DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.

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 REGULATION WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE
Application Acronyms:
[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication] [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling] [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement] [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion] [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase] [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]
[1] TYPE OF APPLICATION - Check Those Which Apply for [A]
[A] Location - Spacing Unit - Simultaneous Dedication
NSL NSP SD
Check One Only for [P] or [C]
[B] Commingling - Storage - Measurement
$\square DHC \square CTB \square PLC \square PC \square OLS \square OLM$
[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
U WFX U PMX X SWD U IPI U EOR U PPR
[D] Other: Specify
[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or Does Not Apply
[A] Uvrking, Royalty or Overriding Royalty Interest Owners
[B] X Offset Operators Leaseholders or Surface Owner
[C] X 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] x For all of the above, Proof of Notification or Publication is Attached, and/or,
[F] Walvers 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.

Nate Alleman	Northan Alleman	Regulatory Specialist - ALL Consulting	11/29/2018
Print or Type Name	Signature	Title	Date

nalleman@all-llc.com Date e-mail Address

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

	APPLICATION FOR AUTHORIZATION TO INJECT			
I.	PURPOSE: Secondary Recovery Pressure Maintenance X Application qualifies for administrative approval? X Yes No	ζ	_Disposal	Storage
II.	OPERATOR: Blackbuck Resources LLC			
	ADDRESS: 2601 Westheimer Rd., Suite C210, Houston, TX 77098			
	CONTACT PARTY: <u>Samuel Oliver</u>		PHONE:	-855-432-1400
III.	WELL DATA: Complete the data required on the reverse side of this form for each well prop Additional sheets may be attached if necessary.	posed	for injection.	
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 v drawn around each proposed injection well. This circle identifies the well's area of review.	vell wi	th a one-half	mile radius circle
VI.	Attach a tabulation of data on all wells of public record within the area of review which pene data shall include a description of each well's type, construction, date drilled, location, depth, of any plugged well illustrating all plugging detail.	trate th , record	ne proposed in d of completion	njection zone. Such on, and a schematic
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 receivin produced water; and, If injection is for disposal purposes into a zone not productive of oil or gas at or within or chemical analysis of the disposal zone formation water (may be measured or inferred fro wells, etc.). 	g form ne mil m exis	nation if other e of the propo sting literature	than reinjected osed well, attach a e, studies, nearby
*VIII.	III. Attach appropriate geologic data on the injection zone including appropriate lithologic detai Give the geologic name, and depth to bottom of all underground sources of drinking water (dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone be immediately underlying the injection interval.	l, geol aquife e as w	ogic name, th rs containing ell as any suc	ickness, and depth. waters with total h sources known to
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 D	vivisio	n, they need r	not be resubmitted).
*XI.	I. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and injection or disposal well showing location of wells and dates samples were taken.	d prod	ucing) within	one mile of any
XII.	 Applicants for disposal wells must make an affirmative statement that they have examined a and find no evidence of open faults or any other hydrologic connection between the disposa drinking water. 	ıvailab l zone	le geologic an and any unde	nd engineering data erground sources of
XIII.	II. Applicants must complete the "Proof of Notice" section on the reverse side of this form.			
XIV.	V. Certification: I hereby certify that the information submitted with this application is true and c belief.	orrect	to the best of	my knowledge and
	NAME: <u>Samuel Oliver</u> TITLE: <u>C</u>	<u>hief (</u>	Commercia	l Officer
	SIGNATURE:DA	\ ΤΕ: _	29 Novemb	er 2018

*

E-MAIL ADDRESS: <u>samuel.oliver@blackbuckresources.com</u> 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.

Application for Authorization to Inject Well Name: Yesely SWD Fed 1

III – Well Data (The Wellbore Diagram is included as Attachment 1) A.

(1) General Well Information:

Operator: Blackbuck Resources LLC (OGRID No. 373619) Lease Name & Well Number: Yesely SWD Fed 1 Location Footage Calls: Unit Letter E, 2,320' FNL & 1,116' FWL Legal Location: S1 T24S R31E Ground Elevation: 3,535' Proposed Injection Interval: 16,650' – 18,000' County: Eddy

(2) Casing Information:

Туре	Hole Size	Casing Size	Casing Weight	Setting Depth	Sacks of Cement	Estimated TOC	Method Determined
Surface	24"	20"	133.0 lb/ft	945'	1,060	Surface	Circulation
Intermediate 1	14-3/4"	13-3/8"	68.0 lb/ft	4,570'	1,830	Surface	Circulation
Intermediate 2	12-1/4"	9-5/8"	53.5 lb/ft	13,615'	5,165	Surface	Circulation
Liner	8-1/2"	7-5/8"	39 lb/ft	16,650'	265	13,415'(TOL)	CBL

(3) Tubing Information:

4-1/2" (composite weight string) of fiberglass-coated tubing with setting depth of 16,630'

(4) Packer Information: Lok-set or equivalent packer set at 16,630'

В.

- (1) Injection Formation Name: Devonian and Silurian-Fusselman formations Pool Name: SWD; Devonian - Silurian Pool Code: 97869
- (2) Injection Interval: Open-hole injection between 16,650' 18,000'
- (3) Drilling Purpose: New Drill for Salt Water Disposal
- (4) Other Perforated Intervals: No other perforated intervals exist.
- (5) Overlying Oil and Gas Zones: Below are the approximate formation tops for known oil and gas producing zones in the area.
 - Delaware (4,570')
 - Bone Springs (8,420')
 - Wolfcamp (11,745')
 - Atoka (13,750')
 - Morrow (14,525')

Underlying Oil and Gas Zones: No underlying oil and gas zones exist.

V – Well and Lease Maps

The following maps are included in *Attachment 2*:

- 2-mile Oil & Gas Well Map
- 2-mile Lease Map
- 1.5-mile Deep SWD Map (Devonian/Silurian SWDs) no Deep SWDs within 1.5 miles

VI – AOR Well List

No wells within the 1-mile AOR penetrate the proposed injection zone. A list of the wells within the 1-mile AOR is included in *Attachment 2*.

VII – Proposed Operation

- (1) Proposed Maximum Injection Rate: 30,000 bpd Proposed Average Injection Rate: 15,000 bpd
- (2) A closed system will be used.
- (3) Proposed Maximum Injection Pressure: 3,330 psi (surface)
 Proposed Average Injection Pressure: approximately 1,500 2,000 psi (surface)
- (4) Source Water Analysis: It is expected that the injectate will consist of produced water from production wells completed in the Wolfcamp and Bone Springs formations. Analysis of water from these formations is included in *Attachment 3*.
- (5) Injection Formation Water Analysis: The proposed SWD will be injecting water into the Devonian and Silurian-Fusselman formations which are non-productive zones known to be compatible with formation water from the Wolfcamp and Bone Springs formations. Water analyses from Silurian-Fusselman could not be located; however, water analyses from the Devonian formation in the area are included in *Attachment 4*.

VIII – Geologic Description

The proposed injection interval includes the Devonian and Silurian-Fusselman formations from 16,650 – 18,000 feet. These formations consist of carbonates including light-colored dolomite and chert intervals interspersed with some tight limestone intervals. Several thick sections of porous dolomite capable of taking water are present within the subject formations in the area. The freshwater formation is the Rustler at a depth of approximately 920 feet. Water well depths in the area range from approximately 275 – 320 feet below ground surface.

IX – Proposed Stimulation Program

A small cleanup acid job may be used to remove mud and drill cuttings from the formation. However, no other formation stimulation is currently planned.

X – Logging and Test Data

Logs will be submitted to the Division upon completion of the well.

XI – Fresh Groundwater Samples

Based on a review of data from the New Mexico Office of the State Engineer, 4 groundwater wells are located within 1 mile of the proposed SWD location; however, state water well data and conversations with water well owners have revealed that none of the water wells are currently in use. Therefore, no groundwater samples were collected in association with this application.

A water well map and details of water wells within 1 mile are included in Attachment 5.

XII – No Hydrologic Connection Statement

No faulting is present in the area that would provide a hydrologic connection between the injection interval and overlying USDWs. Additionally, the casing program has been designed to ensure there will be no hydrologic connection between the injection interval and overlying USDWs. A letter from a knowledgeable and qualified expert stating that there is a low risk of seismic activity from the proposed injection activities is included in *Attachment 6*.

XIII – Proof of Notice

A Public Notice was filed with the Carlsbad Current-Argus newspaper and an affidavit is included in *Attachment 7*.

A copy of the application was mailed to the OCD District Office, landowner, and leasehold operators within 1 mile of the proposed SWD location. A list of the recipients, as well as delivery confirmations, are included in *Attachment 7*.

Attachments

Attachment 1: Wellbore Diagram

Attachment 2: Area of Review Information:

- 2-mile Oil & Gas Well Map
- 2-mile Lease Map
- 1.5-mile Deep SWD Map (Devonian/Silurian SWDs)
- 1-mile Well Detail List

Attachment 3: Source Water Analyses

Attachment 4: Injection Formation Water Analyses

Attachment 5: Water Well Map and Well Data

Attachment 6: Induced Seismicity Assessment Letter

Attachment 7: Public Notice Affidavit and Notice of Application Confirmations

Attachment 1

Wellbore Diagram



SECTION 1, T-24-S, R-31E 2320' FNL & 1,116' FWL EDDY COUNTY, NEW MEXICO PN # 1680.NM.00 NOVEMBER 2018



SIZE

A

OVERNMENT RELATIONS - ENERGY - PLANNING - TECHNOLOGY ENGINEERING - ENVIRONMENTAL © 2018 ALL Consulting, LLC

scale NTS

WELL BORE DATA SHEET

A-3 and AL-2 LOK-SET Retrievable Casing Packers

Product Family No. H64630 and H64628

APPLICATION

The A-3[™] LOK-SET[™] packer combines advantages of a retrievable packer with the features of a permanent packer. An ability to lock down tubing forces makes the A-3 suitable for a broad range of applications, including production, injection, zone isolation, and remedial operations. The AL-2[™] LOK-SET packer is similar to the A-3, and has a larger bore.

Advantages

- Holds pressure from above and below, without relying on set-down weight, tubing tension, or hydraulic hold down
- Provides tubing anchoring with tension applied, suitable for pumping wells or injection, controlling tubing forces related to change fluid temperatures
- Opposed, non-transferring, dovetail slips prevent packer movement associated with changing differential pressures, while allowing the landing of the tubing in tension, neutral or compression
- Right-hand tubing rotation controls setting and releasing
- Packing element compression locks in by ratcheting action of lock segments, which restricts rotation to one direction

Accessories

To provide a simple and reliable injection system for retrieving an injection string without having to unseat the packer:

L-10 or L-316 on-off sealing connectors, Product Family Nos. H68420 and H68422. Baker Hughes blanking plug can be used in the seating nipple profile of the on-off sealing connector to provide a means of plugging the lower zone while the tubing is being pulled.



	Casing				Packer		
01	0	Weight *	Size	Nom	ID	Max 0 Ring	lage OD
in.	mm	lb/ft		in.	mm	in.	mm
4	101.6	9.5-12.9	41A2	1.500	38.1	3.244	82.4
4-1/2	144.3	21.6-23.6	41A2	1.500	38.1	3.244	82.4
4	101.6	9.5	41A4	1.500	38.1	3.423	112.4
		18.8	41A4	1 500	28.1	3.423	112.4
		13.5-17.7	41B	1.500	50.1	3.578	90.9
4-1/2	114.3	11.6-13.5	43A2	1 070	50.0	3.786	96.2
		9.5-10.5	43A4	1.978	50.2	3.786	96.2
		15-18	43B	1.070	50.2	4.140	105.2
5	127.0	11.5-15	43C	1.978	50.2	4.265	108.3
		26	43C		100	4.265	108.3
	ma	20-23	45A2	1	50.0	4.515	114.7
5-1/2	139.7	15.5-20	45A4	1.9/8	50.2	4.656	118.3
		13-15.5	45B	1		4.796	121.8
		26	45B	1		4.796	121.8
6	152.4	20-23	45C	1.978	50.2	5.078	129.0
u	TOLIT	15-18	45D			5.171	131.3
		34	45E			5.421	137.7
		24-32	45F	1.978	50.2	5.499	139.7
6-5/8	168.3	24	47A2	2.441	62.0	5.671	144.(
000		17-24	45G	1.978	50.2	5.796	147.2
		17-20	47A4	2.441	62.0	5.827	148.0
		38	47A2			5.671	144.0
		32-35	47A4	1		5.827	148.0
7	177.8	26-29	47B2	2.441	62.0	5.983	152.0
		23-26	47B4	1		6.093	154.0
		17-20	47C2	1		6.281	159.
		33.7-39	47C4			6.468	164.
7-5/8	193.7	24-29.7	47D2	2.441	62.0	6.687	169.
		20-24	47D4		-	6.827	173.
		44-49	49A2			7.327	186.
8-5/8	219.1	32-40	49A4	3.500	88.9	7.546	191.
		20-28	49B	1		7.796	198.
		47-53.5	51A2			8.234	209.
9-5/8	244.5	40-47	51A4	3.500	88.9	8.452	214.
		29.3-36	51B			8.608	218.

SPECIFICATION GUIDES A-3TH LOK-SET Retrievable Casing Packer, Product Family No. H64630

AL-2[™] Large Bore LOK-SET Retrievable Casing Packer Product Family No. H64628

Casing			Packer								
OD		OD Weig		Weight • Size		Nom ID		Max Gage Ring OD		Max Diameter of Compressed Drag Block	
in.	mm	lb/ft		in.	mm	in.	mm	in.	mm		
			20	45A2 x 2-3/8			4.562	115.9	4.592	116.6	
5-1/2	139.7	15.5-17	45A4 x 2-3/8	2.375	60.3	4.656	118.3	4.750	120.7		
	-	13	45B x 2-3/8			4.796	121.8	4.902	124.5		
6	152.4	26	45B x 2-3/8	2.375	60.3	4.796	121.8	4.902	124.5		

When selecting a packer for a casing weight common to two weight ranges (same OD), choose the packer size shown for the lighter of the two weight ranges. Example: for 7-in. (177.8 mm) OD 26 lb/ft casing use packer size 47B4. Under certain circumstances the other packer size may be run, such as when running in mixed casing strings.

Repair kits, including such items as packing elements, seal rings, etc., are available for redressing Baker Retrievable Packers. Contact your Baker Hughes representative. Use only Baker Hughes repair parts.

Attachment 2

Area of Review Information:

- 2-mile Oil & Gas Well Map
- 2-mile Lease Map
- 1.5-mile Deep SWD Map (Devonian/Silurian SWDs)
- 1-mile Well Detail List





Legend

- ★ Proposed SWD
- 🌣 Gas, Active (12)
- 🌣 Gas, New (33)
- Gas, Plugged (5)
- Oil, Active (446)
- Oil, New (63)
- Oil, Plugged (139)
- Oil, Temporarily Abondoned (4)
- △ Salt Water Injection, Active (22)
- △ Salt Water Injection, New (5)
- △ Salt Water Injection, Plugged (6)

O&G Wells Area of Review

Yesely SWD Fed 1 Eddy County, New Mexico

Proj Mgr: Dan Arthur

November 28, 2018

Mapped by: Ben Bockelmann

Prepared by:









	AOR Tabulation for Yesely SWD Fed 1 (Top of Injection Interval: 16,651')										
Well Name	API#	Well Type	Operator	Spud Date	Location (Sec., Tn., Rng.)	Total Vertical Depth (feet)	Penetrate Inj. Zone?				
CAL MON #014	30-015-34972	0	OXY USA INC	Not Drilled	N-35-23S-31E	Proposed TMD (8,500)	No				
CAL MON #015	30-015-34971	0	OXY USA INC	Not Drilled	O-35-23S-31E	Proposed TMD (8,700)	No				
CAL MON #017	30-015-28024	0	OXY USA INC	1/2/1997	P-35-23S-31E	8440	No				
CAL MON #018	30-015-28026	0	OXY USA INC	9/30/1994	I-35-23S-31E	8402	No				
LITTLEFIELD FEDERAL SWD #001	30-015-10259	S	CHESAPEAKE OPERATING, INC.	2/26/1964	B-11-24S-31E	Plugged (6500)	No				
LOTOS 11 FEDERAL #002	30-015-28821	S	CHEVRON U S A INC	3/24/1996	H-11-24S-31E	8621	No				
MESA VERDE 6 FEDERAL #010H	30-025-32751	0	DEVON ENERGY PRODUCTION COMPANY, LP	12/18/1997	4-06-24S-32E	9058	No				
PRE-ONGARD WELL #001	30-015-21143	0	PRE-ONGARD WELL OPERATOR	5/1/1974	F-01-24S-31E	Plugged (15500)	No				
PRE-ONGARD WELL #001	30-015-21261	0	PRE-ONGARD WELL OPERATOR	4/28/1974	F-01-24S-31E	Plugged (382)	No				
PRE-ONGARD WELL #001	30-015-05848	0	PRE-ONGARD WELL OPERATOR	9/7/1958	M-36-23S-31E	Plugged (4500)	No				
SOTOL A FEDERAL #001	30-015-23459	G	CONCHO EXPLORATION	2/9/1987	F-12-24S-31E	Plugged (15618)	No				
SOTOL A FEDERAL #003	30-015-28626	0	CHEVRON U S A INC	10/24/1995	C-12-24S-31E	8625	No				
SOTOL FEDERAL #002	30-015-23977	0	CHESAPEAKE OPERATING, INC.	11/1/1981	K-01-24S-31E	Plugged (15600)	No				
SOTOL FEDERAL #003	30-015-28651	0	CHEVRON U S A INC	9/18/1995	3-01-24S-31E	8600	No				
SOTOL FEDERAL #005	30-015-28653	0	CHEVRON U S A INC	10/8/1995	1-01-24S-31E	8650	No				
SOTOL FEDERAL #006	30-015-28864	0	CHEVRON U S A INC	4/9/1996	E-01-24S-31E	8615	No				
SOTOL FEDERAL #007	30-015-28865	0	CHEVRON U S A INC	6/14/1996	G-01-24S-31E	8627	No				
SOTOL FEDERAL #009	30-015-32762	0	CHEVRON U S A INC	6/20/2003	O-01-24S-31E	8490	No				
SUNDANCE 1 FEDERAL #001	30-015-21291	0	OXY USA INC	2/4/1995	F-01-24S-31E	8600	No				
SUNDANCE 1 FEDERAL #002	30-015-27227	0	OXY USA INC	5/14/1996	4-01-24S-31E	8560	No				
SUNDANCE 1 FEDERAL #003	30-015-28120	0	OXY USA INC	9/17/1994	H-01-24S-31E	8600	No				
SUNDANCE 1 FEDERAL #004	30-015-28176	0	CHEVRON U S A INC	12/2/1996	P-01-24S-31E	8600	No				
SUNDANCE 1 FEDERAL #005	30-015-30213	0	OXY USA INC	4/7/1998	2-01-24S-31E	8510	No				
SUNDANCE 1 FEDERAL #007	30-015-30061	0	OXY USA INC	1/31/1998	J-01-24S-31E	8562	No				
SUNDANCE 1 FEDERAL #008	30-015-29686	0	OXY USA INC	7/27/1997	L-01-24S-31E	8500	No				
SUNDANCE 1 FEDERAL #009T	30-015-33893	0	OXY USA INC	Not Drilled	N-01-24S-31E	Proposed TMD (8650)	No				
TODD 2 STATE #001	30-015-21497	0	CHEVRON U S A INC	4/1/1975	F-02-24S-31E	15120	No				
TODD 2 STATE #003	30-015-28906	0	CHEVRON U S A INC	4/25/1996	P-02-24S-31E	8511	No				
TODD 2 STATE #004	30-015-28905	0	CHEVRON U S A INC	5/27/1996	I-02-24S-31E	8525	No				
TODD 2 STATE #005	30-015-29366	0	CHEVRON U S A INC	1/1/1998	H-02-24S-31E	8506	No				
TODD 2 STATE #012	30-015-32416	0	CHEVRON U S A INC	10/22/2002	K-02-24S-31E	8383	No				
TODD 2 STATE #013	30-015-32500	0	CHEVRON U S A INC	3/15/2003	1-02-24S-31E	8457	No				
TODD 2 STATE #014	30-015-32781	0	CHEVRON U S A INC	7/9/2003	2-02-24S-31E	8408	No				
TODD 36 J STATE #009	30-015-29404	0	DEVON ENERGY PRODUCTION COMPANY, LP	5/28/1997	J-36-23S-31E	8661	No				
TODD 36 K STATE #005	30-015-28521	0	DEVON ENERGY PRODUCTION COMPANY, LP	3/30/1996	K-36-23S-31E	8672	No				
TODD 36 L STATE #004	30-015-28198	0	DEVON ENERGY PRODUCTION COMPANY, LP	2/23/1995	L-36-23S-31E	8450	No				
TODD 36 M STATE #013	30-015-28815	0	DEVON ENERGY PRODUCTION COMPANY, LP	6/17/1996	M-36-23S-31E	8625	No				
TODD 36 N STATE #014	30-015-28762	0	DEVON ENERGY PRODUCTION COMPANY, LP	8/17/1996	N-36-23S-31E	8586	No				
TODD 36 O STATE #010	30-015-29405	0	DEVON ENERGY PRODUCTION COMPANY, LP	6/16/1997	O-36-23S-31E	8746	No				
TODD 36 P STATE #019	30-015-29407	0	DEVON ENERGY PRODUCTION COMPANY, LP	7/4/1997	P-36-23S-31E	8678	No				
TODD 36 STATE #231H	30-015-45379	0	DEVON ENERGY PRODUCTION COMPANY, LP	Not Drilled	N-36-23S-31E	Proposed TMD (15526)	No				
USA TODD 2 STATE #011	30-015-32420	0	CHEVRON U S A INC	10/4/2002	3-02-24S-31E	8380	No				
USA TODD 2 STATE #015	30-015-33004	0	CHEVRON U S A INC	10/12/2003	G-02-24S-31E	8400	No				
Notes: No wells within the 1-mile AOR	penetrate the i	njection inte	erval.								

Attachment 3

Source Water Analyses



__^

Water Analysis

Date: 23-Aug-11

Analyzed For	Br	sshy	Draw L	~ /	
Company	Well	Name		County	State
	1	3D		Les-	New Mexico
Sample Source	Swab Sampl	e	Sample #	Eddy	1-265-27¢ 1
Formation			Depth		
Specific Gravity	1.170		SG	@ 60 •F	1.172
pН	6.30			Sulfides	Absent
Temperature (*F)	70		Reducing	Agents	
Cations					
Sodium (Calc)		n Mg/L	77,962	in PPM	66,520
Calcium	ir	Mg/L	4,000	in PPM	3,413
Magnesium	ir	n Mg/L	1,200	in PPM	1,024
Soluable Iron (FE2)	ir	n Mg∕L	10.0	in PPM	9
Anions					
Chlorides	in	Mg/L	130,000	in PPM	110,922
Suffates	in	Mg/L	250	in PPM	213
Bicarbonates	in	Mg/L	127	in PPM	108
Total Hardness (as CaCO)3) in	Mg/L	15,000	in PPM	12,799
Total Dissolved Solids (Ca	alc) in	Mg/L	213,549	in PPM	182,209
Equivalent NaCi Concenti	ration in	Mg/L	182,868	in PPM	156,031
Scaling Tendencies					
Calcium Carbonate Index Below 500,000	0 Remote / 500,000 -	1,000,000	Possible / Above	1,000,000 Probabl	507,520 •
Calcium Sulfate (Gyp) Ind Below 500,000	ex Remote / 500,000 -	10,000.00	Possible / Above	10,000,000 Probeb	1,000,000 ¹
This Calculation is only an app roatment.	roximation and is o	nly valid L	before treatment (of a well or eavers	l weaks after
Remarks RW=.0480	270F				

Report # 3188

Sec 22, T25, S, R28E

Bone Spring

;

North Permian Basin Region P.O. Box 740 Sundown, TX 79372-0740 (806) 229-8121 Lab Team Leader - Shella Hernandez (432) 495-7240

Water Analysis Report by Baker Petrolite

Company:		Sales RDT:	33514.1
Region:	PERMIAN BASIN	Account Manager:	TONY HERNANDEZ (575) 910-7135
Area:	ARTESIA, NM	Sample #:	534665
Lease/Platform:	PINOCHLE 'BPN' STATE COM	Analysis ID #:	106795
Entity (or well #):	2 H	Analysis Cost:	\$90.00
Formation:	UNKNOWN		
Sample Point:	WELLHEAD		

Summary		Analysis of Sa	mple 534665 @ 75	4	
Sempling Date: 03/10/11	Anions mg/l	i\pem	Cations	mg/l	neq/i
Analysis Date:03/18/11Analysi:SANDRA GOMEZTDS (mg/l or g/m3):184911.1Density (g/cm3, tonne/m3):1.113Anion/Cation Ratio:1	Chioride: 109618.0 Bicarbonate: 2135.0 Carbonate: 0.0 Sulfate: 747.0 Phosphate: Borate: Silicate:	3091.92 34.99 0. 15.55	Sodium; Megnesium; Calcium; Strontium; Barlum; Iron; Polassium; Aluminum;	70275.7 195.0 844.0 220.0 0.8 6.5 869.0	3056.82 18.04 42.12 5.02 0.01 0.23 22.22
Carbon Dioxide: 0 50 PPM Oxygen: Comments:	Hydrogen Sulfide: pH at time of sampling: pH at time of analysis: pH used in Calculation:	0 PPM 7 7	Chromium: Copper: Lead: Manganese: Nickel:	0.100	0.

Cond	tions	Values Calculated at the Given Conditions - Amounts of Scale in Ib/1000 bbi										
Temp	emp Gauge Press.		alcite taCO ₃	Gyp CaSO	sum 42H_0	Anh C	as0 ₄	Cela S	estite rSO ₄	Ba Ba	rite ISO ₄	CO ₂ Press
Ŧ	psi	Index	Amount	Index	Amount	Index	Arnount	Index	Amount	Index	Amount	psi
80	0	1.08	188.52	-1.20	0.00	-1.18	0.00	-0.11	0.00	0.56	0.29	1.72
100	0	1.10	206.05	-1.29	0.00	-1.20	0.00	-0.15	0.00	0.35	0.29	2.35
120	0	1.12	224.17	-1.36	0.00	-1.19	0.00	-0.17	0.00	0.16	0.00	3,17
140	0	1.13	243.17	-1.42	0.00	-1.18	0 00	-0.18	0.00	0.00	0.00	4,21

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

Attachment 4

Injection Formation Water Analyses

wellname	api	section	township	range	county	state	formation	sampledate	ph sp	ecificgravity	specificgravity_temp_	_F tds_mgL	resistivity_ohm_	cm resistivity_ohm_cm_	temp_F conductivit	y conductivity_temp	_F sodium_mgL	calcium_mgl	. magnesium_	mgL chloride_ma	L bicarbonate_m	gL sulfate_mgL
JURNEGAN POINT #001	3001510280	5	24S	25E	EDDY	NM	DEVONIAN	12/14/1964 0:00) 7			203100								121100	175	2220
WHITE CITY PENN GAS COM UNIT 1 #001	3001500408	29	24S	26E	EDDY	NM	DEVONIAN	3/1/1960 0:00	7	1.012	60		0.36	75	25596	64	6072	1002	132	10120	653	1336

Source: Go-Tech (http://gotech.nmt.edu/gotech/Water/producedwater.aspx)

Attachment 5

Water Well Map and Well Data



Legend



★ Proposed SWD

• Water Well (iWATERS)

Proposed SWD 1-mile AOR

Water Wells Area of Review

Yesely SWD Fed 1 Eddy County, New Mexico

Proj Mgr: Dan Arthur

October 25, 2018

Mapped by: Ben Bockelmann

Prepared by:



Water Well Sampling Rationale										
Yesely SWD Fed 1										
Water Wells	Owner	Available Contact Information	Use	Notes						
C 02460		Jimmy Richardson (Owner):575-706-4063	Dluggod	The Panch Foreman stated that this well is plugged						
	Richardson Cattle Company	Garth Grizzle (Ranch Foreman): 575-200-7013	Plugged	The Ranch Foreman stated that this well is plugged.						
		Jimmy Richardson (Owner):575-706-4063	Dluggod	The Densh Foreman stated that this well is plugged						
C 02460 POD2	Richardson Cattle Company	Garth Grizzle (Ranch Foreman): 575-200-7013	Plugged	The Kanch Foreman stated that this well is plugged.						
		Jimmy Richardson (Owner):575-706-4063	Inactiva	The Ranch Foreman stated that this well is not in						
C 02464	Richardson Cattle Company	Garth Grizzle (Ranch Foreman): 575-200-7013	mactive	and does not currently have a pump installed.						
C 02405		Lindsey Ainsworth	Prospecting or Development of	State records indicate that this water well has not						
	Chevron	lainsworth@chevron.com	Notural Resource	been in use since 2005						
		432-687-7927	Natural Resource							

Note: none of the water wells within 1 mile of the proposed SWD location are currently in use.

Attachment 6

Induced Seismicity Assessment Letter



November 29, 2018

Mr. Phillip Goetze, P.G. NM EMNRD – Oil Conservation Division 1220 South St. Francis Drive Santa Fe, NM 87505

Subject: Induced Seismicity Potential Statement for the Yesely SWD Fed 1

Dear Mr. Goetze,

This letter provides information regarding the seismic potential associated with injection operations associated with Blackbuck Resources LLC's (Blackbuck), proposed Yesely SWD Fed 1, hereinafter referred to as the "Subject Well."

As outlined herein, based on my experience as an expert on the issue of induced seismicity, it is my opinion that the potential for the proposed injection well to cause injection-induced seismicity is expected to be minimal, at best. This conclusion is based on (1) the lack of historic seismic activity and faulting in the area, (2) the low fault slip potential (FSP) of Precambrian faults in the area, (3) the presence of confining layers, and (4) the overall vertical distance between the proposed injection zone and basement rock.

The Subject Well, is located 2,320' FNL & 1,116' FWL of Section 1, in T24-S and R31-E of Eddy County, New Mexico. Historically, the Eddy County area has experienced very limited recorded seismic activity (per the U.S. Geological Survey [USGS] earthquake catalog database). There have been two known seismic events located within a 25-mile radius of the proposed subject well. The closest recorded seismic event was a M3.1 that occurred on March 18, 2012, and was located approximately 9.4 miles northwest of the subject well (See Exhibit 1). The closest Class IID well injecting into the same formations (Devonian-Silurian) of the Subject Well is approximately 1.6 miles to the southeast (See Exhibit 1).

Blackbuck does not own either 2D or 3D seismic reflection data in the area of the Subject Well. Fault data from USGS indicates that the closest known fault is approximately 16.1 miles southwest of the Subject Well (See Exhibit 1).

In a recent paper written by Snee and Zoback (2018) entitled "State of Stress in the Permian Basin, Texas and New Mexico: Implications for Induced Seismicity,", the authors found that large groups of mostly north-south striking Precambrian basement faults, predominantly located along the Central Basin Platform, the western Delaware Basin, and large parts of the Northwest Shelf (which includes Eddy and Lea counties, New Mexico) have low FSP at the modeled fluid-pressure perturbation. The map in Exhibit 2 depicts the low probability risk of FSP for the Delaware Basin and Northwest Shelf areas (Snee and Zoback 2018).

Geologic analysis indicates that the proposed Devonian-Silurian injection zone is overlain by approximately 200 to 400 feet of Woodford Shale, which is the upper confining zone and will serve as a barrier for upward injection fluid migration. Additionally, the Simpson Group that lies directly below the Montoya Formation will act as a lower confining zone to prohibit fluids from migrating downward into the underlying Ellenberger Formation and Precambrian basement rock. See the stratigraphic column for the Delaware Basin included in Exhibit 3.

In the Eddy and Lea Counties area of New Mexico, the Simpson Group is comprised of a series of Middle to Upper Ordovician carbonates, several sandstones, and sandy shales that range from approximately 350 to 650 feet thick (Jones 2008). This group of rocks is capped by the limestones of the Bromide Formation, which is approximately 200 feet thick in this area (Jones 2008). The closest deep well drilled into the Precambrian basement was completed by the Skelly Oil Company in 1975. This well is located in Section 17, Range 36E, Township 25S of Lea County (API No.30-025-25046) and encountered 602 feet of Ellenburger Formation before reaching the top of the Precambrian granite at a depth of 18,920 feet. Based on the estimated thickness of the Simpson Group and Ellenburger Formation in this area, the Precambrian basement should be approximately 1,000 to 1,200 feet below the bottom of the proposed injection zones in the Subject Well.

Conclusion

As an expert on the issue of induced seismicity, it is my opinion that the potential for the proposed injection well to cause injection-induced seismicity is expected to be minimal, at best. This conclusion is based on (1) the lack of historic seismic activity and faulting in the area, (2) the low FSP of Precambrian faults in the area, (3) the presence of confining layers, and (4) the overall vertical distance between the proposed injection zone and basement rock.

Sincerely, ALL Consulting

1 du llot

J. Daniel Arthur, P.E., SPEC President and Chief Engineer

Enclosures References Exhibits

References

Ball, Mahlon M. 1995. "Permian Basin Province (044)." In *National Assessment of United States Oil and Gas Resources—Results, Methodology, and Supporting Data*. U.S. Geological Survey. https://certmapper.cr.usgs.gov/data/noga95/prov44/text/prov44.pdf (accessed June 18, 2018).

Green, G.N., and G.E. Jones. 1997. "The Digital Geologic Map of New Mexico in ARC/INFO Format." U.S. Geological Survey Open-File Report 97-0052. https://mrdata.usgs.gov/geology/state/state.php?state=NM (accessed June 14, 2018).

Jones, Rebecca H. 2008. "The Middle-Upper Ordovician Simpson Group of the Permian Basin: Deposition, Diagenesis, and Reservoir Development." <u>http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf</u> (accessed June 19, 2018).

Snee, Jens-Erik Lund, and Mark D. Zoback. 2018. "State of Stress in the Permian Basin, Texas and New Mexico: Implications for Induced Seismicity." *The Leading Edge* 37, no. 2 (February 2018): 127-34.

U.S. Geological Survey (USGS). No date. Earthquakes Hazard Program: Earthquake Catalog. <u>https://earthquake.usgs.gov/earthquakes/search/</u> (accessed June 14, 2018).

Exhibits



Exhibit 1. Map Showing the Distances from Known and Inferred Faults, Seismic Event, and Closest Deep Injection Well



Exhibit 2. Results of the Snee and Zoback (2018) Probabilistic FSP Analysis Across the Permian Basin



Exhibit 3. Delaware Basin Stratigraphic Chart (Ball 1995)

Attachment 7

Public Notice Affidavit and Notice of Application Confirmations

CURRENT-ARGUS

AFFIDAVIT OF PUBLICATION

Ad No. 0001268215

ALL CONSULTING- CARLSBAD 1718 SOUTH CHEYENNE AVENUE

TULSA OK 74119

I, a legal clerk of the **Carlsbad Current-Argus**, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

11/13/18

egal Clerk

Subscribed and sworn before me this 13th of November 2018.

State of WI, County of Brown NOTARY PUBLIC

My Commission Expires

APPLICATION FOR AUTHORIZATION TO INJECT

NOTICE IS HEREBY GIVEN: That Blackbuck Resources LLC, 2601 Westheimer Rd., Suite C210, Houston, TX 77098, is requesting that the New Mexico Oil Conservation Division administratively approve the APPLICATION FOR AUTHORI-ZATION TO INJECT as follows:

PURPOSE: The intended purpose of the injection well is to dispose of salt water produced from permitted oil and gas wells.

WELL NAME AND LOCATION: Yesely SWD Fed

SW ¹/₄ NW ¹/₄, Section 1, Township 24S, Range 31E

2,320' FNL & 1,116' FWL Eddy County, NM

NAME AND DEPTH OF DISPOSAL ZONE: Devonian-Silurian (16,650' - 18,000') EXPECTED MAXIMUM INJECTION RATE: 30,000 Bbls/day EXPECTED MAXIMUM INJECTION PRESSURE: 3,330 psi (surface)

Objections or requests for hearing must be filed with the New Mexico Oil Conservation Division within fifteen (15) days. Any objection or request for hearing should be mailed to the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505.

Additional information may be obtained by contacting Samuel Oliver (Blackbuck - Chief Commercial Officer) at 855-432-1400. Pub: November 13, 2018 #1268215



Ad#:0001268215 P O : 0001268215 # of Affidavits :0.00

Yesely SWD Fed 1 SWD Notice of Application Recipients												
Entity	Address	City	State	Zip Code								
Landowner												
New Mexico BLM	620 E. Greene St.	Carlsbad	NM	88220								
OCD District												
NMOCD District 2	811 S. First St.	Artesia	NM	88210								
Leasehold Operators												
Bettis Boyle & Stovall, Inc.	P.O. Box 1240	Graham	ТΧ	76450								
Charles P. Miller	1220 South St. Francis Dr.	Santa Fe	NM	87505								
Chesapeake Operating, Inc.	P.O. Box 18496	Oklahoma City	ОК	73154-0496								
Chevron USA Inc.	1400 Smith Street	Houston	ТΧ	77002								
COG Production, LLC	600 W. Illinois Ave.	Midland	ТΧ	79701								
Concho Exploration	110 West Louisiana Ave, Suite 410	Midland	ТΧ	79701								
Curtis Hankamer	9039 Katy Freeway	Houston	ТΧ	77024								
Devon Energy Production Company	333 W. Sheridan Ave.	Oklahoma City	OK	73102								
Gulf Oil Company	P.O. Box 1938	Roswell	NM	88202								
Mesa Verde Enterprises, Inc.	396 La Luz Gate Rd.	Alamogordo	NM	88310								
OXY USA Inc	P.O Box 2647	Houston	ТΧ	77252								
Pogo Production Company, LLC	300 N Marienfeld St, Suite 600	Midland	ТΧ	79701								
Sonat Exploration Company	110 West Louisiana Ave, Suite 500	Midland	ТΧ	79701								
Sotol Energy, Inc.	P.O. Box 688	Georgetown	ТΧ	78627								
Sundance Oil Co.	1776 N Lincoln Street	Denver	CO	80203								
Superior Oil Company	P.O. Box 1150	Midland	ТΧ	79702								
Texaco Inc.	P.O. Box 2100	Denver	CO	80201								
Thomas E. Jennings	P.O. Box 1797	Roswell	NM	88202								
Todd Oil Company	6116 North Central Expressway, Suite 614	Dallas	ТХ	75206								





03/1



Covered by and/or for use with U.S. Patents 6,244,763, 6,868,406, 7,216,110, 7,236,956, 7,236,970, 7,343,357, 7,490,065, 7,567,940, 7,613,639, 7,743,043, 7,882,094, 8,027,926, 8,027,927, 8,027,935, 8,041,644, and 8,046,823 8,103,647 8,195,579, 8,301,572, 8,392,391 8,498,943.





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