

**BEFORE THE BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA**

IN THE MATTER OF THE APPLICATION OF LONEWOLF OPERATING, LLC FOR AN ORDER DESIGNATING THE E$\frac{1}{2}$NE$\frac{1}{4}$SW$\frac{1}{4}$ AND W$\frac{1}{2}$NW$\frac{1}{4}$SE$\frac{1}{4}$ OF SECTION 32, TOWNSHIP 35 NORTH, RANGE 21 EAST, BLAINE COUNTY, AS A TEMPORARY SPACING UNIT AND AUTHORIZING THE DRILLING OF A SAWTOOTH FORMATION EXPLORATORY WELL AT A LOCATION NOT LESS THAN 330 FEET FROM THE EXTERIOR BOUNDARIES OF THE REQUESTED TEMPORARY SPACING UNIT.	APPLICATION DOCKET NO. <u> 1 </u> - 2020
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Lonewolf Operating, LLC ("Applicant"), P.O. Box 81026, Billings, Montana 59108-1026, presents the following Application:

1. Applicant is the owner and operator of oil and gas leasehold interests in, to and under the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 32, Township 35 North, Range 21 East, Blaine County.
2. Applicant desires to drill its Firemoon #11-32 well at an approximate location 2,285' FSL and 2,598' FWL of Section 32, said proposed wellsite location lying within and upon the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 32.
3. If authorized the proposed well will be drilled to an approximate depth of four thousand three hundred thirty-six feet (4,336') to the Sawtooth Formation to test for the presence of oil.
4. The Sawtooth Formation underlying the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 32 is presently subject to temporary spacing established by ARM 36.22.702(1, 2 & 7) which provides, in part, that "... no oil well with a projected depth of 6,000 feet or less shall be located closer than 330 feet to any legal subdivision line, and only one well shall be permitted to produce from the same reservoir within the same legal subdivision."
5. Based upon an approximate location 2,285' FSL and 2,598' FWL from the exterior boundaries of Section 32 the proposed location is not in conformity with ARM 36.22.702(1, 2 & 7).
6. The proposed wellsite location is based upon geophysical data and information and the interpretation thereof and said location in Applicant's opinion is the optimum location for a successful oil well.
7. Because of the location of Applicant's proposed exploratory well Applicant requests the E $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ and W $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 32, comprising forty acres, be designated by this Board as a temporary spacing unit for said well and oil produced from the Sawtooth Formation.
8. Applicant requests authorization and approval from this Board to drill and produce the above well as an exception to ARM 36.22.702(1, 2 & 7).

9. Applicant believes the requested temporary spacing unit is necessary in order to adequately and efficiently increase the ultimate recovery of Sawtooth Formation oil from the foregoing lands.
10. Applicant believes the granting of the request herein will serve to protect the correlative rights of all interested parties and will be in the best interest of prevention of waste and conservation of oil.
11. Should the proposed well be drilled and completed as a well capable of commercial production of oil Applicant will apply for an Order designating and delineating a permanent spacing unit for production of Sawtooth Formation oil therefrom.

WHEREFORE, Applicant requests the following:

1. This matter be set for hearing by this Board and notice thereof be given as required by law;
2. After hearing this matter this Board enter its Order granting and approving the request of Applicant herein; and
3. For such other or additional relief as this Board may deem appropriate.

Dated January 8, 2020.

LEE LAW OFFICE PC

By: 

Don R. Lee, Attorney for Applicant
Lee Law Office PC
158 Main Street – P.O. Box 790
Shelby, MT 59474
Telephone: (406) 434-5244
Facsimile: (406) 434-5246
Email: don@leelawofficepc.com

**BEFORE THE BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA**

**IN THE MATTER OF THE APPLICATION
OF LONEWOLF OPERATING, LLC FOR AN
ORDER DESIGNATING THE SW¼SW¼SE¼
AND SE¼SE¼SW¼ OF SECTION 31,
TOWNSHIP 35 NORTH, RANGE 21 EAST,
AND THE NW¼NW¼NE¼ AND
NE¼NE¼NW¼ OF SECTION 6, TOWNSHIP
34 NORTH, RANGE 21 EAST, BLAINE
COUNTY, AS A TEMPORARY SPACING
UNIT AND AUTHORIZING THE DRILLING
OF SAWTOOTH FORMATION
EXPLORATORY WELL AT A LOCATION
NOT LESS THAN 330 FEET FROM THE
EXTERIOR BOUNDARIES OF THE
REQUESTED TEMPORARY SPACING UNIT.**

APPLICATION

DOCKET NO. 2 - 2020

Lonewolf Operating, LLC ("Applicant"), P.O. Box 81026, Billings, Montana 59108-1026, presents the following Application:

1. Applicant is the owner and operator of oil and gas leasehold interests in, to and under the SW¼SE¼ of Section 31, Township 35 North, Range 21 East, Blaine County.
2. Applicant desires to drill its Firemoon Pike #15-31 well at an approximate location 126' FSL and 2,468' FEL of Section 31, said proposed wellsite location lying within and upon the SW¼SE¼ of Section 31.
3. If authorized the proposed well will be drilled to an approximate depth of four thousand, two hundred and seventy-six feet (4,276') to the Sawtooth Formation to test for the presence of oil.
4. The Sawtooth Formation underlying the SW¼SE¼ of Section 31 is presently subject to temporary spacing established by ARM 36.22.702(1, 2 & 7) which provides, in part, that "... no oil well with a projected depth of 6,000 feet or less shall be located closer than 330 feet to any legal subdivision line, and only one well shall be permitted to produce from the same reservoir within the same legal subdivision."
5. Based upon an approximate location 126' FSL and 2,468' FEL from the exterior boundaries of Section 31 the proposed location is not in conformity with ARM 36.22.702(1, 2 & 7).
6. The proposed wellsite location is based upon geophysical data and information and the interpretation thereof and said location in Applicant's opinion is the optimum location for a successful oil well.

7. Because of the location of Applicant's proposed exploratory well Applicant requests the SW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$, SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 31, Township 35 North, Range 21 East, and the NW $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 6, Township 34 North, Range 21 East, comprising forty acres, be designated by this Board as a temporary spacing unit for said well and oil produced from the Sawtooth Formation.
8. Applicant requests authorization and approval from this Board to drill and produce the above well as an exception to ARM 36.22.702(1, 2 & 7).
9. Applicant believes the requested temporary spacing unit is necessary in order to adequately and efficiently increase the ultimate recovery of Sawtooth Formation oil from the foregoing lands.
10. Applicant believes the granting of the request herein will serve to protect the correlative rights of all interested parties and will be in the best interest of prevention of waste and conservation of oil.
11. Should the proposed well be drilled and completed as a well capable of commercial production of oil Applicant will apply for an Order designating and delineating a permanent spacing unit for production of Sawtooth Formation oil therefrom.

WHEREFORE, Applicant requests the following:

1. This matter be set for hearing by this Board and notice thereof be given as required by law;
2. After hearing this matter this Board enter its Order granting and approving the request of Applicant herein; and
3. For such other or additional relief as this Board may deem appropriate.

Dated January 8, 2020.

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By: 

Don R. Lee, Attorney for Applicant
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Shelby, MT 59474
Telephone: (406) 434-5244
Facsimile: (406) 434-5246
Email: don@leelawofficepc.com

**State of Montana
Board of Oil and Gas**

RECEIVED

JAN - 9 2020

**MONTANA BOARD OF OIL &
GAS CONSERVATION • BILLINGS**

Docket No: ~~TBD~~ 3-2020

**Underground Injection Control
Application**

Vaira 2-35X

Section 35, Township 25N, Range 54E

White Rock Oil and Gas, LLC.

February 13, 2020



January 7, 2020

George Hudak
Underground Injection Control (UIC) Program Director
Montana Board of Oil and Gas Conservation
2535 St. Johns Avenue
Billings, MT 59102

RE: Request for Injection Permit
Vaira 2-35X located in Section 35, Township 25N, Range 54E
Richland County, Montana

Dear Mr. George Hudak,

Please find enclosed an Underground Injection Control (UIC) application by White Rock Oil and Gas, LLC. requesting the granting of authority to inject gas into the Red River formation in the already permitted injection well, Vaira 2-35X, (permit #MT5382) operated by White Rock Oil and Gas, LLC. in Spring Lake Field.

I certify the information contained in this application is, to the best of my knowledge, true and correct, and the work associated with the operation proposed herein will be performed by White Rock Oil and Gas, LLC. in conformity with this application and the terms and conditions under which it is approved.

White Rock Oil and Gas, LLC. is requesting the application be placed on the docket for the MBOGC February 13, 2020 hearing.

If you have any questions concerning the enclosed application, please contact Shawna Bonini, Operations Engineer at (406) 690-0068 or via email at sbonini@whiterockog.com.

Sincerely,

A handwritten signature in cursive script that reads "Rusty Ginnetti".

Rusty Ginnetti
Chief Operating Officer
White Rock Oil and Gas, LLC.

**Underground Injection Control (UIC) Permit Application
Vaira 2-35X Injection**

The following is submitted in support of our application to permit an additional zone in the Vaira 2-35X Red River shut in well for the purpose of gas injection into the Red River Formation as required by Rule 36.22.1403 of the Rules and Regulations of the Montana Board of Oil and Gas Conservation. The Vaira 2-35X Red River producing well was already approved to be converted to an injection well into the Gunton and/or Duperow formations, UIC Permit #MT5382.

1(a) Location of Injection Well:

The Vaira 2-35X well was proposed for conversion and gas injection in Richland County, Montana as described below. Currently, the Vaira 2-35X well is perforated in the Red River formation but is currently shut in due to marginal economics. Attachment 1 shows the surface location and a circle of a quarter (1/4) mile radius representing the area of review (AOR) for this well.

Vaira 2-35X	883 ft FNL, 2,037 ft FEL	Sec 35, T25N, R54E
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1(b) Wells within a Quarter Mile AOR:

There is only one well drilled within ¼ mile AOR and this well is a Bakken producer operated by White Rock Oil and Gas, LLC. The Vaira B-1 well is just outside the AOR at 0.26 miles. However, the Vaira B-1 was also included since the well represents the source of injection gas and the well proximity to the AOR. The Vaira B-1 was originally drilled to the Red River formation; and the well was recompleted several times with the current production from the Duperow Formation.

Well Name	Location	Well Status (Formation)	Distance
Vaira 2-35H	NWNE, Sec 35, T25N, R54E	Producer (Bakken)	523 ft (0.10 miles)

Vaira B-1 is outside AOR but included due to source of injection gas and proximity.

Well Name	Location	Well Status (Formation)	Distance
Vaira B-1	NENE, Sec 35, T25N, R54E	Produce (Duperow)	1,381 ft (0.26 miles)

1(c) Location of all pipelines:

Injection gas will be delivered to the gas injection well by a buried 2 inch or 3 inch pipeline that will be constructed upon approval of injection. The gas source for this injector will be from the Vaira B-1 well. Injection gas will be Duperow produced gas

supplied from the Vaira B-1 Battery located at NE1/4NE1/4, Section 35, Township 25 North, Range 54 East.

There are also Oneok Gas Gathering Lines and Saltwater Gathering Lines throughout the Spring Lake Field. Appropriate precautions will be taken when installing an additional gas injection line from the Vaira B-1 to the Vaira 2-35X well.

1(d) Area Producing Formations, Freshwater Aquifers, and Water Well Information:

The Bakken formation is produced within the radius of ¼ mile of the proposed injection well location and the Duperow producer Vaira B-1 is just outside the AOR. The Bakken produces at a depth of 9,848 ft TVD and the Duperow produces from a depth of 10,455 ft TVD.

Freshwater well data was obtained from the Montana Department of Natural Resources and Conservation, Water Resources Division. There are no freshwater wells which produce within the AOR of the proposed injector. The closest freshwater wells are listed below (outside the AOR):

Well Name	Location	Depth of Well
MPRR-Vaira 2-B	No Info Avail	No Info Avail
Vaira Alfred	Sec 35, T25N, R54E 47.874818, -104.709029	80 ft

The Hell Creek and Fox Hill zones act as potential sources of freshwater. The bottom of the Fox Hills is estimated to be at 2,397 ft based on MBOGC website Vaira B-1 well. The Bear Paw Shale is approximately 1,800 ft thick with no aquifer present and derived from the MBOGC website Vaira B-1 well. Depth to the Bear Paw shale in this area is estimated at 2,397 ft to 4,200 ft. Surface casing has been cemented to surface to protect shallower freshwater zones.

Any potential Underground Sources of Drinking Water (USDW) is protected from the proposed injection zone by surface casing set at 1,558 ft MD/TVD and cemented to surface. The production casing was set at 11,805 ft with a two-stage cement job. The first stage cement consisted of 510 sacks of 15.9 ppg cement slurry that resulted in an estimated Top of Cement (TOC) of 8,380 ft. Based on the cement reports from Halliburton, 3 barrels of cement was circulated to surface between stage jobs which means that cement was as shallow as the stage tool at 8,380 ft. The second stage consisted of 620 sacks of 12.7 ppg cement lead slurry and 430 sacks of 15.8 ppg tail slurry. The well history report documented the TOC at 3,660 ft MD/TVD. Tubing and an injection packer will result in further isolation of fresh USDW from injected gas.

An aquifer exemption is not anticipated for the Red River formation as produced water samples have tested over 10,000 ppm TDS. However, these samples were not collected at the Vaira 2-35X well. During the recompletion process, a water sample will be collected from the injection zone to verify that the water exceeds 10,000 ppm TDS at the Vaira 2-35X well.

1(e) Name and Geologic Description of Injection Zone:

There are two zones of the Red River formation currently perforated which include the Red River "C" Laminated from 11,626 ft to 11,640 ft and Red River "C" Burrowed from 11,650 ft to 11,656 ft.

In the geological report from the Vaira 2-35X, the Red River "C" laminated is described as tan/ gray dolomite exhibiting firm to hard cryptocrystalline to very, fine firm to friable microsucrosic texture with occasional translucent, scattered clusters. Porosity ranges from poor to fair with visible intercrystalline porosity. Although rare, chalky, oil stained cuttings are observed. Fluorescence can be described with a yellow, streaming cut, where the top burrowed zone reveals a blue to white cut and the base has a poor milky blue to white cut.

The Red River "C" Burrowed is described as tan and brown to light gray/brown, gray to dark gray dolomite, firm to occasional friable, poorly visible intercrystalline porosity, no significant fluorescence or cut. The associated limestone did not have any visible porosity and not as likely to be a top candidate for an injection interval.

Above the Red River interval are tight dolomite and interbedded limestones. The interbedded limestones are of similar colors, firm to hard, dolomitic, and rarely chalky in texture. Density-Neutron porosities from the Vaira 2-35X logs show 0% porosity in the limestone. These tight dolomites and interbedded limestones are competent rock and tight (no porosity) providing seals above and below the injection interval in order to avoid any communication to other targets/zones or injecting out of zone.

The existing Vaira 2-35X located in the NWNE Section 35, T35N, R54E, Richland County, Montana is the proposed injection well. Recommended perforation interval would be from 11,600 ft to 11,700; however, the initial injection interval would remain as the current Red River zones: "C" Burrowed perforations from 11,650 ft to 11,656 ft and Red River "C" Laminated perforations from 11,626 ft to 11,640 ft.

A fracture gradient of 0.733 psi/ ft is assumed for this area. An injectivity test will be performed during the completion of the well.

1(f) Additional Information on Producing Wells within the AOR:

As stated previously, there are two wells drilled within the AOR. One of these wells has been drilled and produced in the Dawson Bay and then recompleted in the Duperow. The closest offset well was drilled as a dual lateral in the Bakken formation. A summary of the wellbores in the AOR follows.

Well Name	Vaira 2-35H
Location	NWNE, Sec 35, T25N, R54E
Well Status	Producing
Formation	Bakken
Surface Casing	9-5/8" 36 PPF, J-55
Surface Casing Depth	Surface to 1,550 ft MD/ TVD
Surface Casing Cement	530 sacks
Estimated Surface Casing TOC	0 ft (Surface)
Production Casing	7 in, 26-32 PPF HCL-80
Production Casing Depth	Surface to 10,308 ft
Production Casing Cement	860 sacks
Estimated Production Casing TOC	3,950 ft
Current Production	30 BOPD
Open Hole/ Perforations	10,308 ft to 15,689 ft MD/ 10,244 ft to 15,250 ft MD (approx. 9,220 ft TVD)

Well Name	Vaira B-1
Location	NENE, Sec 35, T25N, R54E
Well Status	Shut In
Formation	Duperow
Surface Casing	10-3/4" 32.75 PPF, H-40
Surface Casing Depth	Surface to 1,039 ft MD/ TVD
Surface Casing Cement	850 sacks
Estimated Surface Casing TOC	0 ft (Surface)
Production Casing	7 in, 32-39-26-23 PPF N-80, P110
Production Casing Depth	Surface to 11,960 ft
Production Casing Cement	825 sacks
Estimated Production Casing TOC	7,010 ft
Current Production	Shut In (before SI producing 250 BOPD)
Open Hole/ Perforations	10,335 ft – 10,353 ft MD/TVD

1(g) Open Hole Logs:

Logs and geologic information for the Vaira 2-35X well are currently on file with MBOGC. A cement bond log currently exists for the Vaira 2-3X with the top of cement at 3,660 ft.

1(h) Description of the Wellbore Construction:

Exhibit 5 and Exhibit 6 show the proposed wellbore configuration for the Vaira 2-35X gas injection well. The Red River perforations will be used for gas injection. These perforations are in the Red River "C" Laminated, 11,626 ft to 11,640 ft and Red River "C" Burrowed, 11,650 ft to 11,656 ft. The Red River perforations may need additional treatment of 15% HCl.

All tubular equipment which may come in contact with injection gas will be H₂S resistant stainless steel and alloys or other resistant coatings. A sour service injection packer will also be installed to isolate shallower zones.

1(i) Description of Injection Fluid:

The injection fluid will consist of produced gas from the Vaira B-1 Battery in the Spring Lake Field (1 producing well with 250 MCFD). Anticipated injection rates are estimated to be 250 MCFD.

Based on current estimates (See Exhibit 7.), the stream of injected gas will have roughly 23.5% H₂S, 12.0% CO₂, and 2.2% N₂ and the rest hydrocarbon gas of which methane is the most prevalent at 48.1%.

The specific gravity of the injection gas is dependent on the temperature and pressure conditions and the composition of any produced water that may be injected with the gas. The hydrocarbons for the most part will remain in a gaseous phase with some potential condensation. It is most accurately calculated using a modification of the Peng-Robinson (PR) equation of state (EOS) mode (Boyle and Carroll, 2002).

We have modeled the daily injection rate of 250 MCFD composed of 23.5% H₂S, 12.0% CO₂, and 2.2% N₂ and the rest hydrocarbon gas of which methane is the most prevalent at 48.1%. Specific gravities of the gas were determined at the wellhead (pressure = 2,000 psi, temperature = 110 Deg F) and the bottom of the well (pressure = 2,600 psi, temperature of 269 Deg F).

$$IP_{MAX} = PG (D_{TOP})$$

Where: IP_{MAX} = Maximum Surface Injection Pressure (psi)

PG = Pressure Gradient of Injection Fluid (psi/ft)

D_{TOP} = Depth at top of perforated interval of injection zone (ft)

And equation modified from CFR 147.3003(a)

$$PG = 0.2 + 0.433 (1.04 - SG_{sg})$$

Where: SG_{sg} = Average Specific Gravity of sour gas in the tubing
 (SG_{sg} at top = 0.95 and SG_{sg} at bottom = 0.61)

For the maximum requested injection volume case, it is assumed that:

$$SG_{sg} = 0.78 \text{ (Average of 0.95 and 0.61)}$$

$$D_{Top} = 11,626 \text{ ft}$$

Therefore:

$$PG = 0.2 + 0.433 (1.04 - 0.78)$$

$$PG = 0.313$$

And

$$IP_{MAX} = 0.313 \times 11,626 \text{ ft}$$

$$IP_{MAX} = 3,639 \text{ psi}$$

The computed maximum injection pressure for the Red River is 3,639 psi. An injection test (step-rate test) will be performed to determine the final injection pressures and volumes to ensure the formation parting pressure (fracture pressure) is not reached during future sour gas injection operations.

1(j) Name of Owners on Record:

The names and addresses of leasehold and surface owners within the area of review for the proposed injection well are listed in Exhibit 9.

White Rock oil and Gas, LLC. will notify surface owners in accordance with 36.22.1410(1) notification requirements for an underground injection permit. The affidavits reflecting this notification will be sent to MBOGC as soon as notices are mailed.

Attachments:

Exhibit 1: Area of Review – Producers

Exhibit 2: Area of Review – Freshwater Wells

Exhibit 3: Structure Map of Red River Formation

Exhibit 4: Geologic Cross Section with Red River Perforations

Exhibit 5: Current Wellbore Diagram

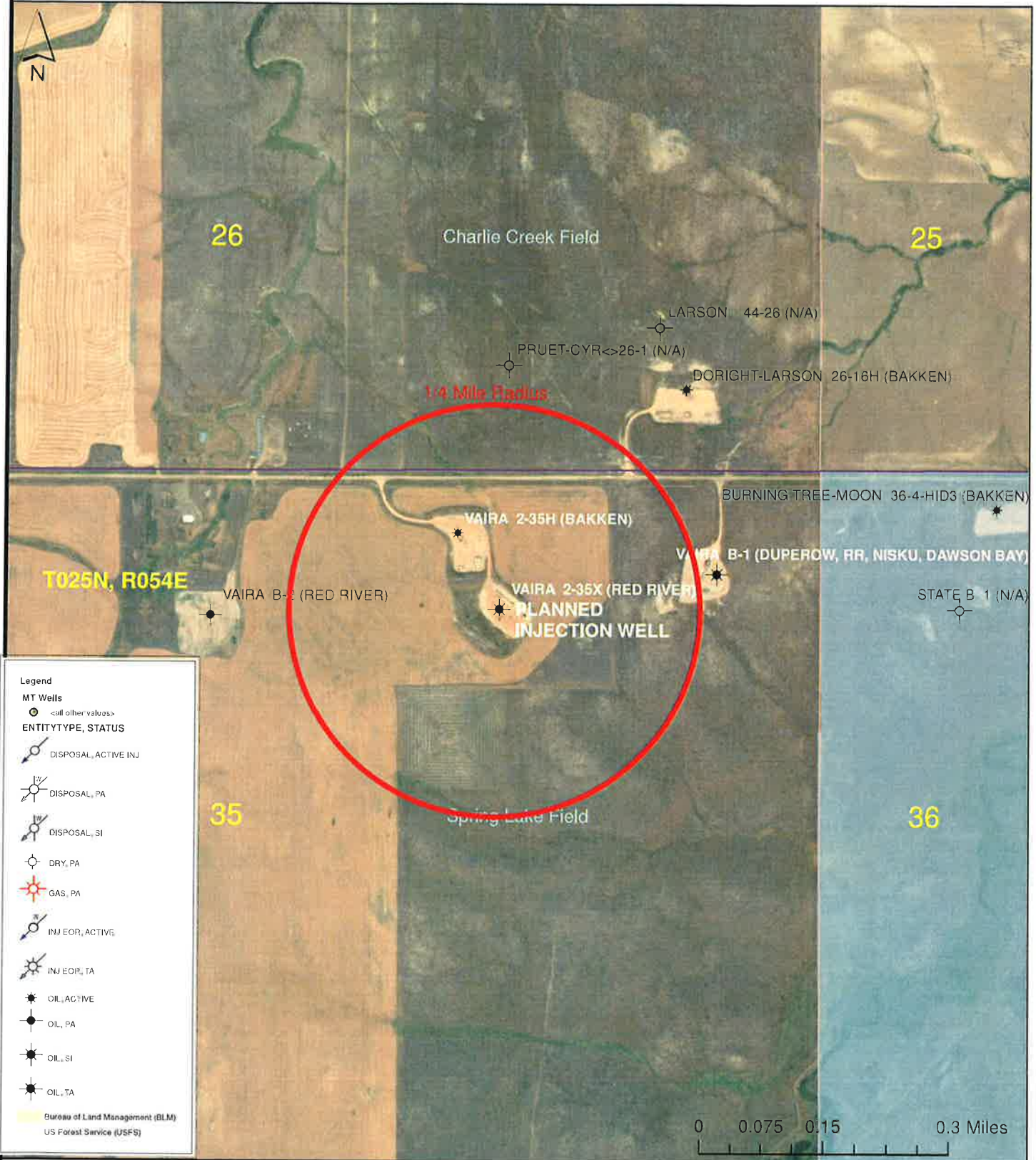
Exhibit 6: Proposed Wellbore Diagram

Exhibit 7: Injected Gas Analysis

Exhibit 8: Produced Water from a Red River Well

Exhibit 9: Names of Surface Owners on Record

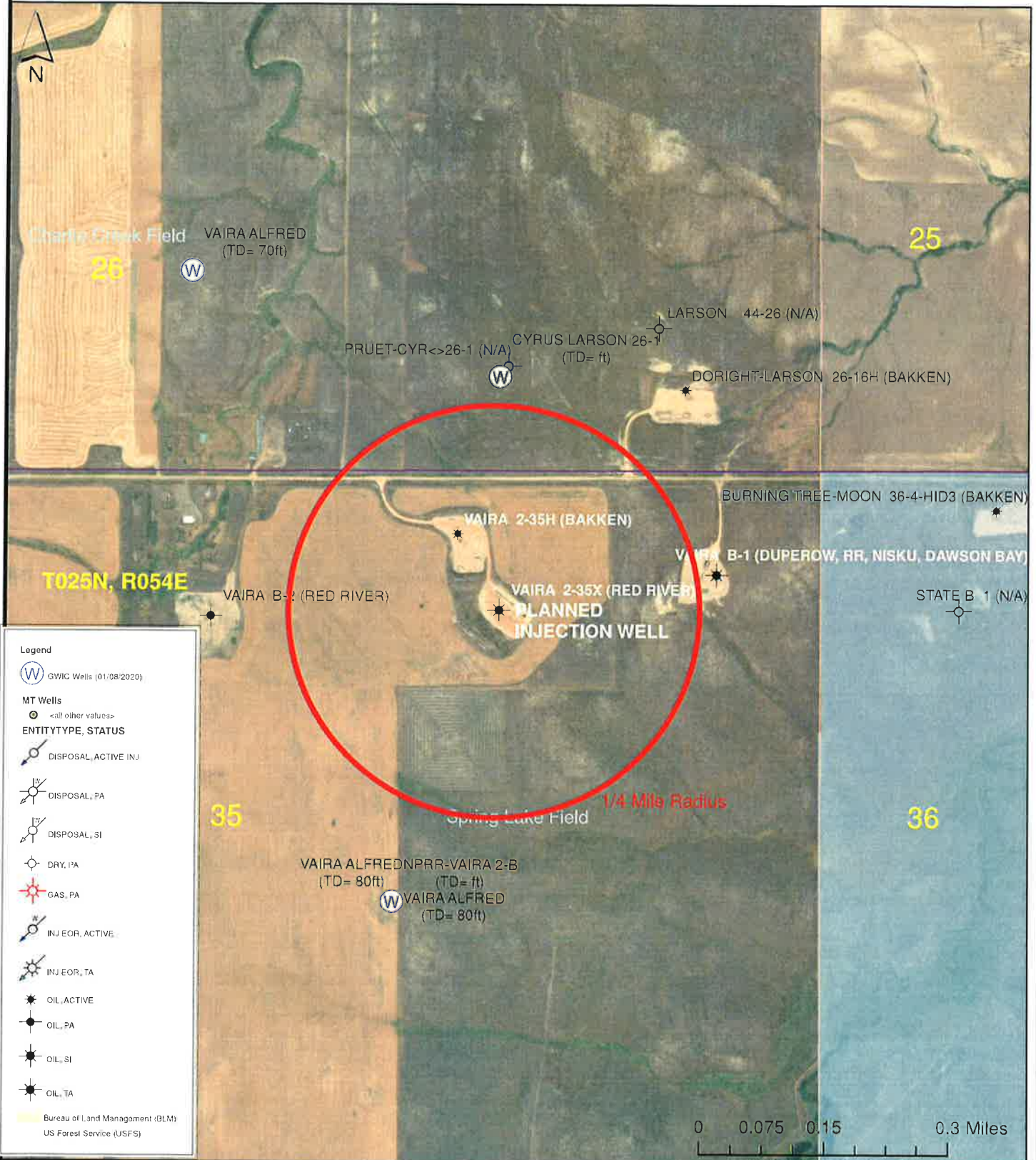
Exhibit 1. Area of Review - Producers



Vaira 2-35X UIC Application
Richland County, Montana
Spring Lake Field
NWNE, Sec 35, T025N, R054E
January 2020

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Exhibit 2. Area of Review - Freshwater Wells



Vaira 2-35X UIC Application
Richland County, Montana
Spring Lake Field
NWNE, Sec 35, T025N, R054E
January 2020

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White Rock Oil and Gas, LLC.

Exhibit 3: Structure Map of Red River

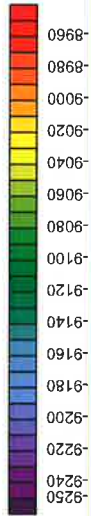


POSTED WELL DATA



Well Label

CONTOURS FMTOPS - MT-RED RIVER (BK) - RED RIVER TOP FMTOPSMTRD_RIVERBK.GRD Contour Interval = 10



WELL SYMBOLS

- Oil Well
- Temporarily Abandoned
- Plugged and Abandoned
- Location Only
- Dry Hole

January 8, 2020

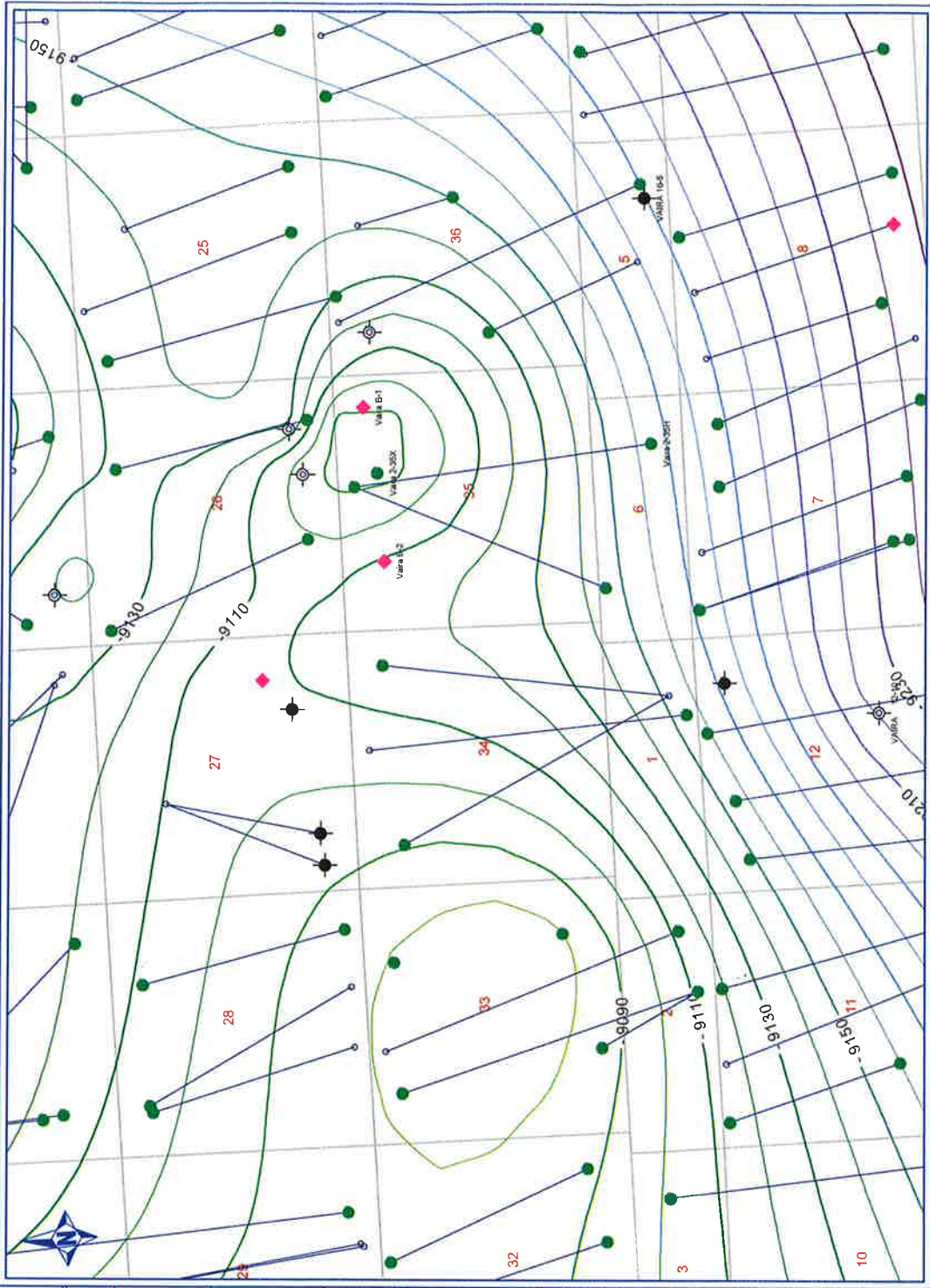
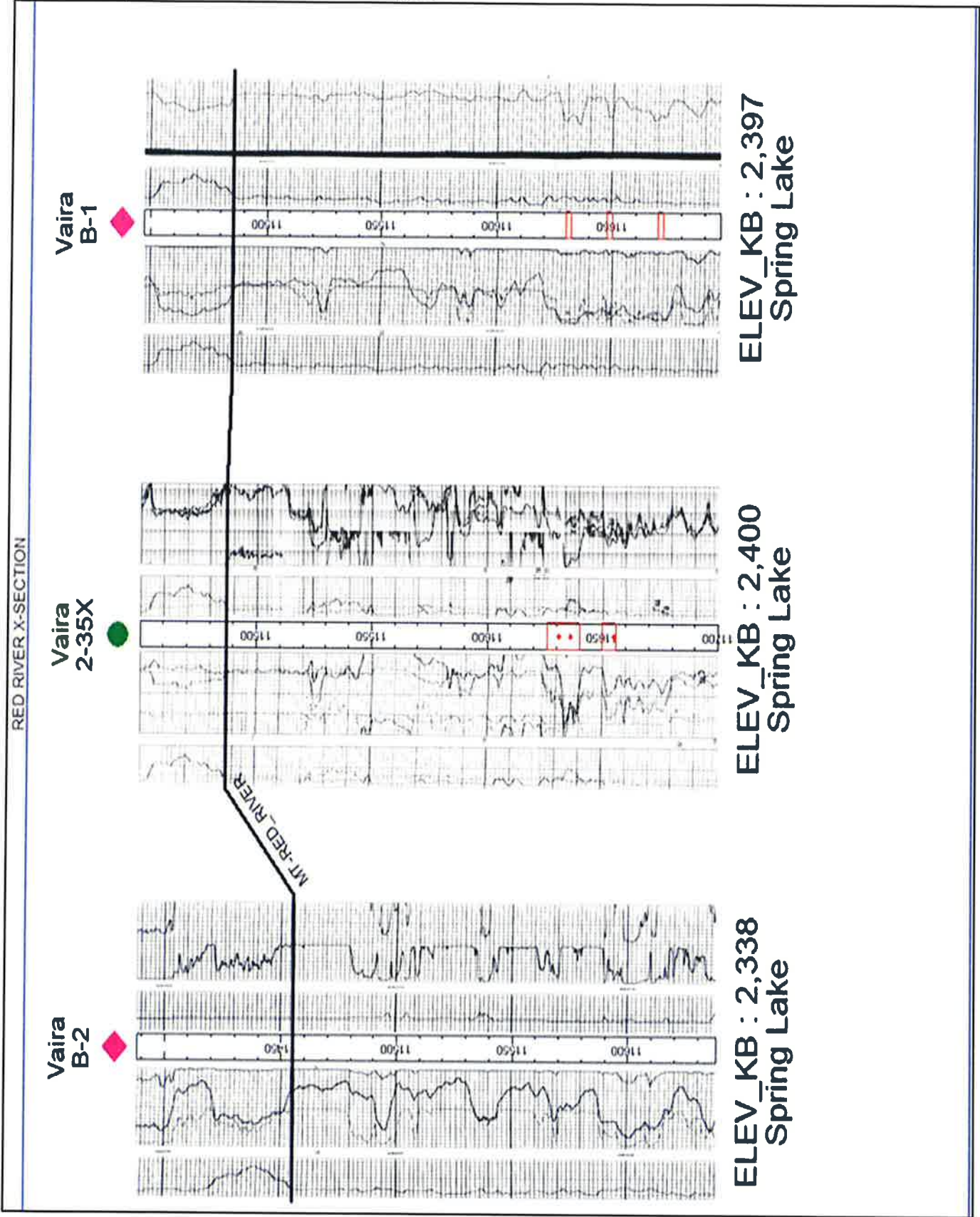


Exhibit 4: Proposed Cross Section with current perforations





Lease & Well No. **Valra 2-35X**
 Field Name **Spring Lake**
 Location **883' FNL, 2037' FEL, Sec 35 Twn 25N, Rge 54E**
47.8797284, -104.7057321

Status: **SHUT IN**
 County & State: **Richland County, MT**
 API No: **25-083-22499**
 Pool Name: **Red River**

Well Information

Spud: **6/2/2006** Ground Elevation: **2,381'** Total Depth: **11,805'**
 Completed: **8/29/2006** KB Elevation: **2,400'** (19' KB) TVD: **11,805'**

Pipe Data

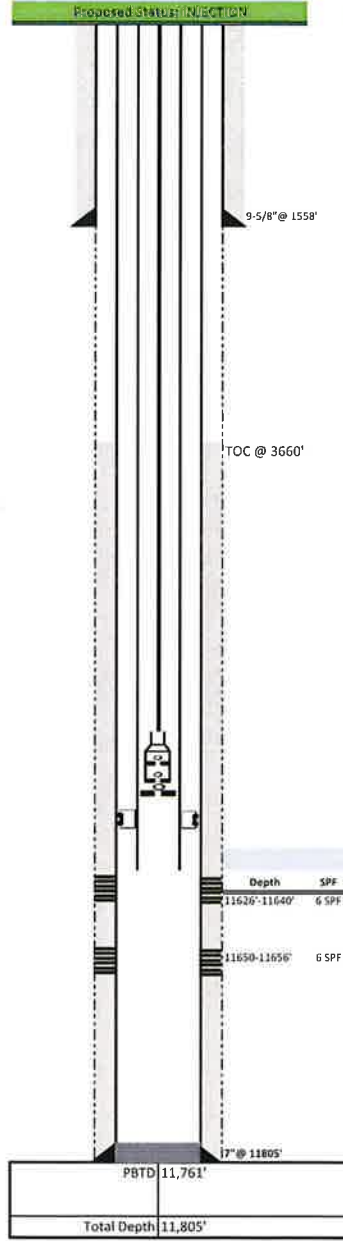
Surface						
Hole Size	Depth	Size (OD)	Weight	Grade	Sx Cmt	Comments
13-1/2"	1,558'	9-5/8"	36 PPF	J-55	545 sx	TOC= Surface
Production						
Hole Size	Depth	Size (OD)	Weight	Grade	Sx Cmt	Comments
8-1/2"	11,805'	7"	14/15.5	K-55/ J-55	St 1: 510 sxm St 2: 1050 sx	TOC= 3660' (Stage Tool @ 8382')
Downhole Tubulars (Top to Bottom)						
Tubing	[304 joints] 2-7/8" tubing, 2-7/8" x 3-1/2" XO, (10) joints 3-1/2" Ultratube, 3-1/2" x 2-7/8" XO, SSMSN, 7" Weatherford TAC with TC Slips, (53) 2-7/8" tubing, Pinned Collar.					
Rods	1-1/2" x 35' Polished Rod, 1" 2', 2', 6', 8' Pony Rods, (118) 1" N97 Rods, (160) 7/8" N97 Rods, (104) 3/4" S-88 Rods, (14) 1-1/2" Kbars, 2-1/2" x 1-3/4" x 36' x 36' 5' x 37' RBHM Pump					

Surface Equipment

Artificial Lift Info	Prime Mover	Separator	Tanks
Rotaflex 900-360-288 288' stroke			

Well History

Date	Event	Description
6/3/2006	SPUD	Spud and drill a vertical Red River well to a TD of 11805'. Ran 5 1/2" & 5 5/8" to 11805'.
8/8/2006	COMP	Perforate the RR only. Acidized both RR zones separately. Swab clean and put on pump w/ a 2" pump, trouble with the 1st 2 pumps ran, had stroked a few times and locked up, appears as metal filings that came out of the pump. Ran a PA plunger pump.
1/31/2007	Pump-Barrel	Pin hole in the pump's bbl. Ran a new 2" x 36' pump.
5/24/2007	TBG-Hole	Hole in top jt, 1' down. Put a blast jt on top. Lower SN 980' to 9987'. 32 new jts above SN.
4/15/2008	Pump-Efficiency	Pump was worn out, and stuck in the tbg. Pull tbg to recover pump. Lots of internal scale made hydrotesting difficult. TAC slid when we went to set it. <u>Unable to get to hole. Ran another one w/ TC slips.</u>
5/17/2008	Polish Rod	Replace broken polish rod
6/2/2008	Pump-Barrel	Found 2 small holes in pump bbl. Possibly from solids. RIH w/new
8/13/2008	On/Off Tool	On/Off tool parted. Change pump. RTP 8/18/08
12/12/2008	No Failure	Slowed down to 1.8 spm 12/12/08
1/6/2009	Pump-Efficiency	POOH w/pump. Hold down was loose, plunger sticky, top sub worn though from pull rod. Scale buildup on rods. RIH rebuilt pump. RTP 1/26/09
1/30/2009	Pump-Efficiency	Pump was stuck open (suspected scale). Swab to clean up. Ran new 1-1/2" pump. RTP 2/2/09
4/23/2009	On/Off Tool	On/Off tool parted. Strip well out. Hydrotest in. Deepen SN from 9989' to 11298'. Ran desander. RIH w/pump. RTP 5/6/09
5/13/2009	No Failure	Speeded unit up to 2.3 spm
7/13/2009	On/Off Tool	POOH to fish. On/Off tool was parted. Fished. Pump parted. Strip tbg out. Desander had holes in it. Changed out to perf sub. Hydrotest in. RIH new pump. RTP 8/6/09
12/7/2009	TBG-Hole	TOH w/rods & tbg. Layed down 10 jts from above SN. Found hole in dip tube. Hydrotest in. Didn't find any leaks. RIH w/inspected pump. RTP 1/4/10
4/20/2010	No Failure	Move off Dynapump Unit and move in Rotaflex unit from the Simard Farms 4-20H. Dynapump repair was to be 50K due to bad seals.
5/8/2010	No Failure	Started Rotaflex unit today
6/7/2010	No Failure	Ran DYNO
6/30/2010	No Failure	Speed unit up from 3.14 to 3.8 spm with 16" sheave
7/26/2010	No Failure	Ran DYNO
8/23/2010	No Failure	Speed unit from 3.8 to 4.8 spm with 18" sheave
8/9/2010	TBG-Hole	Pull & repair pump. Trip out tbg. Replace bottom 11 jts tbg & blast jt tbg, hydrotest. Replace 5000# B-1 flange. Ran repaired pump. Fill & test tbg.
10/29/2010	Pump-Plunger	POOH pump. Plunger was corroded off. RIH w/new pump w/stainless steel plunger. RTP 10/29/10
11/12/2010	No Failure	Ran DYNO
2/2/2011	SURF EQPT	Replace bad starter on Rotaflex



Formation Tops (WL MD)	
Greenhorn	4,200'
Dakota	5,007'
Rierdon	5,982'
Piper Formation	6,220'
Spearfish Formation	6,490'
Kibbey	7,493'
Charles	7,730'
Mission Canyon	8,478'
Lodgepole	8,986'
Bakken	9,760'
Three Forks	9,802'
Nisku	9,926'
Duperow	10,006'
Souris River Formatio	10,457'
Dawson Bay	10,655'
Winnipegosis	10,779'
Ashern Formation	10,849'
Interlake	10,862'
Putnam Member	11,162'
Stonewall	11,289'
Gunton	11,384'
Stony Mountain Shale	11,454'
Red River	11,487'
Red River B	11,545'
Red River C	11,606'

Red River Formation			
Depth	SPF	Date	Details
11626-11640'	6 SPF	8/21/2006	RR "C" Laminated, 11626' - 640', 6 spf 8/21/06
11650-11656'	6 SPF	8/11/2006	RR "C" Burrowed, 11650' - 656', 6 spf

WHITE ROCK OIL & GAS

Date	Event	Description
4/13/2011	TBG-Hole	Attempt to pressure test tbg, didn't fill. TOOH w/rods & pump. Kill well. PU 5 jts, tag bottom @ 11,760'. LD 5 jts & blast joint, Scanalog tbg. 184 YB, 121 BB, 48 RB. Jt #352 had split @ 11,245'. Replace RB tbg w/new. PU new tbg string, hydrotested OK. Set TAC w/20,000#. Swab to clean. RIH w/rods & pump. Pressure tested OK. RD. While lowering bridle to polish rod, brakes didn't hold & weights dropped to bottom tearing up belt guard and sheaves on motor & gearbox, waiting on repairs.
6/29/2011	TBG-Hole	PT tbg, didn't hold. Changed leaky flowline valve, pressure tested OK. POOH w/rods & pump. Pump dry, sent for repairs. Plunger broken off in pump. Swab, IFL @ 5490', FFL @ 7050', pull from 8245'. Recovered 93.8 bbl in 14 runs. RIH w/rods & new pump. RTP 7/27/11.
9/20/2011	TBG-Hole	Tbg wouldn't pressure up. POOH w/rods & pump. Lay down 51 - 7/8" rods. TOOH w/tbg. Lay down 10 jts above SN. Found split jt 2nd jt above SN. RIH w/tbg. Installed tbg rotator assy. RIH w/rods & pump. Upsized pump from 1-1/2" to 1-3/4". Raised pump from ~11,272' to ~10,000'. Installed 14" motor sheave to slow unit down from 4,26 spm to 3.26 spm due to larger pump.
12/21/2011		Ran DYNO
4/23/2012	ROD-Box	#2 - 1" rod parted box on top. Fish parted rod and shop pump. Swab to clean up scale from tubing and well. Run pump fill and test tubing. Changed out 4 bad K-bar and 4 bent 3/4" rods. RTP 5/23/12.
9/24/2012	No Failure	Ran DYNO
12/30/2012	TBG-Hole	Pressure test tubing, did not hold. Caliper Log tubing. Found 26 YB, 217 BB, 73 RB jts. Joint #6 above SN split. LD 73 joints tubing. Hydrotest in hole. Swab to clean up well. Run pump. RTP. Take 4' pony rod out & put in 2' pony rod. RTP.
2/18/2013	Pump-Efficiency	Tripped pump out of hole. Checked tubing anchor, OK. Swab to clean up well. Run pump.
6/20/2013	TBG-Hole	Lay down polish rod, Hot oil rods, Trip pump out of hole. 4 patcos bad, Well flowed 160 bbls fluid while tripping pump out. Pump water to kill well. Strip on BOP. Release anchor and trip out with tubing, had to shut down due to well gasing. Kill well and finish trip out. Found split joint 2nd joint above SN. Hydrotest tubing in hole. Set tubing anchor. Strip off BOP and flange up well. Swab to clean up well. Run pump. Fill and test tubing. Rig down and move on to next job. Pulled unit ahead and put well on production at 10:30 MST.
9/20/2013	TBG-Hole	Rigged up service rig. Unseat and reseal pump. Fill tubing and pressure test, held OK. Bleed down and stroke up w/rig OK. Add 2' pony rod. Did not pull rods & pump. No tubing leak found. Rig down and pull unit ahead. Well on production.
10/18/2013	TBG-Hole	Pressure tested tubing, leaked off 500# in 5 min. Trip pump out of hole. Well flowed 115 bbls while pulling rods. Trip tubing out, layed down 10 joints above SN. Hydrotested tubing in hole. Swab to clean up well. Run pump. Well on production. Picked up 22 - 1" guided rods on bottom.
1/15/2014	Pump-Plunger	Pressure test tubing, OK. Unseat pump and hot oil rods. Trip pump out. Plunger stuck on pump. Swab to clean up well. Run new pump. Fill and test tubing. Space pump out.
5/8/2014	TBG-Hole	Unseated pump and reseal pump. Pumped 60 bbls SW and did not catch any pressure. Trip pump out of hole. Strip on BOP. Release anchor. Trip tubing out of hole. Found split in 2nd joint above SN. picked up 10 joints tubing and hydrotest in hole. Set tubing anchor and
7/7/2014	ROD- Body	MIRU WOR Replace 6' pony with a 2' pony. PSI tubing. Did not pull pump
6/25/2014	No Failure	Ran DYNO
7/15/2014	SURF EQPT	Replaced belt and upper drum on Rotaflex
9/4/2014	TBG-Hole	Hot oil rods. TOOH LD 22 guided S88 1" rods. 8 of the rods the guides wore completely off. ND wellhead. NU BOP. Release TAC. LD 10 jts 2 7/8" L80. LD SSMNS & 7" TAC w/ TC slips. Split on top of 2nd jt above SN. JT was rod cut. TOOH w/ 53 jts 2 7/8" L80 & Barred collar. Tail pipe good. TH w / Barred collar & 53 jts of tail pipe. PUMU new Weatherford 7" TAC w/ TC slips. New 2 7/8" SSMNS. New 2 7/8"x 3 1/2" XO. PU 10 new jts of 3 1/2" ultra tbg. New 3 1/2"x 2 7/8" XO. Western Falcon recommended not to hydrotest thier tbg due to past issues w / test tools. RU tester & test to 7000 psi as follows, 2 new 2 7/8" L80 jts. Rerun 300 2 7/8" L80 jts. 2 new 2 7/8" L80 jts on top. Replaced 2 jts w / bad pins. Add 1 jt for length. Ultra tube jts were 18' shorter than previous tbg. RD tester. Set TAC w / 20 K tension. ND BOP. NU wellhead. ND BOP. NU wellhead to swab. MSN @ 9996.98'. TAC @ 9997.31', EOT @ 11694.33'. Swab 13 swab runs & recovered 36 bbls oil & 87.5 bbls SW. Initial fluid level 7000' & pulled from 8800'. Final fluid level 7900' & pulled from 9300'. Run rod string as follows. PU repaired Richland pump 2 1/2"x 1 3/4"x 36' RHBM. PU 14 new 1 1/2" K bars. Rerun 104 slick S88 3/4" rods. Rerun 160 slick N97 7/8" rods. Rerun 110 slick N97 1" rods. PU 8 new slick N97 1" rods. PU 1 new 1"x 8' S88 pony. 1 new 1"x 6' S88 pony. Rerun 1"x 2' S88 pony & new 1"x 2' S 87 pony. PU rerun 1 1/2" x 36' spryloy polishrod. Seat & space. Fill tbg w / 31 bbls PSW. Pressure to 500 psi w / truck & longstroke w / rig. Held.

| | | | |

Lease & Well No: **Vaira 2-35X**
 Field Name: Spring Lake
 Location: 883' FNL, 2037' FEL, Sec 35 Twn 25N, Rge 54E
 47.8797284, -104.7057321

Status: **RECOMPLETE**
 County & State: Richland County, MT
 API No: 25-083-22499
 Pool Name: Red River

Well Information

Spud: 6/2/2006 Ground Elevation: 2,381' Total Depth: 11,805'
 Completed: 8/29/2006 KB Elevation: 2,400' (19' KB) TVD: 11,805'

Pipe Data

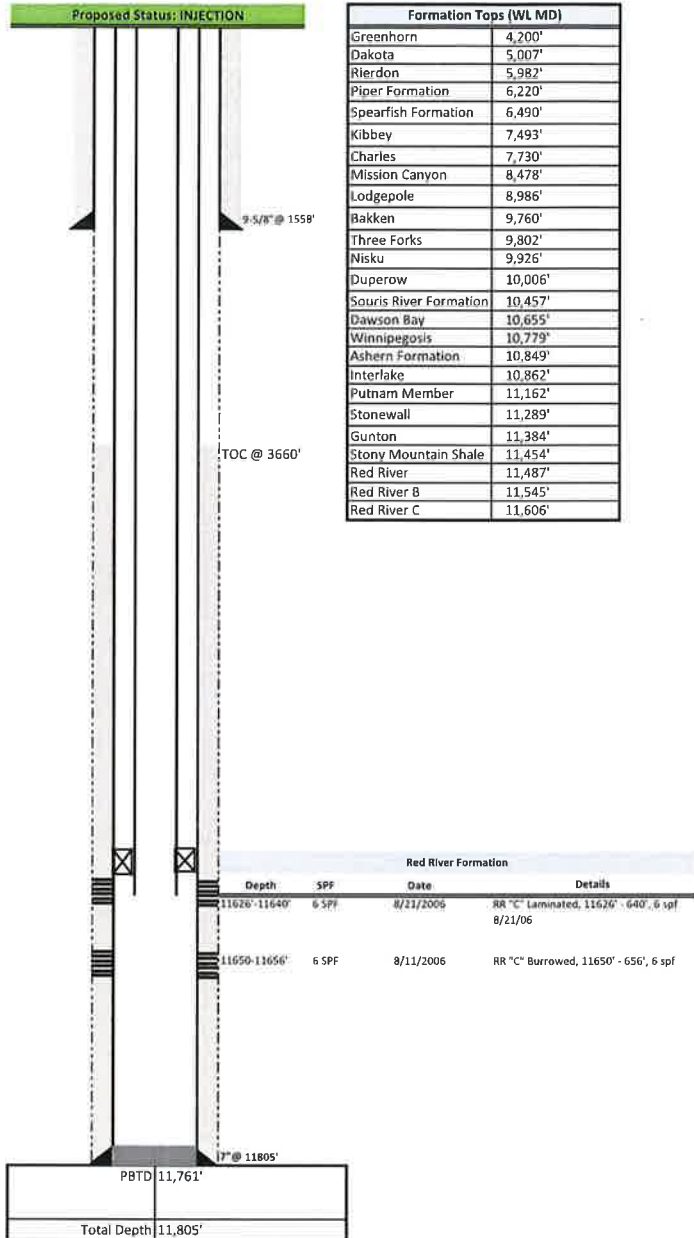
Surface						
Hole Size	Depth	Size (OD)	Weight	Grade	Sx Cmt	Comments
13-1/2"	1,558'	9-5/8"	36 PPF	J-55	545 sx	TOC= Surface
Production						
Hole Size	Depth	Size (OD)	Weight	Grade	Sx Cmt	Comments
8-1/2"	11,805'	7"	14/15.5	K-55/ J-55	St 1: 510 sx St 2: 1050 sx	TOC= 3660' (Stage Tool @ 8382')
Downhole Tubulars (Top to Bottom)						
Tubing	2-7/8" Duoline Tubing, sour service packer.					
Rods	N/A					

Surface Equipment

Artificial Lift Info	Prime Mover	Separator	Tanks
N/A			

Vaira 2-35X Well History

Date	Event	Description
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WHITE ROCK OIL & GAS

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Red River C	11,606'
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QUESTAR ENERGY SERVICES

1210 D. Street, Rock Springs, Wyoming 82901 (307) 352-7292

Description	NEWFIELD CLIENT		
Company	NEWFIELDS ENGINEERING		
Field	CLIENT FIELD MT	Meter Number	
Analysis Date/Time	8/11/17 2:25 PM	G.C. Method	QUESGAS, GPA 2286
Analyst Initials	DEM	Sample Temp.	114
Date Sampled	8/11/2017	Sample Pressure	40
Sampled By	BKS	Cont. Number	S29
Data File	CLIENT WELL		
Sample Point	DOWNSTREAM OF VERT. TRTR BELOW PRES GUAGE		

Component	Mol%	Wt%	LV%
Methane	48.1194	28.0042	46.1334
Ethane	7.1711	7.8223	10.8769
Propane	3.6221	5.7941	5.6486
Isobutane	0.8954	1.8879	1.6577
n-Butane	1.3822	2.9142	2.4662
Neopentane	0.0087	0.0227	0.0188
Isopentane	0.3561	0.9320	0.7377
n-Pentane	0.3478	0.9103	0.7129
2,2-Dimethylbutane	0.0042	0.0130	0.0098
2,3-Dimethylbutane	0.0128	0.0399	0.0296
2-Methylpentane	0.0638	0.1993	0.1497
3-Methylpentane	0.0347	0.1085	0.0801
n-Hexane	0.1010	0.3157	0.2350
Heptanes	0.1260	0.4297	0.2857
Octanes	0.0128	0.0531	0.0369
Nonanes	0.0116	0.0484	0.0298
Decanes plus	0.0016	0.0085	0.0057
Nitrogen	2.1965	2.2321	1.3629
Carbon Dioxide	12.0342	19.2125	11.6075
Oxygen	ND	ND	ND
Hydrogen Sulfide	23.4980	29.0516	17.9151
Total	100.0000	100.0000	100.0000

Global Properties	Value	Units
Gross BTU/Real CF	981.8	BTU/SCF at 60°F and 14.73 psia
Sat. Gross BTU/Real CF	966.0	BTU/SCF at 60°F and 14.73 psia
Gas Compressibility (Z)	0.9950	
Specific Gravity	0.9541	air=1
Avg Molecular Weight	27.566	gm/mole
Propane GPM	0.992683	gal/MCF
Butane GPM	0.726901	gal/MCF
Gasoline GPM	0.400333	gal/MCF
26# Gasoline GPM	0.836286	gal/MCF
Total GPM	9.500695	gal/MCF
Base Mol%	101.239	%v/v

PAGE #1

PAGE #2

Description: CLIENT WELL

H2S Length of Stain Tube NA ppm

Component	Mol%	Wt%	LV%
Benzene	0.0118	0.0336	0.0187
Toluene	0.0115	0.0385	0.0218
Ethylbenzene	0.0005	0.0021	0.0012
M&P Xylene	0.0060	0.0231	0.0131
O-Xylene	0.0009	0.0035	0.0020
2,2,4-Trimethylpentane	0.0032	0.0134	0.0092
Cyclopentane	0.0000	0.0000	0.0000
Cyclohexane	0.0112	0.0342	0.0216
Methylcyclohexane	0.0089	0.0315	0.0201

GRI GlyCalc Information

Component	Mol%	Wt%	LV%
Carbon Dioxide	12.0342	19.2125	11.6075
Hydrogen Sulfide	23.4980	29.0516	17.9151
Nitrogen	2.1965	2.2321	1.3629
Methane	48.1194	28.0042	46.1334
Ethane	7.1711	7.8223	10.8769
Propane	3.6221	5.7941	5.6486
Isobutane	0.8954	1.8879	1.6577
n-Butane	1.3822	2.9142	2.4662
Isopentane	0.3648	0.9547	0.7565
n-Pentane	0.3478	0.9103	0.7129
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.1010	0.3157	0.2350
Cyclohexane	0.0112	0.0342	0.0216
Other Hexanes	0.1155	0.3607	0.2692
Heptanes	0.0794	0.2785	0.1943
Methylcyclohexane	0.0089	0.0315	0.0201
2,2,4 Trimethylpentane	0.0032	0.0134	0.0092
Benzene	0.0118	0.0336	0.0187
Toluene	0.0115	0.0385	0.0218
Ethylbenzene	0.0005	0.0021	0.0012
Xylenes	0.0069	0.0266	0.0151
C8+ Heavies	0.0186	0.0813	0.0561
Subtotal	76.5020	70.9484	82.0849
Oxygen	ND	ND	ND
Total	76.5020	70.9484	82.0849



JACAM LABORATORIES

DownHole R_x

WATER CHEMISTRY

SM ENERGY
NEIL STEEN

LARSON 8-28 TREATER
RICHLAND MT

Report Date: 01-11-2012 Sampled: 12-30-2011
Sample #: 12407 at 0000

CATIONS

Calcium (as Ca)	31390
Magnesium (as Mg)	2457
Barium (as Ba)	68.56
Strontium (as Sr)	1360
Sodium (as Na)	59299
Potassium (as K)	4473
Lithium (as Li)	74.74
Ammonia (as NH ₃)	0.00
Aluminum (as Al)	0.00
Iron (as Fe)	4.93
Manganese (as Mn)	3.03
Zinc (as Zn)	5.45
Lead (as Pb)	0.00

ANIONS

Chloride (as Cl)	177100
Sulfate (as SO ₄)	0.00
Bromine (as Br)	0.00
Dissolved CO ₂ (as CO ₂)	400.00
Bicarbonate (as HCO ₃)	75.00
Carbonate (as CO ₃)	0.00
Silica (as Si)	0.00
Phosphate (as PO ₄)	0.00
H ₂ S (as H ₂ S)	0.00
Fluoride (as F)	0.00
Nitrate (as NO ₃)	0.00
Boron (as B)	117.30

PARAMETERS

pH	5.59
Temperature (°F)	120.00
Density(g/mL)	1.19
Pressure(atm)	1.00
Calculated T.D.S.	277626
Molar Conductivity	111050
Field Fe	0.00

CORROSION RATE PREDICTION

CO ₂ - H ₂ S Rate(mpy)	0.00
--	------

JACAM LABORATORIES

205 S. Broadway · P.O. Box 96 · Sterling, KS 67579-0096



JACAM LABORATORIES

DownHole R_x

DEPOSITION POTENTIAL INDICATORS

SM ENERGY
NEIL STEEN

LARSON 8-28 TREATER
RICHLAND MT

Report Date: 01-11-2012 Sampled: 12-30-2011
Sample #: 12407 at 0000

SATURATION LEVEL

Calcite (CaCO ₃)	0.744
Aragonite (CaCO ₃)	0.622
Witherite (BaCO ₃)	< 0.001
Strontianite (SrCO ₃)	0.00597
Magnesite (MgCO ₃)	0.121
Anhydrite (CaSO ₄)	0.00
Gypsum (CaSO ₄ *2H ₂ O)	0.00
Barite (BaSO ₄)	0.00
Celestite (SrSO ₄)	0.00
Fluorite (CaF ₂)	0.00
Calcium phosphate	0.00
Hydroxyapatite	0.00
Silica (SiO ₂)	0.00
Brucite (Mg(OH) ₂)	< 0.001
Magnesium silicate	0.00
Iron hydroxide (Fe(OH) ₃)	0.0200
Strengite (FePO ₄ *2H ₂ O)	0.00
Siderite (FeCO ₃)	0.0379
Halite (NaCl)	0.239
Thenardite (Na ₂ SO ₄)	0.00
Iron sulfide (FeS)	0.00

MOMENTARY EXCESS (Lbs/1000 Barrels)

Calcite (CaCO ₃)	>-0.001
Aragonite (CaCO ₃)	>-0.001
Witherite (BaCO ₃)	-18.78
Strontianite (SrCO ₃)	-0.207
Magnesite (MgCO ₃)	-0.00514
Anhydrite (CaSO ₄)	-30.67
Gypsum (CaSO ₄ *2H ₂ O)	-35.64
Barite (BaSO ₄)	-8.14
Celestite (SrSO ₄)	-218.51
Fluorite (CaF ₂)	-1.04
Calcium phosphate	>-0.001
Hydroxyapatite	-278.94
Silica (SiO ₂)	-47.85
Brucite (Mg(OH) ₂)	-0.124
Magnesium silicate	-98.45
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	>-0.001
Siderite (FeCO ₃)	-0.0245
Halite (NaCl)	-69046
Thenardite (Na ₂ SO ₄)	-92372
Iron sulfide (FeS)	-1.86

SIMPLE INDICES

Langelier	1.45
Ryznar	2.68
Puckorius	0.169
Larson-Skold Index	774.99
Stiff Davis Index	2.51
Oddo-Tomson	0.654

BOUND IONS

Calcium	31390
Barium	68.56
Carbonate	0.411
Phosphate	0.00
Sulfate	0.00

TOTAL

FREE

31192
68.56
0.00145
0.00
0.00

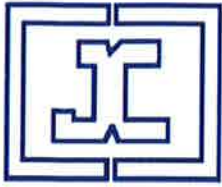
OPERATING CONDITIONS

Temperature (°F)	120.00
Time(secs)	0.00

JACAM LABORATORIES

205 S. Broadway · P.O. Box 96 · Sterling, KS 67579-0096

DownHole SAT™ Water Analysis Report



JACAM LABORATORIES

SYSTEM IDENTIFICATION

SM ENERGY
LARSON 8-28 TREATER
NEIL STEEN
RICHLAND MT

Sample ID#: 12407
ID: *2676
Report Date: 01-11-2012
Sample Date: 12-30-2011
at 0000

WATER CHEMISTRY

CATIONS

Calcium(as Ca)	31390
Magnesium(as Mg)	2457
Barium(as Ba)	68.56
Strontium(as Sr)	1360
Sodium(as Na)	59299
Potassium(as K)	4473
Lithium(as Li)	74.74
Iron(as Fe)	4.93
Field Iron(as Fe)	0.00
Ammonia(as NH ₃)	0.00
Aluminum(as Al)	0.00
Manganese(as Mn)	3.03
Zinc(as Zn)	5.45
Lead(as Pb)	0.00

ANIONS

Chloride(as Cl)	177100
Sulfate(as SO ₄)	0.00
Bromine(as Br)	0.00
Dissolved CO ₂ (as CO ₂)	400.00
Bicarbonate(as HCO ₃)	75.00
Carbonate(as CO ₃)	0.00
Silica(as Si)	0.00
Phosphate(as PO ₄)	0.00
H ₂ S (as H ₂ S)	0.00
Fluoride(as F)	0.00
Nitrate(as NO ₃)	0.00
Boron(as B)	117.30

PARAMETERS

Temperature(°F)	120.00
Sample pH	5.59

SCALE AND CORROSION POTENTIAL

Temp. (°F)	Press. (atm)	Calcite CaCO ₃	Anhydrite CaSO ₄	Gypsum CaSO ₄ *2H ₂ O	Barite BaSO ₄	Celestite SrSO ₄	Siderite FeCO ₃	Mackawenite FeS	CO ₂ (mpy)	pCO ₂ (atm)								
50.00	0.00	0.695	>-0.001	0.00	-38.88	0.00	-34.24	0.00	-1.96	0.00	-215.47	0.0221	-0.0624	0.00	-1.71	0.666	1.21	
65.45	0.00	0.757	>-0.001	0.00	-40.23	0.00	-36.64	0.00	-2.77	0.00	-213.84	0.0270	-0.0491	0.00	-1.74	2.31	1.21	
80.91	0.00	0.786	>-0.001	0.00	-39.44	0.00	-38.49	0.00	-3.85	0.00	-213.57	0.0313	-0.0395	0.00	-1.77	3.99	1.21	
96.36	0.00	0.785	>-0.001	0.00	-36.86	0.00	-39.80	0.00	-5.25	0.00	-214.59	0.0346	-0.0323	0.00	-1.80	5.23	1.21	
111.82	0.00	0.759	>-0.001	0.00	-33.04	0.00	-37.77	0.00	-7.02	0.00	-216.87	0.0369	-0.0269	0.00	-1.84	5.70	1.21	
127.27	0.00	0.727	>-0.001	0.00	-28.54	0.00	-34.00	0.00	-9.24	0.00	-220.41	0.0387	-0.0227	0.00	-1.89	5.30	1.21	
142.73	0.00	0.692	>-0.001	0.00	-23.87	0.00	-30.99	0.00	-11.95	0.00	-225.23	0.0402	-0.0196	0.00	-1.93	4.77	1.21	
158.18	0.00	0.655	>-0.001	0.00	-19.40	0.00	-28.60	0.00	-15.23	0.00	-231.39	0.0414	-0.0171	0.00	-1.98	4.34	1.21	
173.64	0.00	0.618	>-0.001	0.00	-15.39	0.00	-26.70	0.00	-19.13	0.00	-238.97	0.0422	-0.0151	0.00	-2.03	3.92	1.21	
189.09	0.00	0.580	>-0.001	0.00	-11.94	0.00	-25.21	0.00	-23.74	0.00	-248.11	0.0428	-0.0135	0.00	-2.09	1.54	1.21	
204.55	0.00	0.543	>-0.001	0.00	-9.10	0.00	-24.07	0.00	-29.13	0.00	-258.95	0.0430	-0.0123	0.00	-2.15	0.00	1.21	
220.00	0.171	0.504	>-0.001	0.00	-7.07	0.00	-24.07	0.00	-36.28	0.00	-279.88	0.0429	-0.0117	0.00	-2.25	0.00	1.42	
		Lbs per xSAT 1000 Barrels		Lbs per xSAT 1000 Barrels		Lbs per xSAT 1000 Barrels		Lbs per xSAT 1000 Barrels		Lbs per xSAT 1000 Barrels		Lbs per xSAT 1000 Barrels		Lbs per xSAT 1000 Barrels				

Saturation Levels (xSAT) are the ratio of ion activity to solubility, e.g. $\{Ca\}\{CO_3\}/K_{sp}$. pCO₂ (atm) is the partial pressure of CO₂ in the gas phase. Lbs/1000 Barrels scale is the quantity of precipitation (or dissolution) required to instantaneously bring the water to equilibrium.

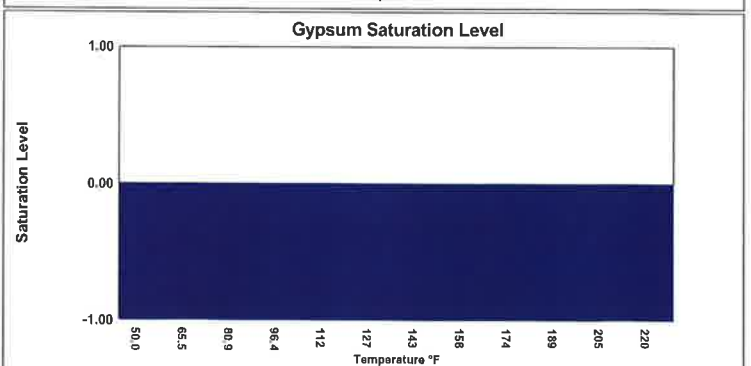
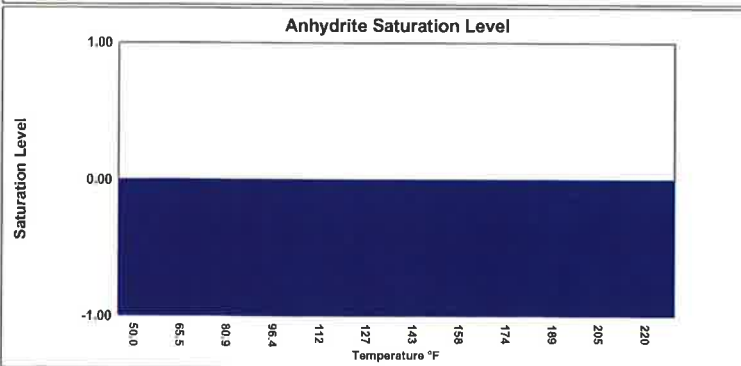
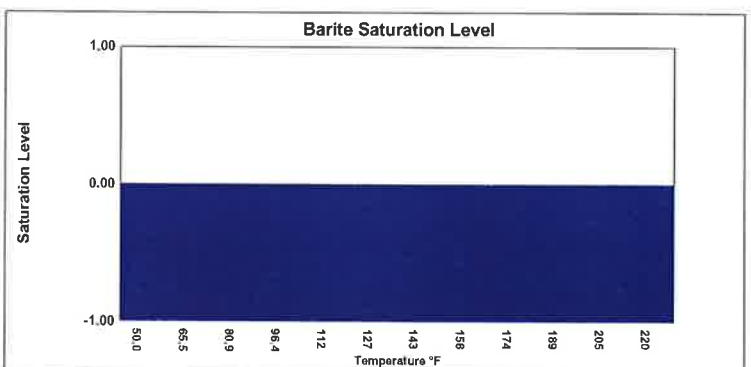
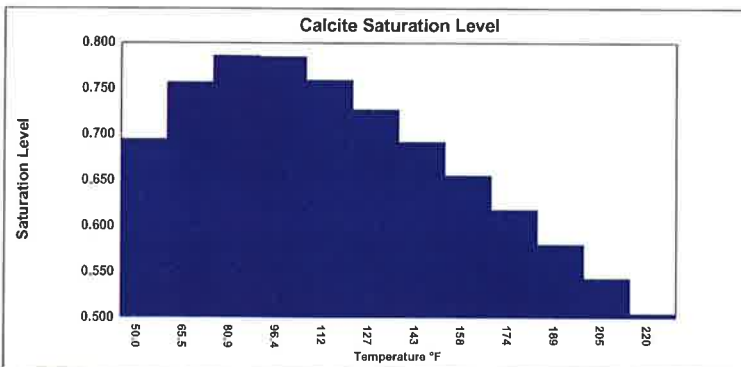


Exhibit 9: Surface Owners

Surface Description	Name	Address
W/2, NWNE Sec 35, T25N, R54E W/2 Sec 26, T25N, R54E	Bud & Joe LLC	2535 Clearwater Way Billings, MT 59105-6012
NENE, S2NE, SE4, Sec 35, T25N, R54E	Andes Farms, LLC.	2550 Forest Meadow Ln. Billings, MT 59102-7930
E/2, Sec 26, T25N, R54E	Larson Farms Properties, LLC.	30020 Hi Francis Rd. Arlee, MT 59821-9009

RECEIVED

JAN - 9 2020

Submit In Quadruplicate To:

**MONTANA BOARD OF OIL AND GAS CONSERVATION
2535 ST. JOHNS AVENUE
BILLINGS, MONTANA 59102**

**MONTANA BOARD OF OIL &
GAS CONSERVATION • BILLINGS**

SUNDRY NOTICES AND REPORT OF WELLS

Operator WHITE ROCK OIL AND GAS, LLC.		Lease Name: VAIRA
Address 5810 TENNYSON PARKWAY, SUITE 500		Type (Private/State/Federal/Tribal/Allotted): PRIVATE
City PLANO	State TX	Zip Code 75024
Telephone 214-981-1400		Fax 214-981-1401
Well Number: 2-35X		Unit Agreement Name: NA
Location of well (1/4-1/4 section and footage measurements): 883' FNL, 2037' FEL, NWNE, SECTION 35, T25N, 454E		Field Name or Wildcat: SPRING LAKE
Township, Range, and Section: 25N, 54E, 35		County: RICHLAND
API Number: 25 083 22499	Well Type (oil, gas, injection, other): INJECTION	
State County Well		

Indicate below with an X the nature of this notice, report, or other data:

Notice of Intention to Change Plans	<input type="checkbox"/>	Subsequent Report of Mechanical Integrity Test	<input type="checkbox"/>
Notice of Intention to Run Mechanical Integrity Test	<input type="checkbox"/>	Subsequent Report of Stimulation or Treatment	<input type="checkbox"/>
Notice of Intention to Stimulate or to Chemically Treat	<input type="checkbox"/>	Subsequent Report of Perforation or Cementing	<input type="checkbox"/>
Notice of Intention to Perforate or to Cement	<input type="checkbox"/>	Subsequent Report of Well Abandonment	<input type="checkbox"/>
Notice of Intention to Abandon Well	<input type="checkbox"/>	Subsequent Report of Pulled or Altered Casing	<input type="checkbox"/>
Notice of Intention to Pull or Alter Casing	<input type="checkbox"/>	Subsequent Report of Drilling Waste Disposal	<input type="checkbox"/>
Notice of Intention to Change Well Status	<input type="checkbox"/>	Subsequent Report of Production Waste Disposal	<input type="checkbox"/>
Supplemental Well History	<input type="checkbox"/>	Subsequent Report of Change in Well Status	<input type="checkbox"/>
Other (specify) <u>ADD RED RIVER INJECTION ZONE</u>	<input checked="" type="checkbox"/>	Subsequent Report of Gas Analysis (ARM 36.22.1222)	<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>

Describe Proposed or Completed Operations:

Describe planned or completed work in detail. Attach maps, well-bore configuration diagrams, analyses, or other information as necessary. Indicate the intended starting date for proposed operations or the completion date for completed operations.
RESPECTIVELY REQUEST ON THE VAIRA 2-35X TO INCLUDE RED RIVER AS AN POTENTIAL INJECTION ZONE.
PROCEDURE WOULD INCLUDE:
 1) POOH WITH PRODUCTION EQUIPMENT.
 2) ESTABLISH INJECTION IN THE RED RIVER AND TREAT WITH ACID AS NEEDED.
 3) INSTALL EQPT FOR INJECTION WHICH INCLUDES SETTING PACKER 100 FT WITHIN PERFS, PERFORMING AN MIT, AND A SATISFACTORY H2S PLAN PRIOR TO INJECTING.

The undersigned hereby certifies that the information contained on this application is true and correct:

1/9/2020

Shawna Bonini

Date

Signed (Agent)

SHAWNA BONINI, OPERATIONS ENGINEER

Print Name and Title

Telephone: **406-690-0068**

BOARD USE ONLY

Approved _____
Date

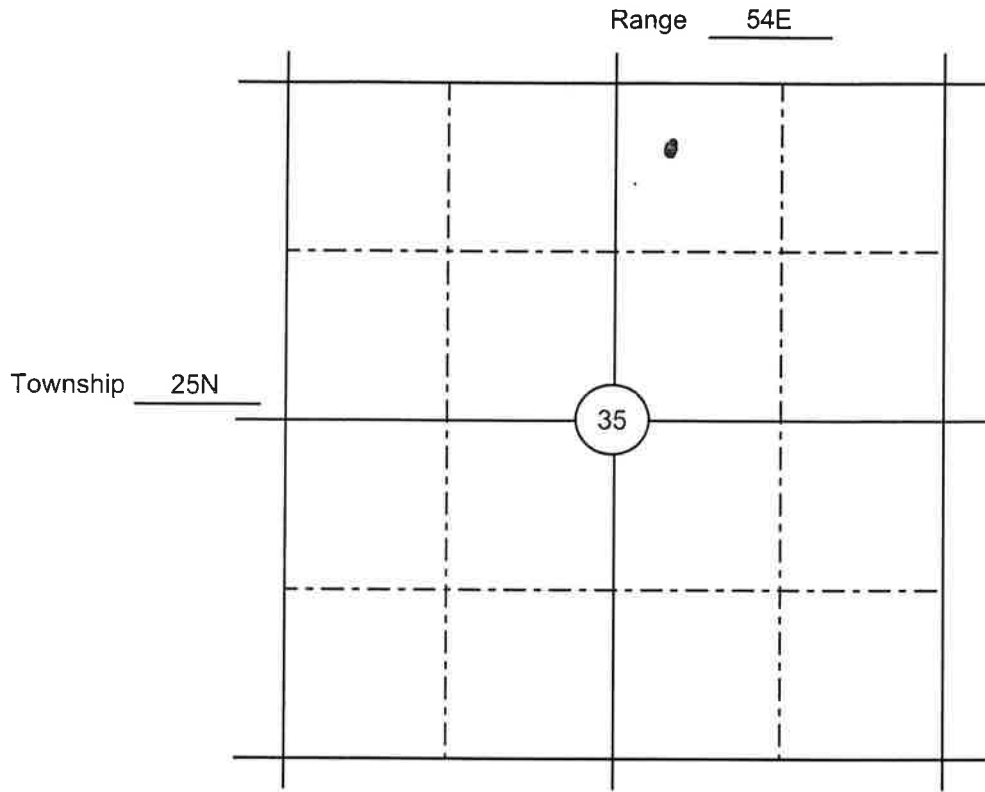
Name

Title

SUPPLEMENTAL INFORMATION

NOTE: Additional information or attachments may be required by Rule or by special request.

Plot the location of the well or site that is the subject of this notice or report.



BOARD USE ONLY

CONDITIONS OF APPROVAL

The operator must comply with the following condition(s) of approval:

Failure to comply with the conditions of approval may void this permit.

BEFORE THE BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA

IN RE THE APPLICATION OF WHITE ROCK OIL AND
GAS, LLC. OF ITS REQUIRED FOR AN
UNDERGROUND INJECTION CONTROL (UIC)
PERMIT TO ADD ADDITIONAL INJECTION ZONE
FOR THE VAIRA 2-35X WELL, 883' FNL, 2037' FEL,
SEC 35, T25N, R54E, FOR THE PURPOSE OF GAS
INJECTION WITHIN THE SPRING LAKE FIELD.

AFFIDAVIT OF NOTIFICATION

DATE: January 9, 2020

STATE OF TEXAS)
) SS.
COUNTY OF COLLIN)

Chad Centorbi, being duly sworn, deposes, and says:

That Notice advising WHITE ROCK OIL AND GAS, LLC's application for UIC Permit in the captioned matter, in the form attached Exhibit 10 was mailed to the surface owners within the area of review at the addresses show in Exhibit 9 attached, by mailing a true copy thereof this 7th Day of January, 2020, postage prepaid, First Class Mail. This Affidavit is given as evidence of compliance with ARM 36.22.1410.

Chad Centorbi

Chad Centorbi

STATE OF TEXAS)
) SS.
COUNTY OF COLLIN)

Subscribed and sworn to before me this 9th Day of January 2020.



Katrena Villarreal

Notary Public
State of Texas
My Commission Expires 7/1/2023

**Underground Injection Control (UIC) Permit Application
Vaira 2-35X Injection**

The following is submitted in support of our application to permit an additional zone in the Vaira 2-35X Red River shut in well for the purpose of gas injection into the Red River Formation as required by Rule 36.22.1403 of the Rules and Regulations of the Montana Board of Oil and Gas Conservation. The Vaira 2-35X Red River producing well was already approved to be converted to an injection well into the Gunton and/or Duperow formations, UIC Permit #MT5382.

1(a) Location of Injection Well:

The Vaira 2-35X well was proposed for conversion and gas injection in Richland County, Montana as described below. Currently, the Vaira 2-35X well is perforated in the Red River formation but is currently shut in due to marginal economics. Attachment 1 shows the surface location and a circle of a quarter (1/4) mile radius representing the area of review (AOR) for this well.

Vaira 2-35X	883 ft FNL, 2,037 ft FEL	Sec 35, T25N, R54E
-------------	--------------------------	--------------------

1(b) Wells within a Quarter Mile AOR:

There is only one well drilled within ¼ mile AOR and this well is a Bakken producer operated by White Rock Oil and Gas, LLC. The Vaira B-1 well is just outside the AOR at 0.26 miles. However, the Vaira B-1 was also included since the well represents the source of injection gas and the well proximity to the AOR. The Vaira B-1 was originally drilled to the Red River formation; and the well was recompleted several times with the current production from the Duperow Formation.

Well Name	Location	Well Status (Formation)	Distance
Vaira 2-35H	NWNE, Sec 35, T25N, R54E	Producer (Bakken)	523 ft (0.10 miles)

Vaira B-1 is outside AOR but included due to source of injection gas and proximity.

Well Name	Location	Well Status (Formation)	Distance
Vaira B-1	NENE, Sec 35, T25N, R54E	Produce (Duperow)	1,381 ft (0.26 miles)

1(c) Location of all pipelines:

Injection gas will be delivered to the gas injection well by a buried 2 inch or 3 inch pipeline that will be constructed upon approval of injection. The gas source for this injector will be from the Vaira B-1 well. Injection gas will be Duperow produced gas

supplied from the Vaira B-1 Battery located at NE1/4NE1/4, Section 35, Township 25 North, Range 54 East.

There are also Oneok Gas Gathering Lines and Saltwater Gathering Lines throughout the Spring Lake Field. Appropriate precautions will be taken when installing an additional gas injection line from the Vaira B-1 to the Vaira 2-35X well.

1(d) Area Producing Formations, Freshwater Aquifers, and Water Well Information:

The Bakken formation is produced within the radius of ¼ mile of the proposed injection well location and the Duperow producer Vaira B-1 is just outside the AOR. The Bakken produces at a depth of 9,848 ft TVD and the Duperow produces from a depth of 10,455 ft TVD.

Freshwater well data was obtained from the Montana Department of Natural Resources and Conservation, Water Resources Division. There are no freshwater wells which produce within the AOR of the proposed injector. The closest freshwater wells are listed below (outside the AOR):

Well Name	Location	Depth of Well
MPRR-Vaira 2-B	No Info Avail	No Info Avail
Vaira Alfred	Sec 35, T25N, R54E 47.874818, -104.709029	80 ft

The Hell Creek and Fox Hill zones act as potential sources of freshwater. The bottom of the Fox Hills is estimated to be at 2,397 ft based on MBOGC website Vaira B-1 well. The Bear Paw Shale is approximately 1,800 ft thick with no aquifer present and derived from the MBOGC website Vaira B-1 well. Depth to the Bear Paw shale in this area is estimated at 2,397 ft to 4,200 ft. Surface casing has been cemented to surface to protect shallower freshwater zones.

Any potential Underground Sources of Drinking Water (USDW) is protected from the proposed injection zone by surface casing set at 1,558 ft MD/TVD and cemented to surface. The production casing was set at 11,805 ft with a two-stage cement job. The first stage cement consisted of 510 sacks of 15.9 ppg cement slurry that resulted in an estimated Top of Cement (TOC) of 8,380 ft. Based on the cement reports from Halliburton, 3 barrels of cement was circulated to surface between stage jobs which means that cement was as shallow as the stage tool at 8,380 ft. The second stage consisted of 620 sacks of 12.7 ppg cement lead slurry and 430 sacks of 15.8 ppg tail slurry. The well history report documented the TOC at 3,660 ft MD/TVD. Tubing and an injection packer will result in further isolation of fresh USDW from injected gas.

An aquifer exemption is not anticipated for the Red River formation as produced water samples have tested over 10,000 ppm TDS. However, these samples were not collected at the Vaira 2-35X well. During the recompletion process, a water sample will be collected from the injection zone to verify that the water exceeds 10,000 ppm TDS at the Vaira 2-35X well.

1(e) Name and Geologic Description of Injection Zone:

There are two zones of the Red River formation currently perforated which include the Red River "C" Laminated from 11,626 ft to 11,640 ft and Red River "C" Burrowed from 11,650 ft to 11,656 ft.

In the geological report from the Vaira 2-35X, the Red River "C" laminated is described as tan/ gray dolomite exhibiting firm to hard cryptocrystalline to very, fine firm to friable microsucrosic texture with occasional translucent, scattered clusters. Porosity ranges from poor to fair with visible intercrystalline porosity. Although rare, chalky, oil stained cuttings are observed. Fluorescence can be described with a yellow, streaming cut, where the top burrowed zone reveals a blue to white cut and the base has a poor milky blue to white cut.

The Red River "C" Burrowed is described as tan and brown to light gray/brown, gray to dark gray dolomite, firm to occasional friable, poorly visible intercrystalline porosity, no significant florescence or cut. The associated limestone did not have any visible porosity and not as likely to be a top candidate for an injection interval.

Above the Red River interval are tight dolomite and interbedded limestones. The interbedded limestones are of similar colors, firm to hard, dolomitic, and rarely chalky in texture. Density-Neutron porosities from the Vaira 2-35X logs show 0% porosity in the limestone. These tight dolomites and interbedded limestones are competent rock and tight (no porosity) providing seals above and below the injection interval in order to avoid any communication to other targets/zones or injecting out of zone.

The existing Vaira 2-35X located in the NWNE Section 35, T35N, R54E, Richland County, Montana is the proposed injection well. Recommended perforation interval would be from 11,600 ft to 11,700; however, the initial injection interval would remain as the current Red River zones: "C" Burrowed perforations from 11,650 ft to 11,656 ft and Red River "C" Laminated perforations from 11,626 ft to 11,640 ft.

A fracture gradient of 0.733 psi/ ft is assumed for this area. An injectivity test will be performed during the completion of the well.

1(f) Additional Information on Producing Wells within the AOR:

As stated previously, there are two wells drilled within the AOR. One of these wells has been drilled and produced in the Dawson Bay and then recompleted in the Duperow. The closest offset well was drilled as a dual lateral in the Bakken formation. A summary of the wellbores in the AOR follows.

Well Name	Vaira 2-35H
Location	NWNE, Sec 35, T25N, R54E
Well Status	Producing
Formation	Bakken
Surface Casing	9-5/8" 36 PPF, J-55
Surface Casing Depth	Surface to 1,550 ft MD/ TVD
Surface Casing Cement	530 sacks
Estimated Surface Casing TOC	0 ft (Surface)
Production Casing	7 in, 26-32 PPF HCL-80
Production Casing Depth	Surface to 10,308 ft
Production Casing Cement	860 sacks
Estimated Production Casing TOC	3,950 ft
Current Production	30 BOPD
Open Hole/ Perforations	10,308 ft to 15,689 ft MD/ 10,244 ft to 15,250 ft MD (approx. 9,220 ft TVD)

Well Name	Vaira B-1
Location	NENE, Sec 35, T25N, R54E
Well Status	Shut In
Formation	Duperow
Surface Casing	10-3/4" 32.75 PPF, H-40
Surface Casing Depth	Surface to 1,039 ft MD/ TVD
Surface Casing Cement	850 sacks
Estimated Surface Casing TOC	0 ft (Surface)
Production Casing	7 in, 32-39-26-23 PPF N-80, P110
Production Casing Depth	Surface to 11,960 ft
Production Casing Cement	825 sacks
Estimated Production Casing TOC	7,010 ft
Current Production	Shut In (before SI producing 250 BOPD)
Open Hole/ Perforations	10,335 ft – 10,353 ft MD/TVD

1(g) Open Hole Logs:

Logs and geologic information for the Vaira 2-35X well are currently on file with MBOGC. A cement bond log currently exists for the Vaira 2-3X with the top of cement at 3,660 ft.

1(h) Description of the Wellbore Construction:

Exhibit 5 and Exhibit 6 show the proposed wellbore configuration for the Vaira 2-35X gas injection well. The Red River perforations will be used for gas injection. These perforations are in the Red River "C" Laminated, 11,626 ft to 11,640 ft and Red River "C" Burrowed, 11,650 ft to 11,656 ft. The Red River perforations may need additional treatment of 15% HCl.

All tubular equipment which may come in contact with injection gas will be H₂S resistant stainless steel and alloys or other resistant coatings. A sour service injection packer will also be installed to isolate shallower zones.

1(i) Description of Injection Fluid:

The injection fluid will consist of produced gas from the Vaira B-1 Battery in the Spring Lake Field (1 producing well with 250 MCFD). Anticipated injection rates are estimated to be 250 MCFD.

Based on current estimates (See Exhibit 7.), the stream of injected gas will have roughly 23.5% H₂S, 12.0% CO₂, and 2.2% N₂ and the rest hydrocarbon gas of which methane is the most prevalent at 48.1%.

The specific gravity of the injection gas is dependent on the temperature and pressure conditions and the composition of any produced water that may be injected with the gas. The hydrocarbons for the most part will remain in a gaseous phase with some potential condensation. It is most accurately calculated using a modification of the Peng-Robinson (PR) equation of state (EOS) mode (Boyle and Carroll, 2002).

We have modeled the daily injection rate of 250 MCFD composed of 23.5% H₂S, 12.0% CO₂, and 2.2% N₂ and the rest hydrocarbon gas of which methane is the most prevalent at 48.1%. Specific gravities of the gas were determined at the wellhead (pressure = 2,000 psi, temperature = 110 Deg F) and the bottom of the well (pressure = 2,600 psi, temperature of 269 Deg F).

$$IP_{MAX} = PG (D_{Top})$$

Where: IP_{MAX} = Maximum Surface Injection Pressure (psi)

PG = Pressure Gradient of Injection Fluid (psi/ft)

D_{Top} = Depth at top of perforated interval of injection zone (ft)

And equation modified from CFR 147.3003(a)

$$PG = 0.2 + 0.433 (1.04 - SG_{sg})$$

Where: SG_{sg} = Average Specific Gravity of sour gas in the tubing
 (SG_{sg} at top = 0.95 and SG_{sg} at bottom = 0.61)

For the maximum requested injection volume case, it is assumed that:

$$SG_{sg} = 0.78 \text{ (Average of 0.95 and 0.61)}$$

$$D_{Top} = 11,626 \text{ ft}$$

Therefore:

$$PG = 0.2 + 0.433 (1.04 - 0.78)$$

$$PG = 0.313$$

And

$$IP_{MAX} = 0.313 \times 11,626 \text{ ft}$$

$$IP_{MAX} = 3,639 \text{ psi}$$

The computed maximum injection pressure for the Red River is 3,639 psi. An injection test (step-rate test) will be performed to determine the final injection pressures and volumes to ensure the formation parting pressure (fracture pressure) is not reached during future sour gas injection operations.

1(j) Name of Owners on Record:

The names and addresses of leasehold and surface owners within the area of review for the proposed injection well are listed in Exhibit 9.

White Rock oil and Gas, LLC. will notify surface owners in accordance with 36.22.1410(1) notification requirements for an underground injection permit. The affidavits reflecting this notification will be sent to MBOGC as soon as notices are mailed.

BEFORE THE BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA

IN RE THE APPLICATION OF WHITE ROCK OIL AND GAS, LLC. OF ITS REQUIRED FOR AN UNDERGROUND INJECTION CONTROL (UIC) PERMIT TO ADD ADDITIONAL INJECTION ZONE FOR THE VAIRA 2-35X WELL, 883' FNL, 2037' FEL, SEC 35, T25N, R54E, FOR THE PURPOSE OF GAS INJECTION WITHIN THE SPRING LAKE FIELD.

NOTICE OF APPLICATION FOR UIC PERMIT FOR INJECTION WELL

DATE: January 9, 2020

TO: SURFACE OWNERS WITHIN AREA OF REVIEW AS LISTED IN UIC APPLICATION

RE Application for Underground Injection Permit

Ladies and Gentlemen,

WHITE ROCK OIL AND GAS, LLC. at 5810 Tennyson Pkwy, Suite 500, Plano, TX 75024, has applied for a permit to add an additional zone to a previously permitted injection well, Vaira 2-35X well, 883' FNL, 2037' FEL, NWNE, Sec 35, T25N, R54E, Richland County, MT. The purpose of this zone would be for injecting gas into the Red River formation within the Spring Lake Field. The application will be heard by the Montana Board of Oil and Gas Conservation at its February 13, 2020 hearing beginning at 9:00 AM in the Montana Board of Oil and Gas Hearing Room at 2535 St. John's Avenue, Billings, Montana.

A portion of the application that describes the proposed project is enclosed. A copy of the complete application is on file with the Montana Board of Oil and Gas Conservation, 2535 St. John's Avenue, Billings, MT, 59102. If you have any questions concerning the application, please contact Ms. Shawna Bonini, Operations Engineer, White Rock Oil & Gas, 720 Lohwest Lane, Billings, MT 59106, 406-690-0068.

Sincerely,



Chad Centorbi, CPL
Senior Landman
White Rock Oil & Gas, LLC

MONTANA BOARD OF OIL AND GAS CONSERVATION
2535 ST. JOHNS AVENUE BILLINGS, MONTANA 59102

Docket 4-2020
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DEC 11 2019
ARM 36.22.307
36.22.308

Notice of Intent to Change Operator

The undersigned Transferor hereby notifies the Board of Oil and Gas Conservation of its intention to transfer ownership and/or operation of the following wells to the undersigned Transferee:

MONTANA BOARD OF OIL & GAS CONSERVATION • BILLINGS

Lease Name:	Lease type:(Private, State, Federal, Indian)
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County:	Field name:
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Description of wells: Include API well number, well name and number, and exact location of the well including Township, Range, Section, quarter-quarter and footage measurements, and lease type - (Federal, Indian, Private, State) Attach additional sheets as necessary.

SEE ATTACHED LIST

Number of Wells to be Transferred: <u>11</u>	Effective Date of Transfer: <u>10/1/2019</u>
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Transferor's Statement:
I hereby designate the Transferee named herein as the owner and/or operator of record of the above described well(s). I acknowledge that the Transferor continues to be responsible for said well(s) and all associated equipment and facilities until such time as this transfer is approved by the Montana Board of Oil and Gas Conservation. I certify that the information contained herein is true and correct:

Transferee's Statement:
I hereby accept the designation of operator/owner for the above described well(s). I understand that this transfer will not be approved until the Transferee has complied with the Board's bonding requirements. I acknowledge that under Section 82-11-101 MCA, the Transferee herein is responsible for the costs of proper plugging and restoration of the surface of the well(s) described above. I certify that the information contained herein is true and correct:

Company RIM OPERATING, INC.
Street Address 5 Inverness Drive East
P.O. Box _____
City, State, ZIP Englewood, CO 80112
Signed *Stephen W. Rector*
Print Name Stephen W. Rector
Title President
Telephone (303) 799-9828
Date 11-8-19

Company Western Meadowlark Resources LLC
Street Address 9301 Wilshire Blvd. Suite 312
P.O. Box _____
City, State, ZIP Beverly Hills, CA 90210
Signed *Chad Brownstein*
Print Name Chad Brownstein
Title CEO
Telephone (310) 492-5020
Date 11-11-19

BOARD USE ONLY

Approved _____ Date _____
Name _____ Title _____
Oper. No. 212 Bond No. M1

Field Office Review	Date	Initial
Inspection	_____	_____
Records Review	_____	_____
Operations	_____	_____
Oper. No.	Bond No.	

7884

Well Name/Number	Twp	Range	Sec	Qtr	Footages	Type	API No.
Benson B1	32N	56E	22	NESESW	1000 FSL & 2100 FWL	Private	25-091-21222
Benson B3	32N	56E	22	SESW	1000 FSL & 1900 FWL	Private	25-091-21254
Benson 5HR	32N	56E	22	SESW	1002 FSL & 1714 FWL	Private	25-091-21327
Benson B6	32N	56E	22	SWSW	660 FSL & 660 FWL	Private	25-091-21521
Marvin Ator 2 SWD	32N	56E	21	NESE	1980 FSL & 660 FEL	Private	25-091-21355
Neiser Creek 1	33N	55E	36	NWNW	447 FNL & 1157 FWL	Private	25-091-21695
Sunmark State 1-36	33N	55E	36	SENW	2430 FNL & 1980 FWL	Private	25-091-21386
Tronson 1	32N	56E	27	NWNE	900 FNL & 1980 FEL	Private	25-091-21242
Tronson 2	32N	56E	27	NWNE	1250 FNL & 1980 FEL	Private	25-091-21253
Tronson 3	32N	56E	27	NENW	1000 FNL & 1980 FWL	Private	25-091-21250
Tronson 4	32N	56E	27	NENW	660 FNL & 1980 FWL	Private	25-091-21306

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