne	J0-Jul-18	310.1	
			Green Anal	ytical Labo	ratories					
otal Recoverable Metals by	(CP (E200.7)									
alcium*	73.6		1.00	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	
fagnesium*	19.5		1.00	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	
otassium*	<10.0		10.0	mg/L	10	B808003	AES	02-Aug-18	EPA200.7 EPA200.7	
odium*	86.7		10.0	mg/L	10	B808003	AES	02-Aug-18	EPA200.7 EPA200.7	

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Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: D-24-N

Project Number: D-24-N

Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported: 06-Aug-18 12:29

er: HAYDEN HOLUB

### **Inorganic Compounds - Quality Control**

### **Cardinal Laboratories**

Analyte		Reporting		Spike	Source		%REC		RPD	
2 Mary C	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 8071613 - General Prep - Wet Chem										
Blank (8071613-BLK1)				Prepared &	Analyzed:	16-Jul-18			- <u></u>	
Alkalinity, Carbonate	ND	1.00	mg/L	• •						
Alkalinity, Bicarbonate	ND	5.00	mg/L							
Alkalinity, Total	ND	4.00	mg/L							
LCS (8071613-BS1)				Prepared &	Analyzed:	16-Jul-18				
Alkalinity, Carbonate	ND	2.50	mg/L			10 001 10	80-120			
Alkalinity, Bicarbonate	355	12.5	mg/L				80-120			
Alkalinity, Total	290	10.0	mg/L	250		116	80-120			
LCS Dup (8071613-BSD1)				Prepared &	Analyzed:	16-Jul-18				
Alkalinity, Carbonate	ND	2.50	mg/L				80-120		20	
Alkalinity, Bicarbonate	318	12.5	mg/L				80-120	11.2	20	
Alkalinity, Total	260	10.0	mg/L	250		104	80-120	10.9	20	
Batch 8073008 - General Prep - Wet Chem										
Blank (8073008-BLK1)				Prepared &	Analyzed: 1	30-Jul-18				
Chloride	ND	4.00	mg/L			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				
CS (8073008-BS1)				Prepared &	Analyzed: 3	30-Jul-18				
Chloride	92.0	4.00	mg/L	100		92.0	80-120			
CS Dup (8073008-BSD1)				Prepared &	Analyzed: 3	30-Jul-18				
Chloride	100	4.00	mg/L	100		100	80-120	8.33	20	
Batch 8073010 - Filtration	_									
Blank (8073010-BLK1)				Prepared: 30	)_Iu1_18 And	alwand: 01	Aug. 10			

### Cardinal Laboratories

\*=Accredited Analyte

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Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: D-24-N

Project Number: D-24-N

Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported: 06-Aug-18 12:29

### **Inorganic Compounds - Quality Control**

### **Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC	nnn	RPD	
D. 4 1 0052010 TIV.		Zimi	Outis	Level	Kesuit	70KEC	Limits	RPD	Limit	Notes
Batch 8073010 - Filtration										
LCS (8073010-BS1)				Prepared: 3	30-Jul-18 Aı	nalyzed: 01				
TDS	532	5.00	mg/L	527	•	101	80-120			
Duplicate (8073010-DUP1)	Sou	rce: H802054	<b>4-</b> 01	Prepared: 3	30-Jul-18 Ar	nalvzed: 01	-Aug-18			
TDS	11100	5.00	mg/L		10900			1.46	20	
Batch 8073011 - General Prep - Wet Chem										
LCS (8073011-BS1)				Prepared &	Analyzed:	30-Jul-18				
Conductivity	484		uS/cm	500		96.8	80-120			
pH	7.07		pH Units	7.00		101	90-110			
Duplicate (8073011-DUP1)	Sou	rce: H802054	-01	Prepared &	Analyzed:	30-Jul-18				
рН	7.70	0.100	pH Units		7.65	30 241 10		0.651	20	
Conductivity	14700	1.00	uS/cm		14800			0.475	20	
Batch 8073014 - General Prep - Wet Chem										
Blank (8073014-BLK1)				Prepared: 3	0-Jul-18 An	alvzed: 31.	-Iul-18			
Sulfate	ND	10.0	mg/L				J 61-10			
LCS (8073014-BS1)				Prepared &	Analyzed:	31-Jul-18				
Sulfate	20.6	10.0	mg/L	20.0	· mary zou.	103	80-120			***************************************
LCS Dup (8073014-BSD1)				Pranarade 2	n Il 10 A	alımadı 21	L.1 10			
Sulfate	20.7	10.0	mg/L	Prepared: 30	0-3u1-10 An	104	80-120	0.678	20	
			6/ 2	40.0		104	0V-12U	0.078	20	

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Celey & Keine

%REC



### Analytical Results For:

Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: D-24-N

Project Number: D-24-N

Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Spike

Source

Reported:

06-Aug-18 12:29

RPD

### Total Recoverable Metals by ICP (E200.7) - Quality Control

### **Green Analytical Laboratories**

Reporting

Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B808003 - Total Rec. 200.7/200.8/200.	2									
Blank (B808003-BLK1)				Prepared &	: Analyzed:	01-Aug-18	}			
Magnesium	ND	0.100	mg/L	··			·			
Sodium	ND	1.00	mg/L							
Calcium	ND	0.100	mg/L							
Potassium	ND	1.00	mg/L							
LCS (B808003-BS1)				Prepared: 0	1-Aug-18 A	nalvzed: 0	7-Aug-18			
Sodium	3.01	1.00	mg/L	3.24		93.0	85-115			
Potassium	8.31	1.00	mg/L	8.00		104	85-115			
Calcium	4.17	0.100	mg/L	4.00		104	85-115			
Magnesium	20.4	0.100	mg/L	20.0		102	85-115			
LCS Dup (B808003-BSD1)				Prepared: 0	1-Aug-18 A	nalyzed: 0	2-Aug-18			
Potassium	8.22	1.00	mg/L	8.00		103	85-115	1.12	20	-
Calcium	4.14	0.100	mg/L	4.00		103	85-115	0.891	20	
Sodium	2.99	1.00	mg/L	3.24		92.2	85-115	0.891	20	
Magnesium	20.3	0.100	mg/L	20.0		102	85-115	0.634	20	
			-				05 115	0.054	20	

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Celey D. Kiene



ND

### **Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	0:- 0 >000 /- /0				
	Sice of ative		BILL 10	ANALYSIS REQUEST	
Project Manager:	Hayden Holub		P.O. #:		
Address: )	112 W Taylor		Company:		
city: Hb6	City: Hobb's state: Na Zip:	88240	Attn:		
Phone #: 57	5-393-9174 Fax #: 675-393-1471	1471-658	Address:	:00	
Project #:			City:	4-	
Project Name: リーンリール	)-24-N		State: Zip:	<i>†</i>	
Project Location:	: 0-24-2		Phone #:		
Sampler Name:	Hayden Holub		Fax #:		
FOR LAB USE ONLY		MATRIX	PRESERV SAMPLING	tie	
Lab I.D.	Sample I.D.		ASE: OOL	jur (a	
H8020S4	(G)RA	GROU WASTI SOIL OIL SLUDO	OTHER ACID/E ICE / C OTHER DATE	M	
_	15 COLY 150 150 150	;>: 	7-27 3:10	×-	
	beologia mell				
	. 0.24-N				
		-			
	*Colt lake				
PLEASE NOTE: Liability and	Danages Cardnot's ability and client's available trematic for				
analyses All claims including service in no event shall Cai	araijests. All claims unusung those to negligence and any other causews tenienty on any other article based in Corridat of total, shall be limited to the amount pad by the claent for the arrainment and the second to the control of	arising whether based in contract in varved unless made in writing and imitation, business interruptions to	of lost, shall be limited to the amount paid by the chent for I received by Cardinal within 30 days after completion of this construction of the chemical within the chemical by Cardinal within 100 days after completion of the construction of the chemical by the chemical	ne applicable	
affiliates or successors arsing	Tailiding or successors arend out of or related to the performance of services hereunder by Cardman regardless of whether such claim is based upon any of the above stated reasons or otherwise.	egardless of whether such claim is	s based upon any of the above stated reasons or otherwise		

Sampler - UPS - Bus - Other:

Delivered By: (Circle One)

33.80

Sample Condition

CHECKED BY:

Time: Date:

Refinquished By:

55.4mil

email results

Mhold Ofice sudicon,

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



August 06, 2018

HAYDEN HOLUB

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: P-15/D-24-N

Enclosed are the results of analyses for samples received by the laboratory on 07/27/18 16:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited accredited analytes are denoted by an asterisk (\*).

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Method EPA 552.2 Total Haloacetic Acids (HAA-5)
Method EPA 524.2 Total Trihalomethanes (TTHM)
Method EPA 524.4 Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2 Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2 Total Haloacetic Acids (HAA-5)

Celeg & Keine

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



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

### Analytical Results For:

Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: P-15/D-24-N

Project Number: P-15/D-24-N

Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported:

06-Aug-18 12:49

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WATER WELL TEST - 1MILE FROM F	H802058-01	Water	27-Jul-18 14:10	27-Jul-18 16:55

Cardinal Laboratories

\*=Accredited Analyte

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Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: P-15/D-24-N

Project Number: P-15/D-24-N Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported:

06-Aug-18 12:49

### WATER WELL TEST - 1MILE FROM P-15 & D-24-N

### H802058-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardin	al Laborat	ories					
Inorganic Compounds										
Alkalinity, Bicarbonate	346		5.00	mg/L	1	8071613	AC	30-Jul-18	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	8071613	AC	30-Jul-18	310.1	
Chloride*	88.0		4.00	mg/L	1	8073008	AC	30-Jul-18	4500-CI-B	
Conductivity	828		1.00	uS/cm	1	8073011	AC	30-Jul-18	120.1	
pH*	8.02		0.100	pH Units	1	8073011	AC	30-Jul-18	9045	
Sulfate*	102		25.0	mg/L	2.5	8073014	AC	31-Jul-18	375.4	
TDS*	538		5.00	mg/L	1	8073010	AC	01-Aug-18	160.1	
Alkalinity, Total*	284		4.00	mg/L	l	8071613	AC	30-Jul-18	310.1	
			Green Ana	lytical Labo	oratories					
Total Recoverable Metals by	ICP (E200.7)									
Calcium*	48.4		1.00	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	
Magnesium*	22.6		1.00	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	
Potassium*	<10.0		10.0	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	
Sodium*	93.1		10.0	mg/L	10	B808003	AES	02-Aug-18	EPA200.7	

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Rice Operating Company

Project: P-15/D-24-N

Reported: 06-Aug-18 12:49

112 W. Taylor Hobbs NM, 88240 Project Number: P-15/D-24-N

Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

### **Inorganic Compounds - Quality Control**

### **Cardinal Laboratories**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 8071613 - General Prep - Wet Chem										
Blank (8071613-BLK1)				Prepared &	: Analyzed:	16-Jul-18				
Alkalinity, Carbonate	ND	1.00	mg/L							
Alkalinity, Bicarbonate	ND	5.00	mg/L							
Alkalinity, Total	ND	4.00	mg/L							
LCS (8071613-BS1)				Prepared &	Analyzed:	16-Jul-18				
Alkalinity, Carbonate	ND	2.50	mg/L				80-120			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Alkalinity, Bicarbonate	355	12.5	mg/L				80-120			
Alkalinity, Total	290	10.0	mg/L	250		116	80-120			
LCS Dup (8071613-BSD1)				Prepared &	Analyzed:	16-Jul-18				
Alkalinity, Carbonate	ND	2.50	mg/L				80-120		20	
Alkalinity, Bicarbonate	318	12.5	mg/L				80-120	11.2	20	
Alkalinity, Total	260	10.0	mg/L	250		104	80-120	10.9	20	
Batch 8073008 - General Prep - Wet Chem										
Blank (8073008-BLK1)				Prepared &	Analyzed:	30-Jul-18				
Chloride	ND	4.00	mg/L							
LCS (8073008-BS1)				Prepared &	Analyzed:	30-Jul-18				
Chloride	92.0	4.00	mg/L	100		92.0	80-120			·
LCS Dup (8073008-BSD1)				Prepared &	Analyzed:	30-Jul-18				
Chloride	100	4.00	mg/L	100		100	80-120	8.33	20	
Batch 8073010 - Filtration										
Blank (8073010-BLK1)				Prepared: 3	0-Jul-18 Ar	nalyzed: 01-	-Aug-18			
TDS	ND	5.00	mg/L							

### Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence arising and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claims is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above.

Celey Z. Keene



Rice Operating Company

112 W. Taylor Hobbs NM, 88240 Project: P-15/D-24-N

Project Number: P-15/D-24-N Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

Reported:

06-Aug-18 12:49

### **Inorganic Compounds - Quality Control**

### **Cardinal Laboratories**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 8073010 - Filtration										
LCS (8073010-BS1)				Prepared: 3	30-Jul-18 A	nalyzed: 01	-Aug-18			
TDS	532	5.00	mg/L	527		101	80-120			
Duplicate (8073010-DUP1)	Sour	ce: H802054	I-01	Prepared: 3	30-Jul-18 A	nalyzed: 01	-Aug-18			
TDS	11100	5.00	mg/L		10900			1.46	20	
Batch 8073011 - General Prep - Wet Chem										
LCS (8073011-BS1)				Prepared &	Analyzed:	30-Jul-18				
Conductivity	484		uS/cm	500		96.8	80-120			
pH	7.07		pH Units	7.00		101	90-110			
Duplicate (8073011-DUP1)	Sour	ce: H802054	l-01	Prepared &	Analyzed:	30-Jul-18				
pH	7.70	0.100	pH Units		7.65			0.651	20	
Conductivity	14700	1.00	uS/cm		14800			0.475	20	
Batch 8073014 - General Prep - Wet Chem										
Blank (8073014-BLK1)				Prepared: 3	30-Jul-18 A	nalyzed: 31	-Jul-18			
Sulfate	ND	10.0	mg/L							
LCS (8073014-BS1)				Prepared &	Analyzed:	31-Jul-18				
Sulfate	20.6	10.0	mg/L	20.0		103	80-120			
LCS Dup (8073014-BSD1)				Prepared: 3	30-Jul-18 A	nalyzed: 31	-Jul-18			
Sulfate	20.7	10.0	mg/L	20.0		104	80-120	0.678	20	

### Cardinal Laboratories

\*=Accredited Analyte

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Celey Z. Kuna



Rice Operating Company

Project: P-15/D-24-N

Reported: 06-Aug-18 12:49

112 W. Taylor Hobbs NM, 88240 Project Number: P-15/D-24-N

Project Manager: HAYDEN HOLUB

Fax To: (575) 397-1471

### Total Recoverable Metals by ICP (E200.7) - Quality Control

### **Green Analytical Laboratories**

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

Blank (B808003-BLK1)				Prepared & Anal	lyzed: 01-Aug-18	8			
Magnesium	ND	0.100	mg/L						
Sodium	ND	1.00	mg/L						
Calcium	ND	0.100	mg/L						
Potassium	ND	1.00	mg/L						
LCS (B808003-BS1)				Prepared: 01-Au	g-18 Analyzed: (	02-Aug-18			
Sodium	3.01	1.00	mg/L	3.24	93.0	85-115			
Potassium	8.31	1.00	mg/L	8.00	104	85-115			
Calcium	4.17	0.100	mg/L	4.00	104	85-115			
Magnesium	20.4	0.100	mg/L	20.0	102	85-115			
LCS Dup (B808003-BSD1)				Prepared: 01-Au	g-18 Analyzed: (	02-Aug-18			
Potassium	8.22	1.00	mg/L	8.00	103	85-115	1.12	20	
Calcium	4.14	0.100	mg/L	4.00	103	85-115	0.891	20	
Sodium	2.99	1.00	mg/L	3.24	92.2	85-115	0.902	20	
Magnesium	20.3	0.100	mg/L	20.0	102	85-115	0.634	20	

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### **Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories \*=Accredited Analyte

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Clay 2 . Kiene



# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Dice Operative Co	BILL TO	ANALYSIS REQUEST
Project Manager: Hojdon Hollo	P.O. #:	
	Company:	
	Attn:	~ \$
Phone #: 575-343-9174 Fax #: 575-353-147/	Address:	
4	City:	<i>ai</i>
Project Name: P-) 5 / P-24-N	State: Zip:	
Project Location: P-15/D-24-N	Phone #:	5 <
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analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries. Relinquished By: Delivered By: (Circle One) Time: Vare: 7-18 Received By: Received By: Sample Condition CHECKED BY: (Initials)

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chiles 33

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



August 6, 2018

Scott Curtis
Rice Operating Company
122 W Taylor St.
Hobbs, New Mexico 88240

RE: Rice Operating Company D-24-N SWD Well Permit

Mr. Curtis:

Tasman Geosciences, Inc. (Tasman) conducted a hydrogeologic investigation on behalf of Rice Operating Company (Rice) related to the proposed injection well D-24-N SWD well permit located in Lea County, New Mexico (Site [Figure 1]). The scope of the investigation was to determine if there is a hydrologic connection between the proposed injection interval and local sources of underground drinking water. The basis of the investigation was in response to the well permit requirement that the applicant makes the following statement:

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

During the investigation Tasman utilized three main sources to determine if there was evidence of open faults or other hydrologic connection between the injection zone, which is between 4,050 and 5,100 feet below ground surface (bgs) in the Permian-Guadalupe San Andreas Formation, and local sources of drinking water estimated to be between 50 and 150 feet bgs within the Tertiary Ogallala Formation (High Plains aquifer).

The sources utilized in the investigation are listed below and are included as attachments:

- Geologic Map of New Mexico (Anderson et al., 1996);
- Regional Cross Sections Central Basin Platform, West Texas (Bebout et al., 1985); and
- Geohydrology of the High Plains Aquifer in Southeastern New Mexico (Hart et al., 1985).

#### HYDROGEOLOGIC EVALUATION AND RESULTS

Based on a review of these sources and information provided by Rice, the following lines of evidence indicates that there is not a "hydrologic connection between the disposal zone and underground sources of drinking water".

 Approximately 4,000 feet of bedrock between the top of the injection interval and the base of the High Plains aquifer;



- Geologic map of New Mexico illustrates no major regional faults or structural features indicating a connection between the San Andreas Formation and the Ogallala Formation (High Plains aquifer);
- Cross section B-B' at points 1, 2 and 3, which are near the injection Site, indicates there
  are no major faults that trend vertically between the Permian San Antreas Formation and
  the Tertiary Ogallala Formation; and
- Plate 1 Geohydrology of the High Plains aquifer illustrates the contact between the base of the High Plains aquifer and the underlying bedrock is approximately 65 feet bgs in the location of the injection Site.

#### SUMMARY

Based on these lines of evidence and as a licensed Professional Geologist, I am confident that Rice Operating Company can provide the affirmative statement:

"that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water".

Please feel free to contact me with any questions or comments at (970) 317-0130.

Sincerely,

Brent Everett, PG

Book Groth

Tasman Geosciences, Inc.

#### Enclosures:

- Figure 1 Site Location Map
- Geologic Map of New Mexico
- Cross Section Overview Central Basin Platform, West Texas
- Regional Cross Section (B-B') Central Basin Platform, West Texas
- Geohydrology of the High Plains Aquifer Southeast New Mexico

#### References:

Anderson, O.J., Jones, G.E., and Green, G.N., 1996, Geologic Map of New Mexico, Scale 1:500,000.

Bebout, D.G., and Meador, K.J., 1985, Regional Cross Sections – Central Basin Platform, West Texas: The University of Texas at Austin, Bureau of Economic Geology.

Hart, D.L., and McAda, D.P., 1985, Geohydrology of the High Plains Aquifer in Southeastern New Mexico, Hydrologic Atlas 679.

### **Affidavit of Publication**

STATE OF NEW MEXICO COUNTY OF LEA

I. Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

> Beginning with the issue dated August 03, 2018 and ending with the issue dated August 03, 2018.

Publisher

Sworn and subscribed to before me this 3rd day of August 2018.

Business Manager

My commission expires

January 29, 2019

(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
109 Commission Expires 1-29-19

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said

#### LEGAL NOTICE August 3, 2018

Public Notice for State D-24-N SWD (API:--) Rice Operating Company, 122 West Taylor, Hobbs. NM 88240 (575) 393-9174 Contact Party: Hayden Holub (575) 393-9174. The intended purpose of this injection well is for disposal of produced water associated with oil and gas production activities. This well is a permitted disposal well into the San Andres formation. This application is made to utilize the well for commercial use. The location of the well is 263 feet from the North Line and 630 feet from the West Line of Section 24, Township 21S, Range 36E, which is in the NW/4 of the NW/4 of the atorementioned section, Lea county. The formation name is the San Andres; injection intervals to be between a depth of 4,050' to 5,100'; a maximum injection rate of 45,000 barrels per day with maximum pressure of 1000 PSI, or maximum allowed by the NMOCD. Interested parties must file objections or request a hearing with the Oil Conservation Division, 1220 South St. Francis Dr. Santa Fe, New Mexico 87505, within 15 days, by F#3070

01104367

00216026

BEGIE BONDS RICE OPERATING COMPANY 112 WEST TAYLOR HOBBS, NM 88240

### SURFACE OWNER, GRAZING LESSEE, LEASE OWNER,

### AND OFFSET OPERATORS

#### D-24-N SWD

#### 263' FNL AND 630' FWL, SEC. 24, T21S, R36E

#### LEA COUNTY, NM

### Surface Owner of Well Site

State of New Mexico Commissioner of Public Lands Attention: Faith Crosby PO Box 1148 Santa Fe, NM 87504

City of Eunice PO Box 147 Eunice, NM 88231

Dasco Cattle Co PO Box 727 Hobbs, NM 88241

### Grazing Lessee of Well Site

Lease #GS-2121-0100 Bruton Cattle Company HC 69, Box 64 Monument, NM 88265

#### **Operators of Record**

Horseshoe Operating Inc. Attention: Colby Welch 110 W. Louisiana Midland, TX 79701 XTO Energy, Inc. Attention: DeeAnn Kemp 6401 Holiday Hill Rd., #5 Midland, TX 79707 Penroc Oil Corp Attention: Mohammed Merchant PO Box 2769 Hobbs, NM 88241

#### Oil & Gas Lessees of Record

Chevron USA, Inc.

Attention: Linda McMurry 6301 Deauville Blvd. Midland, TX 79706

### GIGE Operating Company

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

AUGUST 6, 2018

State of New Mexico Commissioner of Public Lands PO Box 1148 Santa Fe, NM 87504

RE: D-24-N SWD

 $\ensuremath{\text{U/L}}$  D, Section 24, T21S, R36E

263' FNL and 630' FWL

Lea County, NM

To Whom it May Concern:

U.S. Postal Service CERTIFIED MAIL RECEIPT (Domestic Mail Only; No Insurance Coverage Provided) 0644 Certified Fee m Return Receipt Fee (Endorsement Required) Postmark Here Restricted Delivery Fee (Endorsement Required) 1.830 State of New Mexico 7008 Commissioner of Public Lands Attention: Faith Crosby PO Box 1148 Santa Fe, NM 87504

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108 Application for Authorization to Inject into the above captioned well.

Any questions about the permit can be directed to Hayden Holub at 575-393-9174. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. St. Francis Dr., Santa Fe, NM 87505.

Thank You,

Hayden Holub

Manager

### BIG Operating Company

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

AUGUST 6, 2018

Bruton Cattle Company HC 69, Box 64 Monument, NM 88265

RE:

D-24-N SWD

U/L D, Section 24, T21S, R36E

263' FNL and 630' FWL

Lea County, NM

U.S. Postal Service TM CERTIFIED MAIL RECEIPT (Domestic Mail Only; No Insurance Coverage Provided) 199 Certified Fee Postmark Return Receipt Fee Here (Endorsement Required) Restricted Delivery Fee (Endorsement Required) 1680 Total Postage & Fees Bruton Cattle Company HC 69, Box 64 Monument, NM 88265 PS Form 3800, August 2006

To Whom it May Concern:

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108 Application for Authorization to Inject into the above captioned well.

Any questions about the permit can be directed to Hayden Holub at 575-393-9174. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. St. Francis Dr., Santa Fe, NM 87505.

Thank You.

Hayden Holub

Manager

## Derating Company

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

AUGUST 6, 2018

City of Eunice PO Box 147 Eunice, NM 88231

RE:

D-24-N SWD

U/L D, Section 24, T21S, R36E

16 14

263' FNL and 630' FWL

Lea County, NM

U.S. Postal Service ™ CERTIFIED MAIL RECEIPT (Domestic Mail Only; No Insurance Coverage Provided) **5619** Postage Certified Fee 0001 Postmark Return Receipt Fee (Endorsement Required) Here Restricted Delivery Fee (Endorsement Required) 7009 1680 Total Postage & Fees City of Eunice PO Box 147 Eunice, NM 88231 S Form 3800, August 2006

To Whom it May Concern:

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108 Application for Authorization to Inject into the above captioned well.

Any questions about the permit can be directed to Hayden Holub at 575-393-9174. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. St. Francis Dr., Santa Fe, NM 87505.

Thank You.

Hayden Hoʻlub Manager

## BIGE Operating Company

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

U.S. Postal Service TM

AUGUST 6, 2018

Dasco Cattle Company PO Box 727 Hobbs, NM 88241

RE:

D-24-N SWD

U/L D, Section 24, T21S, R36E

A Ha

263' FNL and 630' FWL

Lea County, NM

CERTIFIED MAILT RECEIPT (Domestic Mail Only; No Insurance Coverage Provided) 5777 6619 Postage Certified Fee Postmark 1000 Return Receipt Fee (Endorsement Required) Here Restricted Delivery Fee (Endorsement Required) 1680 Total Postage & Fees 7009 Dasco Cattle Company PO Box 727 Hobbs, NM 88241 See Reverse for Instructions

To Whom it May Concern:

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108 Application for Authorization to Inject into the above captioned well.

Any questions about the permit can be directed to Hayden Holub at 575-393-9174. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. St. Francis Dr., Santa Fe, NM 87505.

Thank You,

Hayden Holub

Manager

## MIGH Operating Company

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

AUGUST 6, 2018

Horseshoe Operating, Inc. Attention: Colby Welch 110 W. Louisana Midland, TX 79701

RE:

D-24-N SWD

U/L D, Section 24, T21S, R36E

263' FNL and 630' FWL

Lea County, NM

784		MAIL REC	CEIPT Coverage Provided)
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<u></u>	Horseshoe Op	erating, Inc.	
7009	Attention: Co	<b>Q</b> ,	
~	110 W. Louisia		
	Midland, TX 7	9701	See Reverse for Instructions

To Whom it May Concern:

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108 Application for Authorization to Inject into the above captioned well.

Any questions about the permit can be directed to Hayden Holub at 575-393-9174. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. St. Francis Dr., Santa Fe, NM 87505.

Thank You,

Hayden Holub

Manager

## Operating Company

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

AUGUST 6, 2018

Chevron USA, Inc.

Attention: Linda McMurry

6301 Deauville Blvd. Midland, TX 79706

RE:

D-24-N SWD

U/L D, Section 24, T21S, R36E

263' FNL and 630' FWL

Lea County, NM

U.S. Postal Service TM FIED MAILT RECEIPT (Domestic Mail Only; No Insurance Coverage Provided) Г PP7. Postmark 0007 Return Receipt Fee (Endorsement Required) Restricted Delivery Fee (Endorsement Required) 1680 Total Postage & Fees Chevron USA, Inc. Attention: Linda McMurry 6301 Deauville Blvd. Midland, TX 79706 See Reverse for Instructions

To Whom it May Concern:

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108 Application for Authorization to Inject into the above captioned well.

Any questions about the permit can be directed to Hayden Holub at 575-393-9174. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. St. Francis Dr., Santa Fe, NM 87505.

Thank You,

Hayden Hollub

Manager

## Operating Company

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

AUGUST 6, 2018

Penroc Oil Corp.

Attention: Mohammed Merchant

PO Box 2769

Hobbs, NM 88241

RE:

D-24-N SWD

U/L D, Section 24, T21S, R36E

263' FNL and 630' FWL

Lea County, NM

To Whom it May Concern:

U.S. Postal Service™ CERTIFIED MAIL RECEIPT (Domestic Mail Only; No Insurance Coverage Provided) 0 **PPJ** Certified Fee 1000 Postmark Return Receipt Fee (Endorsement Required) Here Restricted Delivery Fee (Endorsement Required) 1680 Total Postage & Fees Penroc Oil Corp. Attention: Mohammed Merchant PO Box 2769 Hobbs, NM 88241 everse for Instructions

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108 Application for Authorization to Inject into the above captioned well.

Any questions about the permit can be directed to Hayden Holub at 575-393-9174. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. St. Francis Dr., Santa Fe, NM 87505.

Thank You,

Hayden Hollub

Manager

# Operating Company

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

AUGUST 6, 2018

XTO Energy, Inc.

Attention: DeeAnn Kemp

6401 Holiday Hill Rd., Bldg. #5

Midland, TX 79707

RE:

D-24-N SWD

U/L D, Section 24, T21S, R36E

263' FNL and 630' FWL

Lea County, NM

To Whom it May Concern:

U.S. Postal Service The CERTIFIED MAIL RECEIPT (Domestic Mail Only; No Insurance Coverage Provided) **o** PP7 Postage Certified Fee Postmark 1000 Return Receipt Fee Here Restricted Delivery Fee (Endorsement Required) 1680 Total Postano & Foos XTO Energy, Inc. 7009 Attention: DeeAnn Kemp 6401 Holiday Hill Rd. **Building #5** Midland, TX 79707 See Reverse for Instructions

In accordance with the Rules and Regulations of the Oil Conservation Division of the State of New Mexico, you are being provided a copy of the C-108 Application for Authorization to Inject into the above captioned well.

Any questions about the permit can be directed to Hayden Holub at 575-393-9174. Any objections or request for hearing must be filed with the Oil Conservation Division within fifteen (15) days from the date received. The OCD address is 1220 S. St. Francis Dr., Santa Fe, NM 87505.

Thank You,

Hayden Holúb

Manager

wellname	api	township	range	formation	tds mgL
EUNICE MONUMENT SOUTH UNIT #260	3002504463	215	36E	GRAYBURG/SAN ANDRES	13534
A J ADKINS #008	3002520700	215	36E	BLINEBRY	147118
ANTELOPE RIDGE UNIT #003	3002521082	235	34E	DEVONIAN	80187
BELL LAKE UNIT #009	3002520261	23S	34E	BONE SPRING	204652
NORTHEAST DRINKARD UNIT #306	3002506507	215	37E	BLINEBRY/TUBB/DRINKARD	19094.4
BELLOQ 2 STATE #002H	3001542895	23S	31E	WOLFCAMP	119471.8
NORTH PURE GOLD 5 FEDERAL #003H	3001535892	23\$	31E	DELAWARE-BRUSHY CANYON	278201.6
WASHINGTON 33 STATE #024	3001530334	17S	28E	GLORIETA/YESO	206471

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Additional COAs:\_