

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION



- Engineering Bureau -1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

	[NSL-Non-Star [DHC-Dowr [PC-Po [EOR-Qual	dard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication] hole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling] of Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement] [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion] [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase] ified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]
[1]	TYPE OF AP [A]	PLICATION - Check Those Which Apply for [A] Location - Spacing Unit - Simultaneous Dedication NSL NSP SD
	Check [B]	One Only for [B] or [C] Commingling - Storage - Measurement DHC CTB PLC PC OLS OLM Charte Dui's (4 State T 30-015-40629 Charte Dui's (4 State T 30-015-40629
	[C]	Injection - Disposal - Pressure Increase - Enhanced Oil Recovery Not In Compliance 3.1 WFX PMX SWD IPI EOR PPR II28/2014.7
	[D]	Other: Specify Amend SWD-1352 (8/27/2012) 02/14/2014
[2]	NOTIFICATI [A]	ON REQUIRED TO: - Check Those Which Apply. or Does Not Apply Working, Royalty or Overriding Royalty Interest Owners
	[C]	Application is One Which Requires Published Legal Notice
	[D]	Notification and/or Concurrent Approval by BLM or SLO U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
	[E] [F]	 For all of the above, Proof of Notification or Publication is Attached, and/or, Waivers are Attached

[3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

David Sibley Print or Type Name	Signature Sibley	Production Title
	12-30-13	dsiblev@li

Date

Production Engineer

dsibley@limerockresources.com E-Mail Address Energy, Minerals and Natural Resources Department Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505

Attention: Mr. Richard Ezeanyim, P.E. Chief Engineer

Re: Form C-108 Lime Rock Resources II-A, L.P. Choate-Davis 14 State Com #1 SWD API No. Not Yet Assigned 2310' FSL & 1650' FEL, Unit J Section 14, T-18S, R-27E, NMPM, Eddy County, New Mexico

Dear Mr. Ezeanyim,

Enclosed please find a Division Form C-108 (Application for Authorization to Inject) for the Lime Rock Resources II-A, L.P. ("LRR") Choate-Davis 14 State Com #1 SWD. LRR proposes to drill and utilize this well as a produced water disposal well, injection to occur into the Abo, Wolfcamp and Cisco formations through the perforated interval from 6,500 feet to 6,600 feet in the Abo formation and open hole from 6,650 feet to 9,000 feet through the Wolfcamp and Cisco formations. Produced water from the Glorieta, San Andres, Grayburg, Queen and Yeso formations originating from LRR operated wells in this area will be injected into the well.

I believe that all the information necessary to approve the application is enclosed. If additional information is needed, please contact me at (713) 345-2134.

Sincerely, Dand Silley

David Sibley Production Engineer Lime Rock Resources II-A, L.P. 1111 Bagby Street, Suite 4600 Houston, Texas 77002

Xc: OCD-Artesia

APPLICATION FOR AUTHORIZATION TO INJECT

I.	PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage Application qualifies for administrative approval? X Yes No
II.	OPERATOR: Lime Rock Resources II-A, L.P. (OGRID-277558)
	ADDRESS:1111 Bagby Street, Suite 4600 Houston, Texas 77002
	CONTACT PARTY: PHONE: (713) 345-2134
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? Yes X No 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:
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, 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.).
*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: David SibleyTITLE: Production Engineer
	SIGNATURE: DATE: 12-30-13

E-MAIL ADDRESS: _____dsibley@limerockresources.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:

- III. WELL DATA
- A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:
 - (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
 - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
 - (3) A description of the tubing to be used including its size, lining material, and setting depth.
 - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
 - (1) The name of the injection formation and, if applicable, the field or pool name.
 - (2) The injection interval and whether it is perforated or open-hole.
 - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
 - (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
 - (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

C-108 Application Lime Rock Resources II-A, L.P. Choate-Davis 14 State Com #1 SWD 2310' FSL & 1650' FEL (Unit J) Section 14, T-18S, R-27E, NMPM Eddy County, New Mexico

- The purpose of the application is to request approval to drill the Choate-Davis 14 State Com #1 SWD and complete it as a produced water disposal well in the Abo, Wolfcamp and Cisco formations.
- II. Lime Rock Resources II-A, L.P. (LRR)
 1111 Bagby Street, Suite 4600
 Houston, Texas 77002
 Contact Party: David Sibley, Production Engineer-(713) 345-2134
- III. Injection well data sheet is attached. In addition, attached is a schematic well diagram showing the proposed wellbore configuration. LRR proposes to drill this well setting 13 3/8" casing at 300' cemented to surface, 9 5/8" casing at 2,800' cemented to surface, 7" casing at 6,675' cemented to 2,600', drill a 6 1/8" open into the Abo, Wolfcamp and Cisco formations through the perforated interval from 6,500 feet to 6,600 feet in the Abo formation and open hole from 6,650 feet to 9,000 feet through the Wolfcamp and Cisco formations.
- IV. This is not an expansion of an existing project.
- V. A map showing all wells/leases within a 2-mile radius of the Choate-Davis 14 State Com #1 SWD is attached. Also attached is a more detailed map showing the 1/2-mile Area of Review ("AOR") for the Choate-Davis 14 State Com #1 SWD.
- VI. Within the AOR, there is only one well that penetrates the proposed injection interval. This well is cased and cemented so as to preclude the migration of injected fluid from the proposed injection interval. There are also numerous active or plugged wells that produce or have produced from shallow horizons (i.e. Queen, Grayburg, San Andres, Gloreita, Yeso, ect.). The deepest of these penetrations is 2,575 feet. There are also no plugged wells within AOR that penetrate the proposed injection interval. The attached APR well table shows all AOR well data.
- VII. 1. The average injection rate is anticipated to be approximately 10.000 BWPD. The maximum rate will be approximately 20,000 BWPD. If the average or maximum rates increase in the future, the Division will be notified.
 - 2. This will be a closed system.

3. The injection pressure will initially be in conformance with the Division assigned gradient of 0.2 psi/ft. or 1300 psi. If a higher injection pressure is necessary, LRR will conduct a step rate injection test to determine the fracture pressure of the injection interval.

4. Produced water from the Glorieta, San Andres, Grayburg, Queen and Yeso formations originating from wells in the area of the disposal well will be injected into the Choate-Davis 14 State Com No.1 SWD. Attached are produced water analysis from the Glorieta-Yeso formation originating from LRR's Enron State, Kersey, Staley State A and Staley State wells, and a produced water analysis from the Queen-Grayburg-San Andres formation originating from LRR's Jeffery 1 and Jeffery 36 State wells.

5. Injection is to occur into the Abo, Wolfcamp and Cisco formations. Division records show that the Choate-Davis 14 State Com No. 1 SWD is located approximately: i) 1 mile from the outer boundary of the Empire-Abo Pool; ii) 1.25 miles from the outer boundary of the Chalk Bluff-Wolfcamp Pool; and iii) 0.75 miles from the outer boundary of the East Red Lake Upper Penn Gas Pool (See attached pool maps).

- VIII. The proposed injection interval lies between depths of 6,500 feet and 9,000 feet and includes the Permian age lower Abo and Wolfcamp formations and the Pennsylvanian age Cisco formation. These formations serve as common disposal zones for this area of the Delaware Basin. Within the AOR, the interval consists of interbedded crystalline dolomites, limestones, and shales with the dolomites making up approximately 40 percent of the interval and generally providing for the better injection capacity. Their porosities range from 6% to 14% and average approximately 9%. The limestones are less porous but do offer some additional injection capacity with porosities ranging from 4% to 10%. In this area, fresh water occurs down to a depth of approximately 150 feet. No known fresh water sources underlie the injection interval.
 - IX. Proposed to acid stimulate the injection interval as needed.
 - X. Logs will be filed when the well is drilled.
 - XI. According to the State Engineer, there is one fresh water well located within one mile of the Choate-Davis 15 State Com No. 1 SWD. This well is located in the NW/4 SE/4 SE/4 of Section 14, and is reportedly 2,096' feet deep. The report does not indicate depth to fresh water in this well. LRR has conducted a field survey and was unable to locate this reported fresh water well. It is likely that the well has been plugged.
- XII. Affimative Statement is attached
- XIII. Proof of notice is attached

INJECTION WELL DATA SHEET

OPERATOR:	Lime Rock Resources II-A, L.P.				
WELL NAME & NUN	ABER: Choate-Davis 14 State Com	No. 1 SWD (30-015-40629			
WELL LOCATION:	2310' FSL & 1650' FEL FOOTAGE LOCATION	J UNIT LETTER	14 SECTION	18 South TOWNSHIP	27 East RANGE
PERATOR:Lime Rock Resources II-A 'ELU NAME & NUMBER:Choate-Dav 'ELU LOCATION:2310' FSL & 1650 FOOTAGE LOCA <u>WELLBORE SCHEMATIC</u> See Attached Wellbore Schematic	<u>BORE SCHEMATIC</u>	<u>WEL</u>	<u>L CONSTRUC</u> Surface Ca	<u>CTION DATA</u> asing	
See Atte	ached Wellbore Schematic	Hole Size: 17 1/2'	'	Casing Size: <u>13 3</u>	<u>/8" @ 300'</u>
		Cemented with:	280 Sx.	or	ft ³
		Top of Cement:	Surface	Method Determined	d: Circulated
			Intermediate	Casing	
		Hole Size: <u>12 1/4</u> "		Casing Size: 9 5/	<u>8''@ 2,800'</u>
		Cemented with:	<u>845 Sx.</u>	or	ft3
		Top of Cement:	Surface	Method Determined	d: Circulated
			Production	Casing (Proposed)
		Hole Size: <u>8 3/4"</u>		Casing Size: 7"@	6,650'
		Cement with: 600 S	<u>x.</u>	or	ft3
		Top of Cement: 2,800)'	Method Determined	d: Proposed
		Total Depth: 9,000)'	PBTD: 9,00	<u>)0'</u>
			Injection Inter	val	

Perforated: 6,500'-6,600; Open Hole: 6,650'-9,000'

INJECTION WELL DATA SHEET

Tubing	s Size: $4 \frac{1}{2}$		Lining Mater	ial:	Duoline Fiberglass Coated
Туре с	of Packer:	Arrowset IX or similar type	injection packe	er	
Packer	Setting Depth:	6,425' or within 100	of the upperm	ost inject	ion perforations
Other	Type of Tubing/Casing	Seal (if applicable):	None	en han maanan kataloga katalog	
		Additior	nal Data		
1.	Is this a new well drill	led for injection:	<u> </u>	S	No
	If no, for what purpos	e was the well originally dril	led:		
2.	Name of the Injection	Formation: <u>Abo</u> ,	Wolfcamp and	<u>Cisco Fo</u>	rmations
3.	Name of Field or Poo	l (if applicable): <u>There are</u>	no Abo, Wolfc	amp or C	Cisco pools in Section 14.
4.	Has the well ever been i.e. sacks of cement o	n perforated in any other zone r plug(s) used.	e(s)? List all su	ich perfoi	rated intervals and give plugging detail,
	None.				
5.	Give the name and de in this area:	pths of any oil or gas zones u	underlying or ov	erlying t	he proposed injection zone
	Within Section 14: Ar Gas Pool. The subject Pool, approximately 1 approximately 0.75 m Attached Maps).	tesia Queen-Grayburg-San An well is located approximately .2 miles from the outer boundary o iles from the outer boundary o	dres Pool (1,478 1 mile from the ary of the Chalk If the East Red I	8'-3,850' outer bo Bluff Wo Lake Uppe); Red Lake Atoka-Morrow undary of the Empire – Abo offcamp Pool, and er-Penn Gas Pool (See

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Dieg sev.	D		Surface	13 3/8"	48# H-4	D STC	300'	300'	SURF		Flange:		
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CHOATE - DAVIS 14 STATE SWD #1 WELL Section 13, 14, 23 - T18 - R27 - Eddy County, NM

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Mathematical matrix Mathematical matrix </th <th>Well Name</th> <th>Well #</th> <th>API</th> <th>Operator</th> <th>Sec</th> <th>Lot T</th> <th>WN</th> <th>RGE</th> <th>N/S Dir</th> <th>E/W Dir</th> <th>Weil Type</th> <th>Status</th> <th>Spud Date</th> <th>Sur Hole</th> <th>Surf Cag Siza</th> <th>SX Cent</th> <th>CMT TOC</th> <th>TOC / MTD</th> <th>Prod Hote</th> <th>Prod Cag Size</th> <th>SX Cent</th> <th>CMT TOC</th> <th>TOC/ MTD</th> <th>το</th> <th>Perf</th> <th>Pool</th> <th>COMMENTS</th>	Well Name	Well #	API	Operator	Sec	Lot T	WN	RGE	N/S Dir	E/W Dir	Weil Type	Status	Spud Date	Sur Hole	Surf Cag Siza	SX Cent	CMT TOC	TOC / MTD	Prod Hote	Prod Cag Size	SX Cent	CMT TOC	TOC/ MTD	το	Perf	Pool	COMMENTS
And and a set of the set o	PRE-ONGARD WELL #001		30-015-00880	Pre-Ongard Well Operator	13	E	185	27E	1650 FNL	990 F.WL	Oil	Plugged	· · · · · · · · · · · · · · · · · · ·		1001010									NA			
And Control (A) A A A B <td>ARTESIA STATE UNIT #602</td> <td>602</td> <td>30-015-21486</td> <td>ALAMO PERMIAN RESOURCES, LLC</td> <td>13</td> <td>ι</td> <td>185</td> <td>27E</td> <td>1530 FSL</td> <td>1310 FWL</td> <td>Injection</td> <td>Active</td> <td>3/11/75</td> <td>12 1/4"</td> <td>8 5/8"@ 322'</td> <td>160</td> <td>Surf</td> <td>6 yds Redimix</td> <td>7 7/8"</td> <td>4 1/2" @ 2 000'</td> <td>270</td> <td></td> <td>Circ</td> <td>2010</td> <td>1794' - 1980'</td> <td>Artesia QN GB-SA</td> <td>Production as per Go-Tech: Dec 1992 - Dec 2011</td>	ARTESIA STATE UNIT #602	602	30-015-21486	ALAMO PERMIAN RESOURCES, LLC	13	ι	185	27E	1530 FSL	1310 FWL	Injection	Active	3/11/75	12 1/4"	8 5/8"@ 322'	160	Surf	6 yds Redimix	7 7/8"	4 1/2" @ 2 000'	270		Circ	2010	1794' - 1980'	Artesia QN GB-SA	Production as per Go-Tech: Dec 1992 - Dec 2011
Added matrix Added matr	OXY COTTONTAIL STATE #001	1	30-015-33677	OXY USA WTP LIMITED PARTNERSHIP	13	ι	185	27E	1470 FSL	750 FWL	Gas	Active	12/28/04	17 1/2"	13 3/8" @ 432'	460	Surf	Circ	8 3/4"	5 1/2" @	1600	1680'	Temp. Survey	10431	9936' - 9970'	UNDSG Red Lake Atoka - Mnrrow	Production as per Go-Tech: Apr. 2005 - Jan 2012 Intermediate Car 9 5/A/db1820' 520 Sx Circ surf
And Antion Antis Antion Antis Antion Antion Antis Antion Antion Antion	PRE-ONGARD WELL #001	1	30-015-00882	Pre-Ongard Well Operator	13	L	185	27E	2310 FSL	990 FWL	Oil	Plugged					_			.123.22				NA			
Media metric Media metr	ARTESIA STATE UNIT #201	201	30-015-21446	ALAMO PERMIAN RESOURCES, LLC	13	м	185	27E	10 FSL	10FWL	Injection	Active	2/15/75	12 1/4"	8 5/8" @ 289'	155	Surf	3 yds Redimix	7 7/8"	4 1/2" @2000'	370	surf	Circ	2010'	1771' - 1950'	Artesia QN-GB-SA	Production as per Go-Tech: Dec 1992 - Dec 2011
Mache Martine Mache Mache Martine	PRE-ONGARD WELL #002	2	30-015-00885	Pre-Ongard Well Operator	13	м	185	27E	990 FSL	300 FEL	Oil	Plugged												1995'			
MATHOMMENDERInMath <td>PRE-ONGARD WELL #001</td> <td>1</td> <td>30-015-00891</td> <td>Pre-Ongard Well Operator</td> <td>14</td> <td>A</td> <td>185</td> <td>27E</td> <td>990 FNL</td> <td>330 FEL</td> <td>Oil</td> <td>Plugged</td> <td></td> <td>NA</td> <td></td> <td></td> <td></td>	PRE-ONGARD WELL #001	1	30-015-00891	Pre-Ongard Well Operator	14	A	185	27E	990 FNL	330 FEL	Oil	Plugged												NA			
And the series of the series	VIOLET BIV STATE COM #001	1	30-015-36939	YATES PETROLEUM CORPORATION	14	A	185	276	660 FNL	990 FEL	Gas	Cancelled APD															
Mail Mail<	VIOLET BIV STATE COM #001	1	30-015-34632	YATES PETROLEUM CORPORATION	14	A	185	27E	660 FNL	990 FEL	Gas	Cancelled APD															
Marcia	NO WELL				14	в	185	271																			
Mail	NO WELL				14	С	185	27E																			
Mail	NO WELL			1	14	E	185	27E																			
MARKAR	NO WELL				14	F	185	27F																			
ANTENDATE UNIT: PSD B01 M005 000099: ALAMO PERMAMPRESOURCES, LLC 14 H B5 7 Motion Active 7/16* M00* Motion	PRE-ONGARD WELL #001	1	30-015- 008 93	Pre-Ongard Well Operator	14	G	185	27E	1650 FNL	1650 FEL	Oil	Plugged												NA			
ATESA STATE UNIT 4501 50 DOGIS 2144 ALMO PRMAMM RESOURCIS, LLC 14 6 8 7 6 7 6 7 6 7 6 700 100 101	ARTESIA STATE UNITE #301	301	30-015-0089	ALAMO PERMIAN RESOURCES, LLC	14	н	185	27E	1650 FNL	330 FEL	OH	Active	2/8/45	12 1/4"	10" @ 320'				8"	7'	50	surf	w/ 1" pipe	1,888'		Artesia QN-GB-SA	Production as per Go-Tech: Dec 1992 - Jan 2012
Alternational Pressure State UNIT PSOU Sold Sold Mark AlexAmpressure State UNIT PSOU Sold Sold	ARTESIA STATE UNITE #SO1	501	30-015-21454	ALAMO PERMIAN RESOURCES, LLC	14	i	185	27E	1330 FSL	10 FEL	Oil	Active	2/5/75	12 1/4"	8 5/8" @ 285	210	Surf	6 yds Redimix	7 7/8"	4 1/2" @ 2000	300	surf	Circ	2,010	1718' - 1907'	Artesia QN-GB-SA	Production as per Go-Tech. Dec 1992 - Dec 2012
PROMORDING 1 0	ARTESIA STATE UNIT #502	502	30-0150-2144	7 ALAMO PERMIAN RESOURCES, LLC	14	i.	185	27E	2630 FSL	10 FEL	Injection	Active	2/25/57	12 1/4"	8 5/8" @ 288'	210		Circ	7 7/8"	4 1/2" @ 2000	265	surf	Circ	2,010	1709' - 1892'	Artesia QN-GB-SA	Production as per Go-Tech: Dec 1992 · Dec 2012
1 9.015.0289 Pre-Ongard Welloperator 14 5 8 9.6 9.014	PRE-ONGARD WELL MOO4	4	30-015-0089	5 Pre-Ongard Well Operator	14	(185	27E	1650 FSL	330 FEL	Oil	Plugged	4/10/45											1,853			
NOWELL NOWEL Image: Nome of the state of the sta	PRE-ONGARD WELL #001	1	30-015-0088	Pre-Ongard Well Operator	14	,	185	27E	1650 FSL	1650 FEL	Oil	Plugged	8/15/45											1,946			
NWEL1 I <td>NO WELL</td> <td></td> <td></td> <td></td> <td>14</td> <td>ĸ</td> <td>185</td> <td>2.7E</td> <td>-</td> <td></td>	NO WELL				14	ĸ	185	2.7E	-																		
NOWELL IM No	NO WELL				14	ι	185	27F																			
NOWEL IN No.	NO WELL				14	м	185	27E																			
ARTESIA STATE UNIT #102 10 0.015 2:145 ALMO PERMIAN RESOURCES, LLC 14 0 15 1.0	NO WELL				14	N	185	27E																			
PECONGARD WELL 0001 1 0.01500097 Pecongard Well Operator 14 0 15 16 160 Plaged Plag	ARTESIA STATE UNIT #102	102	30-015-2148	5 ALAMO PERMIAN RESOURCES, LLC	14	0	185	27E	1310 FSL	1435 FEL	Injection	Active	3/15/75	12 1/4"	8 5/8" @ 329'	210	Surf	5 yds Redimix	7 7/8"	4 1/2" @ 1993'	260	surf	Circ	2,010	1655' - 1835'	Artesia QN-GB-SA	Production as per Go-Tech: Dec 1992 - Nov 2011
A 9-050080 9-0-0gard Well Operator 14 9 18 9	PRE-ONGARD WELL #001	1	30-015-0089	7 Pre-Ongard Well Operator	14	0	185	27E	330 FSL	1650 FEL	Oil	Plugged												1,835			
Weils not in Circle 2i 2i 3i 7i 3i 3i 7i 3i	PRE-ONGARD WELL #003	3	30-01500894	Pre-Ongard Well Operator	14	Р	185	27E	990 FNI.	330 FEL	Oil	Piugged	4/21/45											1,883'			
ARTESIA STATE UNIT #701 701 30-01521487 ALAMO PERMIAN RESOURCES, LLC 23 8 185 27 10 FN 2580 FEL Injection Active 3/6/7 12 J/4" 8/8" @ 160 surf 8 yds 7 /8" 4 1/2" 270 surf Circ 2010 1633 - 1813 Artesia QN-GB-SA Production as per Go-Tech. PRE-ONGARD WELL4002 2 30-015-00932 Pre-Ongard WellOperator 23 9 185 27 30 I 1650 FEL 0 i Plugged 9/14/45 I 8/4"	Wells not in Circle				23	Α	185	27E																			
PRE-ONGARD WELL 4002 2 30 015-00932 Pre-Ongard Well Operator 23 B 185 27E 330 FNL 1650 FEL Oil Plugged 9/14/45 1,874	ARTESIA STATE UNIT #701	701	30-01521487	ALAMO PERMIAN RESOURCES, LLC	23	в	185	27E	10 FNL	2580 FEL	Injection	Active	3/6/75	12 1/4"	8 5/8" @ 290'	160	surf	8 yds Redimix	7 7/8"	4 1/2" @ 1994	270	surf	Circ	2010	1633' - 1813'	Artesia QN-GB-54	Production as per Go-Tech: Dec 1997 - Oct 2011
	PRE-ONGARD WELL #002	2	30-015-0093	2 Pre-Ongard Well Operator	23	Ð	185	27E	330 FNL	1650 FEL	Dil	Plugged	9/14/45											1,874			
ARTESIA STATE UNIT H007 3 30-015-00935 ANADARKO PRODUCTION COMPANY 23 B 18 2/E 990 FNL 1650 FEL Oil Plugged 6/27/49 1,921	ARTESIA STATE UNIT #007	3	30-015-0093	5 ANADARKO PRODUCTION COMPANY	23	в	18	27E	990 FNL	1650 FEL	Dil	Plugged	6/27/49											1,921'			
NO WELL 23 C 185 27E	NO WELL				23	с	185	27E																			

Pro-Kem, Inc. WATER ANALYSIS REPORT

S' MPLE

10	0. : LimeRock Re	sources			Date Sample	d: 15-July-2010		
Well	No ST				Lab ID Numb	er: Jul2810 001-9		
Locat	ion:				Salesperson			
Atten	tion:				File Name : J	ul2810.001		
ANALY	SIS							
1	Ph			5.600				
2	Specific Gravity	60/60 F		1.138				
3.	CACO3 Saturat	ion Index	@ 80F		-0.530	Nealiaible		
-			@140F		0.410	Mild		
D)issolved Gasses	5	Ŭ		MG/L.	EQ. WT.	*MEQ/L	
4.	Hydrogen Sulfid	e			100			
5.	Carbon Dioxide				80			
6.	Dissolved Oxyg	en		Not	Determined			
C	ations							
7.	Calcium	(Ca++)			2,166	/ 20.1 =	107.7	6
8.	Magnesium	(Ma++)			971	/ 12.2 =	79.5	9
9.	Sodium	(Na+)	(Calculat	ed)	65.383	/ 23.0 =	2.842.7	4
10.	Barium	(Ba++)	(Not	Determined	/	,	
Δ	nione	()						
11 -	Hydroxyl	(OH_{-})			n	/ 17.0 =	0.0	0
12	Carbonate	(CO3=)			õ	/ 30.0 =	0.0	Õ
13	Bicarbonate	(HCO3-)			714	/ 61 1 =	11.6	9
14	Sulfate	(\$04=)			4 200	/ 48.8 =	86.0	7
5	Chloride	(CI-)			103,977	/ 35.5 =	2.928.9	3
16	Total Dissaluad	(C,) Polide			477 444	,	2,020.0	•
10.	Total Iron				1//,411	0 / 19.2 -	0.0	0
17.	Mangapasa	(re) (Massa)		Mat	Determined	0 / 10.2 -	0.0	0
10.	Total Hardsone r	(WIIITT)		NOT	Determined			
20	Resistivity @ 75	E (Calculated	4)		9,400	17 Ohm meters		
20.	resistivity @ 15		,		0.0	Tr Onth theters		
	LOGARITHMI	C WATER PA	TTERN		PRO	BABLE MINERAL	COMPOSIT	ION
	•	meg / L.			COMPOU	ND *meq/L X	EQ. WT.	= mg/L
Na	н. Ад	-		CI	Ca(HCO3)	2 11.69	81.04	947
0					CaSO4	86.07	68.07	5,858
Ca		· · · ·		HC03	CaCl2	10.01	55.50	556
Mo		5.		504	Mg(HCO3)	0.00	73.17	0
iviy				304	MgSO4	0.00	60.19	0
Fe				CO3	MgCl2	79.59	47.62	3,790
	15000 1000 100 10	10 10	00 1090 1	0000	NaHCO3	0.00	84.00	0
	Calcium Sulfa	te Solubility	Profile		NaSO4	0.00	71.03	0
	4740				NaCi	2,839.33	58.45	165,987
m	4724					millequivalents	per Liter	
9	4716 4708	6 h						
/	4700							
Ĺ.	4692							
	4676		المعصيف مسير فأسرر					
	4660				Tony Abern	athy, Analyst		
	Temp °F 50 70 90	110 130	150 170		-	-		

Pro-Kem, Inc. WATER ANALYSIS REPORT

SAMPLE

T Co _case Well I Locat Attent	o. : LimeRock Res : : Kersey No.: ST ion: tion:	ources			Date Sampled : 15-July-2010 Date Analyzed: 28-July-2010 Lab ID Number: Jul2810.001- 6 Salesperson : File Name : Jul2810.001						
ANALY	SIS										
1.	Ph			5.600							
2.	Specific Gravity 6	0/60 F.		1.143							
3.	CACO3 Saturatio	n Index	<u>(8.80</u> 2)		-0.496	Negligible					
-			(유) 가라 (카드		0.494	Mild	MEON				
<u> </u>	Hudronon Sulfida				<u>MG/L.</u> 20	EQ. WI.	MEQ/L				
4. 5	Carbon Dioxide				50						
6	Dissolved Oxyger	3		Not	Determined						
, i	ations										
7	Calcium	(Ca++)			2.072	/ 20.1 =	103.08	3			
8.	Magnesium	(Mq++)			1,143	/ 12.2 =	93.69				
9	Sodium	(Na+)	(Calcula	ted)	69,836	/ 23.0 =	3.036.35	5			
10.	Barium	(Ba++)	(Not	Determined		_,				
А	nions										
11.	Hydroxyl	(OH-)			0	/ 17.0 =	0.00)			
12.	Carbonate	(CO3=)			0	/ 30.0 =	0.00)			
13.	Bicarbonate	(HCO3-)			686	/ 61.1 =	11.23	\$			
14.	Sulfate	(SO4=)			4,500	/ 48.8 =	92.21	l			
5.	Chloride	(Cl-)			110,975	/ 35.5 =	3,126.06	i			
16.	Total Dissolved Se	olids			189,212						
17.	Total Iron	(Fe)			14.5	0 / 18.2 =	0.80)			
18.	Manganese	(Mn++)		Not	Determined						
19.	Total Hardness as	CaCO3			9,879						
20.	Resistivity @ 75 F	. (Calculated	1)		0.0	08 Ohm · meters					
	LOGARITHMIC	WATER PA	TTERN		PRO	BABLE MINERAL	COMPOSITI	ION			
	" ח"	ieq/L.			COMPOU	ND *meq/L X	EQ. WT.	= mg/L			
Na	1			CI	Ca(HCO3)	2 11.23	81.04	910			
~					CaSO4	91.86	68.07	6,253			
Ca				HC03	CaCl2	0.00	55.50	0			
Ма				SO4	Mg(HCO3)	2 0.00	73.17	0			
ing				004	MgSO4	0.36	60.19	21			
Fe				CO3		93.33	47.02 84.00	4, 444 0			
	10000 1000 100 ve	: 10 1:	90 1020	10000	NaSO4	0.00	71.03	0			
	Calcium Sulfat	e Solubility	Profile		NaCl	3 032 72	58 46	177.293			
	4805				110.01	* milliequivalents	per Liter	,200			
n;	480C 4795		-				F				
9	4790										
	4780										
L-	4775	-									
	4765			-	Tony Abern	athy Analyst					
	4/50 Temp °F. 50 70 90	110 130	150 170		rony Abern	any, runnya					

Pro-Kem WATER ANALYSIS REPORT

C Leas Well	<u>E</u> o. : Lime Rock Resources e : Staley ST A No.:	S		Date Sampled : 15-July-2010 Date Analyzed: 28-July-2010 Lab ID Number: Jul2810.003- 5						
Atten	ition:			File Name : Ju	2810.003					
ANALY	<u>(SIS</u>									
1. 2.	Ph Specific Gravity 60/60 F.		5.600 1.118							
3.	CACO3 Saturation Index	и 161 161 161 161 161 161		-0.204 0.716	Neghgible Vio dersie					
1	Dissolved Gasses			<u>MG/L.</u>	EQ. WT.	*MEQ/L				
4. 5. 6	Hydrogen Sulfide Carbon Dioxide Dissolved Oxygen		Not	80 160 Determined						
0.	Cations			Determinou						
7. 8.	Calcium (Ca- Magnesium (Mg-	++) ++)		3,391 1,371	/ 20.1 = / 12.2 =	= 168 .71 = 112 .38	3			
9. 10	Sodium (Na+ Batium (Ba+	+) (Calculate +)	ed) Not	58,430 Determined	/ 23.0 =	= 2,540.44	4			
,				2010111100						
11.	Hvdroxvl (OH-	-)		0	/ 17.0 =	- 0.00				
12.	Carbonate (CO	ý=)		Ō	/ 30.0 =	- 0.00)			
13.	Bicarbonate (HCC	O3-)		1,060	/ 61.1 =	= 17.35	5			
14.	Sulfate (SO4	4=)		3,400	/ 48.8 =	= 69.6 7	,			
ز	Chloride (Cl-)			96,978	/ 35.5 =	2,731.77	,			
16.	Total Dissolved Solids			164,630						
17.	Total Iron (Fe)			18.00	/ 18.2 =	.0.99)			
18.	Manganese (Mn+	++)	Not	Determined						
19.	Total Hardness as CaCO	3		14,113						
20.	Resistivity @ 75 F. (Calc	ulated)		0.02	7 Ohm · meter	S				
	LOGARITHMIC WATE			PRO	BABLE MINER	AL COMPOSITI	ON			
	*meg/L.			COMPOUN	D *meg/L	X EQ. WT.	= mg/L.			
Na	a ·		CI	Ca(HCO3)2	17.35	81.04	1,406			
				CaSO4	69.67	68.07	4,743			
Ca	a		HC03	CaCl2	81.69	55.50	4,534			
	_		604	Mg(HCO3)2	2. 0.00	73.17	0			
IVIÇ	3		504	MgSO4	0.00	60.19	0			
Fr	a -		CO3	MgCl2	112.38	47.62	5,351			
	10000 1000 100 10	16 100 100 10	xo	NaHCO3	0.00	84.00	0			
	Calcium Sulfate Solul	bility Profile		NaSU4 NaCi	0.00	58.46	140 255			
	3750 3744			NaCi	* milliequivale	onte ner Liter	140,333			
m	3738 3755				minequivale	Ana per Liter				
9	3726									
i	3720									
٤	3708									
	3696	المراجع مي الي المراجع مي الي		Tone Abarra	the Analyst					
	3590 Temp*F.50 70 90 110	130 1 50 170		tony Abema	any, Analyst					

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Pro-Kem WATER ANALYSIS REPORT

SAMPLE

ANALYSIS 1. Ph 5.500 1. Ph 5.500 2. Specific Gravity 60/60 F. 1.178 3. CAC03 Saturation Index 2.995 Negligible Dissolved Gasses MGrL EQ.WT. *MEQ/L 4. Hydrogen Sutfide 0 0 5. Carbon Dioxide 0 0 6. Dissolved Oxygen Not Determined 0 7. Calcium (Ca++) 1,884 / 20.1 = 93.73 8. Magnesium (Mg++) 5,371 / 12.2 = 440.25 9. Sodium (Na+) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined 0 / 17.0 = 0.00 12. Carbonate (CO3+) 0 / 61.1 = 0.00 13.00 14. 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. 14. Sublate (SO4-) 15,000 / 48.8 = 307.38 17.46 16. Tot	Co Lease Well N Locati Attent	 b. : Lime Rock Re : Staley ST No.: ion: ion: 	esources			Date Sampled Date Analyzed: Lab ID Number Salesperson : File Name : Jul	: 15-July-2010 : 28-July-2010 :: Jul2810.003 2810.003	- 4	
1. Ph 5.500 2. Specific Gravity 60/60 F. 1.178 3. CACO3 Saturation Index -2.90.5 Negligible -1.145 Negligible -1.145 Negligible -1.150 Negligible -1.145 Negligible -1.150 Negligible -1.145 Negligible -1.150 Negligible -1.140 Negligible -1.150 Negligible -1.140 Negligible -1.11 Nydroxyl (OH-) 0 11 Hydroxyl (OH-) 0 /17.0 = 0.00 12 Carbonate (CO3+) 0 /30.0 = 0.00 13 Bicarbonate (HCO3-) 0 /30.0 = 0.00 14 Suifate (SC4+	ANALYS	SIS							
2. Specific Gravity 60/60 F. 1.178 3. CAC03 Saturation Index -2.905 Negligible Dissolved Gasses MG/L E0.WT. 'MEQ/L 4. Hydrogen Sulfide 0 0 5. Carbon Dioxide C 6 6. Dissolved Oxygen Not Determined C 7. Calcium (Ca++) 1,884 / 20.1 = 93.73 8. Magnesium (Mg++) 5,371 / 12.2 = 440.25 9. Sodium (Na++) Not Determined Amons 1 10. Barium (Ba++) Not Determined Amons 0 1 11 Hydroxyl (OH-) 0 / 17.0 = 0.00 13. 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 15. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 16. Total Horines as CaCO3 26,814 20. CoMPOUND Total Hardness as CaCO3 26,814 20. Resitivity @ 75 F. (Calcul	1.	Ph		5.	500				
3. CAC03 Saturation index 12.805 Megligible Dissolved Gasses MG/L EQ.WT. 'MEQ/L 4. Hydrogen Suffice 0 0 5. Cathon Disxide 0 0 6. Dissolved Oxygen Not Determined 0 7. Calcium (Ca++) 1,884 / 20.1 = 93.73 8. Magnesium (Mg++) 5,371 / 12.2 = 440.25 9. Sodium (Na++) (Calculated) 80.438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined 0 / 17.0 = 0.00 12. Carbonate (CO3=) 0 / 30.0 = 0.00 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 18.2 = 137.36 16. Total Dissolved Solids 234,663 24,142 14.2 = 137.36 18. Magnesse (Mn++) Not Determined 0 0 60.01 18.2 = 137.36	2.	Specific Gravity	60/60 F.	1.1	178				
Dissolved Gasses GL EQ. WT. 'MEG/L 4. Hydrogen Sulfide 0 0 0 5. Carbon Dioxide 0 0 0 6. Dissolved Oxygen Not Determined 0 7. Calcium (Ca++) 1,884 / 20.1 = 93.73 8. Magnesium (Mg++) 5,371 / 12.2 = 440.25 9. Sodium (Na+) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined 0 1 12.2 = 440.25 9. Sodium (Na+) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined 0 / 61.1 = 0.00 12. Carbonate (HCO3-) 0 / 61.1 = 0.00 1 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 1 14. Sulfate (SO4+)	З.	CACO3 Saturat	ion Index			-2.905	Negligible		
Dissolved Outside 0 4. Hydrogen Sulfide 0 5. Carbon Dioxide 0 6. Dissolved Oxygen Not Determined 7. Calcium (Ca++) 1,884 / 20.1 = 93.73 8. Magnesium (Mg++) 5,371 / 12.2 = 440.25 9. Sodium (Ma++) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined Additional actional actionactional actionactional actional actional actionactional actionact	n	iccolved Gasses				-1.340 NB/2/1	REGIIGIDIE FO WT	MFO/	1
1 Cation Dixide 6. Dissolved Oxygen 7. Calcium (Ca++) 9. Sodium (Mg++) 5. Cation Dixide 9. Sodium (Mg++) 10. Barium (Mg++) 11. Hydroxyl (OH-) 12. Carbon Dixide 13. Bicarbonate (CO3=) 14. Sulfate (SO4=) 15. Corbonate (CO3=) 14. Sulfate (SO4=) 15. Total Dissolved Solids 16. Total Dissolved Solids 17. Total Iron (Fe) 18. Manganese (Mm++) 19. Total Hardness as CaCO3 19. Total Hardness as CaCO3 10. Calciumstree 10. Calciulated) 10. Calciulated) 11. Hydroxyl (Difficities (Difficiti	4 <u>P</u>	Hydrogen Sulfid	2			0	L. G. VV I .	1116.44	Salar Salar
6. Dissolved Oxygen Not Determined Cations (Maynesium (May++) 1,884 / 20.1 = 93.73 8. Magnesium (May++) 5,371 / 12.2 = 440.25 9. Sodium (Na+) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined	5.	Carbon Dioxide	0						
Cations (Ca++) 1,884 / 20.1 = 93.73 8. Magnesium (Mg++) 5,371 / 12.2 = 440.25 9. Sodium (Na+) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined	6.	Dissolved Oxyge	en		Not	Determined			
7. Calcium (Ca++) 1,884 / 20.1 = 93.73 8. Magnesium (Mg++) 5,371 / 12.2 = 440.25 9. Sodium (Na+) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined 440.25 9. Sodium (Na+) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined 3,497.30 11. Hydroxyl (OH-) 0 / 17.0 = 0.00 12. Carbonate (CO3=) 0 / 30.0 = 0.00 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 Chloride (Cl-) 131,970 / 35.5 = 3,717.46 16. Total Hardness as CaCO3 2500.00 / 18.2 = 137.36 18. Magnesee (Mn++) Not Determined 0.001 Ohm meters	C	ations							
8. Magnesium (Mg++) 5,371 / 12.2 = 440.25 9. Sodium (Na+) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined Anions 0 / 30.0 = 0.00 11. Hydroxyl (OH-) 0 / 17.0 = 0.00 12. Carbonate (CO3-) 0 / 61.1 = 0.00 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 Chloride (CI-) 131,970 / 35.5 = 3,717.46 16. Total Dissolved Solids 234,663 234,663 24.663 17. Total Iron (Fe) 200.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined 0.001 Ohm : meters 19. Total Hardness as CaCO3 26,814 20. Registivity@ 75 F. (Calculated) 0.001 Ohm : meters 10. Ca COARPOUND *med/L COMPOUND *med/L X EQ.WT. = mg/L Na - CI Ca(HCO3)2 0.00 73.17 <td< td=""><td>7.</td><td>Calcium</td><td>(Ca++)</td><td></td><td></td><td>1,884</td><td>/ 20.1</td><td>= 93.</td><td>73</td></td<>	7.	Calcium	(Ca++)			1,884	/ 20.1	= 93.	73
9. Sodium (Na+) (Calculated) 80,438 / 23.0 = 3,497.30 10. Barium (Ba++) Not Determined Anions 0 / 17.0 = 0.00 11 Hydroxyl (OH-) 0 / 17.0 = 0.00 12. Carbonate (CO3=) 0 / 30.0 = 0.00 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 Chloride (CI-) 131,970 / 35.5 = 3,717.46 16. Total Dissolved Solids 234,663 234,663 17. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined 0.001 Ohm meters 19. Total Hardness as CaCO3 26,814 20.001 Ohm meters LOGARITHMIC WATER PATTERN PROBABLE MINERAL COMPOSITION *mec / L COMPOUND *meq/L X EQ.WT. = mg/L Na - CI Ca(HCO3)2 0.00 81.04 0 Ca Mg(ICO3)2 0.00 55.50 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe<	8.	Magnesium	(Mg++)			5,371	/ 12.2	= 440.	25
10. Barium (Ba++) Not Determined Anions 0 / 17.0 = 0.00 11. Hydroxyl (OH-) 0 / 17.0 = 0.00 12. Carbonate (CO3=) 0 / 30.0 = 0.00 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 Chloride (CI-) 131,970 / 35.5 = 3,717.46 16. Total Jissolved Solids 234,663 - 17. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined - - 19. Total Hardness as CaCO3 26,814 - 0.001 Ohm meters 20. Resistivity@ 75 F. (Calculated) 0.001 Ohm meters - mg/L X EQ.WT. = mg/L Na - CI Ca(HCO3)2 0.00 81.04 0 Ca - COMPOUND *mec/L X EQ.WT. = mg/L Na	9.	Sodium	(Na+)	(Calculated)		80,438	/ 23.0	= 3,497.	30
Anions 0 / 17.0 = 0.00 11 Hydroxyl (OH-) 0 / 30.0 = 0.00 12. Carbonate (CO3=) 0 / 30.0 = 0.00 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 16. Total Dissolved Solids 234,663 - - - 17. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined - - 19. Total Hardness as CaCO3 26,814 - - 20. Resistivity @ 75 F. (Calculated) 0.001 Ohm meters - - mg/L Na - CI Ca(HCO3)2 0.00 81.04 0 Ca HC03 CaCl2 0.00 55.50 0 - - Mg SO4 MgSO4 213.65 60.19	10.	Barium	(Ba++)		Not	Determined			
11 Hydroxyl (OH-) 0 / 17.0 = 0.00 12. Carbonate (CO3=) 0 / 30.0 = 0.00 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 Chloride (CI-) 131,970 / 35.5 = 3,717.46 16. Total Dissolved Solids 234,663 2 17. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined 19. 10.001 Mmeters 19. Total Hardness as CaCO3 26,814 20.001 0.001 0.001 10.4 0 20. Resistivity @ 75 F. (Calculated) 0.001 Mmeters PROBABLE MINERAL COMPOSITION 10. *meq / L. CI Ca(HCO3)2 0.00 81.04 0 10. Mg SO4 MgSO4 213.65 60.19 12,859 10. MgCl2 226.60 47.62 10,791 10.	<u>A</u>	nions							
12. Carbonate (CO3=) 0 / 30.0 = 0.00 13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 Chloride (CI-) 131,970 / 35.5 = 3,717.46 16. Total Dissolved Solids 234,663	11.	Hydroxyl	(OH-)			0	/ 17.0	= 0.	00
13. Bicarbonate (HCO3-) 0 / 61.1 = 0.00 14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 Chloride (Cl-) 131,970 / 35.5 = 3,717.46 16. Total Dissolved Solids 234,663 17. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined 19. Total Hardness as CaCO3 26,814 20.001 0.001 Ohm meters 19. Total Hardness as CaCO3 26,814 0.001 0.001 Ohm meters 10.001 10.00 10.00 10.00 19. Total Hardness as CaCO3 26,814 0.001 0.001 Ohm meters 10.001 10.00<	12.	Carbonate	(CO3=)			0	/ 30.0	= 0.	00
14. Sulfate (SO4=) 15,000 / 48.8 = 307.38 Chloride (Cl-) 131,970 / 35.5 = 3,717.46 16. Total Dissolved Solids 234,663 17. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined 19. Total Hardness as CaCO3 26,814 20. Resistivity @ 75 F. (Calculated) 0.001 Ohm meters PROBABLE MINERAL COMPOSITION * med / L. Na CI Ca(HCO3)2 0.00 81.04 0 Ca HC03 CaCl2 0.00 55.50 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 MgCl2 226.60 47.62 10,791 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 NaHCO3 0.00 71.03 0 Mg SO4 MgSO4 0.00 71.03 0 Macci 3,490.86 58.46 204,076 * milliequivalents per Liter	13.	Bicarbonate	(HCO3-)			0	/ 61.1	= 0.	00
Chloride (Cl-) 131,970 / 35.5 = 3,717.46 16. Total Dissolved Solids 234,663 17. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined 14.4 19. Total Hardness as CaCO3 26,814 0.001 Ohm meters 10. LOGARITHMIC WATER PATTERN PROBABLE MINERAL COMPOSITION *meq / L. COMPOUND *meq/L X EQ.WT. = mg/L Na - Cl Ca(HCO3)2 0.00 81.04 0 Ca HC03 CaCl2 0.00 55.50 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 MgCl2 226.60 47.62 10,791 Mg 100 100 1000 71.03 0 NaHCO3 0.00 71.03 0 NaCl 3,490.86 58.46 204,076 * milliequivalents per Liter 4766 4766 * milliequivalents per Liter * milliequivalents per Liter	14.	Sulfate	(SO4=)			15,000	/ 48.8	= 307.	38
16. Total Dissolved Solids 234,663 17. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined 19. 19. Total Hardness as CaCO3 26,814 20. Resistivity @ 75 F. (Calculated) 0.001 Ohm meters PROBABLE MINERAL COMPOSITION LOGARITHMIC WATER PATTERN *meq / L. CI Ca(HCO3)2 0.00 81.04 0 Ca HC03 CaCl2 0.00 55.50 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 100 100 100 100 0 MgCl2 226.60 47.62 10,791 NaHCO3 0.00 71.03 0 NaCl 3,490.86 58.46 204,076 #476 4764 4764 * milliequivalents per Liter		Chloride	(CI-)			131,970	/ 35.5	= 3,717.	46
17. Total Iron (Fe) 2,500.00 / 18.2 = 137.36 18. Manganese (Mn++) Not Determined 19. Total Hardness as CaCO3 26,814 20. Resistivity @ 75 F. (Calculated) 0.001 Ohm meters 0.001 Ohm meters PROBABLE MINERAL COMPOSITION *meq / L. CI Ca(HCO3)2 0.00 81.04 0 Na CI Ca(HCO3)2 0.00 81.04 0 Ca HC03 CaCl2 0.00 55.50 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 MgCl2 226.60 47.62 10,791 NaHCO3 0.00 84.00 0 0 0 Macci 100 100 100 100 NaHCO3 0.00 84.66 204,076 * milliequivalents per Liter * milliequivalents per Liter * milliequivalents per Liter * milliequivalents per Liter	16.	Total Dissolved	Solids			234,663			
18. Manganese (Mn++) Not Determined 19. Total Hardness as CaCO3 26,814 20. Resistivity @ 75 F. (Calculated) 0.001 Ohm meters LOGARITHMIC WATER PATTERN PROBABLE MINERAL COMPOSITION *meq / L. CI Ca(HCO3)2 0.00 81.04 0 Ca HC03 CaCl2 0.00 55.50 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 MgCl2 226.60 47.62 10,791 Mg 10 100 100 100 100 100 100 NaHCO3 0.00 71.03 0 MaSO4 0.000 71.03 0 NaSO4 0.00 71.03 0 Maso4 0.00 71.03 0 NaCI 3,490.86 58.46 204,076 #400 #766 #746 #746 * milliequivalents per Liter * milliequivalents per Liter	17.	Total Iron	(Fe)			2,500.00	/ 18.2	= 137.	36
19. Total Hardness as CaCO3 26,814 20. Resistivity @ 75 F. (Calculated) 0.001 Ohm meters PROBABLE MINERAL COMPOSITION *meq / L. Na CI Na CI Ca HC03 Ca HC03 Ca HC03 Ca Ga(HCO3)2 Mg SO4 Fe CO3 Name CO3 MgCi2 226.60 Arros 100 Mg SO4 MgSO4 213.65 Cols MgCi2 Cols 100 MgCi2 226.60 MgCi2 226.60 MgCi2 226.60 MgCi2 226.60 MaHCO3 0.00 NaHCO3 0.00 NaHCO3 0.00 NaCi 3,490.86 58.46 204,076 * milliequivalents per Liter	18.	Manganese	(Mn++)		Not	Determined			
20. Resistivity @ 75 F. (Calculated) 0.001 Ohm meters PROBABLE MINERAL COMPOSITION *meq / L. Na *meq / L. CI Compound *meq/L X EQ. WT. = mg/L Na CI Ca(HCO3)2 0.00 81.04 0 Ca HC03 CaCI2 0.00 55.50 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 100 100 1000 1000 MgCI2 226.60 47.62 10,791 NaHCO3 0.00 84.00 0 0 NaSO4 0.00 71.03 0 4500 4000 1000 1000 1000 1000 1000 * milliequivalents per Liter	19.	Total Hardness a	as CaCO3			26,814			
LOGARITHMIC WATER PATTERN PROBABLE MINERAL COMPOSITION *meq / L. CI COMPOUND *meq/L X EQ. WT. = mg/L Na CI Ca(HCO3)2 0.00 81.04 0 Ca HCO3 CaCl2 0.00 55.50 0 Mg SO4 HGO3 CaCl2 0.00 73.17 0 Mg(HCO3)2 0.00 73.17 0 MgCl2 226.60 47.62 10,791 Fe CO3 100 100 1000 1000 1000 0 Value 100 1000 1000 10000 10000 10000 NaHCO3 0.00 84.00 0 Value 100 1000 10000 10000 10000 NaCI 3,490.86 58.46 204,076 4000 4000 * * * * * * 4000 400 * * * * * *	20.	Resistivity @ 75	F. (Calculated	1)		0.00	1 Ohm mete	rs	
*meq / L. COMPOUND *meq/L X EQ. WT. = mg/L Na CI Ca(HCO3)2 0.00 81.04 0 Ca HC03 CaCl2 0.00 55.50 0 Mg SO4 HGSO4 213.65 60.19 12,859 Fe CO3 MgCl2 226.60 47.62 10,791 NaHCO3 0.00 84.00 0 0 NaHCO3 0.00 71.03 0 NaHCO3 0.00 71.03 0 MgCl2 3,490.86 58.46 204,076 * milliequivalents per Liter * milliequivalents per Liter		LOGARITHMI	C WATER PA	TTERN		PRO	BABLE MINER	RAL COMPOS	TION
Na Ci Ca(HCO3)2 0.00 81.04 0 Ca HC03 CaCl2 0.00 55.50 0 Mg SO4 HCO3)2 0.00 73.17 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 MgCl2 226.60 47.62 10,791 MgCl2 226.60 47.62 10,791 NaHCO3 0.00 84.00 0 Calcium Sulfate Solubility Profile NaSO4 0.00 71.03 0 NaCl 3,490.86 58.46 204,076 * milliequivalents per Liter		•	meg / L.			COMPOUN	D *meq/L	X EQ. WT	. = mg/L.
Ca HC03 CaCl2 0.00 55.50 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 MgCl2 226.60 47.62 10,791 NaHCO3 0.00 84.00 0 Calcium Sulfate Solubility Profile NaSO4 0.00 71.03 0 NaSO4 0.00 71.03 0 NaCl 3,490.86 58.46 204,076 * milliequivalents per Liter	Na	1465		CI		Ca(HCO3)2	0.00	81.04	0
Ca HC03 CaCl2 0.00 55.50 0 Mg SO4 MgSO4 213.65 60.19 12,859 MgCl2 226.60 47.62 10,791 Fe CO3 NaHCO3 0.00 84.00 0 CO3 NaHCO3 0.00 84.00 0 CO3 NaHCO3 0.00 71.03 0 CO3 NaSO4 0.00 71.03 0 MgCl2 28.66 58.46 204,076 * milliequivalents per Liter	-					CaSO4	93.73	68.07	6,380
Mg SO4 Mg(HCO3)2 0.00 73.17 0 Mg SO4 MgSO4 213.65 60.19 12,859 Fe CO3 MgCl2 226.60 47.62 10,791 Ke CO3 NaHCO3 0.00 84.00 0 Ke Collision 100 100 1000 1000 1000 NaHCO3 0.00 71.03 0 Ke Ke Ke NaSO4 0.00 71.03 0 NaCl 3,490.86 58.46 204,076 Ke Ke </td <td>Ca</td> <td></td> <td></td> <td>H</td> <td>C03</td> <td>CaCl2</td> <td>0.00</td> <td>55.50</td> <td>0</td>	Ca			H	C03	CaCl2	0.00	55.50	0
Mg 304 MgS04 213.65 60.19 12,859 MgCl2 226.60 47.62 10,791 MgCl2 0.00 84.00 0 MgCl2 0.00 71.03 0 MgCl2 0.00 71.03 0 MgCl2 3,490.86 58.46 204,076 MgCl2 4766 4766 4766 4766 MgCl2 4766 4766 4766 4766 MgCl2 4766 4766 4766	Ma			50	14	Mg(HCO3)2	0.00	73.17	0
Fe CO3 MgCl2 226.60 47.52 10,791 10000 100 100 1000 10000 NaHCO3 0.00 84.00 0 Calcium Sulfate Solubility Profile NaSO4 0.00 71.03 0 4500 4400 NaCl 3,490.86 58.46 204,076 4500 * milliequivalents per Liter * milliequivalents per Liter	Mg			30	J4	MgSO4	213.65	60.19	12,859
Tocol Tic Tic <thtic< th=""> <thtic< td="" th<=""><td>Fe</td><td></td><td></td><td>C</td><td>03</td><td>MgC12</td><td>226.60</td><td>47.52</td><td>10,791</td></thtic<></thtic<>	Fe			C	03	MgC12	226.60	47.52	10,791
Calcium Sulfate Solubility Profile NaSO4 0.00 71.03 0 4520 NaCl 3,490.86 58.46 204,076 4602 * milliequivalents per Liter 9 4766 4746 4766 4748 * milliequivalents per Liter		0000 1665 100 10	· +0 10	0 1000 10000		NamcO3	0.00	04.00 74.02	0
450 1021 5,490.00 30.40 204,070 4802 * milliequivalents per Liter 4766 4766 4766 4766 4760		Calcium Sulfa	ate Solubility I	Profile		NaSO4	2 400 86	71.03 59.46	204.075
m 4784 4766 9 4748		4520 4802				Naci	5,450.00	ents nor Liter	204,070
9 4748 / 4730	ŕn	4784					milleyulval	ento per citer	
/ 4750	ĝ	4748							
1712	1	4730 4712	1						
4694	Ĺ	4694							
		4676				Tank	Amar American		
4640 IONY ADEMAINSI Temp *F. 50 70 90 110 130 150 170		4640 Temp *F. 50 70 90	110 130	150 170		iony Abema	iny, Analyst		

Pro-Kem, Inc. WATER ANALYSIS REPORT

SAMPLE

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il Co Lease Well I	0. : LimeRock Res : Jeffery 01 No.: ST	iources	Date Sampled : 15-July-2010 Date Analyzed: 28-July-2010 Lab ID Number: Jul2810.001- 8 Salesperson							
Attent	ion: tion:				Salesperson File Name : Ji					
ANALY	SIS									
1	Ph			5 600						
2	Specific Gravity	60/60 F.		1.133						
3.	CACO3 Saturatio	on Index	@ 80F		-0,527	Nealiaible				
			@140F		0.463	Mild				
D	issolved Gasses				MG/L.	EQ. WT.	*MEQ/L			
4.	Hydrogen Sulfide	9			0					
5.	Carbon Dioxide	_		AU - A 1	90 Determined					
D.	Dissolved Oxyge	n		NOU	Determined					
្ទុប្ន	ations				4 004	/ 20.1 -	02.71	•		
7. Q	Calcium	(Ca++) (Ma++)			1,884	/ 20.1 =	93.73	3		
0. Q	Sodium	(Ng++)	(Calculat	ed)	1,420 67 431	/ 23.0 =	2 931 75	2		
10.	Barium	(Ba++)	(Calculat	Not I	Determined	1 20.0	2,001.10	•		
Δ	nions	()								
11.	Hvdroxvl	(OH-)			0	/ 17.0 =	0.00)		
12.	Carbonate	(CO3=)			Ō	/ 30.0 =	0.00)		
13.	Bicarbonate	(HCO3-)			703	/ 61.1 =	11.51	I		
14.	Sulfate	(SO4=)			4,200	/ 48.8 =	86.07	7		
5.	Chloride	(CI-)			107,976	/ 35.5 =	3,041.58	3		
16.	Total Dissolved S	olids			183,622					
17.	Total Iron	(Fe)			1.50	0 / 18.2 =	80.0	3		
18.	Manganese	(Mn++)		Not [Determined					
19.	Total Hardness a	s CaCO3			10,584					
20.	Resistivity @ 75 i	(Calculated	a)		0.0	12 Onm · meters				
	LOGARITHMIC	WATER PA	TTERN		PRC	BABLE MINERAL	COMPOSIT	ION		
	°r	neq/L.			COMPOU	ND *meq/L X	EQ. WT.	= mg/L		
Na				CI	Ca(HCO3)	2 11.51	81.04	932		
Ca				4002	CaSO4	82.23	68.07	5,597		
Ca				HC03		0.00	55.5U 73.17	0		
Mg			h	\$ 04	MaSO4	3.84	60 19	231		
Ŭ					MgCl2	113.21	47.62	5.391		
Fe	- 	· · ·		CO3	NaHCO3	0.00	84.00	0,011		
	Calcium Sulfa	te Solubility	Profile		NaSO4	0.00	71.03	D		
	5000	le Goldbinty			NaCl	2,928.37	58.46	171,192		
m	4995 ▲390					* milliequivalents	per Liter			
9	4986									
F	4975									
L	4970 4965									
	4260									
	4950				Tony Abern	athy, Analyst				
	Temp™ 50 70 90	110 150	150 170							

Pro-Kem, Inc. WATER ANALYSIS REPORT

STAPLE

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Eease Well M Locat Atten	D. : LimeRock Reso : Jeffery 36 No.: ST ion: lion:)urces			Date Sampled Date Analyzed Lab ID Numbe Salesperson : File Name : Ju	: 15-July-2010 d: 28-July-2010 er: Jul2810.001- 7 ul2810.001		
ANALY	SIS							
1.	Ph			5.600				
2.	Specific Gravity 6	0/60 F.		1,143				
3.	CACO3 Saturatio	n Index	@ 80F		148 A.M.	Second and a second		
			@140F		4. Sac	and the		
ם	issolved Gasses				MG/L.	EQ. WT.	*MEQ/L	
4.	Hydrogen Sulfide				30			
5.	Carbon Dioxide				100			
6.	Dissolved Oxyger	l .		Not	Determined			
<u>c</u>	ations							
7.	Calcium	(Ca++)			2,072	/ 20.1 =	103.08	3
8,	Magnesium	(Mg++)			971	/ 12.2 =	79.59	•
9.	Sodium	(Na+)	(Calculate	ed)	69,530	/ 23.0 =	3,023.04	1
10.	Barium	(Ba++)		Not	Determined			
A	nions							
11.	Hydroxyl	(OH-)			0	/ 17.0 =	0.00)
12.	Carbonate	(CO3=)			0	/ 30.0 =	0.00)
13.	Bicarbonate	(HCO3-)			857	/ 61.1 =	14.03	3
14.	Sulfate	(SO4=)			4,400	/ 48.8 =	90.16	5
Ĵ.	Chloride	(Cl-)			109,975	/ 35.5 =	3,097.89	
16.	Total Dissolved Sc	lids			187,805			
17.	Total Iron	(Fe)			1.00	/ 18.2 =	0.05	5
18 .	Manganese	(Mn++)		Not I	Determined			
19.	Total Hardness as	CaCO3			9,173			
20.	Resistivity @ 75 F	(Calculated)		0.00	9 Ohm · meters		
	LOGARITHMIC	WATER PA	TERN		PRO	BABLE MINERAL	COMPOSIT	ION
	•m	eg / L.			COMPOUN	ND *mea/L X	EQ. WT.	= mg/L
Na		• • • • •		CI	Ca(HCO3)2	2 14.03	81.04	1,137
					CaSO4	89.06	68.07	6,062
Ca	1			HC03	CaCl2	0.00	55.50	0
					Mg(HCO3)	2 0.00	73.17	0
Mg	1. A.			SO4	MgSO4	1.11	60.1 9	67
Fo					MgCl2	78.48	47.62	3,737
re '	0000 1000 100 10	- 1- 10	0 1000 10	00G	NaHCO3	0.00	84.00	0
	Calcium Sulfate	Solubility F	Profile		NaSO4	0.00	71.03	0
	4810				NaCl	3,019.40	58.46	176,514
172	4800 ·	v: r	- 7			* milliequivalents	per Liter	
g	4795 4790		1					
1	4785		1					
L	4780 4775							
	4770							
	4765 4760			-	Tony Abema	thy, Analyst		
	Temp *F. 50 70 50	110 130	150 170			,,,.,		



New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW###### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD has been replaced, O=orphaned, C=the file is closed)	(quarters a	are are :	1=N sma	١W	2=N est to	NE 3= b large	SW 4	=SE) (NAD83 UTM	1 in meters)	I	(In fee	t)	
	POD		Q	Q	Q						Depth	Depth	Water	
POD Number	Code Subbas	in County	64	16	4 :	Sec	Tws	Rng	x	Y	Well	Water (Column	
		LE	4	1	2	10	18S	27E	569019	3625660*	130	50	80	
		LE	1	4	4	14	18S	27E	570 84 1	3 623030*	2096			
									Avera	age Depth t	o Water	: 50 f	eet	
										Minimur	n Depth	: 50 f	eet	
										Maximur	n Depth	: 50 f	eet	
Record Count: 2														

.....

PLSS Search:

Section(s): 10-15

Township, 18S

Range. 27E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



New Mexico Office of the State Engineer Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s). 22-24

Township: 18S

Range 27E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Form C-108 Affirmative Statement Lime Rock Resources II-A, L.P. Choate-Davis 14 State Com No. 1 SWD Section 14, T-18 South, R-27 East, NMPM, Eddy County, New Mexico

Available geologic and engineering data has been examined and no evidence of open faults or hydrological connection between the injection zone and any underground sources of drinking water has been found.

Sehly David Sibley

Production Engineer Lime Rock Resources II-A, L.P.

<u>[2 - 30 - 13</u> Date Form C-108 Lime Rock Resources II-A, L.P. Choate-Davis 14 State Com No. 1 SWD Section 14, T-18 South, R-27 East, NMPM, Eddy County, New Mexico

Legal notice will be published in the:

Artesia Daily Press P.O. Box 190 Artesia, New Mexico 88221-0190

A copy of the legal advertisement will be forwarded to the Division upon publication.

Lime Rock Resources II-A, L.P., 1111 Bagby Street, Suite 4600, Houston, Texas 77002 has filed a Form C-108 (Application for Authorization to Inject) with the Oil Conservation Division seeking administrative approval to utilize as a produced water disposal well it's proposed Choate-Davis 14 State Com #1 SWD to be drilled 2310' FSL & 1650' FEL (Unit J) of Section 14, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The well will be utilized to dispose produced water from various producing formations in the area of the disposal well. Injection will occur into the Abo, Wolfcamp and Cisco formations through the perforated interval from 6,500 feet to 6,600 feet in the Abo formation and in an open hole section from 6,650 feet to 9,000 feet through the Wolfcamp and Cisco formations. The average and maximum injection rates will be 10,000 and 20,000 barrels of water per day, respectively, and the average and maximum surface injection pressure is anticipated to be 1,000 psi and 1,300 psi, respectively.

Interested parties must file objections with the New Mexico Oil Conservation Division, 1220 S. St Francis Drive, Santa Fe, New Mexico 87505, within 15 days of the date of this publication.

Additional information can be obtained by contacting David Sibley, Production Engineer, Lime Rock Resources II-A at (713) 345-2134.

Affidavit of Publication
STATE OF NEW MEXICO
County of Eddy:
Danny Scott Warme & Car
being duly sworn, says that he is the Publisher
of the Artesia Daily Press, a daily newspaper of general
circulation, published in English at Artesia, said county
and state, and that the hereto attached
Legal Notice
was published in a regular and entire issue of the said
Artesia Daily Press, a daily newspaper duly qualified
for that purpose within the meaning of Chapter 167 of
the 1937 Session Laws of the state of New Mexico for
Consecutive weeks/days on the same
day as follows:
First Publication December 4, 2013
Second Publication
Third Publication
Fourth Publication
Fifth Publication
Subscribed and sworn to before me this
4th day of December 2013
OPPICIAL BEAL Latishe Romine NOTARY PUBLIC-STATE OF NEW MEDICO My commission expires: 5/12/2015 Auturho Romine Latisha Romine

Copy of Publication:

LEGAL NOTICE

Lime Rock Resources II-A, L.P., 1111 Bagby Street, Suite 4600, Houston, Texas 77002 has filed a Form C-108 (Application for Authorization to Inject) with the Oil Conservation Division seeking administrative approval to utilize as a produced water disposal well it's proposed Choate-Devie 14 State Com #1 SWD to be drilled 2310' FSL & 1650' FEL (Unit J) of Section 14, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The well will be utilized to dispose produced water from various producing formations in the area of the disposal well. Injection will occur into the Abo, Wolfcamp and Cisco formations through the perforated interval from 6,500 feet to 6,600 feet in the Abo formation and in an open hole section from 6,650 feet to 9,000 feet through the Wolfcamp and Cisco formations. The everage and maximum injection rates will be 10,000 and 20,000 barrels of water per day, respectively, and the average and maximum surface injection pressure is anticipated to be 1,000 psi and 1,300 psi, respectively.

Interested parties must file objections with the New Mexico Oli Conservation Division, 1220 S. St Francis Drive, Senta Fe, New Mexico 87505, within 15 days of the date of this publication.

Additional Information can be obtained by contacting David Sibley, Production Engineer, Lime Rock Resources II-A at (713) 345-2134.

Published in the Artesis Delty Press, Artesis, N.M., Dec. 4, 2013. Legal No 22799.,

<u>CERTIFIED MAIL</u> <u>RETURN RECEIPT REQUESTED</u>

TO: OFFSET OPERATORS/LEASEHOLD OWNERS/WORKING INTEREST OWNERS & SURFACE OWNER

Re: Lime Rock Resources II-A. L.P.
Form C-108 (Application for Authorization to Inject)
Choate-Davis 14 State Com #1 SWD
API No. Not Yet Assigned
2310' FSL & 1650' FEL, Unit J, Section 14, T-18S, R-27E, NMPM, Eddy County, New Mexico

Ladies & Gentlemen:

Enclosed please find a copy of Oil Conservation Division Form C-108 (Application for Authorization to Inject) for the Lime Rock Resources II-A, L.P. ("LRR") Choate-Davis 14 State Com #1 SWD. You are being provided a copy of the application as an offset operator, offset leaseholder, offset working interest owner or surface owner. LRR proposes to drill this well and complete it as a produced water disposal well, injection to occur into the Abo, Wolfcamp and Cisco formations through the perforated interval from 6,500 feet to 6,600 feet in the Abo formation and open hole from 6,650 feet to 9,000 feet through the Wolfcamp and Cisco formations.

This application is being filed administratively. If the application qualifies, LRR is seeking administrative approval of this application. Objections must be filed with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, within 15 days.

If a hearing for this application is required, this application will be set for hearing before a Division Examiner at the next available hearing at the New Mexico Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico. You are not required to attend this hearing, should it take place, but as an owner of an interest that may be affected, you may appear and present testimony. Failure to appear at the time and become a party of record will preclude you from challenging this application at a later time. If you intend to attend the hearing and present testimony or evidence, you must enter your appearance and serve the Division, counsel for the Applicant, and other parties with a pre-hearing statement at least four business days before the scheduled hearing date in accordance with 19.15.4.13(B) NMAC.

If you should have any questions, please contact me at (713) 345-2134.

Sincerely, Jund Sillar

David Sibley, Production Engineer Lime Rock Resources II-A, L.P. 1111 Bagby Street, Suite 4600 Houston, Texas 77002

Enclosure

27 East



Form C-108 Choate-Davis 14 State Com No. 1 SWD ½ Mile Notice Area Operator/Leasehold Owner Identification

TRACT 1 Operator & Working Interest Ownership

ABO Petroleum Corp. 105 S. 4th Street Artesia, NM 88210

Estate of Robert E. Bolins 305 S. 5th Street Artesia, NM 88210

Duke Energy Field Services, LP 10 Destra Drive, Suite 400 Midland, TX 79705

Anadarko Petroleum Corporation 1201 Lake Robbins Drive The Woodlands, TX 77380

Devon Energy Corp. 20 N. Broadway, Suite 1500 Oklahoma City, OK 73102

Caspen Oil Inc. 777 S. Wadsworth Blvd, Bldg 3 Ste 200 Lakewood, CO 80226

> Randy C. Hall P.O. Box 10095 Midland, TX 79702

Kenneth F. Albright 15 W. 6th Street, #2600 Tulsa, OK 74119

Randall Capps d/b/a Logan Royalties, LTD P.O. Box 6025 Midland, TX 79704 Columbia II Limited Partnership P.O. Box 22066 Denver, CO 80222

> Rio Grande Energy Inc. P.O. Box 7405 Midland, TX 79708

Lobos Energy Partners, LLC 309 S. Halagueno Street Carlsbad, NM 88220

> Chevron USA 1500 Louisiana Street Houston, TX 77002

Nearburg Exploration Co. 3300 N. A Street #2-120 Midland, TX 79707

Xeric Oil & Gas Corp. 14781 Memorial Drive, Suite 1754 Houston, TX 77079

> Michael G. Mooney P.O. Box 7405 Midland, TX 79708

B & H Properties 2502 Auburn Place Midland, TX 79705

Karen Capps 2450 SW 53rd Street Corvallis, OR 97333-1319 USX Corp. 1 Pennsylvania Ave. Fairless Hills, PA 19030

Geronimo Holding Corp. P.O. Box 804 Midland, TX 79702

Mark D. Wilson 4501 Greentree Blvd. Midland, TX 79707

Mark A. Chapman P.O. Box 450 Sealy, TX 77474

Mewbourne Oil P.O. Box 5270 Hobbs, NM 88241

GPC Oil & Gas P.O. Box 50982 Midland, TX 79710

R.C. Barnett 2502 Auburn Place Midland, TX 70705

Logan Royalties LTD P.O. Box 804 Midland, TX 79702

Carl Brininstool P.O. Box 50982 Midland, TX 79710

TRACT 1 (Cont.) Operator & Working Interest Ownership

Pogar Petroleum LTD P.O. Box 10095 Midland, TX 79702

Barrie Hood Inc. 810 N. Main Carlsbad, NM 88220

Mark L. Shidler Inc. 1313 Campbell Road, Bldg D Houston, TX 77055

> Ward N. Adkins, Jr. 5519 Tupper Lake Houston, TX 77056

Marathon Oil Company 5555 San Felipe Street Houston, TX 77056

BP America Production Company 501 Westlake Park Blvd. Houston, TX 77079

Range Energy Finance Corp. 100 Throckmorton Street, Suite 1200 Fort Worth, TX 76102

APCO International Oil & Gas One Williams Center Mail Drop 35 Tulsa, OK 74172

Continental Natural Gas Inc. 1412 S. Boston Avenue Tulsa, OK 74119 Square Lake Partners, LLC 607 S. Miller Avenue Farmington, NM 87401-6591

Victor J. Sirgo 3405 Choate Place Midland, TX 79707-4711

Royalties Investor Group 4003 Compton Drive Midland, TX 79707

ZPZ Delaware, LLC. 303 Veterans Airpark Lane, Suite 300 Midland, TX 79705

> Exxon Mobil Corporation 810 Houston Street Fort Worth, TX 76102

Oxy USA, WTP, LP 5 Greenway Plaza, Suite 110 Houston, TX 77046

Western Development Co. 3255 Grace Street Northwest Washington, DC 20007

> Husky Oil Co. P.O. Box 380 Cody, WY 82414

Domain Energy Corp. c/o Range Resources Corp. 100 Throckmorton Street, Suite 1200 Fort Worth, TX 76102 Range Resources 100 Throckmorton Street, Suite 1200 Fort Worth, TX 76102

> GPII Energy Inc. P.O. Box 50682 Midland, TX 79710

Richard E. Weinberg P.O. Box 458 Bellaire, TX 77401

Alamo Resources II LLC. 820 Gessner, Suite 1650 Houston, TX 77024

Yates Petroleum Corp. 105 S. 4th Street Artesia, NM 88210

CBS Partners, LTD P.O. Box 2236 Midland, TX 79702

ConocoPhillips 550 Westlake Park Blvd. Houston, TX 77079

Mark D. Wilson & Wife 4501 Green Tree Blvd. Midland, TX 79707

Khody Land & Minerals Company 3817 NW Expressway, Suite 950 Oklahoma City, OK 73112 TRACT 1 (Cont.) Operator & Working Interest Ownership

Apache Corporation 303 Veterans Airpark Lane, Suite 300 Midland, TX 79705

TRACT 2 Operator & Working Interest Ownership

Anadarko Petroleum Corporation 1201 Lake Robbins Drive The Woodlands, TX 77380 Alamo Permian Resources, LLC 415 W. Wall Street, #500 Midland, TX 79701 Oxy USA, WTP, LP 5 Greenway Plaza, Suite 110 Houston, TX 77046

TRACT 3 Operator & Working Interest Ownership

ZPZ Delaware, LLC. 303 Veterans Airpark Lane, Suite 300 Midland, TX 79705

TRACT 4 Operator & Working Interest Ownership

Khody Land & Minerals Company 3817 NW Expressway, Suite 950 Oklahoma City, OK 73112 Marathon Oil Company 5555 San Felipe Street Houston, TX 77056 Yates Petroleum Corp. 105 S. 4th Street Artesia, NM 88210

BP America Production Company 501 Westlake Park Blvd. Houston, TX 77079

TRACT 5 Operator & Working Interest Ownership

Alamo Permian Resources, LLC 415 W. Wall Street, #500 Midland, TX 79701

TRACT 6 Operator & Working Interest Ownership

Alamo Permian Resources, LLC 415 W. Wall Street, #500 Midland, TX 79701 Exxon Mobil Corporation 810 Houston Street Fort Worth, TX 76102

	Ina	octive	e W	/ell	List	
Total \	Vell C	ount: 47	'9 Inad	ctive V	Vell Co	unt: 5
Pri	inted	On: Frid	ay, Fe	bruar	y 14 20	14

District	API	Well	ULSTR	OCD Unit	OGRID	Operator	Lease Type	Well Type	Last Production	Formation/Notes	Status	TA Exp Date
2	30-015-00298	ATOKA SAN ANDRES UNIT #100	D-12-18S-26E	D	277558	LIME ROCK RESOURCES II-A, L.P.	Ρ	I	08/2012	SA / RET TO INJ 1-10-14		
2	30-015-30104	COMPTON 6 FEDERAL #002	O-6 -18S-27E	0	277558	LIME ROCK RESOURCES II-A, L.P.	F	0	07/2011	SAN ANDRES		
1	30-025-25207	NORTH VACUUM ABO NORTH UNIT #003	E-12-17S-34E	E	277558	LIME ROCK RESOURCES II-A, L.P.	S	0	01/1997	ABO 08/27/08 TA; TA EXP 09/22/2013	т	9/22/2013
1	30-025-39662	NORTH VACUUM ABO NORTH UNIT #012	F-1 -17S-34E	F	277558	LIME ROCK RESOURCES II-A, L.P.	S	0	07 <i>1</i> 2012	ABO 05/09/12		
2	30-015-28942	WEST RED LAKE UNIT #073	B-8 -18S-27E	В	277558	LIME ROCK RESOURCES II-A, L.P.	F	0	03/2012	SAN ANDRES / RET TO PROD 1-15-14		

WHERE Ogrid:277558, County:All, District:All, Township:All, Range:All, Section:All, Production(months):15, Excludes Wells Under ACOI, Excludes Wells in Approved TA Period

Darrel 1023 N French Dr., Hobbs, NM 88240 State of Point (373) 393-6161 Fax (575) 393-0720 Darnet II 3115 First St., Artesia, NM 88210 Energy Mineral Bills First St., Artesia, NM 88210 Phone (575) 788-1283 Fax (373) 748-9720 Oil Cons Darnet III 1000 Ruo Brazes Road, Aztec, NM 87410 1220 Sou Darnet IV 1220 S 51 Francis Dr., Santa Fe, NM 87505 Santa Phone (505) 476-3460 Fax (505) 3476-3462 Santa 'Operator Name and Address Lime Rock Resources II-A, L.P. 1111 Bagby Street, Suite 46000 Houston, Texas 77002 Property Cride Property Cride								Mexico atural Reso Division rancis Dr. 87505 ER, DEEP	IUL JUL NMOCE EN, PLU	EIV 26 20 0 ART 0 277550	ED D12 ESIA K, OR A RID Number	Form C-101 Revised December 16, 2011 Permit
$\Box J$	110		1		7	Surfa		tion	• <u> </u>			
UL-Lot J	Section	Township 18S	Ran 27	e r E	Loi Idn	Fee f	ion 0	N/S Line South	Feet From 1650		E/W Line Fast	County Fddy
SWD; ABC	/ Wolfe	amp / Cis	600		SWD.	Pool I	nforma	tion				97967
Work	Турс		²⁰ Well	Туре	Auun	Cable/F	CII III		12 Lease Type	T	¹³ Grou	nd Level Elevation
H Mu	ltip le		о В Ргорози 900	ed Depah)0		¹⁶ Form BO/Wolfca	dion ¹⁷ Contractor np / Cisco United Dalling, Inc					* Spud Date ter 06/30/2012
Depth to Grou	nd water			Distance	e from nearest i	fresh water	well	nites	Dista	ance to nea	urest surface v	vater 0.75 miles
L			-	19 H	Proposed	Casing	and C	ement Pro	gram			
Туре	Hol	e Size	Casing S	Size	Casing Wa	ught/ft	s	etting Depth	Sack	s of Ceme	nt	Estimated TOC
Conductor		26"	20"		915		40' Ka			eady Max		Surface
Surface	r	75"	13 375		48		300' .			350		Surface
Intermediate	12	25"	9625		36			2800'				surface
Production	8	75"	7"		26		6675' 60					2600'
Liner	6	125"	4 5"	Continu	116	D		6400-9000'		350	I	6400
C 1		-11	150	Casing	g/Cement	rrogra	aill: Aû		omnents			
لک			UL.	P	roposed E	lowou	t Preve	ntion Prog	(ram			
	Туре			We	orking Pressure	:		Test Pre	ssurc		Ma	nufacturer
	XLT II"				5900 -	-	1	500)		Na	bonal Varco
I hereby certify that the information given above is true and complete to the best of my knowledge and belief I further certify that the drilling pit will be constructed according to NMOCD guidelines [], a general permit [], or an (attached) alternative OCD-approved plan []. Signature									conserv I Sha	ATION		ION
Printed mene	ler Smit	h					Tule	684	Locis	1)	
Title Assistant Production Supervisor								d Date	7/20/2	Expira	tion Date	<u> 127/2014</u>
E-mail Address jsmith@limerockresources.com								// ///				
Date 7-2	5-12	2	Phore	575-748	3-9724		Conditions of Approval Attached					

.

District	
1625 N. French Dr., Hohlis, NM 88240	÷
District II	Energ
1301 W. Grand Avenue, Artesta, NM 88210	(
District [1]	
1000 Riu Brazos Rd., Aztec. NM 87410	
District IV	
1220 S. St. Francis Dr., Santa Fr. NM 87505	

State of New Mexico nergy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Sārita Fe, NM 87505 Form C-102 Revised October 15,2009 Submit one copy to appropriate District Office

AMENDED REPORT

30-015	- 4D6	29	97	Gin Cat	•	SWD;A	sewi™ BO/Wolfcan	np/Cisce		
37418 CHOATE-DAVIS "14" STATE SWD 1										
OGRID No. Operator Name Elevation 277558 LIME ROCK RESOURCES II A, L.P. 3511.3										
					" Surface	Location				
lil. or tot no. J	Section 14	Township 18 S	Range 27 E	Lot Idn	Feet from the 2310	North/South line	Feet from the 1650	East/West line EAST	County EDDY	
4	1		" Bo	ttom Ho	e Location I	Different From	n Surface			
VE or lot no.	Section	Township	Ränge	Loi Idn	Feet from the	North/South line	Feet from the	East/West line	County	
Dedicated Arre	i ¹³ Joint'o	r Infill 1"C	ónsölidatloñ	Cede ¹⁵ Or	dêr No.		ו ר			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

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Lime Rock Resources II-A, L.P. Drilling Plan

Choate-Davis 14 State #1 SWD 2310' FSL 1650' FEL J-S14-T18S-R27E Eddy County, NM

- 1. The elevation of the unprepared ground is 3511.6' feet above sea level.
- 2. The geologic name of the surface formation is Permian with Quaternary Alluvium.
- 3. A rotary rig will be utilized to drill the well to 9000' and run four strings of casing to protect usable water, potential productive formations and injection equipment. The drilling rig will be rigged down and the well will be completed with a workover rig.
- 4. Proposed total depth is 9000'. Please refer to the well bore diagram attached to this drilling plan.
- 5. Estimated tops of geologic markers:

Quaternary – Alluvium	Surface	
Conductor Pipe	40'	Setting Depth of 20" Casing
Surface Casing	300'	Setting Depth of 13-3/8" Casing
Seven Rivers	480'	
Queen	1075'	
San Andres	1900'	
Intermediate Casing	2800'	Setting Depth of 9-5/8" Casing
Glorieta	3630'	
Abo	5250'	
Top of Liner	6400'	Top of Liner hanger/packer/PBR
Top of Injection Zone	6500'	
Production Casing	6675'	Setting Depth of 7" Casing
Wolfcamp	6650'	
Cisco	7685'	
тр	9000'	

6. Estimated depths at which anticipated oil, gas, or other mineral bearing formations are expected to be encountered:

Seven Rivers	480'
Queen ,	1075'
San Andres	1900'
TD	9000'

Туре	Hole Size, in	Casing Size	Wt	Grade	Thread	Depth,	Sx	Density	Yield	Components
Conductor	26	20	91,5	B	ß	40				Ready Mix
Surface	17.5	13.375	48	H-40	ST&C	300	350	14.8	1.35	CI C Cmt w/ 1/4 pps Cello Flake + 2% CaCl2
Intermediate	12.25	9.625	36	J-55	LT&C	2800	320	12.8	1.903	3S/6S/6 Poz/Cl C/Gel w/ 5% NaCl, 5 pps LCM-1, 0.3% R-3 and 1/4 pps Cello Flake
							525	14.8	1.33	CI C w/ 1/4 pps Cello Flake and 0.6% R-3
Production	8.75	7	26	L-80	LT&C	6650	300	13.2	1.84	35:65 Poz/Cl H w/ 6% Gel, 0.125 lbs/sk Cello Flake, 5 pps LCM-1 and retarder
							300	15.2	1.18	Cl H w/ 0.6% R-3, 0.125% Cello Flake, 2% Gel
LINER	6.125	4.5	11.6	L-80	LT&C	6400- 9000	340	13.8	1.32	CI H/POZ Light Weight Cement w/ 2% gel

7. Proposed Casing and Cement program is as follows:

8. Proposed Mud Program is as follows

Depth	300	2800	2800-6675	6675-8800	8800-9000	
Mud Type	Fresh Water Mud	Brine	Brine, Salt Gel & Starch	Brine, Salt Gel & Starch	Brine, Salt Gei & Starch	
Properties						
MW	8.5-9.3	9.8-10.1	9.9-10.0	9.3-9.7	9 .3- 9.7	
pН	10	10-11.5	11-12	11-12	11-12	
WL	NC	NC	20-30	NC	<50	
Vis	28-34	29-32	32-35	32-34	34-35	
МС	NC	NC	<2	NC	<2 '	
Solids	NC	<1	<3	3	<3	
Pump Rate	300-350	375-425	400-450	400-450	400-450	
Special		Use Polymers sticks and MF-55 Hi-VIs Sweeps as necessary	Hi Vis Sweeps, add acid and starch as req. Raise Vis to 35 for log	Hi Vis Sweeps, add acid and starch as req. Raise Vis to 35 for log	Hi Vis Sweeps, add acid and starch as req. Raise Vis to 35 for log	

9. Pressure Control Equipment: See Attached Description and diagram of Pressure Control Equipment.

10. Testing, Logging and Coring Program	
Testing Program:	No drill stem tests are anticipated
Mud Logging Program:	Mud Log from Intermediate to total depth
Electric Logging Program:	SGR-DLL-CDL-CNL Quad Combo from 6650 to
	intermediate csg, then same log from 9000' up to
	production casing @ 6650'.
Coring Program:	No full or sidewall cores are anticipated.

11. Potential Hazards:

No abnormal temperatures or pressures are expected. There is no known presence of H2S in this area. If H2S is encountered the operator will comply with the provisions of state regulations and BLM Onshore Oil and Gas Order No. 6. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP 3960 psi based on 0.44 x TD. The estimated BHT is 148 degrees F.

12. Duration of Operations:

Anticipated spud date will be soon after approval and as soon as a rig will be available. Move in operations and drilling is expected to take 15 days. An additional 30 days will be needed it complete the well and to construct surface facilities.

- 13. Completion Operations:
- (a) Once a C-108 application to inject is approved, LRE intends to perforate the injection intervals in the ABO (6500 to 6600' or at depths found in the last 150' of the ABO open hole log), in the Wolfcamp from 6650' (or the top of the Wolfcamp found in the open hole log) to the top of the Cisco formation at approximately 7,685' (or as found on the open hole log), and the Cisco formation from the top to 9000' (as the depth of the Cisco top as found on the open hole log to 9000').
- (b) Once the well is perforated, a work string will be used with a packer to acidize the ABO / WOLFCAMP / CISCO injection interval with 10,000 gallons of 15% HCL, then the packer will be pulled and the work string laid down,
- (c) A string of 4-1/2", L-80, 11.6 ppf, LT&C tubing lined with Duoline (fiberglass) will be run with a seal assembly and stung into a PBR on top of the liner at 6400' MD. The annulus will be tested to 500 psig for 30 minutes,
- (d) Before injection, personnel will schedule an MIT test with the NM OCD, perform the MIT and then injection will start into the ABO / WOLFCAMP / CISCO formation when approved by the NM OCD.

Pressure Control Equipment

The blowout preventer equipment (BOP) will consist of a 5000 psi Triple ram type preventer, a bag-type (Hydril) preventer and rotating head. Both units will be hydraulically operated and the ram type preventer will be equipped with Drill Pipe Rams on top, Blind Rams in the middle and drill pipe rams on bottom. A 5M BOP will be installed on the 8 5/8" surface casing and utilized continuously until the depth is reached. All casing strings will be tested as per Onshore Order #2.

Pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily drilling logs.

The BOP equipment will consist of the following:

-Annular preventer*

-Pipe ram, blind ram, and, if conditions warrant, as specified by the authorized officer, another pipe ram shall also be required*

-A second pipe ram preventer shall be used with a tapered drill string

-Drilling spool, or blowout preventer with 2 side outlets (choke side shall be a 3-inch minimum diameter, kill side shall be at least 2-inch diameter)*

-3 inch diameter choke line

-2 choke line valves (3 inch minimum)*

-Kill line (2 inch minimum)

-2 chokes with 1 remotely controlled from rig floor (refer to diagram in Attachment 1)

-2 kill line valves and a check valve (2 inch minimum)*

-Upper kelly cock valve with handle available

-When the expected pressures approach working pressure of the system, 1 remote kill line tested to stack pressure (which shall run to the outer edge of the substructure and be unobstructed)

-Lower kelly cock valve with handle available

-Safety valve(s) and subs to fit all drill string connections in use

-Inside BOP or float sub available -Pressure gauge on choke manifold

-All BOPE connections subjected to well pressure shall be flanged, welded, orclamped* -Fill-up line above the uppermost preventer.



5M ADJUSTABLE CHOKE

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(1) Line to mud gas separator and/or pit

(2) Bleed line to pit

MGV = Manual Gate Valve

CKV = Check Valve

HCR = Hydrautically Controlled Remote Valve

LIME ROCK RESOURCES II-A, L.P.

Choate-Davis 14 State #1 SWD HYDROGEN SULFIDE (H₂S) CONTINGENCY DRILLING PLAN

Assumed 100 ppm ROE = 3000' 100 ppm H₂S concentration shall trigger activation of this plan.

This is an open drilling site. H_2S monitoring equipment, along with a choke manifold, mud/gas separator, and flare will be rigged up and in use when the company drills out from under surface casing. H_2S monitors, warning signs, wind indicators and flags will be in use.

SUMMARY PLAN

- All personnel shall receive proper H₂S training in accordance with Onshore Oil and Gas Order No. 6.III.C.3.a. A minimum of an initial training session and weekly H₂S and well control drills for all personnel in each working crew shall be conducted. The initial training session for each well shall include a review of the this Drilling Operations Plan and site specific measures and areas set up when the rig is moved onto location.
- 2. The company has caused the drilling contractor and other vendors to install 5000 psi well control systems including:
 - A. A choke manifold with:
 - i. One remotely operated choke,
 - ii. a flare line and flare that is 150' from the wellhead to be ignited, in the event the plan is put into effect, with an electronic ignition system or a back up flare gun,
 - iii. a mud/gas separator downstream of the of the choke and upstream of the flare,
 - iv. All BOP equipment required for a 5000 psi well control system will be in place and tested by a third party to 250 psi low pressure and 5000 psi high pressure. This test will include testing all lines and equipment associated with the choke manifold and kill line. Weekly BOP function and control drills will be performed with all applicable crews and personnel on location.
- 3. At rig move in, two perpendicular briefing areas readily accessible will be designated and marked with signage. A clear foot path for escape will be designated and marked.
- 4. The following protective equipment for essential personnel will be located on location at rig move in:
 - A. Breathing apparatus:
 - i. Rescue Packs (1 at each briefing area and 2 stored in the designated safety equipment storage area), shall be on location,
 - ii. 4 work/escape packs shall be stored on the rig floor with sufficient hose to allow work activity,
 - iii. 4 Emergency escape packs shall be stored in the rig doghouse for emergency evacuation,

H2S CONTINGENCY DRILLING PLAN

- B. Auxiliary Rescue Equipment will be available in the designated safety equipment storage area and will include:
 - i. Stretcher,
 - ii. Two OSHA approved full body harnesses,
 - iii. 100 feet of 5/8 inch OSHA approved rope,
 - iv. 2-20# Class ABC fire extinguishers.
- 5. H₂S detection and monitoring equipment shall be in place before drilling out surface casing. There will be a stationary detector in the rig dog house and another with the mud log equipment on the end of the flow line. Three sensors will be placed on the rig floor, the wellhead/cellar, and on the closed loop equipment. The detection level for H₂S will be set at 10 ppm and the alarm will sound if any level of the gas is detected over 10 ppm.
- 6. Visual warning systems will be in place at rig move in and before the surface casing is drilled out. Color coded signage will be placed at the entrance to location indicating H₂S is possible, and furthermore, the color will be changed should the site condition dictate. If H₂S is detected, then a color coded condition flag will be displayed to indicate levels of detection. Wind socks will be placed at the location entrance and one other fully visible site to allow personnel to determine wind direction and safe escape/briefing routes.
- 7. The mud program utilized on this well is intended to provide sufficient density to exclude H₂S from the wellbore. Furthermore, Loss Circulation Material will be added before any known loss circulation (low pressure) zones are encountered. Corrosion inhibitors are included in the mud system to prevent failures in the event H₂S does enter the wellbore, and seal rings are used to prevent the use of elastomers on the wellhead equipment. In the event a rotating head is necessary, elastomers will be designed to operate in H₂S conditions. Drill collars and other bottom hole assembly components are to be inspected after each well, and in the event H₂S is encountered in the wellbore, drill pipe shall be inspected as well.
- 8. The location shall be equipped with one cell telephone in the rig doghouse, one cell telephone with the well site supervisor, two way communication devices to communicate between mud system personnel, rig floor personnel, mud log personnel, and safety personnel on location. In the event H₂S is detected, a company vehicle with two way radios shall be moved into a safe briefing area and manned for communication with all vendors, company personnel or agency personnel as required.

H2S CONTINGENCY DRILLING PLAN

EMERGENCY PROCEDURES

<u>Escape</u>

Crews shall escape upwind of escaping gas in the event of an emergency release of gas, or if monitors indicate H₂S is present. Escape will take place via the entry road away from the flare stack, or a foot path marked and designated before the well is spud by on site personnel. Once crews and other personnel are a safe distance, the crews will move to evacuate any persons in the Radius of Exposure, followed by blocking access to the Radius of Exposure.

There are no homes or buildings within the Radius of Exposure ("ROE"), so efforts will be concentrated on evacuating any third parties within the ROE. Immediate response will include evacuation of any persons potentially affected by toxic or flammable gasses. Once evacuation is under way, perimeter monitoring and control of access will be executed to ensure safe areas and stage areas.

In the event of a release of gas containing H₂S, the first responder(s) must

- · Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- · Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H₂S monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- · Take precautions to avoid personal injury during this operation.
- Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the
 - Detection of H₂S, and
 - · Measures for protection against the gas,
 - Equipment used for protection and emergency response.

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (S0₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any

major release. Take care to protect downwind whenever this is an ignition of the gas.

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H₂S	1.189 Air= 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	S02	2.21 Air= 1	2ppm	N/A	1000 ppm

Characteristics of H₂S and SO₂

H2S CONTINGENCY DRILLING PLAN

Contacting Authorities

Lime Rock Resources personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Lime Rock Resources response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER) and BLM Onshore Order #6.

H₂S OPERATIONS

Though no H_2S is anticipated during the drilling operation, this contingency plan will provide for methods to ensure the well is kept under control in the event an H_2S reading of 100 ppm or more are encountered.

Once personnel are safe and the proper protective gear is in place and on personnel, the operator and rig crew essential personnel will ensure the well is under control, suspend drilling operations and shut-in the well (unless pressure build up or other operational situations dictate suspending operations will prevent well control), increase the mud weight and circulate all gas from the hole utilizing the mud/gas separator downstream of the choke, the choke manifold and the emergency flare system located 150' from the well. Bring the mud system into compliance and the H₂S level below 10 ppm, and then notify all emergency officers that drilling ahead is practical and safe.

Proceed with drilling ahead only after all provisions of Onshore Order 6, Section III.C. have been satisfied.

H2S CONTINGENCY DRILLING PLAN EMERGENCY CONTACTS

Company Offices -	Lime Rock Houston Office	713-292-9510
	Answering Service (After Hours)	713-292-9555
	Artesia, NM Office	575-748-9724
	Roswell, NM	575-623-8424

KEY PERSONNEL							
Name	Title	Location	Office #	Cell #	Home #		
SID ASHWORTH	PRODUCTION ENGINEER	HOUSTON	713-292-9526	713-906-7750	713-783-1959		
JERRY SMITH	ASSISTANT PRODUCTION SUPERVISOR	ARTESIA	575-748-9724	505-918-0556	575-746-2478		
MICHAEL BARRETT	PRODUCTION SUPERVISOR	ROSWELL	575-623-8424	505-353-2644	575-623-4707		
GARY FATHEREE	WELL SITE SUPERVISOR	ROTATES ON SITE	NA	940-389-6044	NA		
GARY MCCELLAND	WELL SITE SUPERVISOR	ROTATES ON SITE	NA	903-503-8997	NA		

Agency Call List					
City	Agency or Office	Telephone Number			
Artesia	Ambulance	91 <u>1</u>			
Artesia	State Police	575-746-2703			
Artesia	Sheriff's Office	575-746-9888			
Artesia	City Police	575-746-2703			
Artesia	Fire Department	575-746-2701			
Artesia	Local Emergency Planning Committee	575-746-2122			
Artesia	New Mexico OCD District II	575-748-1283			
Carlsbad	Ambulance	911			
Carlsbad	State Police	575-885-3137			
Carlsbad	Sheriff's Office	575-887-7551			
Carlsbad	City Police	575-885-2111			
Carlsbad	Fire Department	575-885-2111			
Carlsbad	Local Emergency Planning Committee	575-887-3798			
Carlsbad	US DOI Bureau of Land Management	575-887-6544			
State Wide	New Mexico Emergency Response Commission ("NMERC")	505-476-9600			
State Wide	NMERC 24 hour Number	505-827-9126			
State Wide	New Mexico State Emergency Operations Center	505-476-9635			
National	National Emergency Response Center (Washington, D.C.)	800-424-8802			

H2S CONTINGENCY DRILLING PLAN EMERGENCY CONTACTS

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	Emergency Services						
Name	Service	Location	Telephone Number	Alternate Number			
Boots & Coots International Well Control	Well Control	Houston / Odessa	1-800-256-9688	281-931-8884			
Cudd Pressure Control	Well Control & Pumping	Odessa	915-699-0139	915-563-3356			
Baker Hughes Inc.	Pumping Service	Artesia, Hobbs and Odessa	575-746-2757	SAME			
Total Safety	Safety Equipment and Personnel	Artesia	575-746-2847	SAME			
Cutter Oilfield Services	Drilling Systems Equipment	Midland	432-488-6707	SAME			
Assurance Fire & Safety	Safety Equipment and Personnel	Artesia	575-396-9702	575-441-2224			
Flight for Life	Emergency Helicopter Evacuation	Lubbock	806-743-9911	SAME			
Aerocare	Emergency Helicopter Evacuation	Lubbock	806-747-8923	SAME			
Med Flight Air Ambulance	Emergency Helicopter Evacuation	Albuquerque	505-842-4433	SAME			
Artesia General Hospital	Emergency Medical Care	Artesia	575-748-3333	702 North 13 Street			

<u> </u>			Co	iunty I			Vell Name				1	Field		Well S	ketch	ABO Wolfcamp Cisco SWD	
EL I	IMF	ROCK	E	DDY	С	hoate-Davis 1	4 State	e Com	#1 SV	VD	E	ast Arte	sia	Lir	ne Ro	ck Resources II-A, L.P.	
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	ALJU	VACLU	Surface	Long	104 2454	1330° W	8H Long)	Same			SHL	2310 FS	SL & 1650	FEL	OGRID # 277558	
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Ret to V	ert	Straight	Hole			Production	7"	26#	L-80	LTC	6,650	6,650'	2600	Tre	в Сар	Thread	
L						Liner	4-1/2"	11 6#	J-55	LTC	9,000	9,000'	6400	1			
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Drilling	Fluid	10 PPG	Brine / S	alt Gel			L/sks	Yid	W	T/sks	Yid	w	XS	BTM F	ange		
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Completio	n Flud e Flud	276 NUL				Production	320	1 84	13.2	350	1 18	140	150%	PKR .	ons at	3524 7	
Packer	Fluid	2% KCL	w/ Back	macide & (OZ Sc	Liner	340	1 32	13.8	NA	NA	NA	200%	GL		3511 3	
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Spencer Cox

From:	Spencer Cox
Sent:	Tuesday, October 29, 2013 1:52 PM
T o:	'Ezeanyim, Richard, EMNRD'; Goetze, Phillip, EMNRD
Subject:	Choate Davis 14 State #14 SWD Sundry to Complete Open Hole
Attachments:	LRRII-A_Choate-Davis_14_State_#1_SWD_Cased Hole.xlsx; Open Hole Sundry - LRRII-
	A_Choate-Davis_14_State_#1_SWD.xlsx; Choate-Davis 14 ST #1 SWD_NMOCD Approved
	APD_7-26-12.pdf; Choate-Davis 14 ST #1 SWD_NMOCD Approved C-108_8-27-12.pdf;
	Choate-Davis 14 ST #1 SWD_NMOCD Approved CLP_7-26-12.pdf

Good Afternoon Mr. Ezeanyim and Mr. Goetze, Lime Rock applied for and received a drilling permit and injection approval for the Choate Davis 14 State SWD #1 back in July 2012. We are approaching the drilling of this well and I have been looking into the design of this well. After review of the area and the injection interval I would like to Sundry to remove the proposed liner covering our Wolfcamp and Cisco injection zones (6,650' - 9,000) at the bottom of the well. After taking a close look at the area it is determined that the Lower Abo, Wolfcamp, and Cisco are non productive (these three zones are currently approved for behind pipe injection (Abo, Wolfcamp, and Cisco [6,500' - 9,000] by the NMOCD already). To further enhance injection into the Wolfcamp and Cisco disposal zones I would like to propose the removal of the 4 ½" liner that we had originally designed in the original permit across the Wolfcamp and Cisco Formations (6,400'- 9,000'). I think the removal of the liner would greatly increase our disposal capacity and also allow long term low pressure injection into both zones. I do not see any potential drawback to completing this injection well open hole in both the non-productive Wolfcamp and Cisco formations in this area. There is only one well that penetrates the Wolfcamp and Cisco and produces from a deeper horizon separated by 900', and casing and cement around all intervals up to 1,600'.

Please let me know what is the best way to proceed to get this Sundry approved. I would like to talk to either of you and learn your ideas or suggestions as well as address any questions or potential issues that the NMOCD may foresee. Please let me know what is best course of action.

Well Data

Choate Davis 14 State #1 SWD API #: 30-015-40629 SWD-1352

Attachments

Current Approved NMOCD APD for Choate Davis 14 State #1 SWD Current Approved NMOCD CLP for Choate Davis 14 State #1 SWD Current Approved NMOCD order for injection for Choate Davis 14 State #1 SWD Original cased hole WBD for Choate Davis 14 State #1 SWD Newly proposed WBD with open hole section for Choate Davis 14 State #1 SWD

Thanks,

Spencer C. Cox Production Engineer LIME ROCK RESOURCES t 713-292-9528 c 432-254-5140 f 713-292-9578 e scox@limerockresources.com

State of New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez Governor

John Bemis Cabinet Secretary

Brett F. Woods, Ph.D. Deputy Cabinet Secretary Jami Bailey Division Director Oil Conservation Division



Administrative Order SWD-1352 August 27, 2012

ADMINISTRATIVE ORDER OF THE OIL CONSERVATION DIVISION

Under the provisions of 19.15.26.8B NMAC, Lime Rock Resources II-A, L.P. seeks an administrative order to utilize its proposed Choate-Davis 14 State SWD Well No. 1 (API 30-015-NA) to be located 2310 feet from the South line and 1650 feet from the East line, Unit letter J of Section 14, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico, for produced water disposal purposes.

THE DIVISION DIRECTOR FINDS THAT:

The application has been duly filed under the provisions of 19.15.26.8B NMAC and satisfactory information has been provided that affected parties as defined in said rule have been notified and no objections have been received within the prescribed waiting period. The applicant has presented satisfactory evidence that all requirements prescribed in 19.15.26.8 NMAC have been met and the operator is in compliance with 19.15.5.9 NMAC.

IT IS THEREFORE ORDERED THAT:

The applicant, Lime Rock Resources II-A, L.P., is hereby authorized to utilize its proposed Choate-Davis 14 State SWD Well No. 1 (API 30-015-NA) to be located 2310 feet from the South line and 1650 feet from the East line, Unit letter J of Section 14, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico, for disposal of oil field produced water (UIC Class II only) into the Abo, Wolfcamp, and Cisco formations through a perforated interval from approximately 6500 feet to 9000 feet through internally coated tubing and a packer set within 100 feet of the permitted interval.

The operator of this well shall run an injection survey (tracer/temperature or equivalent) within 1 year after commencing disposal into this well and shall supply the Division with a copy of this log. If the Division does not receive this log as prescribed above within that time period, then this disposal permit shall terminate *ipso-facto*.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the disposed water enters only the proposed disposal interval and is not permitted to escape to other formations or onto the surface. After installing tubing, the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

The well shall pass an initial mechanical integrity test ("MIT") prior to initially commencing disposal and prior to resuming disposal each time the disposal packer is unseated. All MIT testing procedures and schedules shall follow the requirements in Division Rule 19.15.26.11A. NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths in this well.

The wellhead injection pressure on the well shall be limited to **no more than 1300 psi**. In addition, the disposal well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well.

The Director of the Division may authorize an increase in tubing pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the disposed fluid from the target formation. Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable Step-Rate-Test.

The operator shall notify the supervisor of the Division's district office of the date and time of the installation of disposal equipment and of any MIT test so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of disposal to the Division's district office. The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Division Rules 19.15.26.13 and 19.15.7.24 NMAC.

Without limitation on the duties of the operator as provided in Division Rules 19.15.29 and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's district office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

The injection authority granted under this order is not transferable except upon division approval. The division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

The division may revoke this injection permit after notice and hearing if the operator is in violation of 19.15.5.9 NMAC.

The disposal authority granted herein shall terminate two years after the effective date of this order if the operator has not commenced injection operations into the subject well. One year after the last date of reported disposal into this well, the Division shall consider the well abandoned, and the authority to dispose will terminate *ipso facto*. The Division, upon written request mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

Administrative Order SWD-1352 Lime Rock Resources II-A, L.P. August 27, 2012 Page 3 of 3

Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the disposal authority granted herein.

JAM BAILEY Director

JB/wvjj

cc: Oil Conservation Division – Artesia State Land Office – Oil, Gas, and Minerals Division

RECENCED

Energy, Minerals and Natural Resources Department Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505

2014 Jai 23 A 11: 2

Attention: Richard Ezeanyim

Re: Form C-108 Lime Rock Resources II-A, L.P. Choate-Davis 14 State Com #1 SWD 30-015-40629 2310' FSL & 1650' FEL, Unit J Section 14, T-18S, R-27E, NMPM, Eddy County, New Mexico

Dear Mr. Ezeanyim,

Enclosed please find a Division Form C-108 (Application for Authorization to Inject) for the Lime Rock Resources II-A, L.P. ("LRR") Choate-Davis 14 State Com #1 SWD. LRR proposes to drill and utilize this well as a produced water disposal well, injection to occur into the Abo, Wolfcamp and Cisco formations through the open hole interval from 6,500 feet to 9,000 feet. Produced water from the Glorieta, San Andres, Grayburg, Queen and Yeso formations originating from LRR operated wells in this area will be injected into the well.

This well was originally planned and permitted to be drilled vertically to a depth of 9,000' TVD. I 4 ¹/₂" liner was supposed to be installed from 6,400' to 9,000'. The amended C-180 removes the liner and recommends open hole injection in the Cisco and Wolcamp formations. All parties have been notified (public and offset operators) and given an appropriate time to object. There have been no objections to the proposed changes for this well.

Included in package:

Email describing project scope originally sent 10-29-13 Approved original SWD permit - SWD-1352 New C-108 intended to amend SWD-1352 Approved APD for the Choate Davis 14 State #1 SWD Approved CLP for the Choate Davis 14 State #1 SWD

Sincerely,

Sponer Las

Spencer Cox Production Engineer Lime Rock Resources II-A, L.P. 1111 Bagby Street, Suite 4600 Houston, Texas 77002